Focke Wulf 152 H 114 Inches (2.89m) Plan

(Other 42" Wing Span Plan Included)

The **Focke-Wulf Ta 152** was a World War II German high-altitude fighter-interceptor designed by Kurt Tank and produced by Focke-Wulf. The Ta 152 was a development of the Focke-Wulf Fw 190 aircraft. It was intended to be made in at least three versions—the Ta 152H *Höhenjäger* ("high-altitude fighter"), the Ta 152C designed for medium-altitude operations and ground-attack using a different engine and smaller wing, and the Ta 152E fighter-reconnaissance aircraft with the engine of the H model and the wing of the C model.

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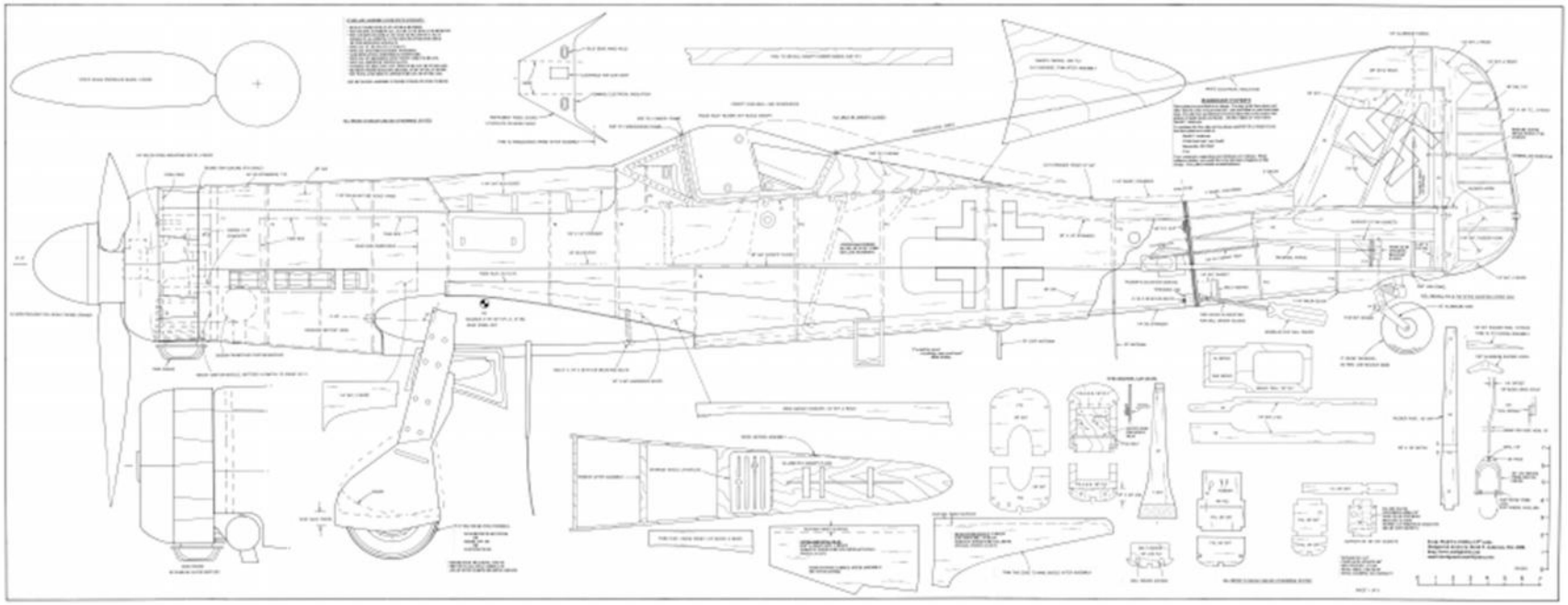
The first Ta 152H entered service with the *Luftwaffe* in January 1945. While total production—including prototypes and pre-production aircraft—has been incorrectly estimated in one source at approximately 220 units,[2] only some 43 production aircraft were ever delivered before the end of the European conflict.[1] These were too few to allow the Ta 152 to make a significant impact on the air war.

Design and development

Due to the difficulties German interceptors were having when battling American heavy bombers at altitudes above 20,000 feet, and in light of rumors of new B-29 bombers with better altitude capabilities, the *Reichsluftfahrtministerium* (German Air Ministry, or "RLM") requested proposals from both Focke-Wulf and Messerschmitt for a high-altitude interceptor. Messerschmitt answered with the Bf 109H, and Focke-Wulf with the Fw 190 *Raffat-1*, or Ra-1 (fighter), Ra-2 (high altitude fighter) and Ra-3 (ground-attack aircraft).

