

P-39 Airacobra



USAAF P-39F-1-BE

Type Fighter

Manufacturer [Bell Aircraft Corporation](#)

Maiden flight April 1939

Introduced 1941

Status retired

Primary users [United States Army Air Force](#)
[Soviet Air Force](#)
[Royal Air Force](#)

Produced 1940-May 1944

Number built 9,584

The [Bell P-39 Airacobra](#) was one of the principal [American](#) fighter aircraft in service at the start of [World War II](#). Although its mid-engine placement was innovative, the P-39 design was handicapped by the lack of an efficient [turbo-supercharger](#), limiting it to low-altitude work, although the type was used with great success by the [Soviet Air Force](#). Together with the derivative [P-63 Kingcobra](#), these aircraft would be the most successful mass-produced, fixed-wing aircraft manufactured by Bell.

Design and development

In 1937, the Army Air Corps issued a specification for a new fighter that could be produced quickly.^{[\[citation needed\]](#)} Other completing designs included the [Curtiss P-40](#), an outgrowth of a previous design, and the [Lockheed P-38](#), which utilized a complex twin-engine twin boom configuration. Although Bell's limited fighter design work had previously resulted in the unusual [Bell YFM-1 Airacuda](#), the **Model 12**^{[\[1\]](#)} proposal adopted an equally original configuration with an [V12 Allison](#)

engine mounted in the middle of the [fuselage](#), just behind the cockpit, with the propeller driven by a shaft passing beneath the pilot's feet (under the cockpit floor^[2]).

The main purpose of this configuration was to free up space for the heavy main armament, a 37 mm [Oldsmobile T9 cannon](#) firing through the center of the propeller hub for optimum accuracy and stability when firing. In fact, the entire design was made to accommodate this gun in the aircraft.^[3] This happened because H.M. Poyer, designer for project leader Robert Woods, was really impressed by the power of this weapon, and he pressed to design an aircraft made with this weapon, though the original concept had been a gun of 20-25 mm mounted in a conventional manner in the nose. This was unusual, because the fighters had always been designed around the engine, not a weapon system. Although devastating when it worked, the T9 had very limited ammunition, a low rate of fire, and was prone to jamming.^[4]

A secondary benefit of the mid-engine arrangement was to create a smooth and streamlined nose profile. The weight distribution necessitated a [tricycle undercarriage](#), a first among American fighters.^[5] Entry to the cockpit was through side doors (mounted on both sides of the cockpit) rather than a sliding canopy. Its unusual engine location, and the driveshaft, caused some pilot concern at first, but experience showed this was no more of a hazard in a crash landing than with an engine located forward of the cockpit, while there were no problems with propshaft failure.

As originally designed, the XP-39 had a turbocharger with a belly scoop (the later a feature shared by the prototype P-40); both were deleted for production.^[6]



Bell P-39 Airacobra center fuselage detail with maintenance panels open.

The XP-39 made her maiden flight on 6 April 1938^[7] at [Wright Field, Ohio](#), achieving 630 km/h at 6100 m (390 mph at 20000 ft), reaching this altitude in only five minutes.^[citation needed] The Army ordered twelve YP-39s for service evaluation^[8] and one YP-39A with the [turbo-supercharger](#) deleted.^[9] After these trials were complete, which resulted in detail changes including deletion of the external radiator,^{[10][11]} and on advice from [NACA](#),^[12] the prototype was modified as the **XP-39B**; after demonstrating a performance improvement,^[13] the thirteen YP-39s were completed to this standard, adding two 0.3" (7.62 mm) MG to the two .50s as well.^[14] Lacking armor or self-sealing fuel tanks, the prototype was 900 kg lighter than the production fighters.^[citation needed]

After completing service trials, and originally designated **P-45**, a first order for 80 aircraft was placed 10 August 1939; the designation would revert before deliveries began.^[15]

Technical details

The P-39 was an all-metal, low-wing, single-engine fighter, with tricycle undercarriage incorporating a very streamlined and aerodynamically efficient design.

