

YAK FIGHTER

in action



Aircraft Number 78
squadron/signal publications

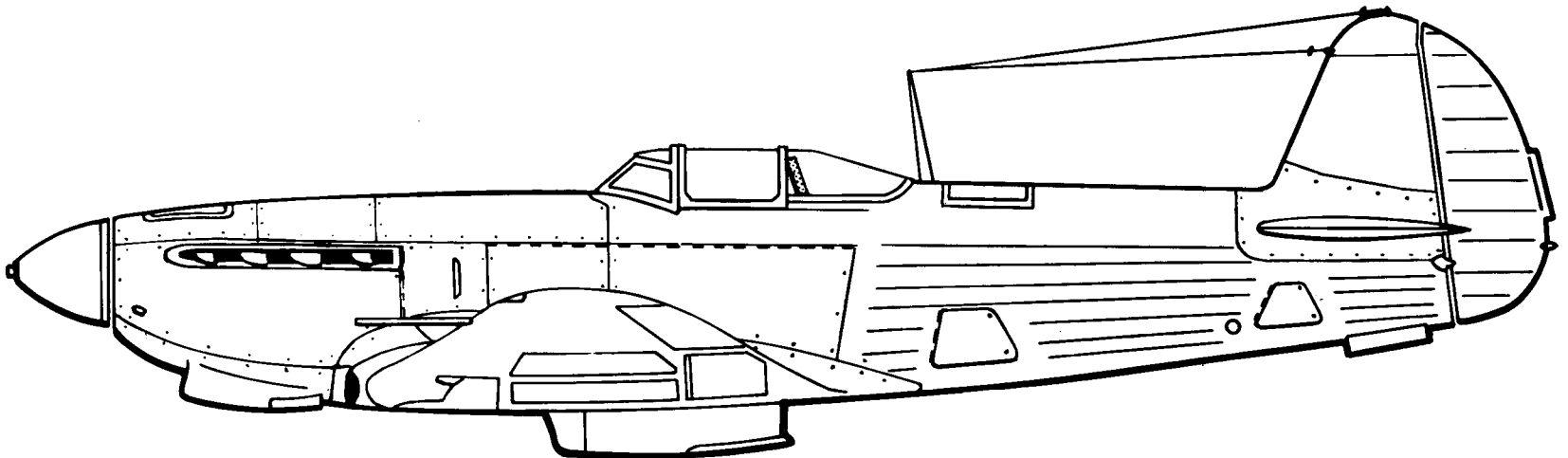
YAK FIGHTERS

in action

By Hans-Heiri Stapfer

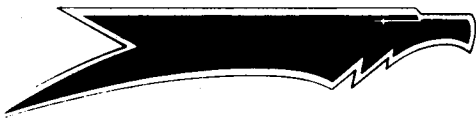
Color by Don Greer

Illustrated by Joe Sewell



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(Front Cover) Yak 7Bs donated by the Komsomol Youth Organizations attack enemy troop concentrations just behind the front lines in the Orel area as the *Wehrmacht* retreats over the Oka River in November of 1942.



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Dedication

For My Mom; she is really the Best!

Acknowledgments

This book would never be realized without the grateful support of many friends and specialists over the years. My first thanks go to Andrzej Morgala and Dr Volker Koos who provided a great deal of information and photos of Russian aircraft. Andrzej Ec, Zbigniew Luranc, Tomasz Kowalski, Andrzej Glass, Jan Horn, Hans-Joachim Mau, Petr Knotek, Andras Pakay, Mike Kirk, Albert Violand, Nigel A. Eastaway and Zdenek Hurt for supplying a great amount of research material. Martin Villing and Artur Gärtner who shared their experiences in the *Luftwaffe* with me. Thomas E. Willis who did such a fine job of researching captured aircraft, and Gino Künzle who added valuable documents on Normandie-Niemen operations. The following individuals and organizations provided me with numerous material and documents: IPMS USA, IPMS Switzerland, Russian Aviation Research Group of Air Britain, Frank Marshall, Keski-Suomen Ilmailumuseo, Renald Gravel, Richard Forster, Karl Hänggi, John T. Williams, Eric Munday, Federal Archives Berne, Peter G. Hörner, Sandro Longhini, Manfred Griehl, Heergeschichtliches Museum, Oesterreichische Flugzeug Historiker, William Rellstab, David Klaus, Chris Ernst, Ulrich Haller, Franz Kurowski and Parwez Sabir. Thanks so much!

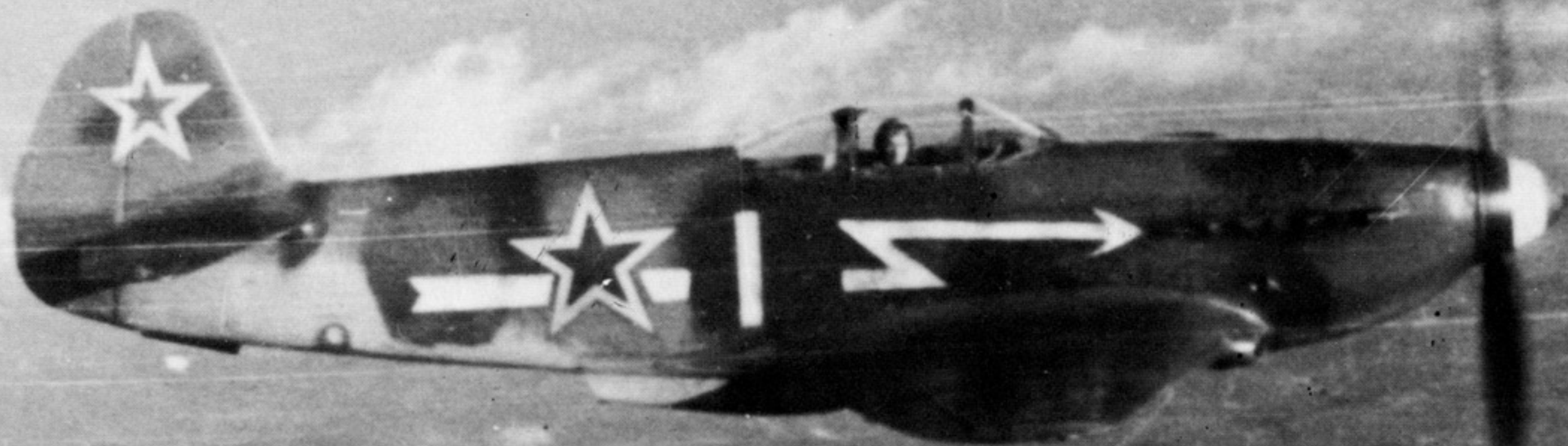
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(Right) White One in the skies over Russia during the Great Patriotic War. During World War II Yakovlev fighters were ideally suited for the Eastern front, easy to build and maintain, the nimble fighter was popular with both pilots and ground crews. Soviet pilots claimed more kills with Yakovlev fighters than with all other types together. The French volunteer unit Normandie-Niemen used the Yak 3 very successfully. René Challe, a squadron leader claimed eight victories. (SHAA)



INTRODUCTION

It is a little known, but important fact, that fifty-eight percent of World War II Soviet fighter production was supplied by the A.S. Yakovlev Design Bureau. When Nazi Germany finally collapsed in May of 1945, more than 36,000 Yak fighters had left production lines all over the USSR. No other fighter in the world was built in such large numbers, and the Yak fighter's basic design had remained structurally almost untouched throughout its production life.

When Hitler launched *UNTERNEHMEN BARBAROSSA* (OPERATION REDBEARD) into Russia on 22 June 1941 the underpowered and underarmed Yakovlev fighter was far from a real challenge to the *Luftwaffe's* superior Messerschmitt Bf 109. However, continued development and improvement soon turned the Yakovlev fighter into a deadly combat plane and as the Great Patriotic War (the Russian name for World War II) came to an end in the outskirts of Berlin, the Yak had become the equal of all but the new German jet fighters.

Due to the typical communist bureaucratic slowness and a near fatal mis-diagnosis of the military situation in Europe during the twenties and thirties the Russians failed in the opportunity to build a strong Red Air Force. The Soviet air arm had been more of a propaganda force than an effective military weapon. While Russian pilots and aircraft were able to set a number of impressive world records during the thirties, and the large Russian bomber fleet had become famous throughout the World, the effective combat value of the Red Air Force was less than ideal.

The creation of only two State Aircraft Bureaus, Tupolev for Bomber development and Polikarpov for fighter development, had severely limited the introduction of new designs and ideas. As late as 1938, as England developed the Spitfire and Germany the Messerschmitt Bf 109, both of which completely outclassed the Russian front-line I-15 Chato and I-16 Rata fighters, the Soviets took little notice of these innovations. Stalin and his air force generals neglected to keep up with German and British, or even French fighter standards.

As the winds of war began to blow against the Russian colossus, it was too late for the Soviets to equip front line units with updated aircraft. Only when the development of new fighter types neared desperation were designers allowed to use their skill and imagination to produce fighters that could meet the Red Air Force's needs. But while the young and innovative aircraft designers, such as Mikoyan, Lavochkin and Yakovlev, were finally allowed to use their skill and imagination they could not repair in months the blunders that the Communist bureaucracy had caused over years. It was an impossible task!

Born on 19 March 1906 in Moscow, Yakovlev began with model airplanes and gliders, and after receiving his high school diploma went to work as an unskilled laborer in an aircraft factory for two years where he was promoted to mechanic and met Julian Ivanovitsh Piontkowski, an outstanding pilot who would later become Yakovlev's test pilot.

In 1926, with hands-on practical experience and help from V.V.Pyshnov, an aviation engineering student, Yakovlev designed his first powered aircraft, a two seat biplane powered by a 60 hp 'Cirrus' engine. Piontkowski took the new aircraft into the air on 12 May 1927. In June, with a long range fuel tank mounted in the passenger seat, the AIR-1 set a non-stop record between Sevastopol and Moscow. The AIR-1, redesignated to VVA-3 served with the Red Air Force during Military exercises in the Odessa District. This extraordinary design got Yakovlev admitted into the Shukovski Aviation Academy in 1927.

Graduating in 1931 Yakovlev joined Polikarpov as an engineering supervisor that provided him with the facilities and access to the materials to create his own sporting planes. However, this was frowned upon, and when the AIR-7, one of Yakovlev's designs, lost an aileron in flight Yakovlov was fired from the plant.

After much lobbying the young designer was given a derelict bed factory in 1934 where he immediately began organizing an aircraft design team. Through 1938 no less than forty aircraft types and derivatives were produced, and Yakovlov's two advanced light plane designs, the UT-2* and UT-1 were built in large numbers for the Red Air Force and aeroclubs. Pilots usually considered the flying qualities of these aircraft to be excellent, and superior to the Polikarpov Po-2 *Nähmaschine*.

The UT-2 long with the UT-1 became Yakovlev's ultimate pre-war trainer developments. The UT-2, a two seat monoplane was powered by a 5 cylinder M-11 engine, first flew on 11 July 1935 with Julian Piontkowski at the controls who was very impressed by its performance, "The type is ideally suited

as a trainer for our young pilots, a real pilot plane." Others shared these impressions and 7,243 were built between 1936 and 1946. Many 'green' pilots got their first taste of flying in the type.

The single seat UT-1 monoplane, an advanced trainer, flew its maiden flight during the summer of 1936. Stressed for aerobatics, some of the 1,241 built were armed with a pair of 7.62mm ShKAS machine guns and saw limited action with the 46. Regiment under Commander Michailov as part of the Black Sea Fleet during 1942.

During a conversation with Aleksandr Yakovlev in late 1938, Joseph Stalin discussed the possibility of building a fighter plane around the Klimov-M-105 engine with a centrally mounted 20mm *Shpital'ny Vladimir* (ShVAK) cannon. The Red Air Force urgently needed a general purpose tactical fighter having its best combat capability between 10,000 and 13,100 feet. Yakovlev, who had never built a fighter plane before, promised to furnish a prototype within a year. The young designer took the challenge to meet the Red Air Force's needs. Top priority was given to Yakovlov's bureau on the outskirts of Moscow, and he and his staff worked almost day and night.

Under the designation I-26 the concept of the new fighter was far from the 'advanced state of the art' designs being developed in other European countries, with many of the well proven components of the UT-1 trainer being adopted for the prototype. Influence also came from the French Morane-Saulnier MS 406 fighter which was powered by the Hispano-Suiza HS 12Y, the same type of engine as that was selected for the Yakovlov design. Vladimir Klimov having built a Soviet derivative of the Hispano-Suiza HS 12Y engine which had been originally developed in Geneva, Switzerland by Marc Birkigt. The Russian copy of the HS 12Y, the Klimov M-105P was a 12-cylinder liquid cooled 1,100 hp engine with a two stage, two speed mechanically controlled blower driving a VISH-61 three bladed metal propeller with hydraulic pitch control and a constant speed governor. Fuel was carried in four tanks between the spars.

The stressed skin construction of the Spitfire and Bf 109 was studied, but since the Soviets were woefully short of light metal alloys Yakovlov adhered to the traditional mixed welded steel tube and

(Below) An evolutionary forerunner of the Yakovlev Fighter was the Yakovlev AIR 14, powered by a 150 hp M-11E engine, is seen during the Moscow-Sebastopol-Moscow competition in 1937. Becoming the UT-1, a basic trainer in the Soviet Air Force, it is armed with two ShKAS machine guns and four RS-82 rockets under the wings. It saw combat with 46. Regiment as part of the Black Sea Fleet during 1942. (Heinz-Joachim Nowarra)



(Above) The father of the wartime Yak fighters, Aleksandr Sergeevich Yakovlev, saw his first creation fly in May of 1927. The skillful young designer provided the Soviet Air Force with its first modern fighter.



* 'UT' stood for trainer and the '2' stood for the number of seats.

Yak 1 (I-26)

The first pre-production series of I-26 fighters left GAZ 115 at Moscow in November of 1940 and were assigned to a special evaluation unit to prove the type under field conditions. The pre-production I-26 was armed with a single 20mm *Shpital'ny-Vladimirov (ShVAK)* cannon with 120 rounds mounted between the engine cylinder banks firing through the propeller hub, and a pair of 7.62mm *Shpital'ny Komaritsky (ShKAS)* machine guns with 375 rounds in the upper nose decking. The ShKAS machine guns had been developed by the team of Shpital'ny and Komaritsky in 1930 with a muzzle velocity of 2,705 ft/sec and an 1,800 rpm rate of fire. The 20mm Cannon mounted in the Klimov engine received the designation M-105 P (*P-Pushka* - cannon). The weapon weighed 99.23lbs with an 800 rpm rate of fire. The four fuel tanks in the wings were provided with a measure of protection from small caliber bullets by a sheeting of four layers of tough cord fabric impregnated with phenol-formaldehyde resin, and inert combustion gases could be fed into the tanks as fire suppressants. Optional armament consisted of six RS-82 unguided missiles or FAB 50 bombs mounted on underwing racks. The only protection afforded the pilot was a small 8mm thick armor plate to guard the head and shoulders. The canopy had no provision for emergency jettisoning and could only be locked in a fully open or fully closed position. The first Yakovlev fighters with a jettisonable canopy would not reach front-line units until early 1943, prior to this pilots often flew with the canopy open allowing a quicker and safer bail out. The spartan cockpit of the Yak 1 lacked equipment that by British or German standards was essential, but included the following instruments: PBP-1 gunsight, a single channel RSI-3 radio, a KI-10 compass and an astronomical AWR clock. During the early stages of the Great Patriotic War Russian fighters seldom carried radio equipment.

Evaluation of the new fighter by the Air Force under combat conditions quickly turned into a disaster for the young designer, who believed that the teething problems had been eliminated. Complaints from the evaluation pilots came in a seemingly endless stream: insufficient rate of armament fire (the Spanish Civil War had found that two 7.62mm guns were ineffective), engine performance and rate of climb were far from sufficient, the pneumatically operated flaps and undercarriage proved to be unreliable, the excessive vibration of the Klimov M-105 P engine produced fuel and oil connection failures, in some cases the fighter even caught fire in the air resulting in the loss of the aircraft ... and on and on.

Test pilots lost all confidence in the new design, but the hard learned lessons of the Russo-Finnish war of the previous year and the pressure to modernize the Red Air Force, all but forced Yakovlev's Design Bureau to put the new fighter into large scale production well before the I-26 had been fully tested. However, since the Red Air Force was in such desperate need of modern fighters, the risk of putting a virtually untested aircraft into production was considered warranted if it offered a reasonable possibility of reducing the time of getting a modern fighter to front line fighter regiments. By December of 1940 sixty-four aircraft had been delivered, with Yakovlev succeeding in improving his fighter without a serious slow down in production. Unfortunately, these changes resulted in an increase in gross weight to 6,217lb making the aircraft somewhat underpowered, with maximum speed being reduced to 335 mph and range to 435 miles. The new fighter now failed to meet Red Air Force specifications, but most of its most serious shortcomings had been eliminated and the I-26 was drafted into operational duty with the Soviet Air Force. Along with two other modern fighters, the LaGG 1 and MiG 1, the Red Air Force had begun to get its modern fighters.

When German armed forces smashed into Russia on 22 June 1941, 2,829 new Types, including 399 I-26s had been delivered, however, only a single fighter unit had been equipped with the type, 11. Fighter Regiment at Kubinka Airfield in the critical Western Military District. The German attack took the Soviet Air Force by almost total surprise, catching many units exchanging obsolete aircraft for newer more modern aircraft and often in the middle of training, with the fatal result that both pilots and ground crew were seldom adequately trained. Many aircraft were shot up while sitting lined up on the ground. The loss of Russian aircraft during the first few weeks of the war was staggering, thousands of aircraft were lost on the ground. However, while the losses of aircraft were huge few trained pilots were lost, and many of these pilots evaded capture and would live to fight another day.



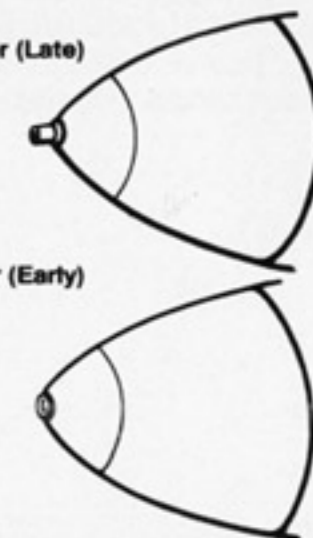
(Above) A very early I-26 (Yak 1) built at *Zavod (Factory 115)* near Moscow. Pre-war production fighters carried an armament of a single 20mm ShVAK cannon and two 7.62mm ShKAS machine guns mounted in the upper deck of the nose, but this rather inadequate firepower was rather unpopular with front line pilots. Most early I-26s had no radio equipment. (Hannu Valtonen)

Undercarriage/Skis



Standard Spinner (Late)

Variant Spinner (Early)

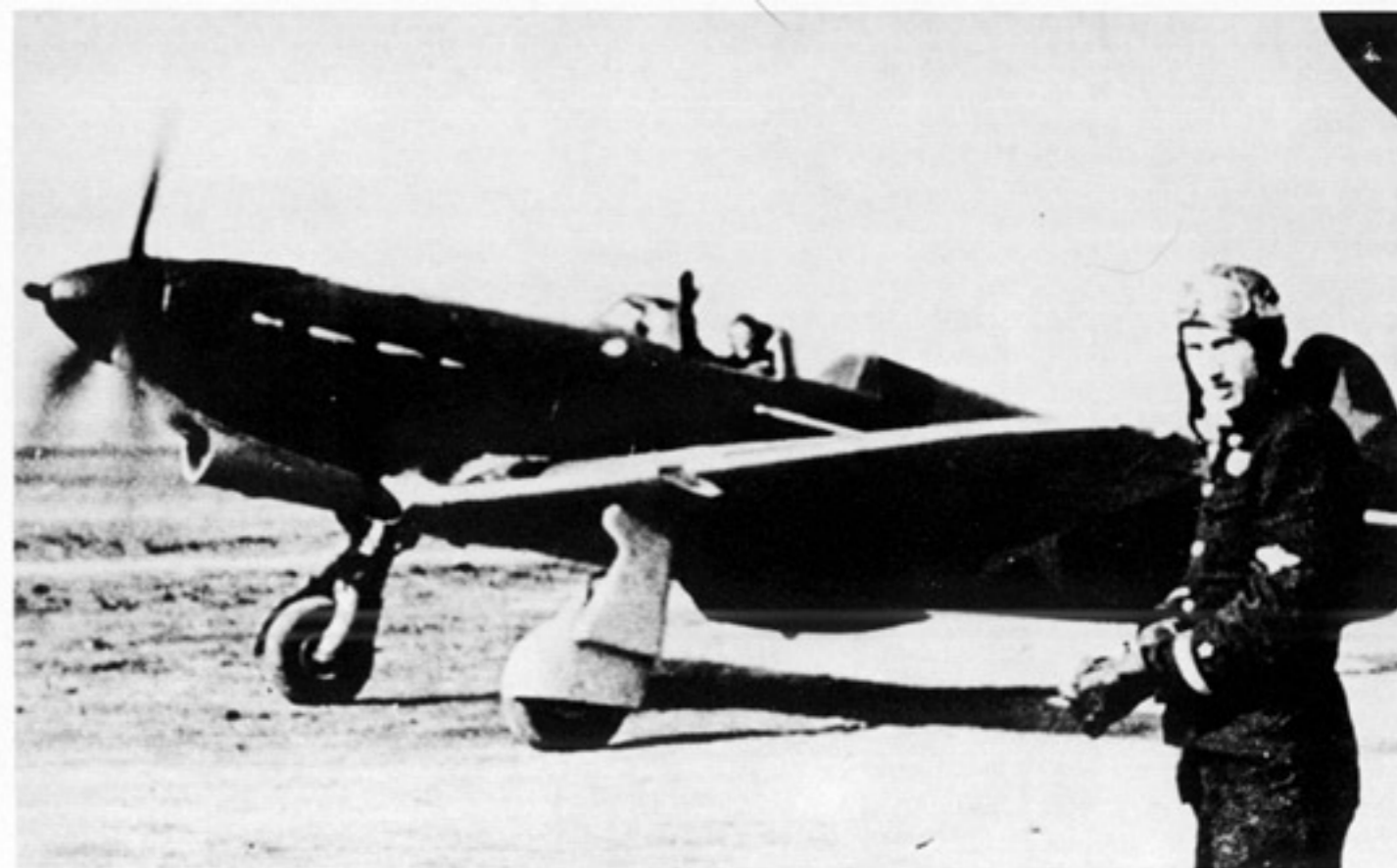


(Below) During the first days of the war hundreds of Red Air Force fighters were shot up on the ground while lined up in neat closely parked rows. However Soviet personnel quickly learned to disperse their aircraft under heavy camouflage cover.



Some Yak 1 1st Series (I-26) aircraft were retro-fitted with an improved landing light, a number of aircraft received a slightly different spinner, and some cockpit equipment was changed. The Yak 1 also received a number of field modification. Due to the heavy snows of the Russian winter ground crews often removed the mainwheel door fairing plate. Pilots often complained of insufficient rear vision in combat. Major F.I.Shinkarenkov had the rear fuselage decking cut down on his Yak 1 and replaced by a transparent aft section. Shinkarenkov's fighter 'unofficially' received the designation Yak 1B. Other units quickly adopted this modification.

Following a recommendation by Joseph Stalin, the designation of the Yakovlev fighter was changed from I-26 to Yak 1 in December of 1941.



(Right) An I-26 returns from a sortie during late summer of 1941. As Hitler's *Wehrmacht* (Army) knifed into Russia on 22 June, only 399 Yak 1s had been built. The canopy and under carriage cover plates are typical of the initial production batch. This Green and Dark Green over Light Blue fighter has received a landing light in a field modification. (Hannu Valtonen)

(Below) The top female Soviet ace Liliya Litvak prepares for another sortie from a muddy airstrip in the Stalingrad area. The twenty-one year old girl later became a flight commander with the predominantly male 73. Fighter Regiment and scored twelve victories before she was killed in action over Orel on 1 September 1943. The Green and Dark Green camouflaged Yak 1 carried RSI-3 radio equipment and early styled National insignias surrounded by a thin Black stripe. (USAF)



wooden construction. This type of construction allowed for easy field maintenance and repair with minimally trained personnel.

The fuselage was a rectangular welded chromemolybdenum steel tube structure with diagonal Warren and wire bracing with the forward portion covered with detachable dural panels, while aft of the cockpit the fuselage was reinforced with plywood formers and light pine lathes and covered with fabric.

The wing was one piece construction with a Clark UN section and comprised two wooden box spars with flanges of vertically-laminated veneer strips, closely-spaced ribs with plywood skinning and an outer covering of varnished fabric. The fixed tail surfaces were of wooden construction with the moveable control surfaces of dural frame with fabric covering. Flaps, undercarriage and wheel brakes were pneumatically operated.

Provision was made for armament of a single 20MM ShVAK cannon mounted between the cylinder banks with 120 rounds, and a pair of 7.62MM ShKAS machine guns mounted in the upper decking of the fuselage with 375 rounds for each gun.

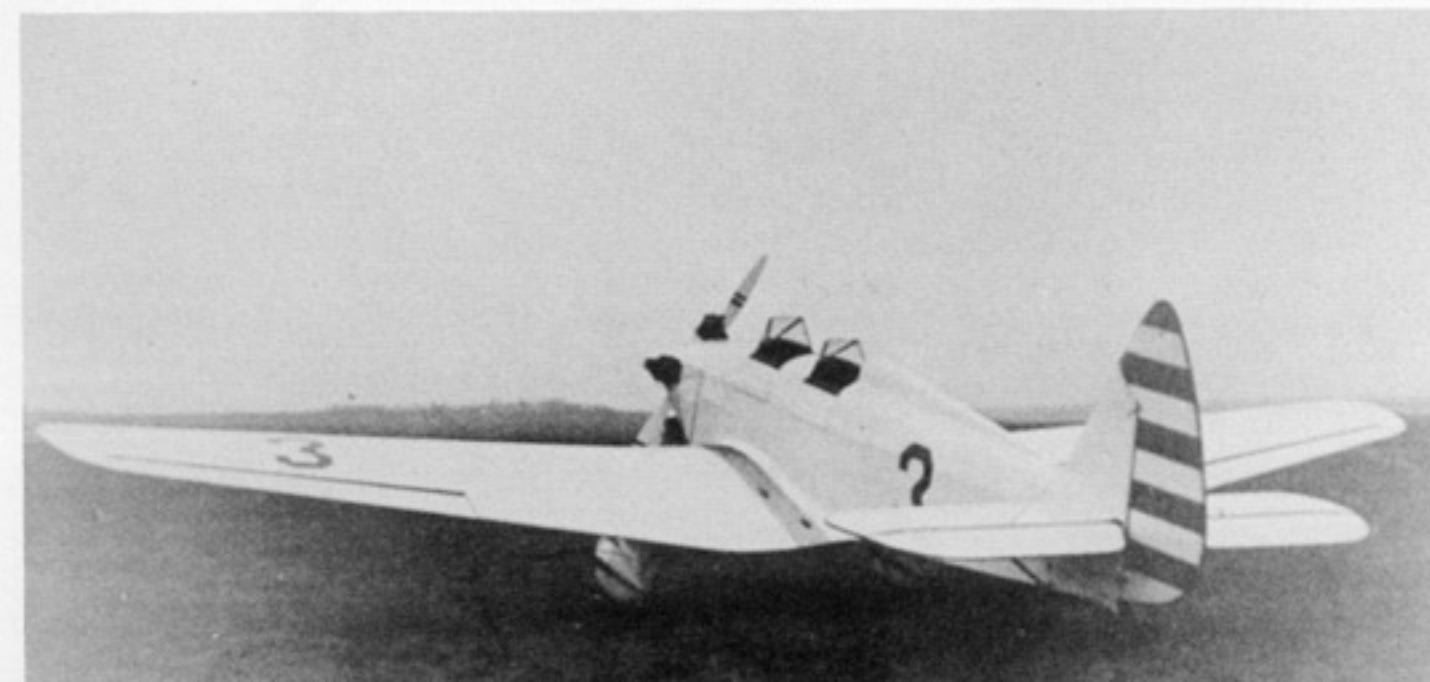
No armored glass was provided with the only pilot protection being an 8MM armor plate protecting the head and shoulders of the pilot. The aft sliding canopy could be locked in either the open or closed position with no provision being made to jettison it during an emergency.

While under construction the experimental shop people christened the sleek new fighter *Krasavec* (Beautiful). The I-26 prototype was rolled out of the experimental shop on 13 January of 1940, with Julian I. Piontkovski carrying out taxiing trials. Without further delay Piontkovski took off in the I-26 and climbed to 1,600 ft, made two circuits of the field with the undercarriage still down and landed. Flight characteristics were found to be very good for an aircraft this early in its development.

THE I-26 PROTOTYPES

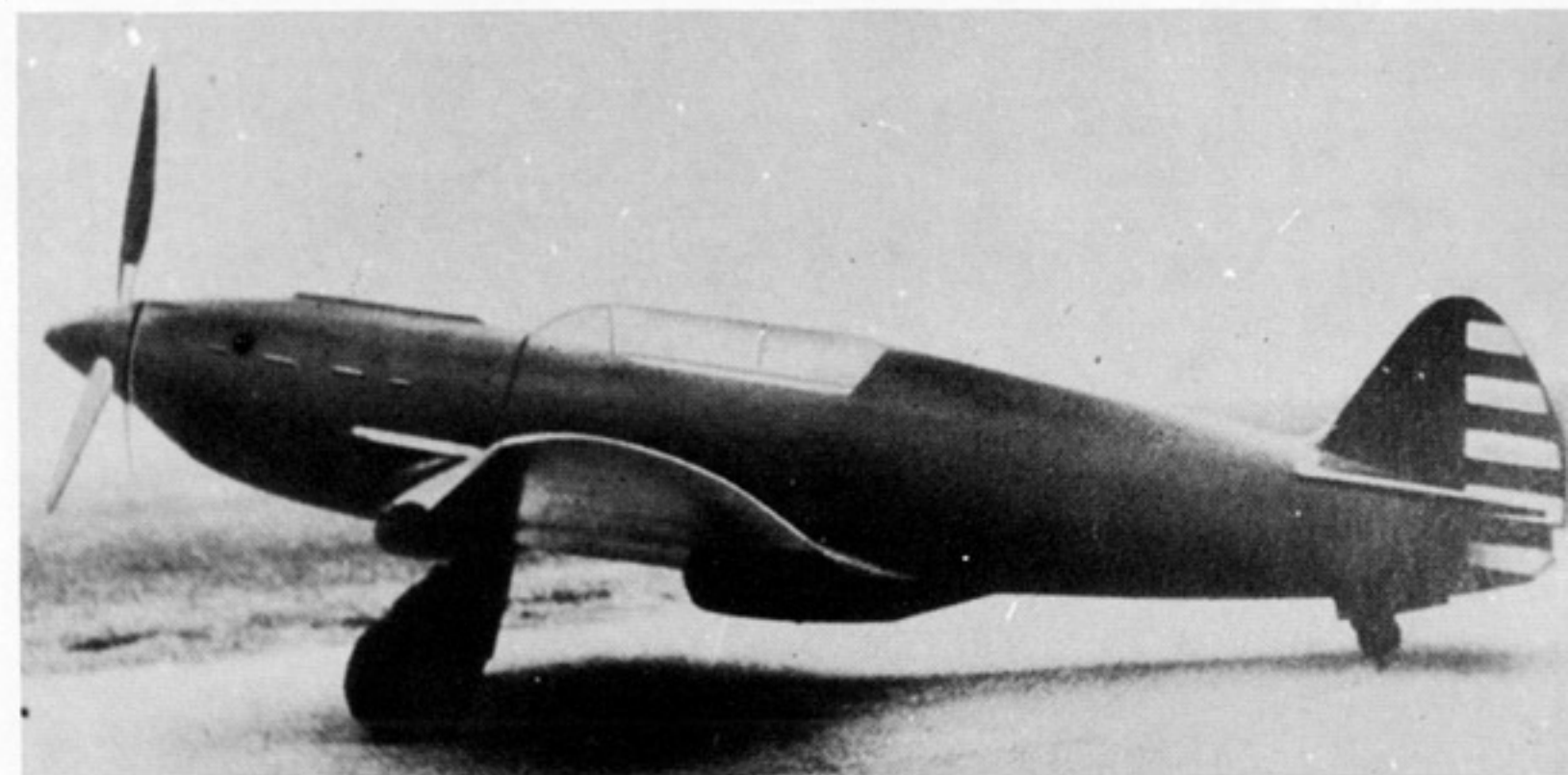
Piontkovski and other test pilots undertook almost daily test trials with the sole prototype carrying out the Factory Test Program, which had to be completed before the new aircraft could be passed to the Soviet Air Force Research Institute at Moscow for State Acceptance Trials. Various teething troubles, such as engine vibration and overheating under certain flight conditions hardly slowed down the Factory Test Program. Reports by the test pilots were so encouraging that the decision was made to manufacture the new plane without modification, but only the planned changes. However, the project sustained a serious setback on 27 April 1940 when Piontkovski pushed the prototype well beyond its limits, crashing the new plane. The loss of the plane did not overly slow the program

(Below Left) Yakovlev's two seat primary trainer, the UT-2 flew for the first time on 11 July 1935. 7,243 planes were built into late World War II. It served alongside the Polikarpov Po-2 in training Soviet pilots. (Dr. Volker Koos)



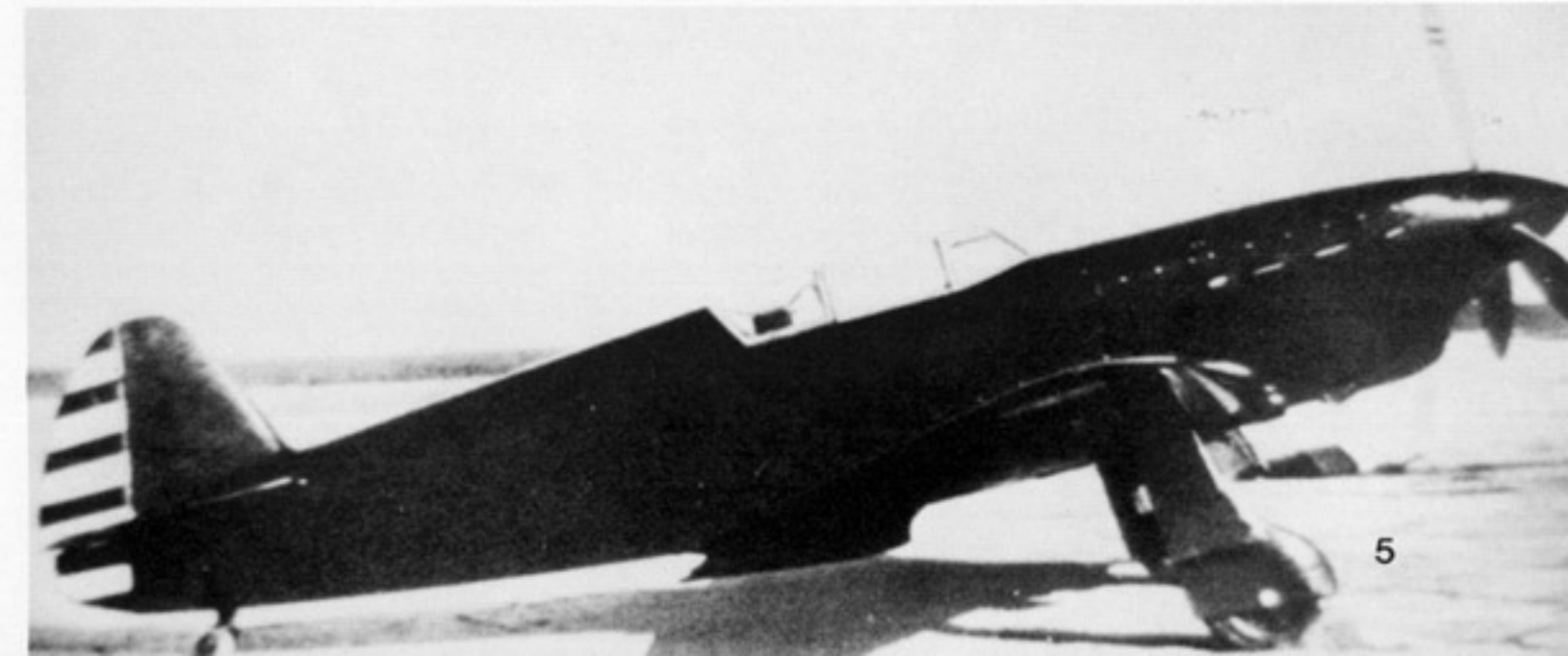
down, but the death of the test pilot weighed heavily on the design team. However, before the crash of the prototype it had been decided to manufacture the new fighter in quantity.

The second prototype, which had rolled out before the crash of the first prototype, finished the remainder of the test envelope. The second prototype featured an enlarged oil-cooler intake under the extreme nose, a new mainwheel leg fairing plates, a redesigned tail and a fixed tailwheel without tailwheel doors, and several internal refinements. State Acceptance trials at Moscow began on 10 June 1940. The Second Prototype was clocked at 364 mph at 12,467 ft, and the pilots were particularly impressed by the aircraft's aerobatic and spinning characteristics, but complained of insufficient level speed and climb rate, due the underpowered Klimov M-105 engine. Even before State Acceptance was completed additional prototypes were completed and a preproduction batch of aircraft were leaving GAZ 115 (State Aircraft Factory 115). This was deemed necessary to prevent a loss of time. The new type was introduced to the public when five I-26s carried out a fly-by during the annual October Revolution Celebrations in Red Square on 7 November 1940. The Red Air Force kept the official designation of the new fighter a secret.



