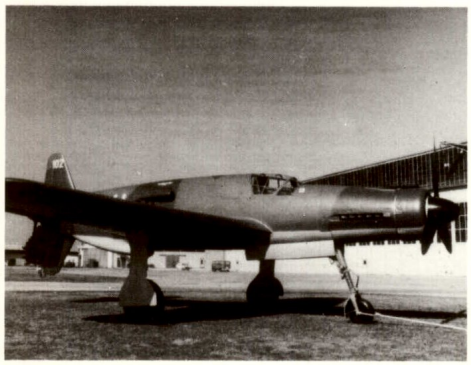
MONOGRAM

Close-Up 21

DO 335



The Do 335 A-02 after restoration.

Of all the aircraft that emanated from the drawing boards of German designers during the Second World War, it was perhaps the Do 335 that was the most intriguing. Unique in its push-pull format, it could have been the prototype for all future conventionally powered fighters had it not been for the advent of the turbojet. Even so, it was the fastest piston-engined fighter built in Germany during the war and suffered none of the asymmetric problems normally associated with a power failure in a conventional twin-engined aircraft.

In this Close-Up the authors have attempted to tell the story not only of the Do 335 itself, but of its many mixed-powered derivitives, none of which was built before the end of the war. The single-engined performance of the fighter was such that the replacement of its second motor by a turbojet seemed to offer a promising project. The turbojet would have been used only in the combat area, giving the mixed-powered fighter a superlative performance at this time. Apart from these aircraft, another important project based on the Do 335 was the Ju 635 — an extremely long-range reconnaissance aircraft which would have been capable of reaching the American East Coast and returning with valuable film.

Many people assisted in the preparation of this issue, but we would like to express particular thanks to Jean-Christopher Carbonel who combed many Franch sources, Hans Kinzler who was in charge of Dornier's license office during the war years, Richard P. Lutz, jr., who supplied many of the lesser-known photographs, Jürgen Rosenstock who provided valuable background pertaining to early Dornier patents. We would also like to express our sincere thanks to Jay P. Spenser of the National Air and Space Museum and Phil Reed of the Imperial War Museum. Additional thanks must also go to the Royal Aircraft Establishment, Farnborough, England, General (Ret.) Harold E. Watson, Peter Petrick, Lee Gullick and our good friend and publisher, Thomas H. Hitchcock.

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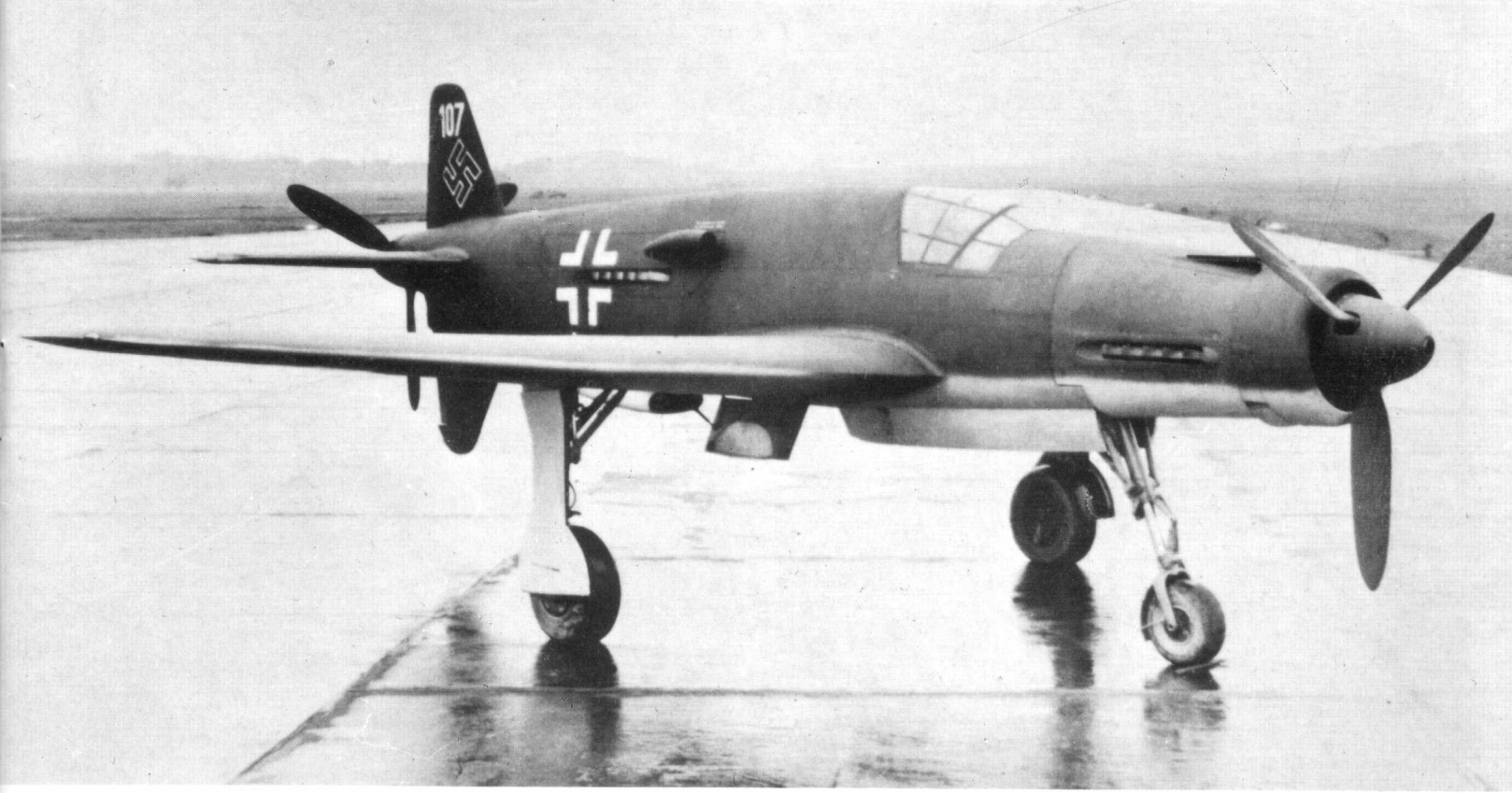
Do 335 WERK NUMMERN

W.Nr.	Code	Series	Fin Nr.	Remarks	W.Nr.	Code	Series	Fin Nr.	Remarks
240101	VG+PG	A-0	101	Second V2 (M2)	240113	+	A-1	113	Single-seat fighter
240102	VG+PH	A-0	102	Sole surviving Do 335	240114	+	A-10	114	Two-seat trainer
240103	VG+PI	A-0	103		240115	+	B-3	?/15	Zerstörer (V19?)
240104	VG+PJ	A-0	104		240116	+	B-?		Night fighter (V17?)
240105	VG+PK	A-0	105	Found by American forces	240117	+	B-?		Night fighter (V20?)
240106	VG+PL	A-0	106		240118	+	B-2	14/18	Second V14 (M14)
240107	VG+PM	A-0	107		240119	+	B-6	15/19	Became V15 (M15)
240108	VG+PN	A-0	108		240120	+	B-2	16/20	Became V16 (M16)
240109	VG+PO	A-0	109		240121	+	A-10	121	Two-seat trainer
240110	VG+PP	A-0	110	Last Preproduction A-0	240122	+	A-11	122	Two-seat trainer
240111	+	A-10	111	Two-seat trainer					
240112	+	A-10	112	Two-seat trainer	240165	+	?	?	?

The twenty-two aircraft listed above represent complete, or nearly complete, Do 335 production aircraft produced prior to the war's end. The one exception is *Werk Nummer* 240165. This number appears on an official Dornier 335 serial number plate held in a private collection in the United States which was removed from an airframe found at Oberpfaffenhofen by American forces. After completion of the first group (listed above), two more groups were allocated begining with 240161 and 240301. No other details. Production aircraft which were subsequently assigned prototype status, had their vertical tailplanes marked in a unique manner. The first one or two digits were separated by a slash mark. It is possible the first digits identified the prototype number while the last one or two numbers corresponded to the last few digits of the aircraft's serial number but, confirmation has yet to be established.



DORNIER 335

By J. Richard Smith & Eddie J. Creek

"This was possibly the most fascinating aircraft I've seen anywhere. Certainly the Do 335 had a most astonishing history. It was developed as an all-weather fighter and there were also night fighter and trainer versions, and I think it had tremendous potential. At the time it was probably the fastest piston-engined aircraft in the world. It think I'm right in saying that the Germans claimed a speed of 472 mph at 21,000 ft, and we'd no reason to disbelieve this figure. From what little we saw, it showed that it was a remarkably speedy aeroplane."

So commented Captain Eric M. Brown of Britain's Royal Aircraft Establishment on the Dornier 335, one of the most remarkable German aircraft produced during the Second World War. Had it not been for the advent of the turbojet, the layout pioneered by the airplane could have become standard for future piston-engined fighters.

For many years Professor Dr. Claudius Dornier had been working on the design of aircraft with tandem engines arranged back-to-back in a single nacelle. Before the mid-1930s this arrangement had been applied solely to flying boats and a few experimental bombers, but toward the end of the decade some thought was given to the design of a twin-engined fighter with this layout. The first patent (No 728 044) for such an aircraft was filed on August 3, 1937. The advantages of the layout were, to quote the patent: "(1) an aircraft consisting of at least three separately built and interchangeable parts — a front section containing a propulsion unit with a tractor propeller; a center section protected by fire walls fore and aft containing the crew, instrumentation and possibly also the fuel; and a rear section carrying the tail unit and second engine with pusher propeller. (2) an aircraft as (1) above, with the center section provided with an outer skin having increased resistance to bullets in the usual manner, for instance by several millimeter thick steel plating."

Shortly after filing the patent, Dornier began work on a project to incorporate the features proposed within it. Designated Dornier P 59, the project was for a single-seat, low-wing monoplane powered by a pair of Daimler-Benz engines. The radiator intakes for the rear engine were positioned on either side of the fuselage, behind the cockpit, with this unit driving the pusher propeller via an extension shaft. Other unusual features of the design were cruciform tail surfaces, the lower fin incorporating a tail skid, and a variable incidence wing.

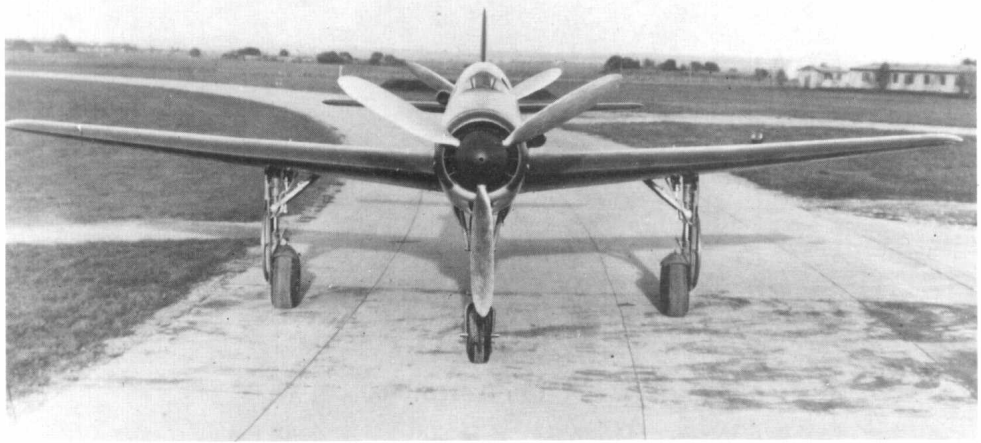
To prove the feasibility of a rear-mounted engine driving a pusher pro-

Top: Representative of the standard Do 335 fighter this photo shows the A-07 preproduction aircraft (W.Nr. 240107). A total of ten such airplanes were completed by the Dornier factory at Oberpfaffenhofen near Munich before production switched to the Do 335 A-1.

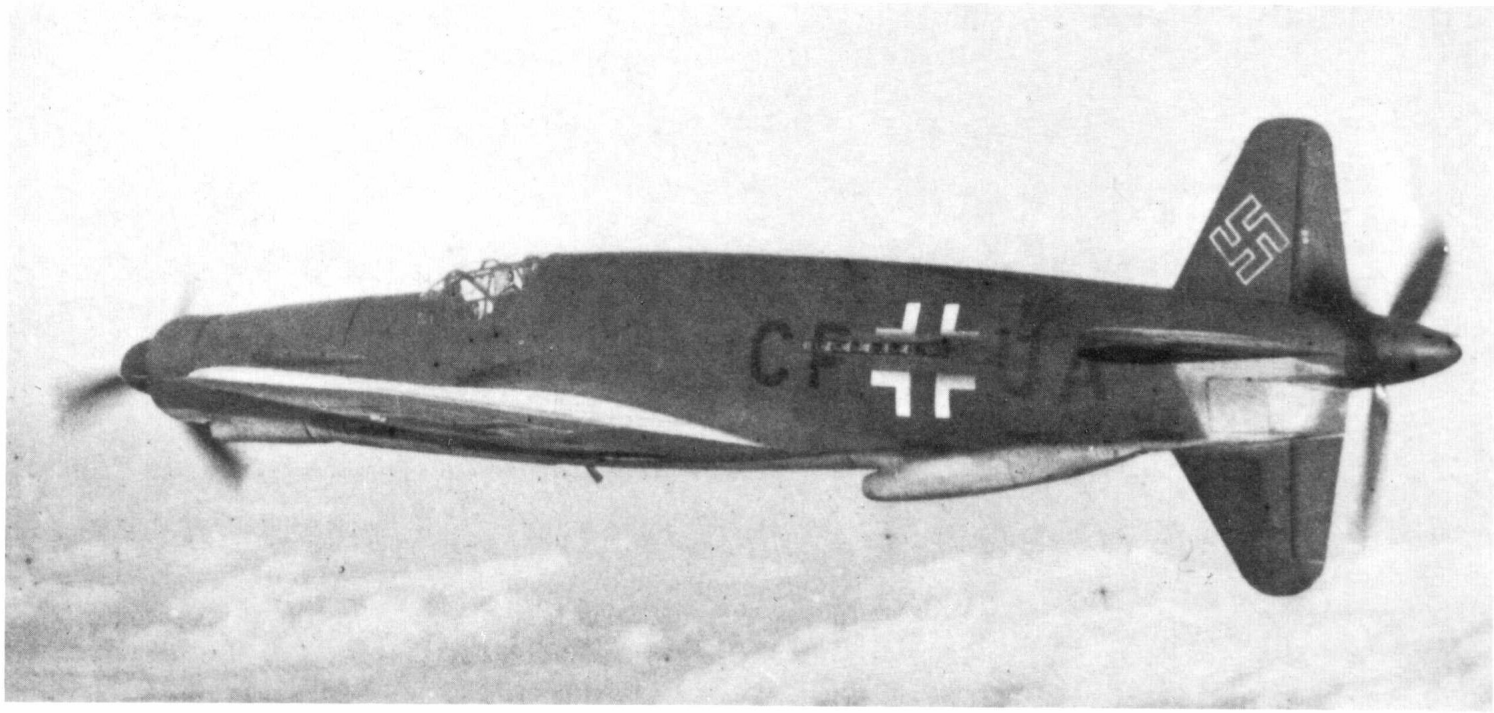
powerful 1,900 hp DB 603 Gs. A variation of the latter was proposed with twin fuselages each with an engine in the nose driving a conventional tractor propeller. This layout was eventually abandoned by Dornier in favor of the original single fuselage back-to-back idea. A third proposal was the P 231/3 in which the rear piston engine was to be replaced by a turbojet. All three projects had the radiators for the piston engines installed in the leading edges of the wing roots.

Prototypes

A development contract for three prototypes was initiated in January 1943. Little time was lost in developing the earlier two projects which led to construction beginning on the Dornier Do 335 V1, the first prototype of an aircraft intended for a large number of roles including those of interceptor fighter, fast bomber and reconnaissance. The prototype was similar to the P 231/2 but with an annular radiator for the forward engine and a large scoop under the rear fuselage feeding the after radiator. The prototype (CP + UA) made its first flight from the Dornier plant at Friedrichshafen on October 26, 1943. The pilot on this flight was *Flugkapitän* Hans Dieterle, who had previously gained the world speed record for Germany. This had occurred on March 30, 1939, when the young 23 year old pilot had attained an average speed of 463.919 mph (746.606 km/h) in the He 100 V8 experimental fighter. He later left Heinkel to become Dornier's chief test pilot.



Above and below: These views of the Do 335 V1 clearly show the circular mainwheel undercarriage doors and separate oil cooler intake which distinguished it from subsequent prototypes.

