

LaGG-3 (8th Series)

LaGG-3s produced between the 4th and 7th Series were, apart from a few details and minor modifications, externally very similar to each other. Combat experience on the Eastern front against German fighters had shown that the firepower of the two ShKAS 7.62MM machine guns in the upper decking of the nose was insufficient to cause damage or to shoot down most German aircraft. Modern airwar clearly showed that larger caliber weapons, with a lower rate of fire, were superior to smaller, fast firing rifle caliber machine guns, such as the 7.62MM (approximately .30 caliber) weapons used on the early LaGG-3s. Small caliber guns usually caused only minor damage to an enemy aircraft, which, in many cases, allowed the enemy to

survive the attack, be repaired and return to service. Large caliber weapons (12.7MM and above) used ammunition with explosive warheads that could cause severe damage to the airframe of an enemy and often set the fuel tanks on fire.

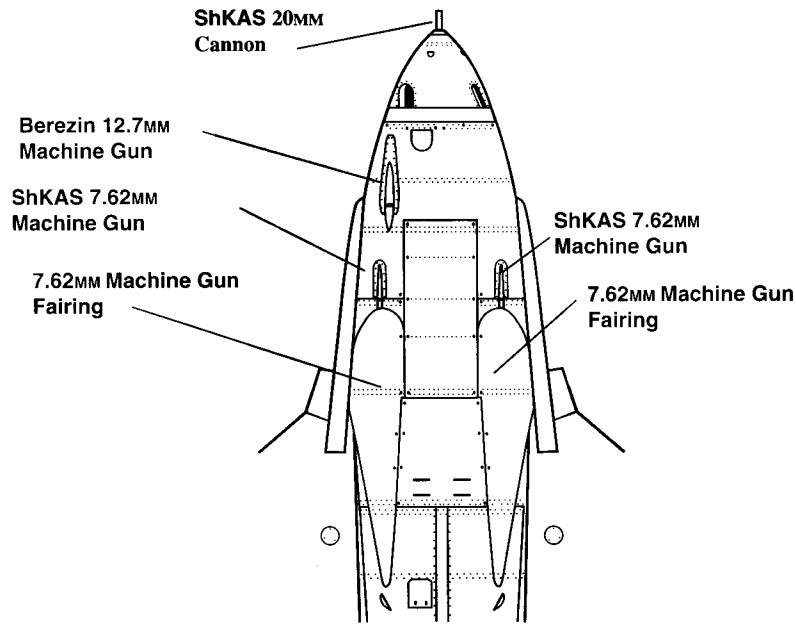
Since the LaGG-3 was by far the heaviest of the three modern fighters (Yak-1, MiG-3 and LaGG-3) in the inventory of the Soviet Air Force, a program was begun to reduce the weight

A LaGG-3 (8th Series) of the 5th Guards Fighter Aviation Regiment prepares for take off from a snow covered forward airfield during the Winter of 1942. The canopy was removed, a common practice with the LaGG-3. The aircraft in the background is a White winter camouflaged, ski-equipped LaGG-3, armed with RS-82 rockets under the wings. (Ivan Ivanov)

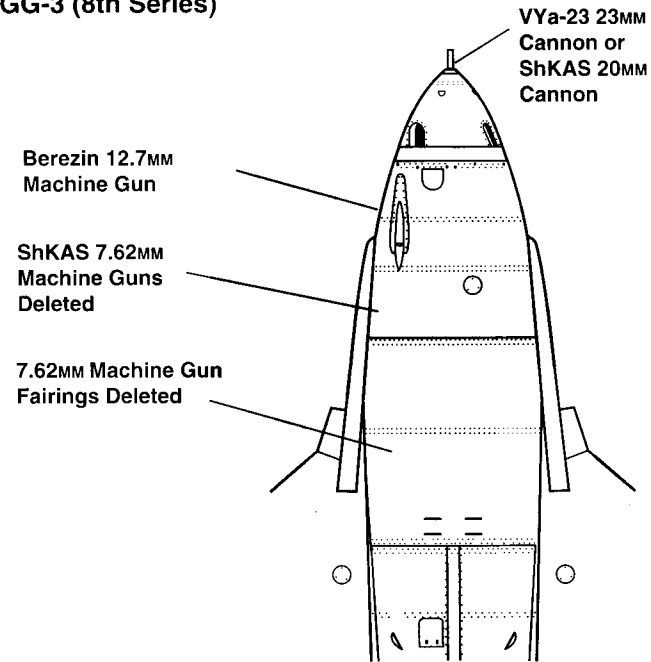


Armament Development

LaGG-3 (4th Series)



LaGG-3 (8th Series)



of the LaGG-3. Since the two ShKAS 7.62MM guns were now considered more as additional weight than as efficient weapons, the OKB modified the forward fuselage area to delete these guns. This modification had to be introduced without causing any disruption to LaGG-3 production in any of the three factories, since every fighter was needed to combat the Luftwaffe.

A LaGG-3 from the 8th Production Series was selected to serve as the prototype and was pulled from the production line and had the two ShKAS 7.62MM machine guns, their ammunition supply and upper fuselage fairings deleted. The armament configuration of a ShVAK 20MM cannon mounted between the engine cylinder banks and firing through the propeller hub augmented by a single Berezin UBS 12.7MM machine gun in the port upper nose became (with the exception of the 34th Series) standard for all later LaGG-3 versions until production was phased out. 8th Series LaGG-3s also had the oil cooler air intake on the nose slightly modified.

The first LaGG-3 (8th Series) aircraft were completed during late 1941. Some production batches of the LaGG-3 were equipped with the VYa-23 23MM cannon, replacing the ShVAK 20MM cannon between the engine cylinder banks. LaGG-3s fitted with the VYa-23 cannon did not receive a special designation, and some LaGG-3s of the 8th and later series could be fitted with either, the VYa-23 cannon and the ShVAK cannon, depending on availability.

The VYa-23 cannon had a muzzle velocity of 2,565 feet per second (905 meters per second) and a rate of fire between 370 and 500 rpm. LaGG-3s equipped with the VYa-23 cannon differed from the ShVAK armed versions in having a slightly longer cannon barrel, although

there were relatively few aircraft actually fitted with this weapon. The 23MM cannon was an effective weapon against light armor and soft skinned vehicles.

Some LaGG-3 were equipped with an AFA-1 vertical camera mounted in the rear fuselage for reconnaissance duties. The camera had two different focal length lenses, one of 300MM and one of 500MM. During a mission, up to 150 seven inch by seven inch (18 x 18 cm) negatives could be exposed. The camera was operated by a 24 Volt electric motor, remotely operated by the pilot.

Combat for Soviet pilots flying the LaGG-3 during the early stages of the Great Patriotic War was disastrous. In front-line combat regiments, the LaGG-3 was openly referred to as a "morticians mate" and an aircraft whose intentions towards its pilots were as hostile as those of the Luftwaffe.

This censure of the LaGG-3 by its crews was not without some justification, since the fighter's performance and flight characteristics soon revealed the haste with which it had been tested and committed to production. The fighter was unforgiving to any but a highly-experienced pilot. It was a difficult machine to fly, since it was overweight, underpowered and possessed very unforgiving handling characteristics, especially stall characteristics. The average service pilots were not ready for a fighter with a high wing loading, being more used to the maneuverability and low wing loading of the earlier Polikarpov biplane fighters, such as the I-15 and I-153.

Japanese LaGG-3

The political climate between the Soviet Union and Japan was far from normal during the 1930s and early 1940s, and there were numerous border incidents along their mutual ill defined border areas. On 18 September 1931, Japan invaded Manchuria and assured the Soviet Union that this action would not touch the Eastern Chinese railway. The invasion ended on 18 February 1932 with a new state, Manchukuo, being proclaimed as a Japanese puppet.

In January of 1934, Japanese troops attacking northern China moved through the Mongolian People's Republic. This action led to a military incident, because the Soviet Union felt that this was an invasion of an allied state. In June of 1937, the Soviet Union occupied two islands in the Amur River in Manchuria. Japan, occupying the opposite bank of the river, demanded their immediate evacuation. Border clashes in the area soon followed. When the Soviets finally withdrew, the Japanese, over Soviet protests, occupied the islands.

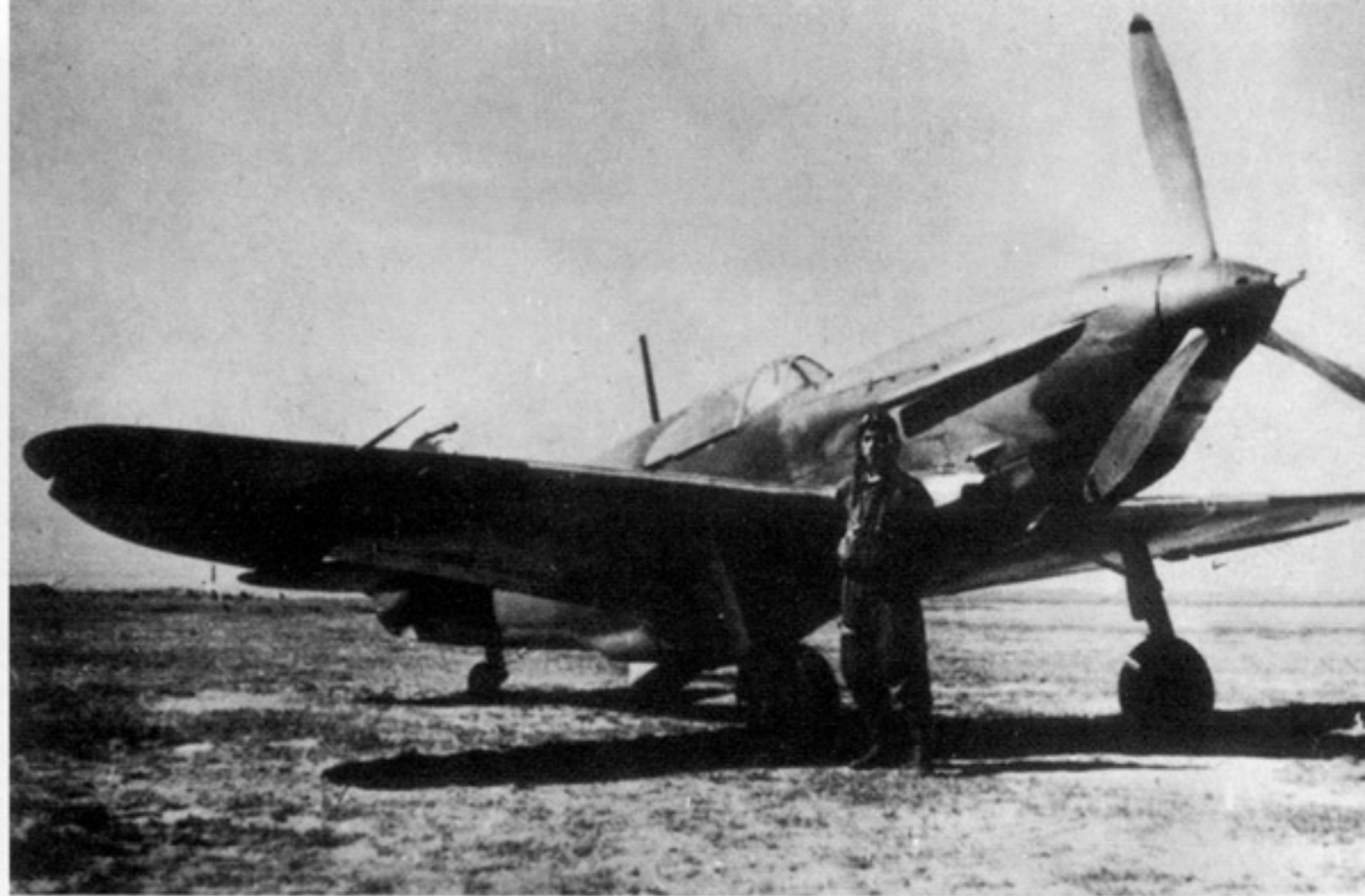
During the Lake Khasan incident of July 1938, Soviet air power came into sharp conflict with the Japanese. At Cheng Fu-keng Hill, the Soviet army built a fortification near the ill-defined Soviet-Korean border. In retaliation, the Japanese attacked, an effort which soon escalated the border dispute into a small-scale war. At the height of the conflict, the Soviets committed twenty-seven infantry battalions, supported by artillery and tanks. The Japanese withdrew from the disputed territory near Lake Khasan with significant losses. During the conflict the Soviets claimed more than 3,000 Japanese were either killed or wounded.

In May of 1939, a band of Mongolian nomads migrated east across the Khalkin-Gol River, but were driven back by border guards from the Japanese Kwantung Army. On 11 May, a full scale but undeclared war for a strip of arid pasture between the Khalkin-Gol river and the village of Nomonhan started between Imperial Japanese Army and the Soviet troops. The Red Army was superior to the Japanese Kwantung Army and on 16 September 1939 the two nations signed an armistice. The Japanese gained a respect for the Soviets, which added to their determination to stay out in the Great Patriotic War.

On 9 June 1940, both countries agreed to cease fighting on the Manchurian-Mongolian border. On 13 April 1941, a neutrality pact was signed between Stalin and the Japanese Foreign Minister Matsuoka.