(Above) The initial Yakovlev fighter prototype, under the designation I-26 made its maiden flight on 13 January 1940 with Julian I. Piontkovski at the controls. Painted Bright Red the airplane lacked the front oil cooler, radio, and armament. (Tomasz Kowalski)

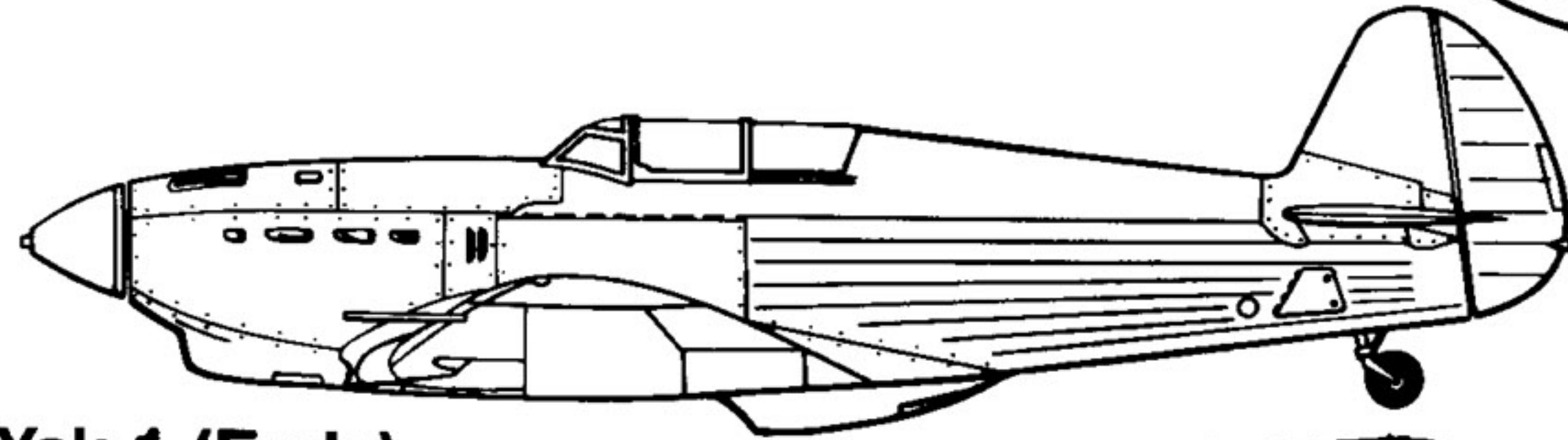
(Below Right) The second I-26 prototype flew for the first time in late April of 1940 and featured the addition of a front oil cooler, deletion of tailwheel doors, and a revised tail. In June of 1940, after the factory test program had been fulfilled, this prototype was transferred to the Scientific and Research Institute of the Soviet Air Force at Moscow. (Karl Hänggi)



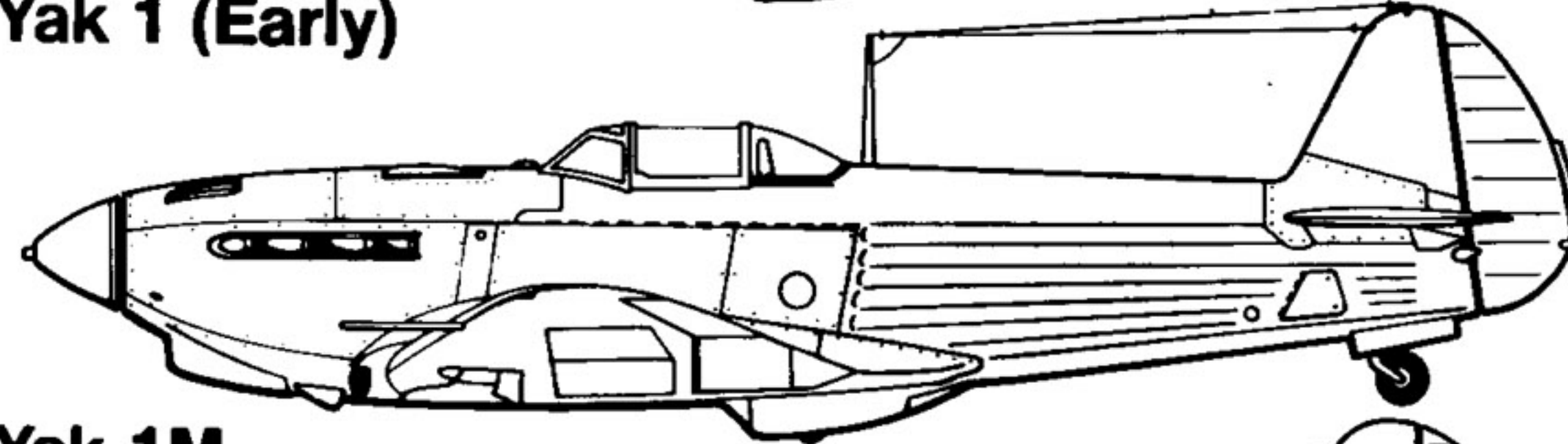
'Light Fighters'

I-26 Prototype (First)

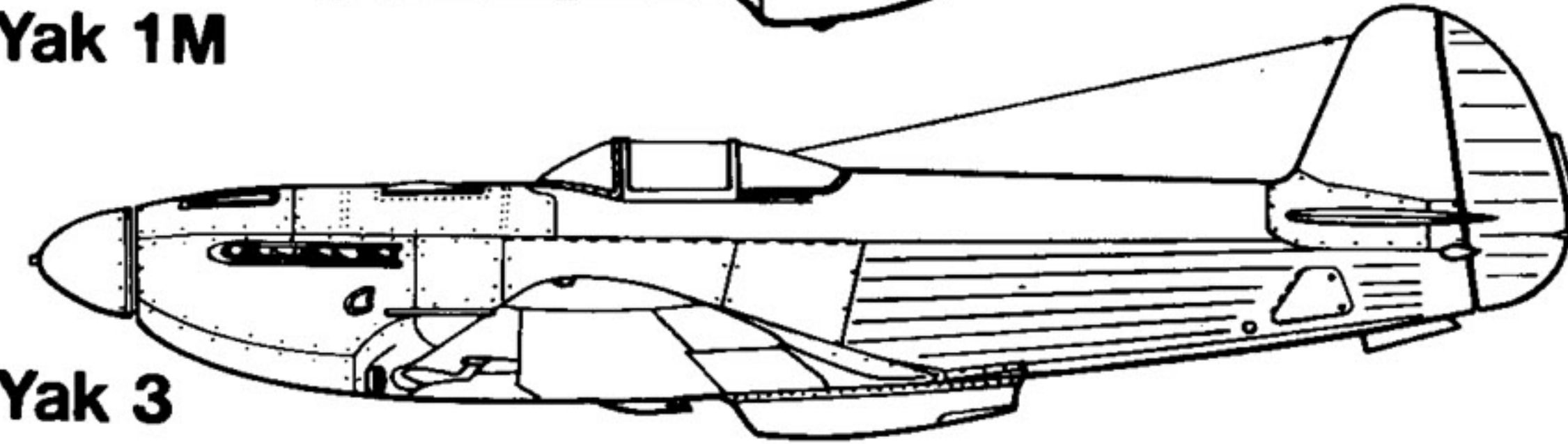
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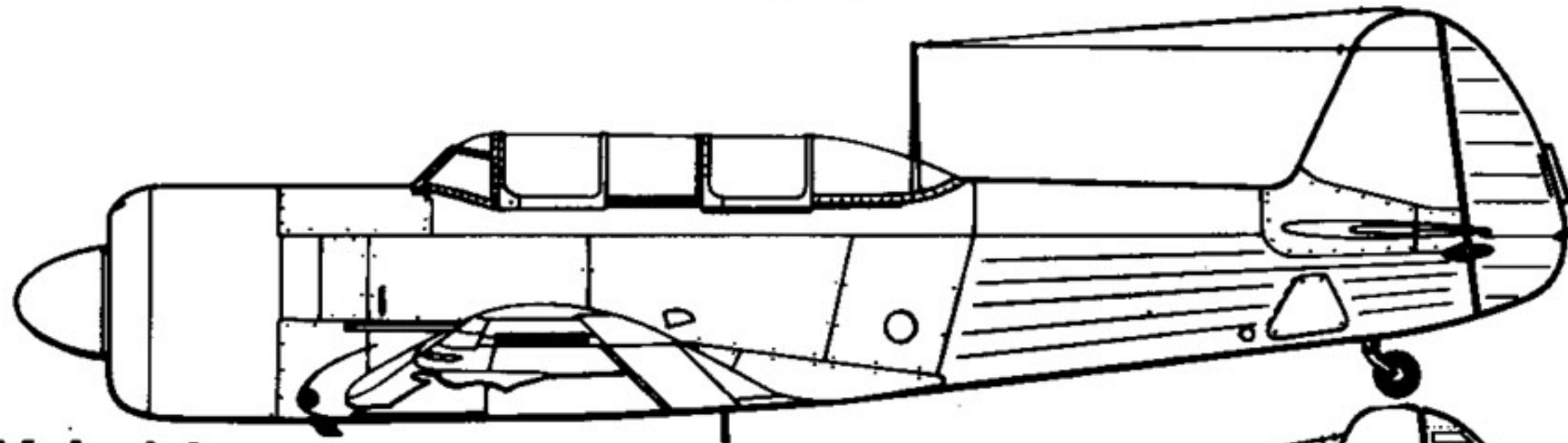
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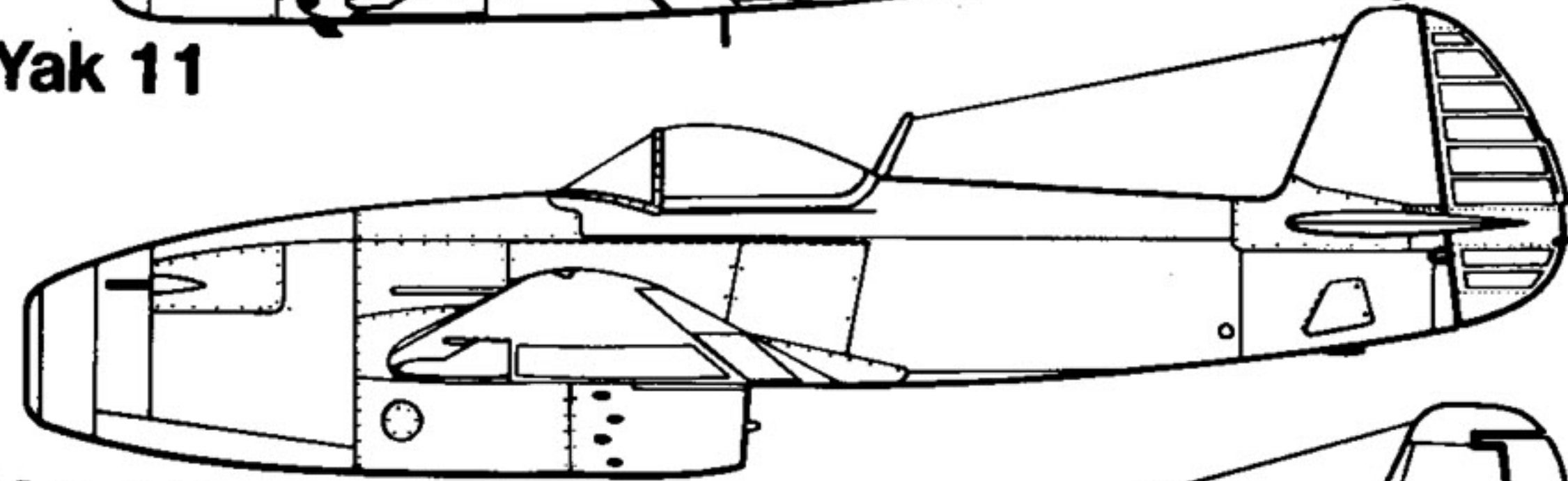
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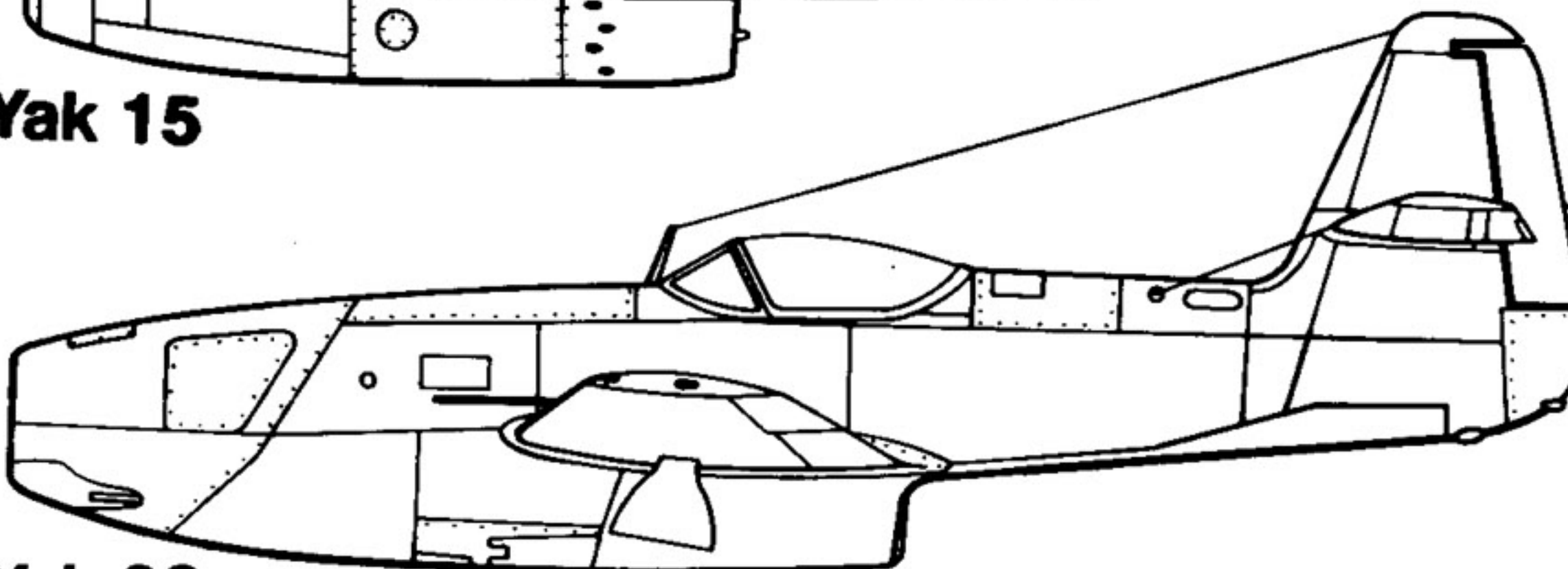
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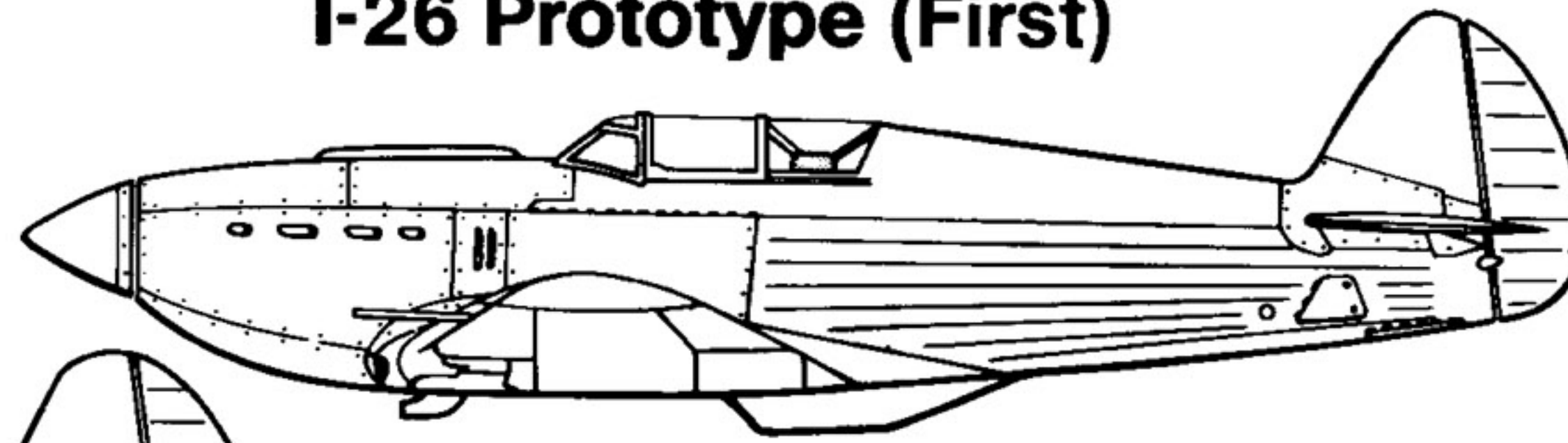
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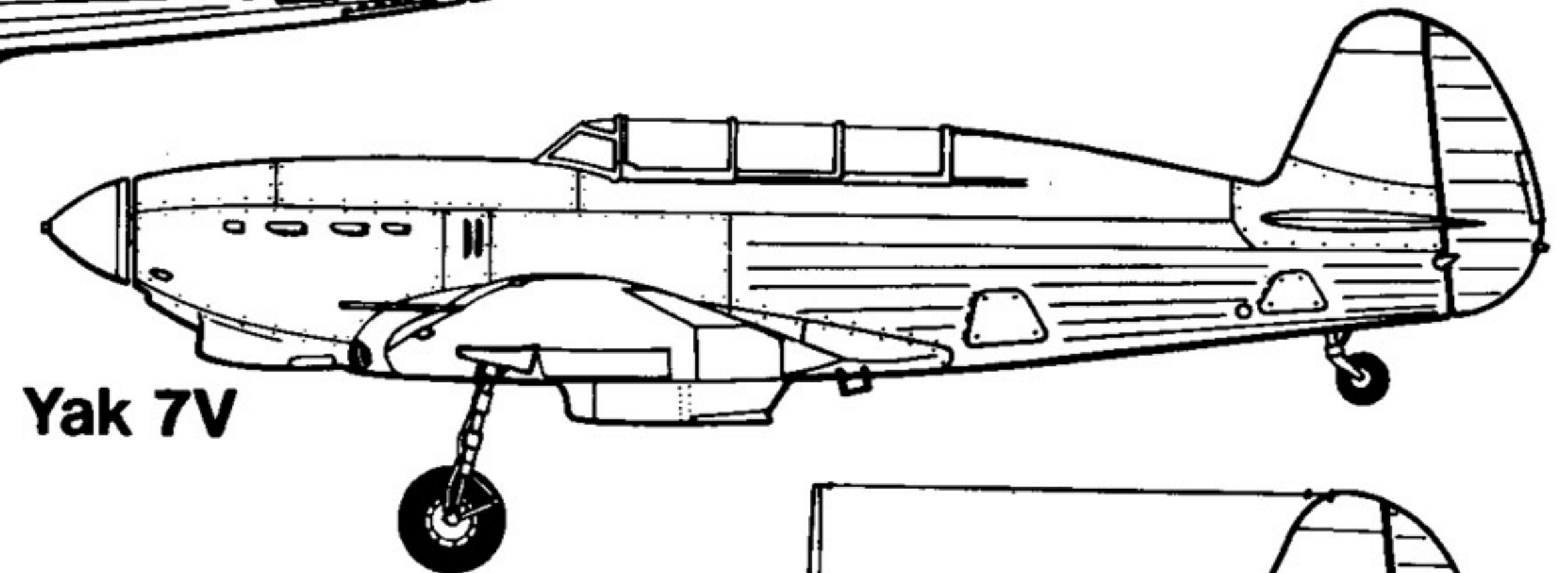
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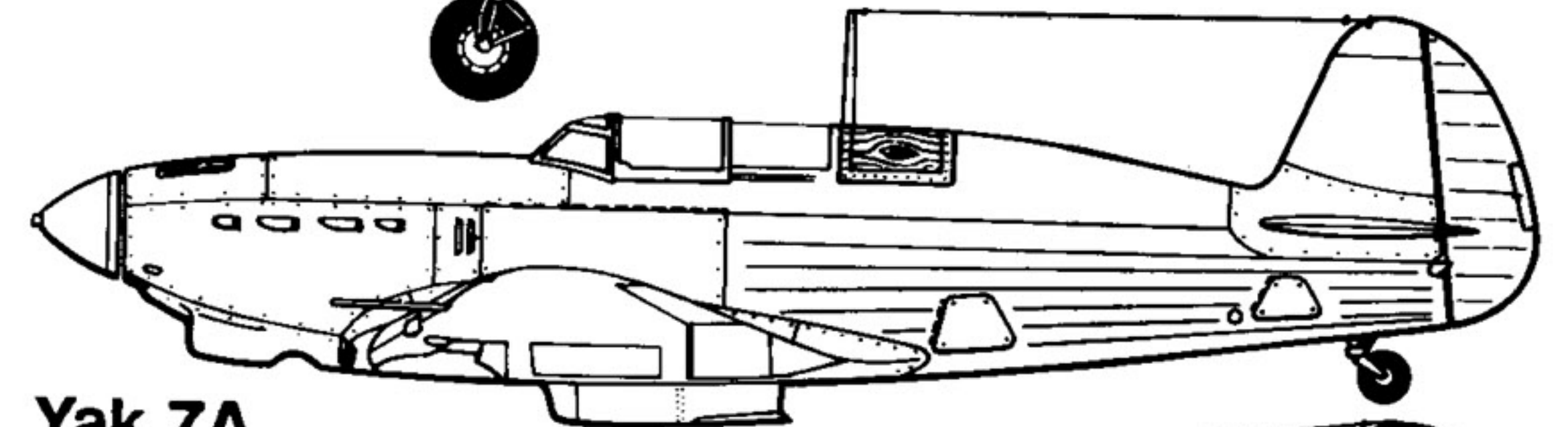
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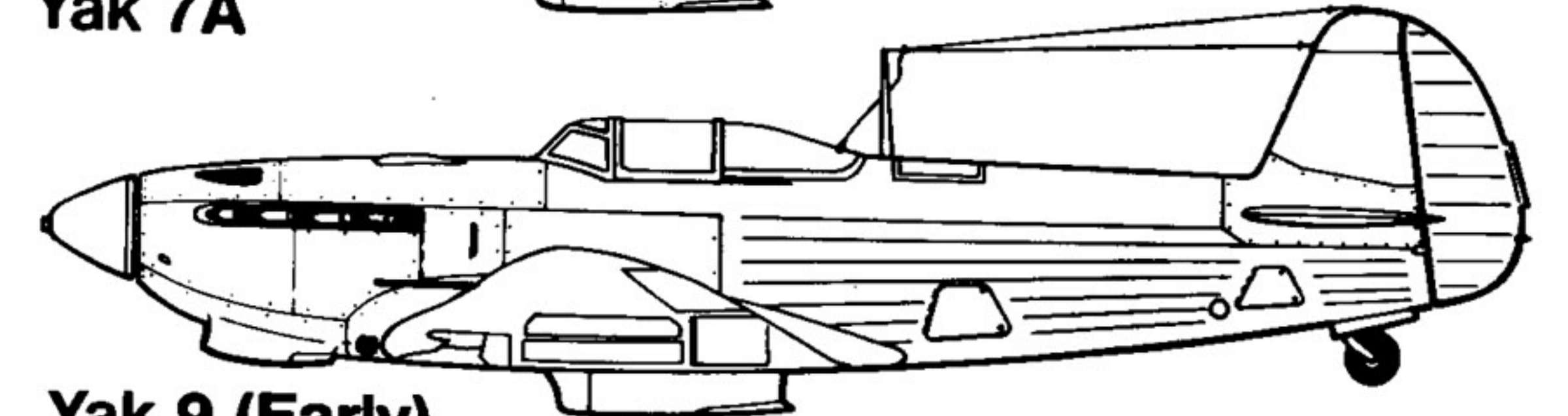
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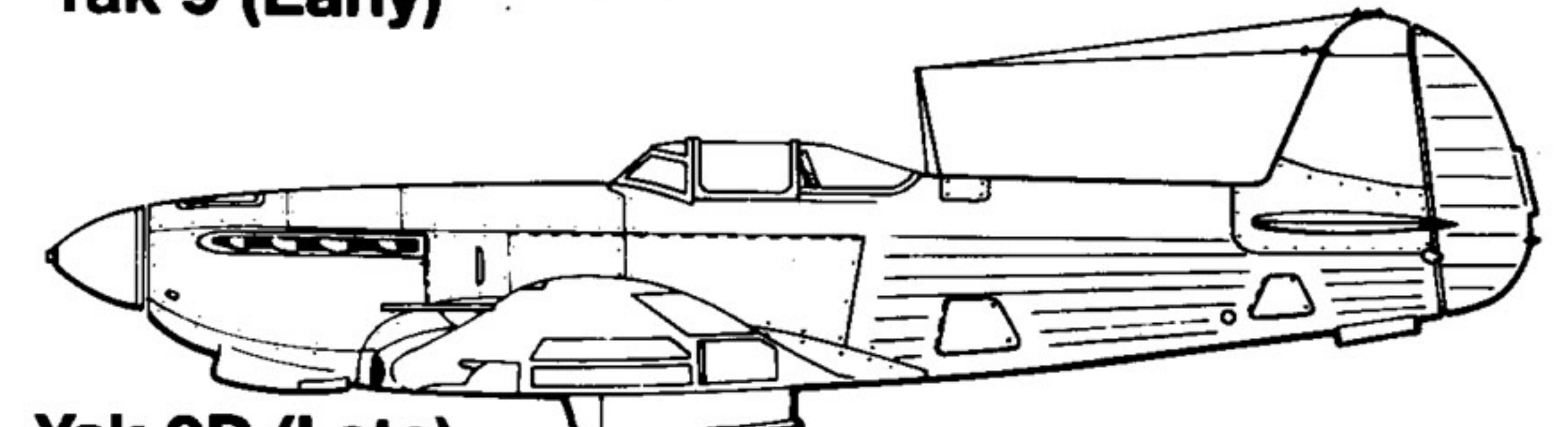
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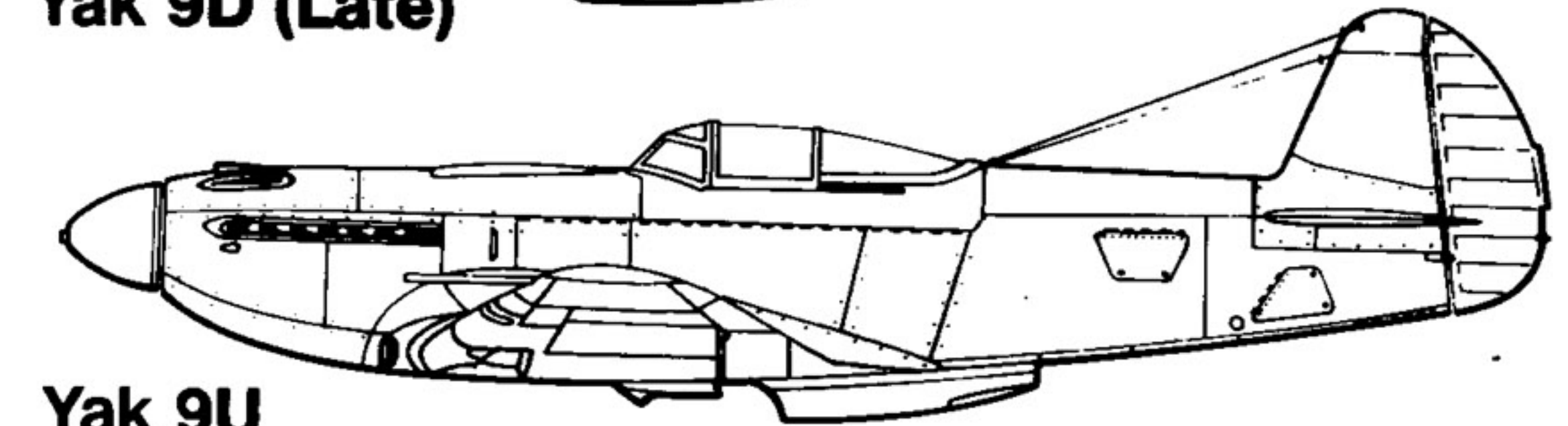
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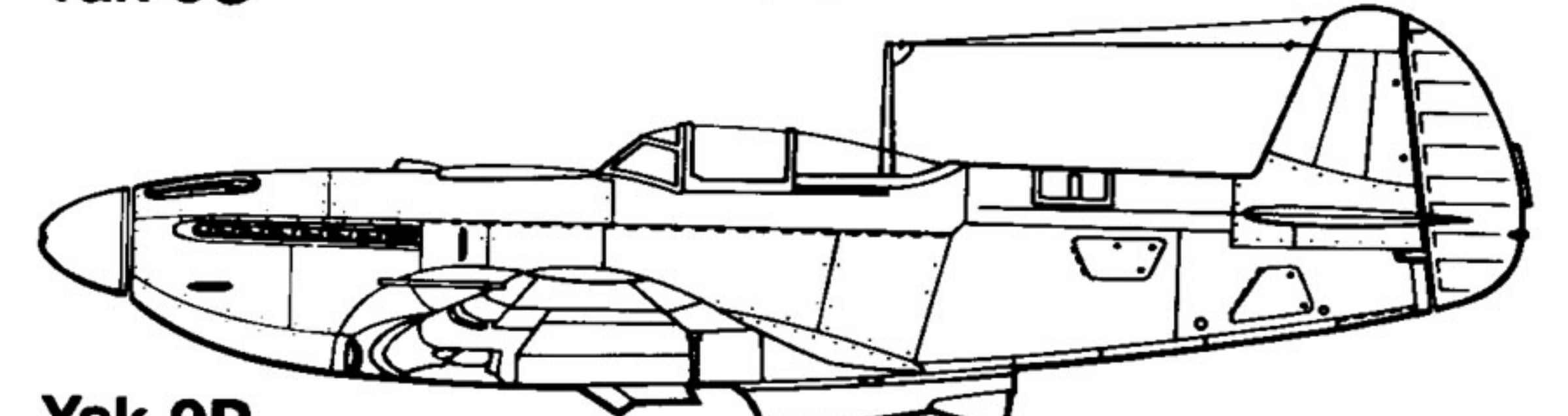
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Yak 9U



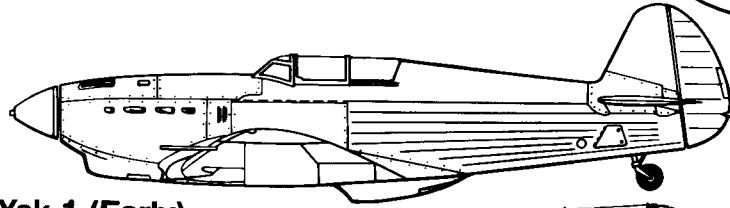
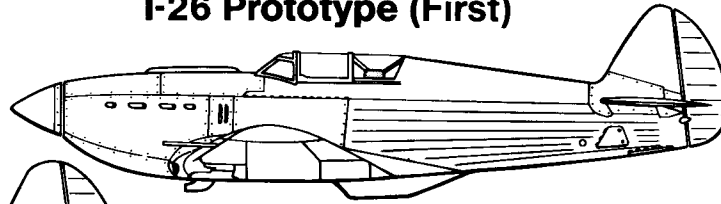
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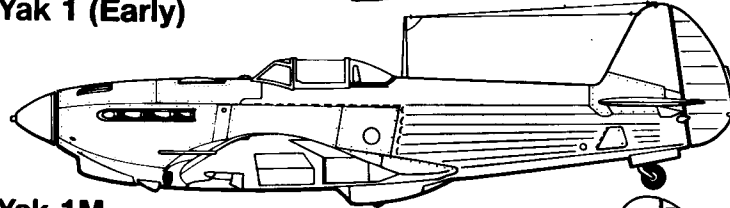
'Light Fighters'

I-26 Prototype (First)

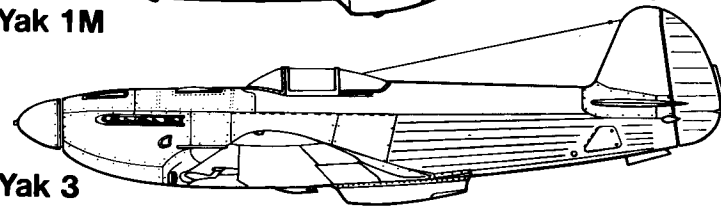
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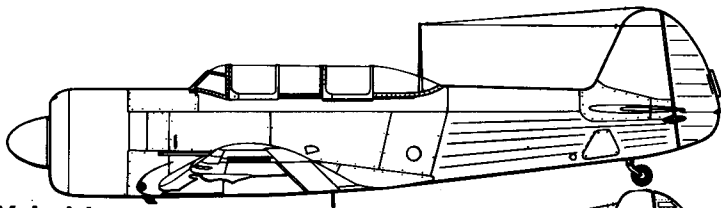
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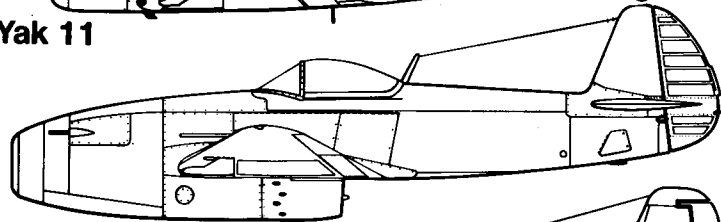
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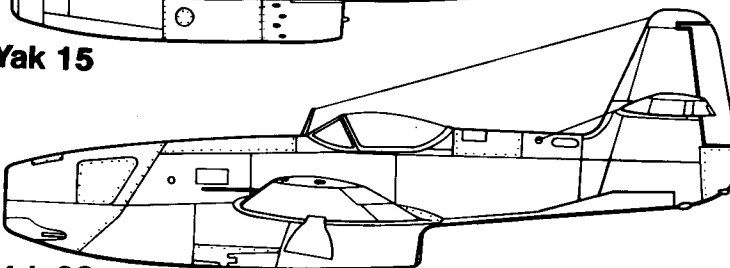
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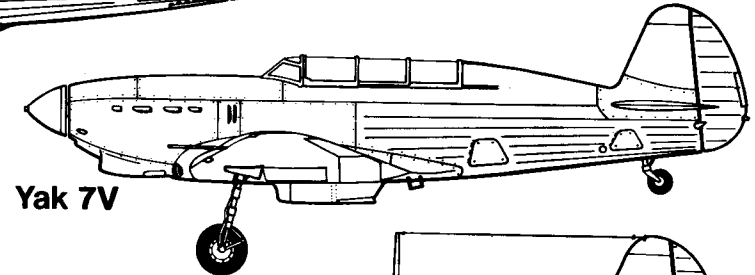
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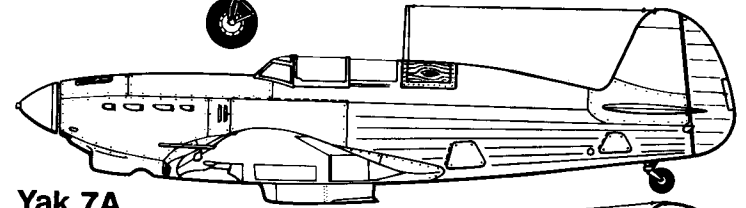
Yak 15



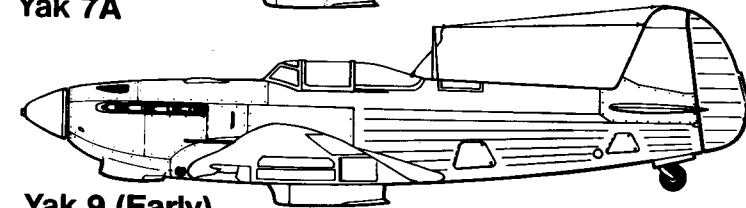
Yak 23



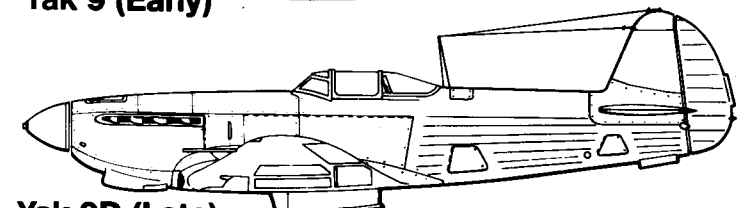
Yak 7V



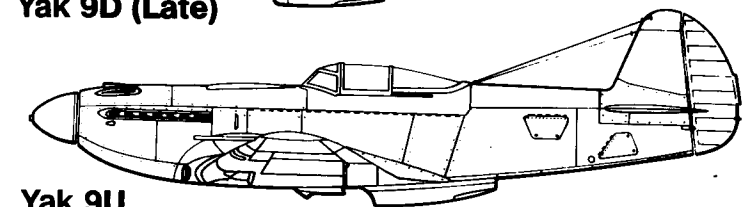
Yak 7A



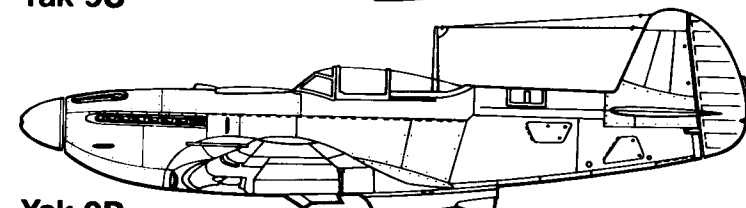
Yak 9 (Early)



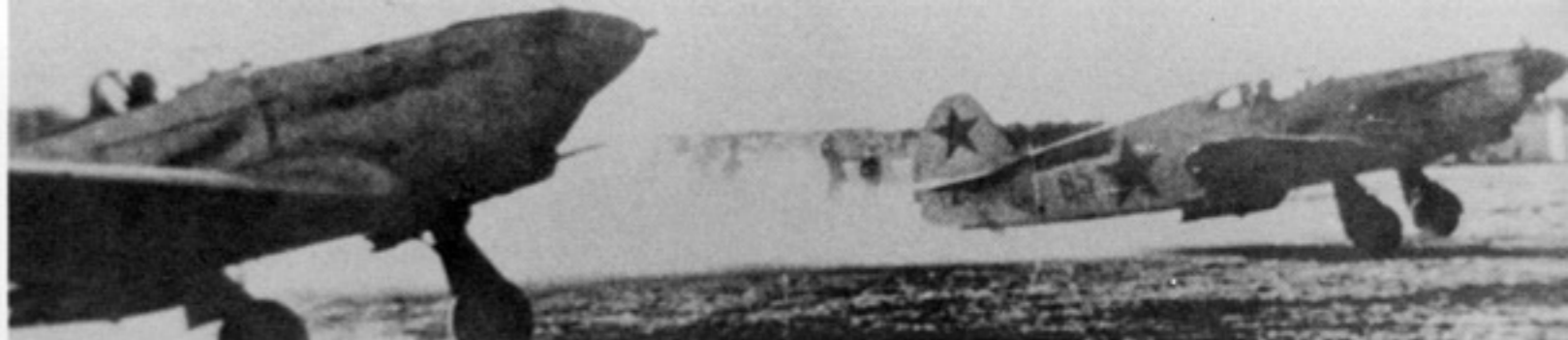
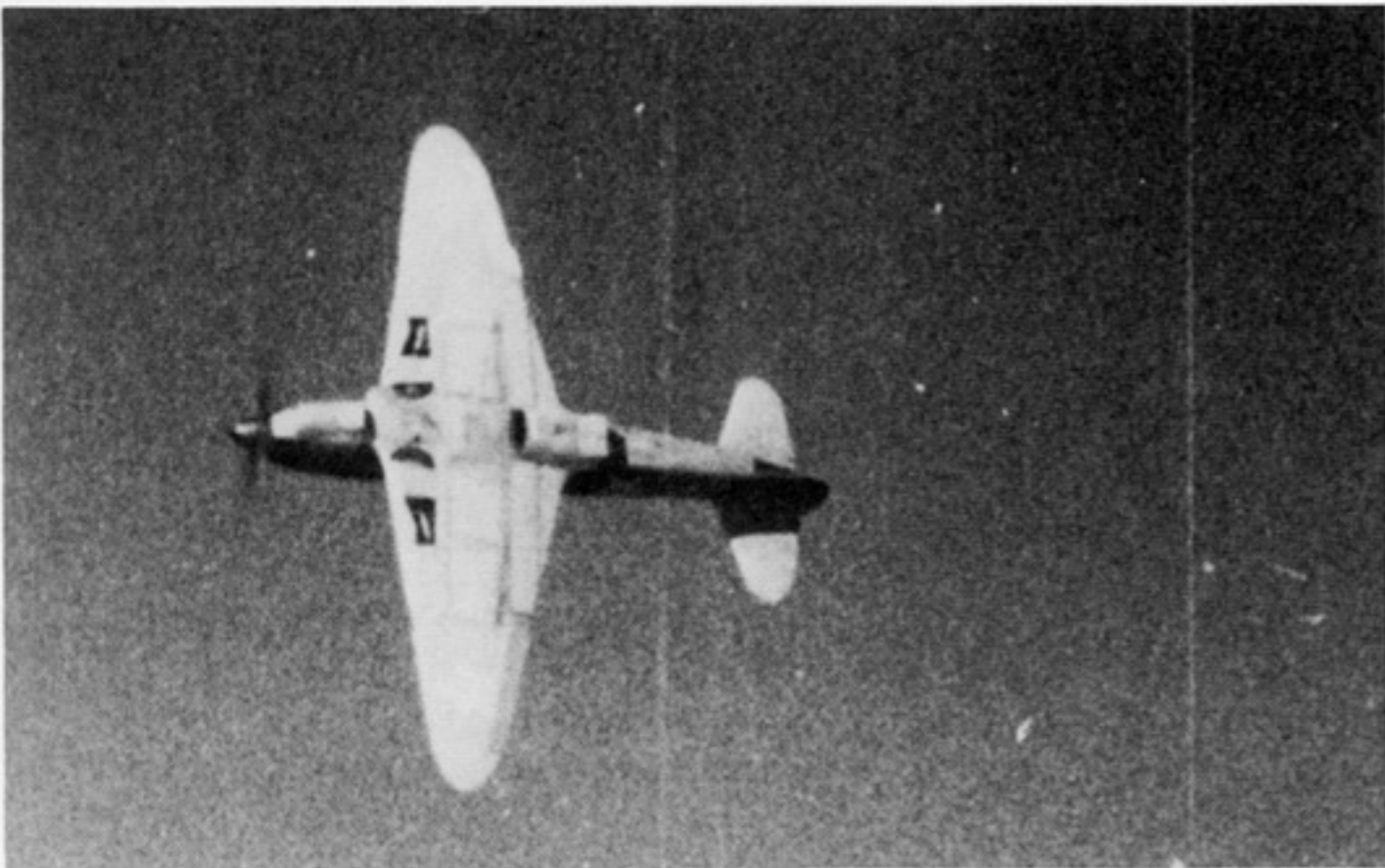
Yak 9D (Late)



Yak 9U

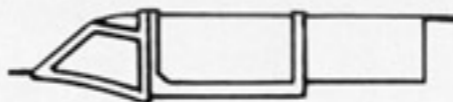


Yak 9P

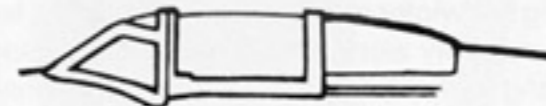


(Above) A pair of field modified Yak 1s of Major Shinkarenkovs fighter regiment with the cut down rear deck and transparent aft canopy.

Yak 1 Standard

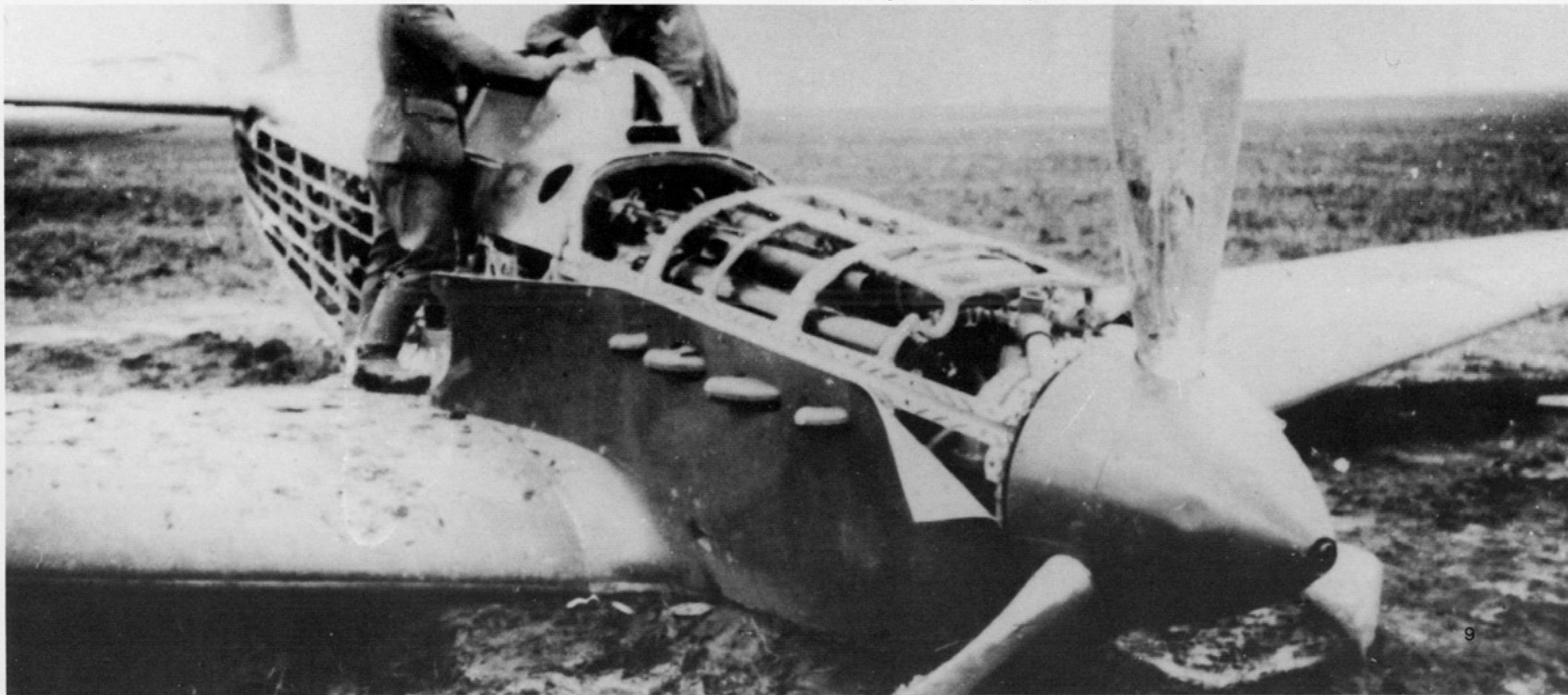


Shinkarenkov Modification



(Left) A Yak 1 during a low level pass. The under carriage upper leg fairing plates have been removed. The fighter is painted in the standard camouflage of Light Blue undersurfaces. (Von Hardesty)

(Below) An unfortunate Red Air Force pilot belly landed this battle damaged Yak 1, Series 1 (I-26) behind the enemy lines during the autumn of 1941 as heavy rainfalls converted Russia into a sea of mud. Much of the skinning has been stripped away by German souvenir hunters. It carries the early variant spinner (Dr Volker Koos)



Yak 1, Series 2

Only three days after the beginning of the Great Patriotic War, a refined I-26 had been accepted by American born Stephan Suprun at the Air Force Scientific and Research Institute. This improved variant was the result of a weight reduction program to meet Red Air Force specifications and pilot's requirements. The 2 Series fighter featured a more powerful Kilmov-M-105 PA powerplant of 1,100hp, a new more pointed aft cockpit glazing, an improved landing gear, the addition of a landing light, and a single 12.7mm Berezin UB machine gun with 220 rounds replaced the two 7.62mm machine guns.

The enthusiasm of front line pilots for the Shinkarenkov rear cockpit modification resulted in A.S. Yakovlev converting ten Yak 1, 2nd Series in a similar fashion during the summer of 1942.

Some Yak 1s of the Northern Fleet Air Force, Naval Aviation were equipped with ski undercarriages during the winter months, however, only a few modern types had been assigned to Soviet Naval Aviation, and they were almost exclusively used for patrol duties.

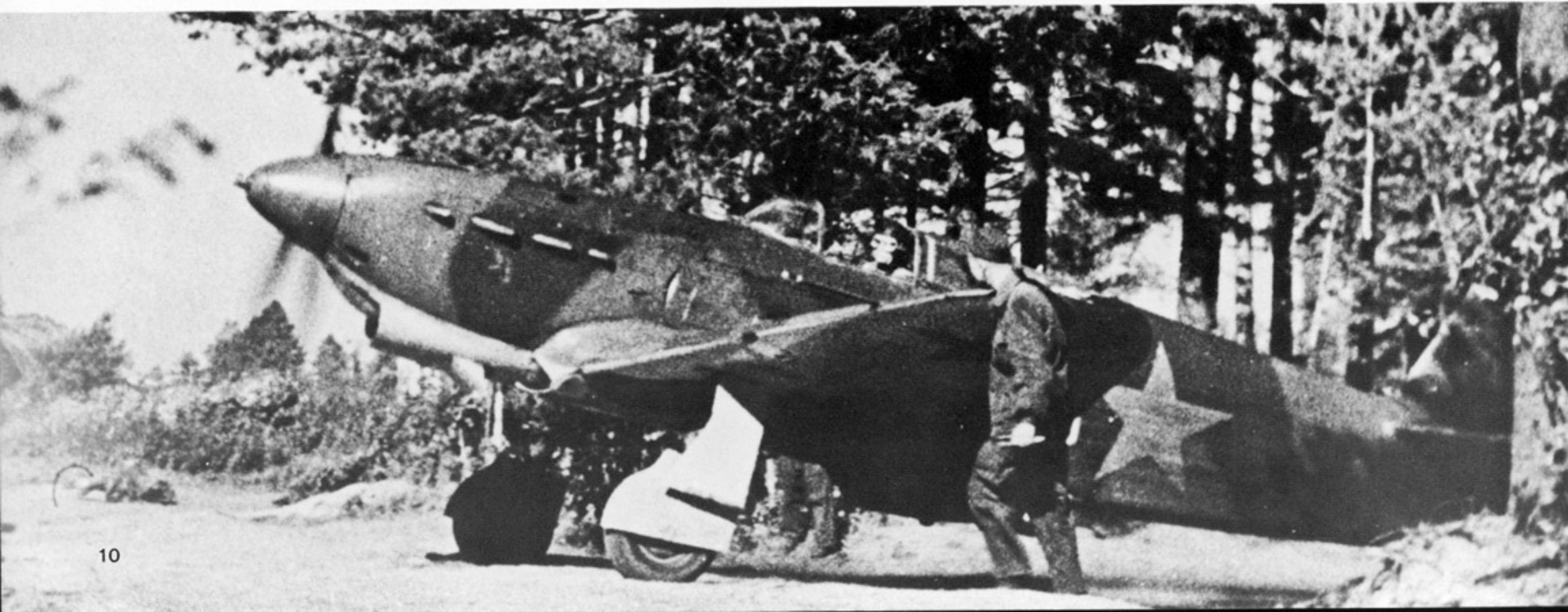
During early 1942, the Yak 1 was the most successful of the new generation fighters, with nearly a third of all frontline fighter regiments flying it. Most pilots considered the take off and landing qualities of the Yak to be superior to both the LaGG 3 or MiG 3, and Soviet test pilots who flew captured Messerschmitt Bf 109s and Focke Wulf Fw 190s found the handling qualities of the Yak to be superior to these as well.

