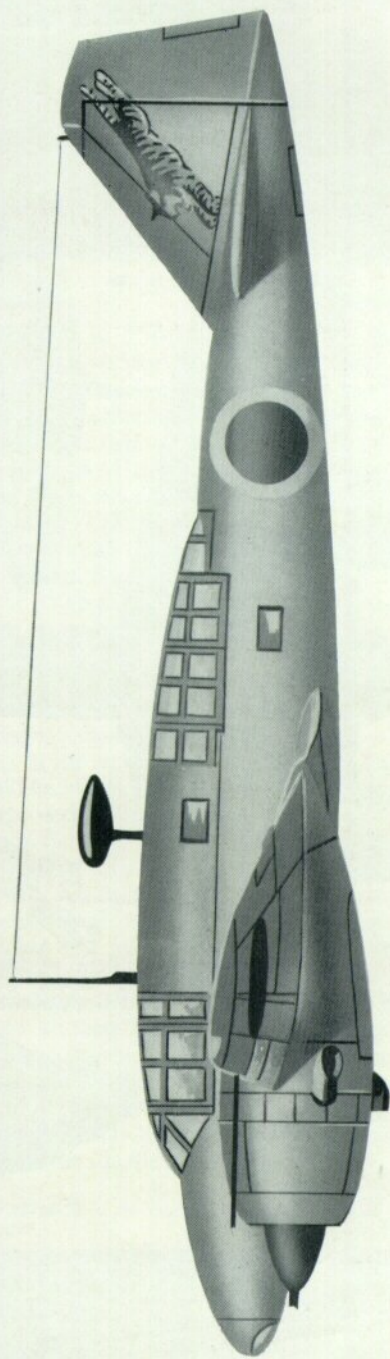
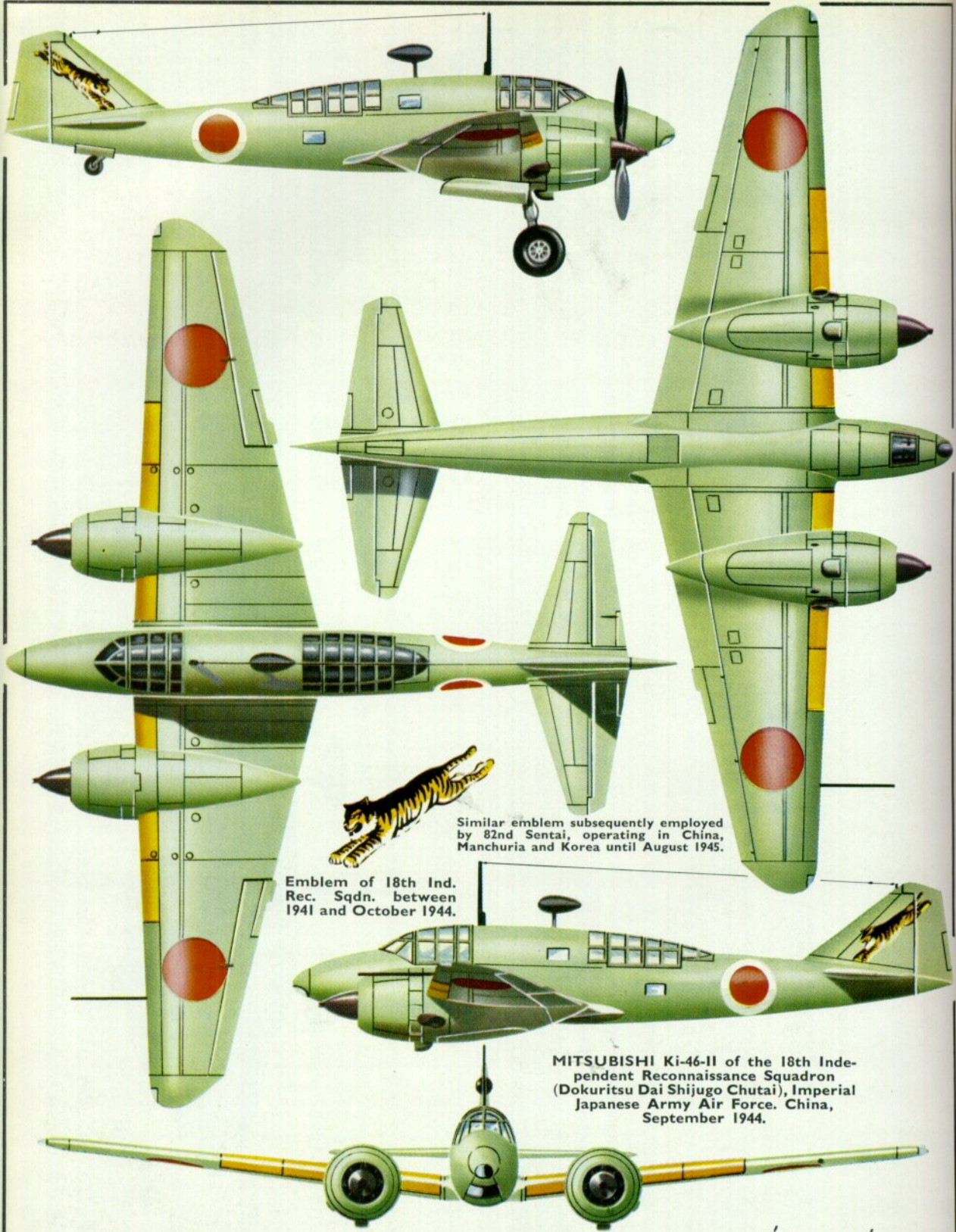


**PROFILE  
PUBLICATIONS**

The  
Mitsubishi  
Ki-46

**NUMBER 82  
TWO SHILLINGS**





Similar emblem subsequently employed by 82nd Sentai, operating in China, Manchuria and Korea until August 1945.

Emblem of 18th Ind. Rec. Sqdn. between 1941 and October 1944.

MITSUBISHI Ki-46-II of the 18th Independent Reconnaissance Squadron (Dokuritsu Dai Shijugo Chutai), Imperial Japanese Army Air Force, China, September 1944.



# The Mitsubishi Ki-46



by René J. Francillon, Ph.D.

