= Polikarpov ITP =

The Polikarpov ITP (Istrebitel Tyazholiy Pushechniy ; Russian : ??????????? ??????? ???????? ; Heavy Cannon Fighter) was a Soviet fighter prototype designed during World War II . Development was prolonged by the evacuation of the design bureau forced by the German advance on Moscow in the fall of 1941 . By the time the second prototype was finished the Soviets had fighters with equivalent or better performance already in production and the program was cancelled .

= = Development = =

In November 1940 , Nikolai Polikarpov proposed a heavy cannon @-@ armed fighter for bomber escort duties and ground attack missions . The new ITP was designed around either the 1 @,@ 230 kW (1 @,@ 650 hp) Klimov M @-@ 107P or the Mikulin AM @-@ 37 inline engines . Two armament configurations were planned . The first consisted of a 37 @-@ millimetre (1 @.@ 5 in) cannon firing through the propeller hub and two synchronized 20 @-@ millimetre (0 @.@ 79 in) ShVAK cannon mounted on each side of the fuselage nose . The 37 mm cannon was provided with 50 rounds and the ShVAK had 200 rounds each . The second configuration substituted an additional ShVAK with 200 rounds for the 37 mm cannon . It had racks for eight unguided RS @-@ 82 rockets underneath the wings .

The ITP was a low @-@ wing , mixed construction monoplane with a wooden monocoque fuselage made from ' shpon ' , molded birch plywood . The two @-@ spar metal wing was built in three sections with automatic leading edge slats . The engine radiators were built into the wing center section with intakes in the wing roots while the oil cooler was located under the engine . The curved , one @-@ piece windshield lacked a flat front panel which gave the pilot a rather distorted view . The conventional undercarriage , including the tailwheel , was fully retractable . It carried 624 litres (137 imp gal ; 165 US gal) of fuel in tanks between the spars of the wing center section . The rear fuselage , cockpit and tail resembled that of the Polikarpov I @-@ 185 .

The first ITP prototype (M @-@ 1) was completed in October 1941 with a 1 @,@ 300 @-@ horsepower (970 kW) M @-@ 107P engine . Due to German attacks , the aircraft was evacuated to Novosibirsk and did not make its first flight until 23 February 1942 . The M @-@ 107P engine proved unreliable and was changed to a M @-@ 107A in late 1942 . The 37 mm gun was deleted in exchange for another 20 mm gun mounted on the side of the fuselage . Flight testing was not completed because the airframe was used for ground static testing , but the estimated maximum speed at 6 @,@ 300 metres (20 @,@ 669 ft) was 655 km / h (407 mph) with a time to 5 @,@ 000 metres (16 @,@ 404 ft) of 5 @.@ 9 minutes .

The second ITP prototype (M @-@ 2) was built in 1942 and fitted with a Mikulin AM @-@ 37 engine which also proved unreliable and was replaced with a 1 @,@ 345 kW (1 @,@ 800 hp) Mikulin AM @-@ 39 that December . It first flew on 23 November 1943 but the manufacturer 's flight tests were not completed until June 1944 . Since several other aircraft with about the same level of performance were already available , it was not placed into production .

= = Specifications (M @-@ 2) = =

Data from Gordon , Soviet Airpower in World War 2
General characteristics
Crew : 1
Length : 9 @.@ 2 m (30 ft 2 in)
Wingspan : 10 m (32 ft 10 in)
Wing area : 16 @.@ 5 m2 (178 sq ft)
Empty weight : 2 @,@ 910 kg (6 @,@ 415 lb)
Gross weight : 3 @,@ 570 kg (7 @,@ 871 lb)
Powerplant : 1 × Mikulin AM @-@ 39 liquid @-@ cooled V @-@ 12 , 1 @,@ 268 kW (1 @,@ 700 hp)

Propellers : 3 @-@ bladed
Performance
Range : 980 km (609 mi ; 529 nmi)
Service ceiling : 11 @,@ 500 m (37 @,@ 730 ft)
Time to altitude : six minutes to 5 @,@ 000 metres (16 @,@ 000 ft)
Wing loading : 216 kg / m2 (44 lb / sq ft)
Armament
Guns : 3 × 20 mm ShVAK cannons , 200 rpg
Rockets : 8 × unguided RS @-@ 82