

P-51 Mustang

P-51 Mustang



North American P-51D Mustang *Tika IV* of the 361st Fighter Group, marked with [D-day \("invasion"\) stripes](#)

Type [Fighter](#)

[Manufacturer](#) [North American Aviation](#)

Designed by [Edgar Schmued](#)
Raymond H. Rice
Larry Waite
E. H. Horkey

[Maiden flight](#) [26 October 1940](#)

Introduction 1942

Retired 1957, US ANG

Primary users [United States Army Air Forces](#)
[Royal Air Force](#), numerous others (see below)

Number built 15,875

Unit cost US \$50,985 in 1945^[1]

Variants [A-36 Apache](#)
[F-82 Twin Mustang](#)
[Cavalier Mustang](#)
[Piper PA-48 Enforcer](#)
[Mustang X](#)

The [North American Aviation P-51 Mustang](#) was an [American](#) long-range single-seat [fighter aircraft](#) that entered service with [Allied](#) air forces in the middle years of [World War II](#). The P-51 became one of the conflict's most successful and recognizable aircraft.

The P-51 flew most of its wartime missions as a bomber escort in raids over [Germany](#), helping ensure Allied [air superiority](#) from early 1944. It also saw service against the [Japanese](#) in the [Pacific War](#). The Mustang began the [Korean War](#) as the [United Nations'](#) main fighter but was supplanted as

a fighter by jets early in the conflict, being relegated to a ground attack role. Nevertheless, it remained in service with some air forces until the early 1980s.

As well as being economical to produce, the Mustang was a well-made and rugged aircraft. The definitive version of the single-seat fighter was powered by the Packard V-1650-3, a two-stage two-speed [supercharged](#) 12-cylinder Packard-built version of the legendary [Rolls-Royce Merlin](#) engine, and armed with six of the aircraft version of the [.50 caliber](#) (12.7 mm) [Browning machine guns](#). Like most other fighters that used a liquid-cooled engine, its weakness was a coolant system that could be punctured by a single bullet.

After World War II and the Korean conflict, many Mustangs were converted for civilian use, especially [air racing](#). The Mustang's reputation was such that, in the mid-1960s, [Ford Motor Company's](#) Designer John Najjar proposed the name for a [new youth-oriented coupé](#) after the fighter.^[2]

Genesis



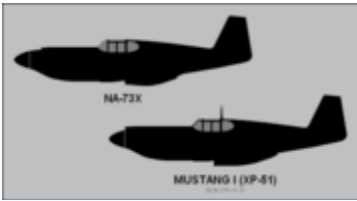
P-51 performing at a Virginia airshow

In [1939](#), shortly after World War II began, the British government established a purchasing commission in the United States, headed by Sir [Henry Self](#). Along with Sir [Wilfrid Freeman](#), who as the "Air Member for Development and Production" was given overall responsibility for RAF production and research and development in 1938, Self had sat on the (British) Air Council Sub-committee on Supply (or "Supply Committee"). One of Self's many tasks was to organize the manufacture of American fighter aircraft for the [RAF](#). At the time, the choice was very limited. None of the US aircraft already flying met European standards; only the [Curtiss P-40 Tomahawk](#) came close. The Curtiss plant was running at capacity, so even that aircraft was in short supply.

[North American Aviation](#) (NAA) was already supplying their [Harvard](#) trainer to the RAF but were otherwise underutilized. NAA President "[Dutch](#)" [Kindelberger](#) approached Self to sell a new [medium bomber](#), the [B-25 Mitchell](#). Instead, Self asked if NAA could manufacture the Tomahawk under licence from Curtiss.

Kindelberger replied that NAA could have a better aircraft with the same engine in the air in less time than it would take to set up a production line for the P-40. As executive head of the British [Ministry of Aircraft Production](#) (MAP), Freeman ordered 320 aircraft in March 1940. On [26 June](#) 1940, MAP awarded a contract to [Packard](#) to build modified versions of the [Rolls-Royce Merlin](#) engines under licence; in September, MAP increased the first production order by 300.

Design and development



The result of the MAP order was the **NA-73X** project (from March 1940). The design followed the best conventional practice of the era, but included two new features. One was a new [NACA](#)-designed [laminar flow](#) wing, which was associated with very low drag at high speeds. Another was the use of a new radiator design that used the heated air exiting the radiator as a form of [jet thrust](#) in what is referred to as the "[Meredith Effect](#)". Because North American lacked a suitable wind tunnel, it was forced to use Curtiss' facility. This led to some controversy over whether the Mustang's aerodynamics were developed by North American's engineer [Edgar Schmued](#) or by Curtiss, although historians and researchers dismiss the allegation of stolen technology; such claims are likely moot, in any event, as North American had purchased Curtiss' complete set of P-40 and [XP-46](#) wind tunnel data and flight test reports for \$56,000^[3].

The [United States Army Air Corps](#) could block any sales it considered interesting, and this appeared to be the case for the NA-73. An arrangement was eventually reached where the RAF would get its aircraft, in exchange for NA providing two examples cost-free to the USAAC.

The prototype NA-73X was rolled out just 117 days after the order was placed, and first flew on [26 October 1940](#), just 178 days after the order had been placed — an incredibly short gestation period. In general, the prototype handled well and the internal arrangement allowed for an impressive fuel load. It was armed with four [.50 M2 Browning](#) (12.7 mm) guns and two [.30 Browning](#) (7.62 mm) guns. In comparison, the British [Spitfire](#) Vb carried two 20 mm cannon and four [.303](#) machine guns.

Allison-engined Mustangs



Early P-51 Mustang on a test flight.

Mustang I/P-51

It was quickly evident that performance, although exceptional up to 15,000 feet, was inadequate at higher altitudes. This deficiency was due largely to the mechanically [supercharged Allison V-1710](#) engine, which lacked power at higher altitudes. Prior to the Mustang project, the USAAC had Allison concentrate primarily on [turbochargers](#) in concert with [General Electric](#); these proved to be exceptional in the [P-38 Lightning](#) and other high-altitude aircraft. Most of the other uses for the Allison were for low-altitude designs, where a simple supercharger would suffice. The turbocharger proved impractical for fitting into the Mustang, and it was forced to use the inadequate superchargers available. Still, the Mustang's advanced aerodynamics showed to advantage, as the Mustang I was about 30 mph faster than contemporary [Curtiss P-40](#) fighters using the same Allison powerplant. The Mustang I was 30 mph faster than the [Spitfire](#) Mk VC at 5,000 feet and 35 mph faster at 15,000 ft, despite the British plane's more powerful engine.^[4]

The first production contract was awarded by the British for 320 NA-73 fighters named **Mustang I** by the British. Two aircraft of this lot delivered to the USAAF were designated **XP-51**. A second British contract called for 300 more (NA-83) Mustang I fighters. In September 1940, 150 aircraft designated NA-91 by North American were ordered under the Lend/Lease program. These were designated by the USAAF as **P-51** and initially named the "Apache" although this designation was soon dropped and the RAF name, "Mustang," adopted instead. The British designated this model as **Mustang IA**. They were equipped with four long-barrelled 20 mm [Hispano Mk II](#) cannon instead of machine guns.