An Army Type 100 Model 2 Command Reconnaissance aircraft of the 2nd Chutai, 81st Sentai, in flight over China.

(Photo: courtesy Aireview)

Due to the vast distances separating Japanese airfields from the bases of its potential enemies, the Japanese Army Air Force had a standing requirement for a fast long-range reconnaissance aircraft. In the mid-thirties, this requirement had been met by a single-engined monoplane with trousered undercarriage, the Army Type 97 Command Reconnaissance Plane or Mitsubishi Ki-15, later named "Babs" by the Allies, which, initiated in December 1935, became operational in May 1937. The outstanding performance of this aircraft was revealed to the Western world when, between 6th and 9th April 1937, at the occasion of the Coronation of H.M. King George VI, the second prototype was flown from Tachikawa to London covering 9,542 miles in 94 hours 17 minutes 56 seconds, the actual flying time being 51 hours 17 minutes 23 seconds and the average speed being 101.2 m.p.h. (according to the *Fédération Aéronautique Internationale* which homologated this record). This aircraft, registered J-BAAI and named *Kamikaze* (Divine Wind), had been bought by *Asahi Shimbun*, one of the leading Japanese newspapers, which entrusted it to Masaaki Inuma, pilot, and Kenji Tsukagoshi, flight mechanic and navigator. Although the range performance of the Ki-15-I was quite outstanding (1,500 miles) its maximum speed of 298 m.p.h. was obviously too low if the aircraft was to avoid interception by the modern monoplanes then entering service with the air forces of the Western Powers.

While the Ki-15 was undergoing flight trials and initial service operations, Major Fujita and Eng. Ando and Tanaka of the Technical Branch of the JAAF Headquarters were already studying the requirements for a future Ki-15 replacement. Towards the end of 1937, having defined the problems to be solved, they were authorised to approach the staff of Mitsubishi Jukogyo K.K. (Mitsubishi Heavy Industries Co.), which was responsible for the aeronautical activities of the powerful Mitsubishi Zaibatsu (Combine), to initiate the project. On 12th December 1937, a specification for a high-speed, long-range, reconnaissance aircraft known as the Ki-46 was issued to Mitsubishi. The JAAF wanted an aircraft able to collect intelligence data and photographs without

being detected, as it was intended to use this aircraft during peacetime for unauthorised overflights of potential enemy territory. Actually, the war broke out too soon for this aircraft to be operated as such but it was to be used extensively throughout the 1941-45 conflict. The JAAF specified that the aircraft was to cruise for six hours at a speed of 250 m.p.h. between 13,125 ft. and 19,685 ft. and to have a maximum speed of 373 m.p.h. at 13,125 ft. It was to be powered by one or two 790-h.p. Kawasaki Ha-20b, 950-h.p. Nakajima Ha-25, or 850-h.p. Mitsubishi Ha-26 engines and the defensive armament was limited to one 7.7-mm. Type 89 flexible machine gun with 216 rounds in the rear cockpit. All other usual requirements were waived to help Mitsubishi meet the stringent speed and range specifications.

Earlier in the same year Mitsubishi, Nakajima and Kawasaki had been instructed by JAAF Headquarters to initiate design studies for twin-engined, two-seat, long-range fighters, these projects being respectively assigned the designations Ki-39, Ki-37 and Ki-38. Mitsubishi's engineering staff being fully committed to other pressing projects, the Ki-39 did not progress further than the initial design stage and the JAAF Headquarters allowed the Company to withdraw from this competition. While working on the Ki-39, Mitsubishi had studied the possibility of adapting this design for long-range missions, the project being known as the Ki-40, but further studies were suspended at the time of the Ki-39's cancellation. However, the work done on the Ki-39 and the Ki-40 was to serve as a basis for the Ki-46 design study.

Captured Ki-46-II in the markings of the Technical Air Intelligence Centre.

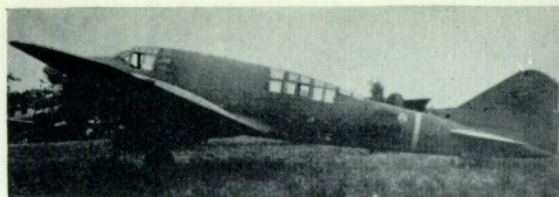
(Photo: via the author)



The challenge facing Tomio Kubo, who had been assigned the responsibility of leading Mitsubishi's design team, was tremendous, especially in regard to the maximum speed specified, which was to exceed that of the early Hurricane I, then just entering service, by some 55 m.p.h. and that of the Curtiss P-36A, about to be delivered to the squadrons of the U.S. Army Air Corps, by 60 m.p.h. Although no liquid-cooled engine of suitable power was then available in Japan, Tomio Kubo was initially in favour of using this type of engine as opposed to the radial with its larger diameter and associated drag. However, as there was little or no prospect of obtaining a satisfactory liquid-cooled engine in the time available, it was decided to use the 15-cylinder radial Mitsubishi Ha-26 as it had the smallest diameter of the three types of engines recommended by the JAAF. To find a solution to the drag problem Tomio Kubo called upon facilities of the Aeronautical Research Institute of the University of Tokyo which conducted extensive wind tunnel tests. As a result of these tests close-fitting cowlings, minimising drag and improving the pilot's side vision while ensuring satisfactory engine cooling, were adopted. At the same time a thinner wing section than had been originally planned was selected and the fuselage diameter was kept to a minimum. To locate a large fuel tank in the fuselage close to the aircraft centre of gravity it was found necessary to separate the two crew members, the pilot being seated over the wing leading-edge whilst the radio-operator/gunner sat over the trailing-edge under a separate canopy. The Aeronautical Research Institute also recommended the use of constant speed propellers and conducted some studies of the retractable landing gear.

