

Pashinin I-21

Le Pashinin I-21 est un prototype de chasseur soviétique du début des années 40. Le I-21 est conçu par M. Mikhail Pashinin, en prenant en compte l'expérience de combat acquise par les pilotes soviétique durant la guerre civile espagnole et l'incident Nomonhan contre le Japon. Au début de 1939, M. Mikhail Pashinin qui avait déjà travaillé pour Polikarpov commence le développement de son propre chasseur en vue du remplacement de l'obsolète I-16.

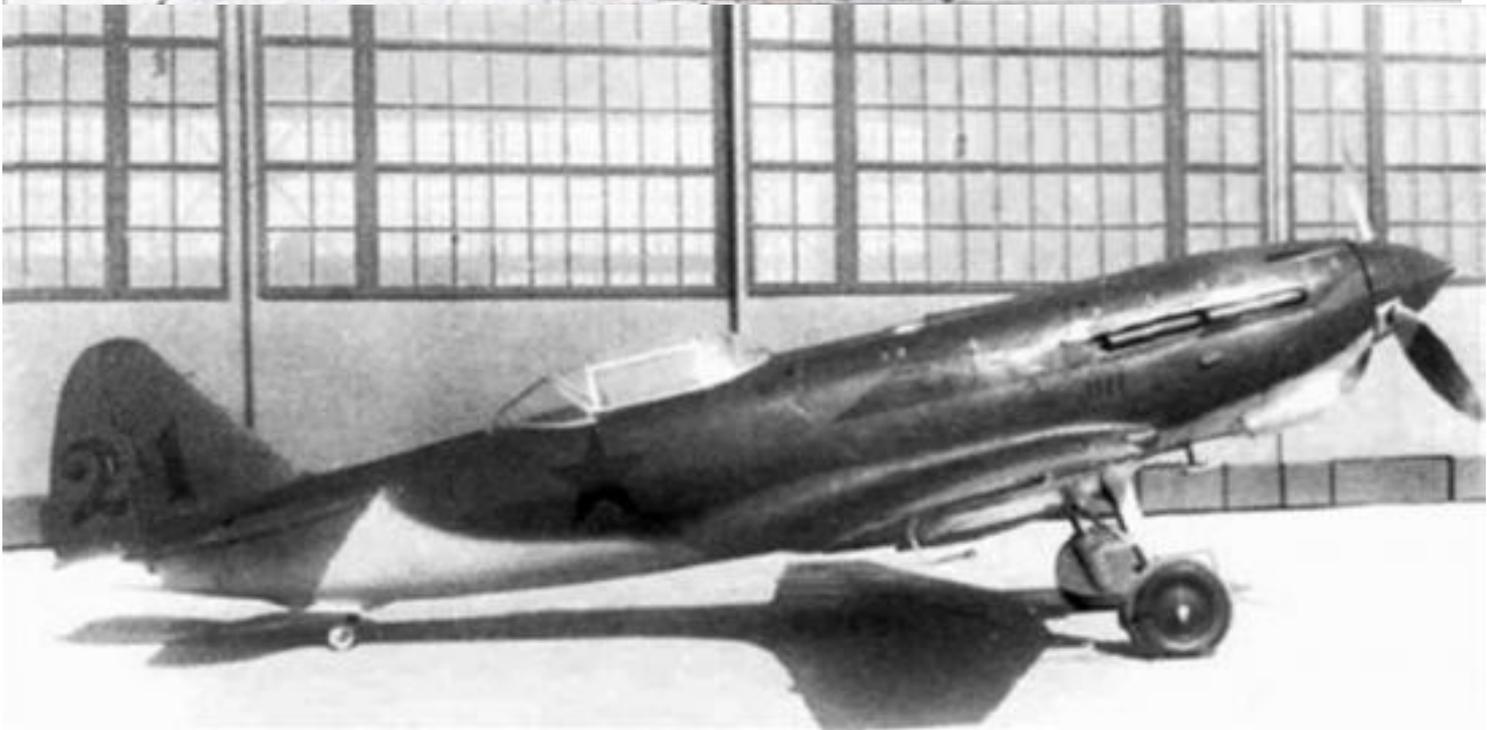
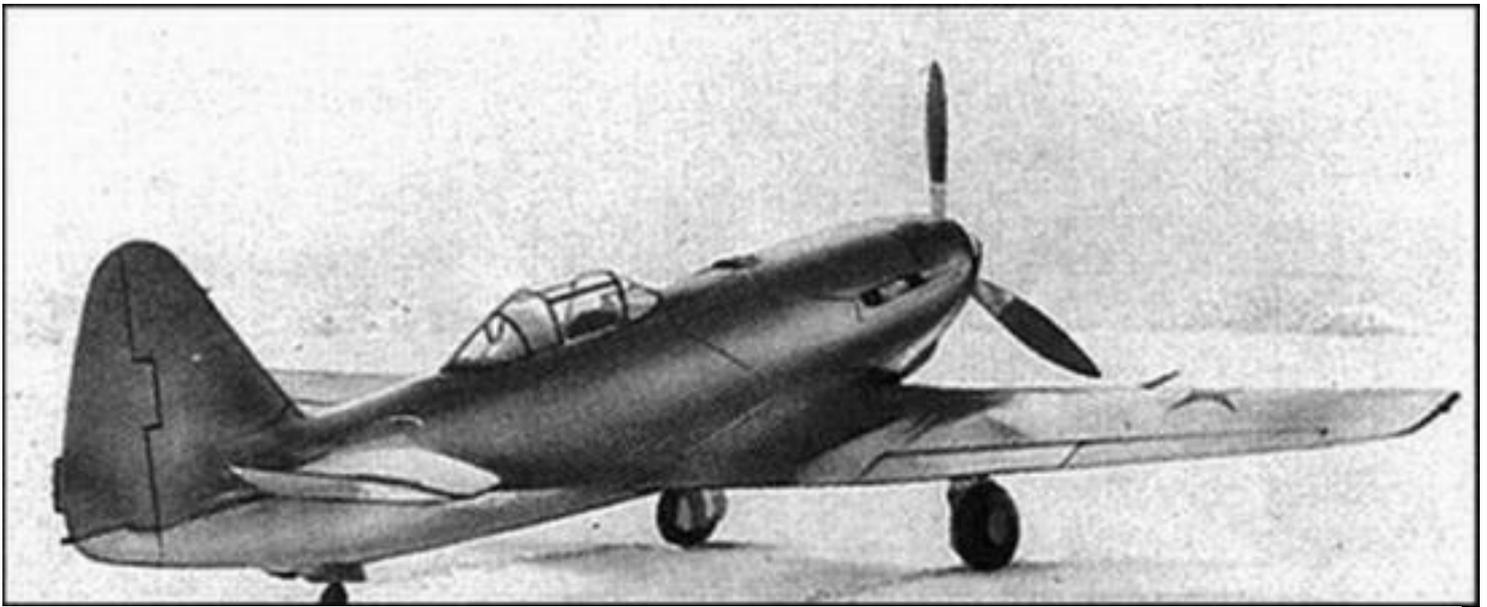
Le Pashinin I-21 est un monoplane à ailes basses, train d'atterrissage escamotable et de construction composite. Seules les structures de l'aile et le châssis tubulaire sont en métal, le reste du fuselage étant en pin recouvert de panneaux de contreplaqué. Le poste de pilotage est en position centrale arrière offrant une bonne visibilité. La motorisation de base doit être un Klimov M-107, mais sera finalement assuré par un Klimov M-105 de 1050 chevaux, par manque de disponibilité du premier choix.