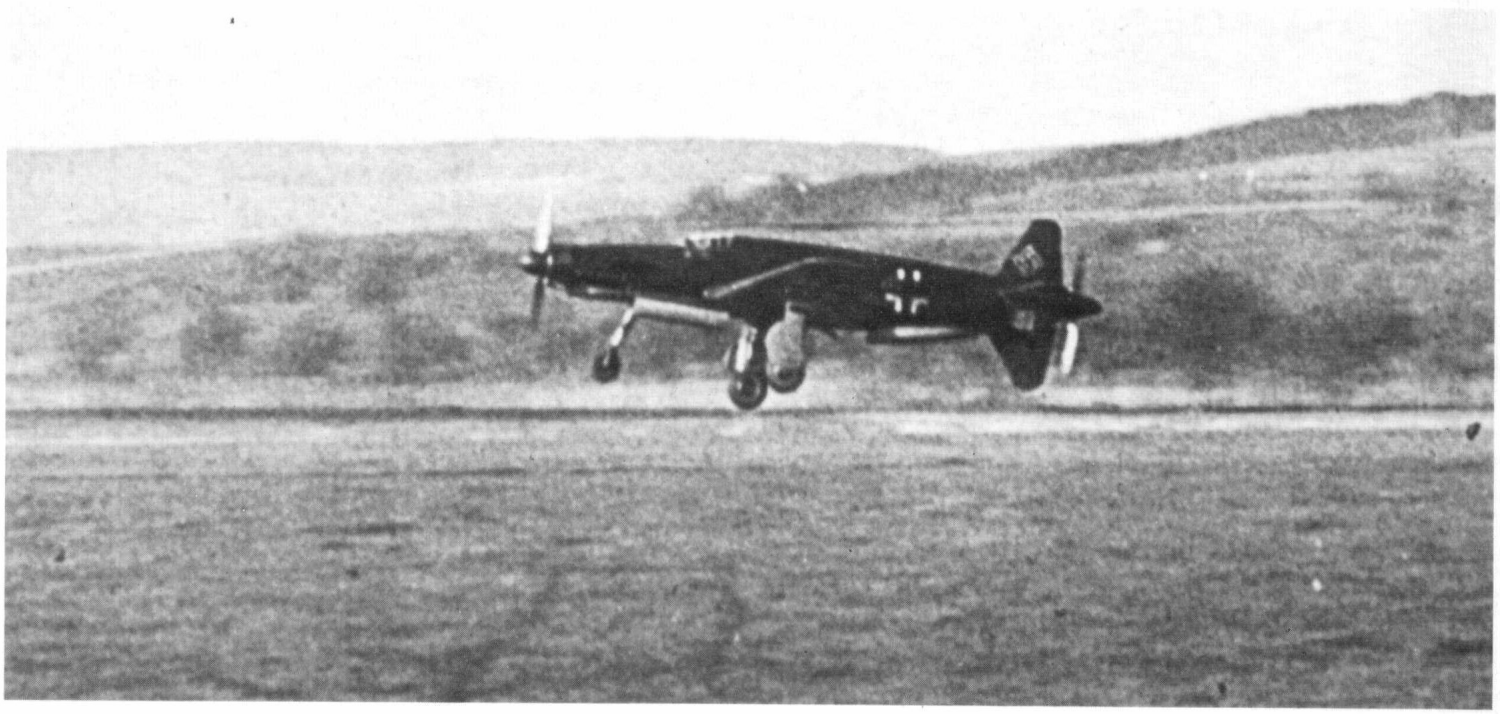


Two further tests with the Do 335 V1 took place on November 2, 1943, the first with Werner Altrogge at the controls, the second with Quenzler. Diploma Engineer (*Dipl. Ing.*) Werner Altrogge had previously flown the high altitude Ju 86 R reconnaissance aircraft over the British Isles before joining the Dornier company as a test pilot. These two men, in company with Dieterle, conducted all early tests with the Do 335.

On the fourth flight of the prototype, the Do 335 V1 attained a speed of 373 mph (600 km/h) at sea level and later tests were to prove that the prototype could fly quite handily on one engine without the asymmetric problems associated with normal twin-engined aircraft. In fact it was found that it could fly faster with the forward engine stopped than with the rear propeller feathered. A speed of 348 mph (560 km/h) was possible in the former condition in level flight. One

Above: The Do 335 V1 in flight. One great advantage of the aircraft's unique layout was that it could fly quite easily on one engine. In fact, tests were to prove that it was marginally faster with the forward propeller feathered than with the rear engine stopped. Although a large twin-engined airplane, the Do 335 only presented similar resistance to the airflow as a single-engined aircraft. The projection positioned on the left side of the V1 is the supercharger intake for the rear engine, that to the right for the forward engine.

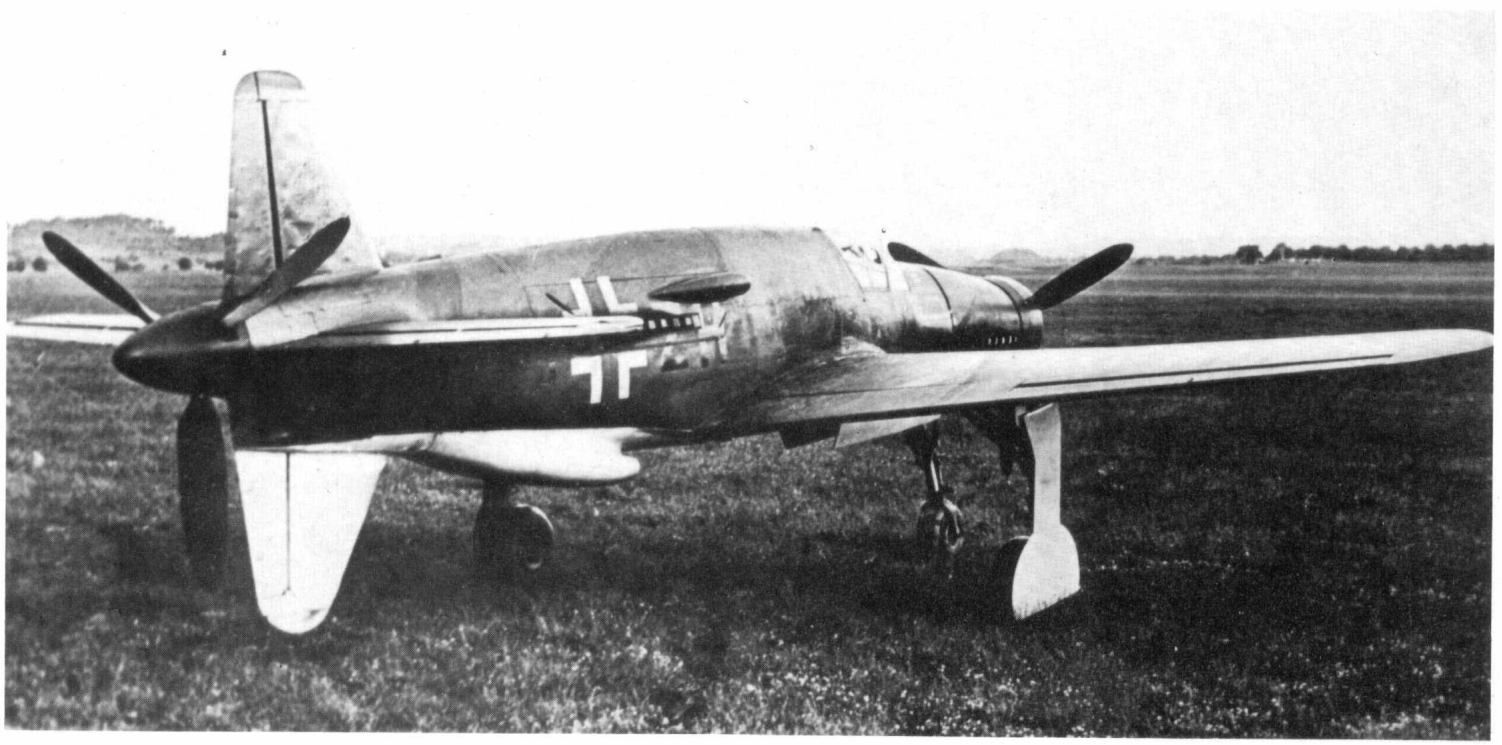
Below: Taken from contemporary movie film, this view shows the first prototype about to touch down. Note the large circular mainwheel covers and chin oil cooler intake which distinguished it from subsequent prototypes.

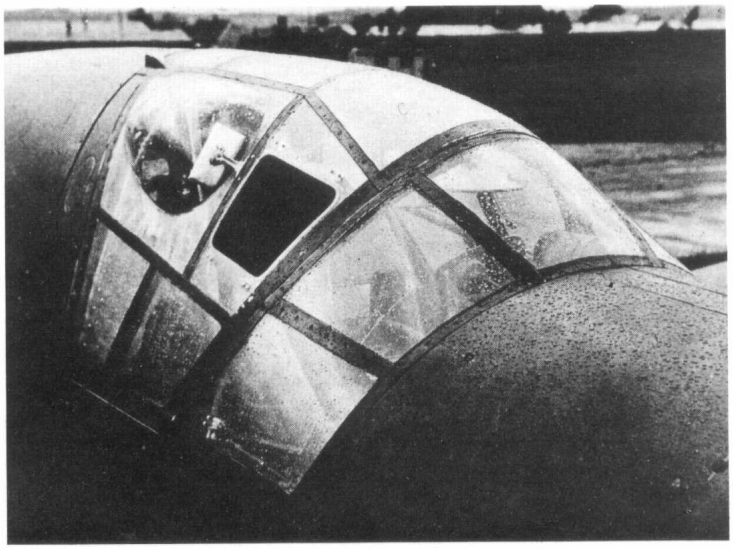


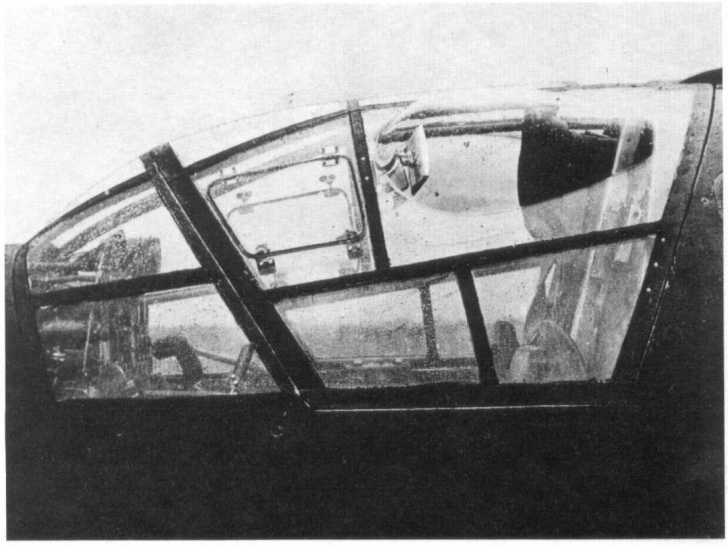
Above and below: Subject of a color painting on page 14, the Do 335 V3 carried the code T9 + ZH signifying that it was being operated by the 1./Versuchsverband OKL. At this time the airplane was piloted by Leutnant Wolfgang Ziese, but no operational missions were flown by him. Postwar German censors have obliterated the swastika on the upper fin.

problem did however manifest itself, one that was to plague the airplane throughout its life. This was that the rear engine tended to overheat because of the difficulty of providing adequate cooling.

A second prototype, the Do 335 V2 (CP + UB), joined the test program on December 31, 1943, the pilot on this first flight again being Dieterle. The aircraft differed in several respects, having a redesigned forward engine cowling with the air cooler intake incorporated, modified mainwheel doors and a rearward hinging cockpit canopy in place of the backward sliding type fitted to the first prototype. The Do 335 V3 (CP + UC) which made its first flight on January 20, 1944, was generally similar to the V2, but with modified exhausts and wing root fairings. Both aircraft had







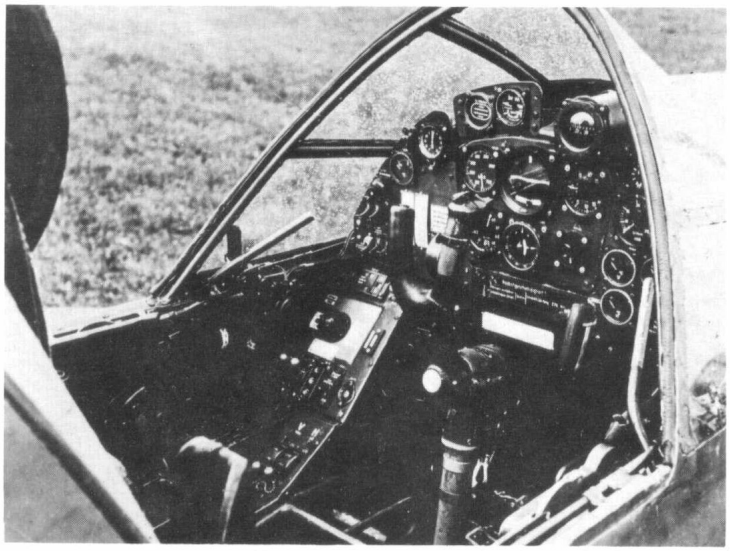
Above: The canopy of the Do 335 pictured after a rainshower. To improve visibility to the rear, a special "teardrop" was fitted to both sides to accommodate a rearview mirror. Forward of this was positioned a square glazed panel which could be opened to further improve visibility. Below: The Do 335 was only the second piston-engined aircraft to be fitted with an ejector seat, compressed air being used to propel the pilot clear of the cockpit in an emergency.

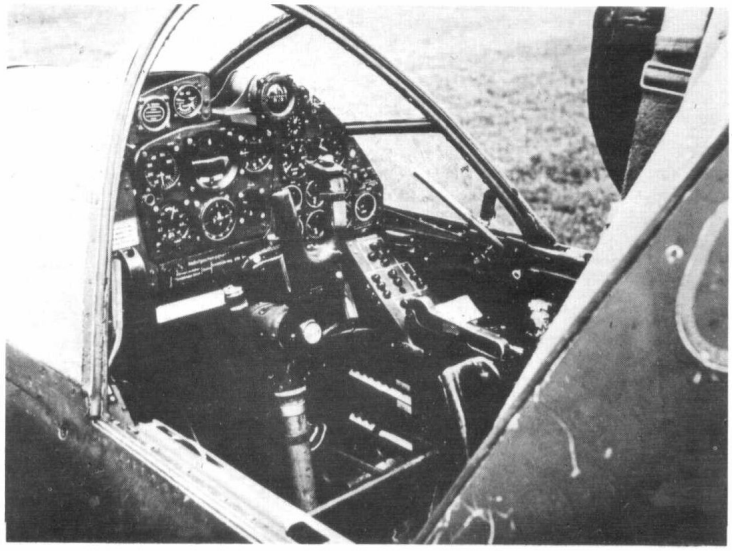
a transparent blister on both sides of the canopy, housing an interior mirror to improve rearward visibility.

The Do 335 V4 (CP + UD) did not make its maiden flight until July 9, 1944, during which five additional prototypes had been completed and flown. The fourth prototype was allocated to test a high aspect ratio wing developed by Heinkel. This new wing with an span of 60 ft 4½ in (18.4 m) was subsequently assigned to the Do 335 B-4 which is discussed later in this title.

The Do 335 V5 (CP + UE) was the first aircraft to be fitted with armament. It had a long-barrelled 30 mm MK 103 cannon mounted between the cylinders of the forward DB 603 inverted vee in-line engine, with two 20 mm MG 151 cannon above. Although having a slower rate of fire than the more common MK 108 gun, the MK 103 had almost twice the muzzle velocity and hence a much greater range. After making its first flight in February 1944, the Do 335 V5 was handed over to the armaments test center at Tarnewitz for firing trials.

The fifth prototype to fly was the Do 335 V6 (CP + UF) which tested various items of equipment including the FuG 101 radio altimeter. It made its first flight on March 25, 1944, with Altrogge at the controls. Shortly afterward, on April 15, this pilot was killed tragically when evaluating the roll characteristics of the Do 335 V2. The rear engine caught fire and probably burned through the elevator controls, causing the airplane to dive vertically into the ground. Altrogge's





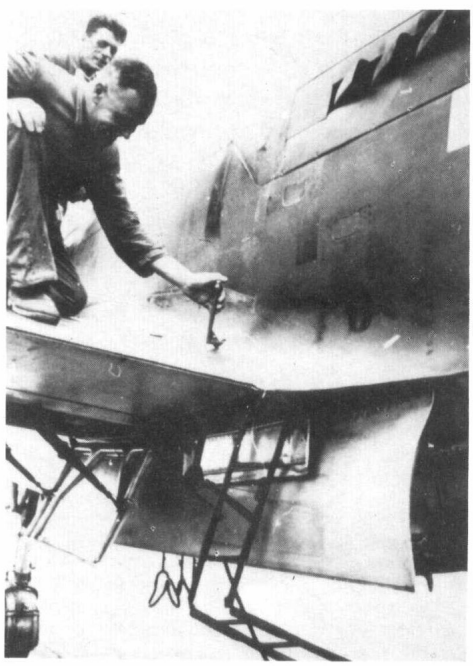
place was later taken by *Flugkapitän* Karl-Heinz Appel.

Because of its unusual configuration a unique sequence of events had to be triggered before the pilot could escape safely from the cockpit of the Do 335. A row of three buttons was provided on the starboard side of the cockpit, the first of which blew off the rear propeller, the second the upper fin and rudder and the third armed the ejector seat. The Do 335 was only the second piston-engined aircraft to be fitted with an ejector seat, compressed air being used to propel the pilot clear of the cockpit. After these buttons had been depressed, the pilot then had to pull two large levers to jettison the canopy.

During May 1944 two further prototypes joined the test program. These were the Do 335 V7 (CP + UG) which made its first flight on May 19 and the V8 (CP + UH) on May 31. The seventh prototype was later transferred to Junkers at Dessau where it was used as a test bed for two 1,750 hp Jumo 213 engines, eventually being destroyed in an air raid. The V8 was probably the first aircraft to be fitted with Daimler-Benz DB 603 E-1 engines which were intended for the production airplanes. It also had modified engine cowlings.

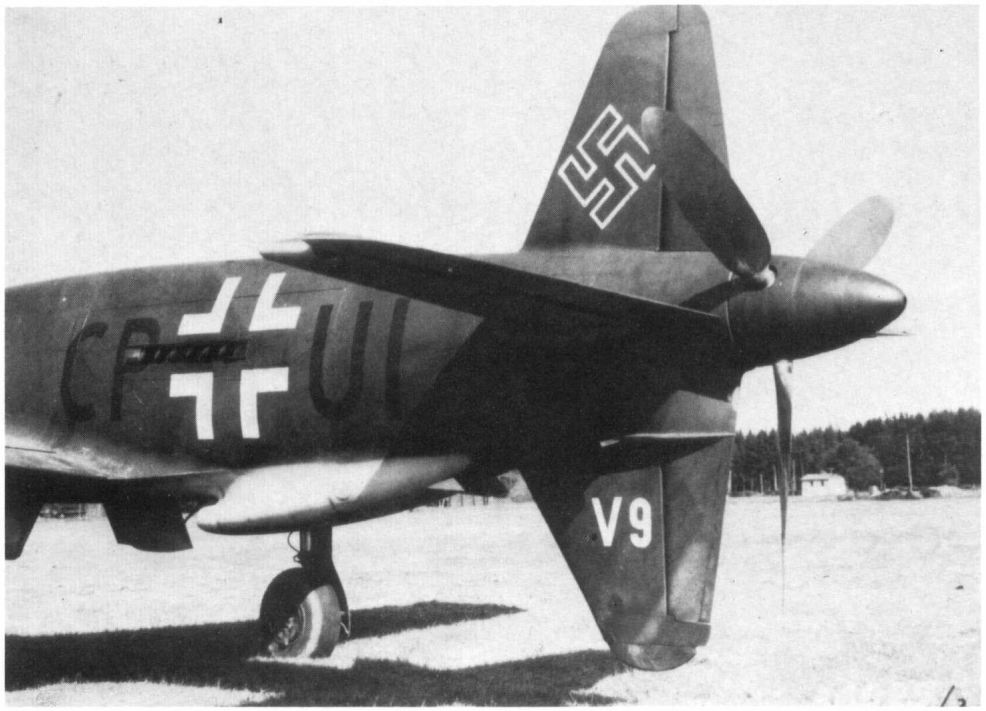
Successful testing of these aircraft led to the V9 (CP + UI) which was to serve as a prototype for the Do 335 A-1 fighter-bomber, by now known as the *Pfeil* (Arrow). It made its first flight on June 29, 1944, piloted by *Flugkapitän* Quenzler. Although similar to previous aircraft, the V9 had a redesigned undercarriage and an armament of two 20 mm MG 151 cannon with 200 rounds per gun and one 30 mm MK 103 with 70 rounds. It was the first prototype to have a canopy hinged to starboard, all previous aircraft, with the exception

Above: These two views of the Do 335 V3's cockpit show several differences in the layout of the instruments when compared to the production aircraft. Below: The considerable size of the Do 335 can be gained from these photos showing the folding access ladder which was fully retractable.



of the V2 and V3, having backward-folding units. It was powered by two Daimler-Benz DB 603 A-2 twelve cylinder inverted vee liquid-cooled, in-line engines.