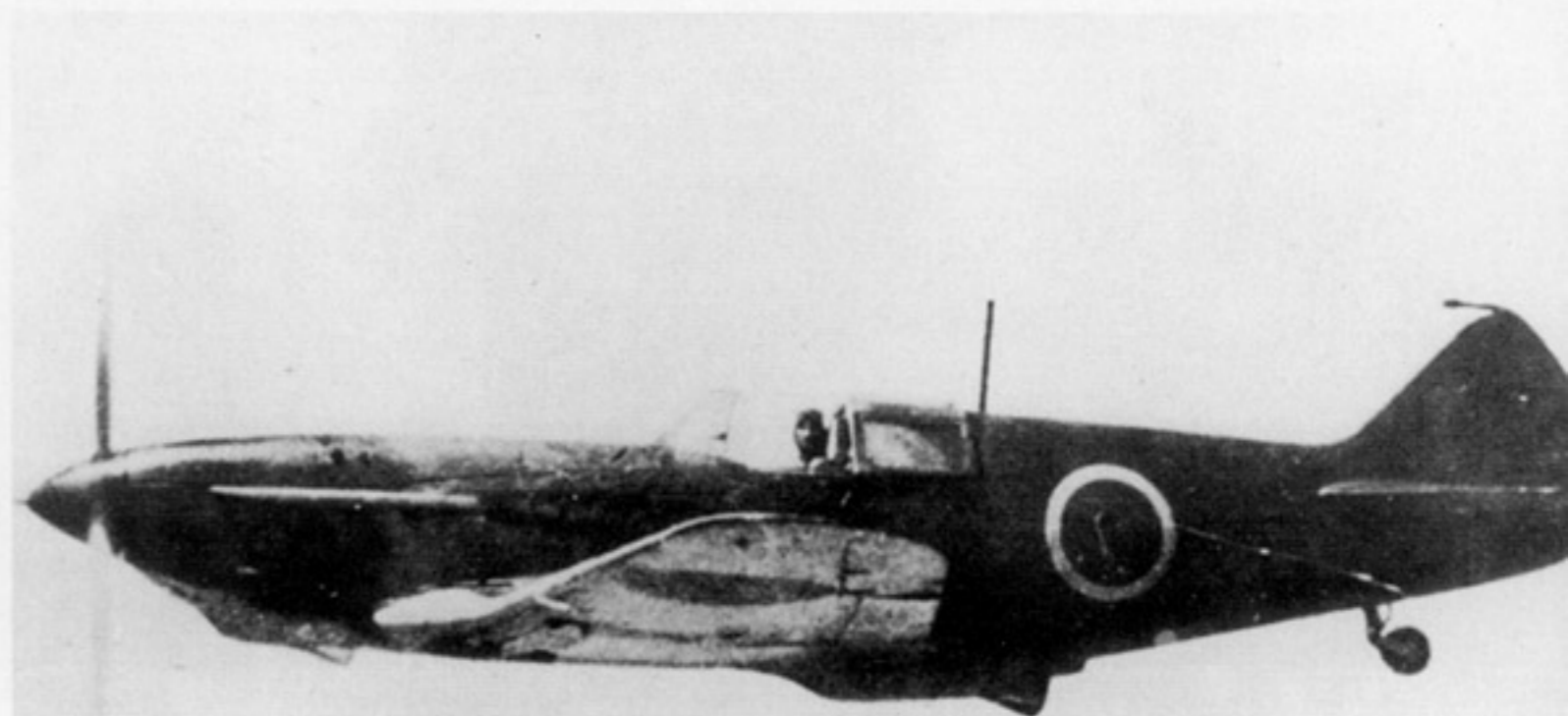
In the Spring of 1942, a Soviet pilot defected with his LaGG-3 (8th Series) to Japanese occupied Manchukuo and making a wheels-up landing in a field near Chiamus. This LaGG-3 previously belonged to a Fighter Aviation Regiment based in the Asian part of the Soviet Union. The LaGG-3 (8th Series) captured by the Japanese Kwantung Army was equipped with a VYa-23 23MM cannon and painted in the standard Soviet Air Force camouflage of Black-Green and Olive Drab uppersurfaces and Light Blue undersurfaces.

On 27 September 1942, after repairs had been completed, a number of evaluation flights began under the supervision of Major Yamamoto from the Army Air Test Center. During the trials, which were performed at Mutanchiang air base in Japanese occupied Manchukuo, the LaGG-3 had the lower main wheel doors removed. The original pitot tube had been replaced by a larger Silver tube of Japanese origin. The propeller, remained in Natural Metal after its repair, with each tip being painted in Red. The original Soviet Air Force Red Stars were replaced by a Japanese Hinomaru. The fuselage marking had a White outline while the wing markings had no outline. The Red Star on the fin/rudder was simply overpainted.



The Japanese captured LaGG-3 on the ramp at Mutanchiang air base. The original pitot tube was replaced by a larger Silver tube of Japanese origin. The propeller was Natural Metal with Red tips. The lower main wheel doors were removed. (Heinz J. Nowarra)

The Japanese LaGG-3 in flight during the evaluation trials in the Autumn of 1942. The original Soviet Air Force Red Star was replaced by Japanese Hinomaru, the markings on the fuselage had a White outline, while the wing markings were not outlined. (Heinz J. Nowarra)



LaGG-3 (11th Series)

LaGG-3s built as part of the 11th Series were modified for the close support role with underwing bomb racks, rocket rails and provision for carrying drop tanks. A wet point for underwing fuel tanks was installed in each wing with the tank being suspended from a D3-40 bomb rack. The D3-40 was capable of carrying a 21 gallon (80 liter) drop tank. Apart from the provision for the D3-40 bomb rack and six Type RO-82 under wing rocket rails, LaGG-3s of the 11th Series were similar to aircraft built in the preceding series.

Another difference between earlier LaGG-3s and the most LaGG-3 (11th Series) aircraft was that the rear of the radiator fairing was enlarged and much more streamlined. Early LaGG-3 (11th Series) were still equipped with the older style rear radiator fairing typical for the preceding production batches.

The D3-40 bomb rack was also capable of carrying bombs up to 110 pounds (50 kg). Bomb types included the FAB-50 (FAB= *Fugasnaja Avia Bomba*/general purpose bomb) as well as the AO-25M and the FAB-50M fragmentation bombs. The Soviet bombs were generally painted Gray with different color bands painted on the bombs to denote its purpose, however, these bands were not always applied. Anti-armor bombs had Yellow-Red bands, while fragmentation bombs had Green and Blue bands around the body. Practice bombs were painted White and Red. Beside the fragmentation and general purpose bombs, the LaGG-3 could also carry ZAB-50TG incendiary bombs, which were marked with Yellow and Blue bands.

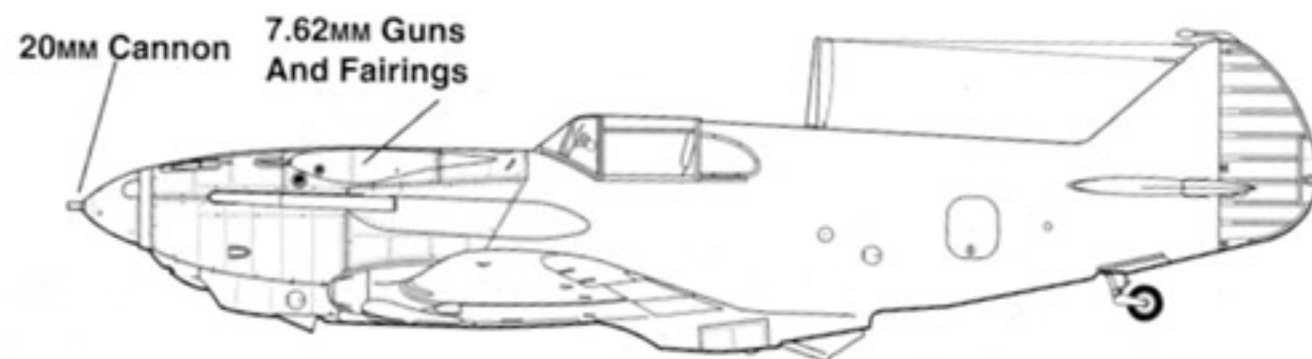
Chemical weapons could also be carried, such as the ChAB-25 R-5 and the AOCh-15. The chemical agent was placed in ordinary fragmentation bombs shortly before a mission. The bombs containing chemical agents were marked with a Yellow-Blue band. There were two major types of chemical agents available, mustard gas and phosgene gas.

A White camouflaged LaGG-3 (11st Series) used on the Northern front in the Winter of 1942. The fighter was equipped with a D3-40 bomb rack, although no weapons were hung on the bomb rack. (Ivan Ivanov)

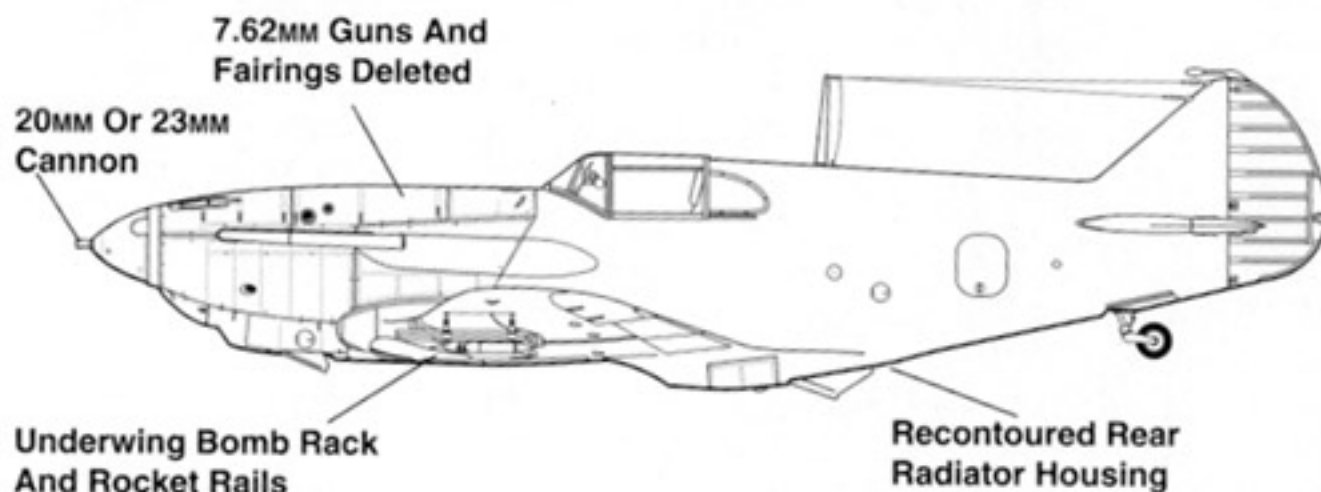


Development

LaGG-3 4th Series



LaGG-3 11th Series



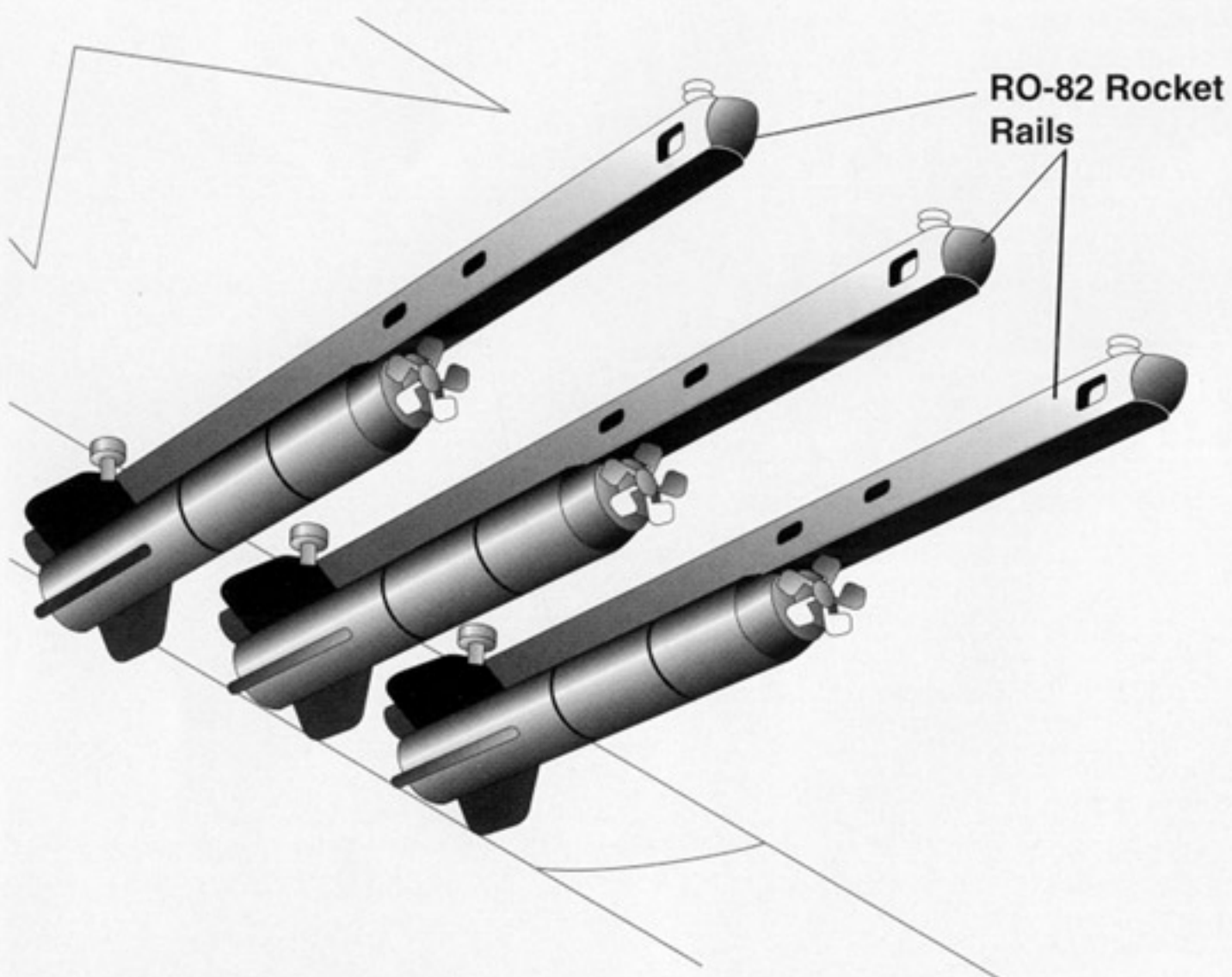
Beside chemical bombs the LaGG could carry a chemical agent dispenser VAP-6M (*Vylivnoj Aviazionnyj Pribor*/Chemical Aviation Container) under each wing. The VAP-6M could carry up to 10 gallons (38 liters) of mustard or phosphorus gas. The gas was dispensed through an ASBR-2 dispenser system, which allowed either or both tanks to be used. It took three to four second to dispense the chemical agents from the tanks over enemy troops.

Using the same container as for chemical agents, a liquid fire dispenser ZAP-6 (*Zashigatelnyj Aviazionnyj Pribor*/Liquid Fire Aviation Container) had been developed for use on close support aircraft. Under the container a second, smaller container of hydrogen sulfide was added to ignite the phosphors when it left the upper container.

During early 1942, the LaGG-3 was increasingly employed in the low-level close-support and ground attack role, where its ability to absorb considerably battle damage was appreciated. The LaGG-3 saw considerably action in the close support role during the battle of Moscow on the Kalinin Front in late 1941 and early 1942. The 129th Fighter Aviation Regiment, flying LaGG-3s, was awarded Guards Regiment status for their actions. On 6 December 1941, the former 129th Fighter Aviation Regiment became the 5th Guards Fighter Aviation Regiment.