The Airacobra was conceived with the T9 gun in mind. This weapon fired a 610gr (39.5g) projectile capable of piercing 2 cm (.78") of armor at 450 m (500yd) with [armor piercing](#) rounds. The complete

armament fit as designed consisted of the T9 with a pair of [Browning M2](#) .50" (12.7 mm) [machineguns](#) mounted in the nose. This would change to two .50s and two .30s in the XP-39B (P-39C, Model 13, the first 20 delivered) and 2x0.50 and 4x0.30 (all four in the wings) in the P-39D (Model 15), which also introduced self-sealing tanks and shackles (and piping) for a 500pd (227 kg) bomb or drop tank.^[16] The engine was placed behind the cockpit, so pilots often referred to this as "Allison armor."^[citation needed] A long transmission tunnel passed through the fuselage, under the cockpit, and was linked to the three bladed propeller. The radiator was located in the fuselage.

In September 1940, Britain ordered 386 P-39Ds (as the Model 14), of 675 in all, differing in the 37 mm being replaced by a 20 mm [Hispano](#) and the 6x0.3 by .303 (7.7 mm). These began equipping 601 Squadron in September 1941, and were promptly recognized as having inadequate rate of climb and performance at altitude; only 80 joined the [RAF](#) (only 601 being outfitted), over 250 being transferred to the [Red Air Force](#), about 200 repossessed by the Army after [Pearl Harbor](#), and some 200 sent to [Eighth Air Force](#) in 1942 (the Army models being designated **P-400**).^[17]

Because of the unconventional layout, there was no space in the fuselage to place a fuel tank. Although drop tanks were implemented to extend its range, the standard fuel load was carried in the wings, with the result that the P-39 was limited to short range tactical strikes.^[citation needed]

A heavy structure, and around 120 kg of armor were characteristic of this aircraft as well. The production P-39's heavier weight combined with the poor performance of the Allison engine, limited the high-altitude capabilities of the fighter. The P-39's altitude performance was markedly inferior to the contemporary European fighters and, as a result, the first USAAF fighter units in the [European Theater](#) were equipped with the [Spitfire V](#). However, the P-39D's roll rate was 75 degrees per second at 235 mph (378 km/h)— better than the A6M2, F4F, F6F, or P-38 up to 265 mph (426 km/h). see NACA chart).^[citation needed]

Above the V-1710's full throttle height of about 17,000 ft (5,000 m), the P-39's performance dropped off rapidly. This limited its usefulness in traditional fighter missions in Europe as well as in the Pacific, where it was not uncommon for Japanese bombers to attack at altitudes above the P-39's operational ceiling (which in the tropical hot air inevitably was lower than in moderate climates).

The weight distribution of the P-39 supposedly is the reason for its tendency to enter a dangerous [flat spin](#) — a characteristic Soviet test pilots were able to demonstrate to the skeptical manufacturer who had been unable to reproduce the effect. After extensive tests, it was determined the spin could only be induced if the plane was improperly loaded, with no ammunition in the front compartment. The flight manual specifically noted a need to ballast the front ammunition compartment with the appropriate weight of shell casings to achieve a reasonable center of gravity. High speed controls were light thus high speed turns and pull-outs were possible although the P-39 had to be held in a dive since it tended to level out, reminiscent of the Spitfire. Redline dive speed was a respectable 525 mph (845 km/h) for the P-39.^[citation needed]

The rear-mounted engine made the aircraft ideal for ground attack since fire would be coming from the front-bottom quarter and was less likely to hit the engine and its cooling systems. However, the arrangement proved to be very vulnerable to attacks from above and behind and nearly any hit on the fuselage from an attacking enemy fighter was virtually guaranteed to disable the cooling system and lead to the prompt demise of the engine and thus the airplane. Coupled with lack of high-altitude performance, the Airacobra was extremely vulnerable to any enemy fighter with decent high altitude performance.