114” Wing Span Plan



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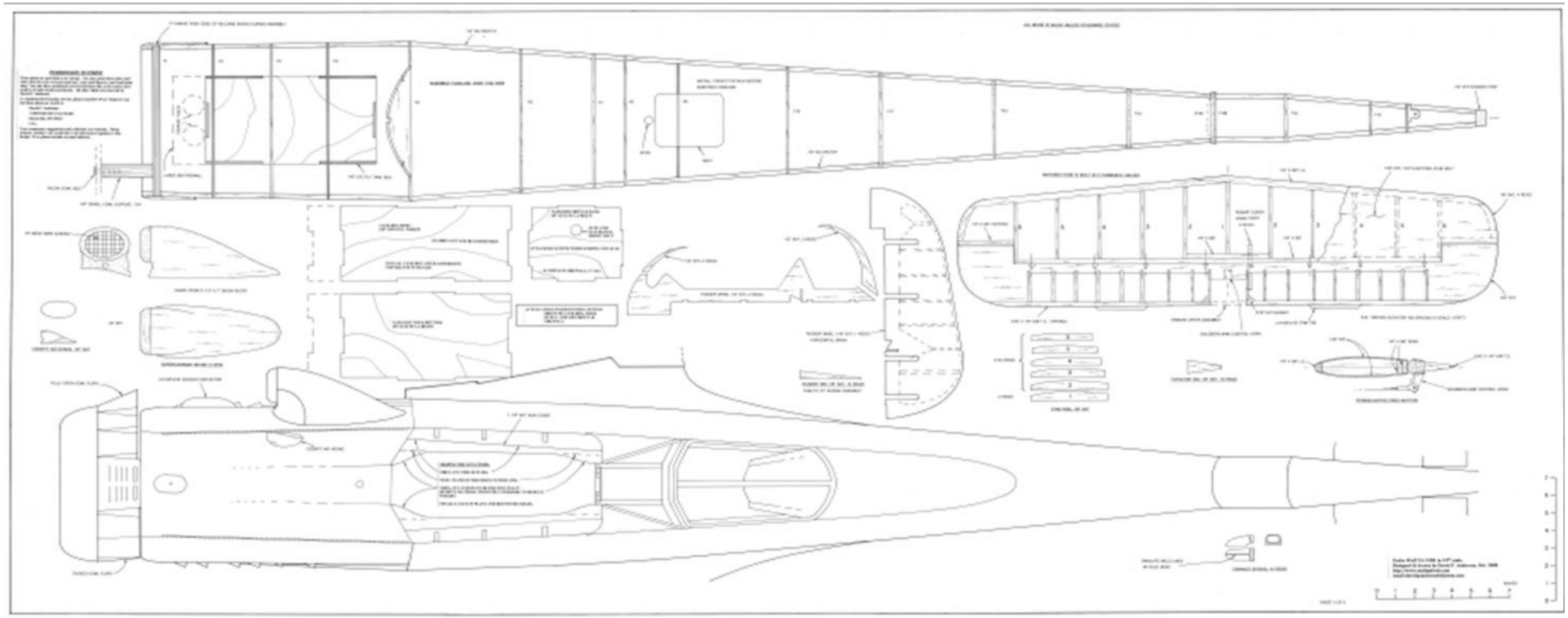
These designs developed into the Fw 190 V20 (Ta 152A), V30 (Ta 152H) and V21 (Ta 152B) prototypes, all based on the then successful Fw 190 D-9 but with varying degrees of improvement. The V20 used the same Jumo 213E engine as the Fw 190 D-9, while the V21 used the DB 603E. Neither of these offered any significant improvement over the Fw 190 D-9, and so further development of the Ta 152A and B was cancelled. The V21 airframe, however, was further modified as the V21/U1 and became the prototype for the Ta 152C.[3][*page needed*]



Kurt Tank originally designed the Ta 152 using the Daimler-Benz DB 603 engine as it offered better high-altitude performance and also a greater developmental potential. The DB 603 had been used in the Fw 190C with many problems and was considered too difficult to implement in the Ta 152 by RLM officials. With this in mind, Tank focused his efforts on the Junkers Jumo 213E as the Ta 152H's power plant. However, he insisted that the Daimler-Benz DB 603 be retained for the Ta 152C versions and as an option for later versions of the Ta 152H. The Ta 152's fuselage was an extended version of the Fw 190 D-9 fuselage with wider-chord fixed vertical tail surfaces (especially the top half), and hydraulic rather than electrically-controlled undercarriage and flaps.