LaGG-3s of the 11th Series were equipped with three RO-82 rocket rails under each wing

Rocket Armament



RS-82 Air-To-Ground Rocket



for RS-82 (RS = *Raketnij Snarjad*/Rocket projectile) unguided air-to-ground rockets. These did impact on performance and, when six RS-82 rockets were carried, top speed was decreased by about 15.5 mph (25 km/h). The rockets were aiming using the standard PBP-1 gunsight.

In early 1942 the improved RS-132 unguided rocket became available in quantity. The RS-132 could be carried on the same rocket rails as the RS-82. Both the RS-82 and RS-132 could knock out light and medium tanks, but because of the fact that they were highly inaccurate, the rockets were usually used to attack tight columns and concentrations of armored equipment.

During the Winter of 1942, a number of LaGG-3 (11th Series) were equipped with a non-



A line-up of ski-equipped LaGG-3s (11th Series) during an inspection. All the aircraft were painted with a crudely applied Winter camouflage. (Robert Bock)

These LaGG-3s (11st Series) are having their standard wheel landing gear replaced by skis for operations from snow. The aircraft in the foreground has the port wheel removed from the landing gear leg, while the aircraft in the background still has its wheels. (Robert Bock)





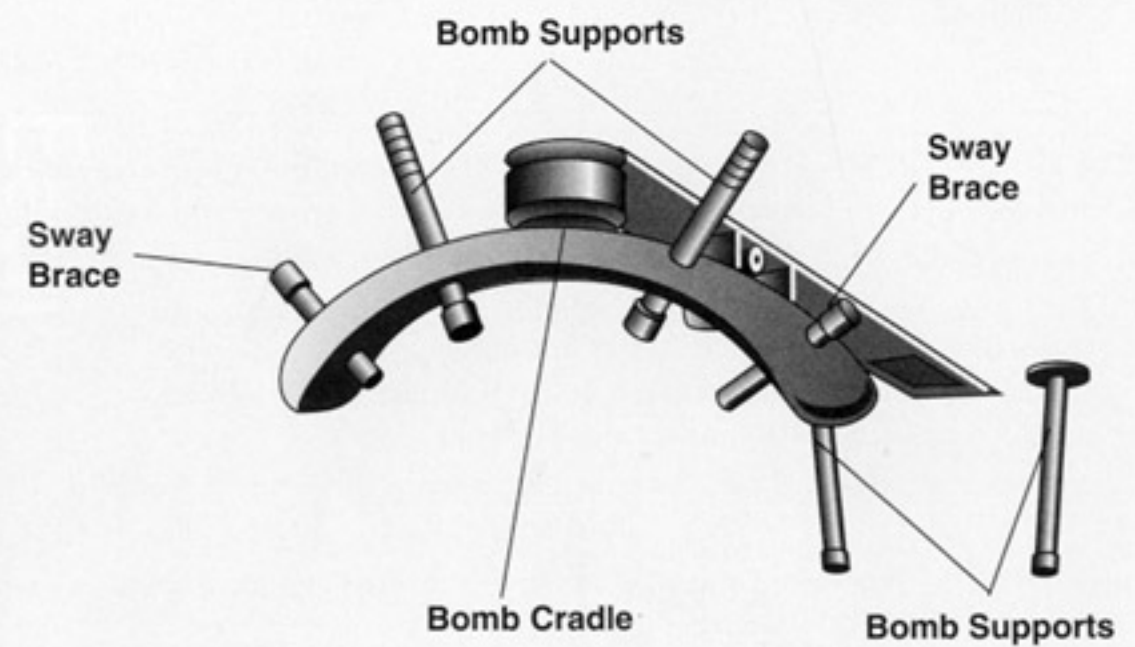
Captain V.P. Mironov in the cockpit of his LaGG-3 (11st Series) in the Summer of 1942. Captain Mironov shot down twenty-one enemy aircraft and became a Hero of the Soviet Union. A number of LaGG-3 (11th Series) had the air intake on the nose deleted. (Ivan Ivanov)

retractable ski undercarriage, in place of the main wheels. While allowing operations from snow covered fields, the additional drag of the skis reduced the aircraft's speed and worsened already difficult handling qualities. As a result, the skis were replaced by the standard wheel configuration as soon the weather conditions permitted.

This Winter camouflaged LaGG-3 (11st Series) crash landed in the Baltic region of the Eastern Front in the Winter of 1942. There are Type RO-82 rocket rails installed under the wing. (Ivan Ivanov)



D3-40 Bomb Rack



LaGG-3 (23rd Series)

The LaGG-3 (23rd Series) differed from previous production batches in that it had a modified rudder. While LaGG-3s up to the 22nd Series had a straight rudder, the LaGG-3 (23rd Series) had a bend at the top of the rudder.

The first production batches of LaGG-3 (23rd Series) were equipped with a balance weight on the modified rudder, but most 23rd Series LaGG-3s had the balance weight deleted.

A few LaGG-3 (23rd Series) were re-equipped with the VISH-105SV propeller. These new propellers differed from the standard VISH-61P propeller in having an enlarged spinner. The 23rd Series was produced until the Summer 1942.

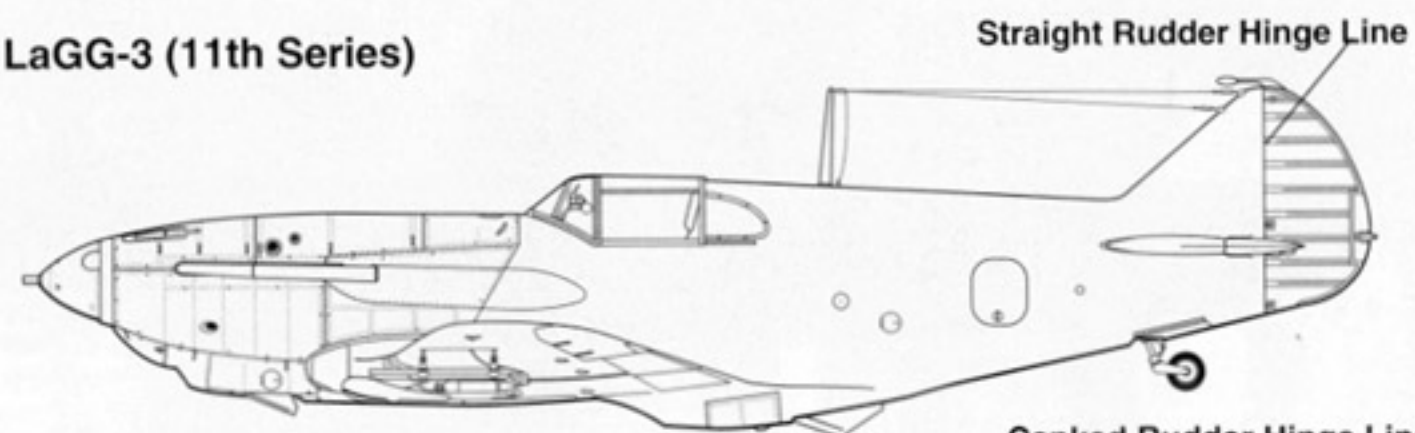
Some LaGG-3s (23rd Series) had a modified exhaust collector tube, with a bend to the side at the end of the exhaust tube to deflect hot exhaust away from the fuselage skinning. These LaGG-3s lacked the fuselage protective plate normally installed just behind the exhausts.

In early 1942, it became clear that the LaGG-3 was in many respects inferior to the Yak-1 and Yak-7. The Yakovlev designs were superior in performance and were much easier to produce than the LaGG-3 with its Delta-Wood structure. As a result, the Commissariat of the People for the Aviation Industry ordered that GAZ-153 should convert from LaGG-3 produc-

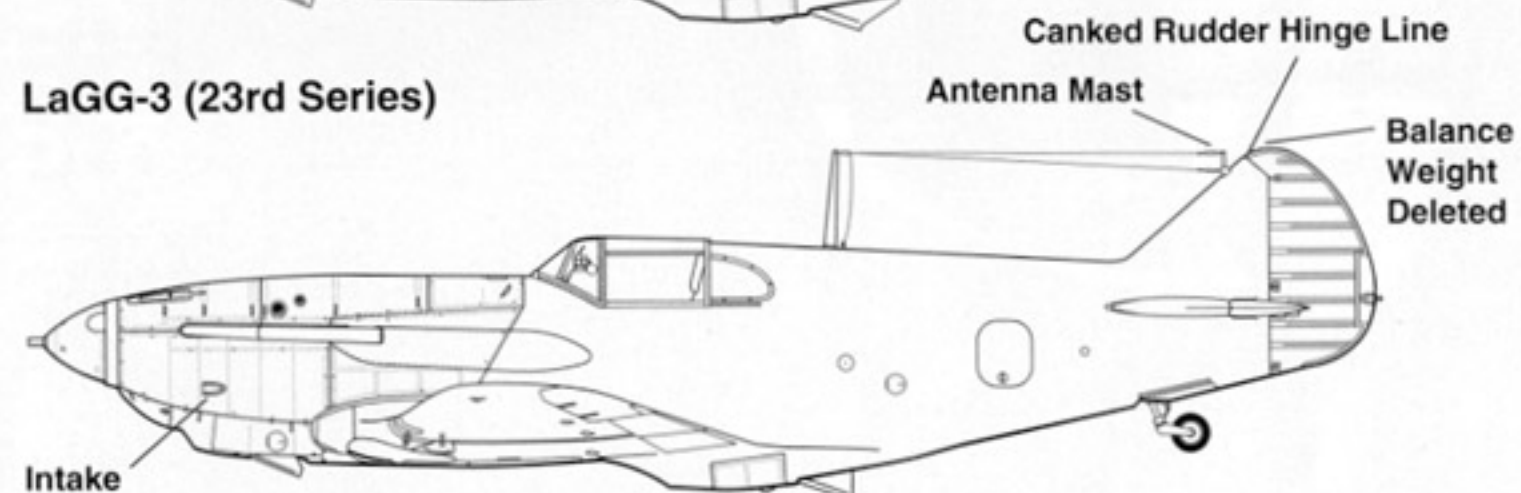
A ski equipped LaGG-3 of the 23rd Series with no tactical markings. A typical feature of the LaGG-3 (23rd Series) was the lack of the balance weights on the rudder tip and the enlarged rudder with a bend. (Nigel Eastaway/RART)

Development

LaGG-3 (11th Series)



LaGG-3 (23rd Series)





This 23rd Series LaGG-3 is configured with RO-82 rocket rails under each wing for the ground attack role. These rails could carry either the RS-82 or RS-132 air-to-ground unguided rocket, either of which was capable of knocking out enemy armor. (Nigel Eastaway/RART)

tion to the Yak-7 fighter. At that time, the factory had produced a total of 330 LaGG-3s. GAZ-21 converted to the radial engine La-5 in the Autumn of 1942, and for a while both, LaGG-3s and La-5s were produced at the factory. As a result, GAZ-31 became the sole factory building LaGG-3s.

During 1942, a total of 2,771 LaGG-3 were built, more than in any other year the LaGG-3 was in production.

This ski equipped LaGG-3 of the 23rd Series has the enlarged rudder which was standard for this series of LaGG-3s. This is an early production aircraft still fitted with the rudder balance weight used on previous models. The large spinner for the VISH-105SV propeller is non-standard. (Nigel Eastaway/RART)



This LaGG-3 (23rd Series) was fitted with two 21 gallon (80 liter) drop tanks attached to the under wing D3-40 bomb racks. There are also three RO-82 rocket rails with RS-82. (Ivan Ivanov)



This ski-equipped LaGG-3 of the 23rd Series had a non standard exhaust collector tube that is bent on the end to deflect the hot exhaust gases away from the fuselage. The standard fuselage metal plate has been deleted. (Nigel Eastaway/RART)



LaGG-3 (29th Series)

The LaGG-3 (29th Series) differed from earlier variants in that it was equipped with a more powerful 1,210 hp Klimov M-105PF engine. This engine produced about 110 hp more than the Klimov M-105PA engine used on the previous production batches of the LaGG-3. The power, however, was increased at expense of its altitude rating. While the M-105PA performed well up to altitudes of 13,123 feet (4,000 meters) the M-105PF had its best performance up to 8,858 feet (2,700 meters). Combat experience had shown, however, that most combat on the Eastern Front was at low altitudes.

Externally, the LaGG-3s of the 29th Series had the large, single exhaust collector tube replaced by three individual exhaust stubs located on each side of the nose. In addition, the protective cover plate behind the exhaust collector tube was deleted. Apart from these two features, the LaGG-3 (29th Series) were nearly identical to the previous production batches.

The first LaGG-3 of the 29th Series were delivered from GAZ-21 and GAZ-31 in June of 1942. There were only a few 29th Series LaGG-3s built at State Aircraft Factory 21 before production switched to the radial engined La-5.

