

= Ilyushin Il 20 (1948) =

The Ilyushin Il 20 was a Soviet prototype for a heavily armored ground attack aircraft to replace the Ilyushin Il 10 . It featured a number of innovative concepts including a cockpit mounted on top of the engine , directly behind the propeller , and wing mounted autocannon that could be adjusted on the ground to fire level or depressed 23 ° to allow the aircraft to strafe ground targets while remaining in level flight . However it was slower than the Il 10 , and its immature M 47 engine was problematic in flight tests in 1948 . It was not placed into production . The test pilots called the aircraft the Gorbach (Hunchback) .

= = Development = =

Sergey Ilyushin 's concept to meet the 1947 requirement for a superior aircraft to the Il 10 in performance and firepower was a heavily armored , single engine , all metal , low wing monoplane powered by the newly developed M 47 ? also known as the MF 45Sh or M 45Sh ? liquid cooled engine , which developed 3 ,000 horsepower (2 ,200 kW) at take off . The design 's most notable feature was the pilot 's cockpit mounted directly above the engine , reminiscent of the Blackburn Cubaroo . Furthermore , the cockpit was situated directly behind the four bladed propeller to maximize pilot visibility . The windshield extended down to the propeller hub and provided the pilot with a 37 ° downward field of view ; in a medium dive he could view targets directly underneath the aircraft .

As was traditional with Ilyushin 's ground attack aircraft the Il 20 used a load bearing armored shell to protect the pilot and gunner as well as the engine , fuel , lubrication and cooling systems . The thickness of the armor varied between 6 to 15 mm (0.24 to 0.59 in) and weighed a total of 1 ,840 kg (4 ,060 lb) . The pilot 's canopy used armored glass 100 mm (3.9 in) thick for the main windshield and 65 mm (2.6 in) for the quarterlights .

A wide variety of armament suites were considered for the Il 20 . One involved two wing mounted 23 mm (0.91 in) cannon and two others mounted in the fuselage , fixed downwards at a 23 ° angle for strafing targets in level flight . This version 's normal bomb load was only 400 kg (880 lb) , but 700 kg (1 ,500 lb) could be carried in overload condition or four RS 132 rockets could be carried instead . Another version used one 45 mm (1.8 in) cannon , two 23 mm guns and six under wing rockets . Most studies placed the rear gunner in a dorsal turret separated from the cockpit by the main fuel tank , but one study put him in an armored Il 8 rear turret , but this required a longer fuselage and moving the wings aft to maintain the CG in the right place .

The obliquely mounted fuselage cannon were thought to be too difficult to aim and were not included in the prototype ; the weight savings allowed the ammunition for the four 23 mm Shpital 'nyy Sh 3 wing mounted guns to be increased to 900 rounds . One additional innovation in the prototype was that they could be adjusted on the ground to fire at a 23 ° downward angle in addition to the normal level position . The dorsal gunner also fired a Sh 3 gun , which was mounted in a separate , remotely controlled , Il VU 11 turret that could traverse through 180 ° and elevated to a maximum of 80 ° . A cassette of ten AG 2 aerial grenades was provided to deter any fighters approaching from below . Maximum bomb load was 1 ,190 kg (2 ,620 lb) and four bomb bays were provided in the wing center section for small bombs . Alternatively two 500 kg (1 ,100 lb) bombs could be carried on wing racks . Launch rails were provided for four 132 mm (5.2 in) RS 132 rockets .

The prototype was completed on 27 November 1948 and its first flight was shortly afterwards on 4 December . The best speed that the Il 20 could manage was only 515 km / h (320 mph) at an altitude of 2 ,800 m (9 ,200 ft) , 36 km / h (22 mph) slower than the Il 10 at the same altitude , possibly a consequence of the increased drag and weight penalties inherent in the greater fuselage cross section and area as a result of the placement of the pilot above the engine . The new M 47 engine proved to be defective with severe vibration problems . Other problems were that the Air Force wasn 't satisfied with the armament and that access to the engine

for routine maintenance was severely hampered by the placement of the cockpit over the engine . Another concern was the close placement of the cockpit to the propeller ; this was believed to increase the risk to the pilot if he had to bail out or make a belly landing ? in which case the bent propeller blades might hit the canopy .

These issues , coupled with emerging jet engine technology , led to the cancellation of the Il @-@ 20 program on 14 May 1949 .

= = Specifications (Il @-@ 20) = =

Data from The Osprey Encyclopedia of Russian Aircraft from 1875 - 1995

General characteristics

Crew : 2

Length : 13 @. @ 58 m (44 ft 6 5 / 8 in)

Wingspan : 15 @. @ 43 m (50 ft 7 ½ in)

Height : ()

Wing area : 44 @. @ 0 m ² (473 @. @ 66 ft ²)

Empty weight : 7 @, @ 500 kg (16 @, @ 534 lb)

Loaded weight : 9 @, @ 500 kg (20 @, @ 950 lb)

Powerplant : 1 × AM @-@ 47 Liquid @-@ cooled V @-@ 12 , 2 @, @ 200 kW (3 @, @ 000 hp)

Performance

Maximum speed : 515 km / h (278 kn , 320 mph)

Range : 1 @, @ 680 km (908 nmi , 1044 mi)

Service ceiling : 7 @, @ 750 m (25 @, @ 430 ft)

Wing loading : 223 kg / m ² (45 @. @ 6 lb / ft ²)

Power / mass : 0 @. @ 23 kW / kg (0 @. @ 14 hp / lb)

Climb to 5 @, @ 000 m (16 @, @ 400 ft) : 8 min

Armament

Prototype as flown

1 × Sh @-@ 3 23 mm cannon mounted in a Il @-@ VU @-@ 11 turret

4 × Sh @-@ 3 23 mm cannon in adjustable mounts outboard of the main undercarriage legs

1 @, @ 190 kg of bombs

4 × RS @-@ 132 132 mm rockets