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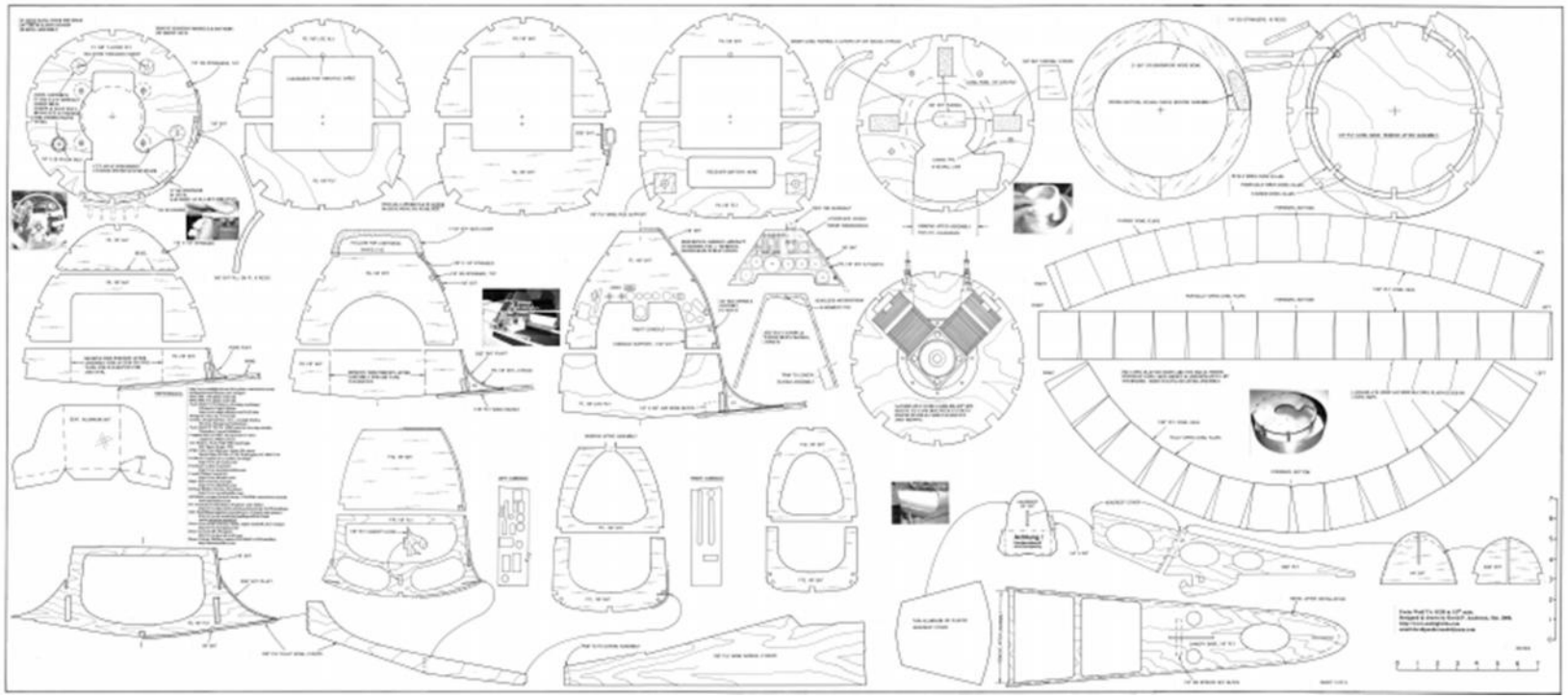
Due to the changes in the center of gravity and overall balance, the nose was also lengthened.[4][page needed] Wingspan was changed from the Fw 190's 10.51 m (34 ft 5 in) for both versions. The H had a span of 14.44 m (48 ft 6 in) and the C a wingspan of 11.00 m (36 ft 1 in).



The Ta 152 also featured the FuG 16ZY and FuG 25a radio equipment[4][page needed] (some aircraft were issued with FuG 125 Hermine D/F for navigation and blind landing, LGW-Siemens K 23 autopilot, and a heated armorglass windscreen for bad-weather operations).

Fuel capacity was 595 L (157 US gal) for the H-0 model, with the option of a 300 L (80 US gal) drop tank on the centerline.[citation needed] The H-1 model carried an additional 454 L (120 US gal) of fuel in six unprotected bag tanks in the wings; typically, one of these tanks was used to hold the MW 50 methanol-water mixture and another for GM-1 nitrous oxide. The H-1 could also carry a 300 L (80 US gal) underbelly drop tank.[citation needed]