One of the first LaGG-3 (29th Series) production examples was assigned in the same month for test trials to the Scientific Research Institute of the Soviet Air Force at Sverdlovsk. The LaGG-3 had, due to its reduced armament, a take off weight of 6,966 pounds (3,160 kg) while the 4th Series LaGG-3 had a weight of 7,231 pounds (3,280 kg). With its improved low

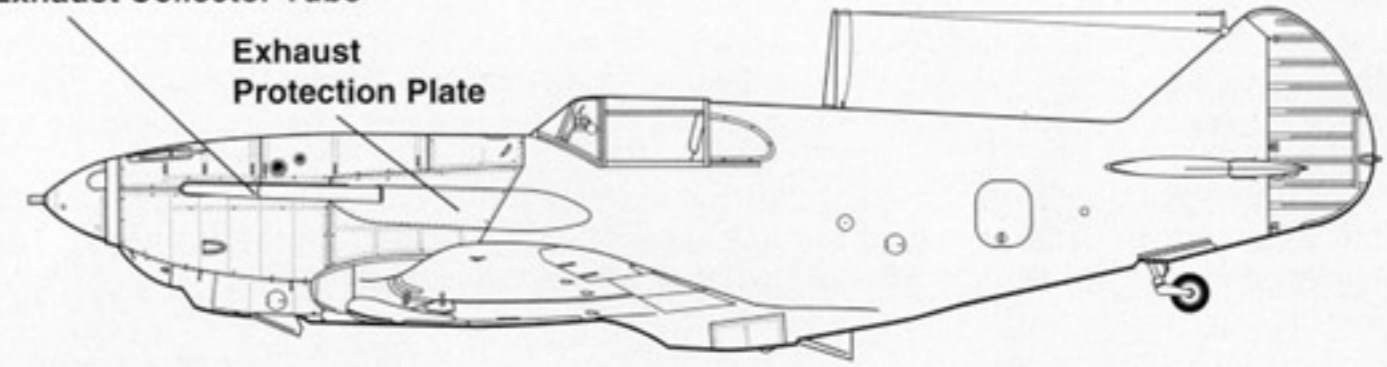
A LaGG-3 (29th Series), White 25, captured by advancing German troops on the Eastern front. The fighter carried a Red-Black Kremlin star national marking on the fuselage and a small Red star on the tail. (Frieder Voigt)

Development

LaGG-3 (23rd Series)

Exhaust Collector Tube

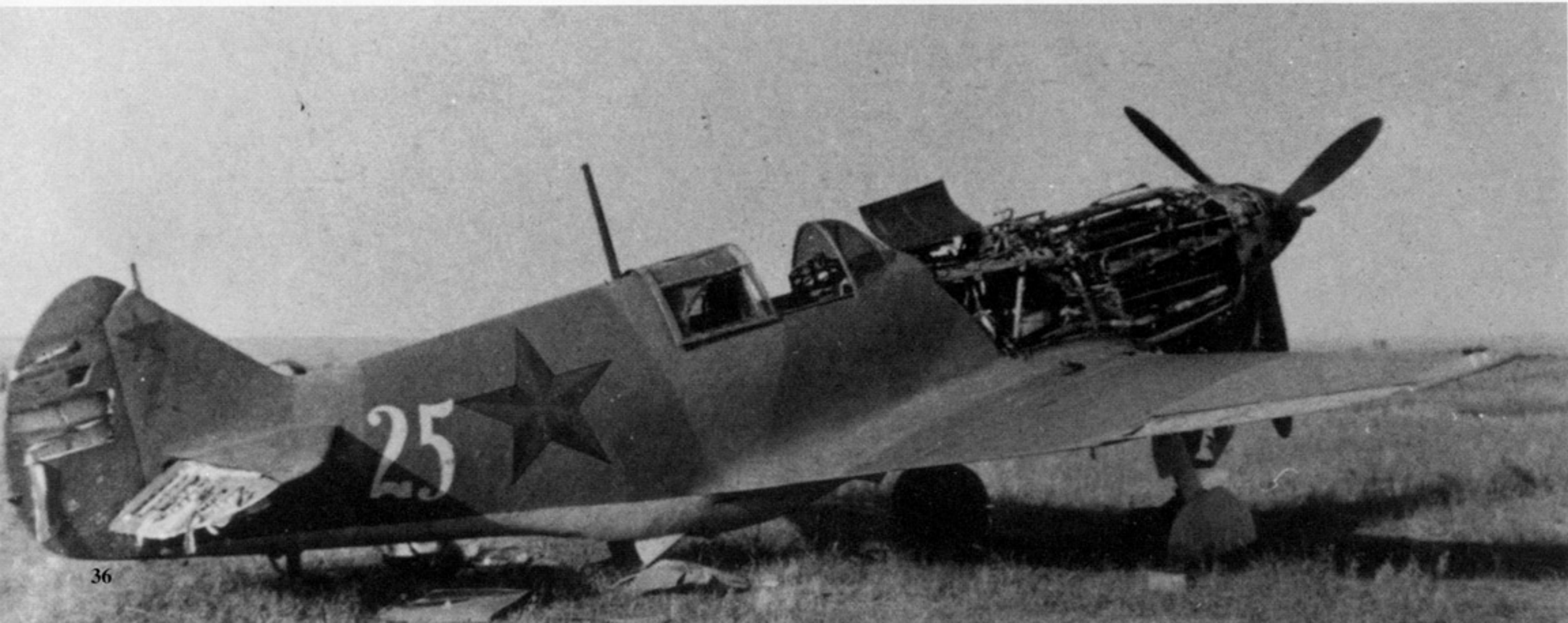
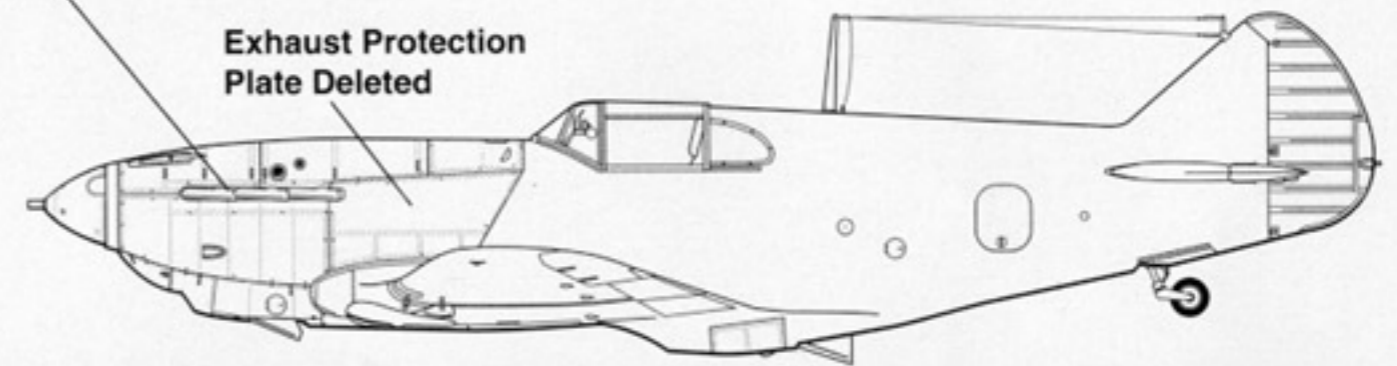
Exhaust Protection Plate

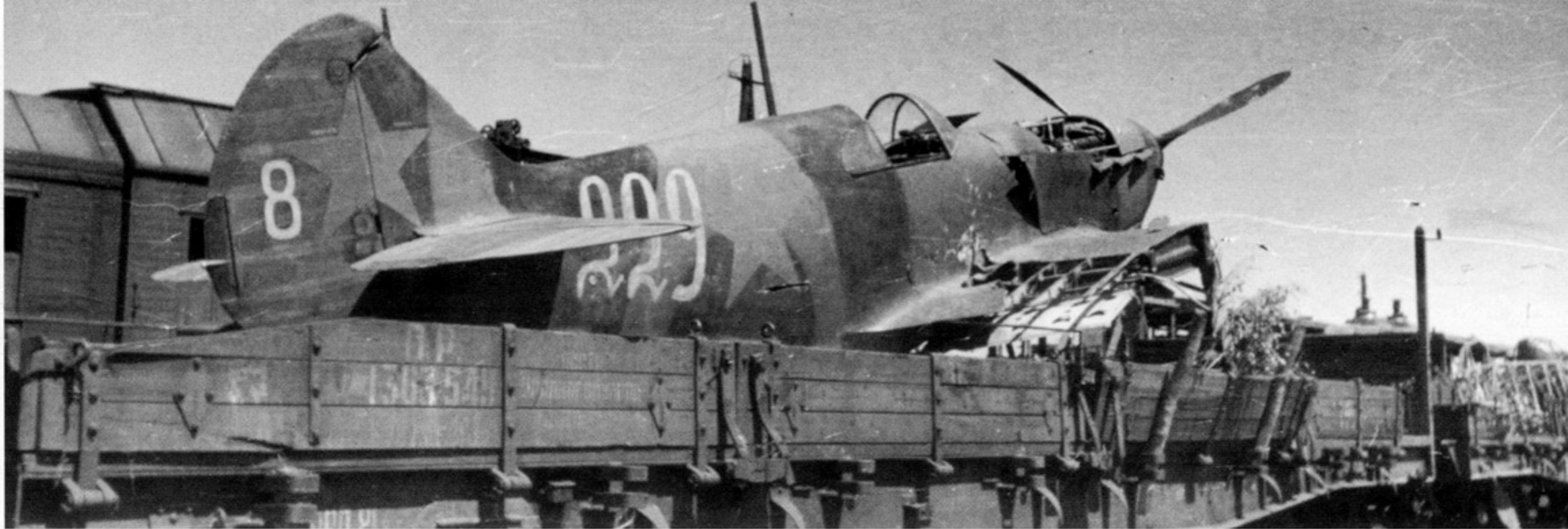


LaGG-3 (29th Series)

Three Exhaust Stacks

Exhaust Protection Plate Deleted

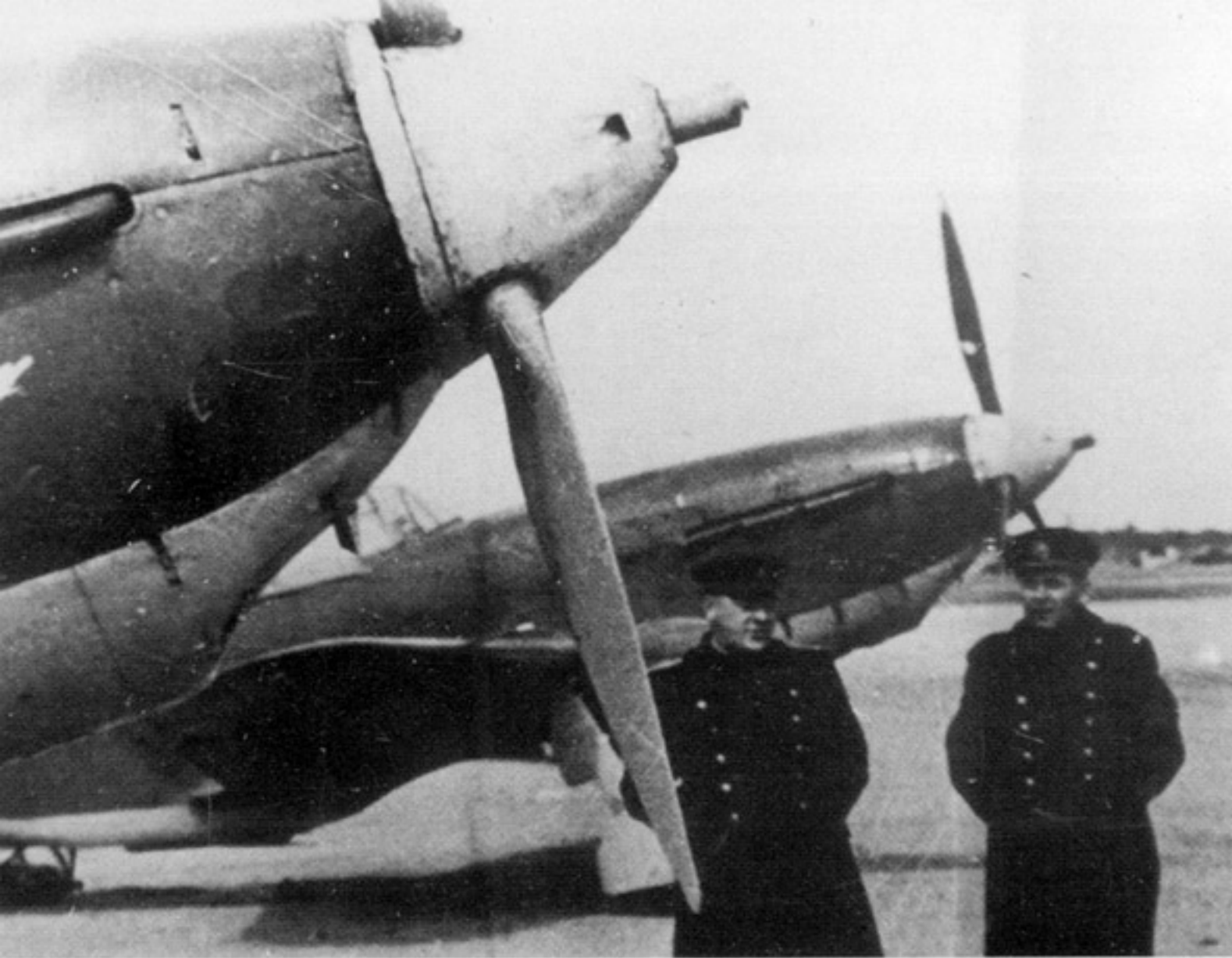




This LaGG-3 (29th Series) carried a crudely painted Red star on the tail and none of the national markings were outlined. The three digit tactical number, White 229, was unusual for an aircraft assigned to a Fighter Aviation Regiment. Additionally, a small White 8 was on the rudder. (Manfred Griehl)

This Winter camouflaged LaGG-3 (29th Series), Red 27, was equipped with a VISH-105SV propeller, identified by the large spinner. This type of spinner is a non-standard feature of aircraft of the 29th series. (Manfred Griehl)





A line-up of LaGG-3s of the 29th Series. The aircraft in the foreground carried a White bird silhouette as a personal marking and a White spinner. The small three exhaust stubs on the LaGG-3 (29th Series) differed from earlier LaGG-3s which used a single exhaust collector tube. (Robert Bock)