A number of aircraft from this lot were fitted out by the USAAF as photo reconnaissance aircraft and designated **F-6A**. The British would fit a number of Mustang Is with similar equipment. Also, two aircraft of this lot were fitted with the Packard built Merlin engine and were designated by North American as model NA-101 and by the USAAF initially as the XP-78, but redesignated **XP-51B**.



A36 Apache.

About 20 of the Mustang Mk I were delivered to the RAF and made their combat debut on [10 May](#) 1942. With their long range and excellent low-level performance, they were employed effectively for tactical reconnaissance and ground-attack duties over the [English Channel](#), but were thought to be of limited value as fighters due to their poor performance above 15,000 feet.

The Mustang Mk IA was identical to the Mustang Mk I except that the machine guns were removed and replaced with four wing mounted 20 mm cannons.

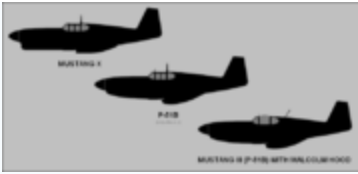
A-36 Apache/Invader

At the same time, the USAAC was becoming more interested in ground attack aircraft and had a new version ordered as the **A-36 Apache**, which included six .50 [M2 Browning machine guns](#), dive brakes and the ability to carry two 500 pound (230 kg) bombs.

In early 1942, the USAAF ordered 500 aircraft modified as dive bombers that were designated A-36A (NA-97). This model became the first USAAF Mustang to see combat. One aircraft was passed to the British who gave it the name **Mustang I (Dive Bomber)**.

Merlin-engined Mustangs

P-51B and P-51C



USAAF P-51B-10-NA

In April 1942, the [RAF](#)'s Air Fighter Development Unit (AFDU) tested the Mustang at higher altitudes and found its performance inadequate, but the commanding officer was so impressed with its maneuverability and low-altitude speeds that he invited Ronnie Harker from [Rolls Royce](#)'s Flight Test establishment to fly it. Rolls-Royce engineers rapidly realized that equipping the Mustang with a Merlin 61 would substantially improve performance and started converting five aircraft as the [Mustang X](#). Ministry official Sir [W.R. Freeman](#) lobbied vociferously for Merlin-powered Mustangs, insisting two of the five experimental Mustang Xs be handed over to [Carl Spaatz](#) for trials and evaluation by the US 8th Air Force in Britain.^[5]

The high-altitude performance improvement was astonishing: the Mustang X AM208 reached 433 mph at 22,000 ft and AL975 tested at an absolute ceiling of 40,600 ft.^[6] After sustained lobbying at the highest level, American production of a North American-designed Mustang, with the Packard Merlin V-1650 engine replacing the Allison, was started in early 1943. The pairing of the P-51 airframe and Merlin engine was designated **P-51B** or **P-51C** (B (NA-102) being manufactured at Inglewood, California, and C (NA-103) at a new plant in Dallas, Texas, in operation by summer 1943). The RAF named these models **Mustang III**. In performance tests, the P-51B reached 441 mph/709.7 km/h at 25,000 ft (7.600 m) and the subsequent extended range made possible by the use of drop tanks enabled the Merlin-powered Mustang to be introduced as a bomber escort.

P-51Bs and Cs started to arrive in England in August and October 1943. The P-51B/C versions were sent to 15 fighter groups that were part of the [8th](#) and [9th](#) Air Forces in [England](#), and the [12th](#) and [15th](#) in [Italy](#) (the southern part of Italy was under [Allied control](#) by late [1943](#)). Other deployments included the [China Burma India Theater](#) (CBI).

Allied strategists quickly exploited the long-range fighter as a bomber escort. It was largely due to the P-51 that daylight bombing raids deep into German territory became possible without prohibitive bomber losses in late [1943](#).

A number of the P-51B and P-51C aircraft were fitted for photo reconnaissance and designated **F-6C**.

P-51D and P-51K



P-51D *My Girl* takes off from Iwo Jima, in the Bonin Islands. From this hard-won base, US fighters escorted the B-29s on bombing missions to Japan in 1945.

One of the few remaining complaints with the Merlin-powered aircraft was a poor rearward view. This was a common problem in most fighter designs of the era, which had only been recognized by the British after the [Battle of Britain](#) proved the value of an all-around view. In order to improve the view from the Mustang at least partially, the British had field-modified some Mustangs with fishbowl-shaped canopies called "Malcolm Hoods." Eventually all Mk IIIs, along with some American P-51B/Cs, were equipped with Malcolm Hoods.

A better solution to the problem was the "teardrop" or "bubble" canopy. Originally developed as part of the [Miles M.20](#) project, these newer canopies were in the process of being adapted to most British designs, eventually appearing on late-model Spitfires, [Typhoons](#) and [Tempests](#). North American adapted several NA-106 prototypes with a [bubble canopy](#), cutting away the decking behind the cockpit to allow looking directly to the rear. This led to the production **P-51D** (NA-109), considered the definitive Mustang.

A common misconception is that the cutting down of the rear fuselage to mount the bubble canopy reduced stability that required the addition of a dorsal fin to the forward base of the vertical tail. Actually, both earlier Bs and Cs and subsequent D/K models also experienced low speed handling problems that could result in an involuntary "snap-roll" under certain conditions of air speed, angle of attack, gross weight and center of gravity. Several crash reports tell of P-51Bs and Cs crashing because horizontal stabilizers were torn off during maneuvering. One report stated:

"Unless a dorsal fin is installed on the P-51B, P-51C and P-51D airplanes, a snap roll may result when attempting a slow roll. The horizontal stabilizer will not withstand the effects of a snap roll. To prevent recurrence the stabilizer should be reinforced in accordance with T.O. 01-60J-18 dated [8 April 1944](#) and a dorsal fin should be installed. Dorsal fin kits are being made available to overseas activities"

While some existing aircraft do not have the dorsal extension fitted, many were equipped at some point in their service or refurbishment with a taller tail, which provided a similar increase in yaw stability. Also, civilian-owned examples often have newer, lighter radios, an absence of external munitions and drop tanks, removed guns and armor plate and an empty or removed fuselage tank — reducing the need for the dorsal fin.



Ground crew arming the P-51 with six [M2 machine guns](#) and [.50 caliber](#) ammunition.

Among other modifications, armament was increased with the addition of another two M2 machine guns, bringing the total to six. The inner pair of machine guns had 400 rounds each, and the others had 270 rounds, for a total of 1,880. In previous P-51s, the M2s were mounted at angles that led to frequent complaints of jamming during combat maneuvers. The new arrangement allowed the M2s to be mounted in a more standard manner that remedied most of the jamming problems. The .50 caliber Browning machine guns, although not firing an explosive projectile, had excellent ballistics and proved adequate against the [Fw 190](#) and [Bf 109](#) fighters that were the main USAAF opponents at the time. Later models had under-wing rocket pylons added to carry up to ten rockets per plane.

The P-51D became the most widely produced variant of the Mustang. A Dallas-built version of the P-51D, designated the P-51K, was equipped with an Aeroproducts propeller in place of the [Hamilton Standard](#) propeller, as well as a larger, differently configured canopy and other minor alterations (the vent panel was different). The hollow-bladed Aeroproducts propeller was unreliable with dangerous vibrations at full throttle due to manufacturing problems and was eventually replaced by the Hamilton Standard. The photo reconnaissance versions of the P-51D and P-51K were designated **F-6D** and **F-6K** respectively. The RAF assigned the name **Mustang IV** to the D model and **Mustang IVA** to K models.