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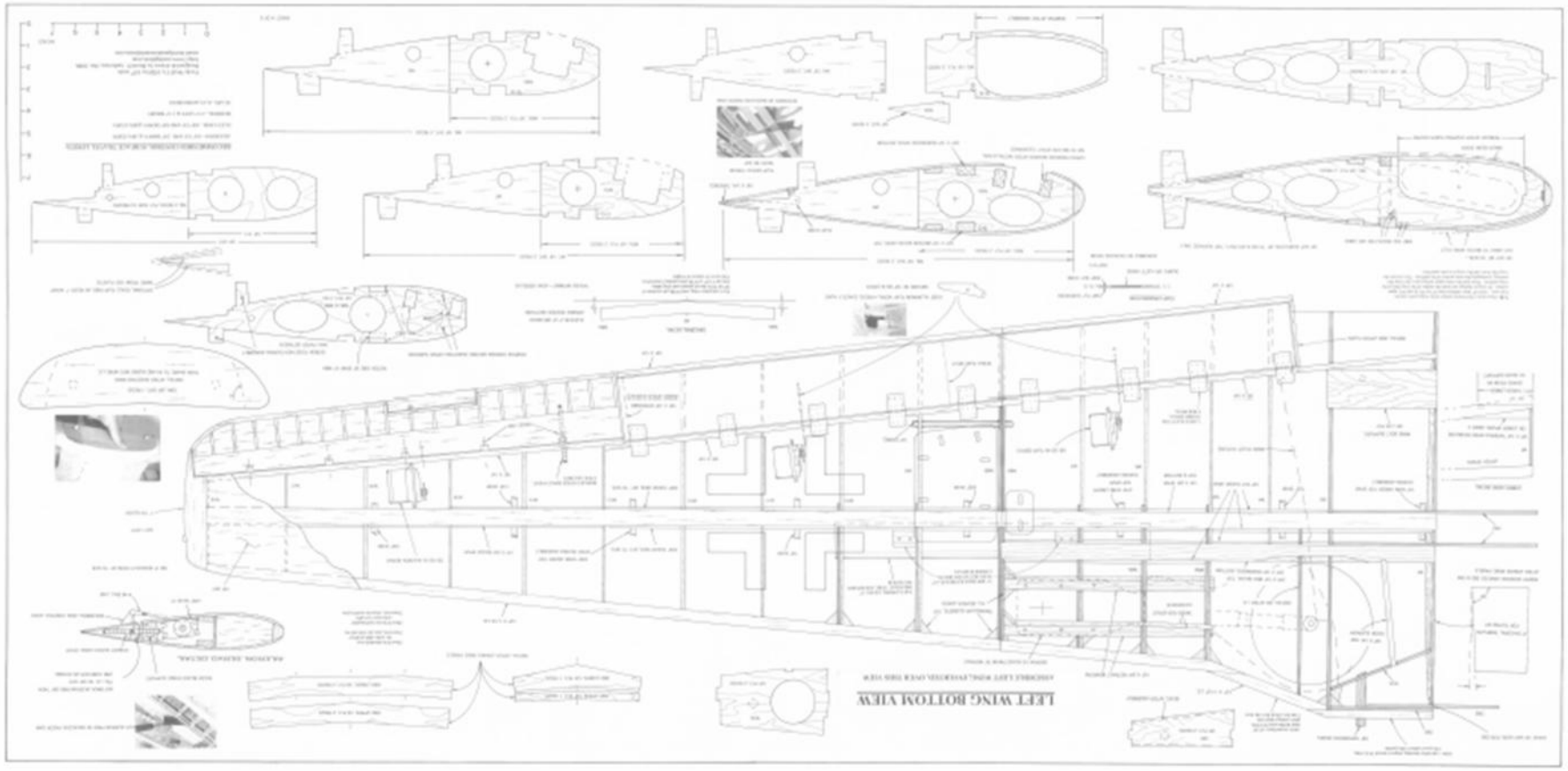
Design for high altitude performance

To reach higher altitudes, a pressurized cockpit was added to the H models. The canopy was sealed via a circular tube filled with rubber foam which was inflated by a compressed air bottle, while the engine compartment was also sealed from the cockpit with a rubber foam ring. A Knorr 300/10 air compressor provided the pressure, maintaining the cockpit at .36 atmospheres (5.29 psi) above 8,000 m (26,250 ft). To prevent fogging, the windscreen was of a double pane style with a 6 mm (.32 in) thick outer pane and a 3 mm (.118 in) inner pane with a 6 mm (.24 in) gap. The gap was fitted with several silica gel capsules to absorb any moisture forming between the panes.[4][*page needed*]