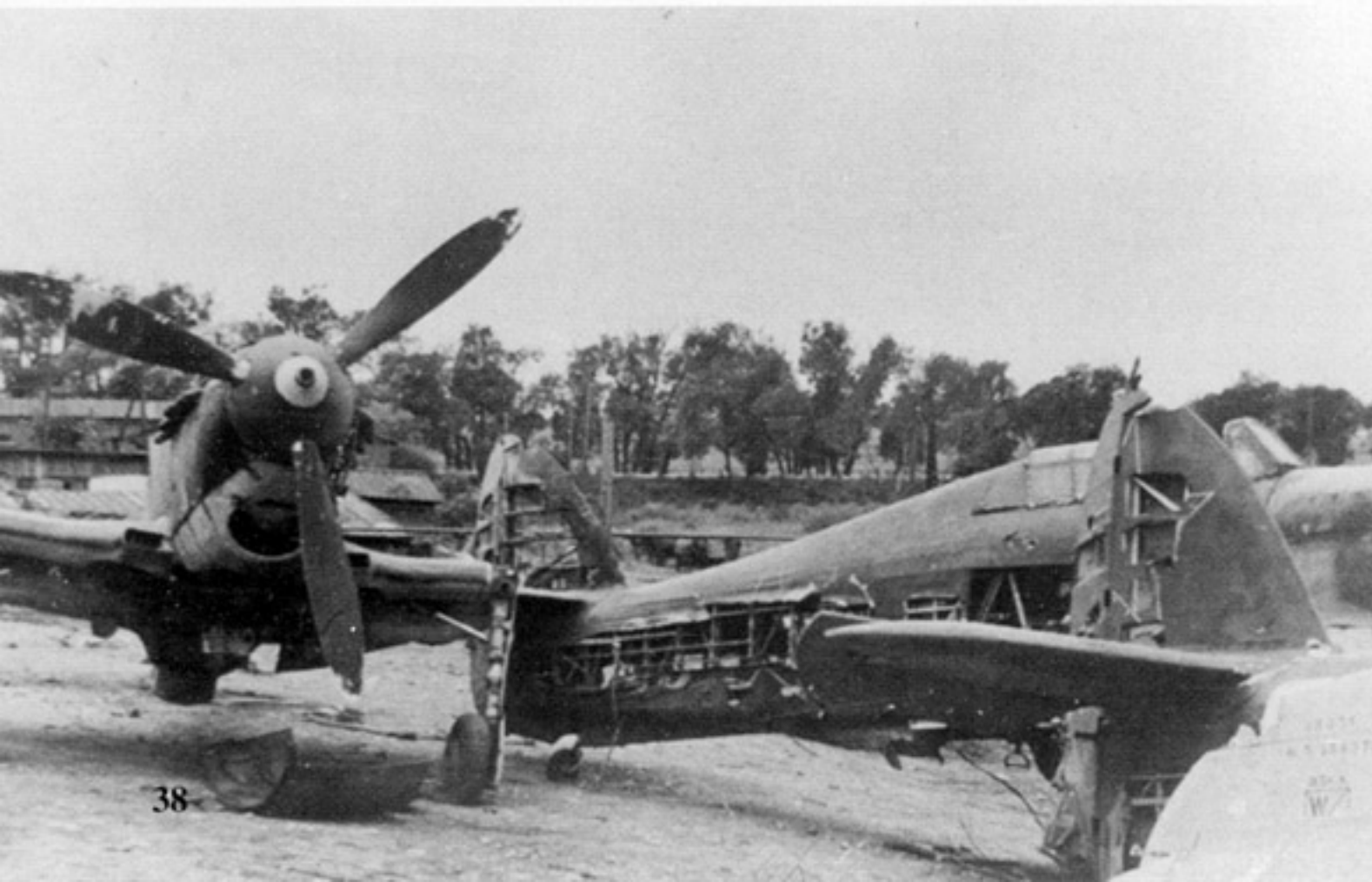
This LaGG-3 (29th Series) was captured by Hungarian troops at Ostrogorsh in the Ukraine. The position of the tactical number, White 29, in front of the national marking was unusual. A White band was painted on the Black-Green spinner. (Attila Bonhardt/Hungarian War Archive)

altitude M-105PF engine, the LaGG-3 (29th Series) had a speed of 315 mph (507 km/h) at sea level, 19.2 mph (31 km/h) faster than the LaGG-3 (4th Series). The LaGG-3 (29th Series) had a maximum speed of 351 mph (566 km/h) and a rate of climb of 2,563 feet per minute.

Some late production batches of the LaGG-3 (29th Series) were equipped with an enlarged radiator, with the radiator intake being more rectangular in shape.

Beginning in August of 1942, the original RSI-3 radio was replaced by a short-wave RSI-4 *Malyutka* receiver. In contrast to the RSI-3 which had five pre-fixed frequencies, the RSI-4 had the capability of using variable frequencies in a band between 3.7 and 6.05 Megacycles.

A few late production batches of the LaGG-3 (29th Series) versions were equipped with the VISH-105SV propeller, although, this type of propeller was not introduced on a large scale until the 33rd Series.



A LaGG-3 (29th Series) and two Lend-Lease Hawker Hurricane IIBs awaiting shipment to Hungary at an Ukrainian railway station. The aircraft were captured at different locations on the Southern Front by advancing Hungarian troops and were sent back for testing. (George Punka)

LaGG-3 (33rd Series)

The 33rd Series LaGG-3 differed very little from the 29th Series. The main difference was that the VISH-105SV propeller and slightly larger spinner became standard.

The tailplane was also modified on the LaGG-3 (33rd Series). Previous production batches had a rounded rudder with a straight hinge line, while LaGG-3 (33rd Series) had a slightly pointed fin and rudder with improved hinges.

LaGG-3 (34th Series) - Anti-tank Variant

The LaGG-3 (34th Series) was modified to serve as an anti-tank ground attack aircraft. The standard ShVAK 20MM cannon was replaced by a NS-37 37MM cannon with an ammunition supply of twenty rounds and a rate of fire of 250 rounds per minute. Externally, the LaGG-3 (34th Series) could be identified from the preceding 33rd Series and later LaGG-3s by the longer cannon barrel of the 37MM cannon. The port Berezin UBS 12.7MM gun was retained.

The first examples of the NS-37 cannon were available in the Autumn of 1942 and after a series of tests with the new weapon, some forty LaGG-3 (34th Series) were sent to Stalingrad for front-line evaluation with the new armament.

Combat experience clearly showed that the LaGG-3 was not well suited for the anti-tank role. The flying characteristics of the cannon armed LaGG-3 were even worse than the standard LaGG-3 since the center of gravity had shifted. The recoil forces of the cannon were **Warming up the Klimov M-105PF engine on an early LaGG-3 (35th Series), Red 52, of the 3rd Guards Fighter Aviation Regiment. The enlarged, more rectangular radiator fairing under the fuselage was a change from earlier production variants of the LaGG-3. (Ivan Ivanov)**



severe and led to fuselage damage. Additionally, the Il-2 Type 3M performed much better in the anti-tank role armed with two NS-37 cannons in underwing gondolas. As a result, there was only one LaGG-3 production batch built with this armament configuration.

Cannon armed LaGG-3s intended for anti-tank missions were not new. In August of 1941, three LaGG-3 (1st Series) were equipped with a Sh-37 37MM cannon and immediately sent to the front, where they were employed with some success.

LaGG-3 (35th Series)

The LaGG-3 (35th Series) incorporates a number of changes aimed at improving the flying characteristics of the fighter, especially during take off and landing. Service pilots generally found the LaGG-3 to be a difficult machine to fly. It tended to nose-up during an approach and stall at the least provocation.

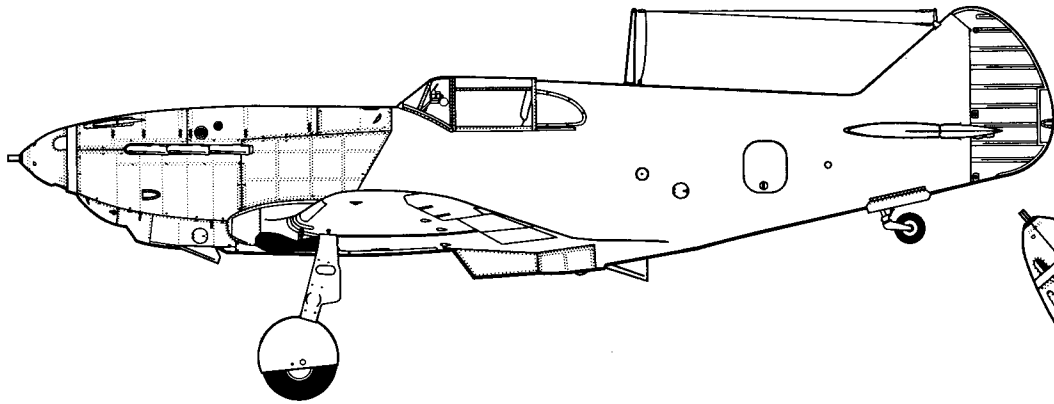
As a result, automatic slats were introduced on the wing leading edge to improve stall characteristics. As a result, the starboard pitot tube was enlarged and repositioned under the wing leading edge. The slats had been successfully tested on LaGG-3s built as part of the 22nd Series with full scale production introduced on LaGG-3s of the 34th Series.

The early LaGG-3 (35th Series) had a smaller spinner on the VISH-105SV propeller, but the most fighters built in this series had an enlarged, more pointed spinner, which became standard.

In contrast to the previous production batches, the LaGG-3 (35th Series) had an enlarged radiator and, as a result, the radiator fairing became larger and more squared than on the previous production models.

A early LaGG-3 of the 35th Series prepares to take-off on a mission. The early production examples of this series were equipped with a smaller, less pointed spinner than the standard production 35th Series LaGG-3. The rudder of this Winter camouflaged LaGG-3 Red 30, was a replacement from another aircraft that did not carry the national marking. (Ivan Ivanov)





Specification

LaGG-3 (35th Series)

Wingspan.....32.15 feet (9.8 m)
 Length.....28.9 feet (8.81 m)
 Height.....14.4 feet (4.4 m)
 Empty Weight.....5,357 pounds (2,430 kg)
 Maximum Weight..... 6,966 pounds (3,160 kg)

Powerplant.....One 1,210 hp Klimov M-105PF
 liquid-cooled engine

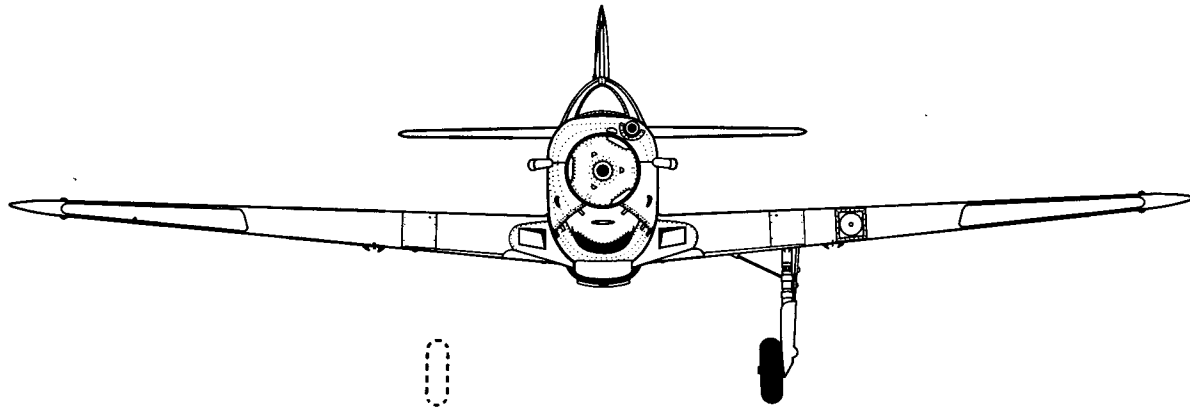
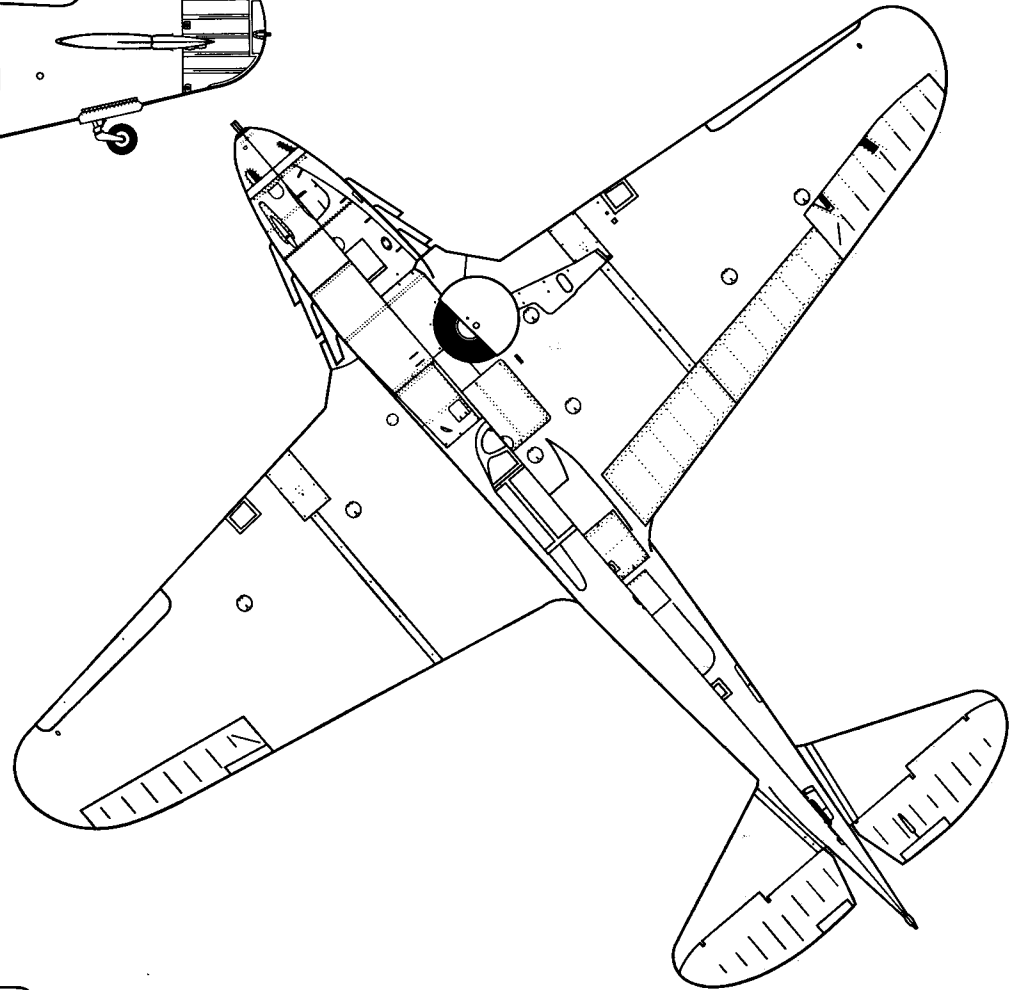
Armament.....One 20mm Cannon and One 12.7mm
 machine gun.