### FLIGHT TRIALS BEGIN

The first prototype Ki-46 was completed at Mitsubishi's Nagoya aircraft plant in early November 1939, and the aircraft was transported to Kakumugahara airfield where flight testing began later in the month with Major Fujita, who had been the moving force behind the programme, at the controls. The aircraft was powered by two 875-h.p. 14-cylinder Mitsubishi Ha-26-I engines, each with a single-speed supercharger, driving constant-speed, three-blade propellers. Provision was made for one 7.7-mm. Type 89 flexible machine gun with 216 rounds of ammunition manned by the radio-operator. Early in the flight test programme the aircraft attained a maximum speed of 335.5 m.p.h. at 13,125 ft. and few teething troubles were encountered. Even though the maximum speed



*Ki-46-II of the 55th Dokuritsu Dai Shijugo Chutai.*  
(Photo: via the author)



*Rear view of the same machine.* (Photo: via the author)



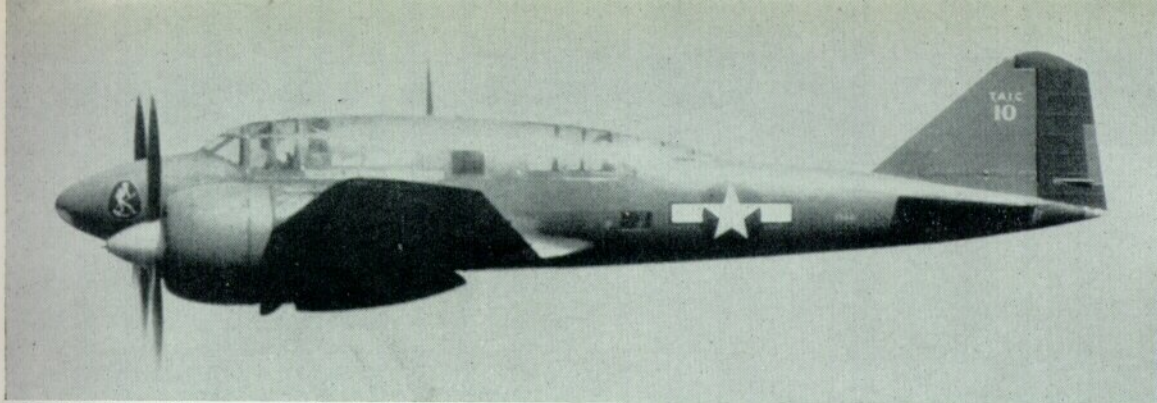
*The Australian Army discovered this Army Type 100 Model 2 of the 76th Dokoritsu Dai Shijugo Chutai at Gasmata, New Britain.*  
(Photo: Australian War Memorial)

was some 40 m.p.h. below that specified, JAAF Headquarters was still satisfied as the aircraft was faster than the A6M2 (331 m.p.h. at 14,930 ft.) and the Ki-43-I (308 m.p.h. at 13,125 ft.) then undergoing flight test evaluation. However, the JAAF was aware that the performance of the Ki-46 was insufficient to assure freedom of interception by Western fighters, such as the Spitfire IIA with its maximum speed of 370 m.p.h., and it instructed Mitsubishi to explore the possibilities of adapting more powerful engines to the Ki-46 airframe. Fortunately, Mitsubishi had under development an advanced version of the Ha-26, the Ha-102, which had the same overall diameter and was expected to develop 1,050 h.p. at take-off rating and 950 h.p. at 19,000 ft.

Pending availability of the Mitsubishi Ha-102 engine the Ki-46 was placed in production with the Type 99 Model 1, the production version of the Ha-26-I, as the Army Type 100 Model 1 Command Reconnaissance Plane (Ki-46-I). These aircraft, which were identical to the prototypes, were used for pilot training and intensive service evaluation, most aircraft



*Undercarriage and engine details visible on a captured 55th D.D.S.C. machine.*  
(Photo: via the author)



A Ki-46-II during flight test evaluation by the T.A.I.C.

(Photo: via the author)

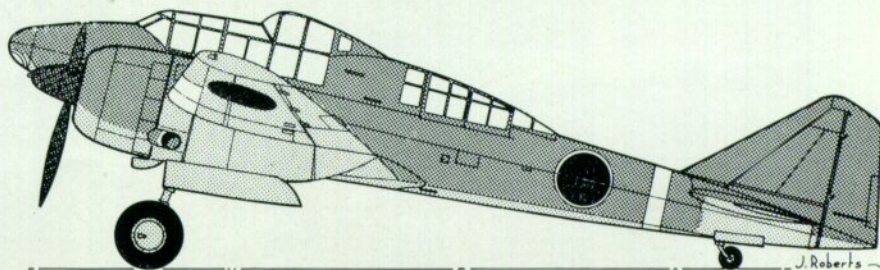
being delivered to the *Shimoshizu Rikugun Hikogakuko* (Shimoshizu Army Flying School). During the production of these aircraft it became apparent that during the design phase the emphasis had been placed on meeting the stringent performance requirements at the expense of ease in production and maintenance. Pilots also complained about the slow response of ailerons and the lack of effectiveness of rudder control, but these were minor shortcomings as the Ki-46 was not intended for combat, its speed and altitude performances protecting it from interception by enemy fighters.

### MAJOR PRODUCTION MODEL

In March 1941, the first Ki-46 powered by two 1,080-h.p. Mitsubishi Ha-102 with a two-speed, two-stage supercharger was readied for flight test evaluation. Immediately the aircraft met the most sanguine expectations of the JAAF Headquarters as it exceeded slightly the maximum speed initially specified, attaining 375 m.p.h. at 19,000 ft. Production aircraft, known as Army Type 100 Model 2 Command Reconnaissance Plane (Ki-46-II), were already rolling off Mitsubishi's assembly lines at Nagoya and were rushed to operational units. In July 1941, the 50th, 70th, 74th, and 76th Dokuritsu Dai Shijugo Chutais (Independent Squadrons) in Manchuria and the 51st Dokuritsu Dai Shijugo Chutai in China were activated and were equipped mainly with Ki-46-IIs as well as a few Ki-46-Is. These units were followed by the 18th Dokuritsu Dai Shijugo Chutai and the 81st Sentai (Group), also operating in China. As the Chinese Air Force was virtually annihilated at that time the Ki-46s went about their business undisturbed, their performances overshadowing those of the Ki-15-Is and Ki-15-IIs, which previously equipped the China-Manchuria based Command Reconnaissance units.