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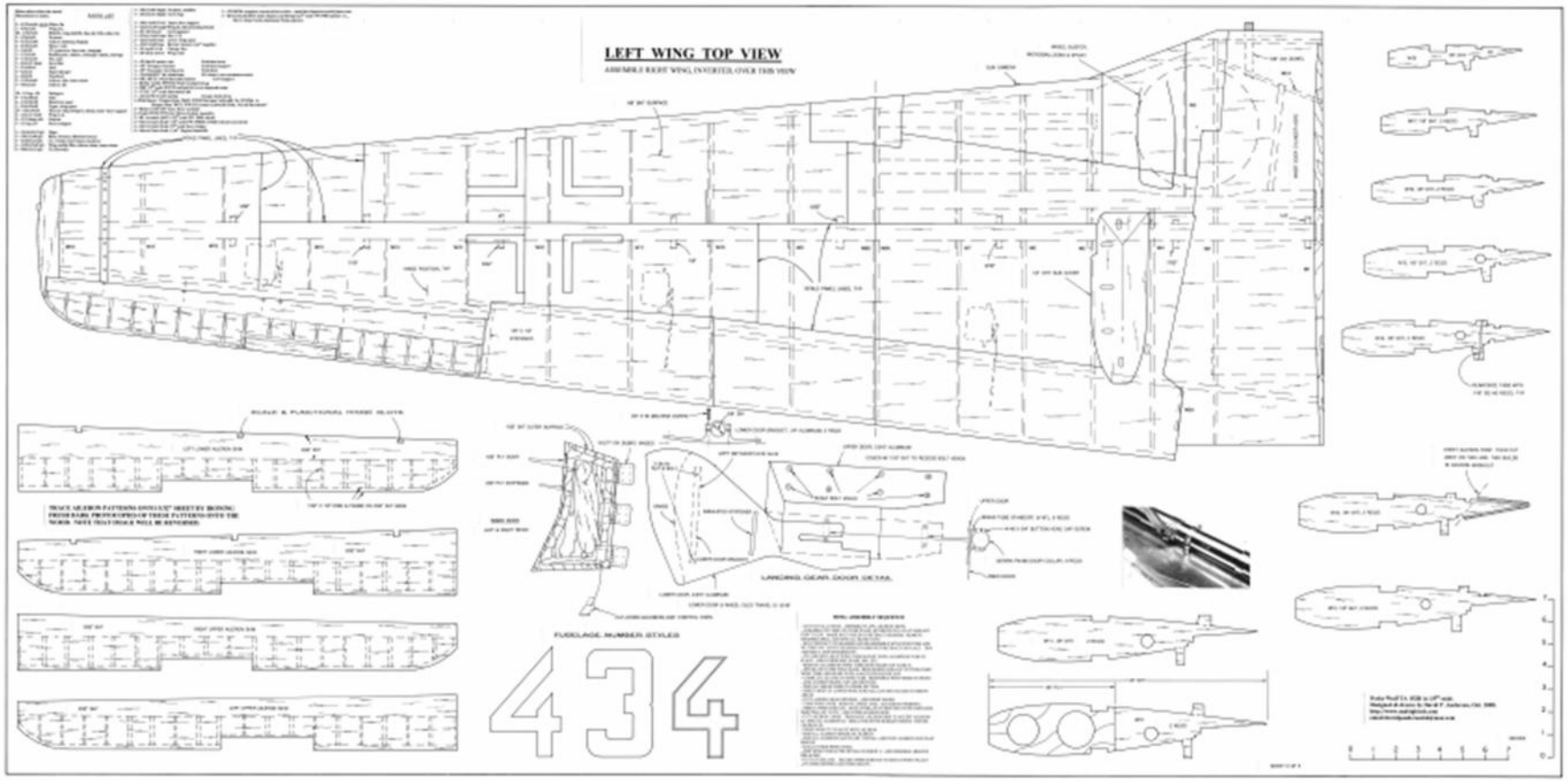
The aircraft had an increased wingspan compared to the previous Fw 190 design, as a further accommodation towards better high altitude performance. Due to the war's impact on aluminum availability, the wing was built around two steel spars, the front extending from just past the landing gear attachment points, and the rear spar spanning the entire wing. The wing itself was designed with 3° of washout, from the root to the flap-aileron junction, to prevent the ailerons from stalling before the center section of the wing. This design allowed the pilot to maintain roll control during a stall and extreme flight envelope maneuvers.[citation needed]



The Ta 152H boasted excellent high altitude performance, using a Jumo 213E engine (a high-altitude version of the Jumo 213A/C used in the Fw 190D), a two-stage, three-speed supercharger and the MW 50 methanol-water mixture engine boost system.[citation needed]

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Armament

The H-model had heavy armament to allow it to deal quickly with enemy aircraft. It had three weapons firing through the propeller arc: one 30 mm (1.18 in) MK 108 *Motorkanone* cannon centered within the propeller hub and two 20 mm MG 151/20 cannons located in the wing roots.[5] The C-model was designed to operate at lower altitudes than the H-model, and had even heavier armament consisting of one 30 mm (1.18 in) MK 108 firing through the propeller hub, and four 20 mm MG 151/20s. Two of the 20 mm guns were mounted above and aft of the engine (in the forward upper fuselage decking), and the other two in the wing roots. The cockpit was not pressurized in the C models.[3][*page needed*] The Ta 152C could destroy the heaviest enemy bombers with a short burst but the added weight decreased speed and rate of turn.

Performance

The Ta 152 H-1, with the Jumo 213 E engine, was among the fastest piston-engined fighters of the war, capable of speeds up to 755 km/h (472 mph) at 13,500 m (41,000 ft, using the GM-1 boost) and 560 km/h (350 mph) at sea level (using the MW 50 boost).[6] To help it attain this speed, it used the MW 50 system mainly for lower altitudes (up to about 10,000 m/32,800 ft) and the GM-1 system for higher altitudes, although both systems could be engaged at the same time.

Kurt Tank was flying an unarmed Ta 152H in late 1944 to a meeting at the Focke-Wulf plant in Cottbus when he was advised by ground controllers of the presence of two P-51 Mustangs, which were on a course heading directly for Langenhagen airfield. The two Mustangs appeared directly behind Tank and would have otherwise caught him, given the planes difference in airspeed, but he escaped by applying full power and engaging the MW 50 boost. As Hermann reports, "[Tank] quickly pulled away from the Mustangs, which had been closing rapidly, until they were no more than two dots on the horizon."[7]