A naval version with tail-dragger landing gear, the XFL-1 Airabonita, was ordered as a competitor to the [F4U Corsair](#) and [XF5F Skyrocket](#). It first flew [13 May 1940](#),^[18] but after a troublesome and protracted development and testing period, it was rejected.

By the time of the [Pearl Harbor](#) attack, nearly 600 had been built.

When P-39 production ended in August 1944, Bell had built 9,558^[19] Airacobras, of which 4,773 (mostly -39N and -39Q^[20]) were sent to the Soviet Union through the [Lend-Lease program](#). There were numerous minor variations in engine, propellor, and armament, but no major structural changes in production types, excepting a few two-seat TP-39F and RP-39Q trainers. In addition, seven went to the [U.S. Navy](#) as [radio-controlled drones](#).^[21]

Trials of a [laminar flow](#) wing (in the XP-39E) and [Continental](#) IV-1430 engine (the P-76) were unsuccessful.^[22] The mid-engine, gun-through-hub concept was developed further in the Bell [P-63 Kingcobra](#).

1. [^] [Donald](#), David, general editor. "Bell P-39 Airacobra." *Encyclopedia of World Aircraft*. Etobicoke, ON: Prospero Books, 1997,, p.106.
2. [^] *ibid*.
3. [^] Somewhat similarly to the [Republic A-10 Thunderbolt](#).
4. [^] [XP-39](#)
5. [^] A first often credited to the P-38.^[citation needed]
6. [^] Fitzsimons, Bernard, ed. *The Illustrated Encyclopedia of 20th Century Weapons and Warfare* (London: Phoebus, 1978), Volume 1, p.50, "Airacobra Bell P-39".
7. [^] Donald, *loc.cit*.
8. [^] *ibid*.
9. [^] Given the reluctance to export turbos at this time, since they were very sophisticated technology, this was likely with export orders in mind.
10. [^] Donald, *loc.cit*.
11. [^] Fitzsimons, *loc.cit*.
12. [^] Donald, *loc.cit*.
13. [^] Donald, *loc.cit*.
14. [^] Donald, *loc.cit*.
15. [^] Donald, *loc.cit*.
16. [^] Donald, *loc.cit*.
17. [^] Donald, *ibid*.
18. [^] Donald, *loc.cit*.
19. [^] Donald, *loc.cit*. and Fitzsimons, *loc.cit*.
20. [^] Donald, *loc.cit*
21. [^] Donald, *op.cit.*, p.107. This type of trainer was a rarity for fighter types in the 1940s.
22. [^] Donald, *loc.cit*.

Operational history

The Airacobra saw combat throughout the world, particularly in the Southwest Pacific, Mediterranean and Russian theaters. Because its engine was not equipped with a supercharger, the P-39 performed best below 17,000 feet (5,200 m) altitude. It often was used at lower altitudes for such missions as ground strafing. Russian pilots appreciated the cannon-armed P-39 for its ground attack capability.

United Kingdom



P-39N-1 "Saga Boy II" (42-19447)

In 1940, the [British Direct Purchase Commission](#) in the US was looking for combat aircraft; they ordered 675 of the export version Bell Model 14 as the "Caribou" on the strength of the company's representations on [13 April 1940](#). The performance of the Bell P-39 prototype and 13 test aircraft which were able to achieve a speed of 390 mph (630 km/h) at altitude was due to the installation of turbo-[supercharging](#). The British armament was 0.50-inch machine guns in the fuselage, and four 0.30-inch machine guns in the wings, the 37 mm gun was replaced by a 20 mm [Hispano Suiza](#).