During the early days of the war, a sortie seldom took longer ninety Minutes, and the Yak's maximum endurance of two and a half hours was more than adequate. The landing speed was 87 mph and maximum allowable diving speed was at 465 mph. Ground crews loved the easily maintained aircraft. Even under poor conditions a Yak 1 could usually be refueled and re-armed within twenty minutes. A full engine change, including adjustment of the engine mounted cannon, usually did not take longer than six hours.



(Above) Trouble for *Luftwaffe* warms up his fighter, Mikhail Baranov claimed twenty-two victories while flying with the 183. Regiment. The inscription on fuselage reads *Death To Fascist*, and the Red stars are White outlined. Soviet Pilots always used small Red or White stars as victory markings, which were usually applied on the fuselage aft of the cockpit such as those seen behind the cockpit of Baranov's White 1. (Robert J. Ruffle)

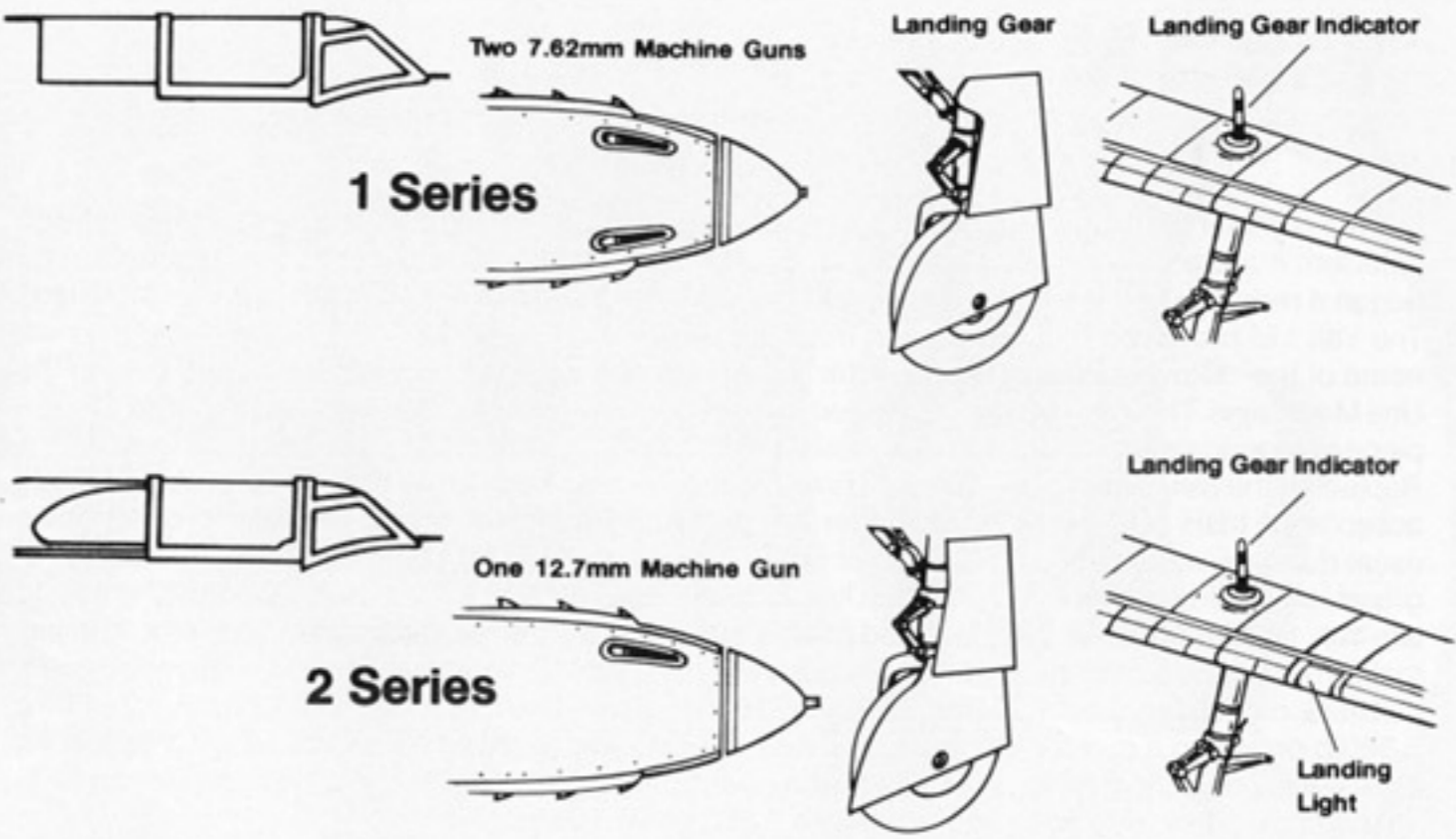
(Below) This Yak 1, Series 2 taxis out of its tree shrouded parking space at the edge of a woods for another sortie against the *Luftwaffe*. There were almost no improved fields in the soviet Union which was just fine for the robust little Yak fighter. (Hannu Valtonen)



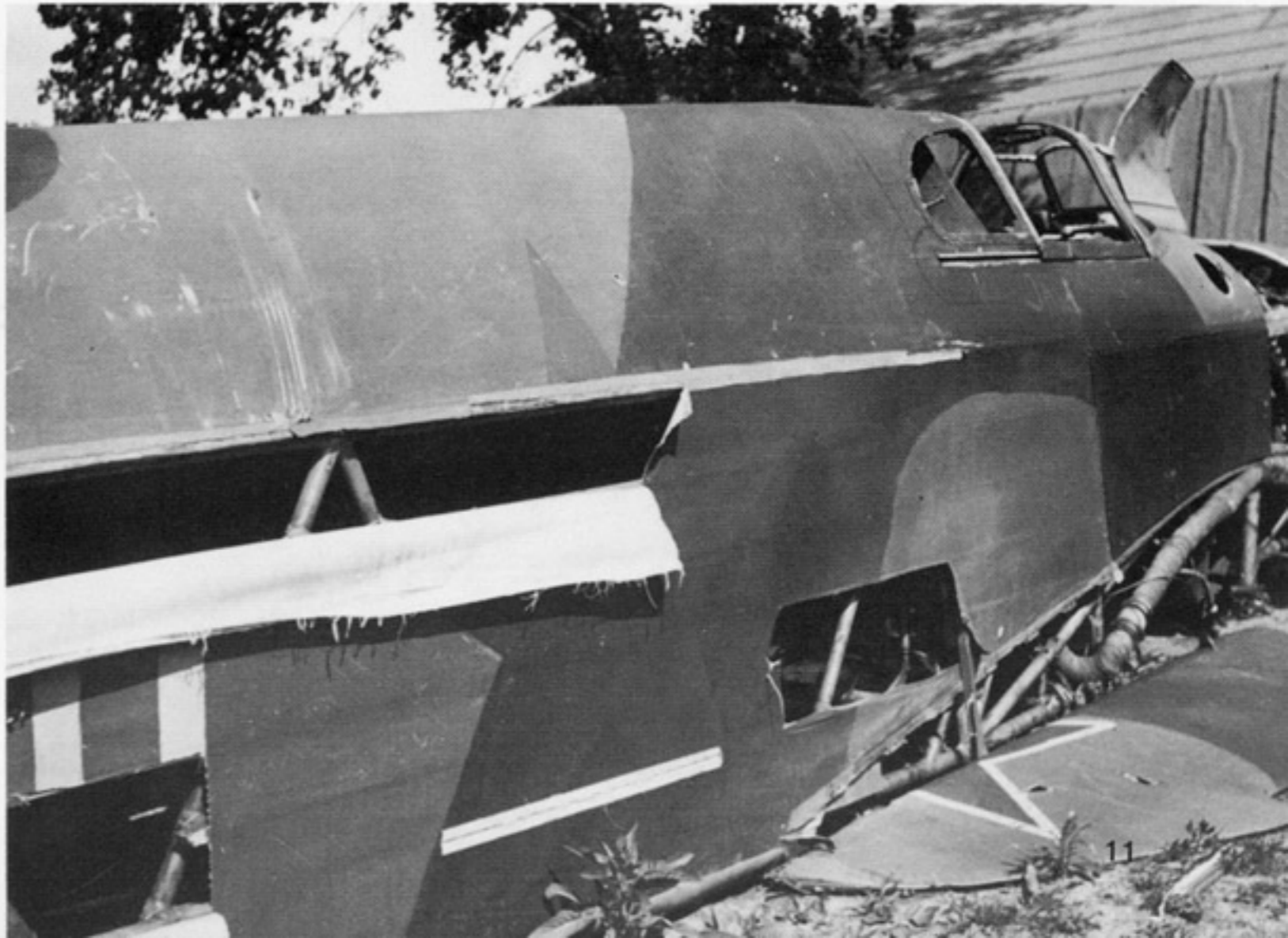


(Above) A defector provided the *Luftwaffe* with an intact Yak 1, Series 2 at Tusov during the summer of 1942. The spinner type with a rather blunt nose opening was not common. White 25 lacked a national insignia on the fuselage. *Luftwaffe* fighter pilots considered the Yak 1 to be both underpowered and underarmed. (Oberst Büchner via Franz Kurowski)

(Below Left) A pilot and his commanding officer share smiles in front of a Yak 1 during the early days of the war. Compared to German or British standards, Soviet flying suits were rather primitive. But for the Soviets it was quantity rather than quality that would subsequently break the back of the *Luftwaffe*. The *Luftwaffe* reported 94,435 aircraft missing in action during World War II, more than 62,000 on the Eastern Front. (Hannu Valtonen)



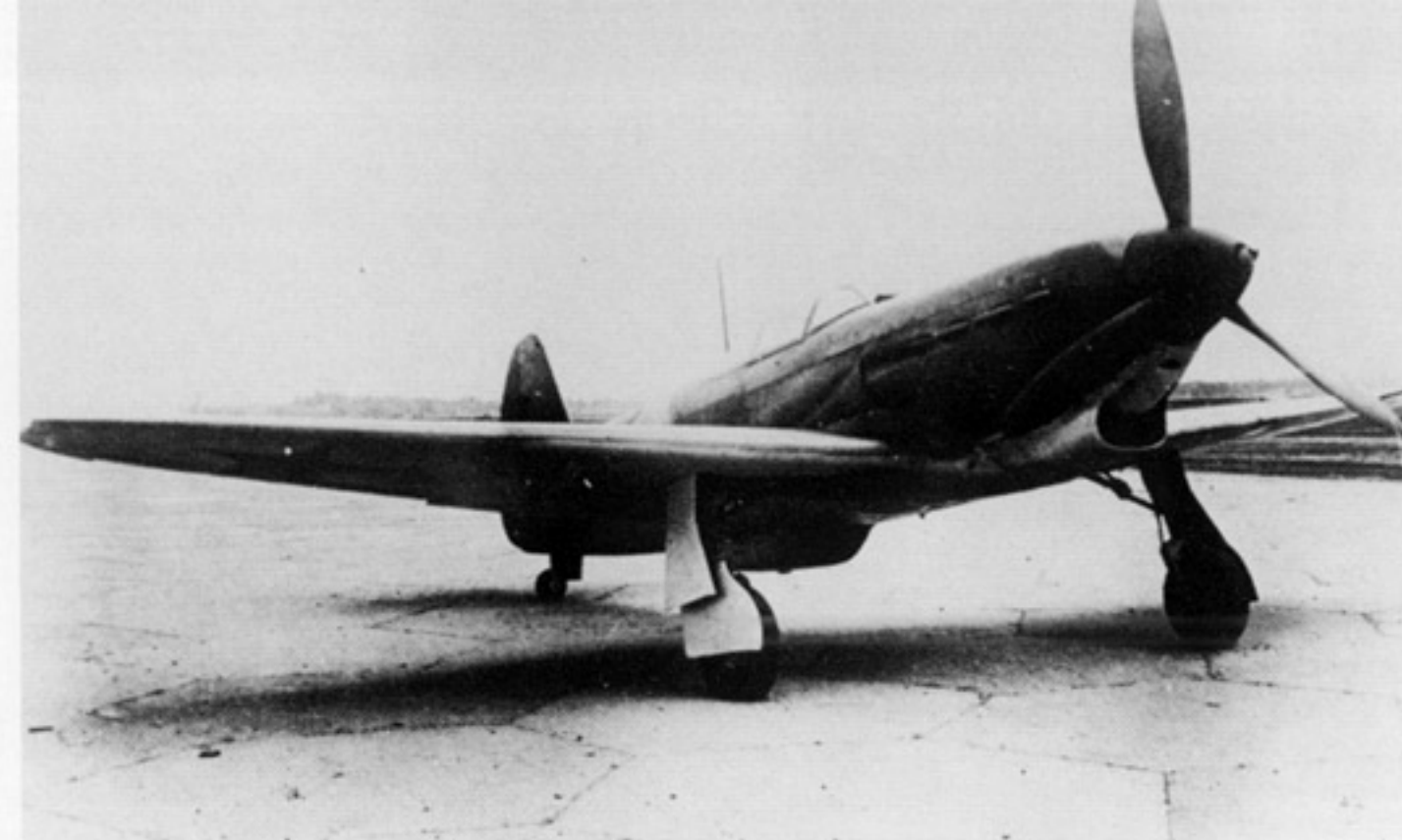
(Below Right) This captured Yak 1, Series 2 was dismantled by the *Luftwaffe* and sent to DLV at Berlin-Adlershof. The *Deutsche-Luftfahrts-Versuchsanstalt e.V.* examined every foreign type possible. The upper surfaces are camouflaged in Green and Dark-Green. No small Black outline surrounds the fuselage star, however the rudder star carried a White outline, probably a field modification. The stripped away fabric reveals the welded steel tube fuselage frame.



Yak 1M

By the summer of 1942, with all testing completed and design problems having been eliminated, and sufficient numbers of the Yak 1 beginning to reach front line fighter regiments, the Design Bureau began a redesign of the aircraft, resulting in the Yakovlev Yak 1M (*M-Modifitsirovanny* — modified). The Yak 1M prototype had been taken from the production line at GAZ 153 Novosibirsk, the new home of the Yakovlev Design Bureau after the whole organization had been evacuated behind the Ural Mountains. The Yak 1M was developed to meet front line pilot requirements and featured a three-piece all-around vision canopy with a re-designed aft fuselage, a retractable tailwheel with fixed doors. Replacing the 8mm armor plate, a clear 75mm armored screen behind the pilot was introduced. State acceptance trials at Moscow began under test pilot A.G. Proshakov during the autumn of 1942. As usual during a wartime situation, in order not to disrupt production, Yak 1M refinements were progressively introduced on the production line, consequently early Yak 1Ms were essentially similar to late Yak 1s. Standard Yak 1Ms featured a redesigned radio-antenna, redesigned and relocated formation lights, and a modified tail fin and rudder. The wing root carburetor air intakes were redesigned. Installation of an uprated 1,210hp Klimov M-105 PF powerplant reduced weight from 6,284lb to 5,860lb providing a much improved climb-rate. Late models received a new VISH-105SV propeller, an RSI-4 multi channel radio, and for reconnaissance duties, the Yak 1M could be fitted with an AFA-1m camera. A few 1Ms were equipped with 1,360 hp M-106 engine.

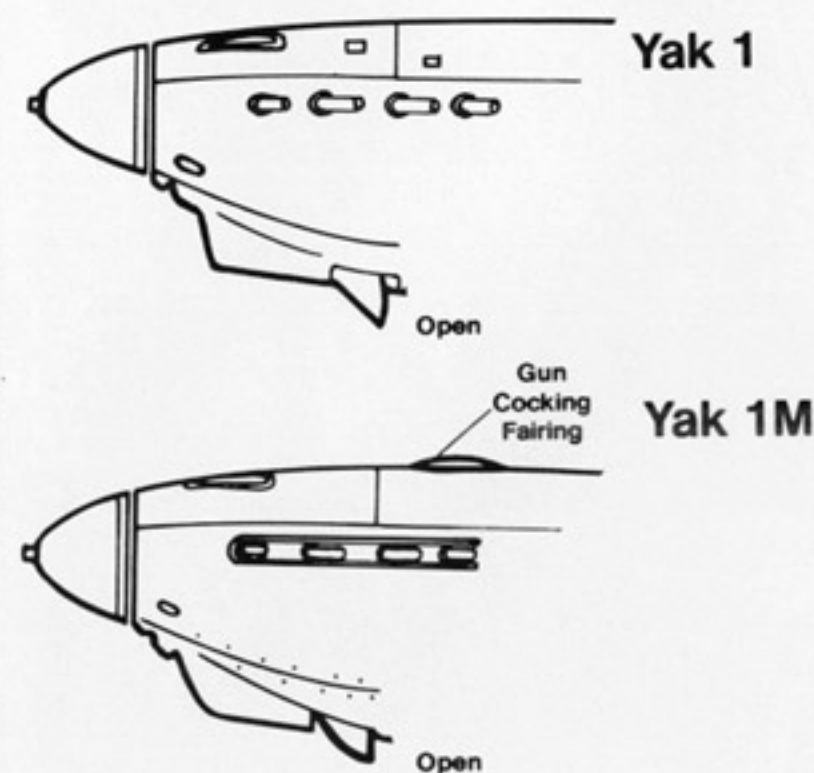
During the fall of 1943, when production of the Yak 1M was phased out in favor of the Yak 3, 8,721 Yak 1's had been built at GAZ 115 Moscow, GAZ 153 Novosibirsk, GAZ 286 Kamensk, and GAZ 292 Saratov. The Yak 1M equipped Polish, Yugoslavian and French volunteer fighter units which fought alongside Russian regiments during the Great Patriotic War. The Yak 1M remained in front-line service until VE-Day and Regiments quite often used the 'light' Yak 1M in mixed units together with the 'heavy' Yak 9.



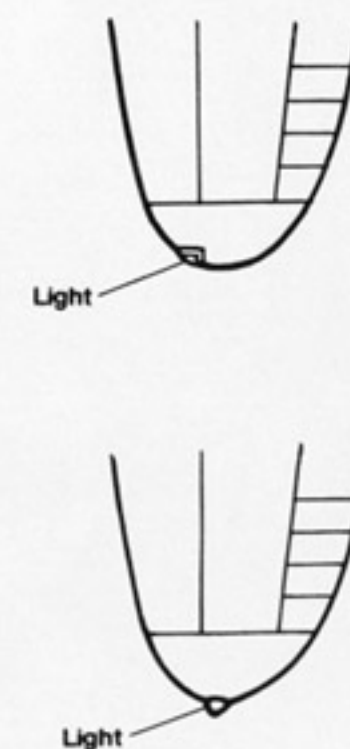
(Above) The Yak 1M Prototype was converted from a standard Yak 1, Series 2 machine. Because frontline pilots had often complained of an insufficient rearward vision during combat, so the Yakovlev Design Bureau fitted the Yak 1M prototype with a three piece all-around vision canopy. A.G. Proshakov tested and accepted the prototype at the Scientific and Research Institute during autumn of 1942. The Production Yak 1M featured new exhaust stubs, repositioned navigation lights, and a revised oil cooler intake scoop. (Von Hardesty)

Development

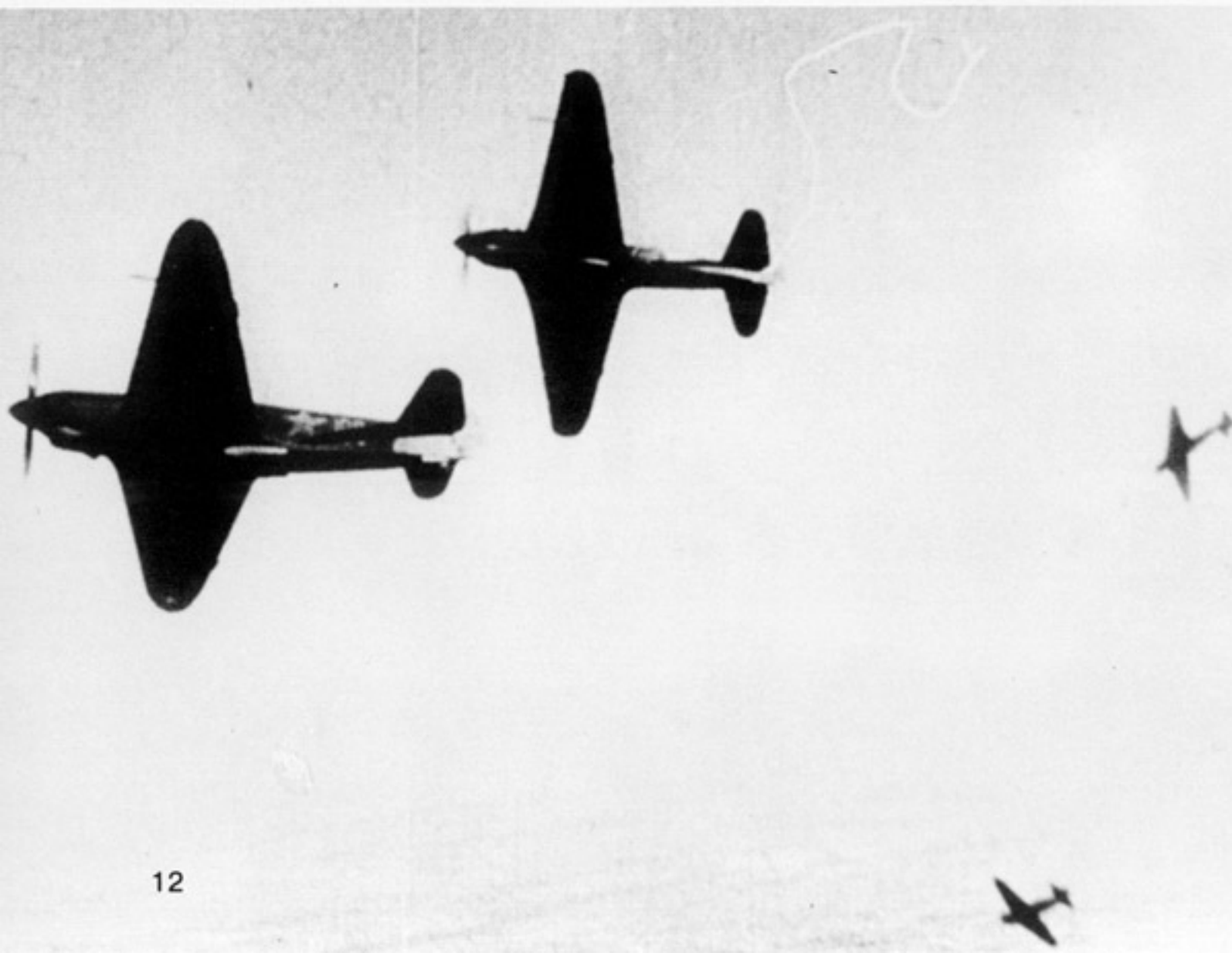
Exhaust



Navigation Light



(Left) The use of the 'light' Yak 1M and 'heavy' Yak 9 (diving in the background) was a common practice in Soviet Fighter Regiments during the Great Patriotic War. The Yak 9 featured less pointed wingtips than the Yak 1. (Robert J. Ruffle)





(Above Left) Russian pilots being briefed in front of a White camouflaged Yak 1M donated by Farmers from Stakhanov. The inscription was applied in Red. The pitot tube was mounted on the port wing. The early Yak 1M did not have a jettisonable canopy. (Von Hardesty)



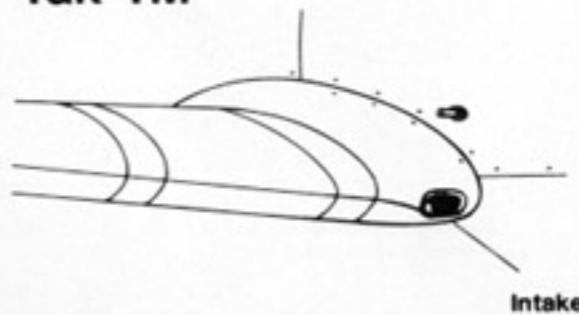
(Above Right) Albert Durand (at left) and Joseph Risso in front of Durand's shark mouthed White 11, a Yak 1M at Kathyonky during the Battle of Orel during the summer of 1943. The shark-mouth was painted by a French ground crewman. Durand was reported missing in action on 1 September 1943 over Ielnya, while Risso, who joined the French Normandie-Niemen Regiment on 28 November 1942 survived the war. At a later date the shark mouth received new 'make up'. (Karl Hänggi)



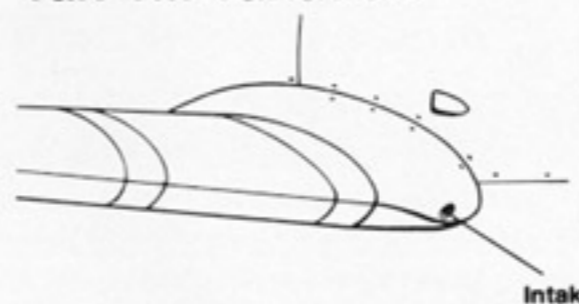
Carburetor Intake

Wheel Parts

Yak-1M



Yak-1M Variation



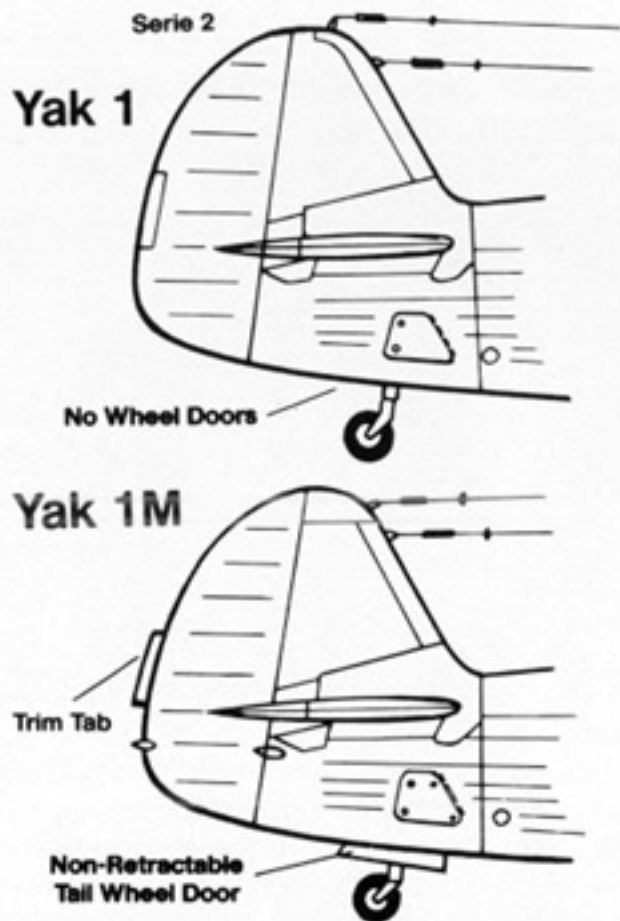
Yak 1



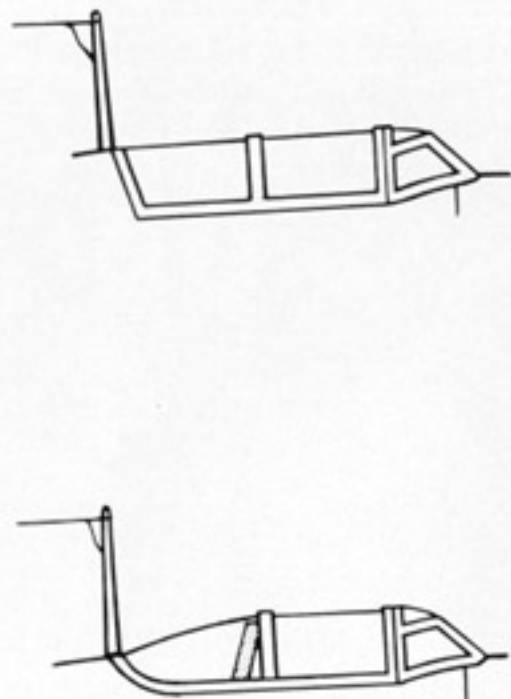
Yak 1M

(Left) This Yak 1M was captured by the *Wehrmacht* at Uman in 1943. A freshly applied *Balkenkreuz* can be seen under the wings. The original Russian 'Winged Star' marking on the side of the nose and a Red spinner with a White star are still on the aircraft. This particular aircraft did not carry a wing root oil cooler intake. (Willy Radinger)

Tail Development



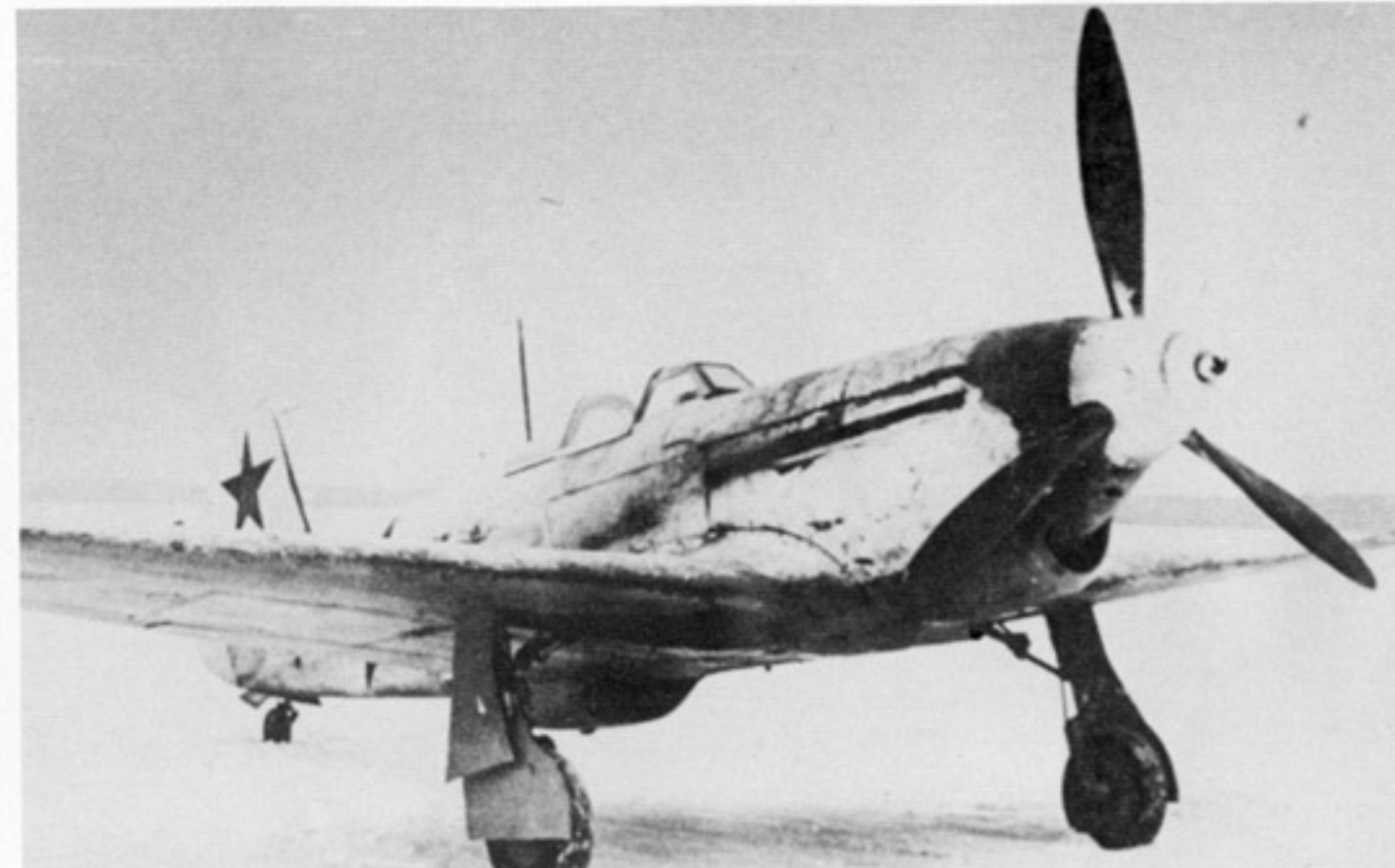
Canopy Development



(Above) Polish personnel have a look at a newly arrived Yak 1M. The 1. PLM (Fighter Regiment) received its first fighters in September of 1943. White 40 (40165) survived the war to become a trainer in the newly formed Polish Air Force and was not struck off charge until 4 December 1945. Russian fighter regiments and volunteer units never carried stars on the upper wings, the exception on British or American lend-lease aircraft. (Andrzej Morgala)

(Below Right) A winter camouflaged Yak 1M in its element! Simple to maintain even under the most arduous of conditions, these fighters were ideally suited for the Eastern Front conditions. The original factory paint appears where the White has been being worn off. (Andrzej Morgala)

(Below Left) Farmers from the Krasnoyarsk District donated this Yak 1M to the Red Air Force. During the War, a total of 2,565 aircraft were built through war bonds, even Aleksandr Yakovlev himself donated an aircraft from his own savings to the Hero of the Soviet Union Pokryshev on the Leningrad front. The inscription on this Yakovlev Fighter reads: *To the defenders of the Stalingrad Front from the Kolkhoz Workers of the Krasnoyarsk District in the Saratov Area.* (Andrzej Morgala)





(Above Left) Line-up of Yak 1Ms at Ivanovo during early 1943. The Klimov M-105 PF engine demanded 92 octane fuel. Ground crews liked the aircraft, which was very reliable and easy to maintain, with refueling and re-arming seldom taking more than twenty minutes. During the very cold winter months standard lubricant Type MSZ was replaced by the low temperature lubricant type MZSZ. (SHAA)

(Below Left) This Yak 1M will be airborne soon. White 11 (11150) was built at State Aircraft Factory 292 at Saratov. Ground crews have outlined the star on the tail with White, but the fuselage national insignia is in the early war style with a small Black outlined. (Andrzej Morgala)



(Above Right) Ground personnel overhaul Red 5, a winter camouflaged Yak 1M at Ivanovo in late 1942. The large wing root intake is not on this aircraft, but it has the small non-standard inlet. Five mechanics could change a complete Klimov engine including adjusting the Cannons within six hours, even under the poorest of conditions. (Karl Hänggi)

(Below Right) White 40, a Yak 1M, takes off from Grigoriewskoje Airstrip during the late Summer of 1944. The Polish 'Warsaw' Regiment used the aircraft, flying the first Mission in the Warka area on 23 August 1944. This historic day is now celebrated in Poland as The Day of Aviation. This Polish volunteer unit in the Red Air Force did not carry the Polish national insignia under the cockpit as Polish pilots did when flying with the Royal Air Force. (Andrzej Morgala)





Yellow 23, an early Yak 1M of Normandie-Niemen carries an interesting mixture of old and new markings, a Blue, White, and Red spinner and a French roundel under the cockpit, along with an added White arrow. (SHAA)

Yak 3

A further development of the Yak 1M airframe and powered by the M-105PF engine VISH-105SV propeller combination, the Yak 3 was the smallest and lightest combat fighter to see large scale production and use during World War II. The Yak 3 was also the first Russian fighter with a superior performance to contemporary *Luftwaffe* fighters in use on the Eastern Front. At this stage of the war, the Soviet Union was outproducing *Luftwaffe* aircraft in both quantity and quality. The excellent power loading of 4.83 lb/hp allowed exceptional performance for the Yak 3s relatively low power. A Yak 3 could complete a full 360° turn within 18.5 seconds, something the *Luftwaffe* pilots could only dream of!

Further attempts to improve the Yak fighter began during the summer of 1942 when K.V. Sinelshchikov was assigned the task of redesigning the Yak to improve endurance, fire power, and combat capabilities. With all modifications directed toward decreasing weight and improving performance a standard Yak 1M fuselage was used as the Yak 3 prototype, which had been fitted with a newly designed wing with a reduced span from 32 feet 9.75 inches to 30 feet 2.5 inches. Original intentions had been to mate the new M-107 powerplant with an anticipated 1500 to 1600 hp, in the event the new engine did not materialize and the M-105PF was retained. A number of aerodynamic refinements were introduced, such as a recontoured oil cooler intake and a one piece frameless windscreen which provided the pilot with excellent all-round visibility. The production version received an enlarged oil cooler under the fuselage resulting in removing the front oil cooler from beneath the nose. The first production batches were equipped with the Yak 1M standard armament of an engine mounted 20mm cannon, and a single 12.7mm Berezin UB machine gun in the port upper engine decking, but main production aircraft received an additional similar machine gun in the starboard decking.

Prototype flight trials began during early 1943 in Moscow with high-speed flight trials far exceeding expectations, 410 mph at 9,840ft and 422 mph at 12,140ft with low level characteristics being particularly pleasing. The loss of the prototype due to a structural failure during aerobatics delayed full State Acceptance until October of 1943, but demands from front line pilots for a more efficient fighter forced the Red Air Force to introduce the fighter into Service before completion of State Acceptance.

The Yak 3 saw action for the first time in June of 1943 at the end of the German OPERATION ZITADELLE in the Kursk area, and pilot's comments were enthusiastic about the combat value of the new weapon. The Yak 3 provided a real challenge to the Messerschmitt Bf 109F and G and the Focke Wulf Fw 190A. Ideally suited for low altitude combat operations, light stick pressure produced fast and accurate snap rolls and all maneuvers could be performed precisely and smoothly. But it demanded careful handling at low speeds, stalling speed was high and the Yak-3 tended to drop a wing during the landing approach unless speed was kept up. It tended to swing on take off and landing, and ground loops were not uncommon among green pilots.

Large scale production of the Yak 3 was begun at GAZ 115 and GAZ 286 during the spring of 1944, only reaching front line fighter regiments in quantity during the summer of 1944. Technical and structural problems had delayed development for some time. The undercarriage in particular was considered unreliable on hard field conditions.

Yak 3U

While the basic design was retained virtually unchanged throughout its operational life, a few changes, mostly internal, were made. But as the Klimov M-107 engine was considered as ready for large scale production, Yakovlev and his staff had begun to develop an all metal variant of the Yak. At this time of the war, enough steel alloy was becoming available in the Soviet Union to replace some wooden parts in the wing and fuselage with metal, however, the initial M-107 powered Yak 3U (U-*Uluchshenny* - improved) retained the mixed structure of the standard Yak. Apart from a lengthened nose, a deeper radiator bath and a cockpit repositioned further aft for center of gravity (CG) reasons, relatively few changes were made in the Yak 3U, and only a small number of Yak 3Us left the factory in late Autumn 1944. The all-metal Yak 3U never saw action, state acceptance trials at Moscow didn't begin until February of 1945 and was not finished when Nazi-Germany collapsed in May of 1945. However, the performance for the Yak 3U was superior to any foreign aircraft, including the

North American P-51D Mustang. Top speed of the Yak 3U was recorded at a remarkable 447 mph at 18,045ft.

Several sub variants of the Yak 3 and Yak 3U were under development, but were unsuccessful, with most of them being withdrawn at the prototype stage.

The **Yak 3P** (*P-Pushka* - Cannon) mounted three B-20 lightweight cannons, while the **Yak 3T-37** (*T-Tyazhely* - Heavy) carried a 37mm NS-37 cannon, and the **Yak 3K** (*Krupnyi* - Heavy) had a 45mm NS-P-45 engine mounted cannon replacing the standard 20mm cannon. Two prototypes, designated **Yak 3TK** and **Yak 3PD** were used for high altitude tests, however, since there was no need for such aircraft both high-altitude fighter projects were dropped. A Yak 3 airframe was experimentally fitted with a Shvetsov M-82 radial engine, which required a revised and deeper fuselage cross section. However, since the M-82 radial engine was needed for the other fighters, the Lavochkin La 5, the **Yak 3M-82** project was terminated.

The **Yak 3R** was fitted with an RD-1 GSH liquid fuel rocket, developed by W.P. Glushko in 1944 and flown by V.I. Rastorguev. The aircraft reached 509.5 mph at 25,590 ft but on the third test flight, on 16 August 1945, the rocket exploded killing the pilot and destroying the sole Yak 3R.

A single, Klimov M-108 equipped Yak 3U claimed the Soviet speed record for fighters built during World War II. Powered by a 1,880 hp M-108 engine it attained a speed of 463 mph in level flight. The M-108 engine never went into production, the piston engined era was over and the Soviet Union had begun to produce jet engines for their new fighters.

As production ended in early 1946, 4,848 examples had left State Aircraft Factories 115, 124 and 286. Besides the Soviet Air Force, the Yak 3 also saw service with France, Yugoslavia, Albania and Poland during the immediate post war years.