The P-51D/K started arriving in Europe in mid-1944 and quickly became the primary USAAF fighter in the theater. It was produced in larger numbers than any other Mustang variant. Nevertheless, by the end of the war, roughly half of all operational Mustangs were still B or C models.

During 1945–48, P-51Ds were also built under licence in [Australia](#) by the [Commonwealth Aircraft Corporation](#) (see below).

The "lightweight" Mustangs

XP-51F, XP-51G and XP-51J

The USAAF required airframes built to their acceleration standard of 8.33 g (82 m/s²), a higher load factor than that used by the British standard of 5.33 g (52 m/s²) for their fighters. Reducing the load factor to 5.33 would allow weight to be removed, and both the USAAF and the RAF were interested in the potential performance boost.

In 1943, North American submitted a proposal to re-design the P-51D as model NA-105, which was accepted by the USAAF. Modifications included changes to the cowling, a simplified undercarriage with smaller wheels and disk brakes, and a larger canopy. The designation **XP-51F** was assigned to prototypes powered with V-1650 engines (a small number of XP-51Fs were passed to the British as the **Mustang V**) and **XP-51G** to those with reverse lend/lease [Merlin](#) 145M engines.

A third lightweight prototype powered by an [Allison V-1710-119](#) engine was added to the development program. This aircraft was designated **XP-51J**. Since the engine was insufficiently developed, the XP-51J was loaned to Allison for engine development. None of these experimental "lightweights" went into production.

[\[edit\]](#) P-51H



P-51H flying.

The **P-51H** (NA-126) was the final production Mustang, embodying the experience gained in the development of the XP-51F and XP-51G aircraft. This aircraft, with minor differences as the NA-129, came too late to participate in World War II, but it brought the development of the Mustang to a peak as one of the fastest production piston engine fighters to see service.

The P-51H used the new [V-1650-9](#) engine, a version of the Merlin that included Simmons automatic supercharger boost control with water injection, allowing War Emergency Power as high as 2218 hp (1,500 kW). Differences between the P-51D included lengthening the fuselage and increasing the height of the tailfin, which greatly reduced the tendency to yaw. The canopy resembled the P-51D style, over a somewhat raised pilot's position. Service access to the guns and ammunition was also improved. With the new airframe several hundred pounds lighter, the extra power and a more streamlined radiator, the P-51H was among the fastest propeller fighters ever, able to reach 487 mph (784 km/h) at 25,000 ft (7,600 m).

The P-51H was designed to complement the P-47N Thunderbolt as the primary aircraft for the invasion of [Japan](#) with 2,000 ordered to be manufactured at Inglewood. Production was just ramping up with 555 delivered when the war ended. Production serial numbers:

- P51H-1-NA 44-64160 – 44-64179
- P51H-5-NA 44-64180 – 44-64459
- P51H-10-NA 44-64460 – 44-64714

Additional orders, already on the books, were cancelled. With the cutback in production, the variants of the P-51H with different versions of the Merlin engine were produced in either limited numbers or terminated. These included the **P-51L**, similar to the P-51H but utilizing the 2270 horsepower V-1650-11 Merlin engine, which was never built; and its Dallas-built version, the **P-51M** or NA-124 which utilized the V-1650-9A Merlin engine lacking water injection and therefore rated for lower maximum power, of which one was built out of the original 1629 ordered, serial number 45-11743.

Although some P-51Hs were issued to operational units, none saw combat in World War II, and in postwar service, most were issued to reserve units. One aircraft was provided to the [RAF](#) for testing and evaluation. Serial number 44-64192 was designated BuNo 09064 and used by the US Navy to test [transonic](#) airfoil designs, then returned to the Air National Guard in [1952](#). The P-51H was not

used for combat in the [Korean War](#) despite its improved handling characteristics, since the P-51D was available in much larger numbers and was a proven commodity.

Many of the aerodynamic advances of the P-51 (including the laminar flow wing) were carried over to North America's next generation of jet-powered fighters, the Navy [FJ Fury](#) and Air Force [F-86 Sabre](#). The wings, empennage and canopy of the first straight-winged variant of the Fury (the FJ-1) and the unbuilt preliminary prototypes of the P-86/F-86 strongly resembled those of the Mustang before the aircraft were modified with swept-wing designs.

Operational history

US operational service



Pilots of the 332nd Fighter Group, "[Tuskegee Airmen](#)," the elite, all-African American 332nd Fighter Group at Ramitelli, Italy., from left to right: Lt. Dempsey W. Morgran, Lt. Carroll S. Woods, Lt. Robert H. Nelron, Jr., Capt. Andrew D. Turner and Lt. Clarence P. Lester.

At the [Casablanca Conference](#), the Allies formulated the [Combined Bomber Offensive](#) (CBO) plan for "round-the-clock" bombing by the RAF at night and the USAAF by day. American pre-war bombardment doctrine held that large formations of heavy bombers flying at high altitudes would be able to defend themselves against enemy interceptors with minimal fighter escort, so that precision daylight bombing using the [Norden bombsight](#) would be effective.

Both the RAF and Luftwaffe had attempted daylight bombing and discontinued it, believing advancements in single-engine fighters made multi-engined bombers too vulnerable, contrary to [Douhet's](#) thesis. The RAF had worried about this in the mid-[1930s](#) and had decided to produce an all night-bomber force, but initially began bombing operations by day. The Germans used extensive daylight bombing during the [Battle of Britain](#) in preparation for a possible invasion. The Luftwaffe found daylight bombing raids sustained high casualties and soon switched to night bombing (see [The Blitz](#)). Bomber Command followed suit in its subsequent raids over Germany.

Initial USAAF efforts were inconclusive because of the limited scale. In June 1943, the Combined Chiefs of Staff issued the [Pointblank Directive](#) to destroy the Luftwaffe before the invasion of Europe, putting the CBO into full implementation. The [Eighth Air Force](#) heavy bomber force conducted a series of deep penetration raids into Germany beyond the range of available escort fighters. German fighter reaction was fierce and bomber losses were severe — 20 percent in an October 14 attack on the German [ball-bearing](#) industry. This made it impossible to continue such long-range raids without adequate fighter escort.

The [Lockheed P-38 Lightning](#) had the range to escort the bombers, but was available in very limited numbers in the European theater due to its degraded performance at frigid high altitudes and its Allison engines proving difficult to maintain. With the extensive use of the P-38 in the [Pacific war](#), where its twin engines were deemed vital to long-range "over-water" operations, nearly all European-

based P-38 units converted to the P-51 in 1944. The [Republic P-47 Thunderbolt](#) was capable of meeting the Luftwaffe on more than even terms, but did not at the time have sufficient range. The Mustang changed all that. In general terms, the Mustang was at least as simple as other aircraft of its era. It used a single, well-understood, reliable engine, and had internal space for a huge fuel load. With external fuel tanks, it could accompany the bombers all the way to Germany and back.



Ferry pilot Florene Watson, [Women Airforce Service Pilots](#), warms up a P-51.