The British export models were renamed "Airacobra" in 1941. A further 150 were specified for delivery under [Lend-lease](#) in 1941 but these were not supplied. The [Royal Air Force](#) (RAF) took delivery in mid 1941 and found that actual performance of the non-turbo-supercharged production aircraft differed markedly from what they were expecting^[23]. In some areas, the Airacobra was inferior to existing aircraft such as the [Hawker Hurricane](#) and [Supermarine Spitfire](#) and its performance at altitude suffered drastically. On the other hand it was considered effective for low level fighter and ground attack work. Problems with gun and exhaust flash suppression and compass were fixable.

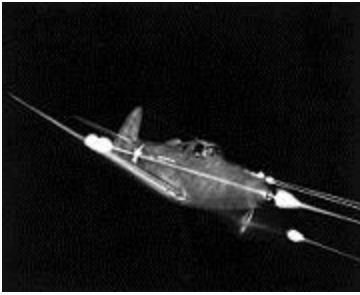
No. 601 (County of London) Squadron was the only RAF unit to use the Airacobra operationally, receiving their first two examples on August 6, 1941. On October 9, four Airacobras attacked enemy barges near Dunkirk, in the type's only operational action with the RAF. The squadron continued to train with the Airacobra during the winter, but in March 1942, it re-equipped with Spitfires.

The Airacobras already in the UK, along with the remainder of the first batch being built in the US, were sent to the Soviet Air force.

US

The US requisitioned 200 of the next part of the order as the P-400. The P-400 designation came from advertised top speed of 400 mph (600 km/h). After [Pearl Harbor](#), the P-400 was deployed to training units, but some saw combat in the Southwest Pacific including with the [Cactus Air Force](#) in the [Battle of Guadalcanal](#).^[24] Guns salvaged from P-39s were sometimes fitted to Navy PT boats to increase firepower.^[25]

From September to November 1942 pilots of the 57th Fighter Squadron flew P-39s and P-38s from an airfield built on land bulldozed into [Kuluk Bay](#) on the barren island of [Adak](#) in Alaska's [Aleutian Islands](#). They attacked the Japanese forces which had invaded Attu and Kiska islands in the Aleutians in June 1942. The number one foe that claimed the most lives, however, was not the Japanese but the weather. The low clouds, mist, fog, driving rain, snow and high winds made flying dangerous and lives miserable. The 57th remained in Alaska until November 1942 and then returned to the United States.



Bell P-39 Airacobra in flight firing all weapons at night.

USSR

The most successful use of the P-39 was in the hands of the VVS (Soviet Air Force). The tactical environment of the [Eastern Front](#) did not demand the extreme high-altitude operations that the RAF and [USAAF](#) employed with their big bombers. The P-39's inherent weakness was its lack of a [turbocharger](#) but in the relatively low-altitude operations in the East, this was not as great a handicap. The low-speed, low-altitude turning nature of most air combat on the Russian Front suited the P-39's strengths: sturdy construction, reliable radio gear and adequate firepower. It was common for the Soviet pilots to remove the wing guns and rely only the cannon and nose machine guns as armament. The P-39 was well liked by VVS pilots. The second-highest scoring Allied ace, [Aleksandr Pokryshkin](#), flew the P-39 from late 1942 until the end of the war; his unofficial score in the Airacobra stands at nearly 60 Luftwaffe aircraft. His wingman, [Grigori Rechkalov](#), scored 57 victories with the P-39. This is the highest score ever gained by any pilot with any US-made aircraft. The usual nickname for the Airacobra in the VVS was *Kobrusha*, "dear little cobra".

Australia

In early 1942, the [Royal Australian Air Force](#) (RAAF), experiencing [Japanese air raids](#) on towns in northern Australia, found itself unable to obtain British-designed fighters, or sufficient numbers of [P-40s](#). US [Fifth Air Force](#) squadrons in Australia were already receiving the brand new P-39D-1.^[26] In July 1942, older USAAF P-39Ds, which had been damaged and renovated at Australian workshops were adopted by the RAAF as a stop-gap.