The Yak 3 prototype was developed from a Yak 1M fuselage with reduced wingspan, newly designed canopy, reduced nose cooler intake and several other refinements. The redesign of the 'light' fighter line was in the hands of K.V. Sinelshchikov, one of Yakovlev's principal design team leaders. (Karl Hänggi)





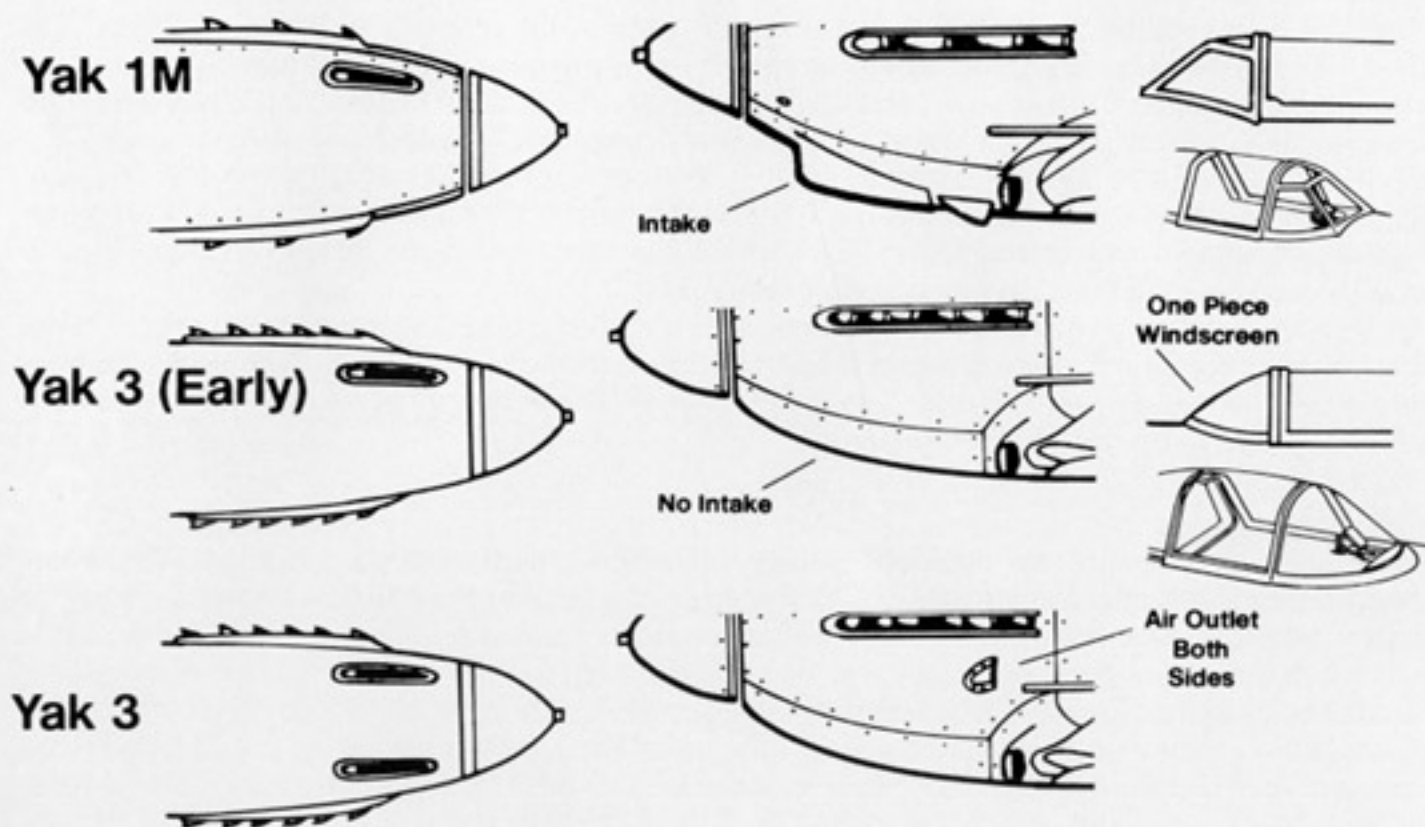
(Above Left) The very early Yak 3 variant carried the original Yak 1M armament of an engine mounted 20mm cannon and a single Berezin UB 12.7mm machine gun on the port side. The frameless windscreen along with the all-around vision rear canopy provided the Yak 3 with unparalleled visibility for the pilot. (Jan Horn)



(Above Right) An early Yak 3 shortly after arrival at the French Normandie-Niemen volunteer Regiment during the summer of 1944 before the White arrow has been applied. The tactical number will be repositioned forward in front of the national marking. The relatively small Red star on tail is dominated by the White outline. A Red Spinner is carried. The French volunteer regiment aircraft were invariably painted with Gray and Gray Green upper upper surfaces over Light Blue undersurfaces. (SHAA)



Armament Front Oil Cooler Canopy



(Left) A brand new Yakovlev Yak 3 during its acceptance flight over the Kamensk area during the summer of 1944. Small White outlines are carried on the national insignias, and an unusually high separation line between the upper and lower camouflage on the fuselage. Most of the fighters were delivered in a Gray and Gray Green camouflage. (USAF)

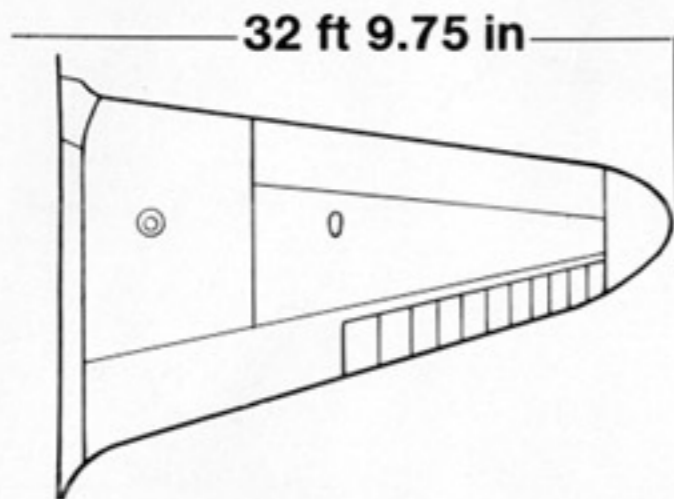


(Above Left) The performance of the robust Yak 3 presented a real problem for the *Luftwaffe*. This nimble fighter was superior to its German opponents and Soviet pilots loved its low altitude handling qualities. The removal of the oil cooler intake from the nose provided quite a different silhouette from previous Yak variants. (SHAA)

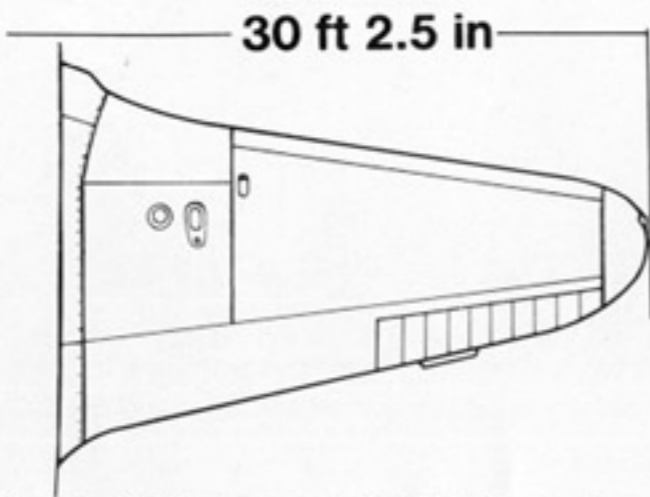


(Above Right) German Flak (Abbreviation of *Fliegerabwehrkanone* - anti-aircraft gun) brought this Yak 3 down near Warsaw in January of 1945, with the pilot managing to escape to friendly lines. A large hole has been shot in the sliding plexiglass canopy. The bent propeller blades indicates that the engine was running when the plane bellied in. The tactical Marking '03' and the outline on the fuselage star is in Yellow, while the rudder star is outlined in White, and spinner is Red. (Andrzej Morgala)

Yak 1M

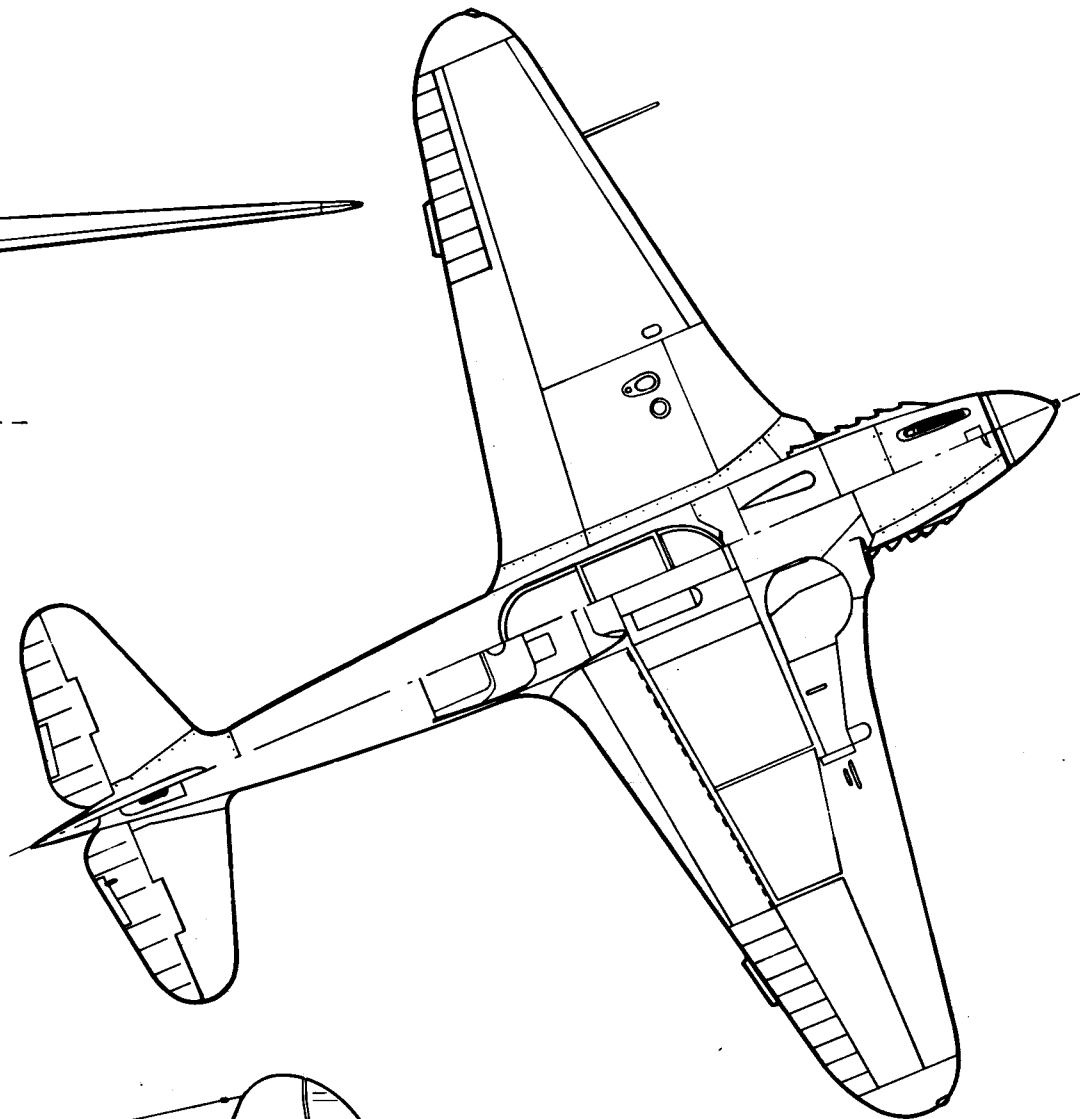
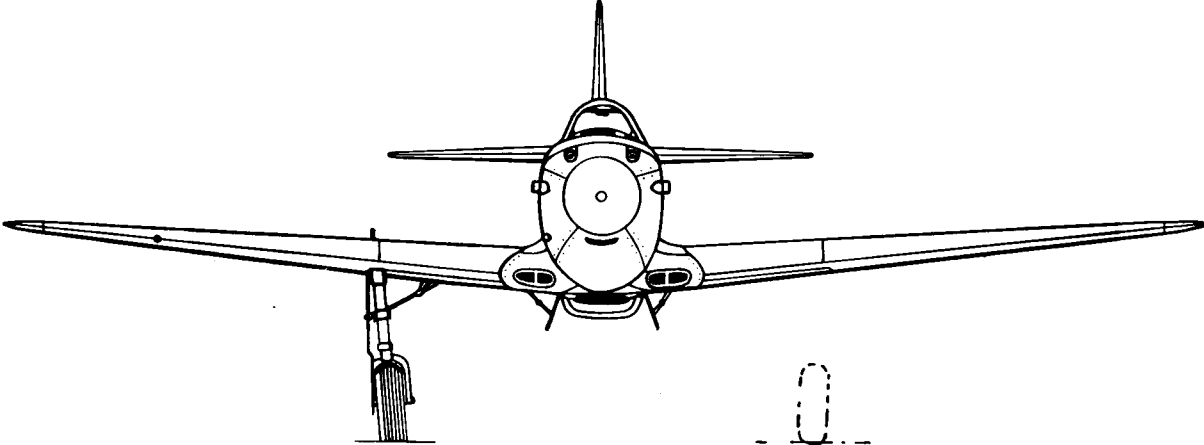


Yak 3



(Right) 'Top brass' in front of Major General G.N. Zakharov's personal Yak 3 (310 147), with Zakharov's personal emblem on the fuselage below the cockpit, a Knight killing a Göbbels faced snake. Zakharov commanded the 303. Fighter Aviation Division. Officers from left to right are French Maj Zamborine, General Zakharov, French Lt Risso and Maj Khustinski. (ECPA)

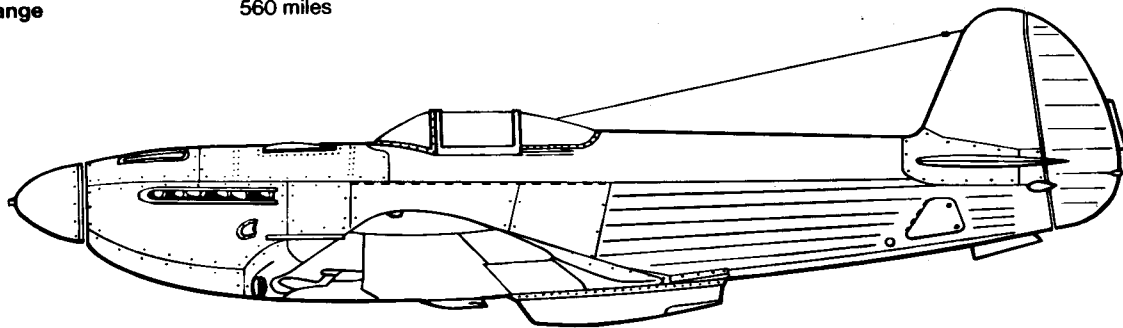




Specifications

Yakovlev Yak 3

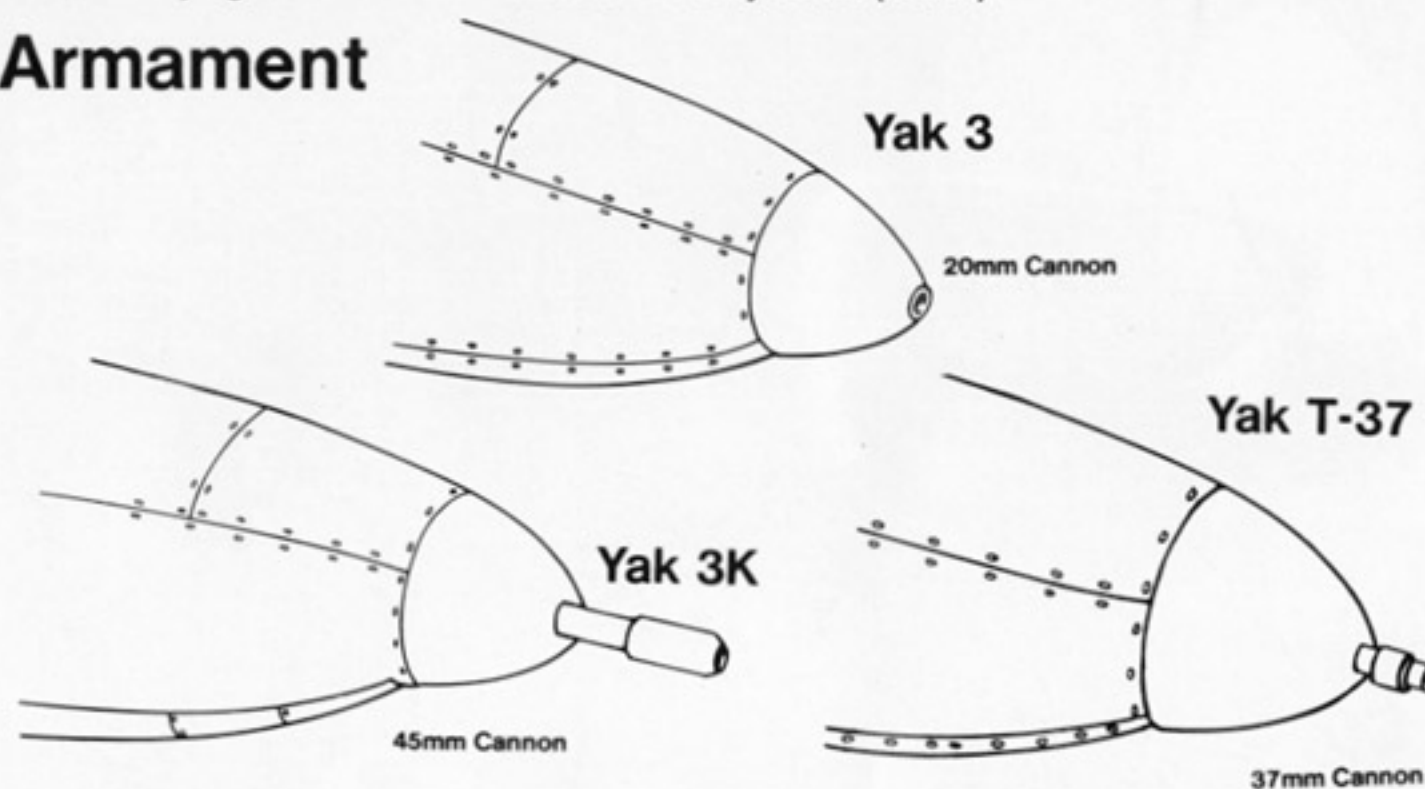
Wingspan	30 feet 2.5 inches
Length	27 feet 10.25 inches
Height	7 feet 11.25 inches
Empty Weight	4,641 pounds
Normal Weight	5,864 pounds
Powerplant	One Klimov M-105PF-2 12 cylinder Vee liquid cooled 1,244hp engine
Armament	One engine mounted 20MM ShVAK Cannon Two 12.7MM Berezin UB machine guns
Performance	
Maximum Speed	404 mph
Service ceiling	35,105 feet
Range	560 miles



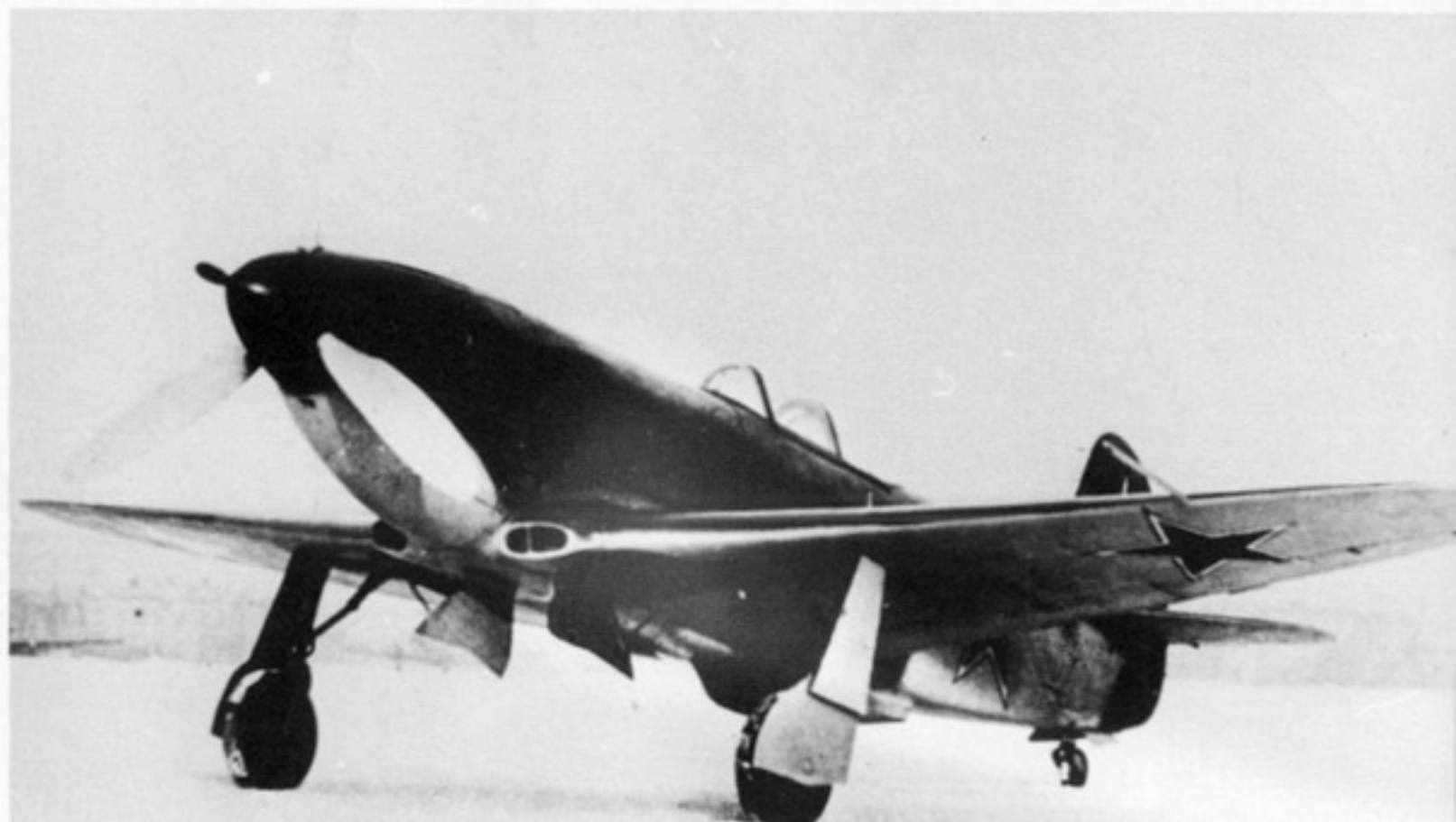


(Left) Roger Marchi's Yak 3 is being readied for another mission. The Normandie-Niemen Regiment used almost exclusively Russian Mechanics and ground crews. Both the under-carriage position indicator stick and fuel gauge control were mounted on wing. Manchi's plane carries thirteen kill markings behind the cockpit. Marchi joined the French volunteer unit on 7 January 1944 and returned to France with the group on 20 June 1945, only to be killed in a flying accident over France on 17 July 1946! (SHAA)

Armament



(Below) Yellow 24, a Yak 3 at Heiligenbeil, East Prussia in May of 1945. Aircraft markings in this style were only used by the 2nd Squadron of Normandie-Niemen. The 2nd Squadron also carried a Yellow arrow instead of the usual White. (SHAA)



(Above) Under the designation Yak 3K, a few Yak 3s received the NS-P-45mm cannon developed by the team of A. Nudelman and A. Suranov. Tests of the Yak 3K were conducted in the ground support role, especially in use against the Panther and Tiger. Tests were discontinued in favor of the Yak 9K with the same armament. (Andrzej Morgala)

(Left) Overhaul of Roger Sauvage's White 5 at Wittenberg, East Prussia during the spring of 1945. Small Balkenkreuzes are carried as kill-markings behind the cockpit, a practice never employed by Red Army pilots. (SHAA)

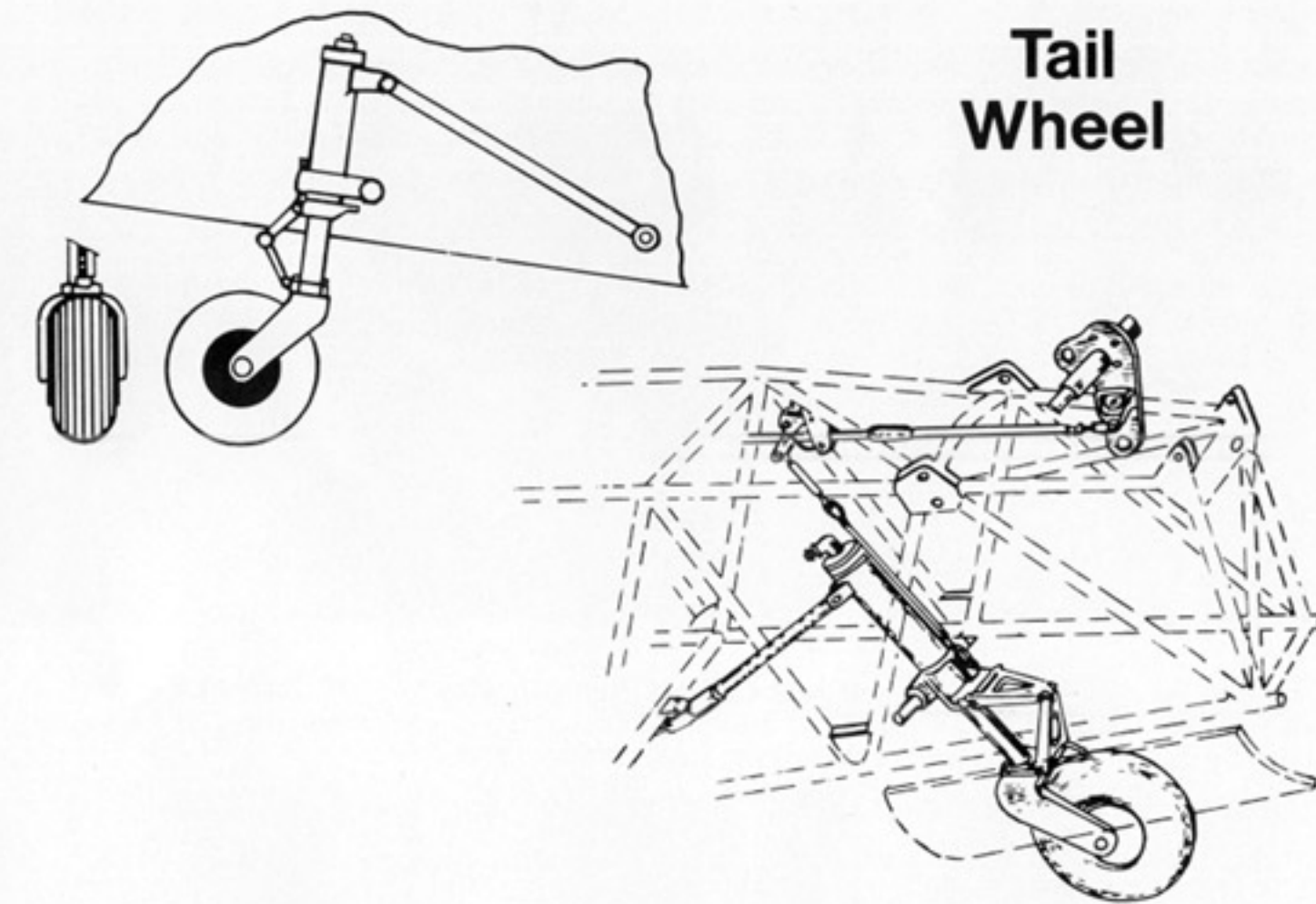




(Left) Arrival of the French Normandie-Niemen Regiment at Stuttgart-Echterdingen Airfield, in Germany on 17 June 1945 during their journey home. The aircraft returned in full Soviet markings with the Lorraine Cross on their tails. The unit left East Prussia with forty-two Yak 3s and eight Lisunov Li-2 transport planes. Two Yak 3s were lost in a collision at St Dizier. (SHAA)



(Above) The end of a long odyssey as the forty remaining Yak 3s of Normandie-Niemen arrive at Le Bourget airfield along with with eight Li-2 transport aircraft. Normandie-Niemen claimed 273 victories in 869 aerial combats at a cost of forty-five airmen missing in action. (ECPA)



Tail Wheel

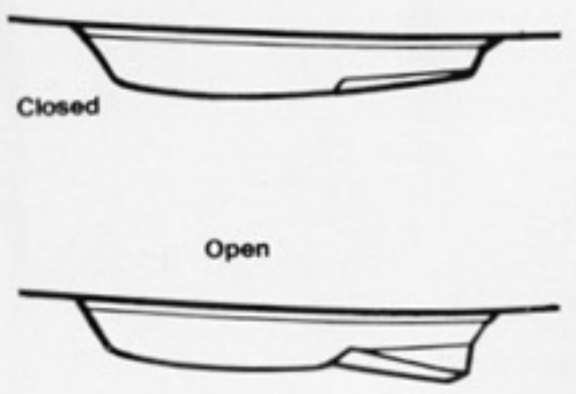
(Below Left) Time to celebrate — the Normandie-Niemen Regiment returned to France on 20 June 1945 with forty of their old warhorses, donated by Soviet dictator Joseph Stalin because of the old French tradition that a soldier always returns to his country with the weapon he bested the enemy with. Upon their move to France the Soviet stars were removed and French markings were applied, a Red, White, and Blue roundel can be seen on the underwing of the second Yak 3. (ECPA)

(Below Right) Three Yak 3s at Le Bourget Airfield during the summer of 1945. The first fighters received the new paint job of Light Gray, which replaced the original Soviet upper camouflage colors. The unit became operational with the L'Armée de l'Air as GC 3/5 Normandie-Niemen based at Le Bourget and Toussus-le-Noble. (ECPA)

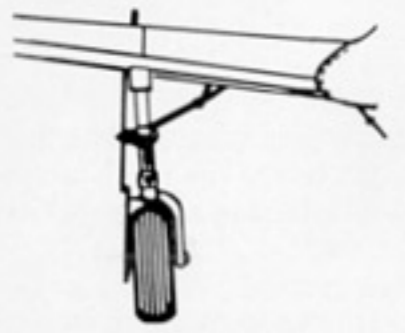
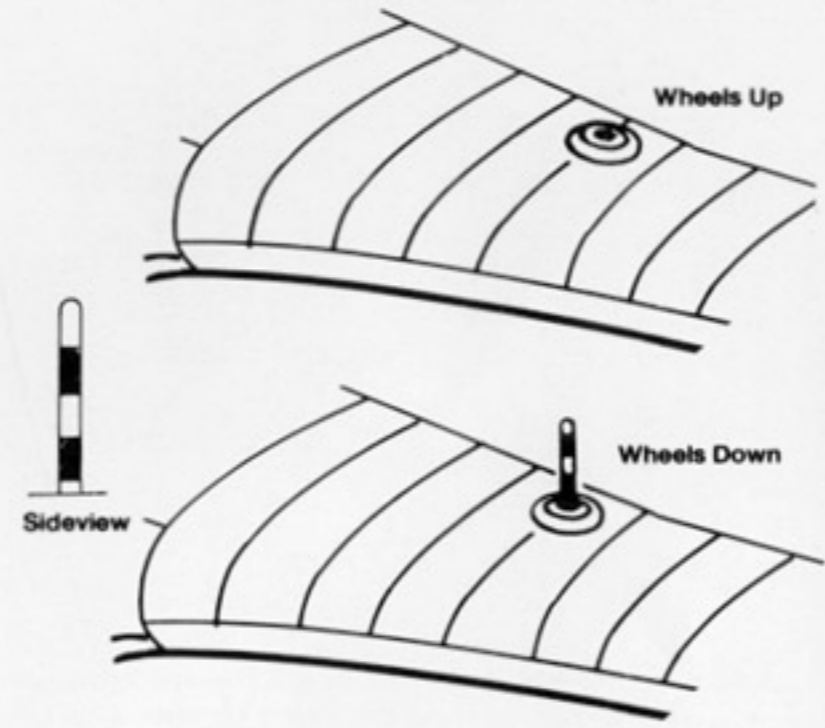


(Right) Yugoslavian Yak 3 (2229) during late 1945, as part of the 114. Fighter Regiment. Tito's pilots were trained at Krasnodar, USSR and were employed in combat over Yugoslavia with the 236. Aviation Division. Most of the Yugoslavian Yak 3s were sold to Albania after the arrival of the Yak 9P. (USAF)

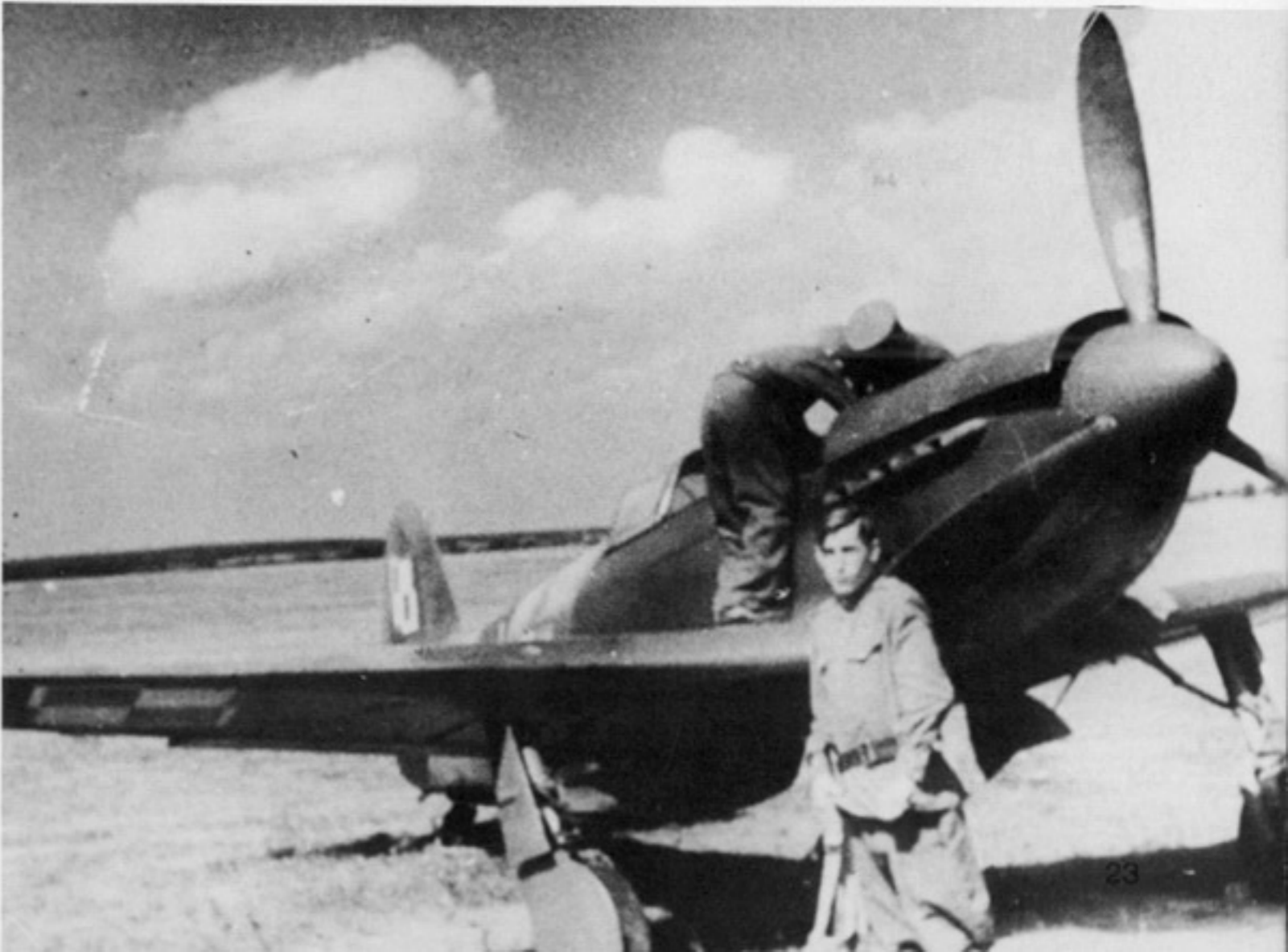
Oil Cooler



Undercarriage Position Indicator



(Below) Poland received twenty Yak 3s which were used mainly for training purposes. Five aircraft remained with the 1st Regiment until September of 1946. Polish national Markings have been applied over the standard Gray and Gray Green camouflage. (Andrzej Morgala)



(Below) Roger Marchi's White 4 at Genève-Cointrin Airport, Switzerland in 1946. Shortly after their arrival in France, all forty Yak 3s had been repainted in Light Gray over Light Blue undersurfaces with captured German stocks of paint. The rudder is in the French national colors of Blue, White, and Red. This particular aircraft is now part of the Museum of Air collection at Le Bourget Airfield near Paris, unfortunately it has an inaccurate camouflage scheme and a spurious No 18. (Albert Violand)



Yak 7

The Yak 7 is an excellent example how the demands of a war situation can alter the development of an aircraft. In late 1939 Aleksandr Yakovlev initiated the study of a two seat trainer variant of his I-26 (Yak 1) fighter. Feeling that a pupil should graduate from the low powered UT-2 trainer to a UTI-26 two seat trainer and then into a combat aircraft, which after allowing for sufficient familiarization time at each level, should keep the number of training accidents comparatively low. The only differences from the single seat fighter was the installation of a second cockpit with full dual controls for the instructor, an enlarged vertical tail, installation of a landing light, an increased wing span to 33 ft 7.5 inches, a single hub mounted 20mm Cannon as the sole weapon. The undercarriage was not retractable. The prototype flew for the first time during the late summer of 1940 with State Acceptance trials of the UTI-26 trainer proceeding in parallel with the fighter type, with production also being at the GAZ 115.

The surprise attack by Germany forced the Yakovlev Design Bureau to convert the UTI-26 into a combat aircraft. Since fighters were so desperately needed at the front any available aircraft that could be used as a fighter were ordered armed and into combat. The designation of the Yakovlev trainer was changed from UTI-26 to Yak 7. The few two seat trainers on the production line when the redesignation decision was made were designated Yak 7V (*V-Vyvozonyi* - Familiarization).

Under the designation Yak 7A the first two seat fighters reached frontline regiments during late 1941. Armed with a 20mm ShVAK cannon and two 12.7mm Berezin UB machine guns with 300 rounds each. Provision was also made for six RS-82 rockets or a pair of 220lb Type FAB 100 bombs.

Frontline pilots considered the rate of fire and handling characteristics of the Yak 7 to be superior to the Yak 1. The addition of a twenty-two Imperial gallon fuel tank replacing the instructor's seat, provided the Yak 7A with an endurance of 510 miles. The upper decking contours of the two-seat trainer were retained, endowing the single seat Yak 7 with the same distinctive 'humped' appearance as the UTI-26. The 772lb of additional weight resulted in a redesigned and strengthened undercarriage, which featured a one piece undercarriage cover.

Relatively few Yak 7As had been built before production was switched to the Yak 7B with a wingspan reduced to 32ft 9.75 in, installation of an RSI-4 radio and a number of aerodynamical refinements which increased the normal load weight to 6,703lb. The Klimov M-105-PF engine replaced the M-105-PA powerplant during the summer 1942, along with the installation of new exhaust stubs, rudder trim tab, and the two machine gun cocking mechanism fairings in front of the windscreen. A number of Yak 7 sub-variants were also assigned to fighter regiments: the **Yak 7BPWO** night fighter with a RPK-10 radio compass, electrical illuminated gunsight and electrically powered undercarriage position indicator lights. The **Yak 7PWO** night fighter saw use during the defense of Moscow.

The **Yak 7K** (*K-Kuryerski* - Courier) was a development from the Yak 7V with two seats, but no dual controls. It was mainly used for courier flights and transfer of top ranking officers. A Yak 7K, Serial Number 820803, flew as test bed for Merkulov DM-4C ramjet trials under the designation **Yak 7PVRD** at the Moscow Aviation Institute. The trainer claimed 318 mph at 7,470 ft with A. Anoshtshenko at the controls.

A single Yak 7B was converted to a high altitude fighter with a pressurized cabin designed by A. Ya. Scherbakov. The project was subsequently cancelled.

Similar to the Yak 3, the Yak 7 also received a Shvetsov M-82 14-cylinder radial air cooled engine, which was flown for the first time in February of 1942 by P. Fedrovi. A pair of 20mm ShVAK cannons were installed in the wings. However, the Klimov M-105 engine was available in sufficient numbers and since the Shvetsov M-82 powered the La 5 the project did not develop beyond the experimental stage.



(Above) Originally intended as the two seat trainer version of the Yak 1, the war situation quickly turned the Yak 7 variant into a fighter which had both better endurance and firepower than the Yak 1 fighter. The Yak 7 became the 'heavy' fighter, a multi-purpose plane within the Soviet Air Force. (Tomasz Kowalski)

The early trainer with fixed undercarriage could exchange its wheels for skis in order to more easily operate from unimproved airstrips during the winter. In early 1942, however, both trainers and fighters left the factory with retractable undercarriages. Some Yak 7Vs also saw action as reconnaissance aircraft with an observer sitting in the rear seat operating a camera. Crew protection for the two crewmembers was an armor plate behind each seat.

The insufficient endurance of Russian fighters was the subject of endless discussions between Joseph Stalin and his Aircraft Designers. Thanks to massive steel alloy deliveries from the United States, the Soviets could replace many wooden components in the wing and fuselage structure. In a first step Yakovlev redesigned the wing of the Yak 7B with steel alloy H-section spars replacing the wooden box spars permitting an increase in wing fuel tankage from 91.3 to 99 Imperial Gallons. The wing was fitted to a standard Yak 7B at GAZ 153 at Novosibirsk with the first trials under the designation **Yak 7D** (*D-Dal'ny* - Endurance) beginning in July of 1942. Similar to the Yak 1, Yak 7 pilots often complained of insufficient aft vision and the non-jettisonable canopy, both serious disadvantages in combat. These and other complaints led to a further redesign of the Yak 7 fighter, which resulted in the **Yak 7DI** (*DI-Daln'y Istrebitel* - Long Range Fighter) equipped with a three piece all-around visible hood similar to that of the Yak 1M. However, only a handful Yak 7Ds and Yak 7DIs were built and it is doubtful if they reached the front in numbers, however, they can be considered as the forerunners of a new generation of Yakovlev fighters, the Yak 9.

As Yak 7 production came to an end in early 1943, 6,399 examples had left the following plants: GAZ 115 Moscow, GAZ 153 Novosibirsk, GAZ 166 Omsk, and GAZ 292 Saratov. A few Yak 7Vs were delivered to Poland during the post war period and a single Yak 7V was provided to Hungary as a trainer when the Hungarian Air Force equipped with the Yak 9P fighter. In Hungary the Yak 7V earned the nickname *Rókácska* (Little Wolf).