When the war broke out the Ki-46 units were split in small elements to cover a vast area encompassing China, the Philippines, Thailand, Burma, India, Malaya and the Dutch East Indies. These units were constantly on the move reconnoitring territories under Allied control ahead of the fast-advancing Japanese forces. As the Allies lacked radar equipment in the South-west Pacific and CBI theatres, the Ki-46-IIs were seldom intercepted by Allied fighters, which did not have the speed or the climbing rate necessary to catch the nimble Japanese aircraft. The Japanese Navy Air Force was one of the first to pay tribute to the magnificent Army Type 100 Command Reconnaissance Plane by negotiating with the JAAF the delivery of a small number of Ki-46s. At that time the land-based reconnaissance units of the JNAF were flying the obsolescent Navy Type 98 Reconnaissance Plane (Mitsubishi C5M1 & 2 "Babs"), a naval version of the Ki-15, which lacked the performance necessary to avoid interception by Allied fighters. Some of the JNAF Ki-46-IIs, flying from Timor Island, were active over Northern Australia. In late 1942, the Ki-46 received from the Allies the code name "Dinah".

In the light of combat experience some weaknesses of the design, most of which had been already uncovered during service trials, became more apparent. Vapour locks occurred frequently in hot and humid weather and tests were specially conducted in Formosa during June 1940, using a Ki-46-I, and June 1941 with a Ki-46-II. As a result of these tests the fuel lines around the engines were modified to improve cooling and the fuel was changed from 87 octane petrol to 92 octane petrol. Oil was also found to overheat during the long climb to cruising altitude but no remedy was found and the pilots were instructed to choose the most favourable climbing speed as, due to the type of operations in which the aircraft was engaged, there



Ki-46-II-KAI (Army Type 100 operations trainer)

Right and below: *Three views of a Model 3 abandoned in China. Note bullet damage, also that the leading edge fuel tank has been removed from the port wing.*

(Photos: via the author)



was no need for a fast climb such as required from a fighter aircraft. Oxygen supply was another source of difficulty, especially during missions flown at maximum range. Furthermore, with a wing loading high by Japanese standards, ranging from 21 lb./sq. ft. at zero fuel weight to 37.1 lb./sq. ft. at maximum gross take-off weight, the Ki-46-II had a high sinking rate and the undercarriage often failed on landing. The trouble was traced to the undercarriage auxiliary rear strut which bent under heavy stress; a stronger strut was adopted but on occasions the undercarriage still collapsed. However, these problems were too minor to seriously affect the operational use of the Ki-46. A measure of the Ki-46's success is given by the fact that, contrary to its usual policy to constantly adopt new aircraft types rather than to improve operational aircraft in its inventory, the JAAF kept the aircraft in production throughout the war; of the two Ki-46 replacements which were studied during the war one, the Tachikawa Ki-70 "Clara", failing to show an improvement over

*Front view of a Ki-46-IVa with wing leading-edge identification band and air intakes offset to port.*

(Photo: via the author)



its predecessor and being overweight, was abandoned, while the second, the Mitsubishi Ki-95, remained a project on its manufacturer's drawing boards. It should also be noted that during the war 1,742 Ki-46s were built as compared to 698 P.R. Mosquitoes, many of the latter converted from bomber or fighter versions of this aircraft, and 1,334 Lockheed F-4s and F-5s, which were converted from the P-38 Lightning for photo-reconnaissance work. The Germans were also sufficiently impressed by the performance of the Ki-46-II to negotiate under the Japanese-German Technical Exchange Programme the acquisition of a manufacturing licence, but the deal failed to materialise.

A three-seat radio navigation trainer characterised by a stepped-up cockpit behind the pilot's seat was produced in 1943 as the Army Type 100 Operation Trainer (Ki-46-II KAI), all Ki-46-II KAIs being converted from standard Ki-46-IIs and none being built as such.

### IMPROVING THE PERFORMANCE

In May 1942, the JAAF Headquarters, anticipating that the Allies would soon have at their disposal fast-climbing fighters such as the P-38F and F4U-1 which, guided by Ground Interception Radar, would be capable of intercepting the Ki-46-II, instructed Mitsubishi to further improve it. The JAAF specified that flight duration was to be increased by one hour, maximum speed raised to 404 m.p.h. and that the aircraft was to be powered by two 1,500-h.p. Mitsubishi Ha-112-II, while the landing gear was to be reinforced to cope with the increase in weight.

To achieve the specified flight duration Mitsubishi entirely redesigned the fuel system, and fuel capacity was increased from 365 Imp. gallons to 417 Imp. gallons contained in two unprotected fuselage tanks,



Port side view of the Ki-46-IV reveals turbo-supercharger installation at the rear of the engine nacelle. (Photo: courtesy Aireview)

one ahead and one behind the pilot, and five unprotected tanks in each wing. A ventral drop tank containing 101.2 Imp. gallons was also fitted. Although the pilot was seated between two unprotected fuel tanks he was given the token protection of 13 mm. back and head armour plate. To save some weight the flexible machine gun, which had been so far provided more for psychological purposes than as an effective means of defence, was dispensed with on the Ki-46-III. Some redesign of the engine cowling was necessary to accommodate the Mitsubishi Ha-112-II which, although being a direct development of the Ha-102 fitted with a direct fuel injection system, had a diameter increase of four-tenths of an inch; and the already streamlined fuselage was further improved by the use of a new canopy over the pilot's seat without the step between the nose and the top of the fuselage.

Following flight testing of two prototypes, which had begun in December 1942, the Ki-46-III was adopted for mass production as the Army Type 100 Model 3 Command Reconnaissance Plane, coming off the assembly lines at Nagoya parallel with the earlier Ki-46-II until the complete phasing out of the Model 2 during 1944. However, Ki-46-III production was transferred in early 1945 to Toyama, Toyama Prefecture, following the almost complete destruction of

A Ki-46-IVa in front of the Mitsubishi aircraft plant at Nagoya.

Mitsubishi's Nagoya plant by a severe earthquake in December 1944 combined with massive raids by B-29s of the U.S. 20th Air Force. Prior to this event a slightly improved version of the Ki-46-III, characterised by the replacement of the single exhaust pipe on the outboard of each engine by individual exhaust stacks providing some thrust augmentation, had been introduced. A slight increase in range and maximum speed (+7 m.p.h.) was registered as a result of this modification.