Soon after its first flight the aircraft was delivered to the *Luftwaffe* experimental station at Rechlin for performance tests. These were conducted by one of the station's most respected pilots, *Dipl.-Ing.* Heinrich Beauvais. Beauvais possibly flew more different types of wartime German aircraft than any other pilot, logging such varied machines as the Ar 232 transport, the He 280 and Me 262 jets, the Me 163 rocket fighter, the Fi 256 communications aircraft, the Ta 154 night fighter and the Fa 223 helicopter. During performance tests the Do 335 V9 attained a speed of 472 mph (760 km/h) at altitude. Beauvais well remembers flying a mock combat operation against a Fw 190 which was then the Luftwaffe's foremost fighter. As soon as he pushed open the throttles of the Do 335, it surged forward and left the Fw 190 far behind. Apart from its high speed and remarkable acceleration, the Do 335 possessed excellent handling characteristics, and was extremely maneuverable for its size.



Successful testing of the Do 335 V9 was followed by construction of a batch of ten A-0 preproduction aircraft (W.Nr. 240101 to 110), a contract for which had been placed in December 1943. These aircraft were built at Dornier's airfield at Oberpfaffenhofen, west of Munich because of bomb damage caused to Dornier's Friedrichshafen factory. On April 28, 1944, some 750 American 8th AF B-17s struck Friedrichshafen and Oberpfaffenhofen, but because of stiff resistance aided by dense smoke screening, only partial

Above: Karl-Heinz Appel made the first flight in the Do 335 V11 on October 11, 1944. This was the prototype of a two-seat trainer to be built under the designation Do 335 A-10. A second cockpit positioned above and behind the first was provided for the instructor. Left: The Do 335 V9 which was extensively tested at Rechlin. One of the station's most experienced pilots, Heinrich Beuvais, recorded that the aircraft could easily outpace a Fw 190.

damage was inflicted to assembly halls and workshops at Friedrichshafen. On July 20, 1944, heavy damage was sustained by assembly halls and workshops, but on August 3, 1944, bombing resulted in total destruction of Dornier's Friedrichshafen plant. In spite of this circumstance, continuation of work proceeded in the vicinity of Friedrichshafen.

The first preproduction machine, the **Do 335 A-01** (VG + PG), made its first flight on September 30, 1944, and was generally similar to the production prototype.

Apart from its unusual shape, the most striking feature of the fighter was its immense size — the average person being able to walk beneath it without even bowing his head. The fuselage was an all-metal monocoque structure with the forward DB 603 A-2 engine driving a huge 11 ft 5¾ in (3.5 m) diameter three-blade propeller with reversible pitch. The last feature could reduce the landing run by some 25 per cent. The main 325 US gal (1,230 ltr) fuel tank was positioned behind the cockpit, separated from it by an armored bulkhead, with the rear DB 603 QA-2 engine driving a pusher propeller via a hollow extension shaft. An internal weapons bay was provided beneath the center of the fuselage capable of carrying a 1,100 lb (500 kg) bomb or a jettisonable 132 US gal (500 ltr) auxilary fuel tank.

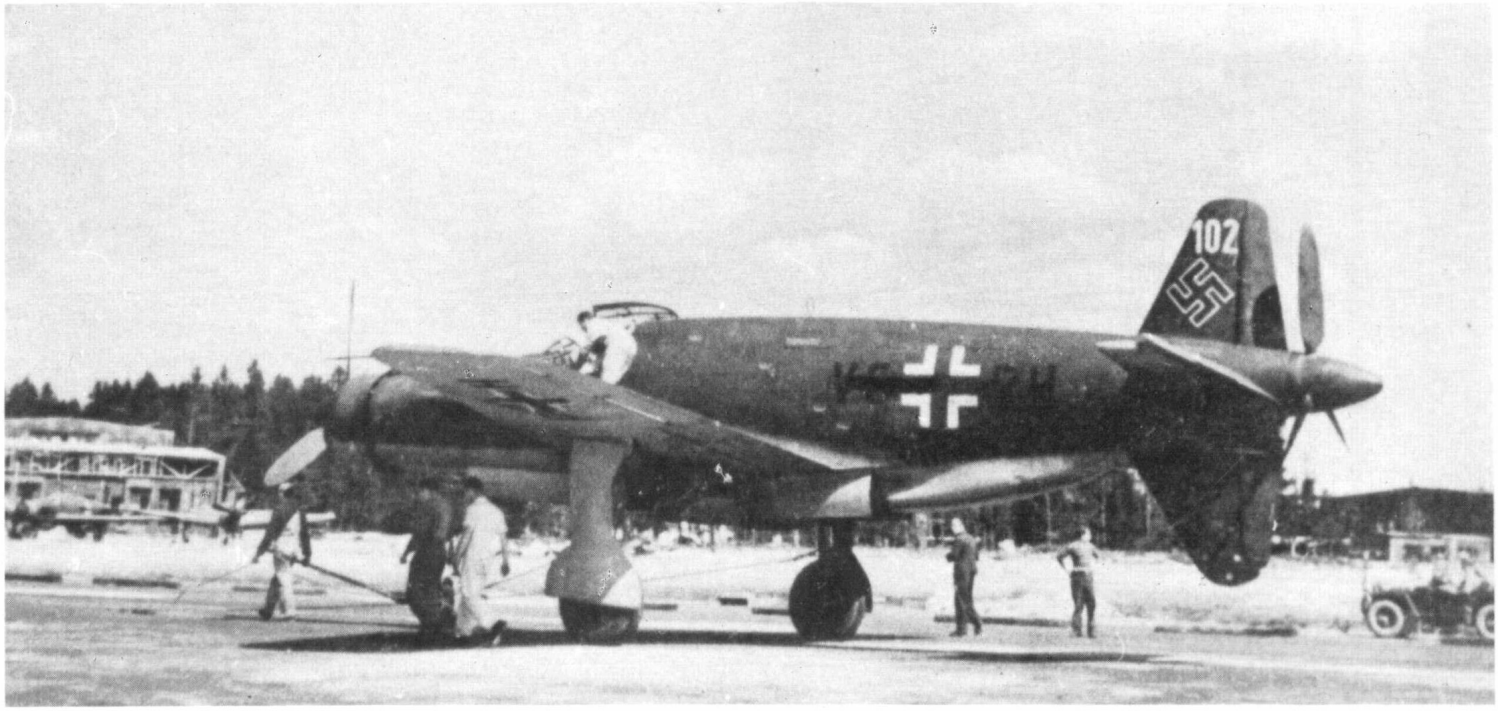
The wings were built around a single box spar with all metal stressed skinning. Two 89 US gal (310 ltr) self-sealing tanks were mounted in the wing leading edges, on either side of the center section, and variable camber flaps were positioned inboard of the hydraulically powered ailerons. The cruciform tail was also built of metal with the exception of the leading edges of the fins which were wood. A sprung tail bumper was attached to the bottom of the lower fin which could be jettisoned in the event of a belly landing.

Initial series production was to commence in February 1944 at Luther u. Jordan, Brunswick. However, owing to continual development delays, none was completed by this firm. Following the completion of the ten Do 335 A-0s at

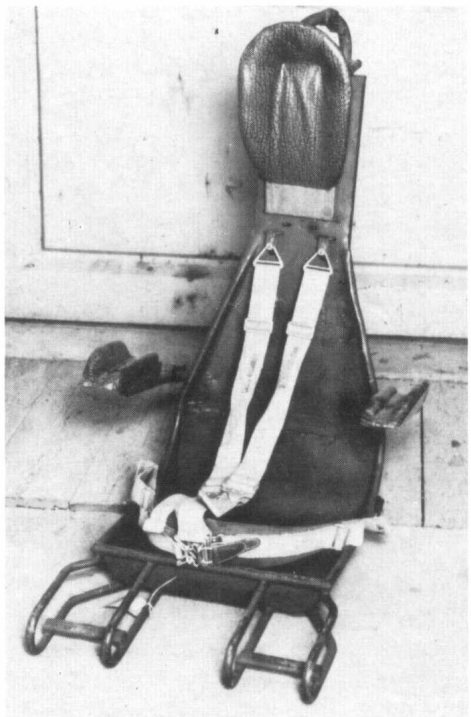
Above: The heavily armed Do 335 V13 destroyer which was fitted with two additional 30 mm MK 103 cannon in the wings. The Rheinmetall-Borsig MK 103, with a muzzle velocity of around 3,000 ft/sec, possessed a much longer range than the smaller but faster firing MK 108.

Oberpfaffenhofen, work began on a batch of production **Do 335 A-1** fighters. These differed in being powered by a pair of DB 603 E-1 engines rated at 1,800 hp for takeoff and 1,900 hp at 5,900 ft (1,800 m) with emergency powerboost. The guns were aimed with the aid of a Revi 16D reflector sight, and an FuG 16ZY transmitter, FuG 25a IFF and FuG 125 blind landing radio equipment were provided. As Rüstsatz (auxiliary apparatus), two ETC 501 A-1 bomb rack could be positioned beneath the wings to carry either a 550 lb (250 kg) bomb or a 79 US gal (300 Ltr) drop tank.

The **Do 335 A-2** was a proposed bomber version (Kampfflugzeug) powered by two DB 603 G engines and capable of carrying a 2,200 lb (1,000 kg) internal bombload. Due to changing war demands, it is doubtful if any aircraft of this series were com-



pleted. Fitted with the rather unusual combination of GM 1 and MW 50 powerboosting, the **Do 335 A-3** was to have been a Zerstörer or heavy day fighter. GM 1 (nitrous-oxide) was added to allow the aircraft to operate above the rated altitude of the engines while MW 50 (methanol-water), allowed extra power to be gained below the rated altitude of the engines. It is also doubtful if any examples of this version were completed before the war's end.



As early as the spring of 1944, the General of the Reconnaissance, *General-Major* Karl-Henning von Barsewisch, suggested using the Do 335 for long-range reconnaissance sorties over the British Isles, the V1 to photograph the British fleet at Scapa Flow in the north Scottish island of Orkney and the V3 for a mission over London. Work had already begun on a reconnaissance version of the aircraft under the designation **Do 335 A-4**. This was to carry two Rb 50/18 cameras in the bomb compartment, with glazed apertures for the lenses in the bay doors.

A single camera was fitted experimentally to the Do 335 V3 and delivered to the First Squadron of the Experimental Unit of the *Luftwaffe's* High Command (*1./Versuchsverband OKL*) in July 1944. Operationally coded T9 + ZH, the airplane was piloted *by Leutnant (Lt.)* Wolfgang Ziese, but it is unlikely that the proposed flights over Britain were attempted because of the aircraft's continued unserviceability. Ziese himself had a remarkable career. Earlier on in the war he had worked as a test pilot for the Siebel company at Halle, and following his testing of the Do 335, flew a number of reconnaissance operations with the remarkable Ar 234 jet. After the war he was taken to Russia to work on Soviet aviation development, and was engaged in the testing of a Russian supersonic research aircraft at the time of his death in 1949.

As recounted earlier, the Do 335 V7 had been transfered to Junkers for trials with the Jumo 213. Although supporting documentation remains elusive, it is nevertheless believed that the little-known **Do 335 A-5** was intended for use with this promising powerplant. The same is believed equally applicable for the **Do 335 A-7, Do 335 A-8** and **Do 335 A-9** series, although the precise role for each is unknown.

Night Fighters and Trainers

During the fall of 1944 proposals were put forward for adapting the aircraft for the night fighting role under the designation **Do 335 A-6**. This was basically similar to the A-1, but with a second seat behind the pilot for a radar operator. The latter was to be provided with a bulged canopy and a specially designed Heinkel ejector seat. The installation of a second seat resulted in the main fuselage fuel tank being reduced in capacity to 158 US gals (600 ltrs), the deficiency being made up by two 79 US gal (300 ltr) drop tanks under

Continued on p. 12

Above: The immense size of the Pfeil can be seen in this photo of the Do 335 A-02 prior to its capture at Oberpfaffenhofen. Left: the pilot's ejection seat shows the structure to be of simple, yet rugged design.

Above and below: The Do 335 A-05 (W.Nr. 240105) after capture by American troops. In a letter to Hitler's adjutant, Nikolaus von Below, written on November 11, 1943, General Milch said that he saw the Do 335 as "the piston-engined, high-speed bomber and day fighter of the future". There is little doubt that he was right, but Allied bombing slowed production to the point that the aircraft was too late to see true operational service.

the wings. Two small MW-50 tanks were also installed in the wings to provide water-methanol injection for the DB 603 E engines. The use of MW-50 increased engine power to 2,000 hp for short periods.

In addition to the standard radio equipment, the A-6 was to carry Telefunken FuG 220 *Lichtenstein SN-2* airborne interception radar (later to be replaced by the lighter Siemens FuG 218 *Neptun V* set which operated on higher frequencies). Also fitted was Telefunken FuG 350 *Naxos Z* "passive" radar which worked on the emissions of the British H2S set, and a Siemens FuG 101 radio altimeter. The installation of radar necessitated the attachment of four "toasting fork" antennae in the

Above and below: The Do 335 A-07 which served as one of the preproduction aircraft for the A-1 single-seat fighter-bomber. Like many other German aircraft of the time, the Do 335 had a trouble shooter (Typenbegleiter) appointed to help coordinate development. That for the Do 335 was Stabsinginieur Vogt.

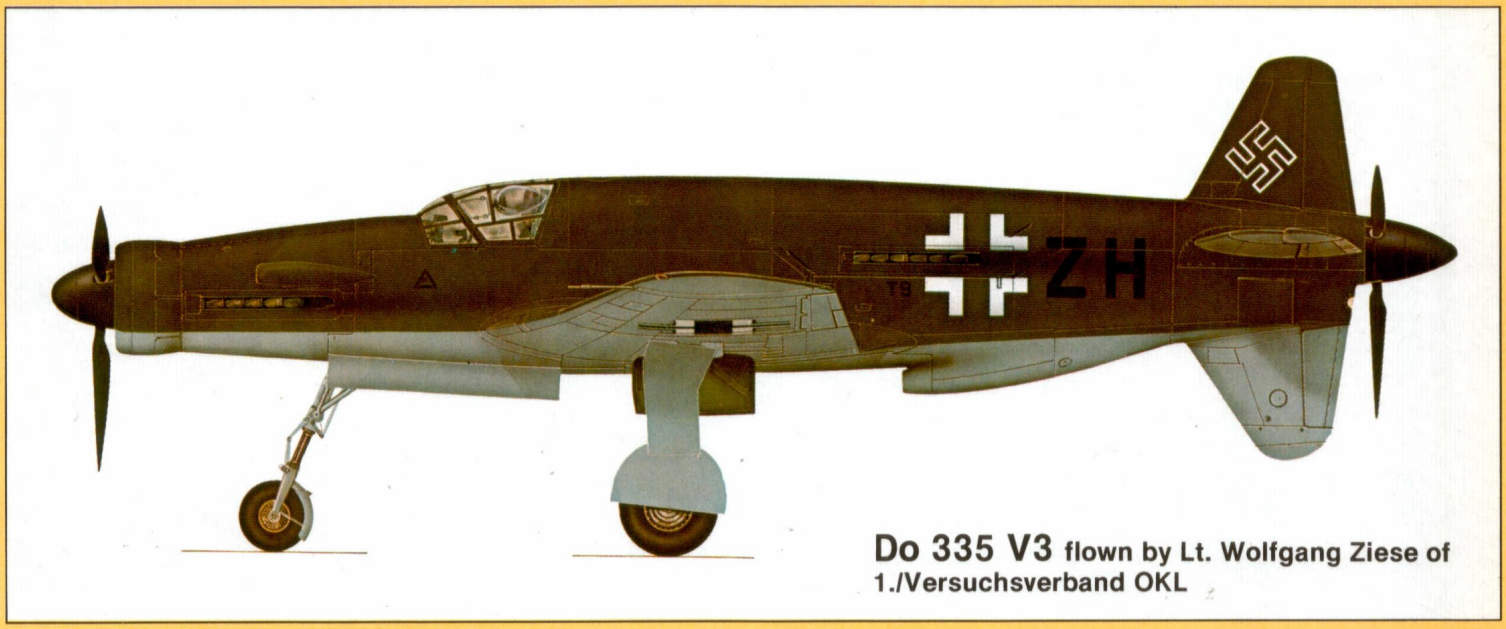
wings, the two for the lateral beams on the port side, the two for the vertical on the starboard. The standard armament of one MK 103 and two MG 151 cannon was retained, and a 1,100 lb bomb could be mounted in the weapons bay in place of the 132 US gal (500 ltr) auxiliary fuel tank. It was estimated that the second seat, radar equipment and flame damping exhausts would reduce the A-6's maximum speed by some 43 mph (70 km/h).

The prototype night fighter was the Do 335 V10 (CP + UK) which made its first flight from Diepensee on January 24, 1945. It had a second seat positioned behind the first but with a flush-fitting canopy adapted from that of a standard Do 335 rather than the "bubble" intended for the production model. The second night fighter prototype, intended for delivery early in February, was the Do 335 V16 which was fitted with FuG 218 radar. Three further A-6 prototypes were proposed, the Do 335 V15, V21 and V22. After delivery these machines were to be passed to the radar test center at Werneuchen for evaluation.