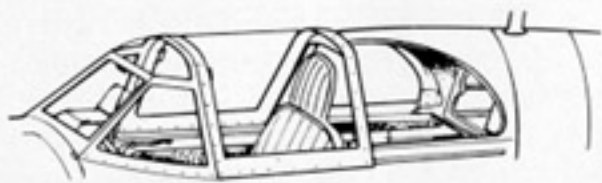


(Above) The initial two seat Yak 7V trainer had a fixed undercarriage and no radio, and was armed with a single 20mm cannon. Besides the trainer role, the Yak 7V saw exhaustive use as a courier aircraft. This machine is painted in Gray and Dark Gray over Light Blue under surfaces, with a Red spinner. The line between the Gray and Light Blue on the nose is unusually high. (SHAA)

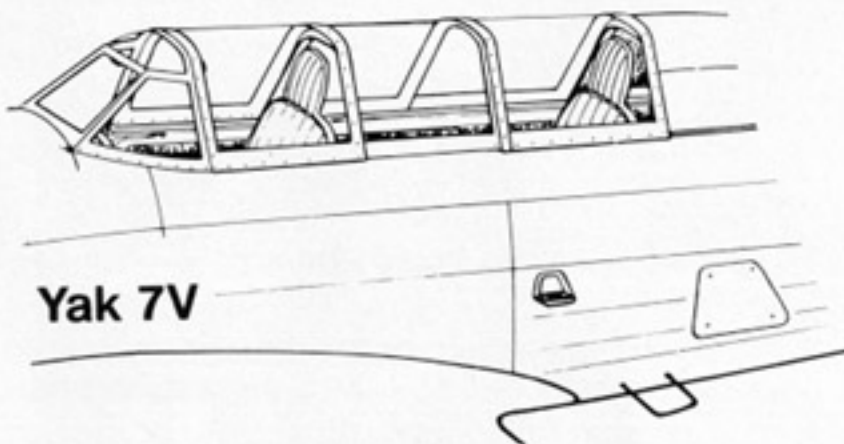


(Above) A Yak 7V trainer with a fixed undercarriage. Trainers and fighters were structurally identical. A trim tab was applied only to late Yak 7s. The camouflage is Gray and Dark Gray, colors not often used on Trainers. (SHAA)

Canopy



Yak 1 Series 2



Yak 7V

Undercarriage

Yak 1



Yak 7

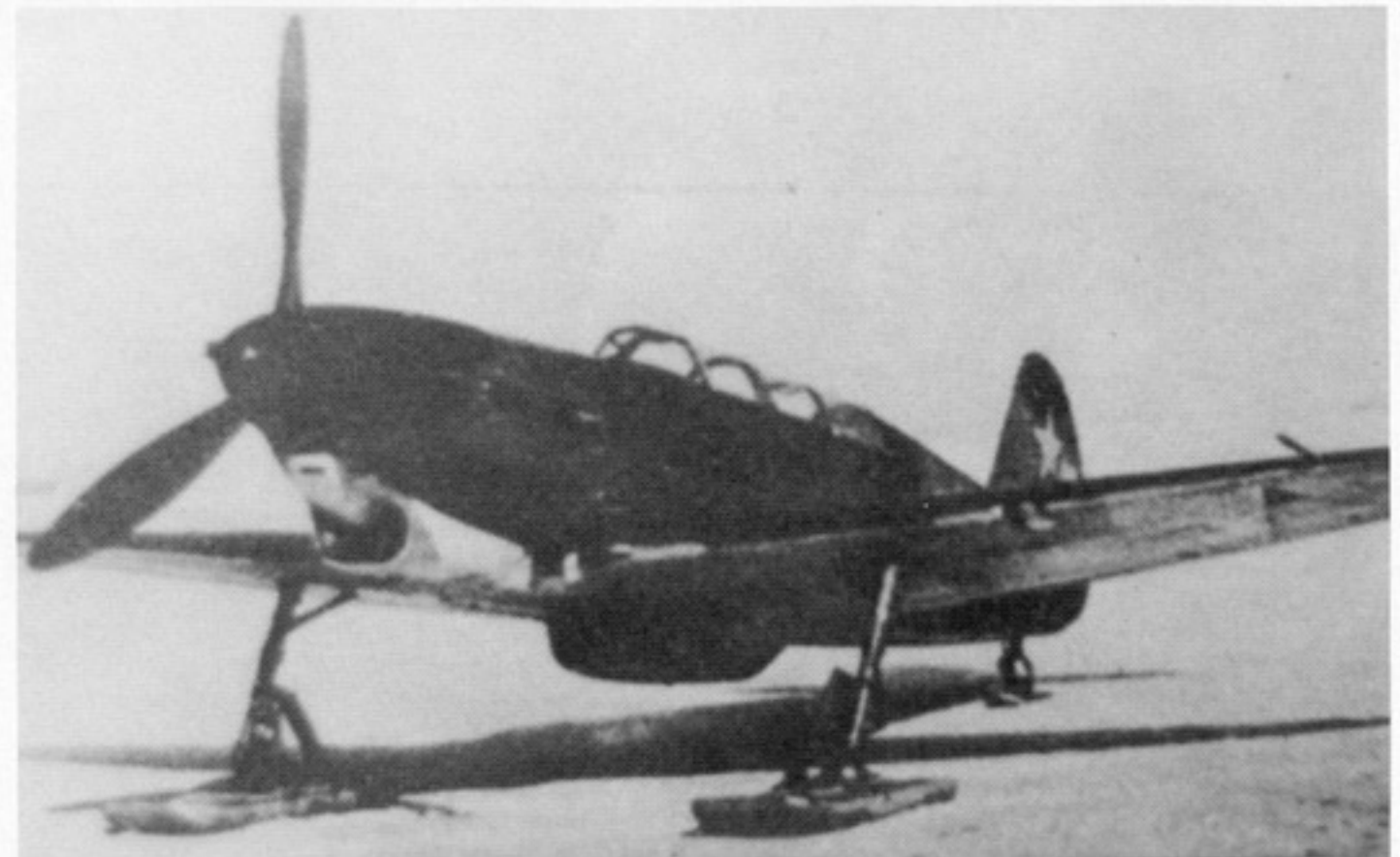


Optional

Yak 7V



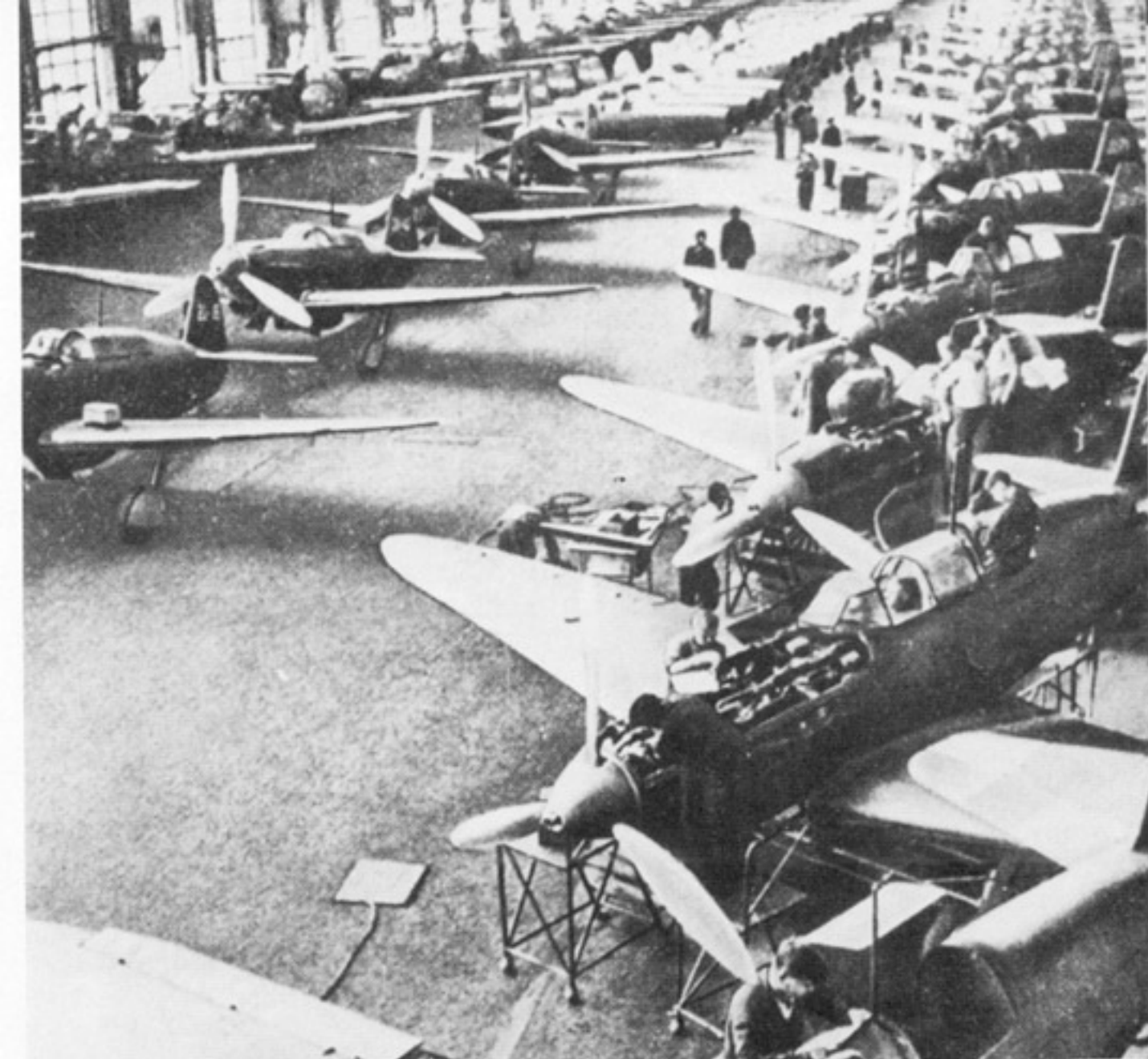
Yak 7V



(Above) Some Yak 7Vs equipped with the fixed undercarriage had their wheels replaced with skis allowing them to more easily operate from unimproved landing strips during the winter months.

(Right) Yak 7V trainer with a pupil in the front seat and an instructor in the rear seat. Only the trainer version had a step on the fuselage below the rear cockpit just behind the wing root. The trainer had full dual controls and did not carry the armor plate behind the pilot's seat as the combat version did. The 20mm cannon was carried for gunnery training. (Andrzej Morgala)





(Above) Huge aircraft factories behind the Ural Mountains provided Red Air Force fighter regiments with the numbers of aircraft so badly needed at the front. State Aircraft Factory 153 at Novosibirsk built more than 15,000 aircraft during the Great Patriotic War, mostly Yak 9s. The nearly completed Yak 7Bs of batch number 22 (at left) will soon be pulled out of the assembly hall for the acceptance flight. Aircraft of batch number 23 (at right) are in the final assembly stage. The compartment behind the cockpit was standard on all 'heavy' Yak Fighters. (Karl Hänggi)

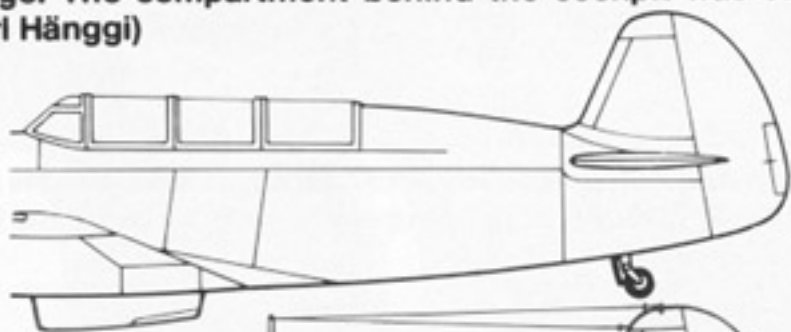


(Above) This standard Yak 7B, serial number 22-03 was completed at Zavod 153 at Novosibirsk during the summer of 1942. The serial number painted in White on the tail indicates the third aircraft built in Batch Number twenty-two. The number of aircraft built varied from batch to batch. Only State Aircraft Factory 153 used this system of serial numbers, all other plants applied the serial number in very small letters on the tail. The large Zavod 153 serial numbers were usually overpainted as soon as the fighter reached a front line unit. (Robert J. Ruffle)

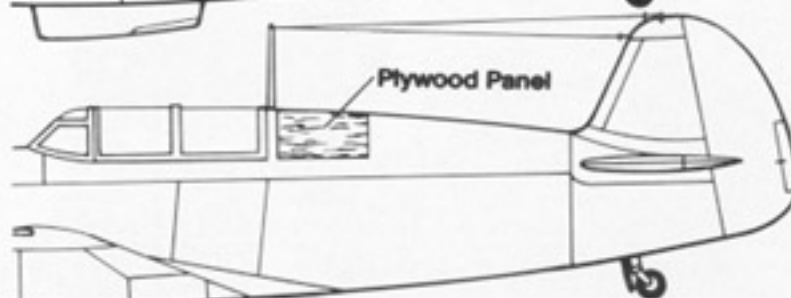
(Below) A Line up of early Yak 7Bs donated by the Communist Youth International Organization *Komsomol* during early 1942. The *Komsomol* insignia has been applied to the center of the fuselage star on each of the aircraft. Early Yak 7Bs lacked the gun cocking mechanism fairing and tailwheel doors. This version also had non-standard wing root carburetor intakes and a small aerial mast. The inscription on the first aircraft reads *Novosibirsk Komsomol* and on White 7 the inscription reads *Kuzbas Komsomol*. White 7 also carries a replacement rudder. The *Novosibirsk Komsomol* aircraft carries a Red arrow on the nose surrounding the exhaust stacks. (Don Henry)



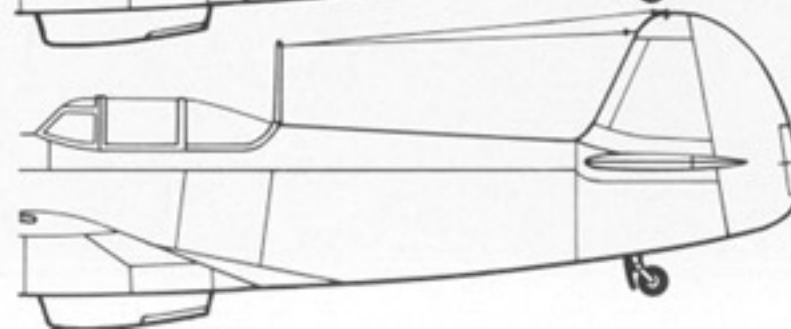
Yak 7V



Yak 7A



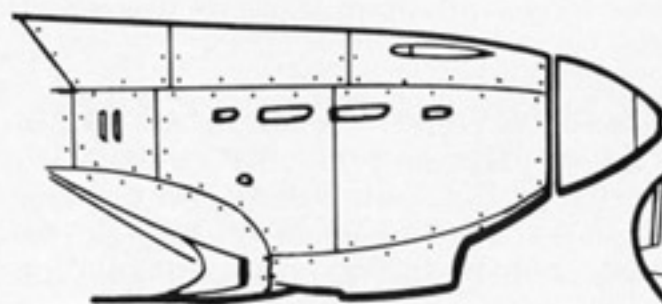
Yak 7B



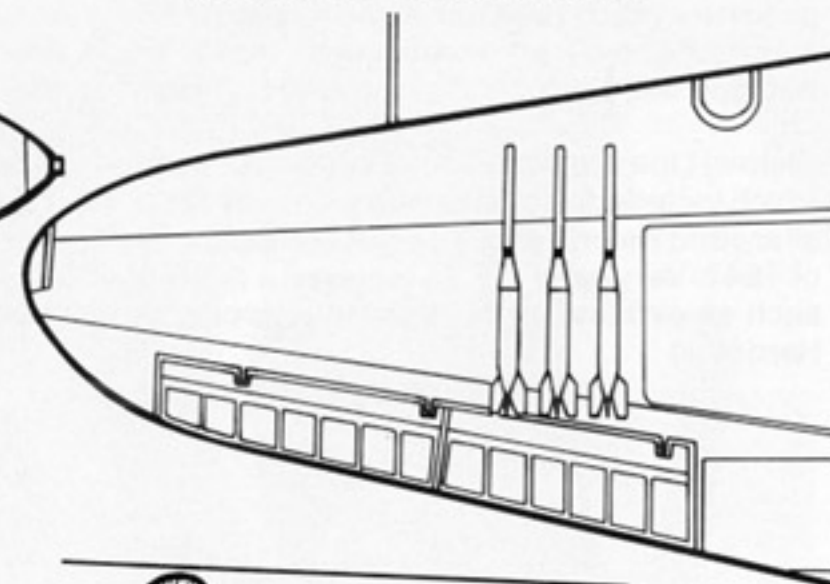


(Above) Lt. Col. Anatoli E. Golobov, Commander of the 18. Guards Regiment relaxes on the wing of White 50, a Yak 7B during early 1943 at Khationki. The uppersurfaces of the fighter are camouflaged in Green and Black, with early war styled national markings. The 18. Guards Regiment was formed on 7 March 1942 from the 6. Fighter Regiment. Golobov became a Hero of the Soviet Union and survived the war. (Von Hardesty)

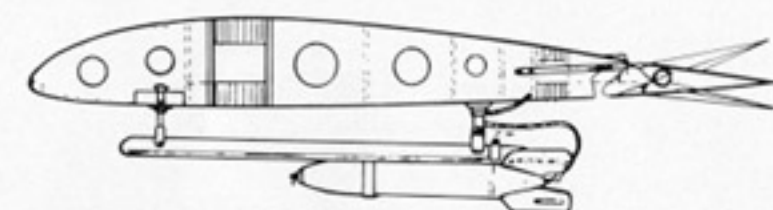
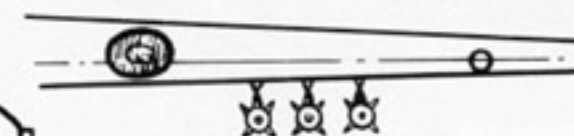
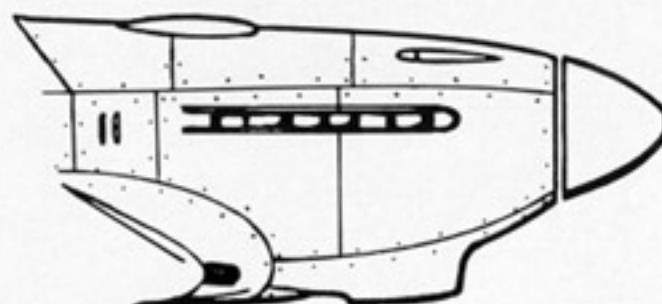
Yak 7 A/B



RS-82 Rockets



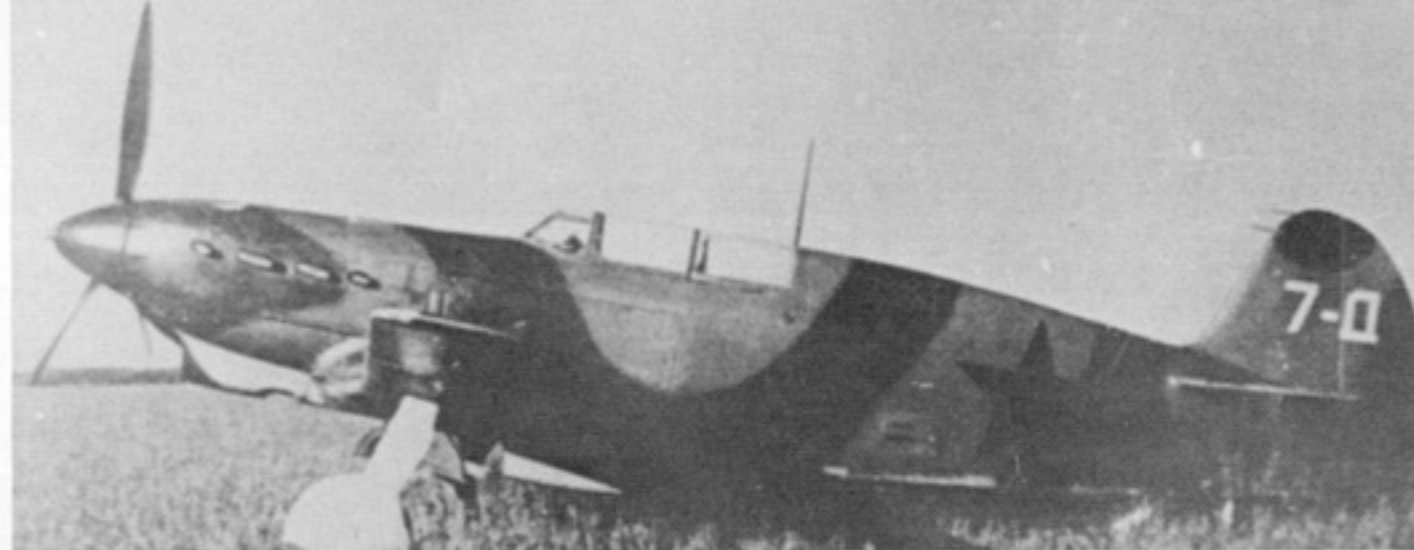
Yak 7B (Late)



(Below) Lt. Martshenko ran out of fuel and bellied in this Yak 7B, serial number 34-37 at Ice Lake of Onega in Finland on 8 February 1943. This late production Yak 7B had Yak 9 styled exhaust stubs and trim tab on rudder. The landing light was eliminated on late production batch Yak 7Bs during the Autumn of 1942. (Hanan Valtonen)



(Right) A new dural wing was fitted to an otherwise standard Yak 7B, which was tested under the Yak 7D designation, which is also painted on the tail. The massive delivery of high quality steel from America permitted Soviet designers to replace many wooden parts in the wing structure which resulted in an increase in wing fuel tankage. First trials with the Yak 7D were carried out during the summer of 1942. These new wings with more rounded tips would become standard on the later Yak 9. (Robert Ruffle)



(Below) Line up of Yakovlev Fighters for a propaganda scene. White 27 seems to be a Yak 7DI which included all standard equipment of the Yak 7B, except for the addition of a three piece all around vision hood. The Yak 7DI was converted on the production line during the summer of 1942. Very early Yak 9s featured a number of details that were influenced by the Yak 7DI, such as exhaust stubs, tailwheel doors, aerial mast, spinner, and oil cooler intake. (Von Hardesty)



White 1, a Yak 1, 2nd Series flown by Senior Lieutenant Mikhail Baranov who scored 27 kills while flying with the 183 Fighter Regiment. Cyrillic inscription reads *Death to the Fascists!*



An early Yak 9 in the autumn of 1942 during the battle of Stalingrad.



This Yak 1M carrying a shark mouth was flown by Albert Durand of the French volunteer Normandie-Niemen Fighter Regiment in April of 1943 at Mosalsk.



Yak 7B (34-37), a GAZ 153 built fighter, which ran out of fuel and bellied in on the frozen surface of Lake Onega in Finland on 8 February 1943. The pilot, Lt. Martshenko became a POW and the airplane was sent to Germany.



This Yak 3 (370147) was the personal aircraft of General G.N. Zakharov, commander of the 303 Fighter Aviation Division, who was given the Hero Of The Soviet Union award on 19 April 1945.



A Yak 9B fighter-bomber presented to the Red Air Force by the artists of the famous Little Theater at Moscow during 1944. The aircraft was assigned to a flight under Lt. V. Melekhov. The inscription reads: *Little Theater To The Front*.



White 92, seen during the summer of 1944, was a GAZ 292 built Yak 9T-37 (0375364) assigned to the 3rd Fighter Aviation Corps commanded by General Savitsky.



Austrian Yak 11 (777229), now coded 4C AH, was based at Langenlebarn/Tulln between 1955 and 1965 and formerly carried the codes 4A AH.



This Yak 15, the first Soviet mass produced jet fighter, was assigned to a training unit during 1946.



Yak 23 (925) coded SP-GLK, was allocated along with one other aircraft (SP-GLL) to the Instytut Lotnictwa Warszawie (Polish Aviation Institute) in 1956. The IL logo of the institute is carried on the fuselage and tail. Andrzej Ablamowicz claimed a new World Altitude Record with this aircraft on 21 September 1957.



Yak 9

The Yak 9 fighter became the most important Yakovlev development during World War II and was produced in larger number than any other Russian fighter, becoming the 'heavy' counterpart to the Yak 1M and Yak 3 'light' fighters. While the Yak 'light' fighters, with a limited endurance for Russian conditions, were used almost exclusively in the fighter and interceptor role, the 'heavy' fighter, developed from the UTI-26 (Yak 7) evolved into a multi purpose fighter with increased endurance, a fighter-bomber, an anti-armor fighter, and a reconnaissance fighter.

Severe limitations on the availability of steel-alloy had seriously hampered Soviet fighter development, but with increasing quantities of steel becoming available from the United States, wooden components of fighters were replaced with components made of steel and had been introduced on the Yak 7 without disrupting production. An armored screen of 75mm thickness replaced the 8mm armor plate on the seat, exhaust stubs, as well a number of other details. The decision to introduce a large number of changes all at once resulted in the designation Yak 9. The standard Yak 7 landing light was deleted on the Yak 9, except the trainer version. The Yak 9 weighed 346lb less than the Yak 7B, with standard armament being reduced to a 20MM cannon and single a 12.7MM Berezin UB machine gun mounted on the portside of the upper engine deck. This reduced firepower was extremely unpopular with frontline pilots.

Pilot complaints forced the re-introduction of the starboard machine gun in some early production batches under the designation Yak 9M. An outgrowth of the Yak 7, the first true Yak 9 to appear was actually a mixture of the Yak 7B and Yak 7DI which began replacing Yak 7s in November of 1942 during the Battle of Stalingrad.

The introduction of a new metal wing permitted provision of two additional unprotected outboard fuel tanks, increasing fuel capacity to 105 Imperial Gallons and range to 590 miles. The standard Yak 9 wing had a marginally shorter span than the 7B at 31 ft 11.5 in. and had slightly enlarged wing root air intakes, and a nominal increase in the rudder area due to a reduction in the hinge line. A deeper radiator bath was provided, the oil cooler intake beneath the nose was refined, and the cowling outlets were revised, a twin door tail wheel was installed, and external aileron and rudder tabs were added.

The time of switching production from the Yak 7B to the Yak 9 varied from one State Aircraft Factory to another, but GAZ 153 was the first plant to switch over and would produce most of the 15,000 Yak 9s built.

The cockpit panel included the following instruments: Altimeter, Type KI-11 Compass, Boost Gauge Type US-800, Speed Indicator UP-1, Turn Indicator, Tachometer TE-22, Clock Type AWR, Engine, Water and Oil Temperature Control. An optically flat 20mm armored glass plate was fitted behind the windscreen. Equipment and time of installation varied from factory to factory.

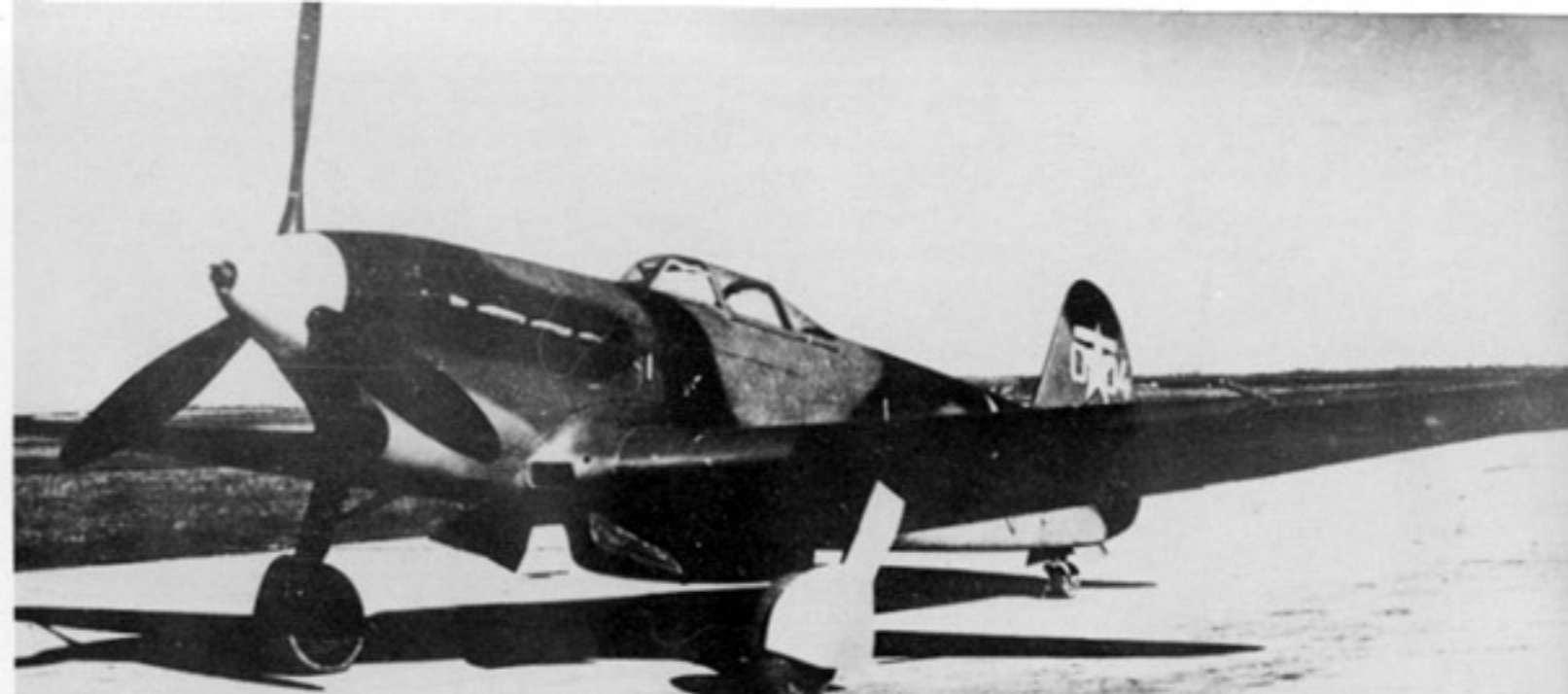
In early 1943, the primary role of the Yak 9 was to gain and maintain air superiority in the immediate vicinity of the battlefield, close escort of assault and attack aircraft, and the direct support of ground forces by strafing enemy troops, transport, and concentration areas behind the frontline. At this time, the 1,210 hp Klimov M-105-PF-3 powerplant driving a 9.84 ft VISH-105SV all metal variable pitch constant speed propeller was installed.

Yak 9L

Powered by a Klimov M-105 RD two stage supercharged engine of 1,000 hp, and armed with a 12.7mm hub mounted machine gun and a 7.62mm ShKAS machine gun buried in the portside over the engine, an unsuccessful attempt was made to convert the basic design into a high altitude fighter was made under the designation Yak 9L (L-Legkji - Light).

Yak 9MPVO

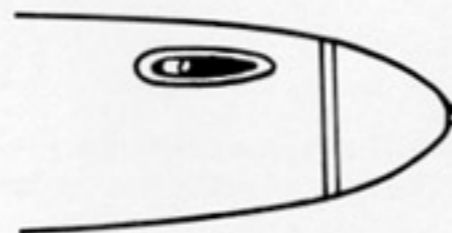
The night fighter version, the Yak 9MPVO was fitted with an RPK-16 radio compass and a small FS-55 searchlight in the port wing.



(Above) A preproduction Yak 9 undergoing trials at the Scientific and Research Institute in Moscow. Built at State Aircraft Factory 153 this is the fourth preproduction machine. Developed from the Yak 7, the aircraft was fitted with a steel-alloy wing developed during the summer of 1942. The experimental aircraft lacks armor plate, the screen behind the pilot seat, and radio equipment. (Andrzej Morgala)

Armament

Yak 9 (Standard)



One 12.7mm Berezin
VB Machine Gun

Yak 9M



Two 12.7mm Berezin
UB Machine Gun

(Below) The Yak 9 saw action for the first time in late November of 1942. The aircraft in the foreground is an early Yak 9 with the earlier Yak 7 wing and armor plate. Later Yak 9 variants produced in early 1943 would feature a new spinner and aerodynamically refined wing root carburetor intakes. The numerals 76 in White is painted on the rudder. (Andrzej Morgala)



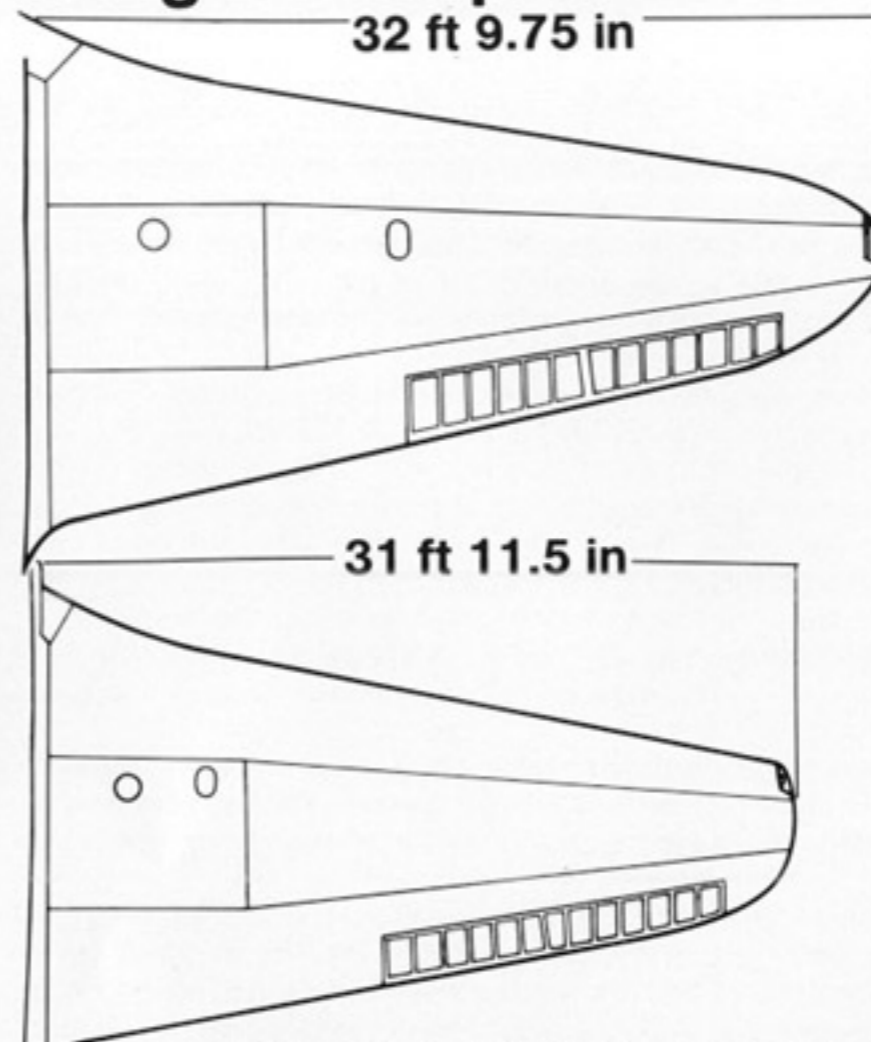


(Above) The Yak 9 would become the ultimate 'heavy' fighter and was destined to be produced in larger numbers than any other Yakovlev aircraft, and took part on every major battle after its introduction during the autumn of 1942. (Swiss Air Force)

(Below Left) Warm up of a Yak 9 at Toula Airfield in late 1943. During the cold snowy Russian winter, ground crews often removed the tailwheel doors. The Aircraft in the background is a two seat Yak 7V trainer. (SHAA)



Wing Development



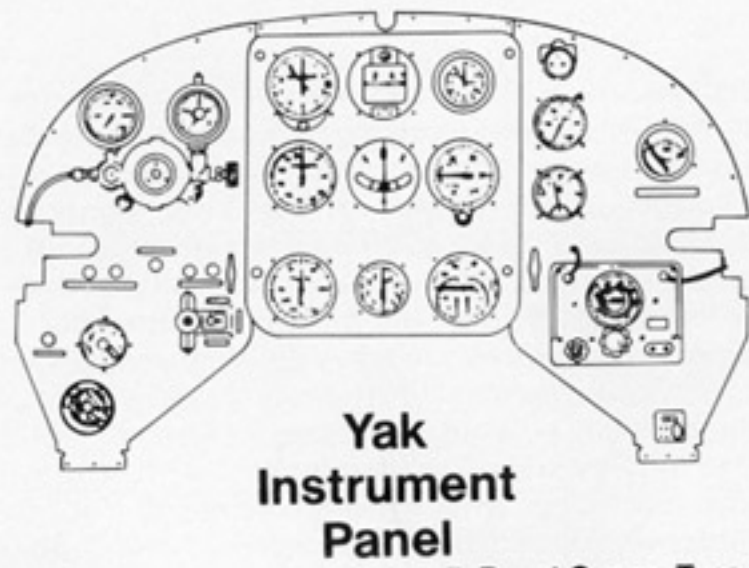
Yak 9 (Early)

Yak 9 Standard

(Below Right) Yellow 35, a Yak 9 at Dobrovka near Smolensk in May of 1944. Melting snow converted airstrips into muddy fields. The Blue, White and Red spinner indicates that the aircraft belonged to the Normandie-Niemen Regiment. The French volunteer regiment used the Yak 9, Yak 9D, and Yak 9T-37. (SHAA)

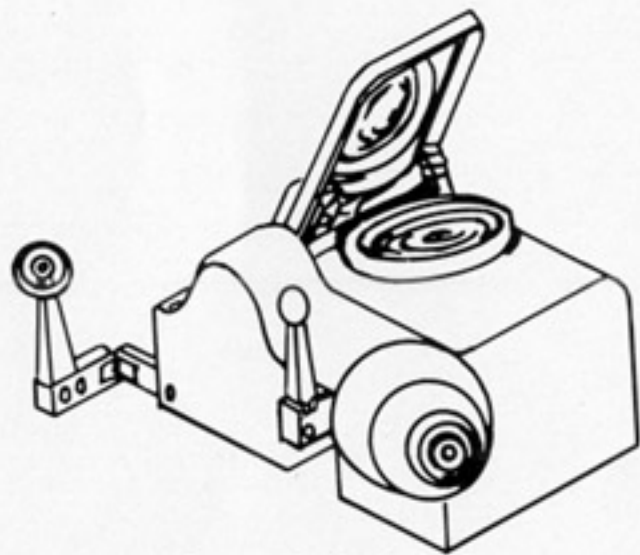


Cockpit

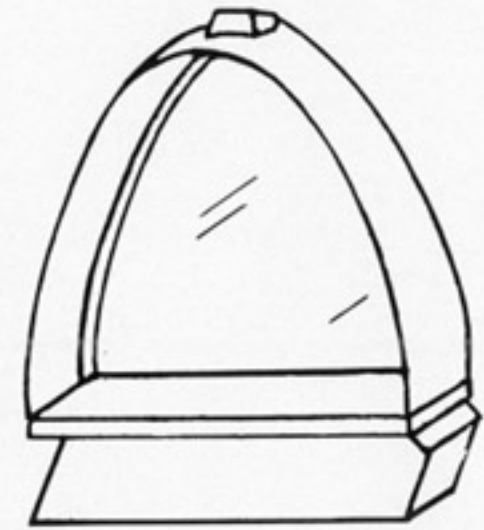


**Yak
Instrument
Panel**

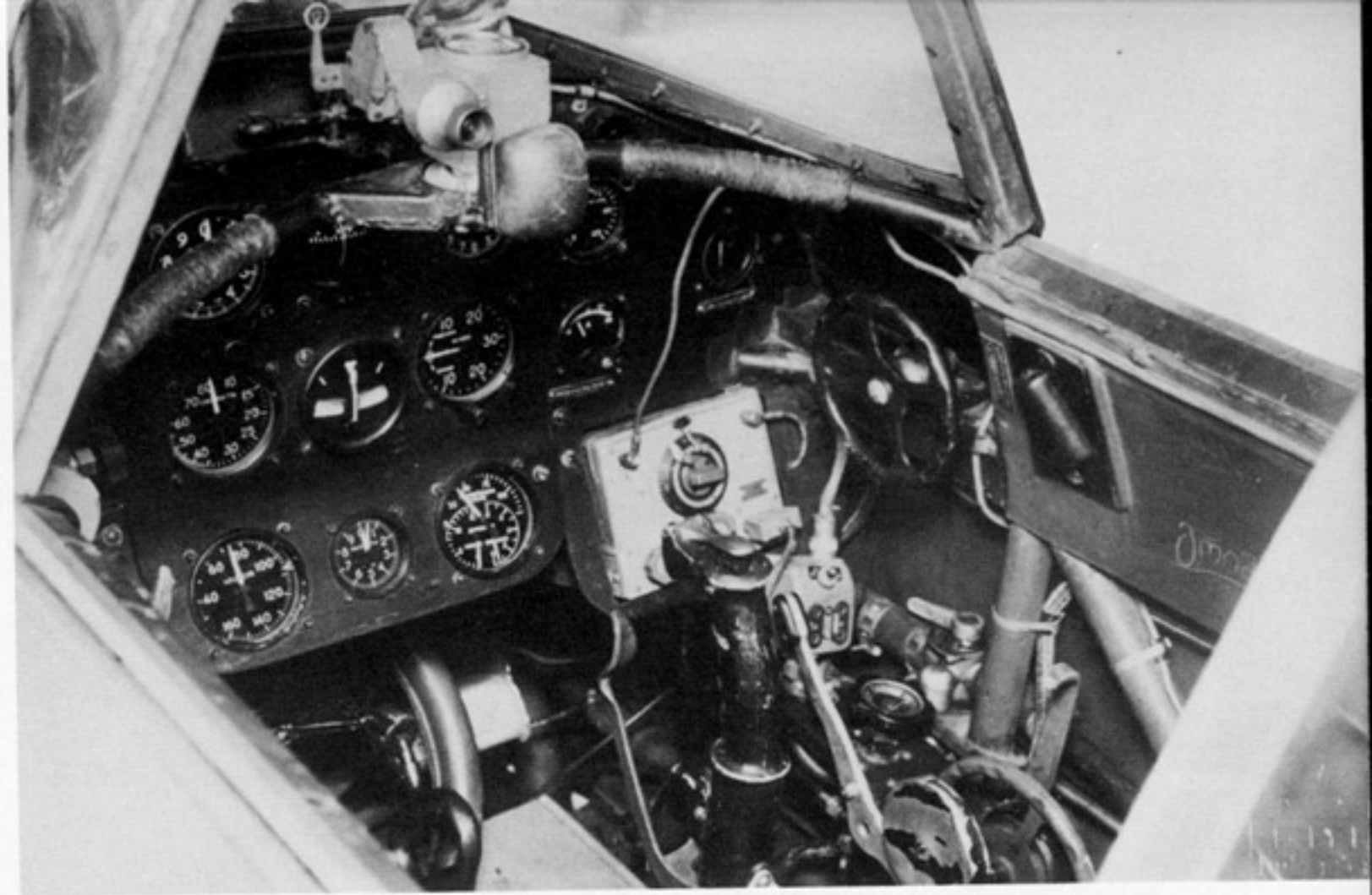
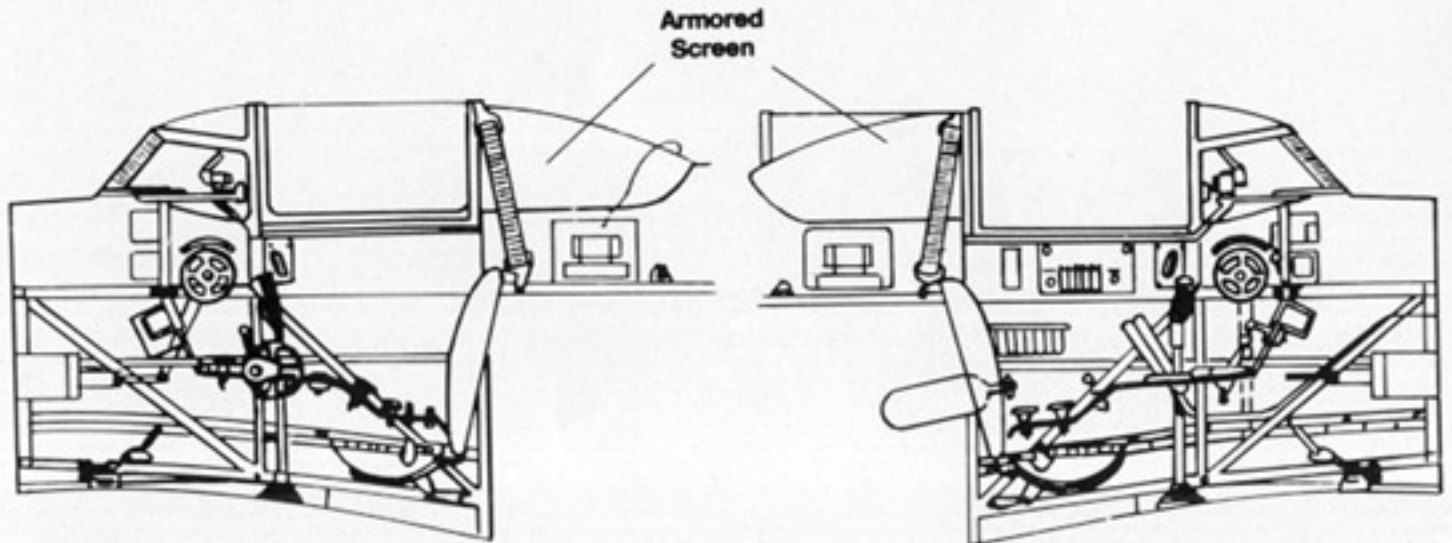
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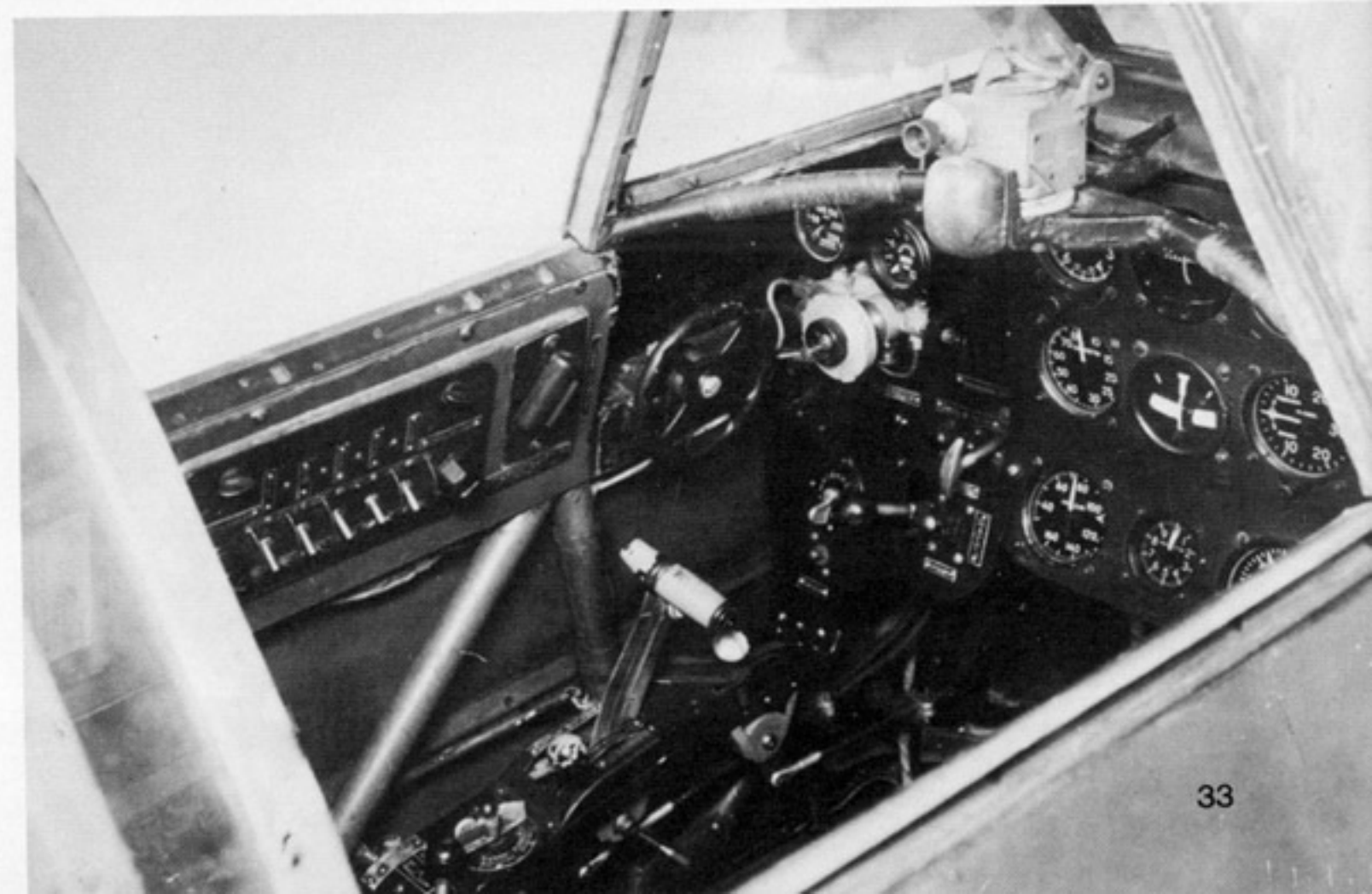
Gunsight