Enough P-51s became available to the 8th and [9th Air Forces](#) in the winter of 1943-44, and when the Pointblank offensive resumed in early 1944, matters changed dramatically. The P-51 proved perfect for the task of escorting bombers all the way to the deepest targets, thus complementing the more numerous P-47s until sufficient Mustangs became available. The Eighth Air Force immediately began to switch its fighter groups to the Mustang, first exchanging arriving P-47 groups for those of the Ninth Air Force using P-51s, then gradually converted its Thunderbolt and Lightning groups until by the end of the year 14 of its 15 groups flew the Mustang.

[Luftwaffe](#) pilots attempted to avoid US fighters by massing in huge numbers well in front of the bombers, attacking in a single pass, then breaking off the attack, allowing escorting fighters little time to react. While not always successful in avoiding contact with escort (as the tremendous loss of German pilots in the spring of 1944 indicates), the threat of mass attacks, and later the "company front" (eight abreast) assaults by armored *sturmgruppe* Fw 190s, brought an urgency to attacking the Luftwaffe wherever it could be found. The P-51, particularly with the advent of the K-14 gunsight and the development of "Clobber Colleges" for the in-theater training of fighter pilots in fall 1944, was a decisive element in Allied countermeasures against the *Jagdverbände*.

Beginning in late February 1944 Eighth Air Force fighter units began systematic strafing attacks on German airfields that picked up in frequency and intensity throughout the spring with the objective of gaining air supremacy over the [Normandy](#) battlefield. In general these were conducted by units returning from escort missions, but beginning in March many groups also were assigned airfield attacks instead of bomber support. On [April 15](#) VIII FC began Operation Jackpot, attacks on specific Luftwaffe fighter airfields, and on [May 21](#) these attacks were expanded to include [railways](#), [locomotives](#), and [rolling stock](#) used by the Germans for movements of materiel and troops in missions dubbed "[Chattanooga](#)".^[7] The P-51 also excelled at this mission, although losses were much higher on strafing missions than in air-to-air combat, partially due to the vulnerability of the Mustang's cooling system to small arms hits.

The numerical superiority of the [USAAF](#) fighters, superb flying characteristics of the P-51 and pilot proficiency crippled the Luftwaffe. As a result, the fighter threat to US, and later British bombers, was greatly diminished by summer [1944](#).

P-51s also distinguished themselves against advanced enemy rockets and aircraft. A P-51B/C with high-octane fuel was fast enough to pursue the [V-1s](#) launched toward [London](#). The [Me 163 Komet](#) rocket interceptors and [Me 262](#) jet fighters were considerably faster than the P-51, but not

invulnerable. [Chuck Yeager](#), flying a P-51D, was one of the first American pilots to shoot down a [Me 262](#) when he surprised it during its landing approach.



[Chuck Yeager](#)'s P-51D Glamorous Glen III, is the aircraft in which the future test pilot achieved most of his 12.5 kills.

The Eighth, Ninth and Fifteenth Air Forces' P-51 groups, all but three of which flew another type before converting to the Mustang, claimed some 4,950 aircraft shot down (about half of all USAAF claims in the European theater) and 4,131 destroyed on the ground. Losses were about 840 aircraft. One of these groups, the [Eighth Air Force's 4th Fighter Group](#), was the overall top-scoring fighter group in Europe with 1,016 enemy aircraft destroyed, 550 in aerial combat and 466 on the ground.^[8] In aerial combat, the top-scoring P-51 units (both of which exclusively flew Mustangs) were the [357th Fighter Group](#) of the Eighth Air Force with 595 air-to-air combat victories, and the Ninth Air Force's 354th Fighter Group with 701, which made it the top scoring outfit in aerial combat of all fighter groups of any type. Martin Bowman reports that in the ETO Mustangs flew 213,873 sorties and lost 2,520 aircraft to all causes.

P-51s were deployed in the Far East later in [1944](#), operating in both close-support and escort missions.

Post-World War II



USAF F-51D dropping napalm on a target in North Korea.

In the aftermath of World War II, the USAAF consolidated much of its wartime combat force and selected the P-51 as a "standard" piston engine fighter while other types such as the P-38 and P-47 were withdrawn or given substantially reduced roles. However, as more advanced jet fighters (P-80 and P-84) were being introduced, the P-51 was relegated to secondary status.

In 1947, the newly-formed [USAF Strategic Air Command](#) employed Mustangs alongside F-6 Mustangs and F-82 Twin Mustangs, due to their range capabilities. In 1948, the designation P-51 (P for pursuit) was changed to **F-51** (F for fighter) and the existing F designator for photographic reconnaissance aircraft was dropped because of a new designation scheme throughout the USAF. Aircraft still in service in the USAF or Air National Guard (ANG) when the system was changed included: **F-51B**, **F-51D**, **F-51K**, **RF-51D** (formerly **F-6D**), **RF-51K** (formerly **F-6K**), and **TRF-51D**

(two-seat trainer conversions of F-6Ds). They remained in service from 1946 through 1951. By 1950, although Mustangs continued in service with the USAF and many other nations after the war, the majority of the USAF's Mustangs had been surplused or transferred to the Reserve and the Air National Guard (ANG).



West Virginia Air National Guard F-51D

During the [Korean War](#), F-51s, though obsolete as fighters, were used as tactical bombers and reconnaissance aircraft. Because of its lighter structure and less availability of spare parts, the newer, faster F-51H was not used in Korea. With the aircraft being used for ground attack, their performance was less of a concern than their ability to carry a load.

At the start of the [Korean War](#), the Mustang once again proved its usefulness. With the availability of F-51Ds in service and in storage, a substantial number were shipped via aircraft carriers to the combat zone for use initially by both the [Republic of Korea Air Force](#) (ROKAF) and USAF. Rather than employing them as interceptors or "pure" fighters, the F-51 was given the task of ground attack, fitted with rockets and bombs. After the initial invasion from North Korea, USAF units were forced to fly from bases in Japan, and F-51Ds could hit targets in Korea that short-ranged F-80 jet fighters could not. A major concern over the vulnerability of the cooling system was realized in heavy losses due to ground fire. Mustangs continued flying with USAF, [Republic of Korea Air Force](#) (ROKAF), [South African Air Force](#) (SAAF) and [Royal Australian Air Force](#) (RAAF) fighter-bomber units on close support and interdiction missions in Korea until they were largely replaced by [Republic F-84](#) and [Grumman Panther](#) jet fighter-bombers in 1953. The South Africans continued to fly their 95 Mustangs in Korea but lost many of them by 1952.

F-51s flew in the USAF Reserve and ANG until they were finally phased out in 1957. The F-51 was adopted by many air forces and continued to be an effective fighter into the late 1950s with smaller air arms. The last Mustangs were retired from USAF/Air National Guard service in 1957 but remained in use as testbeds/chase aircraft into the 1960s and later. Many remain airworthy across the globe, in private hands. A few of those have been modified for extra speed for competing in [air racing](#).

P-51 Pilot Medal of Honor Recipients

Three US fighter pilots were awarded the [Medal of Honor](#) for actions while flying the P-51.

Former "[Flying Tiger](#)" Major [James H. Howard](#) of the 354th Fighter Group was awarded the Medal of Honor for action over Germany on 11 January 1944 while flying a P-51B, when he was separated from the rest of his flight while escorting a formation of B-17 bombers which then came under attack from over 30 German fighters which he then took on singlehandedly. While Howard only claimed two kills, crewmen on the B-17s reported that he downed at least six German fighters.