Apart from the various types of radar, other systems were to be developed for the Do 335 night fighter. These included de-icing equipment (to be tested on the Do 335 A-05), the EZ-42 gyroscopic gunsight (to be installed in the Do 335

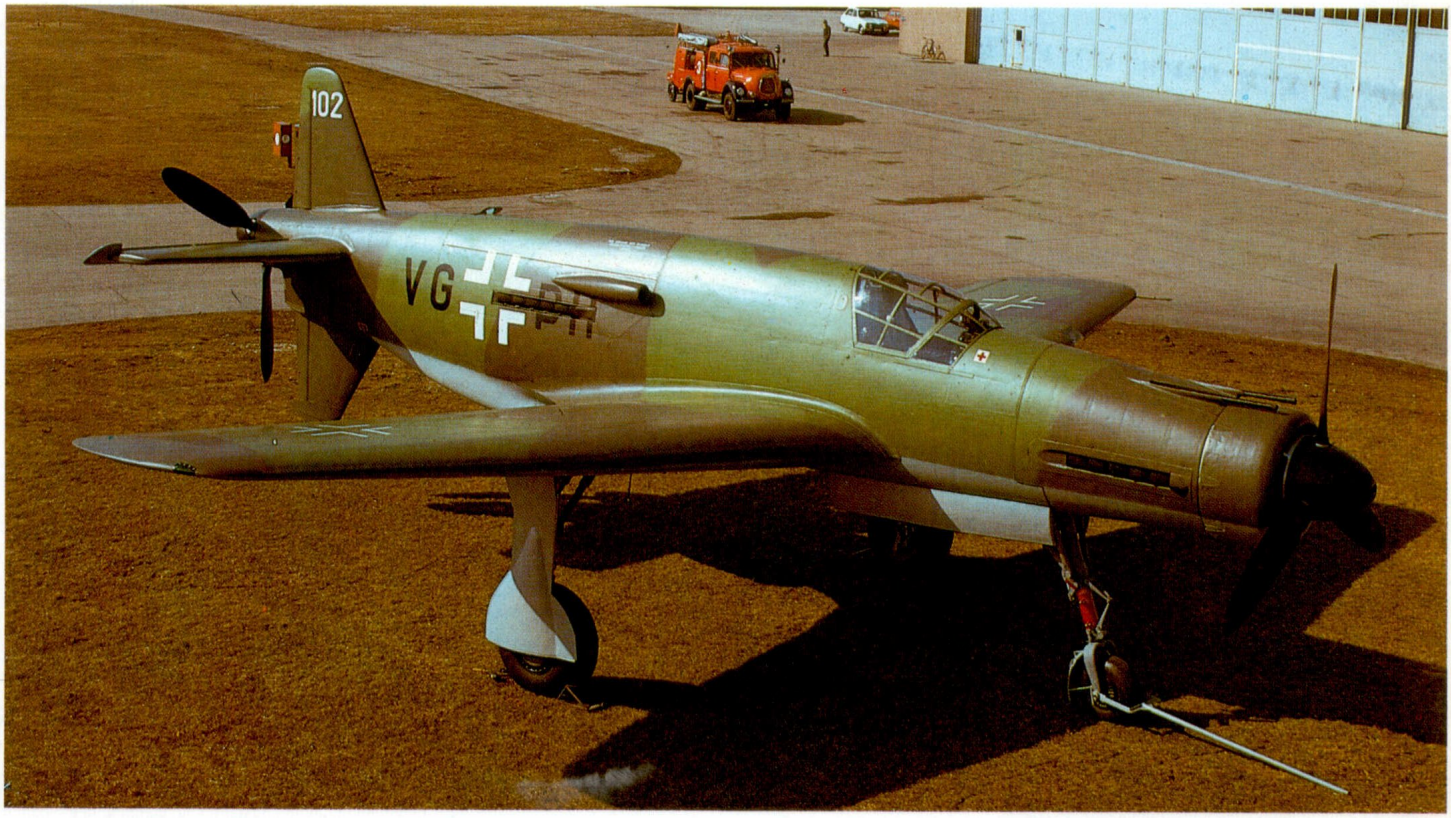
Continued on p. 15

Above: The badly damaged Do 335 A-1 (W.Nr. 240113) after it crashed with the night fighter ace, Major Wolfgang Schnaufer at the controls. The airplane, which was undergoing repairs, was captured by US roops at Bindbach near Bayreuth. Below: This Do 335 A-1, photographed in France, is thought to be the second Pfeil brought to the United States aboard HMS Reaper. Interestingly, the aircraft is juxtaposed to the remains of four German jets including three He 162s and an Me 262.



Do 335 V3 flown by Lt. Wolfgang Ziese of 1./Versuchsverband OKL

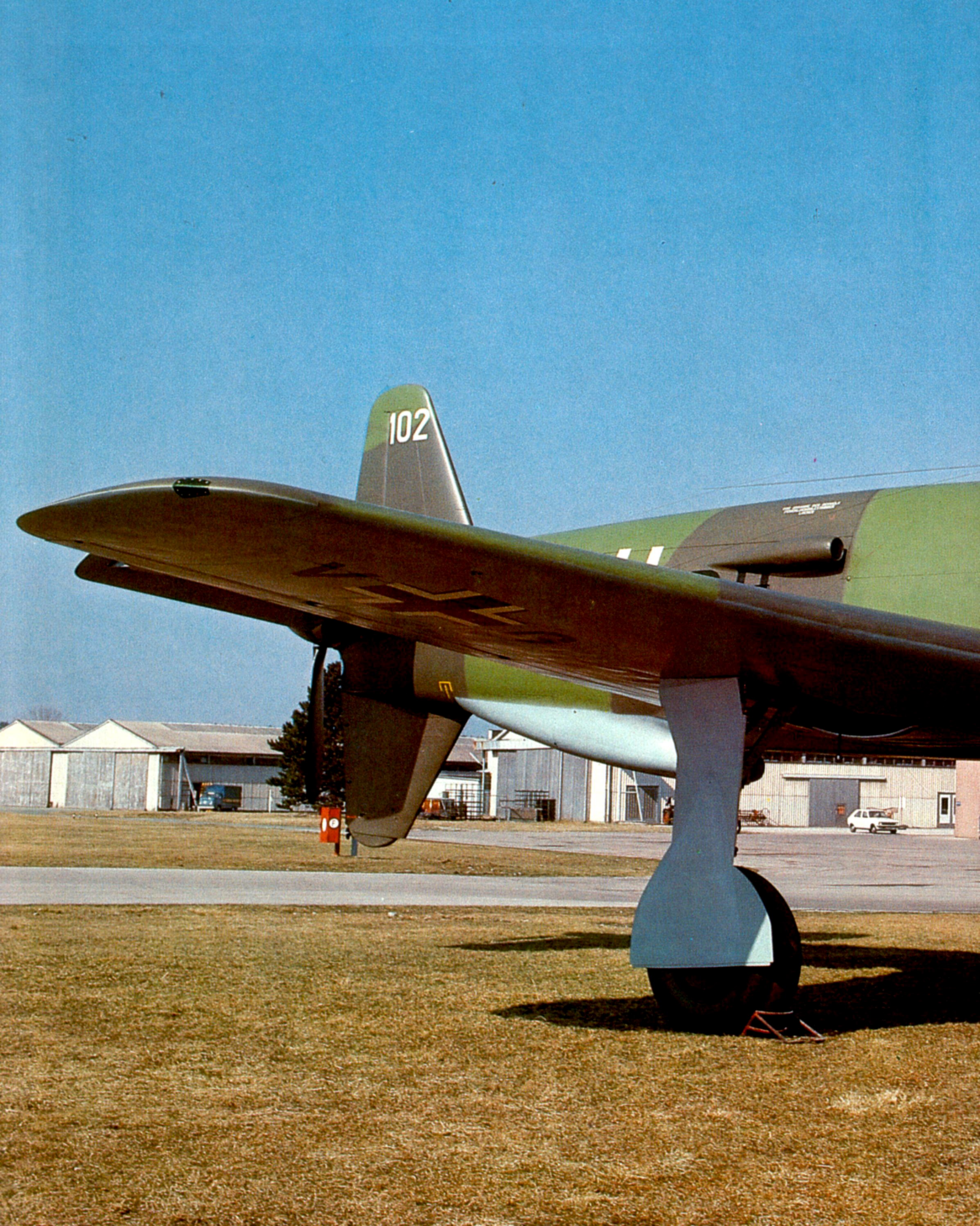
Below: A low drag annular nose ring encloses the oil coolant radiator mounted ahead of the DB 603 A-2 twelve cylinder, liquid-cooler engine. Some impression of its size can be gained by the foreward VDM propeller with a diameter of 11 ft 5¾ in. A mud guard was fitted to the nose wheel which would help prevent foreign material from being thrown into the rear radiator during takeoff and landing.



Above & centerspread: Completed in December 1975, the German restoration of the Do 335 A-02 was exceedingly thorough but the camouflage colors chosen are not those originally found on the machine when it was stored at Silver Hill, Maryland. Right: a view of the cockpit of A-02 shows some minor variation from earlier machines. Flight and engine instruments are conveniently positioned for optimum advantage. A good deal of the interior was painted Color 66, Black-Gray including the instrument panel while RLM Gray 02 was used in some lower portions of the cockpit.

V13) and the Messerschmitt P 8 high speed reversible-pitch propeller (to be tested on the Do 335 A-08). The latter feature, installed in place of the standard VDM forward propeller, was found to reduce the taxying run by some 650 ft (200 m) at maximum landing weight.

At a conference of the Special Commission for the Development of Night and Bad Weather Fighters held in Berlin on January 24, 1945, Dornier promised that he could deliver the first of a batch of fifty Do 335 A-6s by March 1945, these to be subcontracted by Heinkel North at Oranienburg. All fifty airplanes were to be equipped with FuG 220 D *Lichtenstein SN-2* radar sets. Doubts were, however, expressed about the effectiveness of the Dornier 335 as a


102


102

American troops found a number of incomplete Do 335 B fuselages in the halls at Oberpfaffenhofen such as the one shown left. Camouflage netting was draped over several hulks but seldom fooled Allied pilots who were looking for targets of opportunity.

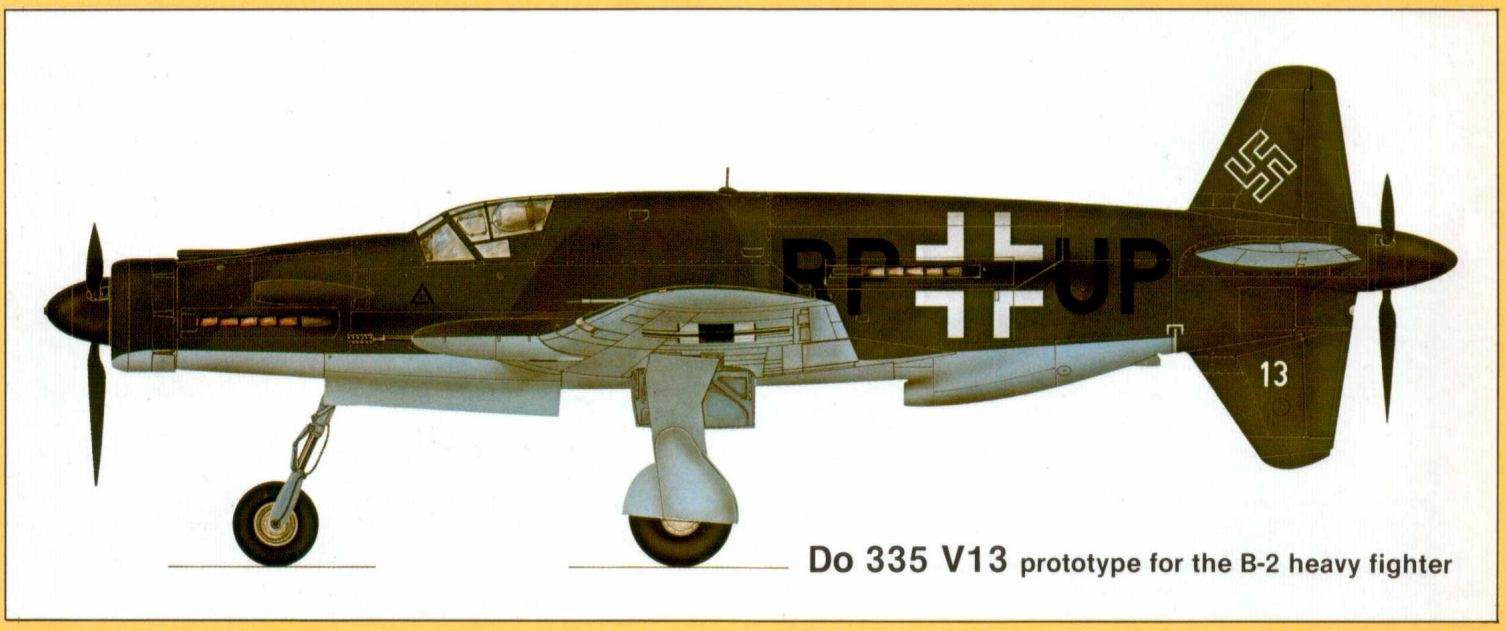
night fighter. The head of the Commission, Professor Kurt Tank of Focke-Wulf considered that "it will only be adequate until around mid-1945; after that only the Me 262 and Ar 234 jets will be suitable until the development of a new three-seater." After some discussion, it was agreed to further examine the Do 335 night fighter in parallel with a mixed power derivative, and abandon them both at the outset if they proved too costly.

As part of the testing of the Do 335, Germany's leading night fighter ace *Major (Maj.)* Wolfgang Schnaufer, flew one of the early production A-1s (W.Nr. 240113). According to Schnaufer's radio operator, *Leutnant (Lt.)* Fritz Rumplehardt, the young ace crashed the aircraft at Gutersloh which did not exactly endear him to the Dornier flight test staff! However, he did put forward a suggestion that the aircraft be fitted with the *schräge Musik* (jazz music) upward-firing gun installation for night fighter operations.

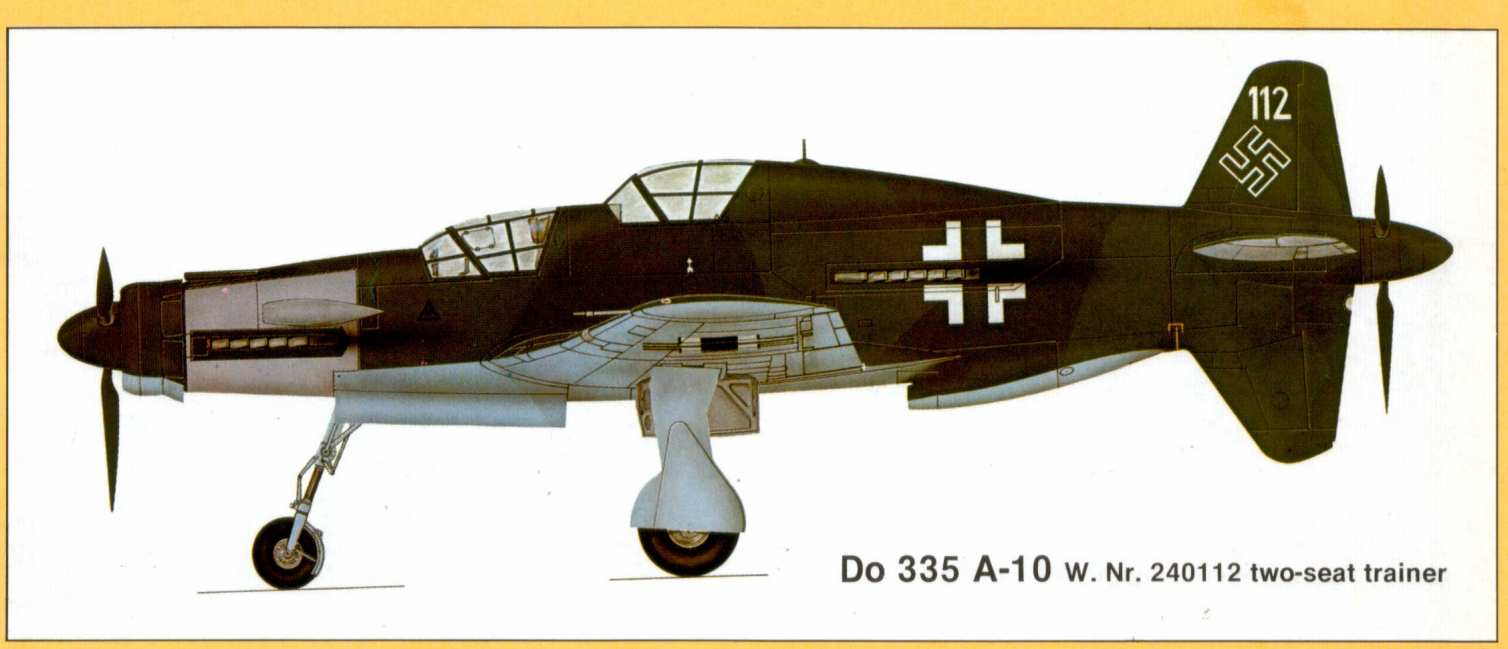
It is possible that the Do 335 V10 was later delivered to I./NJG 3 under *Hauptmann (Hptm.)* Werner Baake for operational testing. This group also flew the Focke-Wulf Ta 154 in the night fighting role. A special operational unit was in fact set up to fly the Do 335 night fighter as early as September 1944. Designated V./NJG 2, the group was formed from III./KG 2, but never received the *Pfeil*. Its last ground attack operation was in fact flown with a Junkers Ju 88 G-6 on the night of April 27/28, 1945.

Meanwhile development of a dual control trainer was begun, the second seat for an instructor being positioned behind the first and provided with a canopy similar to that of the standard Do 335. The instructor had the main instruments and controls, but no ejector seat. To make way for him, the main fuselage tank was considerably reduced in size. The prototype, the Do 335 V11, made its first flight on October 11, 1944, with *Flugkapitän* Appel at the controls. This airplane was powered by DB 603 A-2 engines and was the forerunner of the proposed **Do 335 A-10**. The **Do 335 A-11**, for which the V12 was prototype, was similar but powered by DB 603 E-1 engines. Three A-10s (W.Nr. 240111, 240112 and 240114) were completed at Oberpfaffenhofen before the end of the war, with two others under construction.