L'armement se compose d'un canon ShVAK de 20 mm tirant à travers l'arbre d'hélice et de deux mitrailleuses ShKAS de 7,62 mm dans les ailes. Le premier vol a lieu le 18 mai 1940. Après plusieurs vols d'essai, le prototype fini par s'écraser et le pilote signale des problèmes de stabilité. En Octobre 1940, les essais reprennent avec le second prototype. Malgré le changement des panneaux extérieurs des ailes, le polissage des bords avant et arrière pour une meilleure stabilité et une vitesse de plus de 480 kilomètres par heure, le prototype conserve les mêmes problèmes et une vitesse d'atterrissage élevée.

Le troisième prototype est construit en Janvier 1941 et son premier vol à lieu le 5 avril. Celui-ci présente de profonds remaniements des ailes avec des bords d'attaque plus prononcé, les extrémités taillées (taille réduite à 1,56 m) et des changements de stabilisateurs. Le canon ShVAK est remplacé par un BT-23 de calibre 23 mm. Ce troisième opus démontre de meilleures performances en stabilité, mais conserve une vitesse et une longueur à l'atterrissage très longue. Malgré des résultats prometteurs, le I-21 ne dépassera pas le stade du prototype, face a des chasseurs plus performants que seront les Yakovlev Yak-1 ou Mikoyan Gourevitch MiG- 3.