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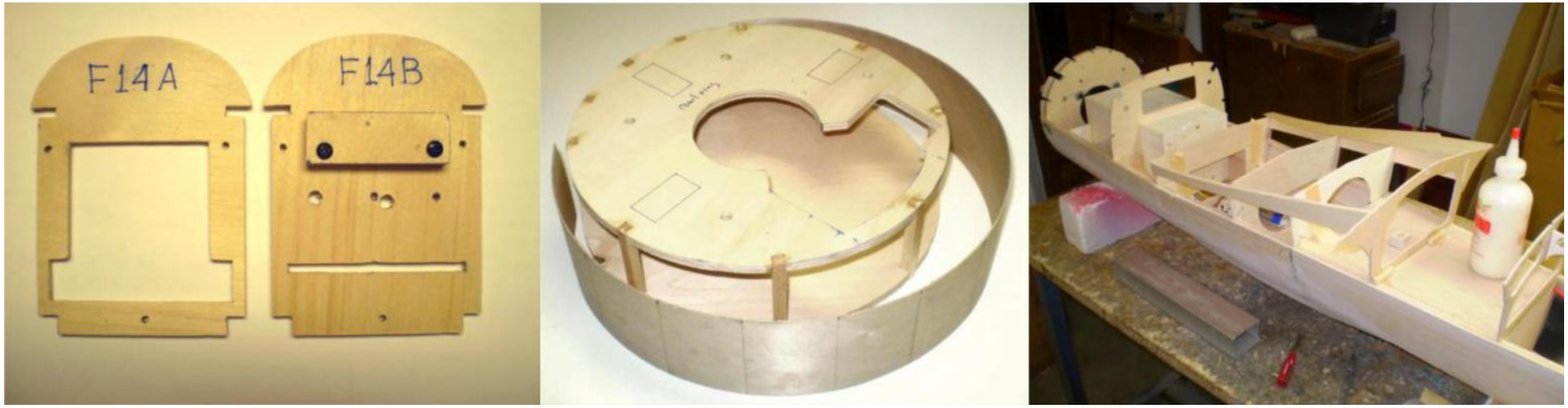
Japanese version

The JAAF acquired, in April 1945, the license, schemes and technical drawings for manufacturing the Ta 152 in Japan.[8] During the last stages of the conflict in Germany, with the plight of the Japanese armed forces growing ever bleaker, a very large influx of the latest aviation technology Germany had to offer was given to or bought by the Japanese air force in the hopes that it would stem the tide of defeats and ever increasing pressure by the superior aircraft the Allies were putting into the field.

Operational history

By October 1944, the war was going very badly for Germany, and the RLM pushed Focke-Wulf to quickly get the Ta 152 into production. As a result, several Ta 152 prototypes crashed early into the test program. It was found that critical systems were lacking sufficient quality control. Problems arose with superchargers, pressurized cockpits leaked, the engine cooling system was unreliable at best due in part to unreliable oil temperature monitoring, and in several instances the landing gear failed to properly retract. A total of up to 20 pre-production Ta 152 H-0s were delivered from November 1944 to *Erprobungskommando* Ta 152 to service test the aircraft. It was reported that test pilots were able to conduct a mere 31 hours of flight tests before full production started. By the end of January 1945, only 50 hours or so had been completed. The Ta 152 was not afforded the time to work out all the little quirks and errors plaguing all new designs. These problems proved impossible to rectify given the situation in Germany towards the end of the war, and only two Ta 152C remained operational when Germany surrendered.[*citation needed*]



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III./*Jagdgeschwader* 301, initially a *Luftwaffe* *Wilde Sau* unit, was ordered to convert to the type in January 1945, which it did (and flew them operationally for a short time). In the end, available Ta 152s were pooled in a special *Stabstaffel* JG 301, first based at Alteno, then at Neustadt-Glewe in Mecklenburg.[citation needed] The *Stabstaffel* never had more than 15 Ta 152Hs available, both H-0s and H-1s. Since the usual transfer system had broken down, pilots had to look for additional 152s themselves.[citation needed]

An early Ta 152 combat occurred on 14 April 1945 when *Oberfeldwebel* Willi Reschke tried to intercept a De Havilland Mosquito over Stendal, but failed to catch up due to engine trouble.[9][page needed] On the evening of that same day, Reschke was to demonstrate that the Ta 152H could be used as a low altitude fighter. A section of four Hawker Tempest Vs of 486(NZ) Squadron were out on patrol. After attacking a train near Ludwigslust, the section split up into pairs; Wing Commander Brooker ordered the Tempests flown by Flying Officer S.J. Short and Warrant Officer Owen J. Mitchell to make their own way back to base. On the way back, this pair, which was strafing targets along the railway tracks near Ludwigslust, was spotted by lookouts posted at Neustadt-Glewe. Three Ta 152s—flown by Reschke, *Oberstleutnant* Aufhammer and *Oberfeldwebel* Sepp Sattler—were scrambled, catching the Tempests by surprise. Reschke declared:

We reached the position at an altitude of 200 metres, just at the moment when both Tempests after diving started climbing again. Just as the dogfight was developing *Sepp Sattler*, on our side, was hit and his plane fell like a stone out of the sky ... The Tempest which I attacked quickly reached the same height as me and was [at] approximately 10 o'clock before me. The dogfight began between 50 and 100 metres above ground level and very often the wing tips passed close over the treetops ... The whole fight was executed in a left-hand turn, the low altitude of which would not allow for any mistakes. Ever so gradually I gained metre-by-metre on the Tempest and after a few circles, I had reached the most favourable shooting position ...



