

= Lavochkin La @-@ 152 =

The Lavochkin La @-@ 152 , (USAF reporting name - Type 4) , and its variants , was a jet fighter prototype designed and manufactured by the Lavochkin Design Bureau (OKB) shortly after the end of World War II . Derived from the Lavochkin La @-@ 150 , the 152 used several different engines , but the program was canceled as other fighters with more powerful engines and swept wings showed more promise .

= = Design and development = =

= = = Izdeliye 152 = = =

Following the limited success of the 150 , drastic changes were introduced to improve performance and ease of maintenance . The RD @-@ 10 engine , rated at 8 @. @ 8 kN (2 @, @ 000 lbf) of thrust , was moved to the front of the nose and its cowling formed the bottom of the forward fuselage . This position minimized thrust losses due to the length of the intake duct and allowed the engine to be changed much more easily than its predecessor . The cockpit was widened and moved to a position over the mid @-@ set wings , even with the engine 's exhaust nozzle . The pilot 's seat back was armored and he was protected by an armor plate to his front and a bulletproof windscreen . Three fuel tanks were positioned ahead of the cockpit and one behind it with a total capacity of 620 kilograms (1 @, @ 370 lb) of fuel . The removable , mid @-@ mounted wings used several different laminar flow airfoils over their span . Each wing had a single spar , slotted flaps and ailerons . The tricycle undercarriage retracted into the fuselage , which meant that the aircraft had a very narrow ground track . The aircraft was armed with three 23 @-@ millimeter (0 @. @ 91 in) Nudelman @-@ Suranov NS @-@ 23 autocannon , two on the starboard side of the aircraft 's nose and the other on the port side . Each gun had 50 rounds of ammunition .

The 152 made its first flight on 5 December 1946 and the manufacturer 's trials completed on 23 June 1947 . State acceptance trials commenced on 12 July , but the prototype crashed on the eighth flight when the engine failed on approach . The maximum speed attained by the 152 before its crash was only 840 kilometers per hour (520 mph) .

= = = Izdeliye 154 = = =

The Lavochkin OKB decided to improve the performance of the 152 in late 1946 by replacing the RD @-@ 10 engine with a more powerful Lyulka TR @-@ 1 turbojet of 12 @. @ 3 kN (2 @, @ 800 lbf) thrust . The design work was completed in September 1947 , and construction began of a prototype shortly afterward , but the engine was not yet ready for testing and the project was canceled . The only other significant difference from the 152 was that each cannon was furnished with 75 rounds of ammunition .

= = = Izdeliye 156 = = =

Meanwhile , the OKB had been developing two afterburning versions of the RD @-@ 10 to increase the engine 's power . The more successful model was only 100 millimeters (3 @. @ 9 in) longer and weighed an additional 31 kilograms (68 lb) more than the original engine . Its power , however , was increased by an additional 3 @. @ 3 kN (740 lbf) , over 30 % more thrust . This engine was designated the izdeliye YuF by the bureau and was fitted into an aircraft 152 prototype in November 1946 , initially designated as the 150D (Dooblyor - Second) . This was changed to Aircraft 156 the following month .

In addition to the more powerful engine , the aircraft now had an ejection seat , additional cockpit armor , and a revised canopy . More importantly , it was fitted with new wings with a greater span and more surface area ; they also had a new airfoil designed to delay Mach tuck . The area of the

tailplane and the vertical stabilizer was also increased . Two prototypes were built and the first one was completed in February 1947 and made its first flight on 1 March . The second prototype joined the manufacturer 's trials later that month . One of these aircraft participated in the Tushino flypast on 3 August 1947 , where it was given the USAF reporting name of Type 5 . The additional power increased the aircraft 's top speed by 40 ? 70 km / h (25 ? 43 mph) over the 152 . The second prototype began state acceptance trials on 9 September and demonstrated a maximum speed of 905 km / h (562 mph) at an altitude of 2 @, @ 000 meters (6 @, @ 560 ft) . It could reach 5 @, @ 000 meters (16 @, @ 400 ft) in four minutes using afterburner . The aircraft was rejected by the Soviet Air Forces when the trials were concluded on 28 January 1948 . The report said that the YuF engine was required more work before it was ready for production , the aircraft had problems with longitudinal stability , excessive stick forces from the ailerons and elevators , and the undercarriage was troublesome . Lavochkin consequently canceled the program .

= = = Izdeliye 174TK = = =

An experimental version of Izdeliye 156 was built in 1947 under the name of Izdeliye 174TK (Tonkoye Krylo - thin wing) . It had a very thin , straight wing of 6 % thickness , believed to be the thinnest yet flown in the world , and an imported Rolls @-@ Royce Derwent V engine , rated at 15 @. @ 6 kN (3 @, @ 500 lbf) , mounted in the nose . The three NS @-@ 23 cannon had to be repositioned on the bottom of the nose to accommodate the engine . It was first flown in January 1948 and had a top speed of 970 km / h (600 mph) at sea level . It reached an altitude of 5 @, @ 000 meters in only 2 @. @ 5 minutes , but even these impressive gains over the 156 were inferior to the swept @-@ wing Lavochkin La @-@ 160 that had flown nine months earlier and the program was canceled .

= = Variants = =

Izdeliye 154 - A second 152 airframe with a Lyulka TR @-@ 1 turbojet . Canceled due to delays with the engine .

Izdeliye 156 - Originally known as Aircraft 152D . A modified 152 with a YuF engine , an afterburning version of the RD @-@ 10 .

Izdeliye 174TK - A thin @-@ wing version of the 156 with a Rolls @-@ Royce Derwent engine , but performance was already overshadowed by the lower @-@ powered Aircraft 160 so further development abandoned .

= = Specifications (Izdeliye 156) = =

Data from Early Soviet Jet Fighters

General characteristics

Crew : 1

Length : 9 @. @ 12 m (29 ft 11 in)

Wingspan : 8 @. @ 52 m (27 ft 11 in)

Wing area : 13 @. @ 24 m² (142 @. @ 5 sq ft)

Empty weight : 2 @, @ 398 kg (5 @, @ 287 lb)

Gross weight : 3 @, @ 521 kg (7 @, @ 762 lb)

Fuel capacity : 756

Powerplant : 1 x YuF afterburning version of RD @-@ 10 turbojet , 8 @. @ 5 kN (1 @, @ 900 lbf) thrust dry , 10 @. @ 3 kN (2 @, @ 300 lbf) with afterburner

Performance

Maximum speed : 905 km / h (562 mph ; 489 kn)

Range : 680 km (423 mi ; 367 nmi)

Service ceiling : 10 @, @ 700 m (35 @, @ 105 ft)

Rate of climb : 23 @. @ 6 m / s (4 @, @ 650 ft / min)

Wing loading : 264 kg / m² (54 lb / sq ft)

Armament

Guns : 3 × 23 mm Nudelman @-@ Suranov NS @-@ 23 autocannon with 190 rounds total