Finally, it is believed the **Do 335 A-12**



Do 335 V13 prototype for the B-2 heavy fighter



Do 335 A-10 W. Nr. 240112 two-seat trainer

would have been powered by the Jumo 213 engines and, may well have been a two-seat trainer. However, precise details of this variant are conspicuous by their absence.

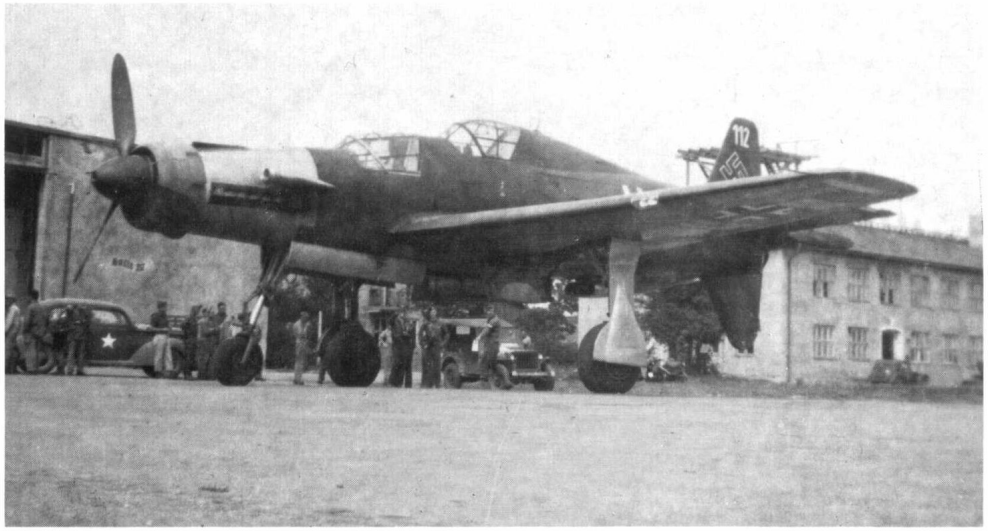
The B-series

During the summer of 1944 work began on the improved B-series for which eight different versions were planned. The first of these, the **Do 335 B-1** single-seat day fighter, was generally similar to the A-1 series, but with an armored windshield and certain equipment changes. However, this model was passed over in favor of the more heavily armed **Do 335 B-2** Zerstörer for which the Do 335 V13 (RP + UP) and V14 (RP + UQ) were development prototypes. This heavily armed version was characterized by two wing-mounted MK 103 30 mm cannon contained in special fairings each with 70 rounds. To make way for this ammunition, the two 82 US Gal (310 Ltr) wing tanks were removed and replaced by two smaller containers of 58 US Gal (220 Ltr) capacity in the outer panels. The B-series also standardized on larger tires which caused a need to have the nose wheel to rotate through 45 degrees when retracted. The Do 335 V13 was

Right: An American soldier seated in the pupil's cockpit of a two-seat trainer, Do 335 A-10 (W.Nr. 240112) after it was transfered to Neubiberg in September 1945. Notice the leading edge near the root of the wing with its sharp edge designed to break the airflow. This was to create better low speed characteristics during the landing cycle.

Above and below left: American troops examining the second production Do 335 A-10 (W.Nr. 240112) in September 1945. This aircraft was lost tragically during a familiarization flight on January 18, 1946, over England. Left: Although of poor quality, this is the only known photograph of the third Do 335 A-10 trainer (W.Nr. 240114).

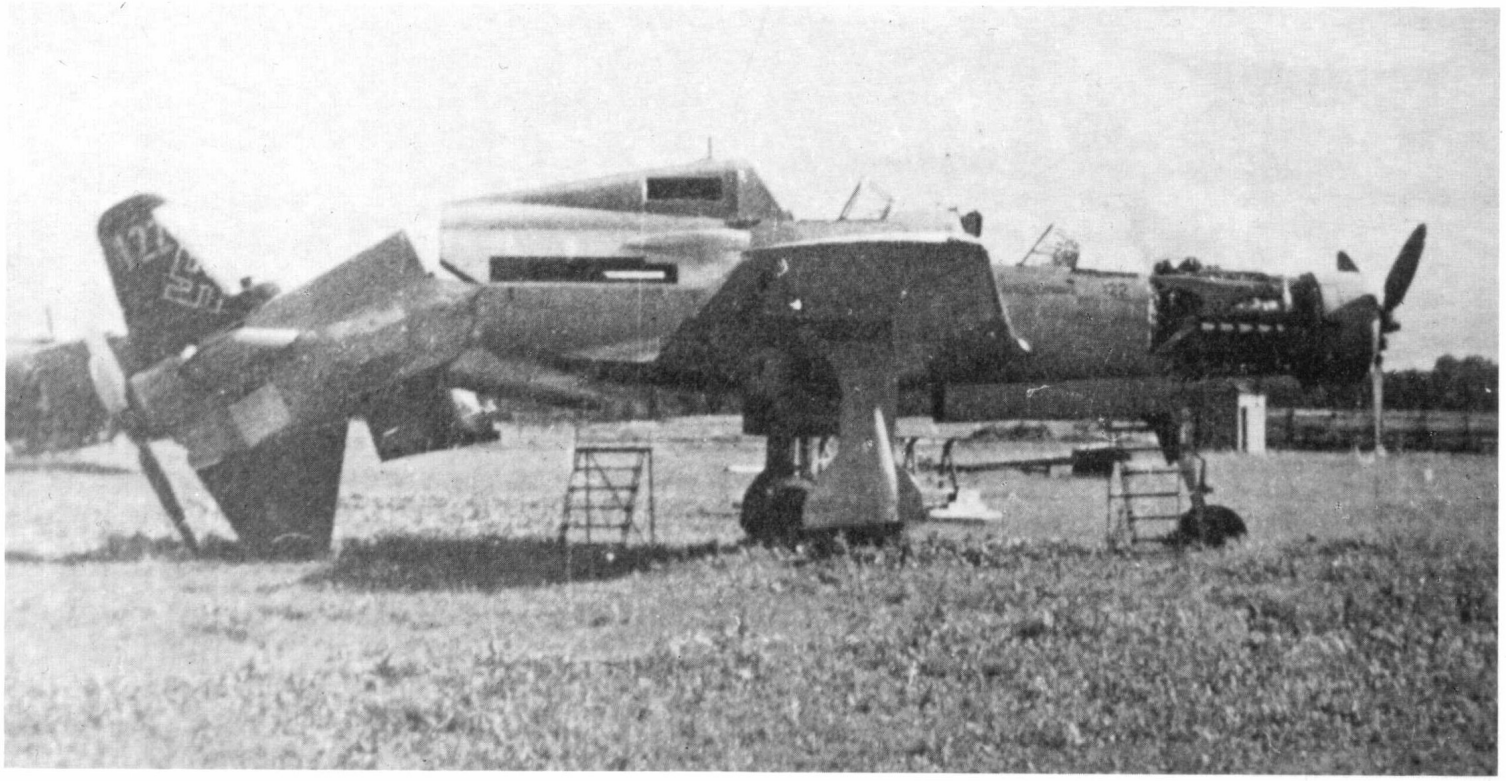
first flown on October 31, 1944, powered by two DB 603 E-1 engines with the rear unit being identified as the DB 603 QE-1. The V14 was completed late in 1944 and was captured by American troops at Oberpfaffenhofen. Series production was issued to Heinkel at Oranienburg in May-June 1944 but because of numerous problems, none was delivered until February 1945.



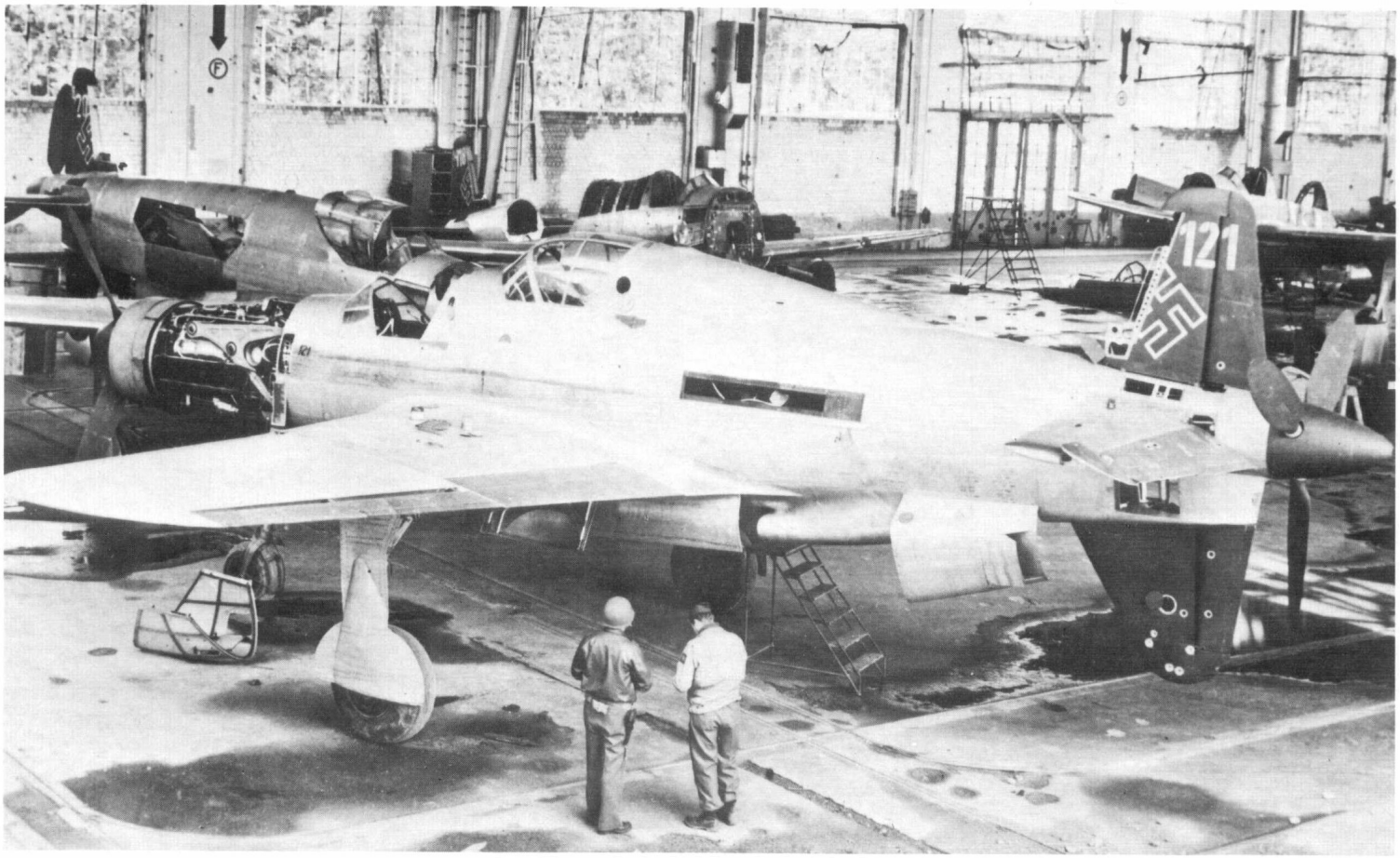
The **Do 335 B-3** Zerstörer was similar to the B-2 but fitted with the more powerful DB 603 LA engines. The Do 335 V18 and V19 were assigned to B-3 development trials but neither prototype was completed.

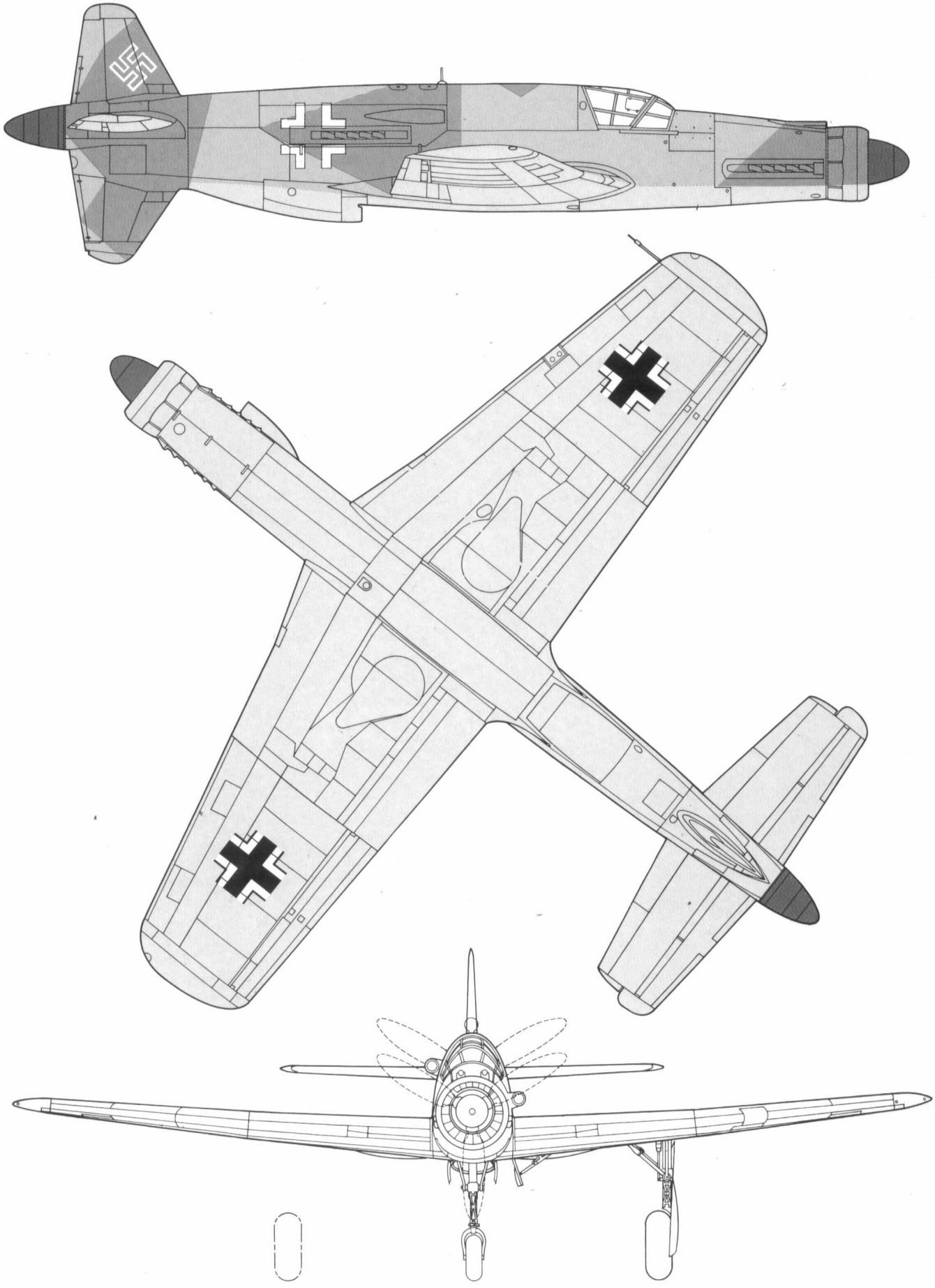
The Zerstörer class of aircraft were heavily armed day fighters which were basically utilized to attack Allied bombers. With their heavy caliber weapons they were capable of bringing down heavy four-engined bombers with but a few well-placed hits. The Do 335 B-2 and B-3 Zerstörers were formidable

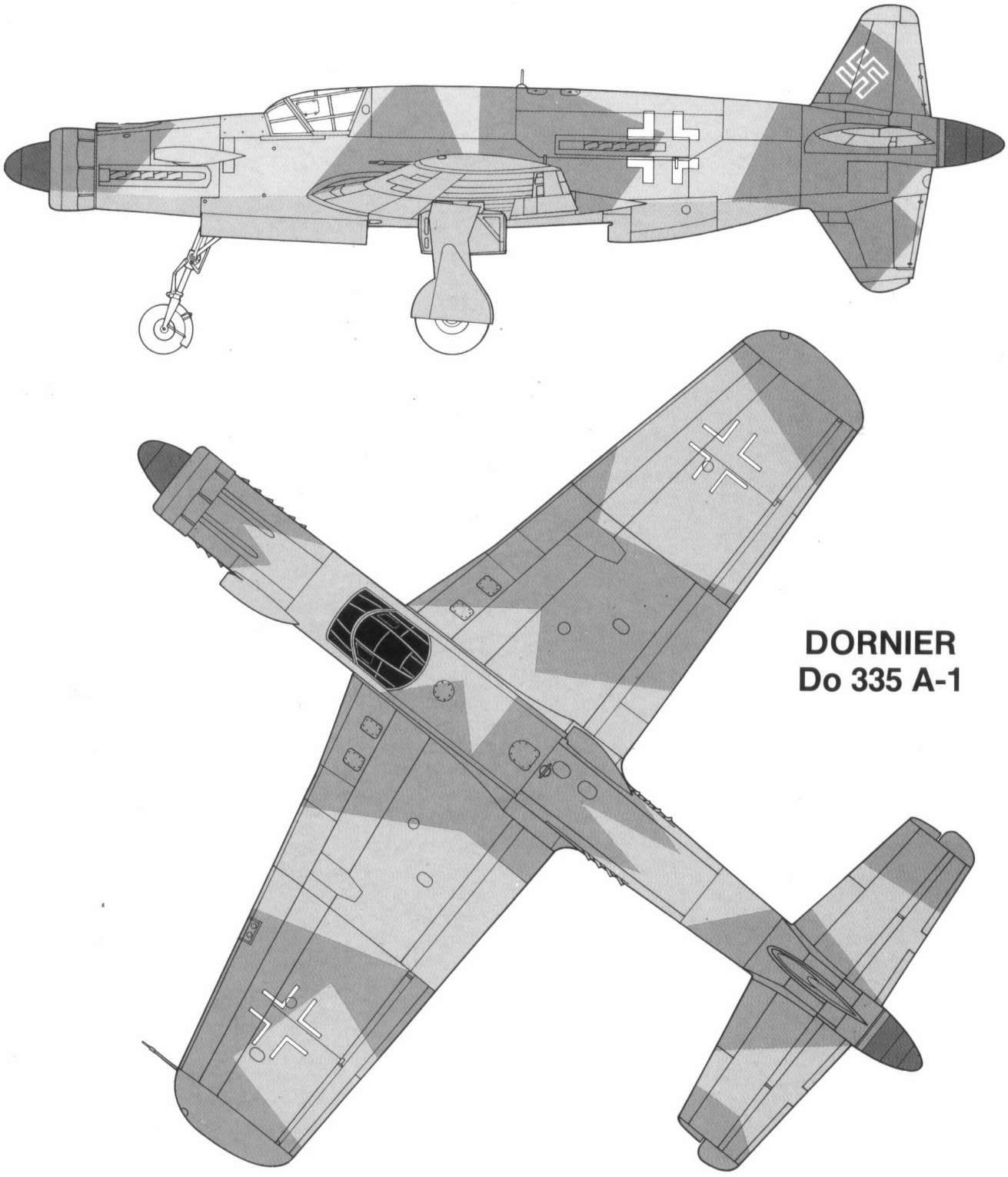
Continued on p. 24



Above: The badly damaged Do 335 A-10 (W.Nr. 240122) found by US troops at the war's end. Below: American officers examine a Do 335 A-10 (W.Nr. 240121) inside one of the assembly halls at Oberpfaffenhofen. At least seven two-seat trainers were completed or virtually completed before all work stopped. These included the V11 and V12 prototypes plus 240111, 240112, 240114, 240121 and 240122. It has been suggested the basic trainer was adapted to the night fighting role however, there is no official evidence to support this assumption.