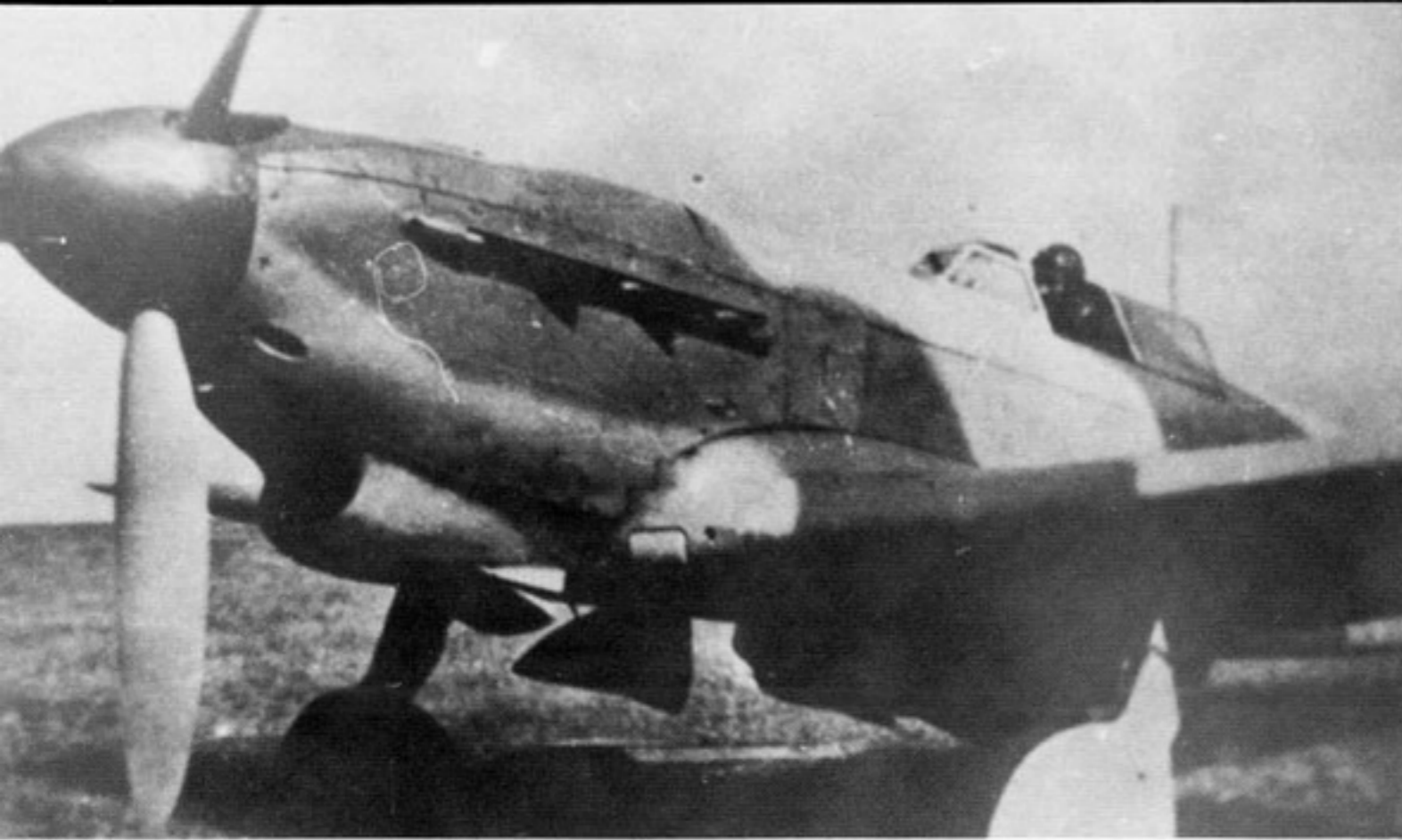


**Rear Cockpit
Armor Screen**



(Above and Below) Compared to American and German standards, the cockpit of Russian fighters was spartan and included an altimeter, type KI-11 compass, type US-800 boost gauge, UP-1 speed indicator, turn indicator, type TE-22 tachometer, type AWR clock, oil pressure gauge, engine temperature control, oil and water temperature control. The RSI-4 radio was operated with a button at the bottom of the throttle control stick. The Clock was the only electrically heated instrument on the panel. The rudimentary gunsight with two deflection rings was operated by daylight, only the nightfighter variant received an improved gunsight with an electrical light. (Swiss Air Force)

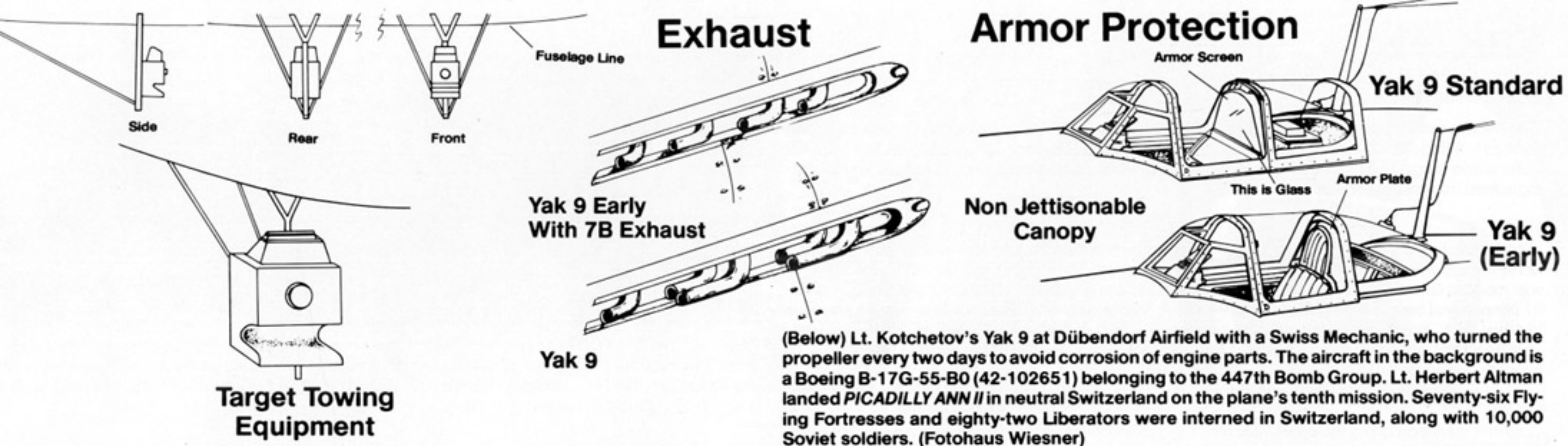




(Left) This Yak 9 wears a very unusual camouflage scheme, believed to be a field application, unfortunately the colors cannot be determined, however, they seem to be a mixture of White, Green, and Light Gray on the upper surfaces, and the standard Light Blue on the undersurfaces. The spinner is Red and the propeller is in natural aluminum. The wing root carburetor intake is closed. (Dr. Volker Koos)

(Below) White 4, a Yak 9 of the 5th Air Force under the command of General S.K. Goryunov, which ended the War in Czechoslovakia occupying Slatina and Medlanky airfields near Brno. This fighter was converted into a target towing ship shortly after the war, and wears the standard Gray, Dark Gray camouflage and markings of a 1943 built fighter. Even at this stage of the war, the Yak 9 had no jettisonable canopy. White 4 has no tailwheel doors. In late August of 1945, Lt. Genandji Nikitovitch Kotchetov defected to the American sector of occupied Germany and asked to emigrate to the United States. His defection was rejected by the Americans, and the young pilot was ordered to leave the American sector within twenty-four hours or be turned over to Soviet authorities. The twenty-three year old pilot started his Yak 9 and headed for neutral Switzerland, landing at Dübendorf Airfield near Zürich. In December the aircraft was returned to the Soviets with a lend-lease C-47 'Dakota' flying in spare parts, fuel and oil as well as nine mechanics under the command of Captain Kashnikov. On 29 December, Captain Kashnikov took off from Dübendorf airfield, flying via Munich-Schleissheim to Vienna. The unfortunate defecting pilot and the aircraft designer Novikov were exchanged for Swiss Red Cross personnel that the Soviets had captured in Germany. (Fotohaus Wiesner)





(Below) Lt. Kotchetov's Yak 9 at Dübendorf Airfield with a Swiss Mechanic, who turned the propeller every two days to avoid corrosion of engine parts. The aircraft in the background is a Boeing B-17G-55-B0 (42-102651) belonging to the 447th Bomb Group. Lt. Herbert Altman landed *PICADILLY ANN II* in neutral Switzerland on the plane's tenth mission. Seventy-six Flying Fortresses and eighty-two Liberators were interned in Switzerland, along with 10,000 Soviet soldiers. (Fotohaus Wiesner)



Yak 9D

The need for additional range became increasingly obvious as the Red Army advanced in 1943 and resulted in fitting two additional fuel tanks in the aft fuselage, increasing fuel capacity to 147 Imperial Gallons and range to 870 miles. This early Yak 9D (D-*Dalnosty* - Range) could not visually be distinguished from standard Yak 9s.

Yak 9T-37

The installation of the large caliber NS-37 37mm cannon during the late spring of 1943 in the Yak 9 led to the repositioning of the cockpit 15.75 inches to rear. To simplify production this modification was made to all Yak 9Ds, becoming one of the distinguishing features of the *Dalnosty*. The 37mm NS-37 cannon had been developed in early 1943 by A. Nudelman and A. Suranov to penetrate armor up to 48mm thick. Yak 9s equipped with this weapon received the designation **Yak 9T-37** (T-*Tankovyi* - Tank Hunting). Space for the 37mm and thirty rounds of ammunition reduced fuel tankage to 79 Imperial Gallons.

Yak 9K

A further development in the anti-armor role, the Yak 9K (K-*Krupnyi* - Heavy) with a 45mm NS-P-45 hub mounted cannon and fifteen rounds of ammunition could easily knockout both the German Mk V Panther and Mk VI Tiger Tank. In some cases a 23mm MP-23-VV cannon replaced the standard 20mm ShVAK weapon in the Yak 9D, but this was usually done as a field modification.

Yak 9PD

Five high-altitude Yak 9PDs were built to intercept Junkers Ju 86Rs and Ju 388s carrying out daily reconnaissance flights over Moscow in 1943. A Yak 9D was stripped of all armor protection, armed with a single 12.7mm in the port side above the engine, and powered by a Klimov M-105PD engine with supercharger developed by V.A. Doleshal. The Yak 9PD high altitude fighter could climb to 44,690 ft. All aircraft were assigned to the 12. Guards Regiment.

Yak 9B

A small production batch included the Yak 9B (B-*Bombardirovshchik* - fighter-bomber) which flew for the first time in early 1944. Provision was made for either four 220lb FAB 100 bombs or a container of anti-armor bombs, both types were stowed in tubes immediately aft of the cockpit. Fully loaded the Yak 9B had a speed of 315 mph at sea level with a range of 620 miles.

Yak 9R

Another variant, the Yak 9R (R-*Razvedchik* - Reconnaissance), carried AFA-1m cameras capable of taking fifty photos in the bay behind the cockpit.

Yak 9PO

Trials with a single Yak 9D with a pressurized cabin, designated Yak 9PO proved far from successful and the program was cancelled.

Yak 9DD

While American and British engineers tried to extend the range of their fighters with speed consuming and aerodynamical ugly drop tanks under the fuselage and wings, Yakovlev succeeded in increasing the range of the Yak 9DD (DD-*Daldego Deysviya* - Long Range) to 1,367 miles with the addition of two fuselage tank resulting in a total capacity of 193.5 Imperial Gallons. A flight of twelve Yak 9DD flew from Belzyi, Ukraine to the 97th Bomb Group base at Amendola near Bari, in Southern Italy. Guided by M.A. Njuchtikov in a Douglas A-20 Boston the fighters flew the 807 miles non-stop. These fighters, part of the 236. Fighter Aviation Division subsequently flew missions from Soten-Orlik in Yugoslavia supporting Tito's Partisans.



(Above) The Yak 9T-37 received a 37mm cannon developed by A. Nudelman and A. Suranov. To accommodate the breech of the large cannon within the fuselage the cockpit was move aft 15.75 inches. This modification became standard on all late Yak 9Ds. Poland received twelve Yak 9T-37. (Andrzej Morgala)

Yak 9UTI

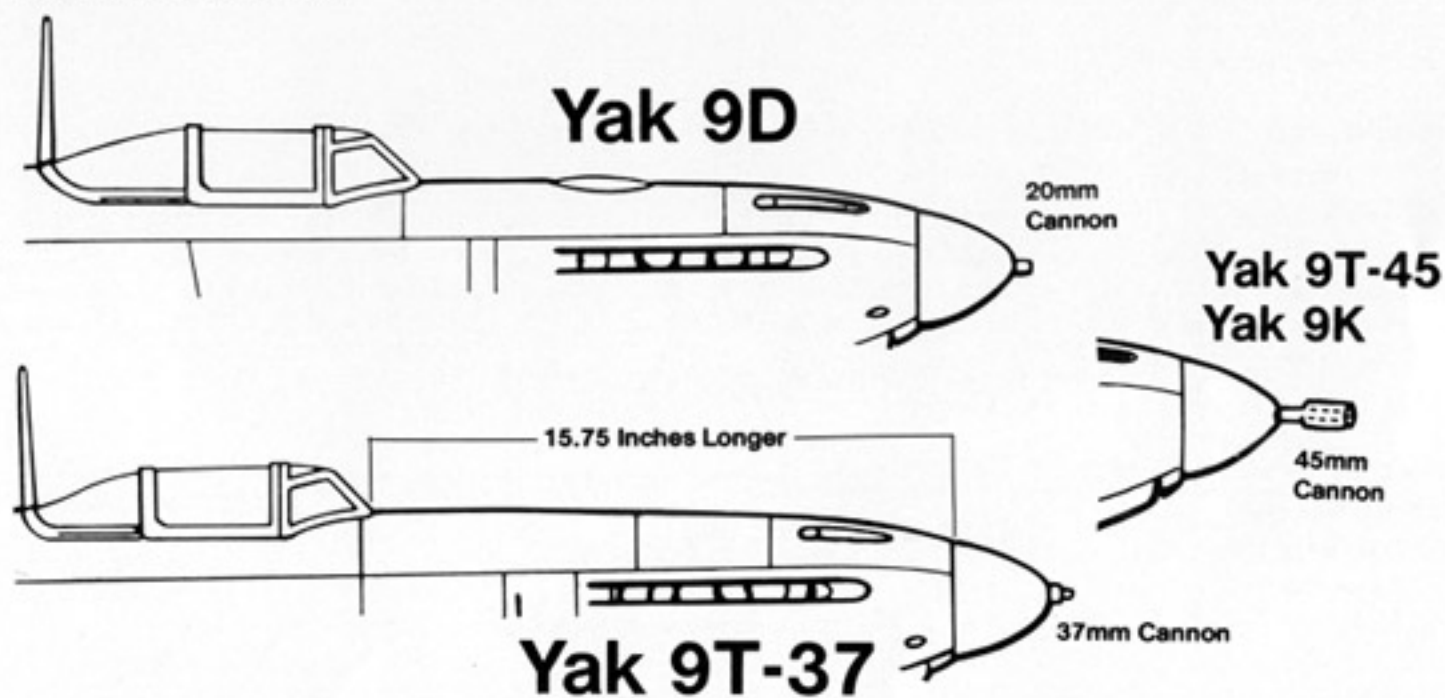
By mid 1944, as Soviet aircraft factories sent a never ending stream of combat planes to the advancing front, Yak 9 variants outnumbered all other fighters combined in service and were increasingly beginning to replace the earlier Yak 1M and Yak 7 types. At this stage of the War, the Yakovlev Design bureau undertook to provide Red Air Force training units with a two-seat Yak 9 trainer with dual controls. Under the designation Yak 9UTI the trainer had a lengthened fuselage and dual controls. A landing light was installed in the port wing and standard armament was retained, however, the seat armor and armored screen were deleted. Poland was the sole foreign country to use the Yak 9 trainer, receiving nineteen Yak 9UTIs, and were flown as **Yak 9W-1s** and **Yak 9W-2s**, depending on the engine type used.

(Below) White 5, a Yak 9T-37 equipped with the efficient NS-37mm cannon. The weapon was capable of penetrating armor up to 48mm thickness. The standard tailwheel doors are carried. (SHAA)

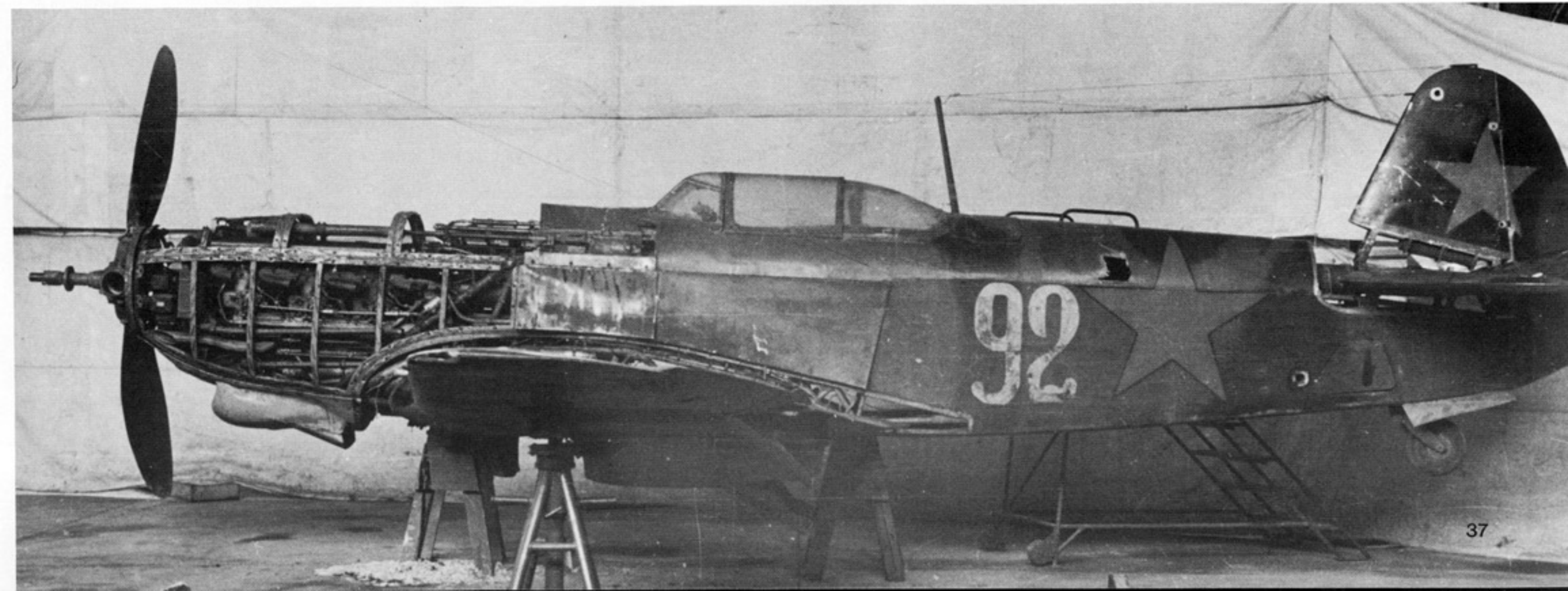




(Left) This formation contains a number of Yak variants in a variety of markings: White 23, a Yak 9, and White 27, a Yak 7DI carry their tactical markings in front of the Star, while White 40, a Yak 1M without an aerial mast carries its markings aft of the Red star. The last two aircraft carry no tactical markings. The first two fighters have White rudder tips. The tailwheels on the Yak 1M and the Yak 7DI are not retractable, while the other aircraft, Yak 9's have retractable tailwheels. The Yak 7DI is without a trim tab on rudder. Mixed formations of 'heavy' Yak 9s and 'light' Yak 1Ms were common in Soviet fighter regiments during the Great Patriotic War. (Von Hardesty)



(Below) This Yak 9T-37 had the doubtful honor of being dismantled by *Luftwaffe* specialists at DLV Berlin-Adlershof. Serial Number 0315364 belonged to the 3rd Fighter Aviation Corps under the command of General Savitsky. The undamaged oil coolers may indicate a wheels down landing behind enemy lines. White 92 can be easily distinguished as a standard late Yak 9D by the muzzle of the NS37mm cannon. (Bundesarchiv Koblenz)

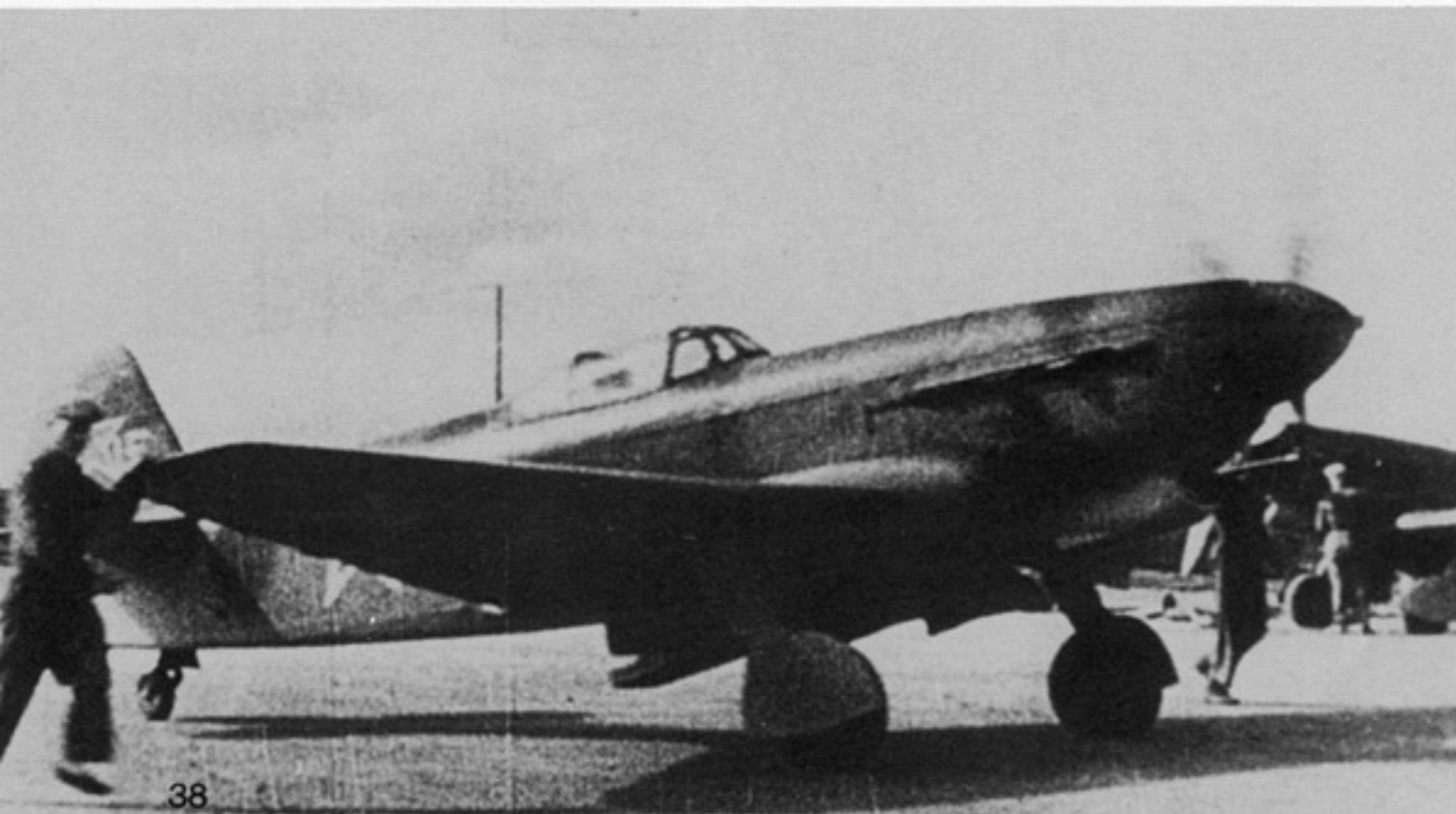




(Above Left) Russian Mechanics check out an engine after an overhaul at Toula in late 1943. The Soviet Klimov M-105 PF powerplants proved very reliable even in the coldest periods. Inexperienced pilots often tended to bring the engine to full start-performance before sufficient warm-up. The Klimov engine was usually forgiving of such brutal treatment, but not so the more fragile engines in the American and British lend-lease fighters! (SHAA)

(Above Right) A Soviet pilot poses on his Yak 9. The roomy compartment behind the Cockpit is typical of the 'heavy' fighter series. The Yak 1M and Yak 3 'light' fighters did not have a compartment behind the cockpit. (Musée de l'Air)

(Below) By mid-1944 Zavod 153 alone produced thirty aircraft daily. As usual in the Soviet Air Force, the last two or three digits appeared in large letters on the fuselage as the tactical number, however, there were exceptions such as using the first digits of the Serial Number or none, or both. (Robert J. Ruffle)



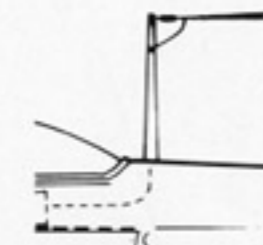
Tailwheel

Antenna

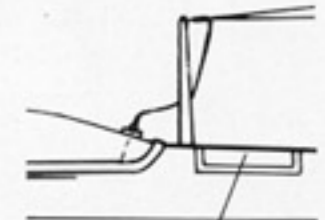
Yak 9D Standard



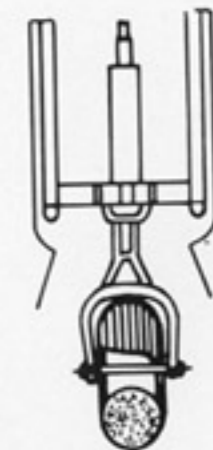
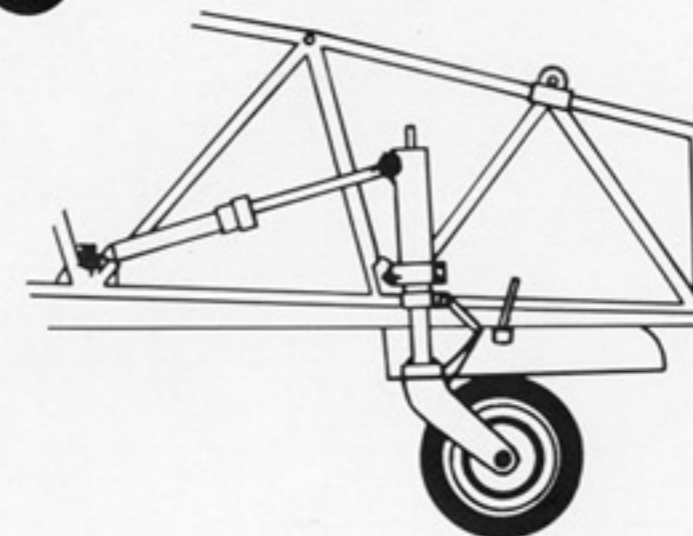
Yak 9D Field Modification

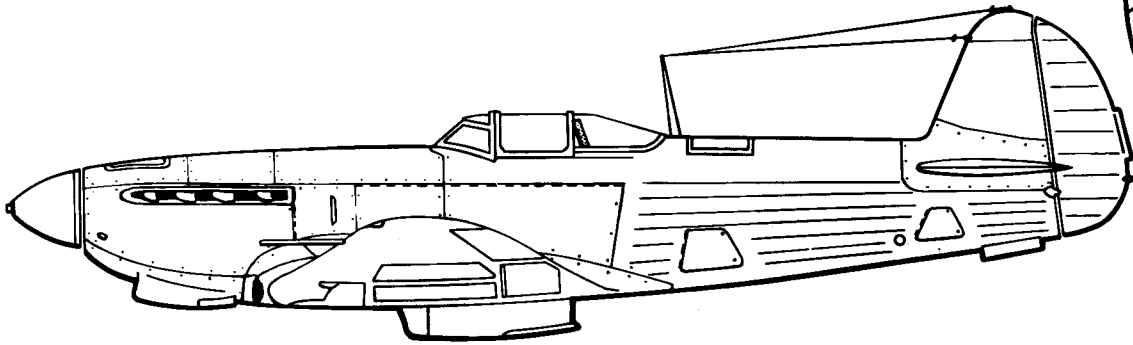


Yak 1M



Yak 9
Storage Compartment





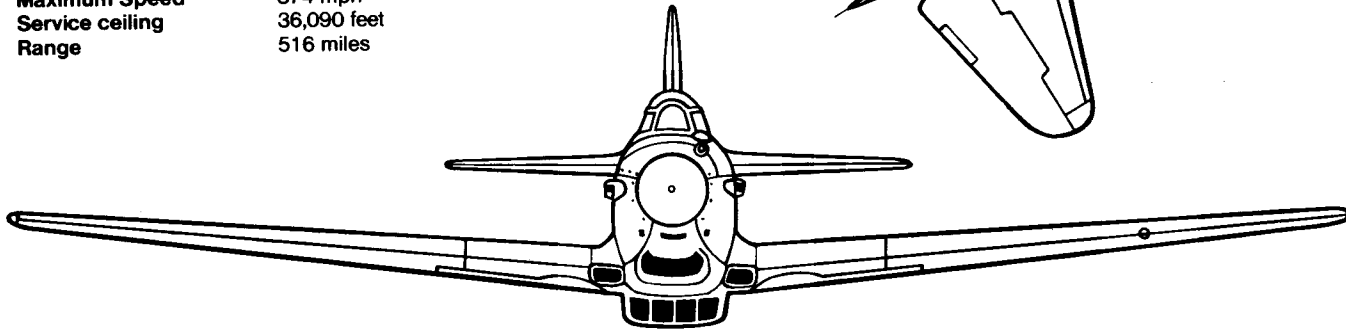
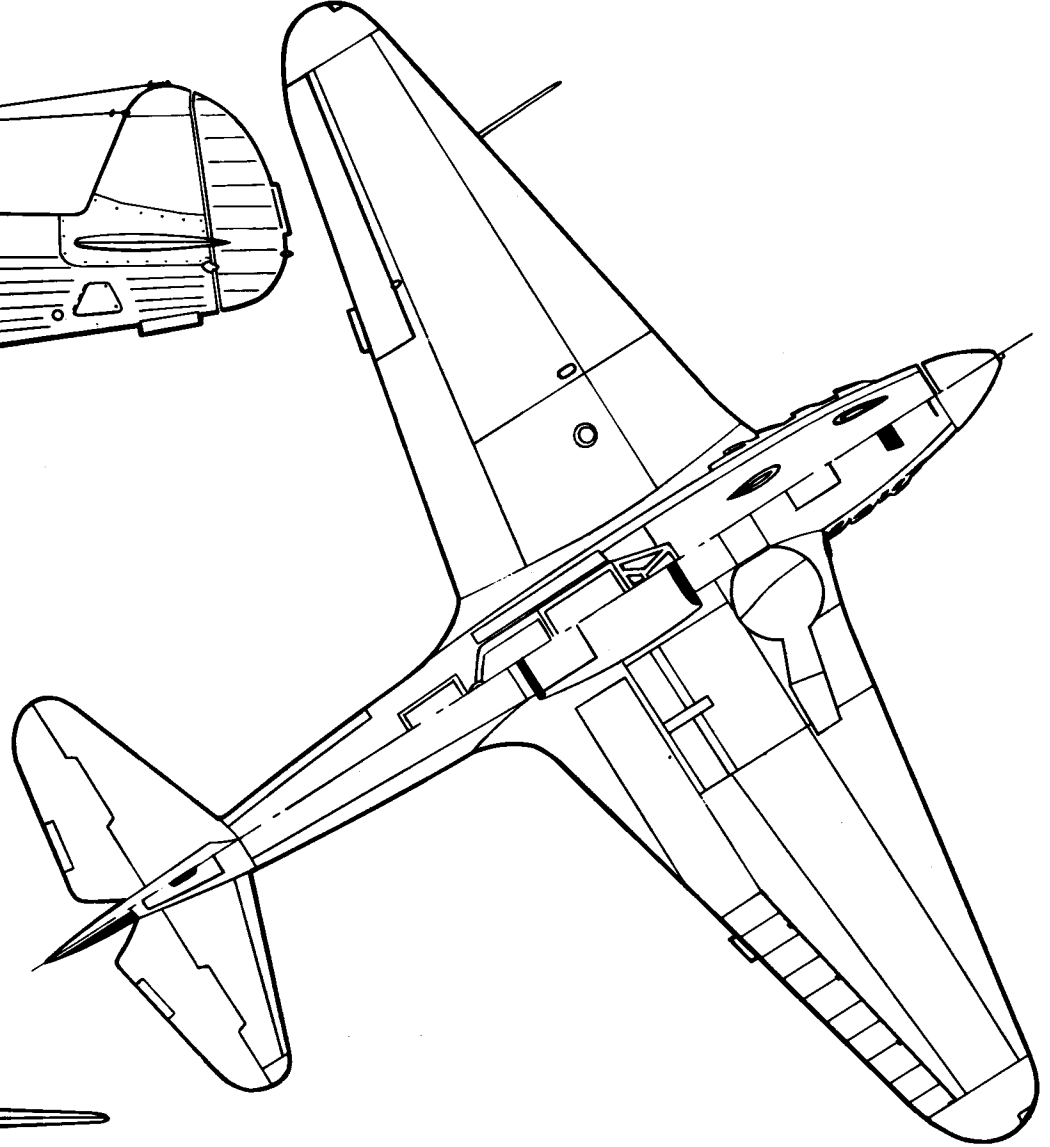
Specifications

Yakovlev Yak 9D

Wingspan 31 feet 11.5 inches
Length 28 feet 0.25 inches
Height (tail up) 9 feet 10 inches
Empty Weight 6,107 pounds
Maximum Weight 6,790 pounds
Powerplant One Klimov M-105PF-3
12 cylinder Vee liquid cooled 1,360hp engine

Armament One engine mounted 20MM ShVAK cannon
One 12.7MM UB machine gun

Performance
Maximum Speed 374 mph
Service ceiling 36,090 feet
Range 516 miles





(Above Right) René Challe shares a joke with Kazanov, his Russian Mechanic. In the background is White 60, Challe's personal aircraft carrying the emblem of the French GC III/7 Fighter Group. Challe served with GC III/7 in 1940 when he was shot down by a German plane shortly after he claimed his first kill on 15 May. He evaded capture via Spain and joined Normandie-Neimen where he served as Commander of the 4th and later the 1st Squadron. He claimed eight victories on the Eastern Front before he was seriously wounded in an air combat over East Prussia on 17 January 1945. (Karl Hänggi)



(Above Left) René and Maurice Challe in front of White 60, a Yak 9T-37. The Challe Brothers had joined the Normandie-Niemen Regiment on 18 March 1944. Maurice (right) was killed in combat over East Prussia while René subsequently became a Colonel in the French Air Force. (SHAA)

(Left) A Yak 9D at Toula during the Winter of 1944. The aircraft carries the standard Gray and Dark Gray camouflage. A relatively small star is carried on the rudder. (SHAA)

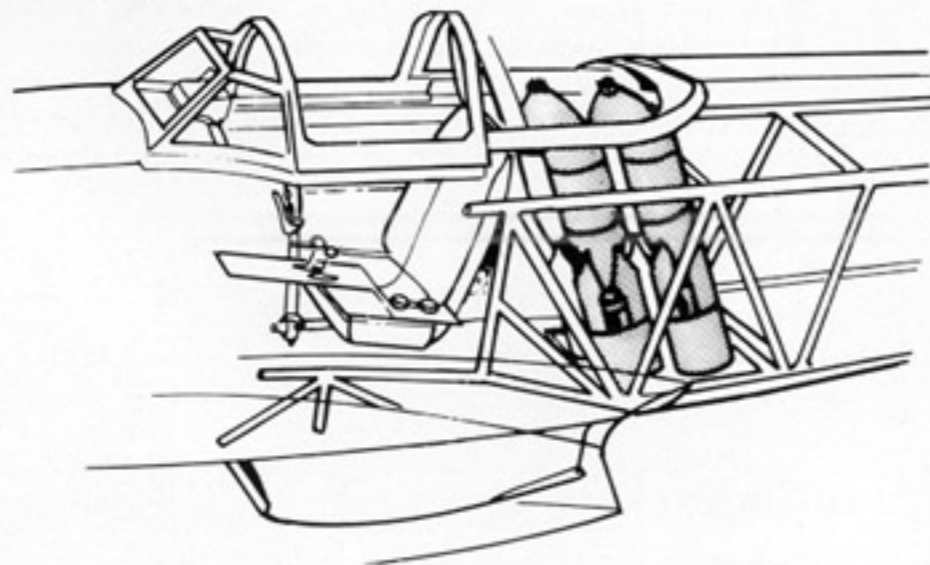


(Above Left) The Yak 9B, a fighter-bomber variant, carried four 220 IB bombs FAB 100 in tubes immediately aft of the Cockpit. Capable of 349 mph, a number of this variant were donated by the Little Theater in Moscow during 1944. The Yak 9B did not have an aerial mast. (Karl Hänggi)

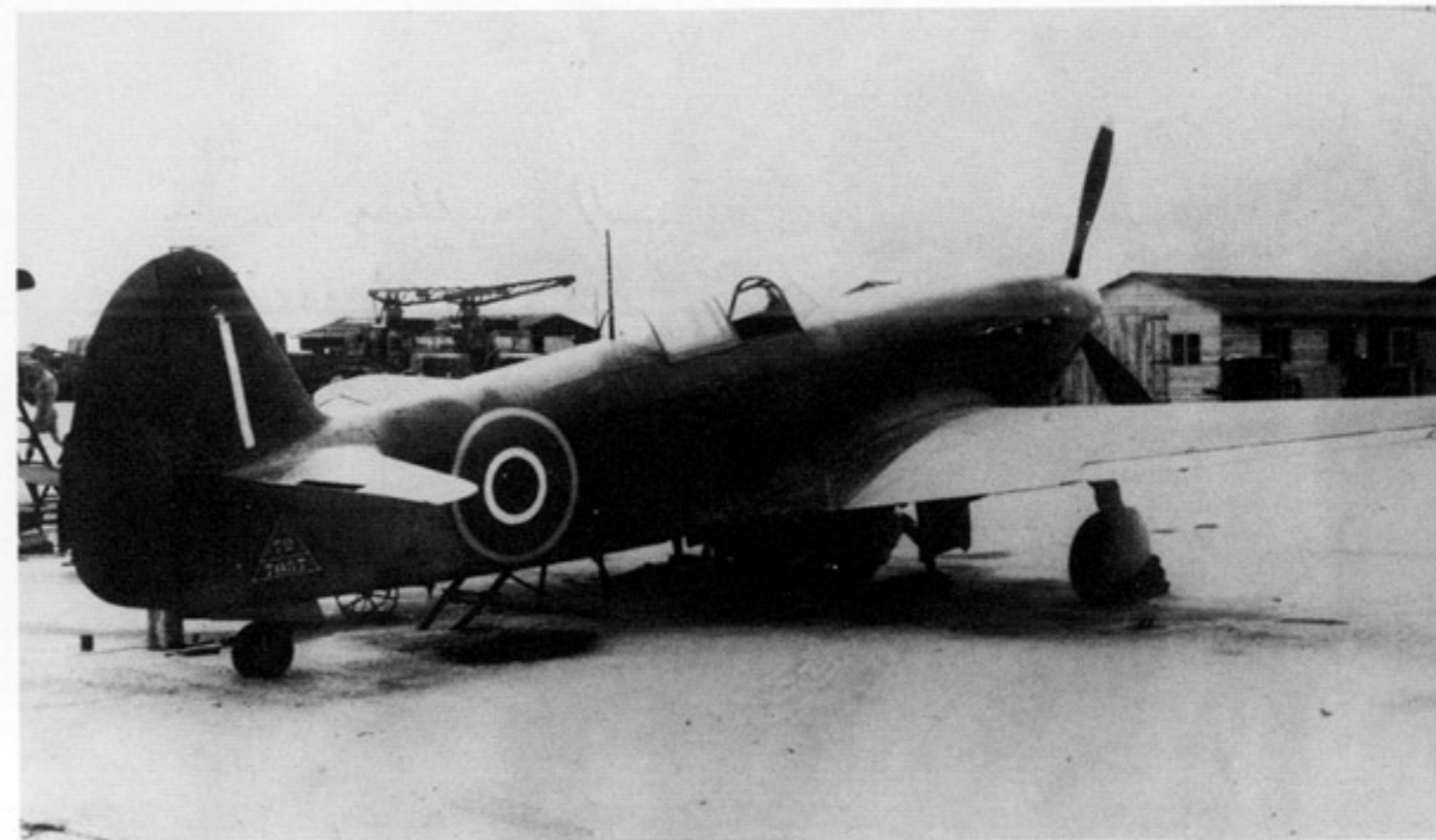


(Above Right) This Yak 9D of the Bulgarian Air Force landed in Italy during a ferry flight to Yugoslavia. A twin engine Anson and a Wellington of the RAF are in the background. (RAF Museum)

Yak 9B Bomb Installation



(Right) James Eric Storrar's personal hack, a late Yak 9D, carries his personal initials 'JAS' in Black on the fuselage just in front of the roundel. Storrar served as a commander with No. 234 Squadron, equipped with P-51 Mustangs, based at Treviso in Northern Italy. Other pilots were rotated to fly this machine on seniority basis. The aircraft ruptured its oil tank during a flight and when all attempts to repair or replace the damaged item failed, the Yak 9 was towed to the center of the airfield and ceremonially burnt. (RAF Museum)

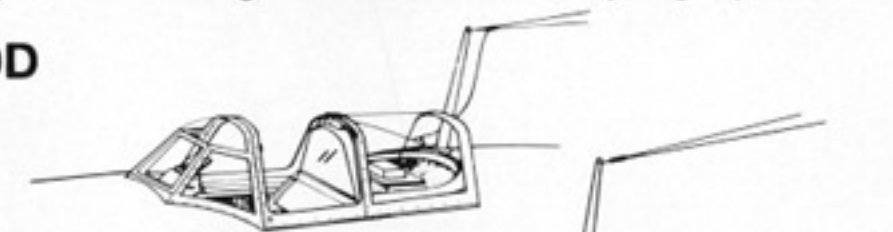




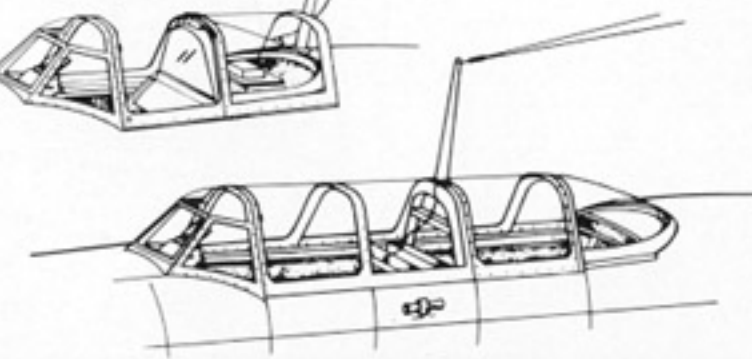
(Above) A Group of twelve Yak 9DDs at the 97th Bomb Group base at Amendola near Foggia, Italy. Additional fuel tanks provided the ultra long range Yak 9DD fighter with an endurance of 1,367 miles. Visually a Yak 9DD could not be distinguished from the standard Yak 9D. These fighters, part of the 236 Fighter Aviation Division flew from Belzyi, Russia to Amendola in Southern Italy led by M.A. Njuchtikov in a lead-lease Douglas A-20 Boston. Subsequently based at Soten-Orlik the unit carried out close support missions for Tito's partisans in Yugoslavia. These Yak 9DDs carry interesting markings, White wingtips, a Red Star on the mainwheel door fairing plates, and a white outlined Red star on the spinner. National markings on the fuselage and tail are unusually large. (Alberto Salvati)



Yak 9D



Yak 9UTI



(Left) This two Seat Yak 9UTI Trainer with a lengthened fuselage has a Yellow rudder. The trainer carried the same armament as the fighter, but no armor screen behind the cockpit seats. A landing light was added in the port wing on the trainer variant. White 40 is painted in the standard Gray and Dark-Gray scheme. (Andrzej Morgala)

Yak 9U

Yak 9U

The Yak 9D played a leading role in wresting air-superiority on the Eastern front away from the *Luftwaffe*, but quantity more than quality of the Yak 9 finally broke the back of the *Luftwaffe*. No, however one was more aware than Yakovlev and his design bureau in the weaknesses of the Yak 9D design. The first attempts at a refinement of the Yak 9D were made in early 1943, but the unreliability Klimov M-107 engine delayed the project. It was an engine failure that was responsible for the loss of the initial Yak 9U (*U-Ulutshshennyi* - Improved) prototype on 25 February 1943.