Pashinin I-21:

- Moteur Klimov M-105P
- 1050 Ch
- 580 Km/h
- 1 Canons 23 mm et 2 mitrailleuses 7.62 mm
- 2670 Kg en charge
- 10600 m de plafond pratique
- 760 Km en distance franchissable
- 1 pilote



version anglaise

The **Pashinin I-21** (not to be confused with the Ilyushin TsKB-32, also known as "I-21") was an early 1940s [Soviet](#) fighter prototype. Designed by Mikhail M. Pashinin, the I-21 was built to incorporate lessons learned from the combat experiences of Soviet pilots during the Spanish Civil War and the Nomonhan Incident with the Empire of Japan. Despite showing promising performance, the I-21 did not get past the prototype stage, as it was felt the type did not offer a significant enough increase in capability over competitors already in production, such as the [Yakovlev Yak-1](#) or [Mikoyan Gurevich MiG-3](#).

Development

Mikhail Pashinin began development of his monoplane fighter in early 1939. A former employee of N. N. Polikarpov, Pashinin envisioned the I-21 as a replacement for the increasingly obsolescent [I-16](#) in Soviet service. The resulting I-21 featured a low set wing with retractable undercarriage, a Klimov M-107 engine, and a framed canopy with good visibility. The I-21 was of mixed construction, as was typical of many contemporary designs, and had a monocoque rear fuselage made of wood, whereas the forward fuselage was built from welded steel tubing for increased rigidity. Wings were of metal with plywood covering.

The cockpit was placed well aft, behind the wing, and the pilot was seated under a swinging canopy. The I-21's armament consisted of an engine mounted 20 millimeter [ShVAK](#) automatic cannon and two 7.62 millimeter [ShKAS](#) machine guns, one in each wing. This armament was typical of other Soviet fighters of the period such as the Yak-1. The 20mm ShVAK was later replaced by a harder-hitting 23mm BT-23 cannon. (This gun developed by [Jacob Taubin](#) ([Яков Таубин](#)) and M. Baburin (М.Н. Бабурин) and is also known under the designation MP-6.)

The prototypes were ultimately powered by Klimov M-105P engines, since the M-107 had run into development troubles of its own, and production of the engine was delayed. Flight testing with the 1,050-hp M-105 began with the first flight on 18 May 1940. Official testing by Soviet authorities was conducted from 6 June, in test pilots discovered that the I-21 had stability problems. As a result, Pashinin made modifications to the second prototype, consisting of new outer wing panels with tapered leading and trailing edges to improve stability. Although an improvement, the I-21 still was not performing as expected, despite some promising speeds of over 480 km/h (300-mph) at sea level. The third prototype featured more extensive remodeling of the wings, with clipped wingtips (reducing wingspan by 1.57-m) and sweeping back the leading edges. In addition, the tailplane was also improved. This last prototype also was fitted with a ventral oil cooler

The third prototype displayed improved performance and handling, but officials complained of the I-21's need for an unacceptably long runway and its tricky character on landing. In the event, a planned pre-series run for five aircraft was canceled by Soviet officials, who likely felt the I-21 simply did not offer much more than types already in established production.

Specifications (I-21)

General characteristics

- **Crew:** 1
- **Length:** 8.73 m (28 ft 8 in)
- **Wingspan:** 9.4 m (30 ft 10 in)
- **Wing area:** 15.46 m² (166.4 sq ft)
- **Gross weight:** 2,670 kg (5,886 lb)
- **Powerplant:** 1 × [Klimov M-105P](#) V-12 liquid-cooled piston engine, 780 kW (1,050 hp)
- **Propellers:** 3-bladed constant-speed propeller

Performance

- **Maximum speed:** 580 km/h (360 mph, 310 kn)
- **Range:** 760 km (470 mi, 410 nmi)
- **Service ceiling:** 10,600 m (34,800 ft)
- **Rate of climb:** 21 m/s (4,100 ft/min)
- **Wing loading:** 173 kg/m² (35 lb/sq ft)

Armament

- **Guns:** 2 × [7.62x54mmR ShKAS machine guns](#), in wings, and one [20x99mmR ShVAK cannon](#) or 23 mm [BT-23 cannon](#) firing through propeller hub.