Major [William A. Shomo](#), commander of the 82nd Tactical Reconnaissance Squadron, was awarded the Medal of Honor for action over the Philippines on 11 January 1945, a year to the day after Howard's action. Flying F-6Ds on an armed recon mission, Shomo and his wingman spotted and attacked a flight of 12 Japanese fighters escorting a Betty bomber. Shomo downed the bomber and six of the escorting fighters while his wingman downed three more of the escorts.

Major [Louis J. Seville](#) of the 67th Fighter Squadron was posthumously awarded the Medal of Honor for action over Korea on 5 August 1950. Flying on a ground attack mission against a heavy troop concentration, his F-51D sustained severe damage from enemy ground fire. Rather than attempting to return to base or bail out over friendly territory, he continued his attacks until finally deliberately diving his Mustang into an enemy antiaircraft battery.

Non-US service

The P-51 Mustang remained in service with more than 30 air forces after World War II; the last was retired from active service in the early 1980s. Here is a list of some of the countries that used the P-51 Mustang.

- [Argentina](#)
- [Australia](#)

The first [Royal Australian Air Force](#) (RAAF) unit to use Mustangs was [No. 3 Squadron RAAF](#), which converted to them at its base in Italy in November 1944. The RAAF had also decided to replace its [P-40](#) Kittyhawks in the [South West Pacific Area](#) with P-51s, and ordered a total of about 500 Mustangs, which were to be built by the [Commonwealth Aircraft Corporation](#) (CAC), the only non-US production line. In 1944, 100 P-51Ds were shipped from the US in kit form to inaugurate production at [Fishermans Bend](#), in [Melbourne](#). CAC assembled 80 of these under the designation CA-17/Mark 20, the remaining 20 being kept unassembled as part spares.

CAC then produced on its own 120 more P-51Ds (reduced from an initial order for 170), which it designated CA-18/Mark 21, 22, or 23. (The RAAF used the serial number prefix A68 for all P-51s.). Mk 22 was a photo reconnaissance variant and Mk 23 had newer model British-made Merlin engines. In addition, 84 P-51Ks were also shipped direct to the RAAF from the USA. However, only 17 Mustangs reached the frontline squadrons of the [First Tactical Air Force](#) by the time World War II ended in August 1945. The RAAF cancelled orders for about 200 Mustangs. [No. 77 Squadron RAAF](#) also used P-51s extensively during the first years of the Korean War, before converting to [Gloster Meteor](#) jets.

- [Bolivia](#)

Nine *Cavalier* F-51D (including the two TF-51s) were given to Bolivia, under a program called Peace Condor.

- [Canada](#)



Restored P-51D in the markings of No. 402 "City of Winnipeg" RCAF Auxiliary Squadron

Canada had five squadrons equipped with Mustangs during World War II. RCAF No. 400, 414 and 430 squadrons flew Mustang Mk 1s (1942-1944) and nos. 441 and 442 flew Mustang Mk IIIs and

IVAs in 1945. Postwar, a total of 150 Mustang P-51Ds were purchased and served in two regular: no. 416 "Lynx" and no. 417 "City of Windsor" and six auxiliary fighter squadrons: no. 402 "City of Winnipeg," no. 403 "City of Calgary," no. 420 "City of London," no. 424 "City of Hamilton," no. 442 "City of Vancouver" and no. 443 "City of New Westminster." The Mustangs were declared obsolete in 1956; a number of special-duty versions served on into the early 1960s.

- [China \(People's Republic\)](#)

Several hundred P-51s were given to the Allied Air Forces in [China](#). They were also used by the Chinese Communists until the late 1950s.

- [Costa Rica](#)

The Costa Rica Air Force flew four F-51s from 1955–64.

- [Cuba](#)

Some reports claim that under the terms of the 1947 Rio Pact, Cuba was supplied with F-51D Mustangs. These reports appear to be erroneous. However, after the 1959 [Cuban Revolution](#), Cuba's Fuerza Aerea Revolucionaria illegally acquired three ex-civilian Mustangs reputedly being bought in Canada by envoys of [Fidel Castro](#). The P-51 Mustangs did not enter service soon enough to see any action during the Cuban revolution. During the [Bay of Pigs Invasion](#), the Mustangs were damaged on the ground, and were repaired too late to participate in the fighting. They served with the Cuban air force until they were replaced with Russian-built equipment in the early 1960s.^[9]

- [Dominican Republic](#)

The Dominican Republic (FAD) was the largest Latin American air force to employ the F-51D with 44 acquired in 1948.^[unclear] It was the last nation to have the F-51 Mustang in service, with some remaining in use as late as 1984.

- [El Salvador](#)

The FAS purchased five Cavalier Mustang IIs (and one dual control Cavalier TF-51) featured wingtip fuel tanks to increase combat range and up-rated Merlin engines. Seven P-51D Mustangs were also in service.

- [France](#)

In late 1944, the first French unit began its transition to reconnaissance Mustangs. In January 1945, the Tactical Reconnaissance Squadron 2/33 of the French Air Force took their F-6Cs and F-6Ds over Germany on photographic mapping missions. The Mustangs remained in service until the early 1950s when they were replaced by jet fighters.

- [Guatemala](#)

Guatemala (FAG) had 30 P-51s in service from 1954 to the early 1970s.

- [Haiti](#)

Haiti had two Mustangs when President Paul Eugène Magloire was in power between 1950 and 1956.

- [Honduras](#)

Seven Mustangs were acquired from private sources to fight in the so-called "[Football War](#)."

- [Indonesia](#)

Indonesia acquired some F-51s from the departing Netherlands East Indies Air Force in 1949/1950. The Mustangs were used against Commonwealth (RAF, RAAF and RNZAF) forces during the Indonesian confrontation in the early 1960s. The last time Mustangs were to be deployed for military purposes was a shipment of six *Cavalier* II Mustangs (without tip tanks) delivered to Indonesia in [1972-1973](#), which were replaced in [1976](#).^{[10][11]}

- [Israel](#)

A few P-51 Mustangs were illegally bought by Israel in 1948 for use in the [War of Independence \(1948\)](#) and quickly established themselves as the best fighter in the Israeli inventory. Further aircraft were bought from Sweden and Nicaragua but were replaced by jets at the end of the 1950s, but not before the type was used in the [Suez Crisis, Operation Kadesh](#) (1956). Reputedly, during this conflict, one daring Israeli pilot literally cut communications between Suez City and the Egyptian front lines by using his Mustang's propeller on the [telephone](#) wires^[12].

- [Italy](#)

After the fall of Axis Italy and their subsequent realignment with the Allied powers, the Italian Air Force was supplied with American equipment, including P-51Ds. By late 1948, Italy had 48 Mustangs in service, remaining as frontline equipment until replaced by Vampires and Sabres in 1953.

- [Japan](#)

The P-51C-11-NT "Evalina" marked as "278" (former USAAC serial:44-10816) flown by 26th FS, 51st FG, was hit by gunfire on 16 January 1945 and belly landed on Suchon Airfield in China which was held by the Japanese. The Japanese repaired the aircraft, roughly applied [Hinomarus](#) and flew the aircraft to the Fussa evaluation centre (now Yokota Air Base) in Japan.