The Yak 9U featured a further aerodynamically refined aft cockpit canopy with a modified aft fuselage deck contour. The oil cooler intake was moved from beneath the nose to the port wing root, an enlarged radiator bath was moved further aft on the under fuselage, and a supercharger intake was centered on the top decking of the engine cowling. Armament comprised an engine mounted 20MM ShVAK or 23MM MP-23VV cannon and two 12.7MM UB machine guns, which fulfilled a long standing desire of front line pilots for more fire power.

Continuous problems with the M-107A engine forced the first production batches to be powered with the reliable M-105 PF-3 engine.

Additional changes had to be made, the wing was moved forward 3.9 in, fuel capacity was increased to 78 Imperial Gallons and a VISH-107LO propeller replaced the old VISH-105S type. In the Yak 9U, the Red Air Force had a superb fighter equipping its fighter regiments with outstanding performance and handling qualities, which was considered to be nearly on par with its contemporary, the North American P-51D Mustang. Impressive achievements had been made by Russian aviation since the Nazis invaded the Soviet Union when an underpowered and underarmed Yak 1 tried to challenge far superior *Luftwaffe* aircraft and suffered enormous losses. Time changed the situation, as Germany increasingly found itself mired in many of the same problems the Russians had faced during the fateful Summer of 1941. The Yak 9U could attain 433 mph at 18,500 ft and reach an altitude of 16,405 ft in 4.1 minutes. Compared with the 360 mph speed of the Yak 1, an incredible achievement.

Yak 9UT

The availability of metal alloys in large quantities during the second half of the war allowed the replacement of all wooden parts internally in the wing and the application of light alloy stressed skinning to the entire aircraft including the wing. The Yak 9UT reached the front as Germany was finally collapsing, with relatively few of the following sub-variants of the Yak 9UT being built: **Yak 9UV** - a two seat trainer.

Yak 9UF - a tactical Reconnaissance variant with cameras.

Yak 9K - a close support version with a 45MM NS-P-45 hub mounted cannon as the sole armament.

An experimental Yak 9U received an M-107U experimental engine of 1,875 hp, attaining a 447 mph speed. Further tests were cancelled when the plane lost part of the skinning during high speed trials.

Yak 9P

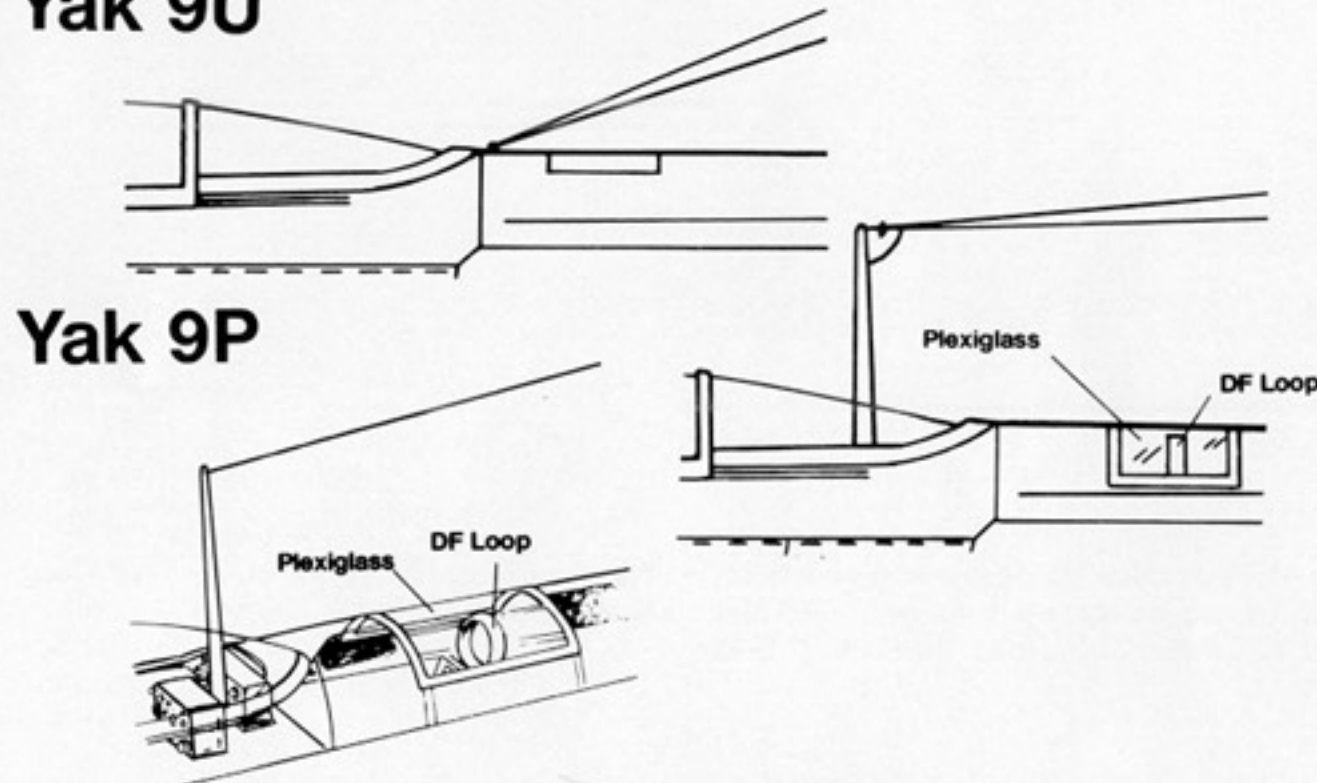
When hostilities ended in Europe on 8 May 1945, the Yak 9UT had proven itself to be a superb fighter, but by Western standards lacked much of the essential equipment and instrumentation. However in performance Yakovlev's last piston engined fighter development, the Yak 9P (*P-Perekhvatchik* - Interceptor) had matched the latest British and American standards and even offered limited all-weather capability.

The Yak 9P was introduced into fighter regiments during 1946 and featured a new instrument panel with an RPKO-10-M radio compass, a landing light, and a direction finding loop in the fuselage behind the cockpit covered by a plexiglass cover. The 9P could carry two 220lb bombs on underwing racks.

The Yak 9 also saw extensive use in a number of foreign Air Forces, Poland received ninety-three Yak 9Ps in 1949 in addition to its Yak 9Ds. Yugoslavia exchanged its Yak 9s for forty Yak 9Ps. Hungary dubbed their 120 Yak 9P *Vércse* (Falcon). China, Rumania and Bulgaria flew the Yak 9P. The Bulgarian Yak 9ps had the outboard wing tanks deleted and replaced by two 12.7MM machine guns under the designation Yak 9 P(Bulg).

Production ended in early 1947 after a total of 16,769 Yak 9 fighters had been produced since 1942, and were built at the following State Aircraft Factories GAZ 115 Moscow, GAZ 153 Novosibirsk, GAZ 166 Omsk, and GAZ 292 Saratov.

Yak 9U



(Below) "Who is knocking at my front door?", may have been the surprised question of this farmer in the Ukraine when this Yak 9U bellied in. White 20 is camouflaged in overall Green on the upper surfaces with Light Blue on the undersides. (Andrzej Morgala)



(Below) The most hated view of the Yak 9. Not only the *Luftwaffe*, but later over Korea American fighter and bomber crews learned to hate the Yak 9P when it appeared on the scene. The Yak 9P's performance was considered equal with its American opponent, the North American F-51 Mustang. Pilots were impressed by handling qualities of the nimble fighter but complained of insufficient front view during take off. (Andrzej Ec)



(Above) Hungarian Pilots push a Yak 9P to its hardstand after a mission. Patches of Dark Blue have been painted on the wings and fuselage. The inscription on the rudder trim tab is in Red, *ITT TOLNI TILOS* (No Hand Hold). The Yak 9P *Vércse* (Falcon) remained in Hungarian service until 1954 when they were exchanged for MiG 15s. (Georg Punka)

Exhausts



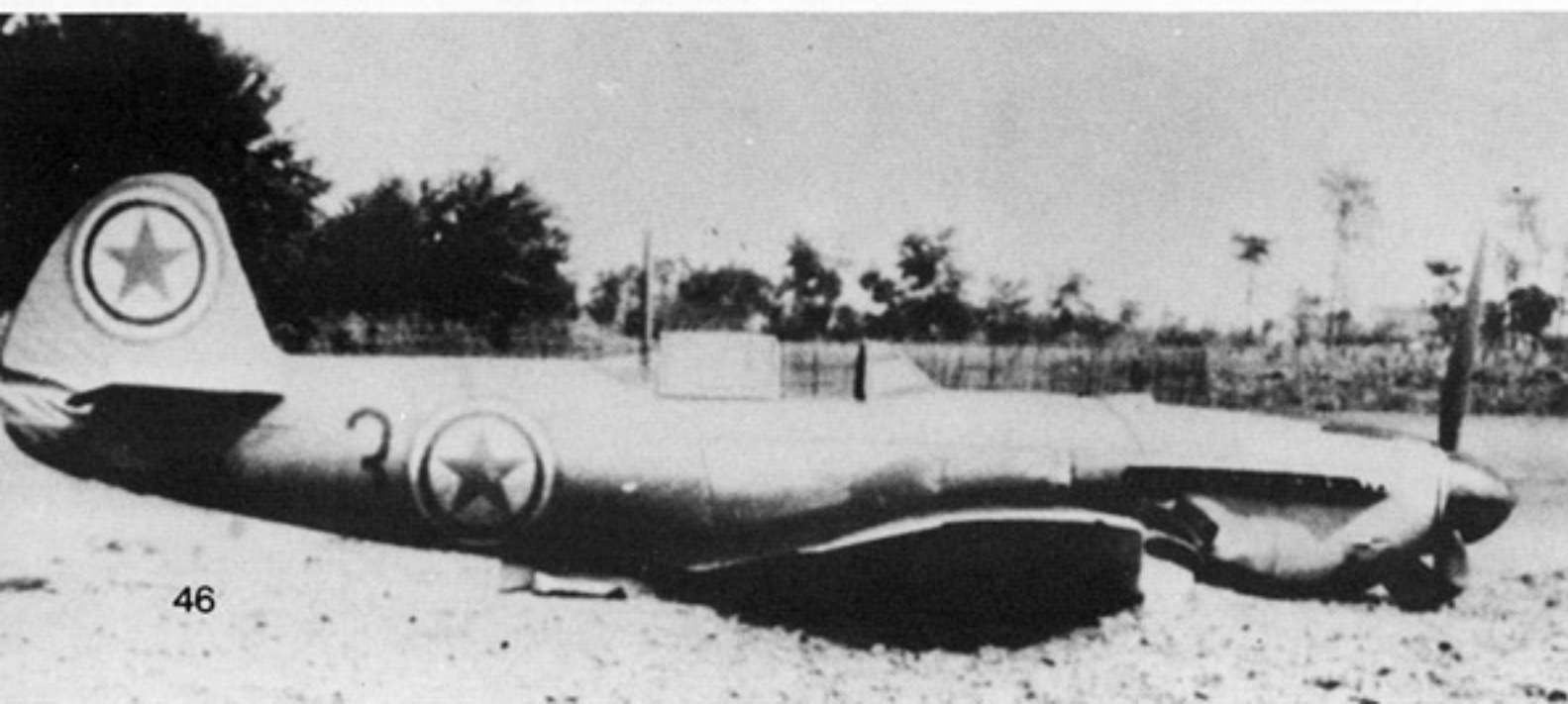
(Below) Hungarian Pilots pose in front of a Yak 9P, Serial Number 05-39. Red 17 carried a Red frame on its sliding canopy section. All Hungarian Yak 9s were flown in a Light Gray Blue camouflage. Red 17 has a replacement rudder, note the lack of a White outline on the National insignia on the rudder. Hungary received 120 Yak 9Ps from existing Soviet stocks. (Georg Punka)





(Above) Hungarian pilots relax in front of a worn Yak 9P with Dark Blue patches on its fuselage. The part of the star on the replacement rudder does not have a White outline. The tactical number '17' and the spinner are in Red while the national markings and the cockpit frame are in a Darker Red. Hungarian Pilots considered the Yak 9 easy to fly and extremely maneuverable. (Georg Punka)

(Below Left) A Hungarian Yak 9P with the early National Markings similar to the Korean People's Republic Air Force, a Red Star with Green and Red circles on a White background. The tactical number and spinner are in Black. The first Yak 9P arrived in Hungary during 1949, all from surplus Soviet stocks. (Georg Punka)



(Below) One of the ninety Yak 9Ps used by the Polish Air Force during the post war period. These aircraft were camouflaged in Light Gray, Olive Drab and Medium Gray uppersurfaces over Light Blue undersurfaces, such as carried on White 312. The Yak 9P could be distinguished from the earlier Yak 9D by the aerial mast coming through the rear canopy and redesigned exhaust stubs. Cockpit equipment of a Yak 9P included a RSI-4 Radio and a RPKO-10 radio compass. The circle on the wing is a fuel gauge indicator. (Andrzej Morgala)



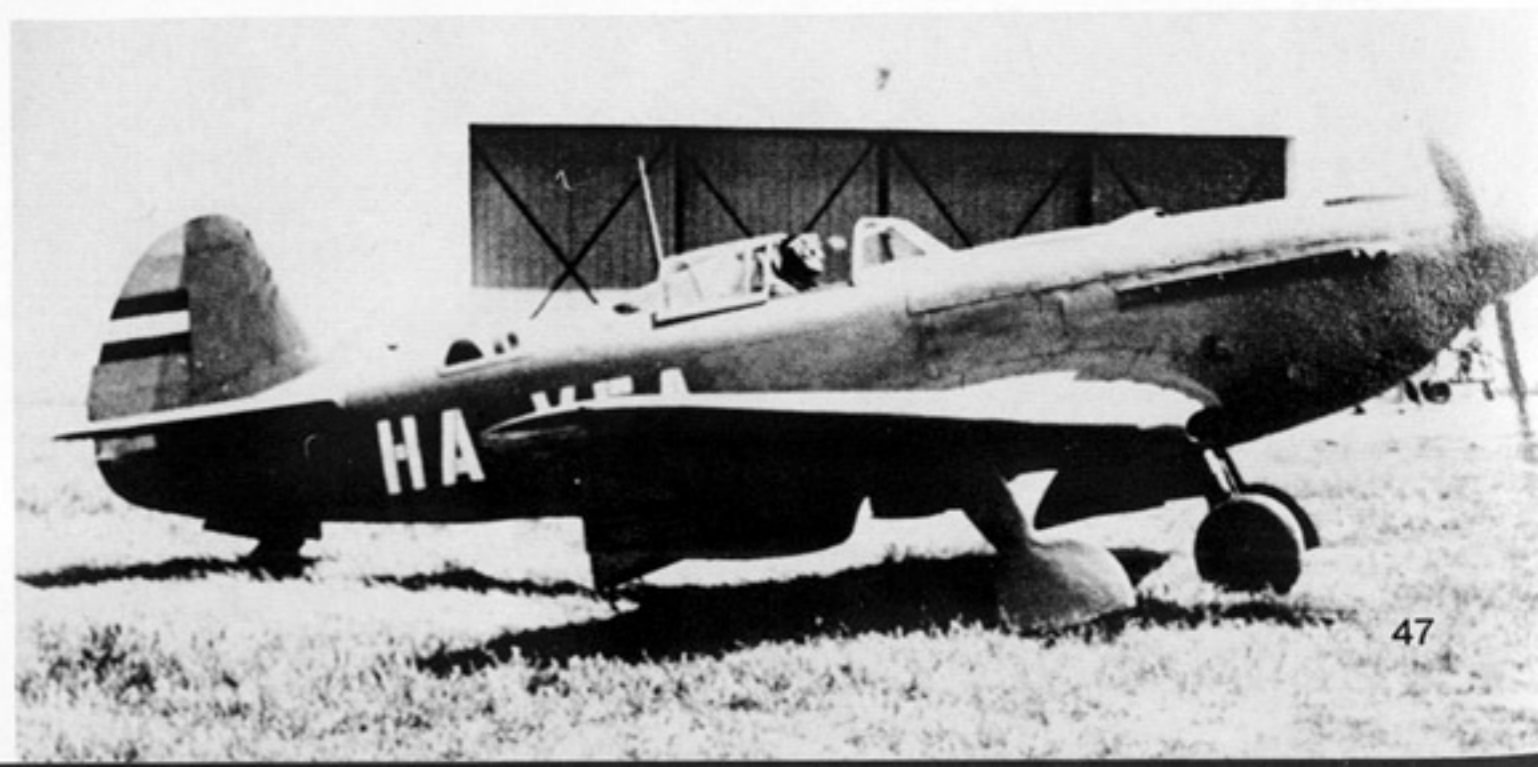


(Below Left) An overall Light Gray Yak 9P in Polish service. A Russian inscription in white can be seen on the propeller blade. All Yak 9Ps were powered by a 1,600 hp Klimov M-107 A engine and carried an armament of a single ShVAK 20mm cannon with 100 rounds, and two 12.7mm machine guns each with 250 rounds. Some examples of the Yak 9P were also armed with a 23mm cannon. (Andrzej Ec)

(Above) After being withdrawn from service this Yak 9P became an air racer in Hungary. The ex-Hungarian Air Force fighter received a Light Blue paint job with White Civil Registration HA-VEA. Only the non-appearance of American Air Racers prevented the Mustang from a loss, an aerodynamically clean Yak could beat any American type in post war racing competition! (Georg Punka)



(Below Right) Hungarian Pilot Mezölaky starts Victor Echo Alpha, a Yak 9P from a Demonstration Flight. A Green, White, and Red Hungarian national insignia is on the rudder. (Georg Punka)



Yak 11/C-11 Trainer

Shortly after World War II ended, the Yakovlev Design Bureau began development of a two seat trainer with full dual controls, intended for the intermediate and advanced training role to replace the obsolete UT-2 and Yak 7V. The Soviet Air Force specified that the new trainer should have the same handling qualities as the latest standard fighters then in use with the Soviet Air Force. As a further condition, the aircraft should be developed with as little expenditure as possible. The designer put all these requirements of the Air Force into a two seat Yak 3 powered by a 700 HP Shvetsov ASh-21 radial engine.

Yak 3UTI

The so called Yak 3UTI (UTI-*Uchebno-Trenirovochnyi-Istrebitel* - Fighter Trainer) flew for the first time on 10 November 1945 with Pyotr M. Stefanovski at the controls. Compared with the Yak 3 fighter, this advanced trainer looked radically different, employing a somewhat altered fuselage to accommodate the radial powerplant. The wing, apart from an increase in span to 30 ft 10 in remained virtually unchanged, the same applied to the tail unit which incorporated tailplane and elevators of slightly larger span. During the official trials at the Scientific Research Institute in Moscow the Yak 3UTI was clocked at 297 mph at 8,366ft in normal loaded condition of 4,960lb. For some reason, the Air Force did not place an order with Yakovlev until the following year when the designer offered an improved advanced trainer, which saw large scale production under the designation Yak 11 and featured a non-retractable tailwheel without doors. Weight increased to 5,380lb and resulted in top speed being reduced to 248 mph.

Armament included a single, synchronized 127mm MG in the upper port decking with 100 rounds for gunnery training and provision for a 110 or 220 lb Bomb under each wing. A camera gun was installed either on top of the windscreen frame or on the starboard wing between the ninth and tenth rib. The first examples of the Yak 11 reached training units in late 1947. A pupil's training syllabus with the Yak 11 included aerobatics, navigation, blind flying, gunnery practice, air fighting and bombardment.

In 1952 the Soviet Union made license building of the Yak 11 available to Czechoslovakia. The SSP 'LET' plant at Kunovice building 707 aircraft between 1953 and 1962 under the Czech designation C-11. A nose-wheel variant, the C-11U did not progress beyond the prototype stage. Altogether 3,859 Yak 11s were built by the Soviet Union with the type becoming the standard trainer of Warsaw Pact countries in the fifties and early sixties. The Yak 11 and C-11 remained almost untouched through out its production life span, with the trainer being exported in substantial numbers to many countries in Europe, Asia and Africa, including: Afghanistan, Albania, Algeria, Austria, Bulgaria, Egypt, German Democratic Republic, Guinea, Hungary, Iraq, People's Republic of China, Poland, Rumania, Syria, Vietnam and Yemen. A Czech built C-11 was taken to England after a forced landing in Cyprus on the way to Egypt and was fully restored into a flying condition carrying the codes G-AYAK.

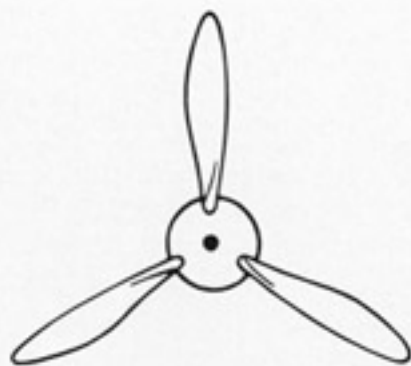
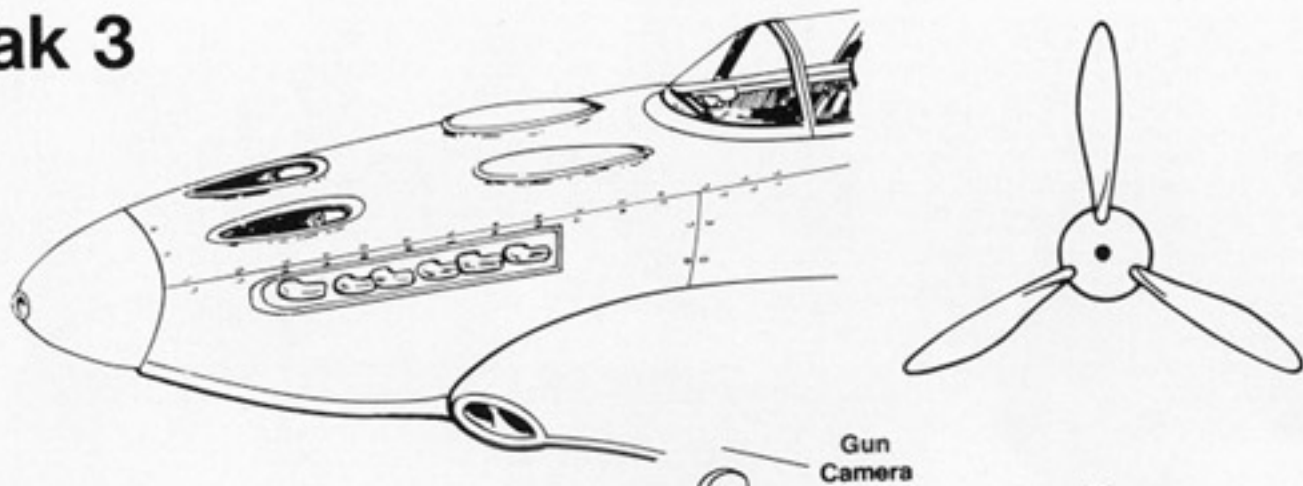
(Right) An Austrian Yak 11, Serial Number 171 229, carrying the codes 4C-AH is seen on a training flight in 1955. The plane is painted Light Gray with Black codes and the last three digits of the serial number repeated in Black on the tail. The Yak 11 was the first aircraft acquired by the newly formed Austrian Air Force in 1955. Neutral Austria re-introduced its pre-WW II markings, a White triangle inside a Red circle. (Heeresgeschichtliches Museum Wien)



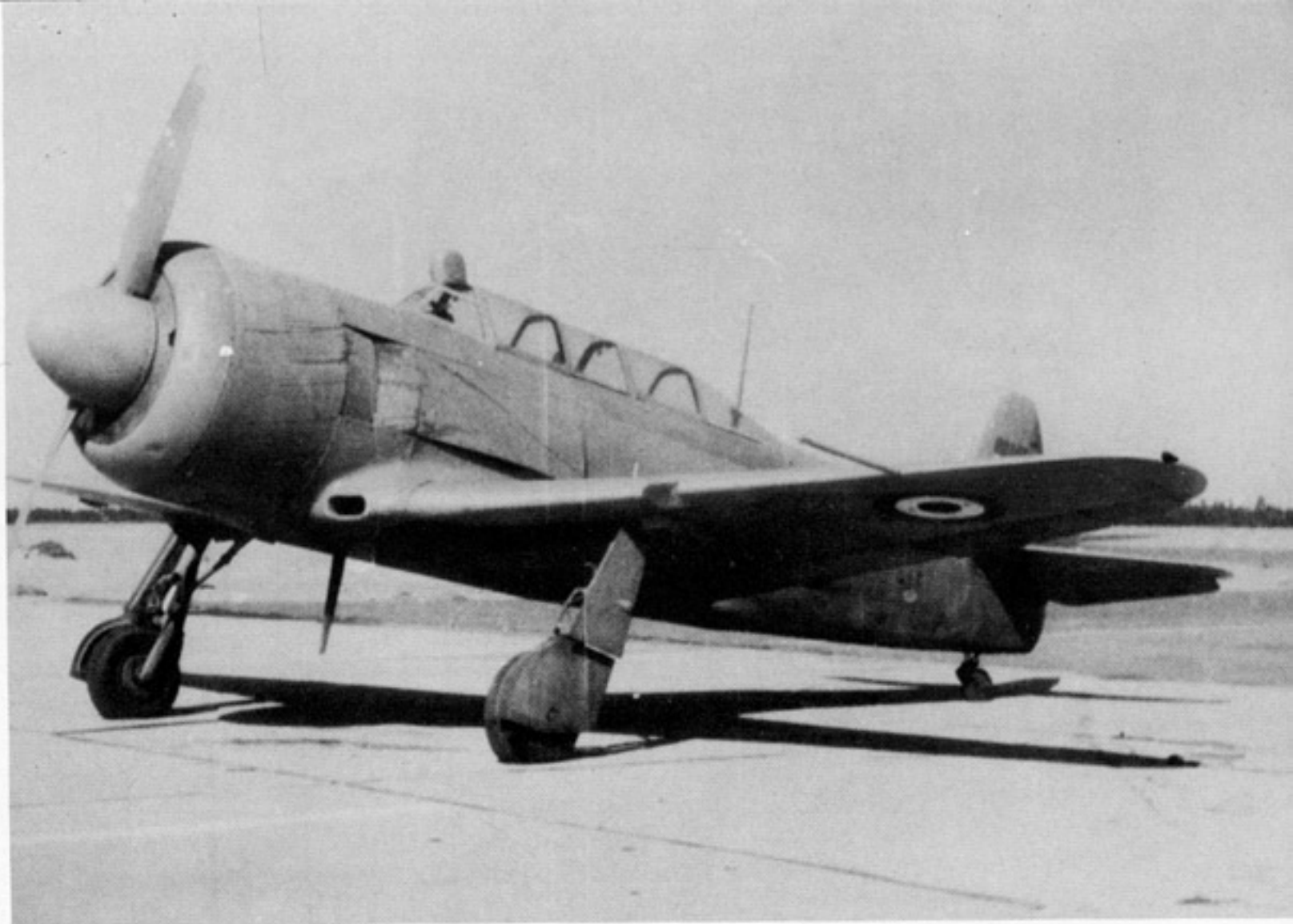
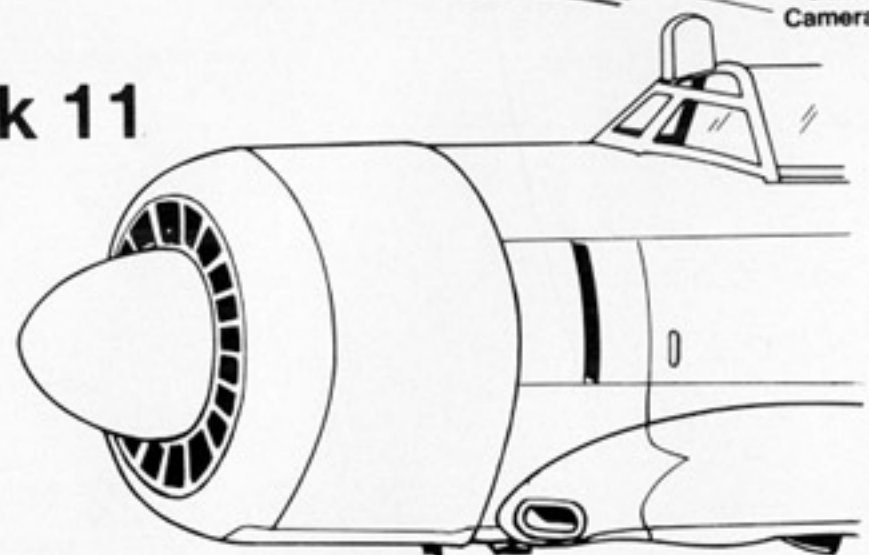
(Above) Maintenance on Polish Yak 11 Trainers. Initially Polish Yak 11s were flown in a Light Gray scheme, which was exchanged for Khaki after their first major overhaul. The first Yak 11 arrived at Deblin Airfield in Poland during 1949. Poland used both Russian built Yak 11s and Czechoslovakian built C-11s. (Andrzej Ec)



Yak 3



Yak 11



(Below) The Hungarians used two Yak 11s carrying the civil registrations HA-JAJ and HA-JAA. They received a very colorful paint job in the Hungarian national colors, a Green fuselage with Red trim, with a White fuselage flash with Red trim, a Red spinner, and Red propeller blades with White tips. (Georg Punka)

(Above) A Czech built C-11 trainer of the Egyptian Air Force. Most of the Egyptian C-11s previously served with the Czech Air Force and were ferried by air to Egypt. Bomb racks are carried on the wings and a gun camera is mounted on the cockpit frame. (Egypt Embassy Berne)





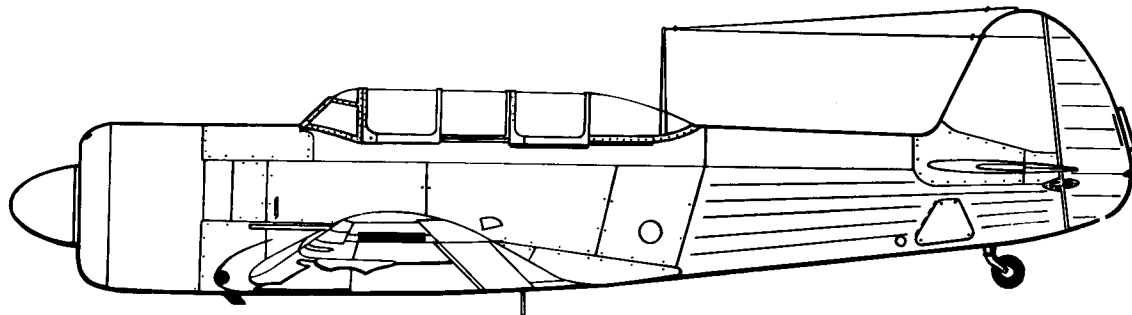
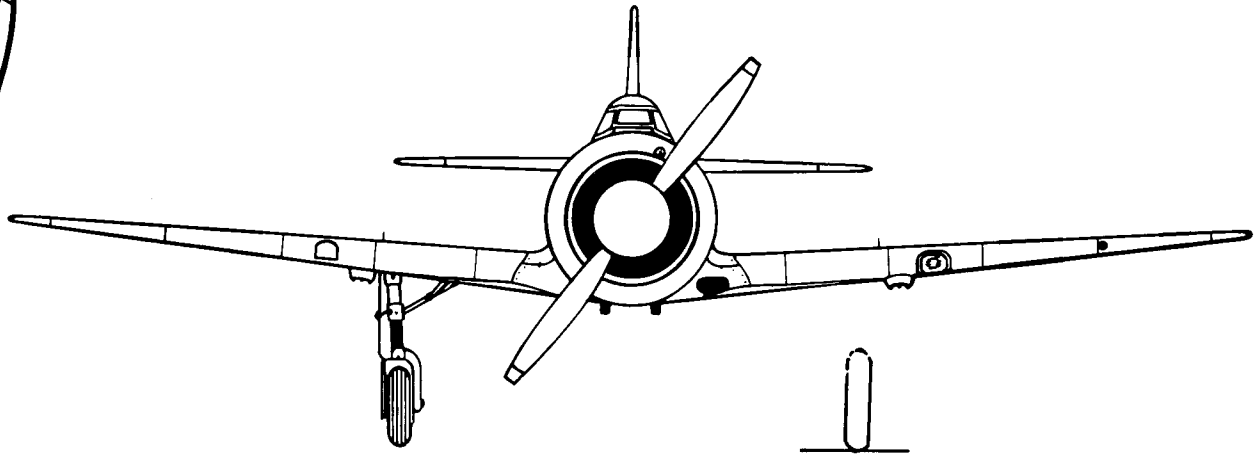
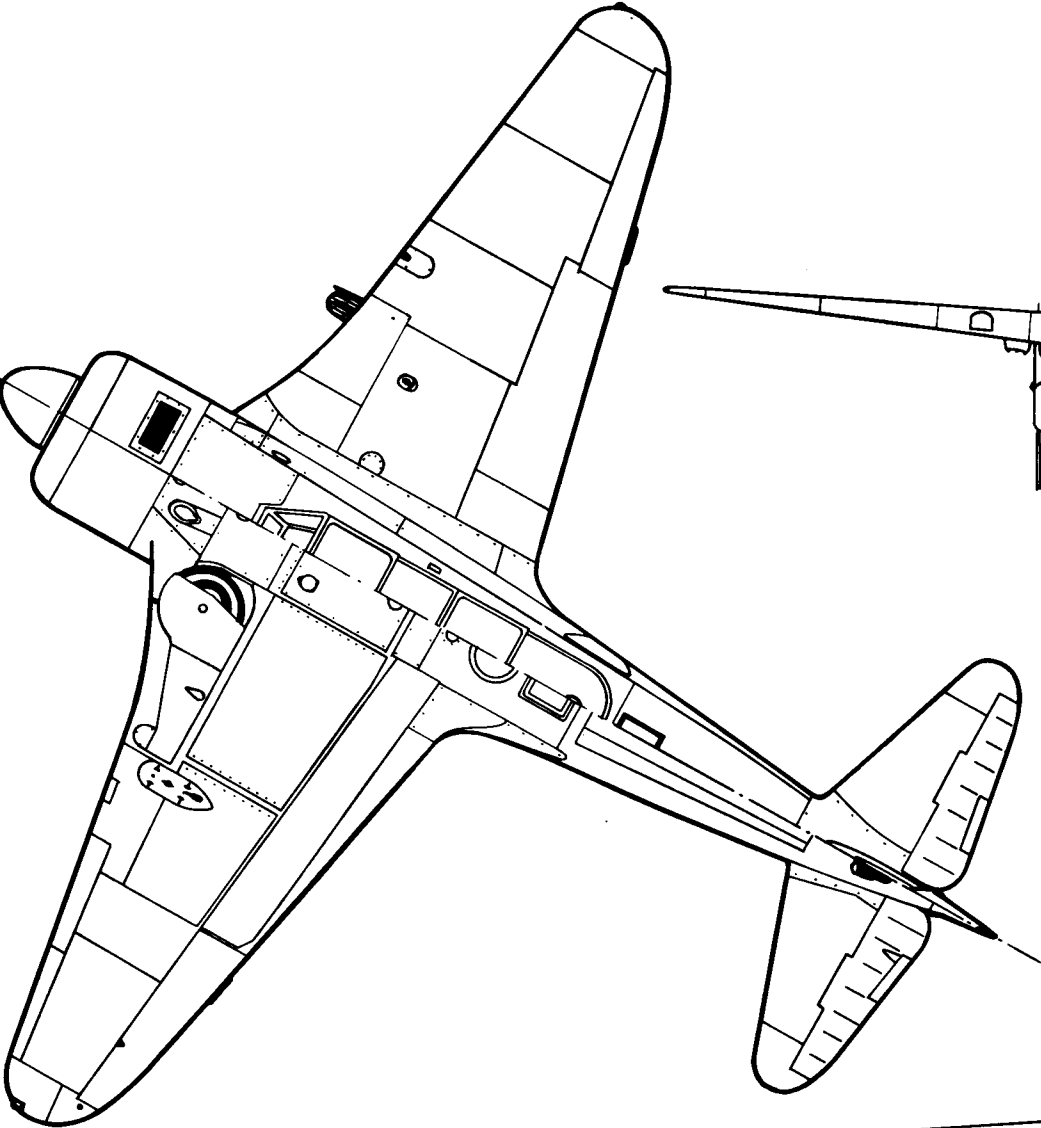
(Above) A Hungarian Yak 11 carrying the civil registration HA-JAA during an airshow in Hungary. The registration is in Black, the anti-glare panel is in Black and the fuselage flash is in White. The wing has Red, White, and Green radiant stripes. The Aircraft had previously served with the Hungarian Air Force. (Georg Punka)

(Below) A line up of all four Austrian Yak 11s at Langenlebarn-Tulln Airfield during 1955, shortly after the trainers were passed to the Austrian Air Force. The airplanes arrived in crates as a present from the Soviet Union and were re-assembled with neither help nor technical information from the manufacturer. One aircraft, 4C-AF is now on exhibit at the Heeresgeschichtliches Museum in Vienna. (Heeresgeschichtliches Museum Wien)



(Below) The sole C-11U built at the *Uherské Hradiste* LET factory at Kunovice. The type was developed to facilitate pilot conversion to jet fighters equipped with tricycle landing gear. Two landing lights are mounted in the port wing. (Hans-Joachim Mau)





Specifications Yakovlev Yak 11

Wingspan	30 feet 10 inches
Length	27 feet 11 inches
Height	10 feet 9.125 inches
Empty Weight	4,409 pounds
Maximum Weight	5511 pounds
Powerplant	One ASh-21 seven cylinder air cooled 700 hp air cooled engine
Armament	One 12.7MM UBS machine gun
Performance	
Maximum Speed	460 mph
Service ceiling	23,300 feet
Range	795 miles

Yak 15

On 18 February 1945, eleven weeks before Nazi Germany surrendered, the State Defense Committee of the Soviet Union ordered the four design bureaus to begin a crash program to develop a jet propeller fighter with a performance of over 560 mph. In 1937, A. Ljulka had created the RD-1 jet engine, but development was curtailed with the outbreak of the Great Patriotic War, however during the closing days of the war development of a jet powered fighter became reality. Similar to their allies, England, France, and the United States, the Soviets adapted captured concepts, drawings and hardware for their own. The Russians succeeded in capturing a number of Bavarian Motor Works (BMW) 003 and Junkers Jumo 004 engines, which had caused nightmares to the Allies by powering the formidable Messerschmitt Me 262 jet fighter. At first, attempts were made to build the German engines under license with the more or less 'voluntary' help of German engineers and skilled workers. The original Junkers Jumo 004-B1 jet engine design with a maximum thrust at sea level of 1,984lb was put into production with over 6,000 being built by VE-Day. The Soviets continued to build the German engine under the designation RD-10.

It was A.S. Yakovlev's belief that a pilot could be much more quickly familiarized with the new jet propulsion system in a proven type that simply exchanged the Klimov M-107 powerplant for a jet engine. The Yakovlev design team was assigned to work with the Junkers Jumo 004. Three prototypes were ordered.