Seven P-39Ds were sent to [No. 23 Squadron RAAF](#) at [Lowood, Queensland](#). Later, seven P-39Fs were operated by [No. 24 Squadron RAAF](#) at [Townsville](#). In the absence of adequate supplies of P-39s, both squadrons also operated [Wirraway](#) armed [trainers](#). However, neither squadron was ever to receive a full complement of Airacobras, or to see combat with them. The [front line](#) air defence role was filled by P-40 squadrons, and later by Spitfires. Plans to equip two more squadrons with P-39s were also abandoned. Nos. 23 and 24 Squadrons converted to the [Vultee Vengeance](#) in 1943.

France

In 1940, France ordered numerous P-39s to Bell, but because of the [armistice with Germany](#) they were not delivered. However, P-39Ns were issued to French units in North Africa in 1943. Two fighter squadrons, the GC 3/6 *Roussillon* and the GC 1/5 *Champagne*, used them in combat. A batch of P-39Qs was delivered later, but Airacobras, which were never popular with French pilots, had been replaced by P-47s in front line units by late 1944.

Italy

In June 1944, the [Italian Co-Belligerent Air Force](#) (ICAF) 223th Group received approximately 150 P-39s, almost all N and Q series, but also at least one L and five M models. The training of 4 Stormo pilots began on P-39Ns (N variants were over 200 hours old) while more modern Qs were used in the front line. The three groups of 4 Stormo trained at a small and poorly-maintained airfield near Vesuvio, then were sent to Galatina airfield in fall 1944. At least 19 training accidents occurred; among the victims on [25 August 1944](#) was Teresio Martinoli, an 22-victory ace, killed in an Allied aircraft after four years of air combat.

Almost 70 aircraft were operational and on [18 September 1944](#) 12 Group's P-39s flew its first mission over Albania. Concentrating on ground-attack and accumulating over 3000 hours of combat, losing ten aircraft to German flak, the Italian P-39s proved to be suitable in this role.^[27]

Portugal

Between December 1942 and February 1943, the *Aeronáutica Militar* (Army Military Aviation) obtained aircraft operated by the 81st and the 350th Fighter Groups originally dispatched to North Africa as part of [Operation Torch](#). Due to several problems en route, some of the aircraft were forced to land in Portugal and Spain. Of the 19 fighter aircraft that landed in Portugal, all were interned and entered service that year with the [Portuguese Army](#) Military Aviation — the first examples to enter service were five P-39s from the 81st Fighter Group, which landed on [27 December 1942](#) at Lisbon Airport.^[28]

P-39 interned by Portugal (1942—1943)		
Date	Qty	Fighter Group
December 27, 1942	5	81st
January 15, 1943	2	81st
January 15, 1943	9	350th
February 8, 1943	1	350th

Although, the obtainment of this aircraft was due to their landing in Portugal, the Portuguese Government requested the purchase of the aircraft that had until 1943 been interned.^[29] On 26 April 1943, the United States authorized the sale for \$20,000 each of 16 Airacobras and one [P-38 Lightning](#), which were intact, and to give as a gift four crates of aircraft, two of which were not badly damaged. However, the United States declined to supply spares.^[30]

The fact that these aircraft were interned during flight missions and that flight or maintenance manuals were bought or available, never allowed a correct transition for the pilots coming from another aircraft.

A check-list recovered from one of the aircraft, but that was incomplete and not totally correct, provided some help but still severe difficulties were felt in the adaptation of pilots to the aircraft. The

arrival of American mechanics at the [Lajes Air Base](#) eased the maintenance problems, but still any type of documents and technical manuals were never handover to Portuguese crews.

Because of the previous stated reasons, the start of these aircraft activity was marked with accidents, dut mainly to deficient engine handling.