- [Netherlands](#)

The [Royal Netherlands East Indies Army Air Force](#) received 40 P-51s and flew them in the Indonesian conflict. When the conflict was over Indonesia received some of the ML-KNIL Mustangs.

- [Nicaragua](#)

Nicaragua (GN) gained 26 Mustangs from Sweden in 1954 and used them until 1964.

- [New Zealand](#)



P-51 performing at 2007 Wings over [Wairarapa](#) airshow

[New Zealand](#) ordered 320 P-51 Mustangs as a partial replacement of its [F4U Corsairs](#) in the [Pacific Ocean Areas](#) theatre. Thirty were delivered in [1945](#) but the war ended before they entered service. The remainder were retained in the US. The 30 received were placed in storage (left in their packing cases) until 1950 when put into service with the New Zealand Territorial Air Force (TAF)'s Auckland, Wellington, Canterbury and Otago squadrons. The TAF was disbanded in 1957 and the Mustangs retired, one being retained by [42 Squadron](#) for regular target towing duties, the remainder were sold for scrap. RNZAF pilots in the Royal Air Force also flew the P-51 and at least one New Zealand pilot scored victories over Europe while on loan to a USAAF P-51 squadron. A Mustang is on display in the [RNZAF Museum](#) and three other privately owned Mustangs are airworthy in the country.

- [Philippines](#)

After World War II, P-51 Mustangs were issued to the Philippines. These were to become the backbone of the Philippines Air Force and were extensively used during the [Huk](#) campaign, fighting against Communist insurgents. They were replaced by F-86 Sabres in the late 1950s.

- [Poland](#)

During World War II, five [Polish Air Force in Great Britain](#) squadrons used Mustangs. The first Polish unit equipped ([7 June 1942](#)) with Mustang Mk Is was Flight B of [No. 309 Polish Army-Cooperation Squadron](#), followed by Flight A in March 1943. Subsequently, 309 Squadron was renamed *No. 309 Polish Fighter-Reconnaissance Squadron* and became part of Fighter Command. On [13 March 1944](#), [No. 316 Polish Fighter Squadron](#) received their first Mustang Mk IIIs; rearming of the unit was completed by the end of April. By [26 March 1943](#), [No. 306 Polish Fighter Squadron](#) and [No. 315 Polish Fighter Squadron](#) received Mustangs Mk IIIs (the whole operation took 12 days). On [20 October 1944](#), Mustang Mk Is in No. 309 Squadron were replaced by Mk IIIs. On [11 December 1944](#), the unit was again renamed, as *No. 309 Polish Fighter Squadron*. In [1945](#), [No. 303 Polish Fighter Squadron](#) received 20 Mustangs Mk IV/Mk IVA replacements. Postwar, between [6 December 1946](#) and [6 January 1947](#), all five Polish squadrons equipped with Mustangs were disbanded. Poland returned approximately 80 Mustangs Mk IIIs and 20 Mustangs Mk IV/IVAs to the RAF, which transferred them to the US government.^[13]

- [Somalia](#)

- [South Africa](#)

The [South African Air Force](#) operated a number of Mustang Is and IIs (P-51As) in Italy and the Middle East during World War II. After VE-Day, these machines were soon struck off charge and scrapped. In 1950, 2 Squadron SAAF was supplied with F-51D Mustangs by the United States for Korean War service. The type performed well in [South African](#) hands before being replaced by the F-86 Sabre in 1952/1953.

- [South Korea](#)

Within a month of the outbreak of the Korean War, 10 F-51D Mustangs were provided to the badly depleted [Republic of Korea Air Force](#) as a part of the [Bout One](#) Project. They were flown by both South Korean airmen, several of whom were veterans of the Imperial Japanese Army and Navy air services during World War II as well as by US advisers led by Major [Dean Hess](#). Later, more were provided both from US and from South African stocks, as the latter were converting to F-86 Sabres. They formed the backbone of the South Korean Air Force until they were replaced by Sabres.

- [Soviet Union](#)

The Soviet Union received at least ten early-model Mustangs and tested them in combat. Some reports suggest that other Mustangs that were abandoned in Russia after the famous "shuttle missions" were repaired and used by the Soviet Air Force, but not in frontline service.

- [Sri Lanka](#)

- [Sweden](#)

Sweden's Flygvapnet first recuperated four of the P-51s (two P-51Bs and two early P-51Ds) that had been diverted to Sweden during missions over Europe. In February 1945, Sweden purchased 50 P-51Ds designated J 26, which were delivered by American pilots in April and assigned to the F 16 wing at [Uppsala](#) as interceptors. In early 1946, the F 4 wing at [Östersund](#) was equipped with a second batch of 90 P-51Ds. A final batch of 21 airplanes was purchased in 1948. In all, 161 J 26s served in the [Swedish Air Force](#) during the late 1940s. About a dozen were modified for photo reconnaissance and re-designated S 26. A few of these aircraft participated in the top secret Swedish mapping of new Soviet military installations at the Baltic coast in 1946-47, a project that entailed many intentional violations of Soviet airspace. However, the Mustang could outdive any Soviet fighter of that era, so no S 26 was lost in these missions. The J 26s were replaced by [De Havilland Vampires](#) around 1950. The S 26s were replaced by [S 29Cs](#) in the early 1950s.

- [Switzerland](#)

[Switzerland](#) operated a few USAAF P-51s which had been impounded by the Swiss authorities during World War II after the pilots were forced to land in neutral Switzerland. They also bought 130 P-51s for \$4,000 each. They served till 1958.

- [Taiwan \(Nationalist China\)](#)

Some of the P-51s given to China after [World War II](#) ended up in Taiwan when their pilots sided with [Chiang Kai-shek's](#) Nationalist government. Further P-51s were acquired from the USAF and other sources. Many P-51s were subsequently lost to the Communist People's Liberation Army Air Force during the Nationalist retreat from the Chinese mainland.

- [United Kingdom](#)

The RAF was the first air force to operate the P-51 which was originally designed to meet RAF requirements. The first P-51As (**RAF Mustang Is**) entered service in 1941, wearing the standard RAF fighter markings. Due to poor high altitude performance, the Mustangs were soon transferred to Army co-operation and fighter reconnaissance duties. On July 27 1942, sixteen RAF Mustangs undertook their first long-range reconnaissance mission over Germany. During Operation Jubilee, the [Dieppe](#)

[Raid](#) (19 August 1942), four British and Canadian Mustang squadrons, including [No. 26 Squadron RAF](#) saw action. By 1943/1944, British Mustangs were used extensively to seek out [V-1](#) sites. The final RAF Mustang I and **Mustang II** machines were struck off charge in 1945. The RAF operated several **Mustang III** (P-51B/C) machines, the first units converting to the type in late 1943/1944. Mustang III units were operational until the end of World War II, though many units had already converted to the **Mustang IV** (P-51D/K). RAF pilots preferred the Mustang III (with Malcolm hood), but the RAF re-equipped with Mustang IVs. As the Mustang was a [Lend-Lease](#) type, all aircraft still on RAF charge at the end of the war were either returned to the USAAF "on paper" or retained by the RAF for scrapping. The final Mustangs were retired from RAF use in 1947.