Upon its initial introduction in operational squadrons the Ki-46-III was received enthusiastically by its pilots due to its maximum speed of 391 m.p.h. at 19,685 ft. and its markedly improved performances between 26,000 ft. and 32,800 ft. over the earlier Ki-46-II. At first the pilots' enthusiasm was not shared by the maintenance crews, who experienced difficulties with the novel fuel injection system of the Ha-112-II engines, this problem being finally solved by appropriate training given to the ground crews by roving field teams sent out by Mitsubishi. Ki-46-IIIs, often operating alongside Ki-46-IIs, covered the entire South-west Pacific and CBI theatres of operations where they enjoyed a relative, though rapidly disappearing, freedom from interception. Amongst the final major tasks undertaken by the Army Type 100 Model

(Photo: via the author)





Although the strengthening of the undercarriage was one of the requirements of the Ki-46-III development, the Model 3 still suffered chronic weakness of the landing gear struts.

(Photo: via the author)

3 Command Reconnaissance Plane were regular reconnaissance flights by aircraft based at Shimoshizu near Tokyo which, with a fuelling stop at Iwo-Jima, kept a constant watch over the B-29 bases in the Marianas. Allied pilots respected this enemy, which proved difficult to intercept even by high-performance fighters such as were available in 1944-45 but which, once overtaken, was an easy prey lacking all defensive armament and fire protection equipment.

### FIGHTER DEVELOPMENT

Shortly before China-based B-29s of the U.S. XX Bomber Command initiated high-altitude daylight raids over Japan, the JAAF Headquarters became aware of the urgent need to develop an interceptor fighter with good performances at high altitude. The Army Aeronautical Research Institute at Tachikawa (*Rikugun Kokugijutsu Kenkyujo*) had, in June 1943, studied the possibility of adapting the Mitsubishi Ki-46-III, which was one of the few JAAF operational aircraft to have the required altitude performance, to this type of operation. In May 1944, the project was urgently revived and conversion lines were quickly set up at the *Tachikawa Dai-ichi Rikugun Kokosho* (First Army Air Arsenal at Tachikawa). The photographic equipment and forward fuselage fuel tank were replaced by two 20-mm. Ho-5 cannon with 200 r.p.g., the canopy was modified to resemble that of the Ki-46-II and a 37-mm. Ho-203 cannon with 200 rounds of ammunition was mounted in the centre fuselage firing forward and upward at an angle of 30°. The first aircraft of this model, known as the Army



An operational "Dinah", probably photographed in China.  
(Photo: R. Ward collection)



A Ki-46-III Kai prepares for take-off; note nose battery.  
(Photo: R. Ward collection)

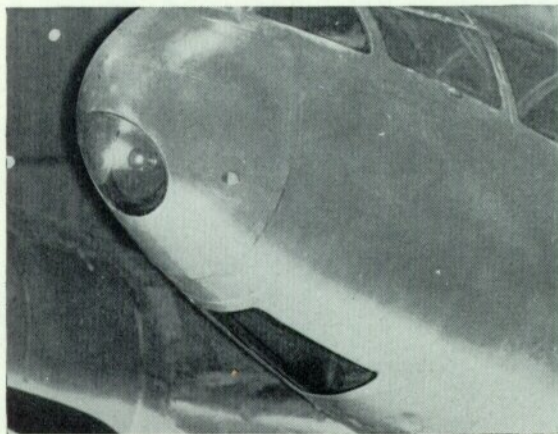
Type 100 Air Defence Fighter (Ki-46-III KAI), was completed in October 1944. From November of that year aircraft of this type served in the defence of Japan, equipping two Sentais, five *Dokuritsu Dai Shijugo Chutai* and one *Dokuritsu Hikotai*. However, the aircraft was not very successful, being too vulnerable to the concentrated fire of the B-29s and lacking the climbing speed required of an interceptor.

Development of two additional fighter versions, dispensing with the 37-mm. cannon, were begun by Mitsubishi in March 1945. They were the Ki-46-IIIb or Army Type 100 Ground-Attack Aircraft, of which only a few were built, and the Ki-46-IIIc, with obliquely mounted 20-mm. Ho-5 cannons, which remained on the drawing boards.

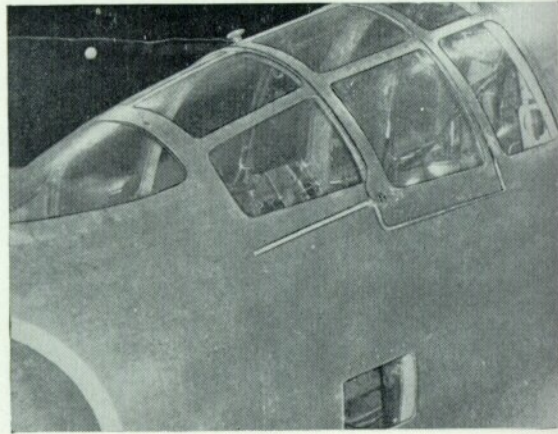
Details of the Ki-46-III now preserved in the aircraft museum at R.A.F. Biggin Hill, Kent, U.K.

(Photos: John Pitt)

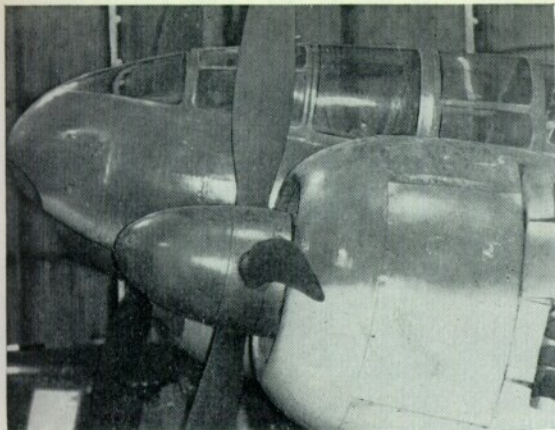
Nose, showing forward camera position.