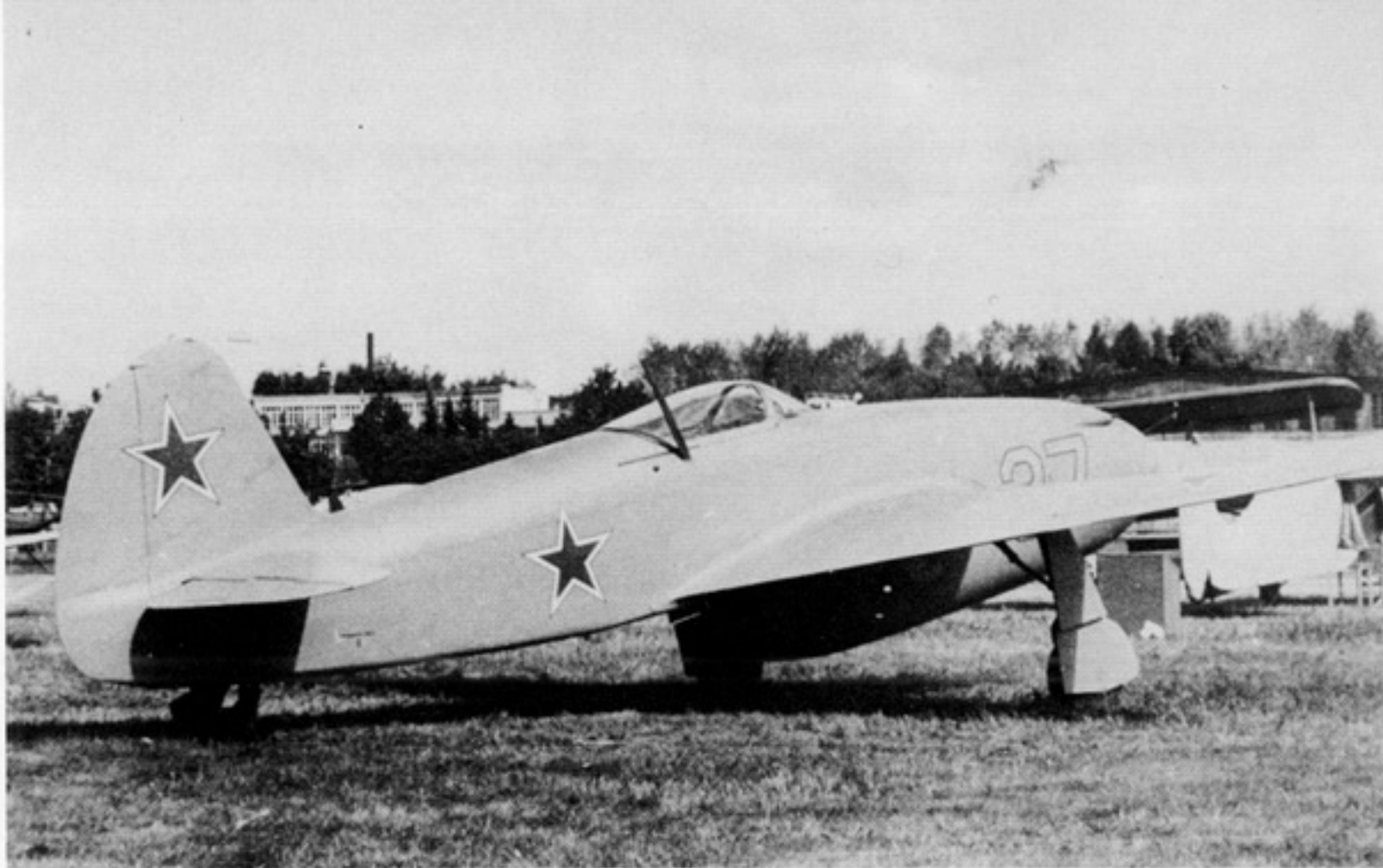
Rather than spending time designing an entirely new aircraft, Yak 3U components were adapted to take a single 1,984lb Jumo 004 jet engine creating an interim jet fighter. Under the designation Yak 15, a new forward fuselage was designed to accept the Jumo Jet engine which was married to Yak 3U wings, landing gear, rear fuselage and tail surfaces. The fuselage was lengthened to 28 ft 2.5 in. In order to minimize the area of the nozzle opening by lifting the jetpipe as high as possible the main wing spar was arched over the jetpipe. To protect the fuselage from hot gases a stainless steel sheath enclosed the jetpipe and the tail wheel was replaced by a steel roller. The new fuselage nose and underside of the rear fuselage were skinned with metal. Armament was two 23mm VYa-23V cannons each with 60 rounds of ammunition mounted in the upper decking of the nose. A revised aerial mast and improved instrumentation were installed.

The prototype of the Yak 15 made its maiden flight with Michail I. Ivanov at the controls on 24 April 1946, just three hours after the Mikoyan-Gurevich MiG 9 with Lt Col A. Grintshik at the controls earned the distinction and prestige of being the first Russian jet to fly. This significant day brought the Red Air Force to the jet age. Ivanov considered the Yak 15 to have the same pleasant handling characteristics as the Yak 3, but without the vibrations typical of piston engine aircraft. During trials level speed was recorded at 566 mph at 15,400 ft.

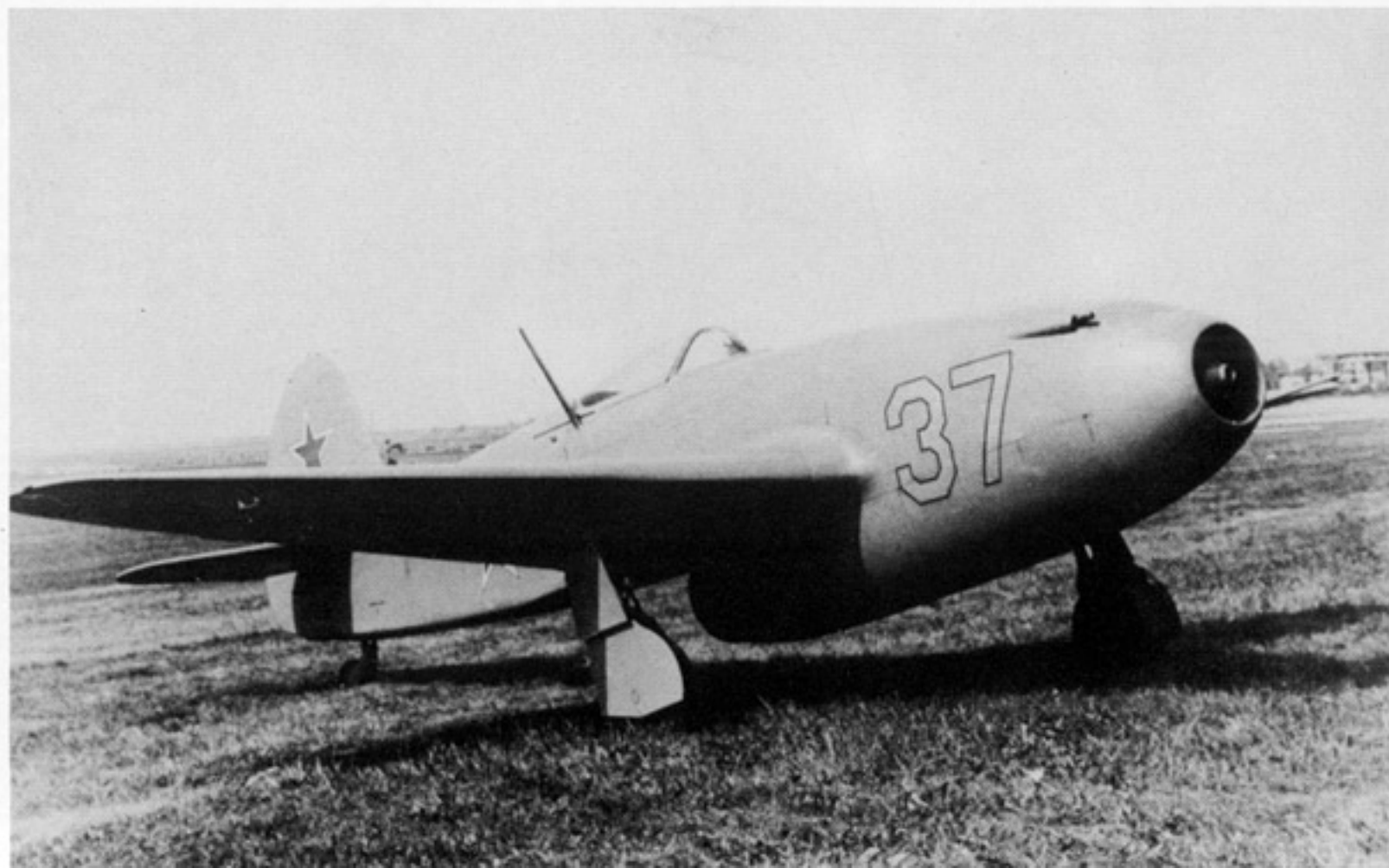
Both the MiG 9 and the Yak 15 were introduced to the Public during the Aviation Parade at Tushino on 18 August 1946.

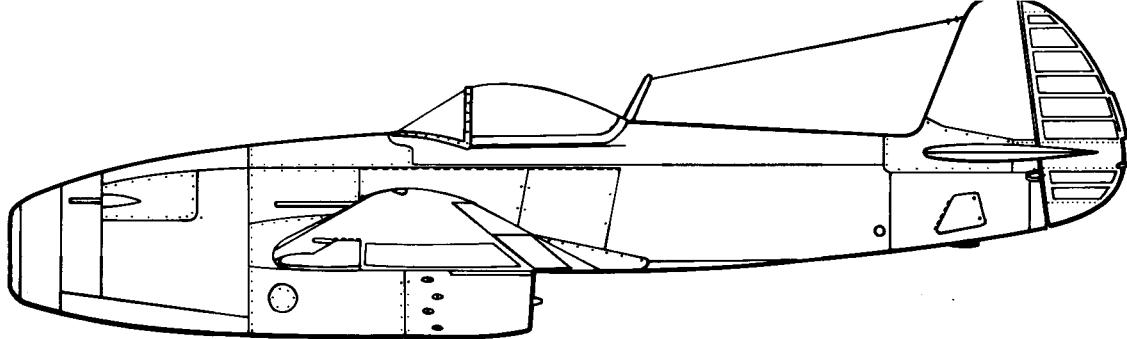
Production of a pre-production batch began immediately and by 21 October 1946 fifteen hand-built Yak 15s had been crated and shipped by rail to the Air Force Research Institute for evaluation. The Yak 15 successfully passed State Acceptance in May of 1947 and Test-Pilot Pyotr Stefanovski undertook the first acrobatic trials with the type. When one of the BMW 003 powered MiG 9s crashed during trials, an order for 280 Yak 15s had been given to Yakovlev and the Yak 15 became the first jet aircraft produced on a large scale for the Soviet Air Force. Almost all these new jet aircraft were used to transition pilots from piston engine to jet powered flying.

The Yak 15 had been developed as an interim jet fighter to fill a specific gap during the transition to jet powered aircraft until more mature jet aircraft were available. The Yak 15, a mixture of a piston engine airframe married to a jet powerplant proved good enough to acclimate pilots and provide experience, but was unreliable under field conditions.



(Above and Below) The Yak 15 was the first mass produced Soviet jet and was developed from the piston engine Yak 3U. A 2,205lb RD-10 engine based on the captured Junkers Jumo 004 engine, powered the fighter, and armament was two 23mm cannons mounted in the nose. The prototype flew for the first time on 24 April 1946 with M.I. Ivanov at the Controls. 280 aircraft were built between 1946 and 1947, with most being allocated to training units. (Dr. Volker Koos)





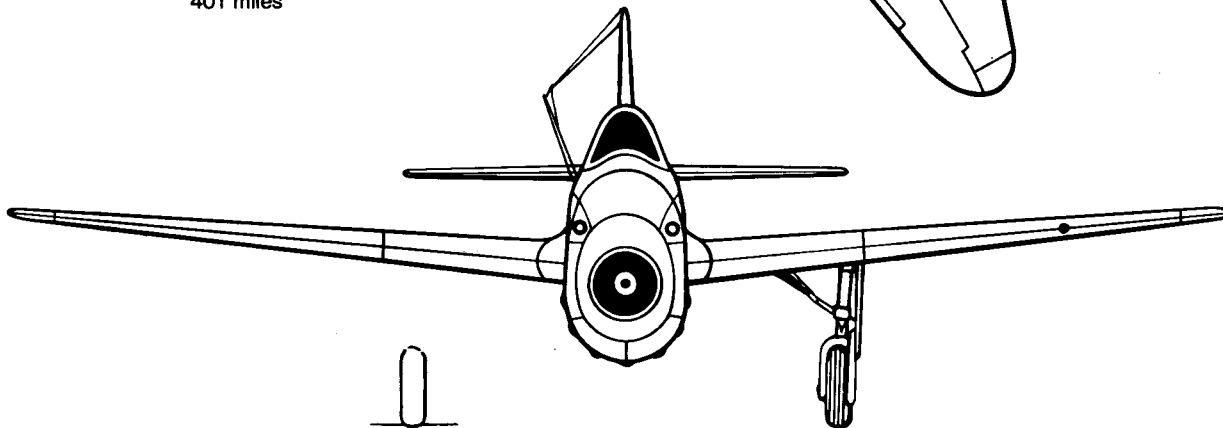
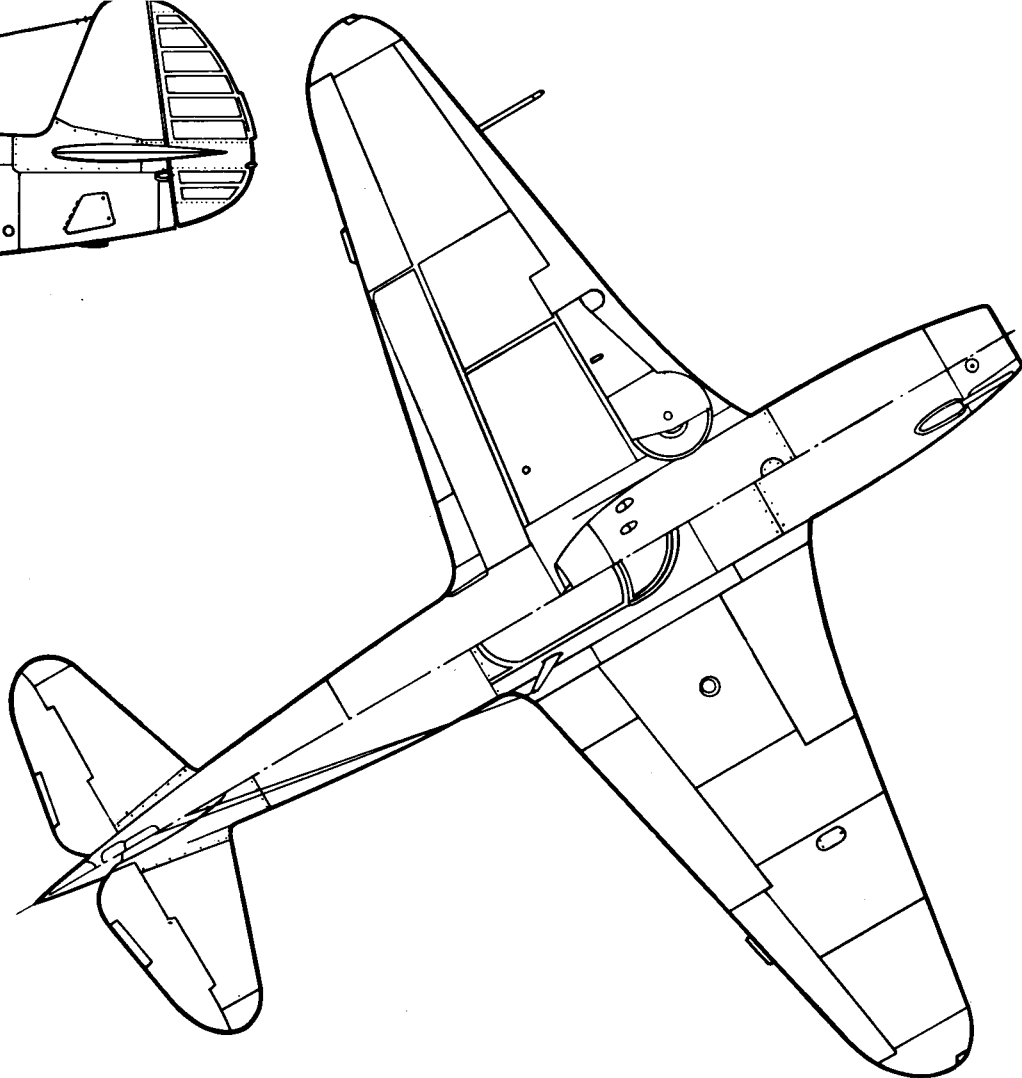
Specifications

Yakovlev Yak 15

Wingspan 30 feet 1.25 inches
Length 28 feet 9.75 inches
Height 7 feet 11.25 inches
Normal loaded 5,816 pounds
Maximum Weight 7,326 pounds
Powerplant One Kolesov RD-10A 2,205 lb axial flow turbo-jet

Armament Two 23MM Nudelman-Suranov NS-23 cannon

Performance
Maximum Speed 466 mph
Service ceiling 40,025 feet
Range 401 miles



Yak 17

Yak 15U

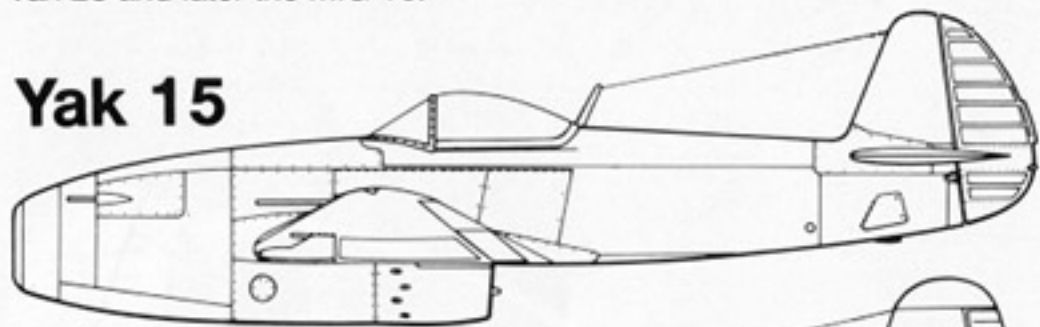
Serious problems with the metal roller tail wheel of the Yak 15 led to development of the Yak 15U (U-Ulutshshennyi - improved), with the addition of a nose wheel undercarriage. Flight trials were begun during the late spring of 1947, passing to State Acceptance Tests during the following August. Because of the engine the nose wheel could not be fully retracted and therefore had to be partly retracted into a fixed fairing. The new tricycle landing gear caused the main landing gear to be relocated with a consequent reduction in fuel tankage. The wing was stressed in order to accept wingtip fuel tanks which in fact increased total fuel capacity by some twenty percent.

The Junkers Jumo 004 powerplant had been further improved by a team of Y. Kolesnikova, and under the designation RD-10A had a thrust of 2,205lb. The greater air intake area demanded by the RD-10A was accomplished by cutting back the intake face. However, due to an increase in weight to 5,358lb, even the increased power of the RD-10A engine and aerodynamical refinements, including a new taller and more angular tail, could not prevent a considerable loss of speed and climbing capacity. Most of the wooden parts in the airframe had been replaced by metal parts and the wingtip fuel tanks provided the Yak 17 with a range of 420 miles. The prototype flew for the first time in May of 1947. With the quantity production of the RD-10 powerplant the Yak 15U was put into production under the designation Yak 17. Production was 430 through 1948.

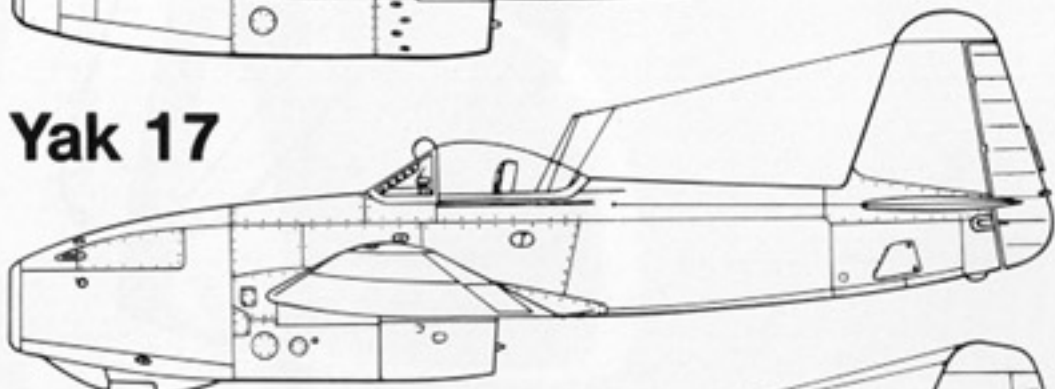
Parallel to the fighter variant, was an unarmed tandem two seat trainer with full dual controls under the designation Yak 17V (V-Vyvozonyi - Familiarization) and became the world's first serial production jet trainer, as well as the first jet to be exported to other socialist countries. Czechoslovakia evaluated a Yak 17 under the designation S-100 between 1949 and 1950. Poland intended to build the type under license by PZL-Mielec, but the project was dropped in favor of the more advanced MiG 15.

Poland ordered a number of Yak 17 fighters and Yak 17V trainers in 1950, the first plane was delivered on 20 September 1950, with a sole Yak 17V being allocated to the *Instytutu Lotnictwa* (Aviation Institute). Flying until 1963, it was subsequently turned over to the Museum at Krakow where it rests today. The Yak 17 remained in first-line service for only a short time when it was replaced by the Yak 23 and later the MiG 15.

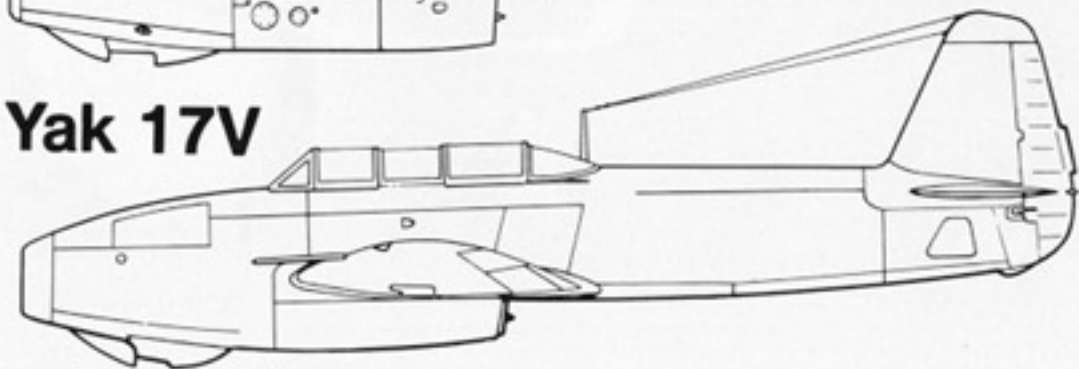
Yak 15



Yak 17



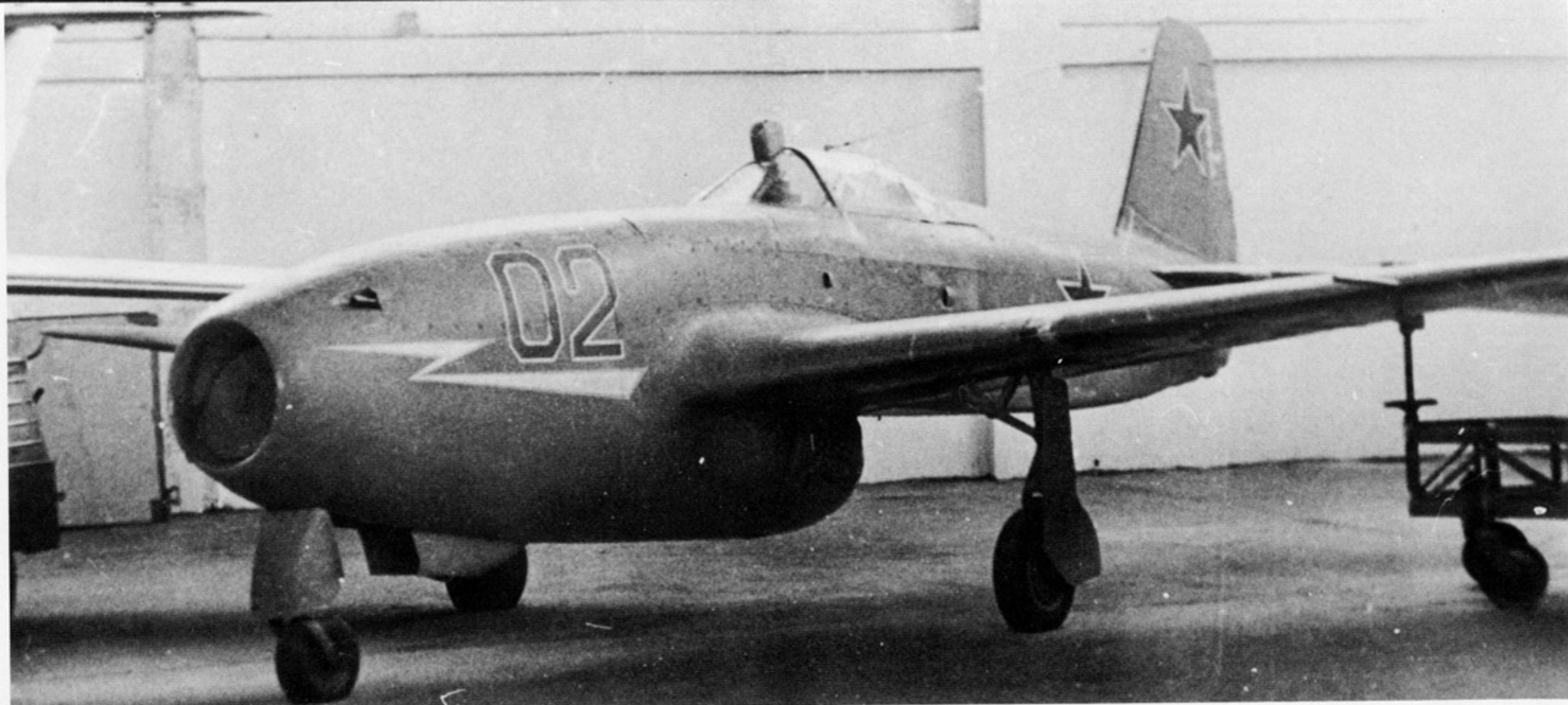
Yak 17V



(Above) Red 02, a Polish Yak 17V Trainer during the summer of 1964. The two-seat trainer became the World's first jet trainer equipped with a full set of dual controls. It flew for the first time in May of 1947. The trainer variant of the Yak 17V usually did not carry armament. (Andrzej Morgala)

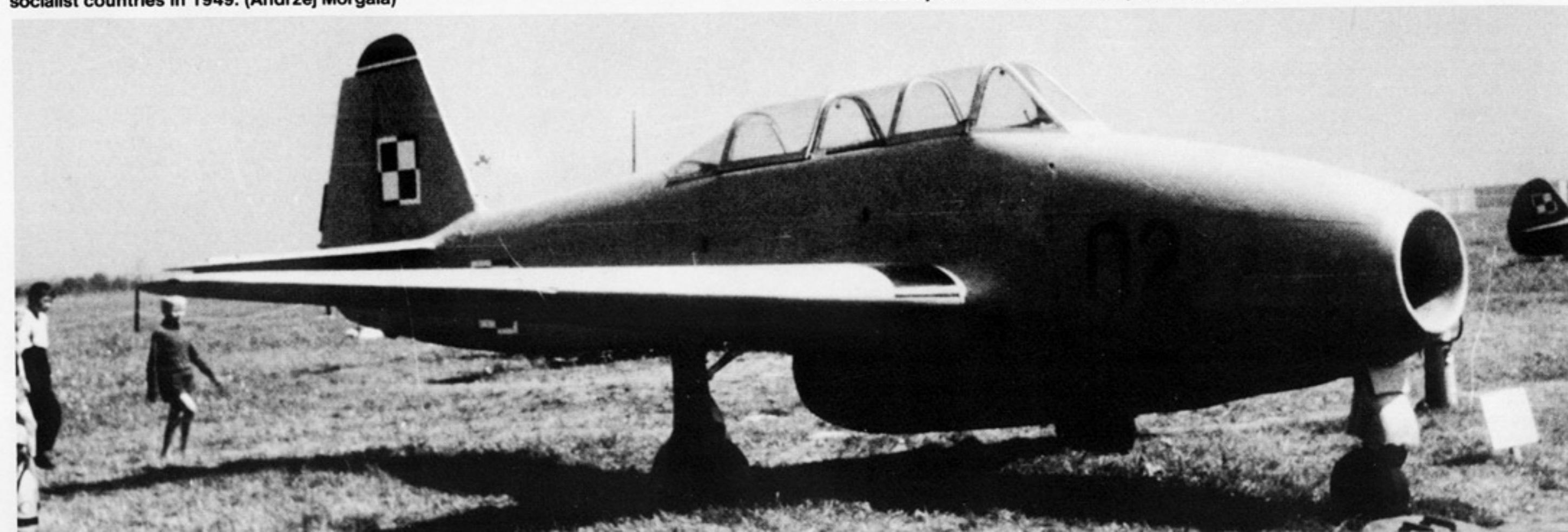
(Below) This Yak 17V flew with the Polish State Aeronautical Institute with the codes SP-GLM. The plane had previously served with the Polish Air Force as Red 02. Andrzej Ablamowicz became the first Polish civil pilot to fly a jet when he flew this aircraft. (Andrzej Morgala)





(Above) The limited space in the nose forced the designer to place the nose-wheel in a gondola under the nose. A White arrow is carried on the nose and a gun camera on the upper canopy frame. Armament included a pair of NS-23mm cannons with sixty rounds each. The Yak 17 fighter became the first Soviet jet fighter to be exported when they were sold to other socialist countries in 1949. (Andrzej Morgala)

(Below) Poland used the Yak 17W two seat trainer to school pupils in flying the Yak 17 and Yak 23 fighters. This trainer is painted in the standard overall Light Gray camouflage, the tactical number and tip of the tail are in Red. (Andrzej Morgala)



Yak 23

The Yak 23 was designed to meet an October 1946 specification for a next generation fighter the Yakovlev design bureau offered a completely re-designed airframe loosely based on the Yak family of designs, looking very similar to the earlier Yak 15 and Yak 17. However, the new airframe adopted few details of the Yak 17 and these only with an aim toward reducing weight and increasing power. The Yak 23 was lighter, smaller and faster than the earlier Yak 17. A broadened fuselage accommodated an RD-500 engine with a thrust of 3,506lb for a top speed of 573 mph at sea level. The RD-500 powerplant was built under license from the British Rolls Royce Derwent V engine.

The thin, metal alloy skinned wing eliminated the wingtip tanks with the required range being provided by two 41.64 Imperial Gallon bubble tanks mounted on the wingtips. Pneumatically operated flaps could be set at either 25° for take off and a 60° position for landing. A redesigned nose wheel was fully retractable. Two 132lb bombs could be carried on underwing racks. Armament included two 23MM NS-23 cannons with 90 rounds each, mounted in the lower nose just above the nose-wheel. The simple robust undercarriage allowed the Yak 23 to operate from grass airfields.

Cockpit equipment included an RSI-6M-1 radio and a RPKO-10M radio compass. The aircraft completed State Acceptance on 12 September 1947 with mass-production beginning in March of the following year and ending in 1950 after 310 Yak 23s had left the production lines. The simple and easy to fly aircraft was extremely popular with pilots.

A few Yak 23s were exported to Poland, Czechoslovakia, Hungary, Rumania, Bulgaria and Albania. In 1956 Rumania converted their Yak 23 fighters into two seat trainers under the designation Yak 23DC (DC-*Doubla Comanda* - Dual Control). The Soviet Air Force replaced their Yak 23 equipped fighter regiments with the MiG 15, but surprisingly the Polish Test Pilot Andrzej Ablamowicz set a new World Altitude Record on 21 September 1957 climbing to 19,151 ft in 197 seconds, proving the excellent climbing qualities of the Yak 23. The last Yak 23s were withdrawn from service by the Socialist Countries in 1961.

At least one two seat trainer was built in 1949 under the designation Yak 23UTI. Flight tested by G.S. Klimushin, this variant featured a new tandem seat canopy with armament being reduced to a single 12.7MM UB machine gun, and an S-13 gun camera was installed on the upper cockpit frame.

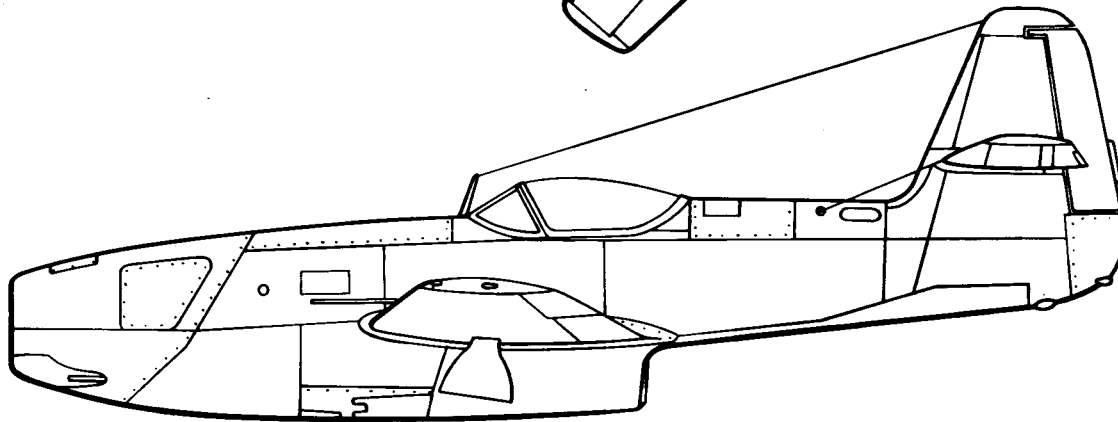
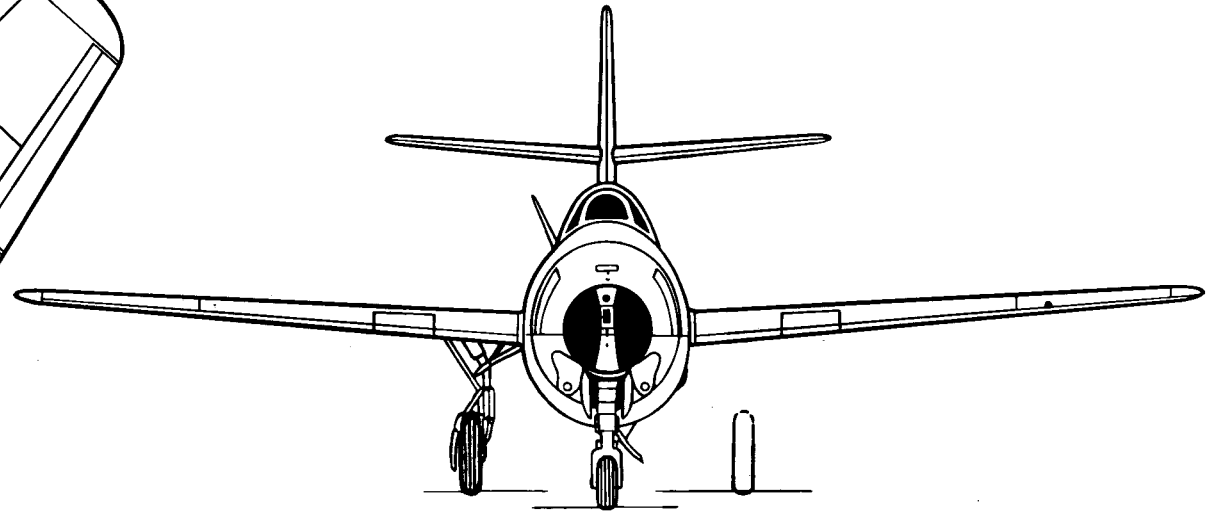
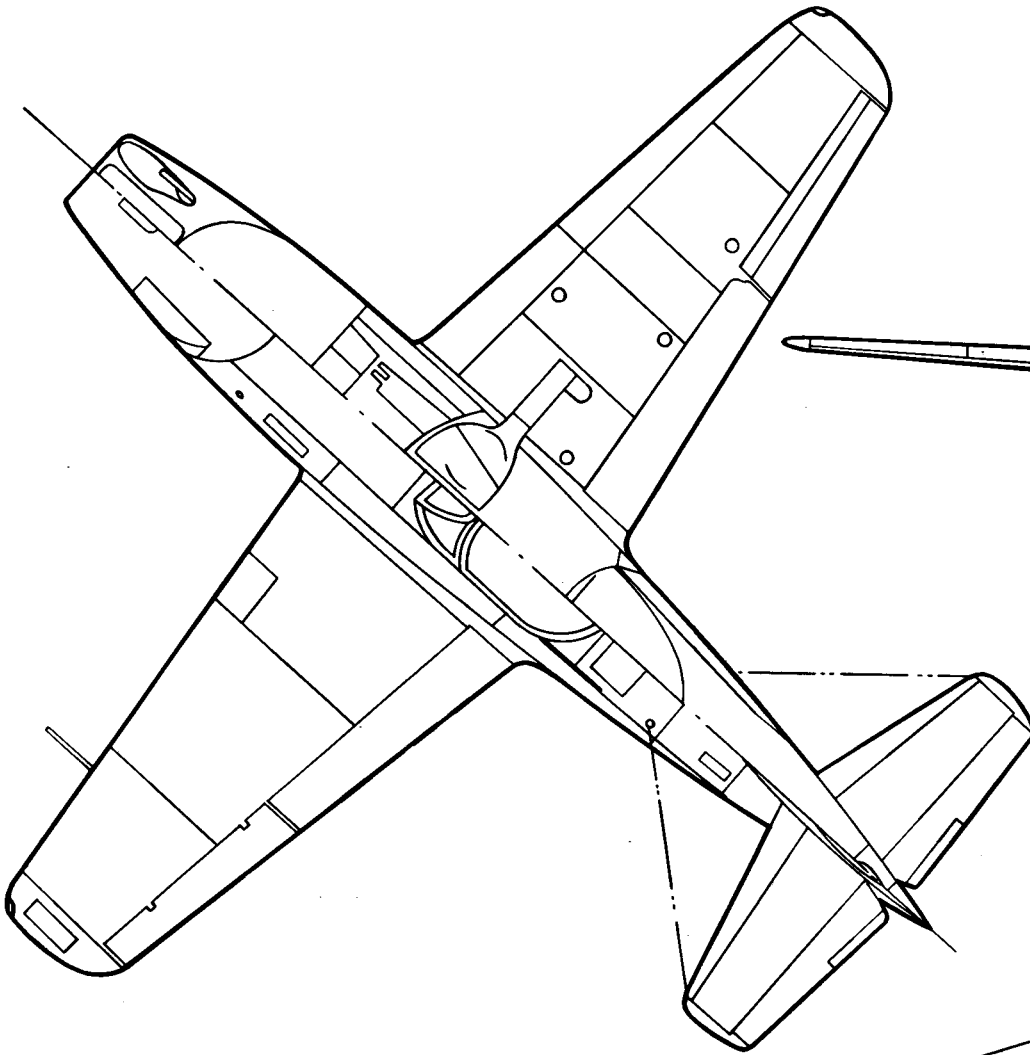
The Yak 23 would be the end of the 'glorious' Yakovlev fighter line that had begun with the under-powered and under-armed I-26 in 1940. The Yak 23 can be considered as the designer's last and unsuccessful attempt for an efficient Jet Fighter. During the Great Patriotic War, the Yak fighter had outclassed the MiG designs, but times had changed their positions. The formidable MiG 15 was impossible to best and the Yakovlev design failed. Without the Yak fighters there probably would have been no MiG 15, indeed without the Yak fighter there might have been no Red Air Force.



(Above) 230 Yak 23s were built between March of 1948 and 1950. The Yak 23 replaced the Yak 9P in front line fighter units, and also saw service in Czechoslovakia, Poland, Bulgaria and Rumania. Most Yak 23s carried a bubble tank on the wing tips. (Andrzej Morgala)

(Below) The Yak 23 entered service with the Polish Air Force in 1950, mainly serving with 1. PLM (Fighter Group). The Yak 23 was powered by the Soviet RD-500 engine, a Soviet copy of the Rolls-Royce Derwent V powerplant. Projects to build the Yak 23 under license were dropped in favor of the more advanced MiG 15. (Andrzej Morgala)





Specifications Yakovlev Yak 23

Wingspan	28 feet 6.125 inches
Length	26 feet 9.25 inches
Height	10 feet 10.33 inches
Empty Weight	4,409 pounds
Maximum Weight	7,460 pounds
Powerplant	One RD-500 3,505 lb thrust centrifugal-flow turbojet
Armament	Two 23mm Nudelman-Suranov NS-23 or two Nudelman-Rikhter NR-23K cannons, and provision for carrying two 132 lb Bombs
Performance	
Maximum Speed	606 mph
Service ceiling	48,557 feet
Range	746 miles.



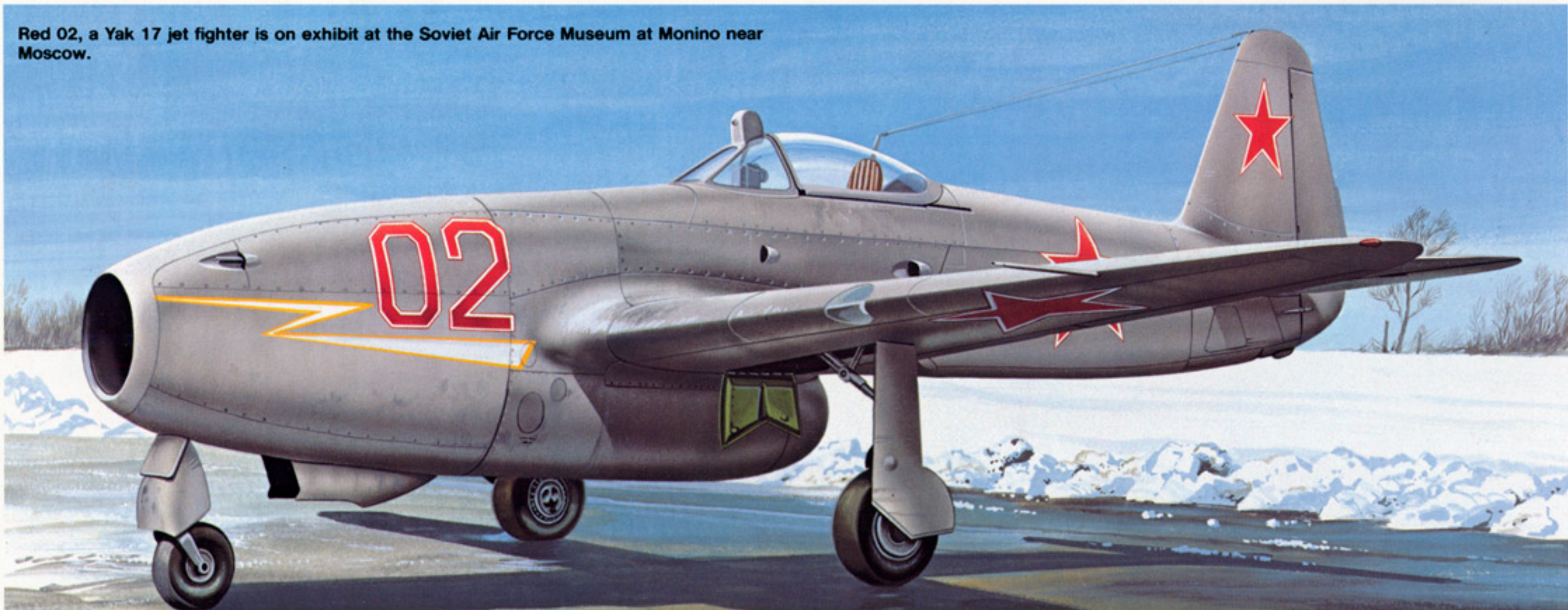
(Above) Yak 23, serial number 925, was assigned to the *Institutu Lotnictwa* at Warsaw and was allocated the registration code SP-GLK. The *Institut's* Logo is carried on the nose and tail. Polish test pilot Andrzej Ablamowicz set a new World Altitude Record on 21 September 1957 when he took SP-GLK to 19,151 feet in 197 seconds. (Andrzej Morgala)

(Below) A Polish Yak 23 without the usual wingtip drop tanks on. Yellow 12 is in the natural aluminum finish. A landing light is mounted in the nose. The sturdy undercarriage allowed take-offs and landings from grass landing fields. (Andrzej Morgala)





Yellow 44, a Yak 1, 2nd series, the personal aircraft of Lilya Litvak, the female Flight Commander of the 73 IAP over Stalingrad during early 1943. Litvak claimed twelve kills before her death in combat over Orel on 1 September 1943 at the age of twenty-one.



Red 02, a Yak 17 jet fighter is on exhibit at the Soviet Air Force Museum at Monino near Moscow.