Speed.....351 mph (566 km/h)

Service Ceiling..... 32,808 feet (10,000 m)

Range.....565 miles (910 km)

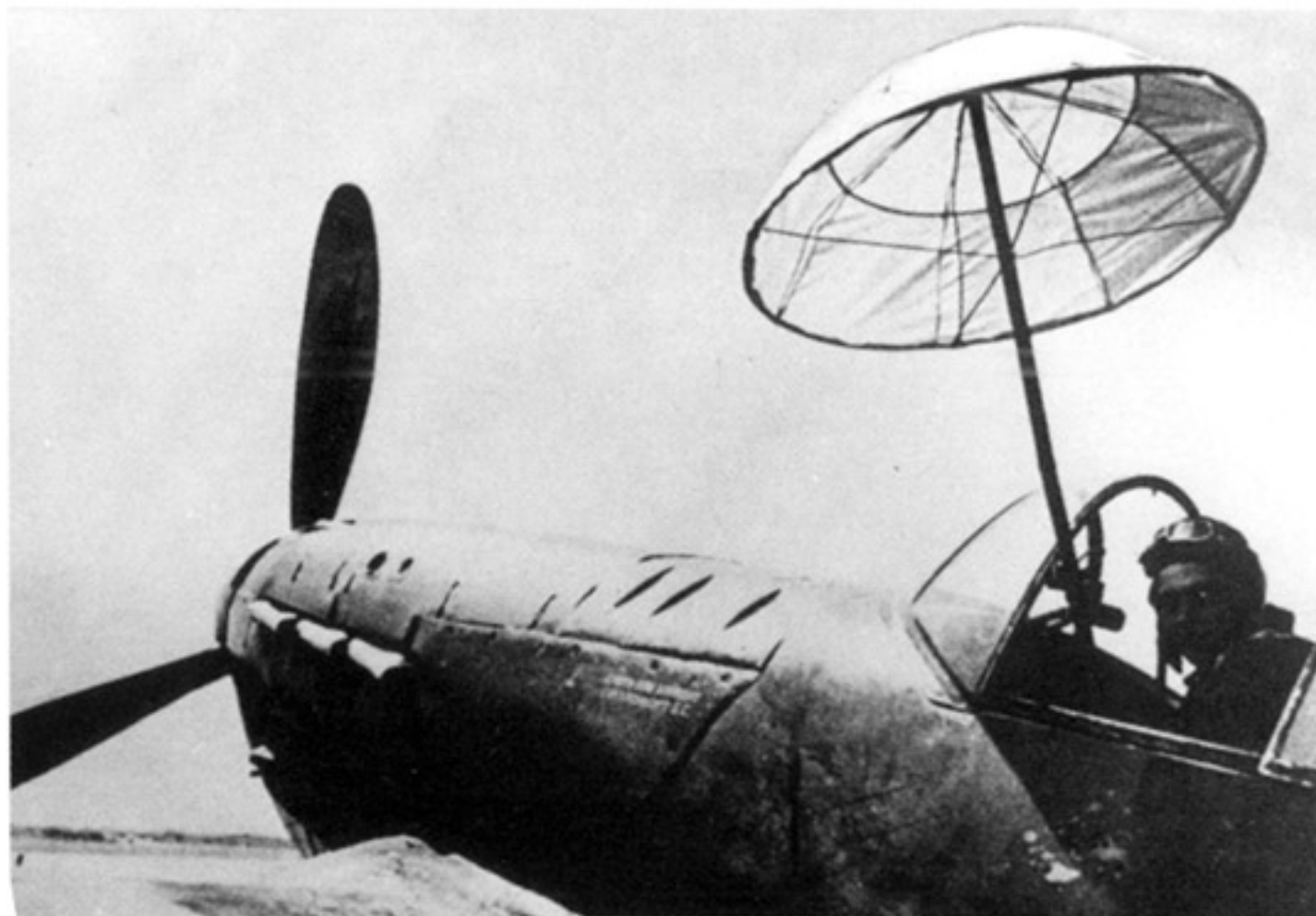
Crew.....One





An early LaGG-3 (35th Series), Red 59, of the 3rd Guards Fighter Aviation Regiment prepares for a mission east of Lake Ladoga during the Winter of 1942. The Red star on the tail was crudely applied to this winter camouflaged LaGG-3. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)

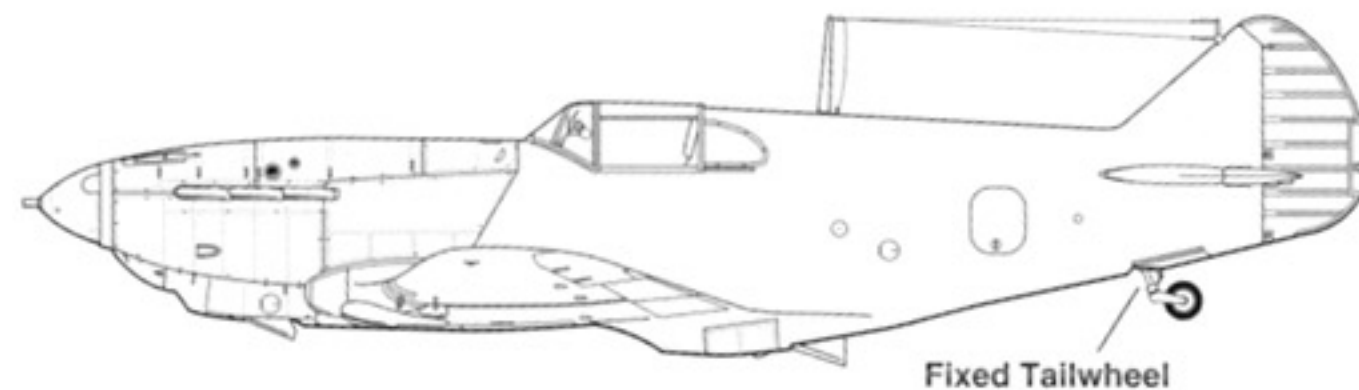
A Soviet pilot protects himself from the sun with an umbrella, while on alert in the cockpit of his LaGG-3 (35th Series). (Ivan Ivanov)



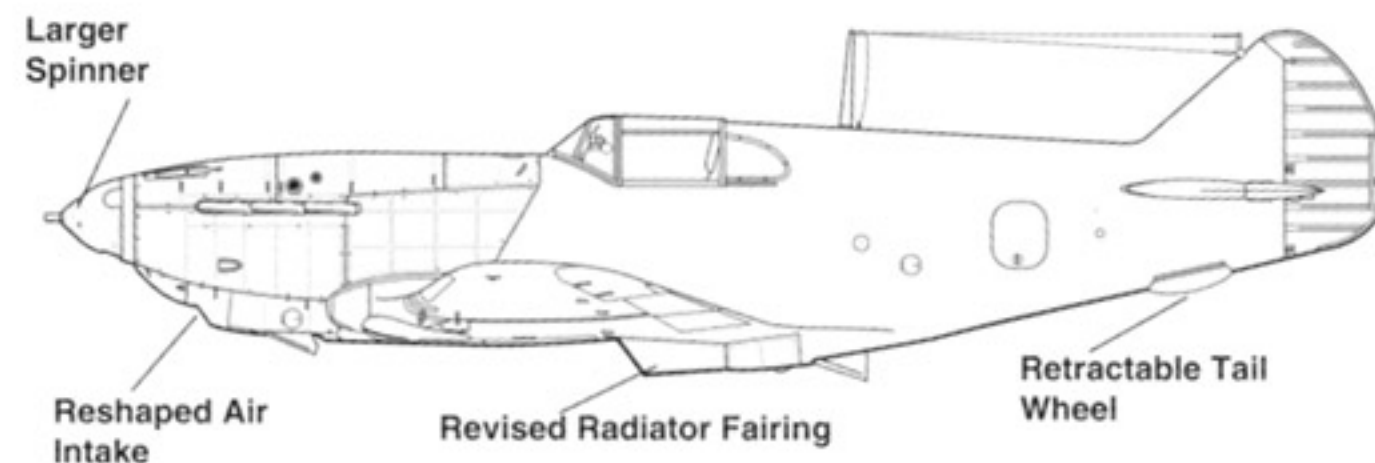
A Finnish soldier takes cover behind this 35th Series LaGG-3 Yellow 68, when the salvage team came under Soviet artillery fire while removing usable parts from the wreckage. Such salvage efforts kept Finnish Air Force LaGG-3s flying. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)

Development

LaGG-3 (29th Series)



LaGG-3 (35th Series)

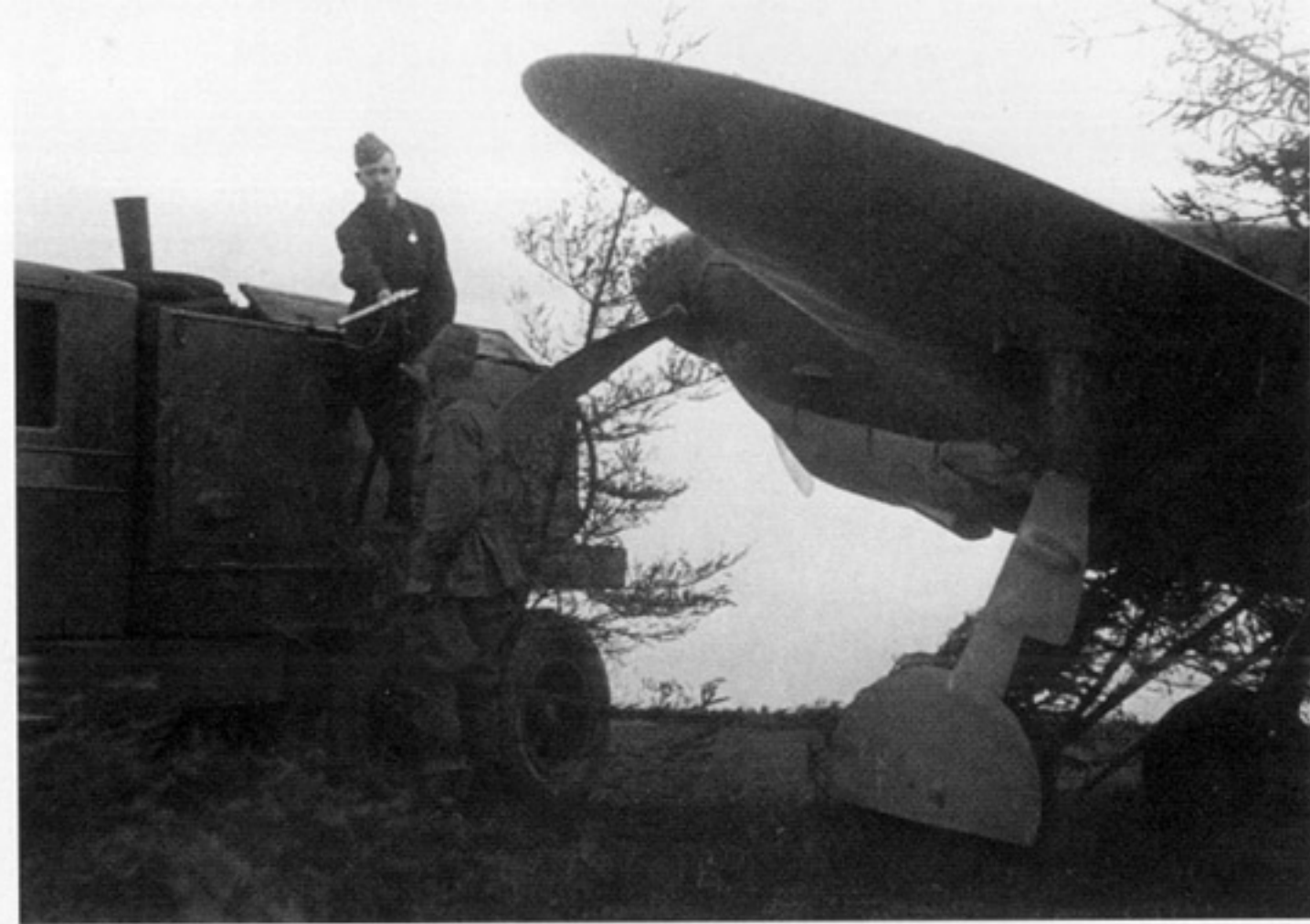
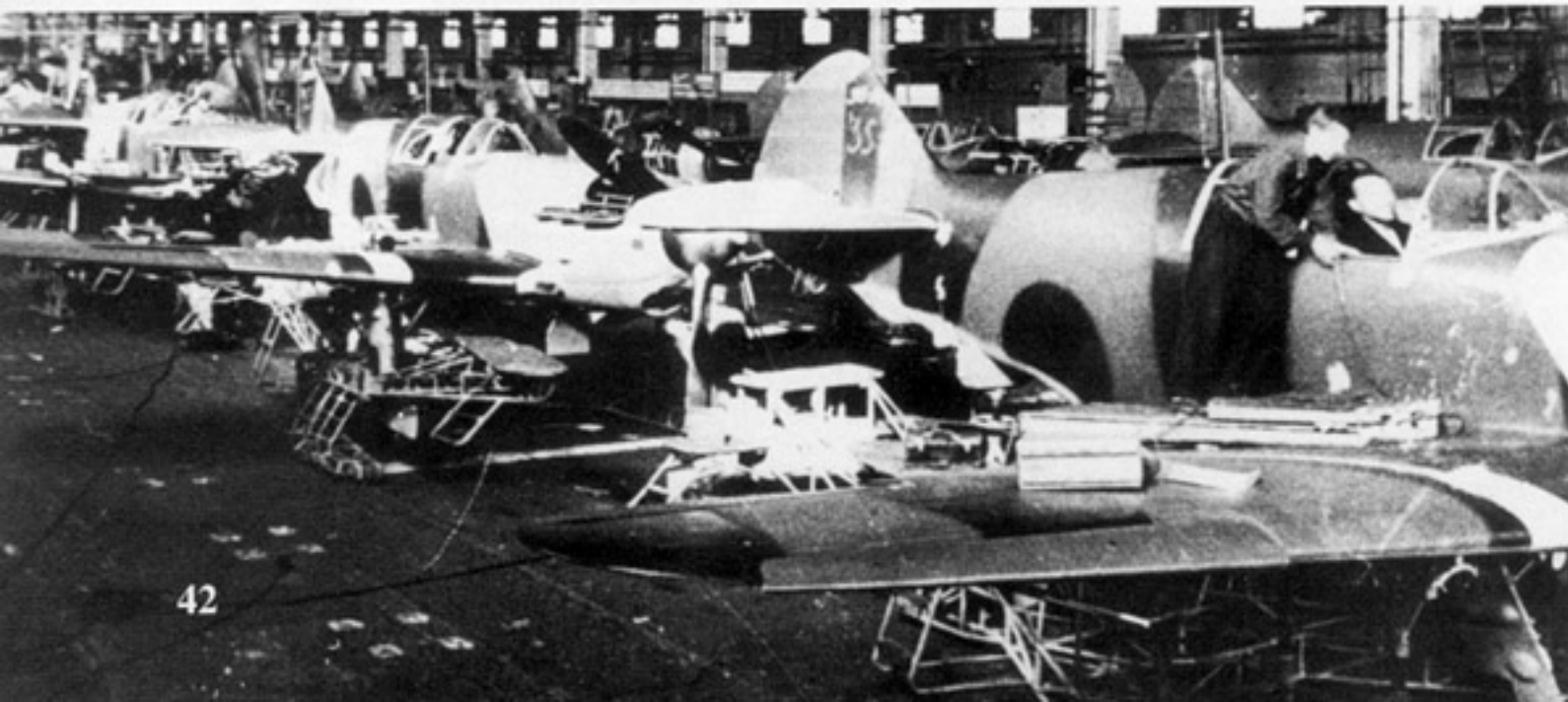




Camouflaged with foliage, this late production LaGG-3 (35th Series) was refueled on an airstrip on the Kalinin front in May of 1943. The air intake just above the wing root was a feature found on late production LaGG-3s. (Ivan Ivanov)

The LaGG-3 (35th Series) was also modified with a retractable tail wheel, which had been tested on a small number of aircraft built in the 28th Series. The first LaGG-3 (35th Series) were fitted with small, flush type retractable tailwheel doors. These were replaced on most 35th Series aircraft by enlarged, bulged tailwheel doors.