Portuguese P-39 accidents log book		
Aircraft	Date	Notes
Airacobra 301	August 15, 1943	
Airacobra 304	August 16, 1943	Near Ota, causing the death of the pilot, 1st Sergeant Augusto Alves Ferreira
Airacobra 309	August 26, 1943	
Airacobra 312	February 8, 1944	During a training flight
Airacobra 317	April 25, 1946	

Other accidents are known in which many of the aircraft were not repairable, as one case in which the pilot lost control when rolling too fast and crashed against two other aircraft; and two other aircraft that had to make emergency landings due to engine failure (one at [Póvoa de Varzim](#), and the other at [Costa da Caparica](#)).

In 1944, the Portuguese P-39 saw a peak of activity when 14 Airacobras, divided in two flights of seven aircraft each, participated in various combined armed forces exercises at Ota.

Due to the recurring problem of contamination of the cockpit with carbon monoxide when the machine guns were fired, with the fact that the weapons had a difficult access for maintenance, and had many malfunctions, led to the low or non-existent use of them.

The service life of the P-39 in Portugal was not a very long one, and the last six Airacobras that remained until the aircraft retirement in 1950, were sold for scrap.

Postwar

In 1945, Italy purchased the 46 surviving P-39s at 1% of their cost but in summer 1946 many accidents occurred, even fatal ones. By 1947, 4 Stormo re-equipped with P-38s, and P-39s were sent to training units until retirement in 1951. Only a T9 cannon survives today at Vigna di Valle Museum [\[27\]](#).

The Airacobra was raced at the [National Air Races](#) in the United States after World War II. Famous versions used for racing included the twin aircraft known as "Cobra I" and "Cobra II," owned jointly between three Bell Aircraft test pilots, Chalmers "Slick" Goodlin, Alvin M. "Tex" Johnston, and Jack Woolams. These craft were extensively modified to use the more powerful P-63 Kingcobra engine and had prototype propeller blades from the Bell factory. "Cobra I" with its pilot, Jack Woolams, was lost in 1946, over the Great Lakes while he was flying from the National Air Races in Cleveland, Ohio back to the factory to get a fresh engine.

The "Cobra II" (Race #84) flown by famed test pilot "Tex" Johnston, beat out P-51 Mustangs and other P-39 racers, which were the favorites, to win the 1946 Thompson Trophy race. Cobra II raced again in the 1947 Thompson Trophy race, finishing 3rd. It raced yet again in the 1948 Thompson trophy race, but was unable to finish owing to engine difficulties. Cobra II did not race again and was destroyed on August 10, 1968 during a test flight prior to a run on the world piston-engine speed record, when owner-pilot Mike Carroll lost control and crashed. Carroll and the highly-modified P-39 perished.

Mira Slovak's "Mr. Mennen" (Race #21) P-39Q Airacobra was a very fast unlimited racer - a late arrival in 1972 kept this little 2000+ hp racer out of the Reno races, and it was never entered again. Its color scheme was all white with "Mennen" green and bronze trim. It is now owned and displayed by the [Kalamazoo Air Zoo](#). The P-39Q (former USAAC serial no. 44-3908/NX40A), is painted as a P-400, "Whistlin' Britches."

In 1942, an P-39 Airacobra crashed in Fiji, but was not found until a local pig farmer discovered the wreck in 2004. The pilot's body was also found and sent to Hawaii for identification. Personal items were recovered at the site. [\[2\]](#)

A number of P-39s are still in existence of which three are still flying. The Commemorative Air Force flies a Bell P-39 Airacobra painted in the markings and colors of the 350th Fighter Group, which consisted of the 345th, 346th and 347th Fighter Squadrons operating P-39s in North Africa and Italy. At one time, the Airacobra was painted in Russian colors and markings. Bell P-39Q-6-BE USAAF, serial no. 42-19993, "Brooklyn Bum— 2nd" is now at the Fighter Collection in Duxford, UK. The [Smithsonian's National Air and Space Museum](#) has P-39Q-15BE, serial no. 44-2433 on display.

[Keski-Suomen Ilmailumuseo](#) at [Tikkakoski, Finland](#), has one restored P-39Q Airacobra, "White 26", on static display. The aircraft is originally a Soviet lend-lease plane, shot down and captured by Finnish troops in World War Two. It has been restored in the original wartime camouflage and markings.