DORNIER
Do 335 A-1

Color 81 Dark Green	Color 70 Black-Green
Color 82 Bright Green	Color 21 White
Color 65 Bright Blue	Color 22 Black

This November 1944 factory camouflage pattern called for both uppersurface colors to be dark green; however, it is generally recognized that color 81 was Dark Green or Brown-Violet while color 82 was Bright Green. Undersurfaces were specified to be color 65 but, by late 1944, this color had been replaced with Color 76 Light Blue. Propellers and spinners were to be painted in color 70 Black-Green.

Left: The burnt-out remains of the Do 335 M12 (RP + UO) found at Friedrichshafen by American troops in April 1945. The M12 was prototype and test aircraft for the Do 335 A-11 two-seat trainer which was to be powered by DB 603 E-1s. In addition to this aircraft, other Do 335s and at least one Focke-Wulf 190 were also found burned. During the closing weeks of the war, the Germans issued orders to the effect that all war equipment was to be destroyed if it could not be evacuated in the face of advancing Allied forces. The order was not universally carried out, consequently, many valuable aircraft were captured intact by the Allies.

gun platforms with up to three 30 mm MK 103 cannon augmented by two faster firing 20 mm MG 151 cannon above the cowl. As potent as this weaponry array was, it was planned to upgrade the engine-mounted cannon from the 30 mm MK 103 to the newer 55 mm MK 112 as soon as the latter weapon became available. By the war's end only ten prototypes of this remarkable weapon were manufactured and none was mounted in the Do 335. With a weight of 600 lb (272 kg) and a rate of fire of 300 rounds a minute, it would have been a devastating aircraft cannon.

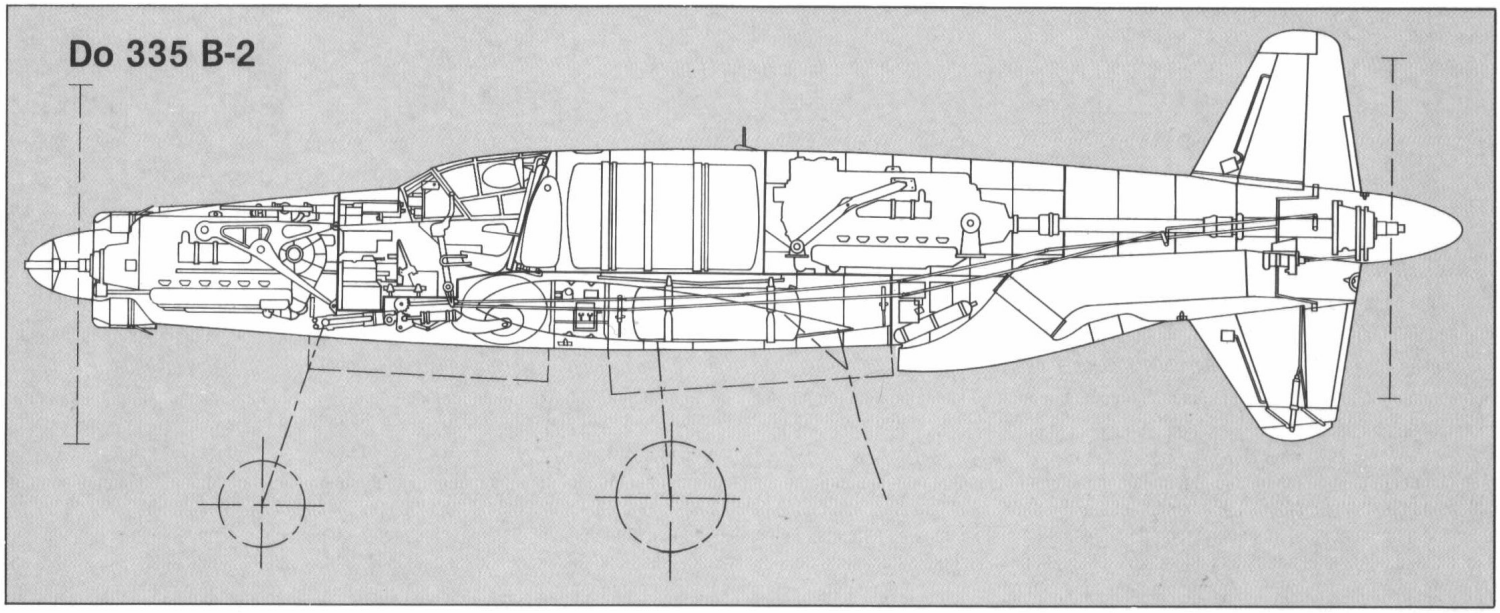
The **Do 335 B-4** reconnaissance version was similar to the A-4 apart from the new high aspect ratio wing developed by Heinkel and the 2,000 hp DB 603 LA engines with two-stage supercharges. The new wing, first tested on the Do 335 V4, had a wing span of 60 ft 4½ in (18.4 m) and an area of 463 sq ft (43 m^2).

The **Do 335 B-5** trainer was also to be fitted with this wing, but the **Do 335 B-6** night fighter was similar to the A-6 apart from being structually strengthened and having a new nosewheel. The variant also was to be built by Heinkel at Oranienburg, fifty aircraft being ordered. The first of these was due for delivery in April 1945. Early B-6s would have had FuG 220 radar, this being replaced by FuG 218 from the thirty-first production machine. A more advanced night fighter version having 2,000 hp DB 603 LA engines and an enlarged laminar flow wing with an area of 441 sq ft (41 m^2) was also proposed under the designation **Do 335 B-7**. The final B-series variant, which was to go into series production in September 1945, was the **Do 335 B-8**, a high-altitude night fighter with the 463 sq ft wing.

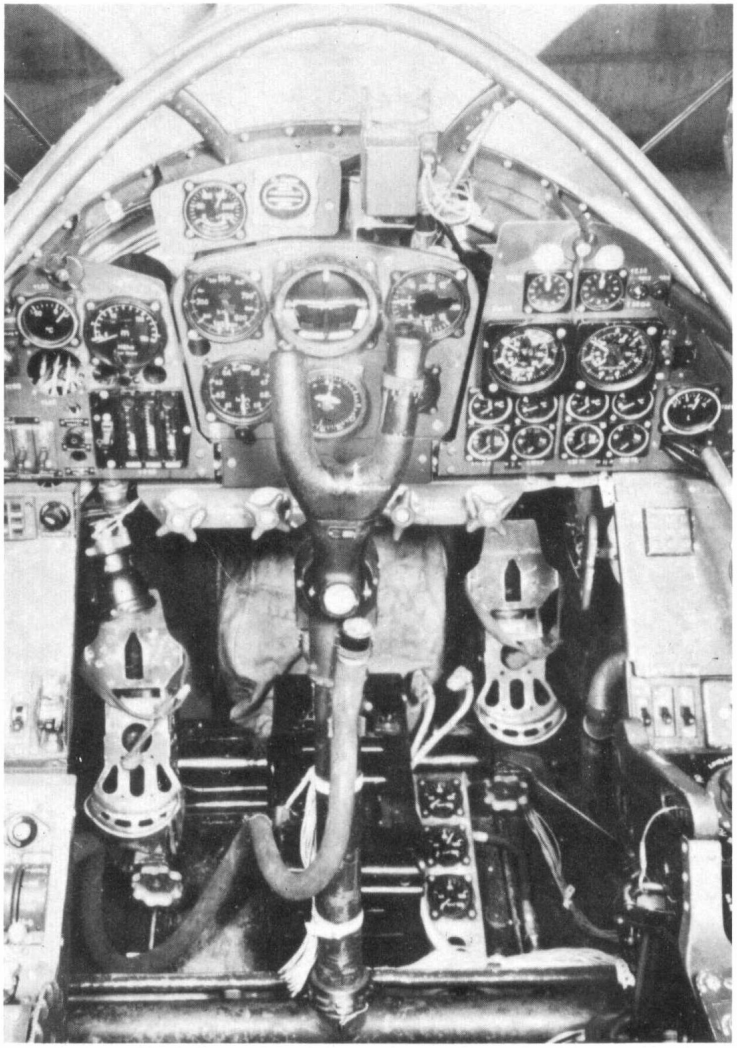
On September 4, 1944, an experimental unit had been set up to introduce the Do 335 to operational service. Designated *Erprobungskommando 335*, the unit had the dual tasks of developing the *Pfeil* as an anti-Mosquito night fighter and evolving fighter bomber and reconnaissance tactics. Its commander was *Hptm*. Alvon Meyer. The testing of the Do 335 led to an aircraft recognition memorandum being issued to German flak units on October 26, 1944: "The following information is given to prevent the new fighter airplane *Pfeil* (Do 335) being fired on by our own guns. The aircraft has tandem twin engines, with the second propeller behind the tail unit. The latter is in the form of a cross." Despite all this there are only isolated reports of the Do 335 having been met by Allied aircraft. In mid April 1945, Tempests of No 3 Squadron RAF chased a *Pfeil* over the River Elbe, but it easily outpaced them and made off. In another case a Do 335 was seen by Mustangs of the 325th Fighter Group, US 15th Air Force over southern Germany but this again made off at high speed.

Probably the last wartime flight of a Do 335 was undertaken by *F1. Hauptingenieur* Hans-Werner Lerche in mid April 1945 when he ferried Do 335 A-02 (VG + PH) from Rechlin to Oberpfaffenhofen. Although he had planned to fly preproduction aircraft A-03 (VG + PI), a flat tire prevented this and the A-02 was selected instead. Landing safely back at the Dornier factory with the *Pfeil* was something the ground personnel could not believe. Still more difficult to believe is the fact that this very aircraft would again make a return to its home base after an absence of thirty years!

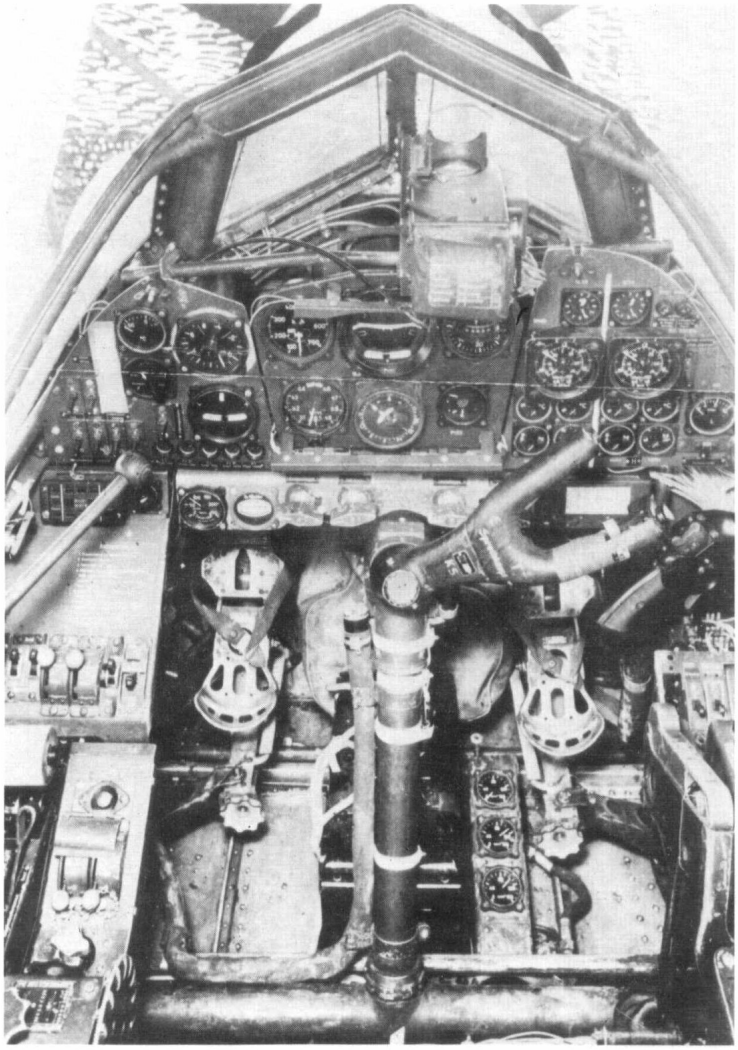
When US forces captured the Dornier plant at Oberpfaffenhofen in April 1945 they found several Do 335s intact and many more under construction. Some had been damaged previously by Allied air attacks, but two airworthy examples were secured by Colonel Watson and his team. One of these, W.Nr. 240102, was ferried to Cherbourg where it was joined by a second Do 335 single-seat fighter destined for shipment to the United States aboard HMS Reaper. It was decided to provide W.Nr. 240102 to the US Navy. By this time it had been allocated Foreign Equipment number FE-1012. The subsequent history and fate of the other machine is still unknown. The US Navy was duly impressed with the *Pfeil*, but frequent malfunctioning of the rear engine oil cooler inlet shutter discouraged extensive flight testing. In 1947, the Navy at Patuxent River released its Do 335 to the Smithsonian Institution.



Below: Inside the main assembly hall at Dornier's Oberpfaffenhofen facility shortly after capture by American troops, are many B-series aircraft under construction. In the foreground to the left is the incomplete airframe of what is possibly the Do 335 M14, while the aircraft to the right is thought to be the M16. The unique numbers atop the tailplane are believed to signify the Muster (Model) number and the last digits of the serial number. However, the seeming duplication of the two M14/V14 test aircraft (see p. 29) is enigmatic. This ambiguity may or may not relate to serviceability of the original V14 and/or a change in designation and role.



Cockpit interior of the Do 335 A-1 showing the various controls, flight and engine instruments. The left horn of the control column holds the bomb release button while the right horn contains the 30 mm cannon button and the 20 mm trigger on the forward position.



Cockpit interior of the Do 335 B-2 shows little difference from the A-series apart from the heavily armored windscreen. The canopy jettisoning levers are shown on either side of the cockpit. It is rumored that activation of these could cause the pilot serious discomfort if he failed to release the levers quickly.

During the mid-1970s, the airplane was taken from its storage at the National Air and Space Museum's Silver Hill facility and returned to Germany where it was carefully restored by the Dornier company. Technically, the *Pfeil* still belongs to the NASM and is subject to the agreement which allowed it to be returned to Germany for restoration and display at the *Deutsches Museum*.

Of the aircraft captured by American forces, two were transferred to a group of British pilots under Lieutenant Commander Eric M. Brown of the Royal Aircraft Establishment. The first of these, a Do 335 A-10 two-seat trainer (W.Nr. 240112) reached the R.A.E., Farnborough on September 8, 1945. After being overhauled by the facility's technicians, the machine was test flown by Wing Commander "Roly" Falk on October 1. Lt. Cmdr. Brown found the Do 335 a most impressive aircraft, possessing the rare quality of being overpowered. It also had excellent visibility from the roomy cockpit, a feature which Brown thought would make it an ideal night fighter. Sadly the aircraft was destroyed on January 18, 1946, when the rear engine caught fire and burned through the elevator controls. This caused the airplane to dive vertically into a school house at Cove in Hampshire. The pilot, Group Captain Alan F. Hards, commander of the RAE, was killed instantly.

The other British Do 335 was an A-0 sub-type found at Reims in France. The airplane came to grief on its third flight on December 13, 1945, when the pilot, *Hptm*. Miersch, was unable to lower the nosewheel. The aircraft made an emergency landing but was never flown again.

At least two Do 335s were captured by French forces: the V10 two-seat night fighter and the V13 destroyer. The latter was extensively tested by the *Centre d'Essais en Vol* (flight test center), but the V10 was badly damaged during a crash landing while in French hands.