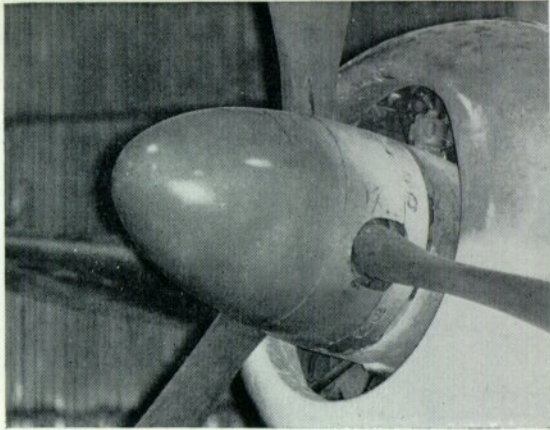
Starboard view of rear cockpit.







*Port engine nacelle.*



*Starboard spinner.*

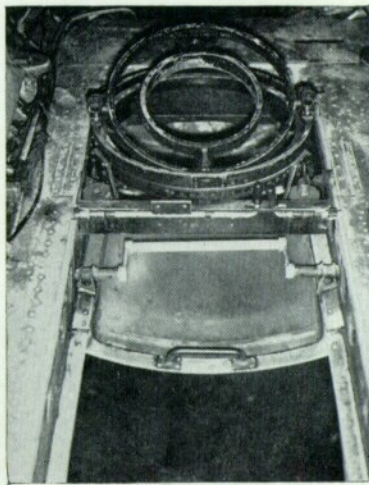
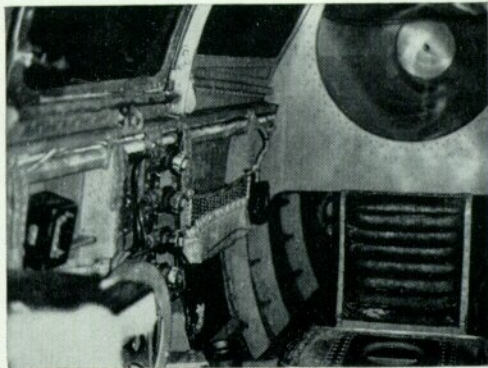
## TURBO-SUPERCHARGER ADAPTED

Following the failure of its intended replacement, the Tachikawa Ki-70, the weight and wing loading of which proved excessive (21,730 lb. and 46.9 lb./sq. ft. respectively), the Ki-46 had to be further developed to improve its capabilities of avoiding interception. Little could be done to improve the aerodynamic characteristics of the aircraft, and performance could only be improved by using engines of increased power, in particular at high altitude. Rather than selecting a new type of engine, which would have entailed a major redesign of the wings and nacelles, Mitsubishi decided to use a newer version of the Ha-112-II, the Ha-112-IIRu, fitted with an exhaust-driven turbo-supercharger, and rated at 1,500 h.p. on take-off at sea-level, but developing 1,250 h.p. up to 22,965 ft. and 1,100 h.p. at 33,465 ft. The turbo-superchargers were mounted in the lower rear portion of the nacelles and the intake air was methanol-cooled as the space available in the nacelles was too limited for using a normal intercooler. The front fuselage fuel tank was further enlarged bringing the total internal capacity to 435 Imp. gallons but no other change was introduced.

Four prototypes Ki-46-IVa were built in 1944-45 and flight tests commenced in February 1944. Performance at altitudes over 26,250 ft. was spectacularly improved, but the aircraft were a source of constant headache to the ground crews as the novel engines proved to be quite unreliable. On 28th February 1945, two of the prototypes demonstrated the capabilities of the Ki-46-IVa by covering the 1,430 miles separating Peking from Fussa (now Yokota AFB) in 3 hours 15 minutes, the aircraft flying at 32,800 ft. and averaging 435 m.p.h. However, the production of the turbo-supercharged Ha-112-IIRu was too slow to gain tempo and these engines were assigned in priority to power high-altitude interceptor fighters such as the Kawasaki Ki-100-II, Ki-102a and Ki-102c. Consequently the Ki-46-IVa never replaced the Ki-46-III on Mitsubishi's production lines and a fighter version, the Ki-46-IVb, with nose-mounted cannons remained on the drawing boards.

Thus ended the development of what was perhaps the most outstanding Japanese aircraft to serve its country during the Pacific war. Fortunately for historians, one of these aircraft, a Ki-46-III, has been preserved by the Royal Air Force at Biggin Hill, Kent, U.K.

*Left to right: Aft view of rear cockpit, also showing fine aerodynamic finish of the fuselage; rear cockpit interior, looking aft; ventral camera mounting and sliding belly hatch in rear cockpit.*

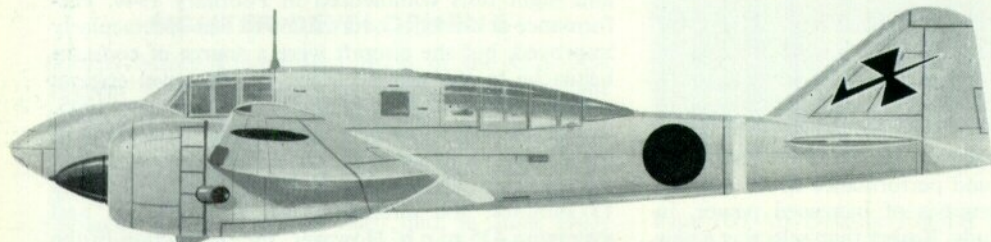


**SERVICE DEPLOYMENT OF THE MITSUBISHI Ki-46**

**I. Army Type 100 Command Reconnaissance Plane.**

| Unit                         | Period               | Theatres of Operation  |
|------------------------------|----------------------|--|
| Sentai                       |                      |  |
| 2nd                          | 1943-44              | Manchuria, Philippines.  |
| 8th                          | 1942-July 1943       | —  |
| 10th                         | 1943-45              | New Guinea, Rabaul, Formosa, Japan.  |
| 15th                         | Jan. 1944-45         | Philippines, New Guinea, French Indo-China (created by merger of the 50th, 51st and 55th Dokuritsu Dai Shijugo Chutais). |
| 38th                         | April 1943-July 1945 | Japan, Philippines, Formosa.   |
| 81st                         | Sept. 1941-Aug. 1945 | China, Indo-China, Malaya, Sumatra, Java, Burma.   |
| 82nd                         | Oct. 1944-Aug. 1945  | China, Manchuria, Korea.   |
| 88th                         | Oct. 1944-Aug. 1945  | —  |
| Dokuritsu Dai Shijugo Chutai |                      |  |
| 17th                         | July 1944-July 1945  | Japan.   |
| 18th                         | 1941-Oct. 1944       | China, Indo-China.   |
| 19th                         | July 1944-June 1945  | Japan.   |
| 50th                         | July 1941-Jan. 1944  | Manchuria, Indo-China, Java, Sumatra, Malaya, Burma.   |