The 35th Series LaGG-3s also had the air intake located below the exhaust stubs reduced in size and reshaped. In addition, late production batches of the LaGG-3 (35th Series) had an air intake behind the exhaust stubs, a feature which became standard on later LaGG-3s built in Final assembly of LaGG-3s (35th Series) is ongoing (in the foreground) while their replacement, the La-5 is assembled in the background at State Aircraft Factory 31 in the Autumn of 1942. The slats on the aircraft in the foreground were painted before the camouflage was applied to the fighter. (Ivan Ivanov)

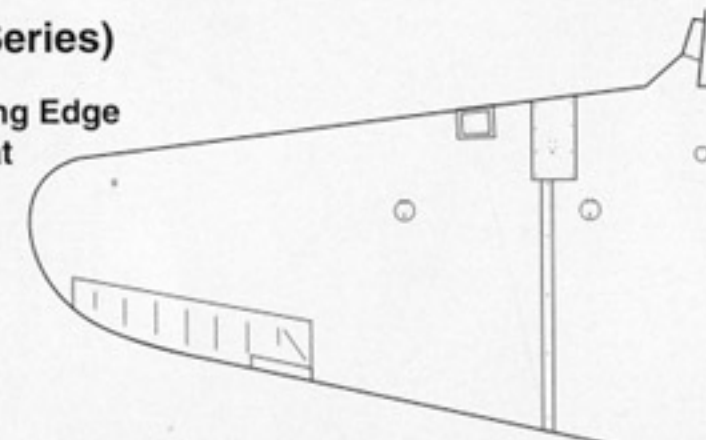


A LaGG-3 (35th Series) being refueled at an airstrip on the Eastern front. The fuel capacity of the LaGG-3 was 127 gallons (480 liters) distributed between five tanks. The large spinner for the VISH-105SV propeller was a good identification feature for the 35th Series aircraft. (Ivan Ivanov)

Wing Development

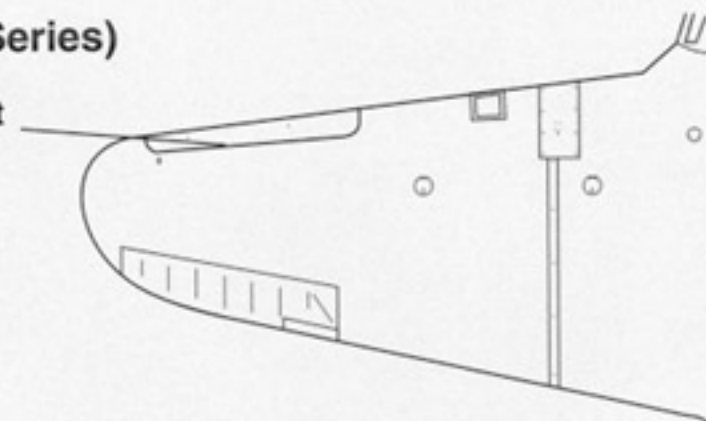
LaGG-3 (29th Series)

Hard Wing Leading Edge
With No Wing Slat



LaGG-3 (35th Series)

Leading Edge Slat





Finnish Air Force personnel look over a crash landed LaGG-3. The inspection team went over the fighter carefully to decide if it could be salvage or if it should be stripped of usable parts. In the event, the team decided that the aircraft could be put back into service. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)

On 14 September 1942, Soviet and Finnish fighters clashed over the Finnish held Olonets Isthmus. One LaGG-3 (35th Series) was damaged by Alto Tervo and belly landed in a meadow at Ala-Sedoksa, where it drew considerably attention from the local habitants. The muzzle for the Berezin UBS 12.7MM machine gun is clearly visible. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)

The LaGG-3 (Serial 3121357), captured by the Finnish Air Force left the factory on 11 August 1942 and had been in front line service for a short time. The Finns considered the LaGG-3 as repairable and it was taken to a repair depot for rebuilding. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)





LG-3 undergoes repair at the Mechanic's School at Utti Air Base during 1944. Visible in the background is the wing of a captured Lend-Lease P-40M Warhawk, White 23. The Curtiss fighter became KH-51 in the Finnish Air Force, after it made a forced landing in Finland on 27 December 1943. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)

the 66th Series.

The LaGG-3 (35th Series) variants were produced from August of 1942 until Spring of 1943 at GAZ-31, which became the sole State Aircraft Factory building LaGG-3s in 1943.

Although the LaGG-3 was regarded as obsolete by the NKAP (Commissariat of the People for the Aviation Industry) in early 1942, production continued until preparations were finished to convert the production lines to more advanced fighters. Up to the end of 1942, 2,771 LaGG-3 had left the assembly lines, more than in any other year the type was produced.

Finnish LaGG-3 (35th Series)

Major Aulis Bremer, commander of LeLv 32, at the controls of the Finnish Air Force LaGG-3 (35th Series), LG-3. All LaGG-3s equipped with slats had the pitot tube relocated under the wing leading edge. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)





LG-3 taxis out for a mission at Tampere Air Force Base in January of 1943. The Finnish national markings were applied on the wing surfaces and the fuselage. The two Yellow bands, were recognition markings to help distinguish LG-3 from Soviet operated LaGG-3s in the area. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)

Ground crew of the LeLv 32 push the LaGG-3 (LG-3) into a wooden shelter at Nurmoila Air Base on the Olonets Isthmus. All Finnish flown LaGG-3s had the tips of the propeller blades painted Yellow. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)



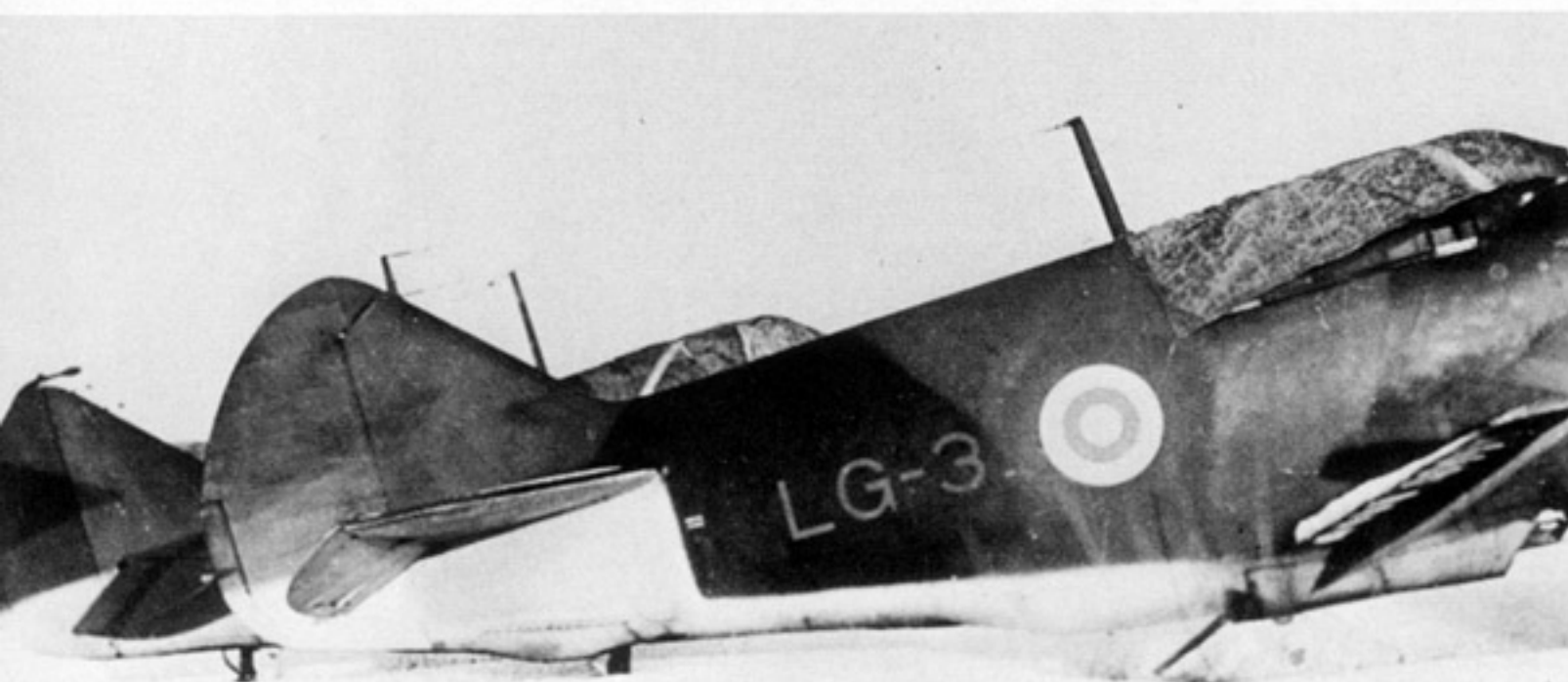
During the Summer of 1944, LG-3 was equipped with a short antenna mast, similar to early LaGG-3s. The upper portion of the Yellow nose identification band was overpainted in Olive-Green. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)





LG-3 was the only Finnish flown LaGG-3 to carry the small Red cross marking, noting the location of the first aid kit, on the fuselage just above the Black LG-3 registration. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)

On 1 April 1945, the national markings of the Finnish Air Force were changed to White/Blue/White roundel. The two remaining LaGG-3, at that time in storage at Tampere Air Depot, received the new marking, which were considerably smaller then the old markings. No flights were ever made in these markings. (Keski-Suomen Ilmailumuseo via Hannu Valtonen)



On 14th September 1942, Soviet and Finnish fighters clashed together over the Finnish held Olomets Isthmus. A LaGG-3 (35th Series) was shot up by a Finnish Air Force pilot, Altto Tervo and belly landed with only minor damage in a meadow at Ala-Sedoksa. Apart from a bent VISH-105SV propeller, there was only minor damage done to the fuselage. A salvage team dismantled the fighter and shipped it to a repair depot, where the Soviet fighter arrived on 7 October 1942. After repairs, the aircraft was assigned to LeLv 32 with the registration LG-3.

On 7 July 1943, the port wing and the propeller were damaged on take-off from Nurmoila but the aircraft was soon repaired. During the overhaul, the radio antenna was shortened to the same size as the radio antenna of LG-2.

The last flight of LG-3 was on 29 January 1945, this was also the last flight of a LaGG-3 in Finnish Air Force service. The fighter was stored at Tampere Air Depot after a total flight time of 79 hours and 40 minutes, more than any other LaGG-3 in Finnish Air Force service.

LG-3 was camouflaged in Black and Olive Green on the upper surfaces and Light Blue undersurfaces. It differed from the other two Finnish LaGGs in that a Red cross in a White disc was added above the registration on the port side, indicating the location of a small first aid kit. In 1944, the upper part of the Yellow nose band on LG-3 was overpainted with Olive Green, while the lower half remained Yellow.

LaGG-3 (66th Series)

The LaGG-3s of the 66th Series were to become the last liquid cooled, in-line engined fighters built by Lavochkin. Compared with previous versions, the 66th Series aircraft had a considerable airframe weight reduction. And, although additional weight was saved by elimination of certain items of equipment, the power to weight ratio of the 66th Series fighters was by far the lowest of all Soviet Air Force fighter aircraft produced at that time. While the LaGG-3 (29th Series) had a take off weight of 6,966 pounds (3,160 kg), the LaGG-3 (66th Series) weighed in at 6,611 pounds (2,990 kg), some 385 pounds less. Series production of this aircraft was launched at GAZ-31 and this State Aircraft Factory became the sole plant producing the LaGG-3 during 1943.