Popular culture

- *Introduction to the P-39* (1942) [\[3\]](#) Bell wartime training film (38 min) intended for military pilots examining flight techniques, cockpit layout and armament.
- *Flying the P-39* (1943) [\[4\]](#) Bell Training Film No. A.F. - 110 (23 min) demonstrating techniques for piloting the P-39 including aerobatics and strafing.
- The P-39 Airacobra is featured in the Russian movie *Перезон* (2006)(Peregon, Transit) [\[5\]](#) dealing with Lend Lease aircraft in transit to Russia.

Variants



 P-39Q-5-BE warbird



 Bell XFL-1 Airabonita, Navy version
XP-39

first prototype, unarmed

YP-39

service test version, V-1710-37 (E5) 1,090 hp engine, 12 built

YP-39A

intended to have a high-altitude V-1710-31 engine (1,150 hp) but delivered as a regular YP-39, one built.

XP-39B

streamlined XP-39 based on [NACA wind tunnel](#) testing resulting in revised canopy and wheel door shape, oil and radiator intakes moved from right fuselage to wing roots, increased length (by 1 ft 1 in to 29 ft 9 in) and decreased wingspan (by 1 ft 10 in to 34 ft). [Turbosupercharger](#) replaced with single-stage geared [supercharger](#), Allison V-1710-37 (E5) engine rated to 13,300 ft (4,050 m).

P-39C

first production version, identical to YP-39 except for V-1710-35 1,150 hp engine. Armed with 1x 37 mm cannon, 2x .50 cal and 2x .30 cal machine guns. First aircraft lacked armor and self-sealing fuel tanks.

P-39D

245 lb of additional armor, self-sealing fuel tanks. Armament increased to 1x 37 mm cannon (30 rounds), 2x .50 cal (200 rounds/gun) and 4x .30 cal (1,000 rounds/gun) machine guns. Provisions for a single 250-lb, 325-lb, or 500-lb bomb under the fuselage.

P-39D-1

[Lend-Lease](#) version, [Hispano 20 mm cannon](#) instead of the 37 mm cannon

P-39D-2

[Lend-Lease](#) version, upgraded V-1710-63 (E6) engine with 1,325 hp; restored the 37 mm cannon; provisions for a single 145 US gallon drop tank under the fuselage.

Bell Model 14

export version, ordered by France but not delivered.

P-400 Airacobra I

P-39D for [Royal Air Force](#), briefly called :Caribou:; [Hispano 20 mm cannon](#) (60 rounds) instead of the 37 mm cannon. A total of 200 were requisitioned by USAAF after Pearl Harbor; most were used for training, but some saw service in the Southwest Pacific.

XP-39E

intended for [Continental I-1430](#)-1 engine with 2,100 hp; see [Bell XP-76](#)

P-39F-1

Aeroproducts [constant speed propeller](#)

P-39F-2

field conversion of P-39F-1 with additional belly armor and cameras in rear fuselage

TP-39F

Two-seat training version, built in small numbers.

P-39G

intended to be a P-39D-2 with an Aeroproducts propeller. Due to modifications during production no P-39G were actually delivered. Instead, these aircraft were designated P-39K, L, M and N.

P-39J

P-39F with V-1710-59 1,100 hp engine with automatic boost control

P-39K

P-39D-2 with Aeroproducts propeller and V-1710-63 (E6) 1,325 hp engine; one aircraft designated P-39K-5 and fitted with a V-1710-85 (E19) engine to serve as a P-39N prototype

P-39L

P-39K with Curtiss Electric propeller, revised nose gear for reduced drag, provision for underwing rockets.

P-39M

11 ft 1 in Aeroproducts propeller, V-1710-67 (E8) 1,200 hp engine with improved high-altitude performance at the expense of low-altitude performance, ten mph faster than P-39L at 15,000 ft (4,600 m).