|   |                     |  |
|---|---------------------|--|
| 51st                                      | July 1941-Jan. 1944 | China, Formosa, Indo-China, Malaya, Thailand, Japan.                       |
| 55th                                      | Mar. 1942-Oct. 1944 | Manchuria, China.  |
| 63rd                                      | —                   | —  |
| 70th                                      | July 1941-Aug. 1945 | Manchuria, Formosa, Indo-China, Thailand, Burma, Java.                     |
| 74th                                      | July 1941-Mar. 1944 | Manchuria, Formosa, Philippines, Java, New Guinea.                         |
| 76th                                      | July 1941-June 1943 | Manchuria, Formosa, Philippines, New Britain, Solomon Islands, New Guinea. |
| 81st                                      | 1941-Nov. 1944      | —  |
| 85th                                      | ? -Jan. 1944        | —  |
| Dokuritsu Hikotai                         |                     |  |
| 38th                                      | July-Aug. 1945      | Japan.   |
| Shimoshizu Rikugun Hikogakuko             |                     |  |
| 1941-June 1944                            |                     | Japan.   |
| (Shimoshizu Army Flying School).          |                     |  |
| Tokorozawa Rikugun Koku Seibigakuko       |                     |  |
| Mar. 1943-June 1944                       |                     | Japan.   |
| (Tokorozawa Army Air Maintenance School). |                     |  |



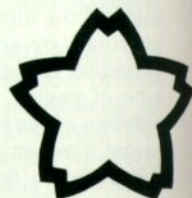
Ki-46-II, 81st Group, 2nd Squadron, Malaya, 1942. Overall pale green, yellow stripe on wing leading edge, white fuselage band, brown spinners, red fin marking outlined in white.



81st Group, 1st Squadron, white, red outline.



Ki-46-II, 76th Direct Command Squadron, Gasmata, New Britain, 1943. Overall pale grey, yellow stripe on wing leading edge, white fuselage band, red tail marking.

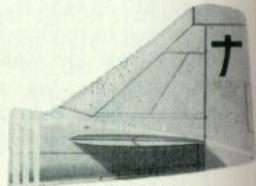


15th Group, white, red outline.

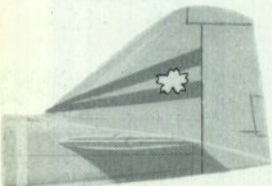


Ki-46-II, Tokorozawa Army Air Maintenance School, 1943-44.

Overall bare metal, pale green rudder, black rudder markings, black anti-glare panel, two white fuselage bands, red spinners.



Shimoshizu Army Flying School, 1941-June 1944. Colours as Tokorozawa School aircraft (left).



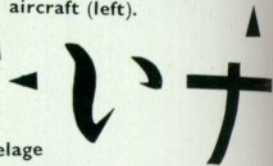
Ki-46-II, 15th Group, 3rd Squadron. Overall pale green, white emblem outlined in red, superimposed on yellow stripes.



76th Direct Command Squadron; red marking on pale green.



17th Direct Command Squadron, 1944-45. Note yellow star.



74th Direct Command Squadron; yellow marking, as 76th.  
70th Direct Command Squadron; white marking, as 76th.

Ki-46-III, Kai, 16th Direct Command Squadron, Japan, July 1944-August 1945.



16th Direct Command Squadron.

Ki-46-II, 19th Direct Command Squadron, Japan, July 1944-June 1945.



55th Direct Command Squadron.



Ki-46-II, 50th Direct Command Squadron, Manchuria, July 1941.

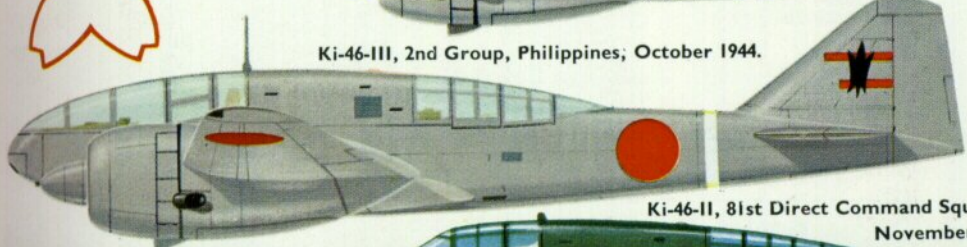


51st Direct Command Squadron.

Ki-46-II, unit unknown, Don Muang airfield, Thailand, 1945.



Ki-46-III, 2nd Group, Philippines, October 1944.



2nd Group.

Ki-46-II, 81st Direct Command Squadron, November 1944.



Ki-46-III, 81st Group, 3rd Squadron, Burma, 1944.



38th Group.



Ki-46-III, 38th Group, Formosa, 1945.



Ki-46-III, 38th Direct Command Wing, 2nd Squadron, Japan, July-August 1945.



38th Direct Command Wing marking position varied from fin to fin and rudder.



Army Type 100 Air Defence Fighter of the 16th Dokuritsu Hikotai. Note oblique-mounted 37-mm. Ho-203 cannon. (Photo: courtesy Aireview)

## 2. Army Type 100 Air Defence Fighter.

| Unit              | Period              | Theatres of Operation |
|-------------------|---------------------|-----------------------|
| Sentai            |                     |                       |
| 28th              | ? -July 1945        | Japan.                |
| 106th             | Nov. 1944-May 1945  | Japan.                |
| Dokuritsu Dai     |                     |                       |
| Shijugo Chutai    |                     |                       |
| 4th               | —                   | Japan.                |
| 16th              | July 1944-Aug. 1945 | Japan.                |
| 81st              | Nov. 1944-Feb. 1945 | Manchuria.            |
| 82nd              | Feb. 1945-July 1945 | Japan.                |
| 83rd              | Feb. 1945-July 1945 | Japan.                |
| Dokuritsu Hikotai |                     |                       |
| 16th              | 1945                | Japan, Okinawa.       |