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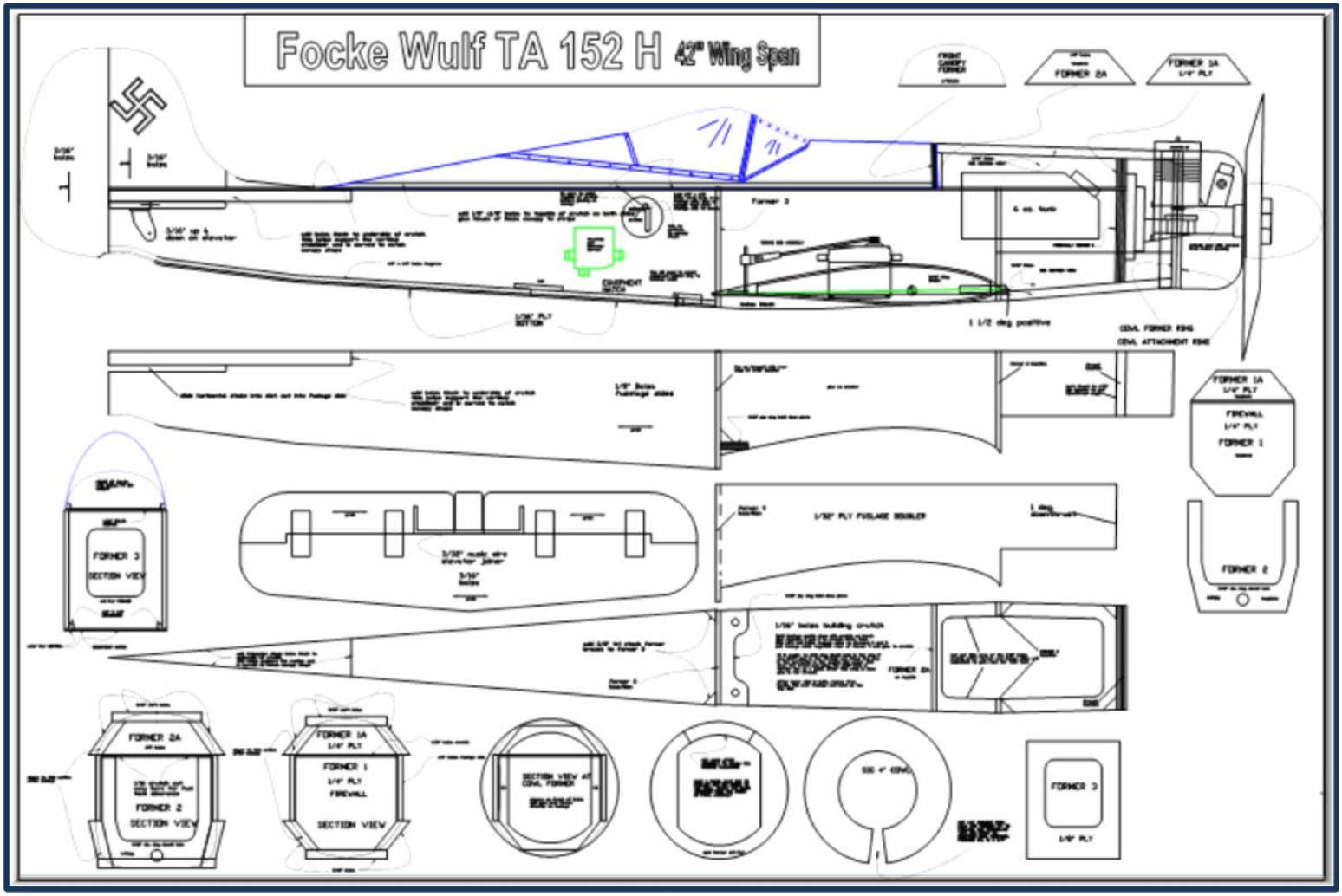
I pressed my machine gun buttons[10] for the first time ... I could see the Tempest for a short moment in straight ahead flight displaying slightly erratic flying behaviour. But immediately she went straight back into the left turn ... I sighted the Tempest very favourably in my cross hairs and could not have missed, but my machine guns experienced feeding problems. I therefore tried to shoot it down with my cannon and forced her into a tight left-hand turn from where she tipped out over her right wing and crashed into a forest.