- [Uruguay](#)

Uruguay (FAU) used 25 F-51D Mustangs from 1950 to 1960 — some were subsequently sold to Bolivia.

- [Venezuela](#)

Venezuela (FAV) used only a sole Mustang which was acquired from another Latin American country.



One of many P-51D Mustangs at Oshkosh 2005, in the livery of the 352nd Fighter Group, [RAF Bodney](#), UK

P-51s and civil aviation

Many P-51s were sold as surplus after the war, often for as little as \$1,500. Some were sold to former wartime fliers or other aficionados for personal use, while others were modified for air racing.^[14]

One of the most prominent Mustangs involved in air racing was a surplus P-51C purchased by [Paul Mantz](#), a film stunt pilot. The plane was modified by creating a "wet wing", sealing the wing to create a giant fuel tank in each wing, which eliminated the need for fuel stops or drag-inducing drop tanks. This Mustang, called "Blaze of Noon", came in first in the 1946 and 1947 Bendix Air Races, second in the 1948 Bendix and third in the 1949 Bendix. He also set a US coast-to-coast record in 1947. This Mustang was sold to Charles Blair (future husband of [Maureen O'Hara](#)) and re-named "Excaliber III". Blair used it to set a New York-to-London record in 1951. Later that same year he flew from Norway to Fairbanks, Alaska, via the North Pole, proving that navigation via sun sights was possible over the magnetic north pole region. For this feat, he was awarded the Harmon Trophy and the Air Force was forced to change its thoughts on a possible Soviet air strike from the north. This [Mustang](#) now resides in the [National Air and Space Museum](#) at [Steven F. Udvar-Hazy Center](#).

The most prominent firm to convert Mustangs to civilian use was *Trans-Florida Aviation*, later renamed *Cavalier Aircraft Corporation*, which produced the [Cavalier Mustang](#). Modifications included a taller tailfin and wingtip tanks. A number of conversions included a Cavalier Mustang specialty: a "tight" second seat added in the space formerly occupied by the military radio and fuselage fuel tank.



P-51D of the CAF's Dixie Wing

Ironically, in the late [1960s](#) and early [1970s](#) when the [United States Department of Defense](#) wished to supply aircraft to [South American](#) countries and later [Indonesia](#), for close [air support](#) and [counter insurgency](#), it turned to Cavalier to return some of their civilian conversions back to [updated military specifications](#).

The P-51 is perhaps the most sought after of all [warbirds](#) on the civilian market; the average price usually exceeds \$1 million USD, even for only partially restored aircraft.^[15] Some privately owned P-51s are still flying, often associated with organizations such as the [Commemorative Air Force](#) (formerly the Confederate Air Force)^[16]

Variants

NA-73X

The initial prototype was designated the NA-73X by the manufacturer, North American Aviation.

- Mustang I

The first production contract was awarded by the British for 320 **NA-73** fighters. This aircraft was named **Mustang I** by the British. A second British contract for 300 more Mustang Is was assigned a model number of **NA-83** by North American.

XP-51

Two aircraft of this lot delivered to the USAAF were designated **XP-51**.

P-51

In September 1940, 150 aircraft designated **NA-91** by North American were ordered under the Lend/Lease program. These were designated by the USAAF as **P-51** and initially named the **Apache** although this name was dropped early-on for **Mustang**. The British designated this model as **Mustang IA**. They were equipped with 4 long barreled 20 mm Hispano-Suiza Mk II cannon instead of machine guns. A number of aircraft from this lot were fitted out by the USAAF as photo reconnaissance aircraft and designated **F-6A**. The British would fit a number of Mustang Is with photographic reconnaissance equipment as well. Also, two aircraft of this lot were fitted with the Packard built Merlin engine and were designated by North American as model **NA-101** and by the USAAF initially as the **XP-78**, but re-designated quickly to **XP-51B**.

In early 1942, the USAAF ordered a lot of 500 aircraft modified as dive bombers that were designated **A-36A**. North American assigned the aircraft the model number **NA-97**. This model became the first USAAF Mustang to see combat. One aircraft was passed to the British who gave it the name **Mustang I (Dive Bomber)**.

Following the A-36A order the USAAF ordered 310 model **NA-99** fighters that were designated **P-51A** by the USAAF, and **Mustang II** by the RAF. A number of this lot of aircraft were equipped with K-24 cameras and designated **F-6B**. All these models of the Mustang were equipped with Allison V-1710 engines except the prototype XP-51B.

Beginning with the model **NA-102** Mustang the Packard built Merlin V-1650 engine replaced the Allison. In the summer of 1943 Mustang production was begun at a new plant in Dallas, Texas as well as at the existing facility in Inglewood, California. The model NA-102 was produced as the **P-51B** in Inglewood while the **NA-103** as the **P-51C** was produced at Dallas. The RAF named these models **Mustang III**. Again, a number of the P-51B and P-51C aircraft were fitted for photo Reconnaissance and designated **F-6C**.

The prototypes of the bubble canopy change were designated model **NA-106** by North American and **P-51D** by the USAAF. The production version, while retaining the P-51D designation, was assigned a model number **NA-109** by North American. The 'D' became the most widely produced variant of the Mustang. A variation of the P-51D equipped with an AeroProducts propeller in place of the Hamilton Standard propeller was designated the **P-51K**. The photo versions of the P-51D and P-51K were designated **F-6D** and **F-6K** respectfully. The RAF assigned the name **Mustang IV** to the 'D' model and **Mustang IVA** to 'K' models.

As the USAAF specifications required airframe design to a higher load factor than that used by British for their fighters, consideration was given to re-designing the Mustang to the lower British requirements in order to reduce the weight of the aircraft and thus improve performance. In 1943, North American submitted a proposal to do the re-design as model **NA-105**, which was accepted by the USAAF. The designation **XP-51F** was assigned for prototypes powered with V-1650 engines and **XP-51G** to those with reverse lend/lease Merlin 145M engines. Modifications included changes to the cowling, a simplified undercarriage with smaller wheels and disk brakes, and a larger canopy. A third prototype was added to the development that was powered by an Allison V-1710 engine. This aircraft was designated **XP-51J**. As the engine was insufficiently developed the XP-51J was loaned to Allison for engine development. A small number of XP-51Fs were passed to the British as the **Mustang V**.

The final production Mustang, the **P-51H** embodied the experience gained in the development of the lightweight XP-51F and XP-51G aircraft. This aircraft, model **NA-126** and with minor differences **NA-129**, came too late to participate in World War II, but it brought the development of the Mustang to a peak which was probably the fastest production piston engine fighter to see service. The **P-51H** used the Merlin V-1659-9 engine, equipped with Simmons automatic boost control and [water injection](#), allowing [War Emergency Power](#) as high as 2218 horsepower. Some of the weight savings inherited from the XP-51F and XP-51G were invested in lengthening the fuselage and increasing the height of the tailfin, greatly reducing the tendency to [yaw](#), and in restoring the fuselage fuel tank. The canopy was changed back to more nearly resemble the **P51-D** style, over a somewhat raised pilot's position. Service access to the guns and ammunition was improved. The **P-51H** was designed to complement the [P-47 Thunderbolt](#) as the primary aircraft for the invasion of [Japan](#) and 2,000 were ordered to be built at the Inglewood plant. With the solution to the problem of yaw control, the **P-51H** was now considered a suitable candidate for testing as an [aircraft carrier](#) based fighter; but with the end of the war, the testing was cut short, and production was halted after 555 aircraft were built. Although some **P-51Hs** were issued to operational units, none saw combat. One plane was given to the [RAF](#) for testing and evaluation. Serial number 44-64192 was designated BuNo 09064 and used by the Navy to test [transonic](#) airfoil designs, then returned to the Air National Guard in [1952](#). The **P-51H** was not used for combat in the [Korean War](#) despite its improved handling characteristics, due to the lack of experience with durability of the lighter airframe under combat conditions.