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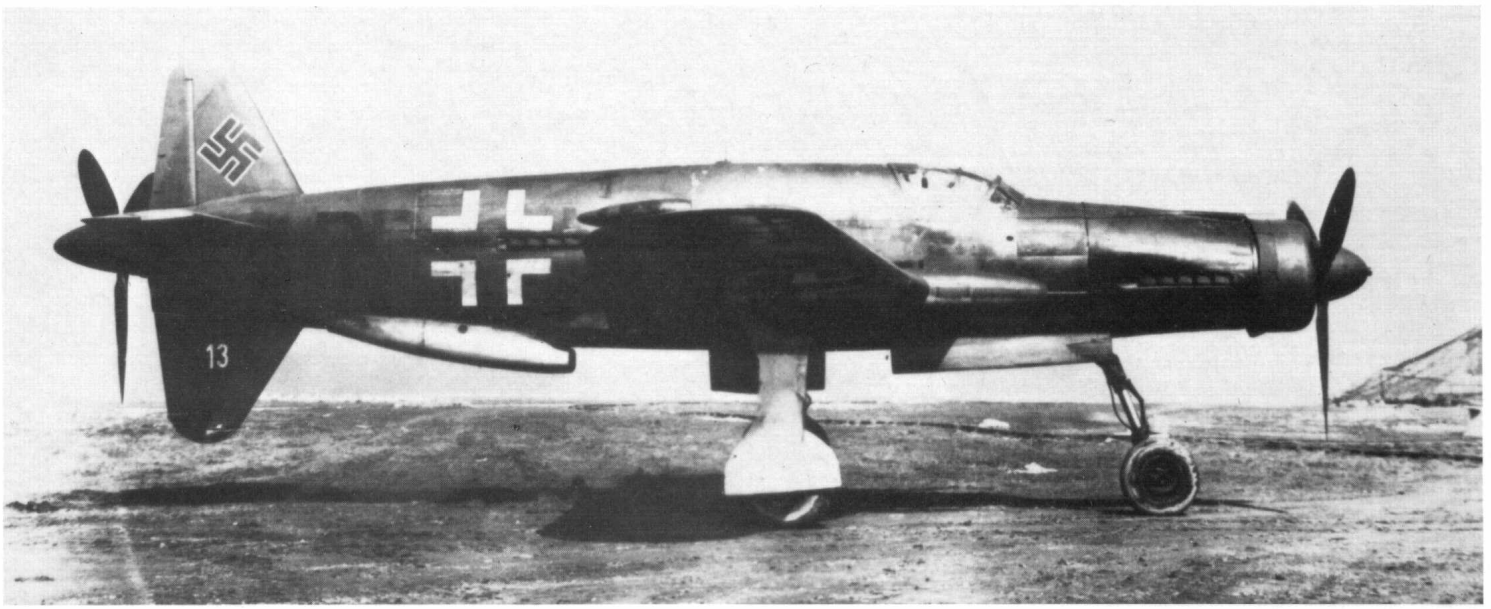
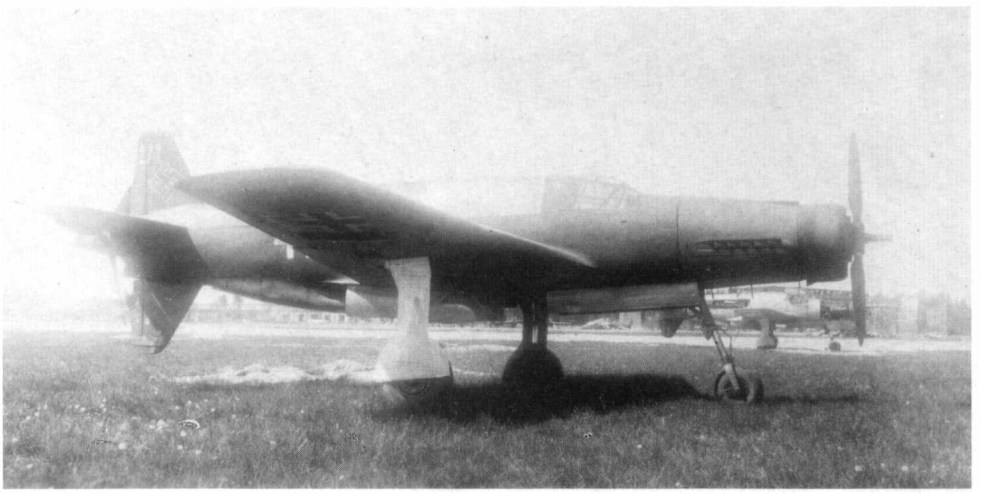
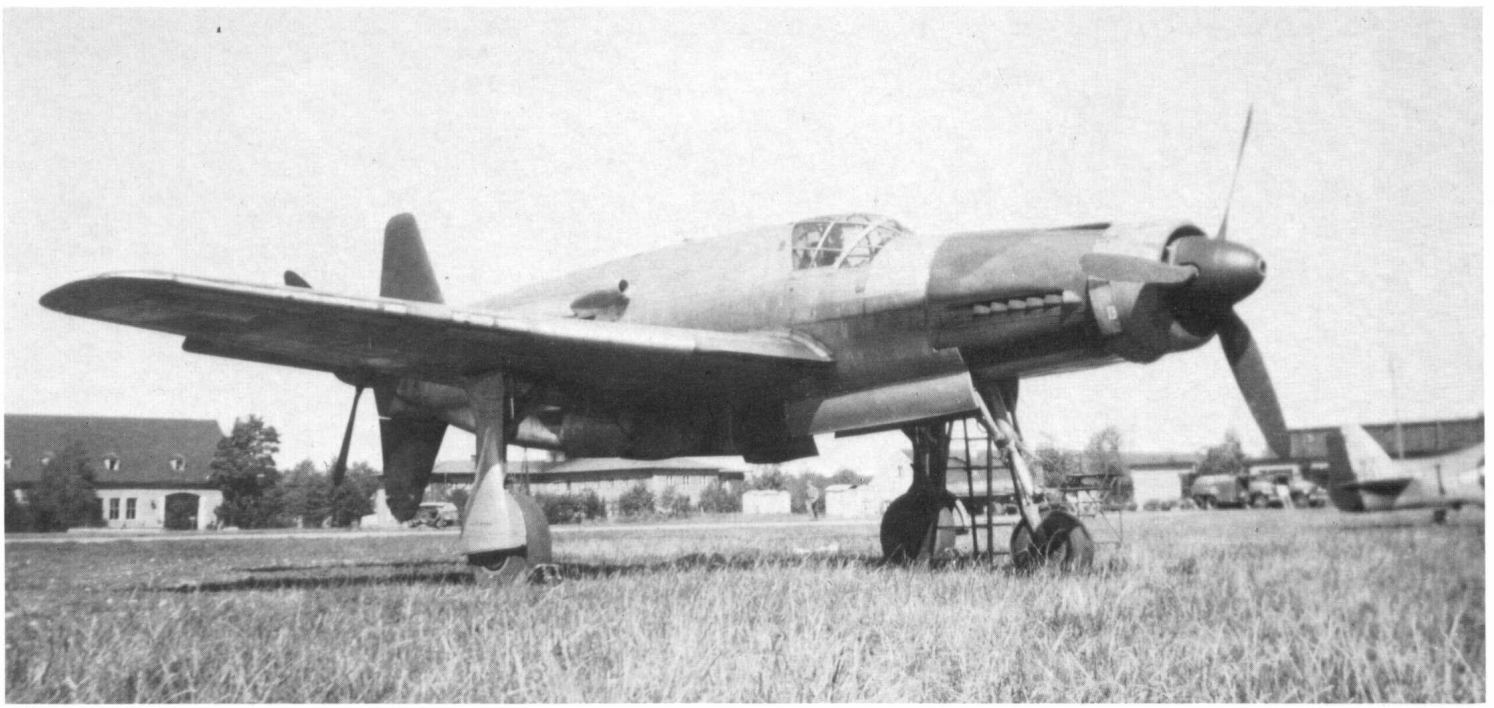
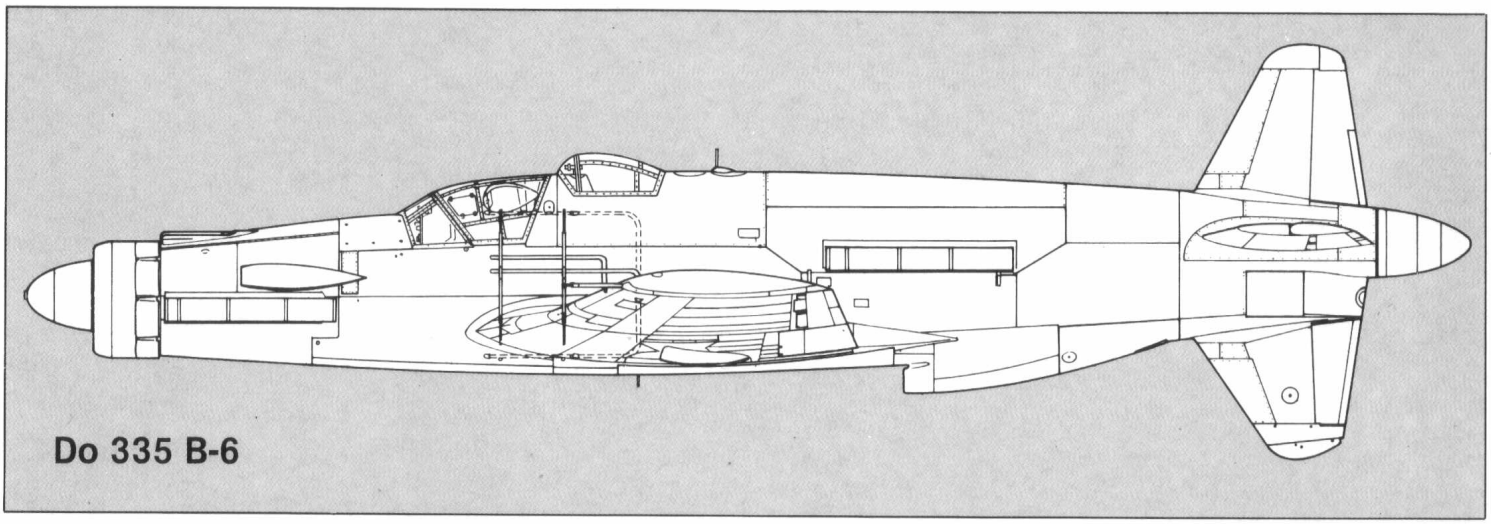


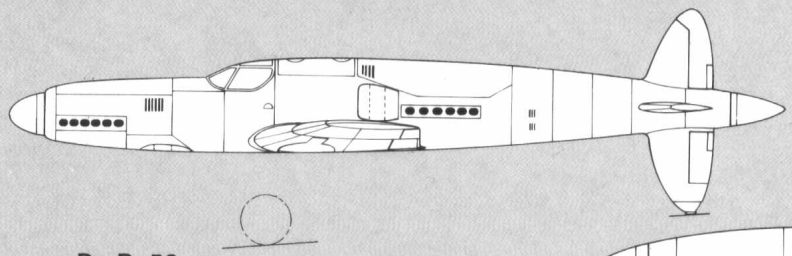
Top: After the war the French captured the Do 335 M13 (V13) (RP + UP) intact and extensively tested the aircraft between June 3, 1946, and March 5, 1948. The M13 was the initial test aircraft for the heavily armed Do 335 B-2 Zerstörer series. Right: The Do 335 M2 (ex A-01) found by American troops in the Munich area. After the original V2 (M2) was lost during a test flight, the first preproduction machine was assigned to take its place. The tailplane identifies this as the M2, W.Nr. 240101. Although not plainly visible in our photograph, atop the vertical tailplane is the number 2/1 which supplanted the original number 101. Below: A newly completed Do 335 A-1 found by American forces at Oberpfaffenhofen. Interestingly, only the vertical tailplane and nose cowling have been painted.



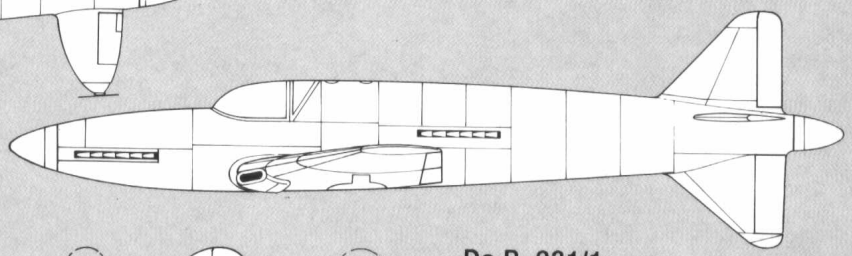




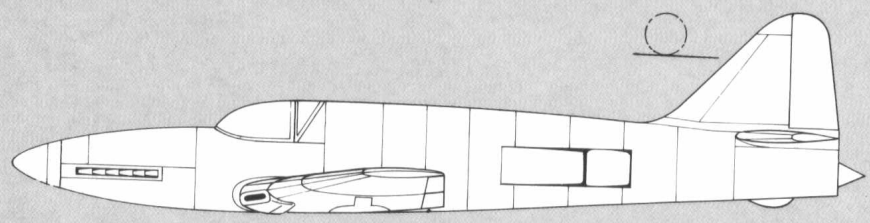
Do 335 B-6



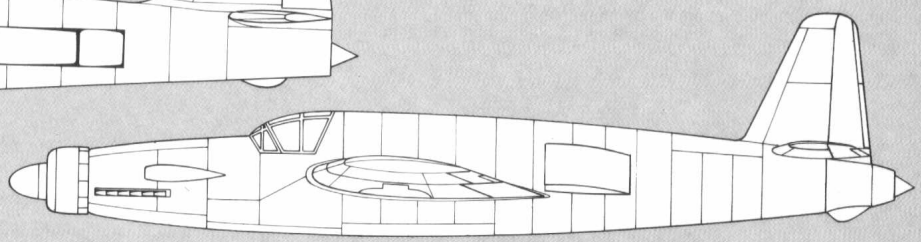
Do P. 59
Original project
2 × DB engines



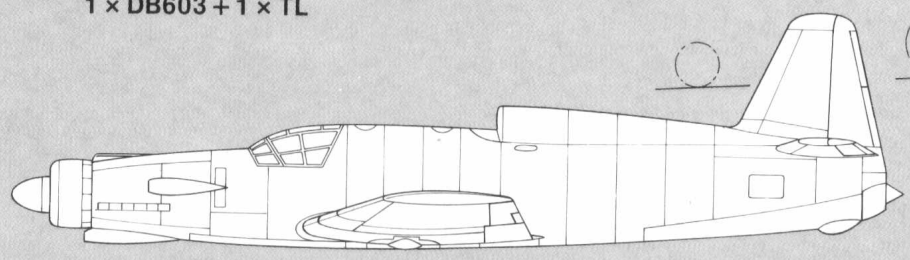
Do P. 231/1
2 × DB605E



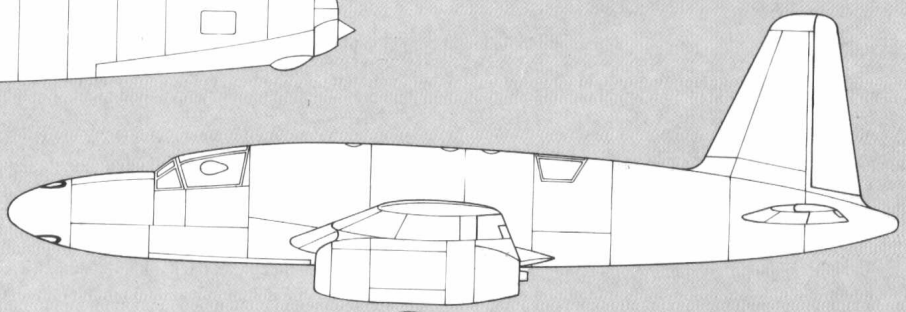
Do P. 231/3
1 × DB603 + 1 × TL



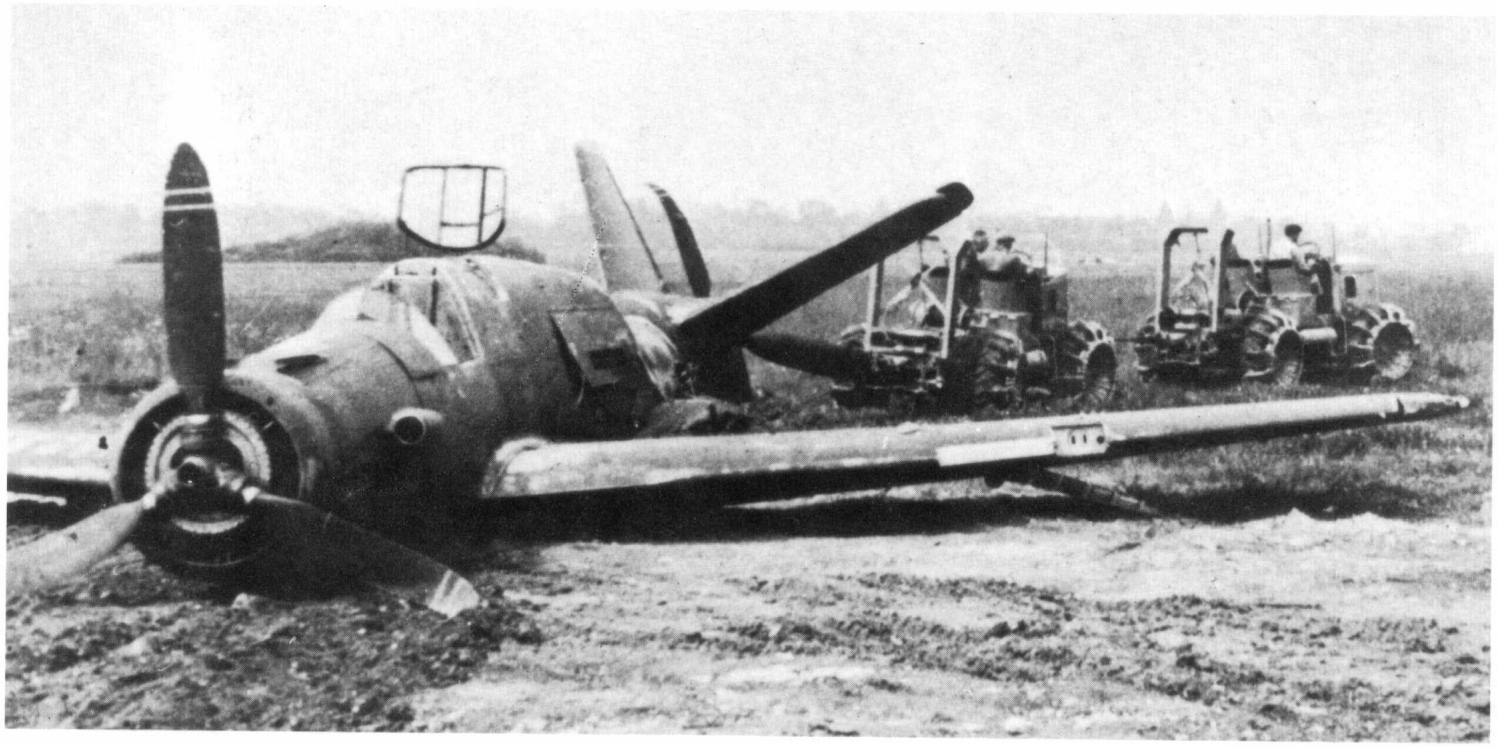
Do P. 232/2
May 28, 1943
1 × DB603G + Jumo 004C



Do P. 232/3
1 × DB603G + 1 × Jumo 004C



Do P. 256
3-seat night fighter



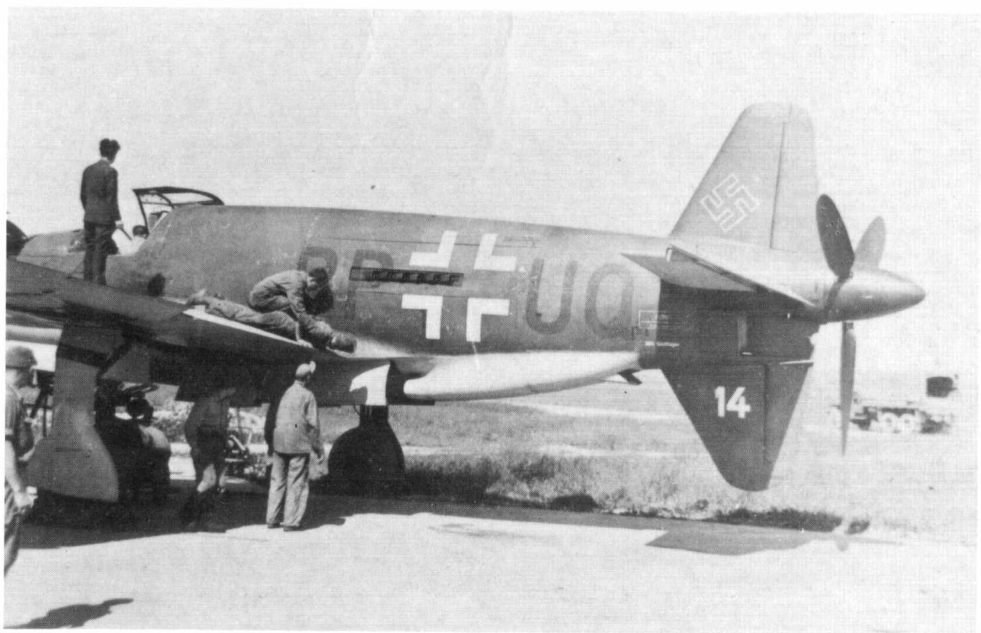
Perhaps the most interesting development of the basic airframe was the Do 335 Z: a long-range reconnaissance aircraft which comprised two standard Do 335 fuselages coupled together by a new center section. The design was initially handled by the Heinkel company who started work under the project designation P 1075 during the fall of 1944, planning to produce the first prototype within a year.