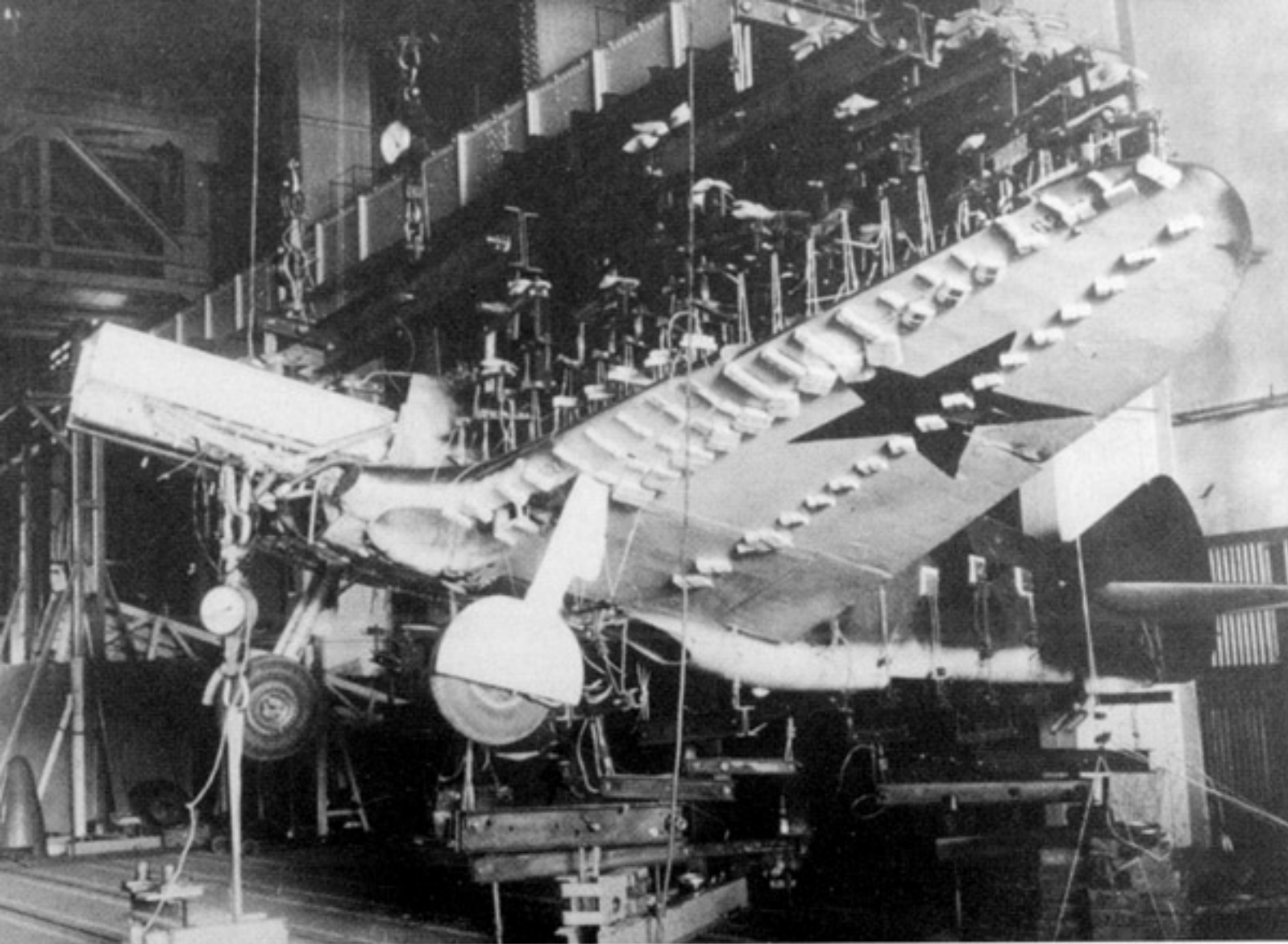
The LaGG-3 (66th Series) had a number of aerodynamic refinements over its predecessors. Production of this last production batch of the Klimov engined LaGG-3 was launched exclusively at GAZ-31, located in Tbilisi, the capital of the Georgian Soviet Socialist Republic. In the 1940s, Georgia had enhanced political significance, since it was the birthplace of the Soviet Leader Iosif Stalin. This last production batch was being built side by side with the

next generation radial-engined La-5 and a number of features and improvements from the La-5 versions were also adopted for the 66th Series LaGG-3. The La-5, however was never produced in substantial number at GAZ-31. In 1942, only twenty-two of the radial engined fighters were produced and only a handful were built during 1943, so that GAZ-31 concentrated nearly its entire production on the LaGG-3. When the last LaGG-3 left the assembly line, production of Lavochkin fighters was stopped at that State Aircraft Factory. After a reorganization, the plant subsequently built Yakovlev Yak-3 fighters with a total of 1,008 being built at the plant.

Evaluation trials performed by test pilots of the Scientific Research Institute of the Soviet Air Force at Sverdlovsk, East of the Ural mountains, clearly showed that the Series 66 LaGG-3 had superior performance to any previous production variants of the LaGG-3. The LaGG-3 (66th Series) reached a speed of 336 mph (542 km/h) at sea level while the earlier LaGG-3

A line-up of 66th Series LaGG-3s of the 9th Fighter Aviation Regiment of the Black Sea Fleet. Each propeller blade has been painted with a White stripe. The small antenna mast and the four exhaust stubs were identification features for the last production version of the LaGG-3. (Ivan Ivanov)





This LaGG-3 (66th Series) is suspended from a special rack while undergoing structural tests at the TsAGI (Central Aero Hydrodynamics Institute). The lack of a landing light under the port wing and the small radiator fairing were features of the last production batch of LaGG-3s. (Nigel Eastaway)

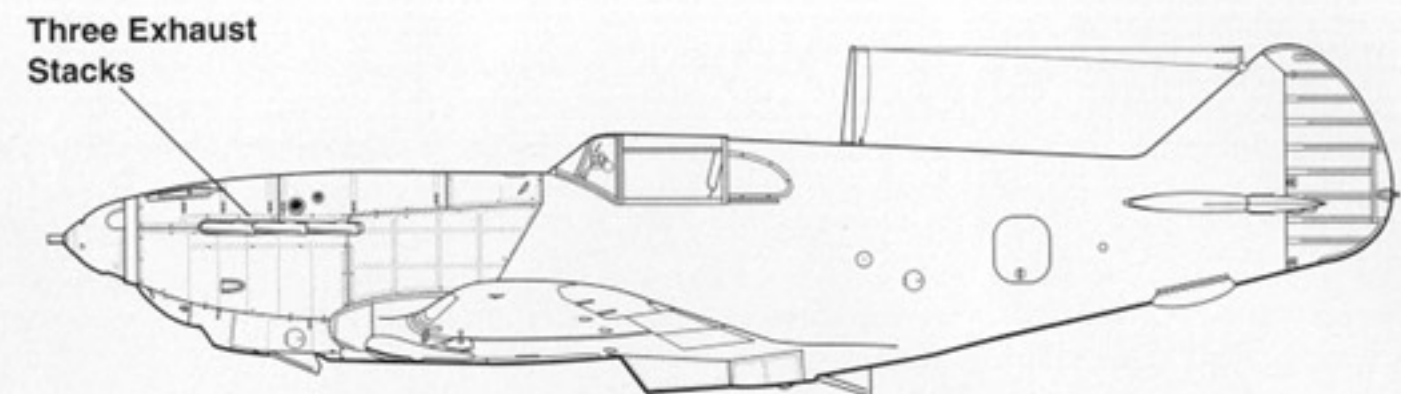
(29th Series) could only reach a speed of 315 mph (507 km/h). A top speed of 367 mph (591 km/h) was recorded at altitude, which was some 15.5 mph (25 km/h) faster than on previous production version of the LaGG-3. The LaGG-3 (66th Series) was, however, remarkable slower than the primary enemy fighter on the Eastern Front at that time, the Messerschmitt Bf-109G-6, which had a top speed of 391 mph (630 km/h). The German fighter was also more heavily armed. Its armament included a MG-151 20MM cannon and two MG-131 13MM machine guns mounted in the cowl. The LaGG-3 (66th Series) was also an easy pray for the Focke-Wulf Fw-190 A-3 which had a top speed of 410 mph (660 km/h).

The LaGG-3 (66th Series) had a rate of climb of 2,929 feet per minute, while the LaGG-3 (29th Series) had a rate of climb of 2,563 feet per minute. The ceiling of the LaGG-3 (66th Series) was reduced to 31,496 feet (9,600 meters), which was 1,312 feet (400 meters) lower than on previous production versions. Due to the weight reduction program, the LaGG-3 (66th Series) was a highly maneuverable fighter, and was the most maneuverable of any production series.

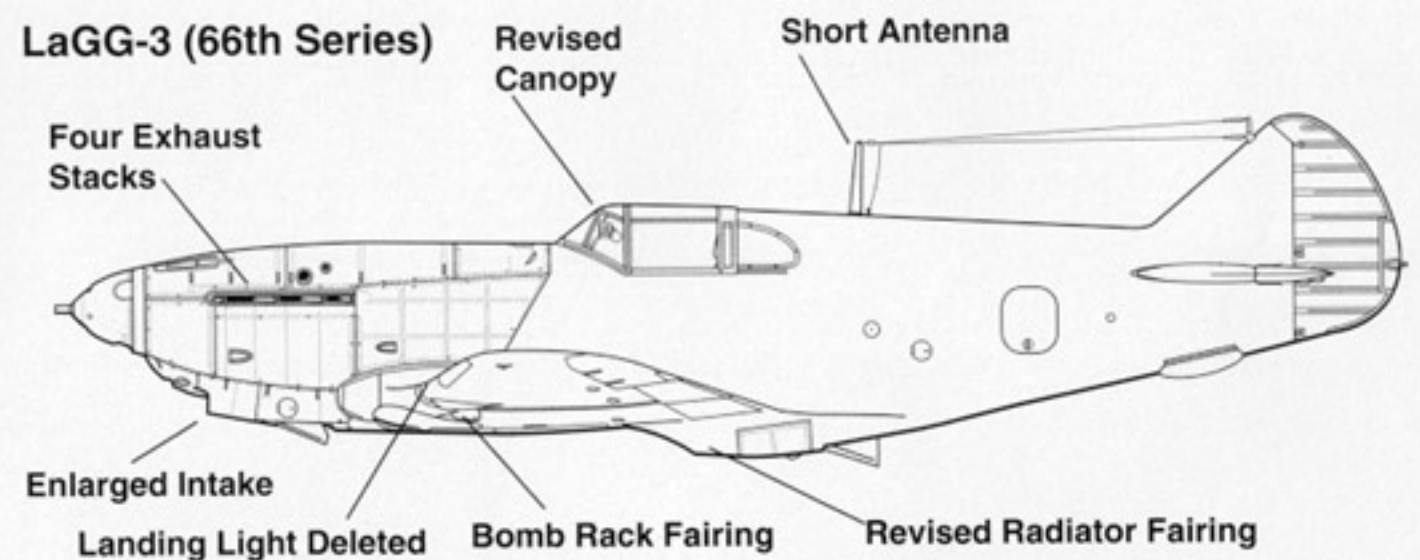
The first LaGG-3 (66th Series) were produced during the Spring of 1943. The entire nose was modified, using data supplied by the specialists of the Central Aero Hydrodynamics Institute at Zhukovsky. They incorporated a number of changes which were also made to the Yakovlev Yak-1B to improve the aircraft's streamlining and to reduce drag. Many of the detail changes on the LaGG-3 (66th Series) were similar to those made to the Yak-1B nose, including the redesigned oil cooler intake and the exhaust stub configuration.

Fuselage Development

LaGG-3 (35th Series)



LaGG-3 (66th Series)



Under the nose, the oil cooler intake was enlarged and reshaped so that it was now slanted forward. The rear engine cowling panel behind the exhaust stubs was also slightly changed in shape, when compared with the panels used on all previous LaGG-3 versions. The air intake under the exhaust stubs was enlarged and moved slightly to the rear. In addition, a second air intake was added on the fuselage, above the wing roots.

The three large exhaust stubs were changed to four smaller exhaust stubs and a fairing was added to the fuselage above the exhausts. The landing light on the port wing was deleted, so that the LaGG-3 (66th Series) had no landing lights. The rectangular wing root air intakes were reshaped, becoming oval in shape.

The underwing bomb rack was streamlined by the addition of a tear drop shaped fairing. The radiator fairing under the fuselage was reduced in size and reshaped, returning to the same size as the radiator used on early production LaGG-3s.

The cockpit windshield used on the La-5 was adopted for use on the 66th Series LaGG-3. The round frame for the windshield was changed to a rectangular shaped frame in order to accommodate a 55MM section of armor glass mounted behind the windshield. An additional frame was also added to the windshield. Early production versions of the LaGG-3 lacked armor glass behind the windscreen and had only one frame on the windscreen. The rear frame of the aft sliding canopy was enlarged and had a small vent window installed in it.

The first production versions of the LaGG-3 (66th Series) were delivered with the tall radio mast adopted from the LaGG-3 (35th Series), however, the most LaGG-3 (66th Series) built were fitted with a smaller radio antenna mast.

The last LaGG-3s (66th Series) was delivered in September of 1943 from State Aircraft 31. When production ceased, a total of 6,528 LaGG-3 of sixty-six different production batches had left the four State Aircraft Factories between January of 1941 and September of 1943. In the last year of production, a total of 1,294 LaGG-3 were delivered from the State Aircraft Factory at Tbilisi.

These LaGG-3 were involved, during April and May of 1943, in the battle of Kuban in the North Caucasus area. It was in this area that the Luftwaffe and the Red Air Force fought one of the most dramatic air battles of the Great Patriotic War, which became an important benchmark for the Red Army. Along with other formations involved in the campaign, there was a squadron of 66th Series LaGG-3s acquired from funds collected in the Georgian Soviet Socialist Republic. These LaGG-3s were assigned to the 88th Fighter Aviation Regiment.

The LaGG-3 (66th Series) served well into 1944 in various Red Air Force units, including the 9th Fighter Aviation Regiment of the Black Sea Fleet, which operated the fighter in the Novorossiysk area during the Spring of 1944. In May of the same year, the formation was transferred to the Baltic Fleet as part of the 11th Ground Attack Division. These LaGG-3 then took part in the major attacks against the Finnish forces on the Karelian Isthmus in June of 1944.

66th Series LaGG-3s were delivered in the standard Soviet camouflage of Black-Green and Olive-Green on the upper surfaces and Light Blue undersurfaces. Most of these aircraft had a large, small Black outlined Red star on the fuselage and the lower wing. A small Red star was added on the tail.

Beginning in early 1944, a new style of national marking was introduced. The Red star was given a thick White outline and a thin Red outline. LaGG-3s which remained in service at that time were repainted with these new national markings applied. The small Red star on the tail, however, remained unchanged or was overpainted.

A LaGG-3 (66th Series) with a Lend-Lease Curtiss P-40 in the background. This fighter carried the new national markings introduced during early 1944. The small Red star on the tail remained in its original configuration while the fuselage and wing stars had the White and Red outlines. (S.H.A.A.)



This aircraft served as a testbed for the LaGG-3 (66th Series). It was a LaGG-3 (4th Series) fuselage mated with a Klimov M-105PF engine and a slatted wing. The fighter carried the new, oval shaped air intakes in the wing roots, but was still equipped with a landing light, which was deleted on production 66th Series LaGG-3s. (Nigel Eastaway)

An very early LaGG-3 (66th Series) during the evaluation trials. It differed from later standard production fighters of this series in that it was still equipped with the tall antenna mast used on the previous production batches. (Ivan Ivanov)



Russian Aircraft Of The Second World War



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White 64, a LaGG-3 (1st Series) patrols over the "Road of Life," the Leningrad supply route across Lake Ladoga during February of 1942. The aircraft has the canopy removed, a common feature on early LaGG-3's, since the standard canopy could not be jettisoned in an emergency.



A Finnish Air Force LaGG-3 (35th Series) patrols over Finland during the Summer of 1944. The aircraft had the antenna mast shortened during one of its overhauls while in Finnish service.