## PRODUCTION

|  |  |
|--|--|
| All Ki-46s were built by Mitsubishi Jukogyo K.K. at Nagoya and Toyama. |  |
| 34   | Ki-46 and Ki-46-I (1939-40).                         |
| 1,093  | Ki-46-II (1940-44).                                  |
| 2  | Ki-46-III prototypes (1942).                         |
| 609  | Ki-46-III (including fighter conversions) (1942-45). |
| 4  | Ki-46-IV (1943-44).                                  |
|  | <u>1,742</u>   |
| Or:  | 52 (1939-41).  |
|  | 118 (December 1941-March 1942).                      |
|  | 282 (April 1942-March 1943).                         |
|  | 603 (April 1943-March 1944).                         |
|  | 551 (April 1944-March 1945).                         |
|  | 136 (April 1945-August 1945).                        |
|  | <u>1,742</u>   |

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## SPECIFICATIONS

|                                   | Ki-46-I                        | Ki-46-II                       | Ki-46-III                     | Ki-46-III Kai                                | Ki-46-IV                      |
|-----------------------------------|--------------------------------|--------------------------------|-------------------------------|--|-------------------------------|
| Span ... ..                       | 48 ft. 2 $\frac{3}{4}$ in.     | 48 ft. 2 $\frac{3}{4}$ in.     | 48 ft. 2 $\frac{3}{4}$ in.    | 48 ft. 2 $\frac{3}{4}$ in.                   | 48 ft. 2 $\frac{3}{4}$ in.    |
| Length ... ..                     | 36 ft. 1 $\frac{1}{8}$ in.     | 36 ft. 1 $\frac{1}{8}$ in.     | 36 ft. 1 $\frac{1}{8}$ in.    | 37 ft. 8 $\frac{1}{8}$ in.                   | 36 ft. 1 $\frac{1}{8}$ in.    |
| Height ... ..                     | 12 ft. 8 $\frac{3}{8}$ in.     | 12 ft. 8 $\frac{3}{8}$ in.     | 12 ft. 8 $\frac{3}{8}$ in.    | 12 ft. 8 $\frac{3}{8}$ in.                   | 12 ft. 8 $\frac{3}{8}$ in.    |
| Wing Area ... ..                  | 344.4 sq. ft.                  | 344.4 sq. ft.                  | 344.4 sq. ft.                 | 344.4 sq. ft.                                | 344.4 sq. ft.                 |
| Empty Weight ... ..               | 7,449 lb.                      | 7,194 lb.                      | 8,446 lb.                     | —  | 8,840 lb.                     |
| Loaded Weight ... ..              | 10,631 lb.                     | 11,133 lb.                     | 12,619 lb.                    | 13,730 lb.                                   | 13,007 lb.                    |
| Maximum Weight ... ..             | —                              | 12,787 lb.                     | 14,330 lb.                    | —  | 14,330 lb.                    |
| Wing Loading* ... ..              | 30.9 lb./sq. ft.               | 32.3 lb./sq. ft.               | 36.6 lb./sq. ft.              | 39.9 lb./sq. ft.                             | 37.8 lb./sq. ft.              |
| Power Loading* ... ..             | 13.6 lb./h.p.                  | 10.3 lb./h.p.                  | 8.4 lb./h.p.                  | 9.2 lb./h.p.                                 | 8.7 lb./h.p.                  |
| Fuel Capacity: (Internal) ... ..  | 327.8 Imp. gals.               | 364.5 Imp. gals.               | 416.9 Imp. gals.              | —  | 434.9 Imp. gals.              |
| (Drop Tank) ... ..                | —                              | —                              | 101.2 Imp. gals.              | —  | 101.2 Imp. gals.              |
| Engine ... ..                     | Ha-26-I                        | Ha-102                         | Ha-112-II                     | Ha-112-II                                    | Ha-112-II Ru                  |
| Take-off Rating ... ..            | 780 h.p. at 2,540 r.p.m.       | 1,080 h.p. at 2,700 r.p.m.     | 1,500 h.p. at 2,600 r.p.m.    | 1,500 h.p. at 2,600 r.p.m.                   | 1,500 h.p. at 2,600 r.p.m.    |
| Military Power Rating ... ..      | 900 h.p. at 11,810 ft.         | 1,055 h.p. at 9,185 ft.        | 1,350 h.p. at 6,560 ft.       | 1,350 h.p. at 6,560 ft.                      | 1,350 h.p. at 6,560 ft.       |
| Propeller: (No. of Blades) ... .. | 3                              | 3                              | 3                             | 3  | 3                             |
| (Diameter)... ..                  | 9 ft. $\frac{1}{2}$ in.        | 9 ft. 8 $\frac{1}{2}$ in.      | 9 ft. 8 $\frac{1}{2}$ in.     | 9 ft. 8 $\frac{1}{2}$ in.                    | 9 ft. 8 $\frac{1}{2}$ in.     |
| Maximum Speed ... ..              | 335.5 m.p.h. at 13,350 ft.     | 375 m.p.h. at 19,030 ft.       | 391 m.p.h. at 19,685 ft.      | 391 m.p.h. at 19,685 ft.                     | 391 m.p.h. at 32,800 ft.      |
| Cruise Speed ... ..               | —                              | 264 m.p.h. at 13,125 ft.       | —                             | —  | 394 m.p.h. at 23,625 ft.      |
| Climbing Speed... ..              | 16,405 ft. in 7 min. 45 sec.   | 26,250 ft. in 17 min. 58 sec.  | 26,250 ft. in 20 min. 15 sec. | —  | 32,800 ft. in 16 min. 30 sec. |
| Service Ceiling ... ..            | 35,530 ft.                     | 35,170 ft.                     | 34,450 ft.                    | 34,450 ft.                                   | 36,090 ft.                    |
| Range ... ..                      | 1,305 m.                       | 1,540 m.                       | 2,485 m.                      | 1,245 m. plus one hour combat                | 2,485 m.                      |
| Armament ... ..                   | 1 7.7-mm. Type 89 (216 r.p.g.) | 1 7.7-mm. Type 89 (216 r.p.g.) | —                             | 2 20-mm. Ho-5 & 1 37-mm. Ho-203 (200 r.p.g.) | —                             |