On October 12 the Junkers design team under Prof. Heinrich Hertel and *Dipl.-Ing*. Ernst Zindel took over the project and incorporated several new features including a new undercarriage. This was to have two nosewheel legs and three mainwheel legs, the latter adapted from those of the Ju 352 transport. The outer legs were to retract backward into each fuselage, the center one jettisoned on takeoff. On October 16 *Maj*. Fischer, commander of the long-range reconnaissance and U-boat cooperation unit, FAG 5, demanded a new machine with a range of 5,000 mls (8,000 km) to replace the somewhat venerable Ju 290.

The Do 335 Z or **Ju 635** as it was later designated, was an obvious contender for such a requirement with its high cruising speed and long range. As work on the project continued, it was decided to use a retractable camera installation instead of that of the Do 335 A-4, and FuG 200 search radar. At the same time it was decided to lengthen each fuselage by 15 ft 3 in (4.65 m) and house the third crew member, the radar operator, on the port side. Four prototypes and six Ju 635 A-0 preproduction aircraft were to be completed, all to be powered by four DB 603 E engines with MW-50 injection. Walter 109–501 rocket-assisted takeoff units were also to be provided.

At the end of the war preparations were being made at Dessau for the construction of the first two prototypes. With their immense range the aircraft would have been easily capable of flying the Atlantic, and would have proved a most useful addition to FAG 5's inventory.

Above: In addition to the M13, the French also captured the Do 335 M10 (V10) (CP + UK) night fighter prototype. This aircraft featured a flush-fitting canopy for the second crew number. This can clearly be seen in this photograph taken in France in 1946. Following this crash landing the French decided not to make repairs and it is unlikely the M10 ever flew again. Below: A rare photograph showing the Do 335 V14 (RP + UQ) following capture by American troops. This test aircraft was intended to serve as the second test aircraft for the B-2 Zerstörer series. It is believed that this machine subsequently was transfered to the French along with the V13.

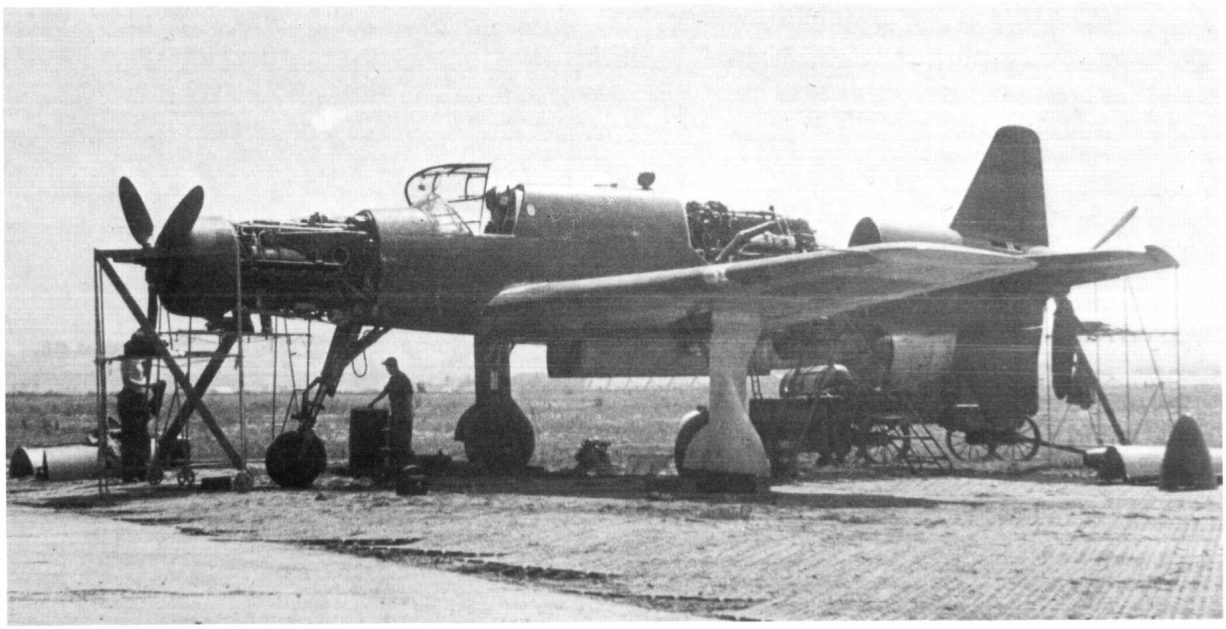


Do 435

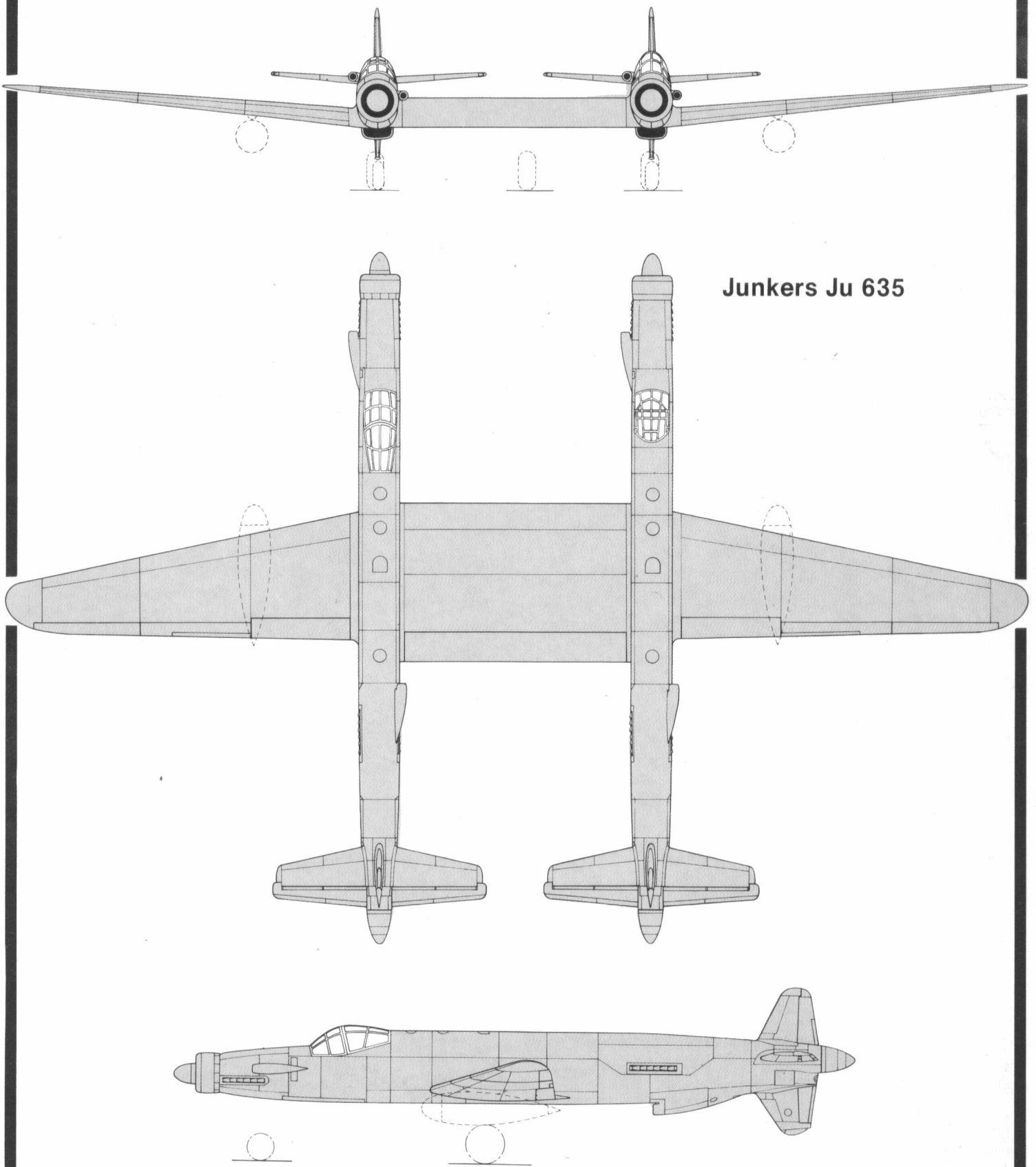
A post-war Allied intelligence report stated that the **Do 435** was a modified version of the Do 335 with the wider cockpit previously mentioned, cabin pressurization, radar equipment and long-span wooden outer wing panels. The project was to be powered by two 2,500 hp Jumo 222 engines.

He 535

The **He 535** project probably was based on the Dornier P 254/1 of January 1945 This was a developed version of the Do P 232/3 with a 2,000 hp DB 603 LA piston engine in the nose and a 2,866 lb (1,300 kg) thrust HeS 011 A turbojet in the tail. Two versions were proposed: a destroyer with a conventional Do 335 wing, and a night fighter with a laminar flow wing with extended tips. The latter was to carry an armament of two forward-firing 20 mm MG 151/20 cannon and two upward-firing 30 mm MK 108s behind the main fuselage tank. FuG 218 and FuG 350 radar equipment was to be provided, with the radar operator seated in an extremely cramped space between the upward-firing guns and the turbojet intake.



Left: As recounted in the text, the USAAF acquired two Do 335s in airworthy condition, and this is believed to be the little known second machine. This particular aircraft appears to be a standard Do 335 A-1 which is shown here being serviced by American personnel prior to its transatlantic journey aboard HMS Reaper.


Junkers Ju 635

WEIGHTS, SPECIFICATION AND PERFORMANCE STATISTICS				
Type		Do 335 A-0	Do 335 A-6	Ju 635 A-0
Role		Preproduction fighter	Night fighter	Reconnaissance
Seating		1	2	3
Wing span	m (ft-in)	13.80 (45 – 3¼)	13.80 (45 – 3¼)	27.45 (90 – 0¾)
Wing area	m ^{2} (ft^2)	38.5 (414.4)	38.5 (414.4)	80.5 (866.5)
Length	m (ft-in)	13.85 (45 – 4¼)	13.85 (45 – 4¼)	18.50 (60 – 8¼)
Height	m (ft-in)	5.00 (16 – 4¾)	5.00 (16 – 4¾)	5.00 (16 – 4¾)
Engines	fore (aft)	2 × DB 603 A-2 (DB 603 QA-2)	2 × DB 603 E-1 (DB 603 QE-1)	4 × DB 603 E-1 (DB 603 QE-1)
Takeoff HP each	PS (hp)	1,750	1,800	1,800
Propellers	fore (aft)	VDM Ø 3.5 m (VDM Ø 3.3 m)	VDM/Me P 6 (VDM Ø 3.3 m)	VDM (VDM)
Fuel		B4 (87 octane)	C3 (96 octane)	C3 (96 octane)
MW powerboost	Ltr (US gal)		2 × 75 (2 × 19.8)	2 × 209 (2 × 55.2)
Electronics		FuG 25a, FuG 125, FuG 16ZY	FuG 15, Ei V 15, FuG 25a, FuG 125, FuG 120, FuG 220 (later 218), FuG 350, FuG 101A	FuG 10 GP or FuG 10P, FuG 16 Z or FuG 15 Z, FuB1 2, FuG 101, FuG 25a, FuG 217, FuG 200 (later 224)
Empty weight	kg (lb)		6,850 (15,101)	
Equipped weight	kg (lb)	6,530 (14,396)	7,830 (17,262)	17,464 (38,500)
Internal fuel	Ltr (US gal)	1,850 (489)	1,720 (454)	16,634 (4,394)
Loaded weight	kg (lb)	9,510 (20,966)	10,100 (22,266)	33,000 (72,751)
Maximum speed at sea level	km/h (mph)	580 (360)	622 (386)	539 (335)
Maximum speed at	km/h-km(mph-ft)	763 at 6.4 (477 at 21,000)	692 at 5.4 (430 at 17,717)	720 at 6.5 (447 at 21,120)
Economical cruising at	km/h-km(mph-ft)	472 at 6.0 (293 at 19,685)	415 at 6 (258 at 19,685)	
Landing speed	km/h (mph)	175 (109)	190 (118)	
Normal range	km (mi)	1,380 (857)	1,330 (826)	7,450 (4,629)
Maximum range	km (mi)	2,150 (1,336)	2,540 (1,578)	7,982 (4,960)
Climb to 6 km (19,685 ft)	min	10.0	11.8	
Service ceiling	m (ft)	9,500 (31,168)	10,800 (35,433)	11,000 (36,089)
Armament		1 × MK 103 (70 rounds) 2 × MG 151 (200 rpg)	1 × MK 103 (70 rounds) 2 × MG 151 (200 rpg)	none
Rüstsätze (aux. apparatus)			1 × Schloss 502 A-1 2 × 300 Ltr drop tanks	2 × 300 kg marker bombs 2 × 1200 Ltr drop tanks

Do 335 Prototypes		
Versuch[1]	Code	Remarks
V1	CP + UA	First flight on October 26, 1943.
V2	CP + UB	Flew Dec. 31, 1943. Destroyed Apr. 15, 1944.
V3	CP + UC	Flew Jan. 20, 1944. Later T9 + ZH.
V4	CP + UD	Flew Jul. 9, 1944, with long span wing.
V5	CP + UE	Armament tests with 1 × MK 108, 2 × MG 151.
V6	CP + UF	Flew Mar. 25, 1944, general test aircraft.
V7	CP + UG	Flew May 19, 1944, served as Jumo 213 test.
V8	CP + UH	Flew May 31, 1944, to DB as engine test a/c.
V9	CP + UI	Flew Jun. 29, 1944, production prototype.
V10	CP + UK	Flew Jan. 24, 1945, night fighter prototype.
V11	CP + UL	Flew Oct. 11, 1944, trainer for A-10
V12	RP + UO	Prototype for A-11 two-seat trainer.
V13	RP + UP	Flew October 31, 1944, prototype for B-2.
V14	RP + UQ	Second prototype completed for B-2 series.
V15		For A-6 with FuG 218 but not completed.
V16		For A-6 with FuG 218 but not completed.
V17		For B-6 night fighter development.
V18		For B-3 series but not completed.
V19		For B-3 Zerstörer with DB 603 LA engines.
V20		For B-7 night fighter with DB 603 LA engines.
V21		A-6 night fighter probably for conversion to B-8 with long span and DB 603 LA engines.
V22		A-6 night fighter probably for conversion to B-8 with long span and DB 603 LA engines.

Do 335 Production Models	
Series	Remarks
A-0	Preproduction batch of ten aircraft. Day fighter.
A-1	Day fighter powered by a DB 603 A-2 and DB 603 QA-2.
A-2	Bomber version (Kampfflugzeug) with 2 × DB 603 G.
A-3	Zerstörer with both GM 1 and MW 50 powerboosting.
A-4	Reconnaissance version with 2 × Rb 50/30 cameras.
A-5	Believed to be Jumo 213-powered version.[2]
A-6	Two-seat night fighter.
A-7	Believed to be Jumo 213-powered version.[2]
A-8	believed to be Jumo 213-powered version.[2]
A-9	Believed to be Jumo 213-powered version.[2]
A-10	Two-seat trainer with 1 × DB 603 A-2 and DB 603 QA-2.
A-11	Two-seat trainer with 1 × DB 603 E-1 and DB 603 QE-1.
A-12	Believed to be Jumo 213-powered two-seat trainer.[2]
B-1	Single-seat day fighter.
B-2	Zerstörer with two wing-mounted MK 103 30 mm cannon.
B-3	Zerstörer variant with the DB 603 LA engines.
B-4	Reconn. with Heinkel high aspect ratio wing.
B-5	Two-seat trainer with new wing designed by Heinkel.
B-6	Two-seat night fighter based on the A-6.
B-7	Two-seat night fighter with laminar wing and DB 603 LA.
B-8	Two-seat high altitude night fighter with DB 603 LA.

[1] Late in 1944 an indudstry-wide trend resulted in the redesignation of prototype aircraft away from the previously accepted *Versuch* (Test) catagory toward the *Muster* (Model) standard. It was felt that the new system of designating prototypes would encompass a broader spectrum without implying that the aircraft was purely a test machine.

[2] The precise role of these variants is unknown. Possibly they were variously intended as day fighter, bomber, reconnaissance and night fighter versions.