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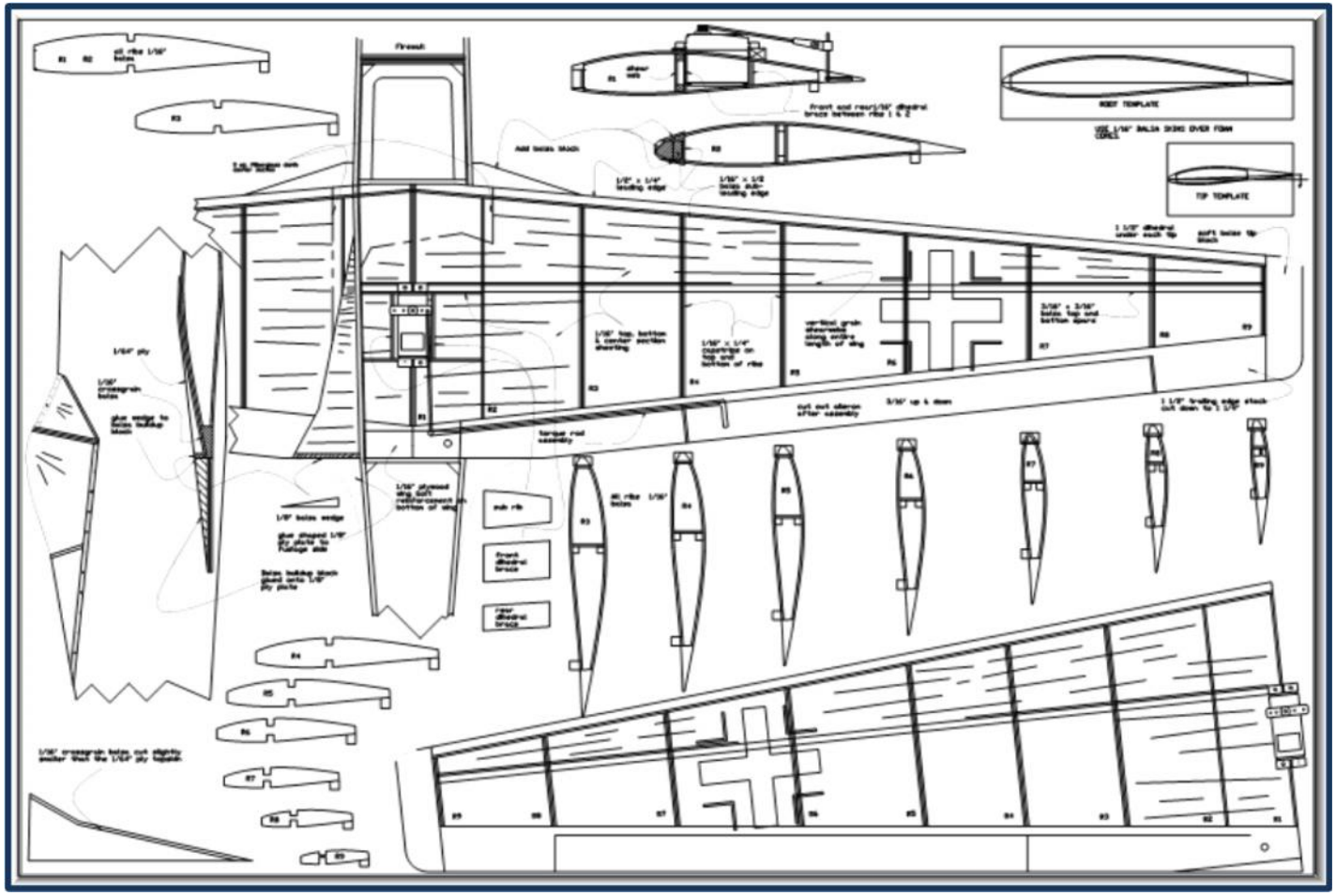
(A more detailed and slightly different account of this incident, also by Reschke, is given in 'Fw190 Aces on the Attack' published by Osprey)

Lt. Owen J. Mitchell (a rookie with only a month and half of experience on the front line[11]) was flying the Tempest and was killed on impact with the ground.[12] It is thought that Sattler had been shot down either by Short or Bill Shaw of 486 Sqn, who claimed a Bf 109 in the same area (the Ta 152s were mistaken for 109s).[13][14] [15] Operational missions were flown in April 1945 from Neustadt, mostly escorting close support aircraft to the Battle of Berlin. Reschke claimed two Yakovlev Yak-9s near Berlin on 24 April,. It seems that three often reported victory claims by Obfw. Walter Loos, on 24, 25 and 30 April [16][*verification needed*]),



cannot be attributed to Ta 152. Loos himself stated he never shot down a single enemy fighter while flying the Ta 152 [17][*verification needed*]).

The Ta 152 score at the end of the war was likely seven victories and four losses in air combat (a degree of uncertainty about those numbers exists). Four victories were achieved by Josef Keil, from 1 March 1945 to 21 April 1945.[18] The statement that he had five victories on Ta 152 is unsubstantiated and is shown to be false by matching score table and dates. The Ta 152 was delivered to JG 301 on 27 February 1945 and the first Ta 152 combat action against American bombers happened on 2 March 1945,[19] so his victory against a B-17 on 20 February 1945 couldn't have been achieved flying that type of fighter. Alternatively, this results from an incorrect reading of published sources such as Lowe [20] because JG 301 had the Ta 152 in service from late January 1945, and individual missions such as Keil's could well have been flown. At least three victories were achieved by Willi Reschke.[21]

The four losses in air combat were: Hptm. Hermann Stahl, KIA on 11 April 1945; Obfw. Sepp Sattler, KIA on 14 April 1945; two unknown JG11 pilots, downed by Spitfires in the last days of April 1945 during transfer from Neustadt-Glewe to Leck airfield.[22]

The total Ta 152 production is not well known but 43 are identified,[1] (H-0 and H-1) with c.6 prototypes.