P-39N

V-1710-85 (E19) 1,200 hp engine; Aeroproducts propeller enlarged from 10 ft 4 in to 11 ft 7 in starting with 167th aircraft. The P-39N-5 had reduced armor.

P-39Q

wing-mounted 0.30 cal machineguns replaced with a single 0.50 cal with 300 rounds of ammunition in a pod under each wing. These wing guns were often removed on [Soviet](#) aircraft. P-39Q-21 had a four-bladed Aeroproducts propeller. The P-39Q-30 reverted to a three-bladed propeller because the four-bladed unit worsened directional stability.

RP-39Q

Two-seat training version, built in small numbers.

P-45

The P-45 was the initial designation of the P-39C or Model 13.

F2L

Seven P-39s were supplied to the US Navy to be used as target drones.

XFL-1

One prototype for the US Navy.

A-7

Proposed radio-controlled target drone, never built.

Operators



[Australia](#)
[RAAF](#)



[France](#)



[Italy](#)



[Poland](#)

(two aircraft only)



[Portugal](#)

Esquadilha Airacobra (Airacobra Squadron), later renamed *Esquadilha 4* (Squadron No. 4)
— *Aeronáutica Militar* (Army Military Aviation)

 [Soviet Union](#)
 [United Kingdom](#)
[RAF](#)
 [United States](#)
[US Army Air Corps](#), [US Army Air Force](#)

Specifications (P-39Q Airacobra)



Bell P-39Q Airacobra at the [National Museum of the United States Air Force](#).

General characteristics

- **Crew:** One
- **Length:** 30 ft 2 in (9.2 m)
- **Wingspan:** 34 ft 0 in (10.4 m)
- **Height:** 12 ft 5 in (3.8 m)
- **Wing area:** 213 ft² (19.8 m²)
- **Empty weight:** 5,347 lb (2,425 kg)
- **Loaded weight:** 7,379 lb (3,347 kg)
- **Max takeoff weight:** lb (kg)
- **Powerplant:** 1× [Allison V-1710](#)-85 liquid-cooled V-12, 1,200 hp (895 kW)

Performance

- **Maximum speed:** 376 mph; (605 km/h; Redline dive speed=525 mph.)
- **Range:** 1,098 miles (1,770 km)
- **Service ceiling:** 35,000 ft (10,700 m)
- **Rate of climb:** 3,750 ft/min (19 m/s; 15,000' / 4.5 min @ 160 mph (260 km/h).)
- **Wing loading:** 34.6 lb/ft² (169 kg/m²)
- **Power/mass:** 0.16 hp/lb (0.27 kW/kg)

Armament

- 1x 37 mm [M4 cannon](#) firing through the propeller hub at the rate of 140 rpm with 30 rounds of HE ammo.
- 4 x .50 cal (12.7 mm) machine guns. Rate of fire was 750 rpm x 1 gun in each wing, only 300 rpm each x 2 guns synchronized in the cowl. Ammo: 200 rounds per nose-gun, 300 per wing-pod.
- Up to 500 lb (230 kg) of bombs externally
- [P-39 Airacobra](#)
- [XFL-1 Airabonita](#)
- [Bell P-39 Airacobra](#)
- [Web site with more description of the Loza reference and use of P-39 for air superiority](#)

- [\[6\]](#) Article on aircraft guns of WWII.
- [\[7\]](#) article over technical and operational faults of P-39.

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Related development

- [P-63 Kingcobra](#)

Comparable aircraft

- [Curtiss P-40](#)
- [Messerschmitt Bf 109](#)
- [Supermarine Spitfire](#)
- [Yakovlev Yak-1](#)
- [Yakovlev Yak-9](#)

Designation sequence

- [P-36](#) - [XP-37](#) - [P-38](#) - **P-39** - [P-40](#) - [XP-41](#) - [XP-42](#)

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