With the cut back in production the variants of the P-51H with different versions of the Merlin engine were produced in either limited numbers or terminated. These included the **P-51L**, similar to the P-51H but utilizing the 2270 horsepower V-1650-11 Merlin engine, which was never built; and its Dallas-built version, the **P-51M** or **NA-124** which utilized the V-1650-9A Merlin engine lacking water injection

and therefore rated for lower maximum power, of which one was built out of the original 1629 ordered, serial number 45-11743.

Production



P-51D on runway.

Source: *U.S. Military Aircraft Designations and Serials since 1909*^[17]

- NA.73X Prototype: One built
- P-51: 150 built
- P-51A: 310 built at [Inglewood, California](#)
- P-51B: 1,988 built at Inglewood
- P-51C: 1,750 built at [Dallas, Texas](#)
- P-51D: 6,502 built at Inglewood; 1,454 at Dallas; 200 by CAC at Fisherman's Bend, Australia. A total of 8,156.
- XP-51F: Three built
- XP-51G: Two built
- P-51H: 555 built at Inglewood
- XP-51J: Two built
- P-51K: 1,500 built
- P-51L: None built - cancelled
- P-51M: one built at Dallas
- Mustang I: 620 built
- Mustang III: 852 built
- Mustang IV: 281 built
- Mustang IVA: 595 built

Total number built: 15,875 (among American fighter aircraft second only to the [P-47 Thunderbolt](#))

Scaled replicas

The P-51 has been the subject of numerous sub-scale flying replicas; aside from ever-popular R/C-controlled aircraft, several [kitplane](#) manufacturers offer 3/4-scale replicas capable of comfortably seating one (or even two) pilot(s) and offering high-performance combined with more forgiving flight characteristics. Such aircraft include the [Titan T-51 Mustang](#) and [Thunder Mustang](#).

Survivors

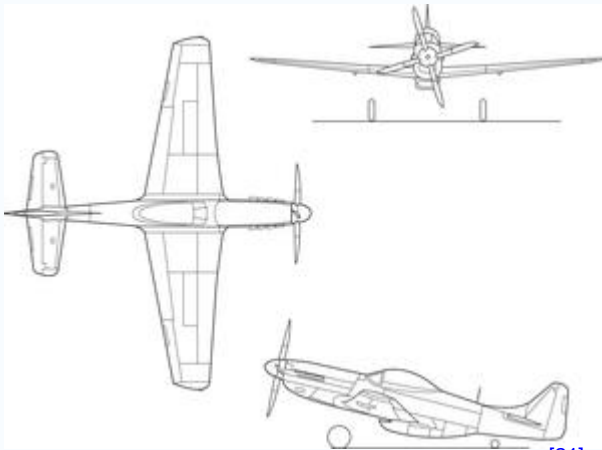
Among the 287 current airframes and the 154 "flying" Mustangs are the following:^[18]

- P-51D Mustang, Olympic flight museum, Olympia, Wa. In flying condition.
- P-51D Mustang, Indiana Aviation Museum, Valparaiso, IN. In flying condition, served with the North Dakota, Alabama, and Kentucky Air National Guards.

- P-51 Mustang (Mk IV), Vintage Wings of Canada, Gatineau, Québec.
- P-51D Mustang N-167F, Scandinavia Historic Flight, based in Oslo, painted as "Old Crow", the aircraft of one of the 8th AF aces, Col. Clarence E. "Bud" Anderson of the 357th Fighter Group, 363rd Fighter Squadron.^[19]
- P-51 Mustang (Mk II), N-405HC "It's About Time", based in Sweden.^[20]

Specifications

P-51D Mustang



Data from The Great Book of Fighters,^[21] and Quest for Performance^[22]

General characteristics

- **Crew:** 1
- **Length:** 32 ft 3 in (9.83 m)
- **Wingspan:** 37 ft 0 in (11.28 m)
- **Height:** 13 ft 8 in (4.17 m)
- **Wing area:** 235 ft² (21.83 m²)
- **Empty weight:** 7,635 lb (3,465 kg)
- **Loaded weight:** 9,200 lb (4,175 kg)
- **Max takeoff weight:** 12,100 lb (5,490 kg)
- **Powerplant:** 1× [Packard Merlin V-1650-7](#) liquid-cooled [supercharged](#) V-12, 1,695 hp (1,265 kW)
- **Zero-lift drag coefficient:** 0.0163
- **Drag area:** 3.80 ft² (0.35 m²)
- **Aspect ratio:** 5.83

Performance

- **Maximum speed:** 437 mph (703 km/h) at 25,000 ft (7,620 m)
- **Cruise speed:** 362 mph (580 km/h)
- **Stall speed:** 100 mph (160 km/h)
- **Range:** 1,650 mi (2,655 km) with external tanks
- **Service ceiling:** 41,900 ft (12,770 m)
- **Rate of climb:** 3,200 ft/min (16.3 m/s)
- **Wing loading:** 39 lb/ft² (192 kg/m²)

- **Power/mass:** 0.18 hp/lb (300 W/kg)
- **Lift-to-drag ratio:** 14.6

Armament

- 6 × 0.50 in (12.7 mm) machine guns; 400 rounds per gun for the two inboard guns; 270 per outboard gun
- 2 hardpoints for up to 2,000 lb (907 kg)
- 10 × 5 in (127 mm) rockets

P-51H Mustang

Data from The Great Book of Fighters^[21]

General characteristics

- **Crew:** 1
- **Length:** 33 ft 4 in (10.16 m)
- **Wingspan:** 37 ft 0 in (11.28 m)
- **Height:** 11 ft 1 in (3.38 m)
- **Wing area:** 235 ft² (21.83 m²)
- **Empty weight:** 7,040 lb (3,195 kg)
- **Loaded weight:** 9,500 lb (4,310 kg)
- **Max takeoff weight:** 11,500 lb (5,215 kg)
- **Powerplant:** 1× [Packard Merlin V-1650-9](#) liquid-cooled [supercharged](#) V-12, 1,380 hp (1,030 kW) military, 2,218 hp (1,655 kW) [WEP](#)

Performance

- **Maximum speed:** 487 mph (784 km/h) at 25,000 ft (7,620 m)
- **Range:** 1,160 mi (1,865 km) with external tanks
- **Service ceiling:** 41,600 ft (12,680 m)
- **Rate of climb:** 3,300 ft/min (16.8 m/s)
- **Wing loading:** 40.4 lb/ft² (197.4 kg/m²)
- **Power/mass:** 0.23 hp/lb (385 W/kg)

Armament

- 6 × 0.50 in (12.7 mm) Browning machine guns with 1,880 total rounds (400 rounds for each on the inner pair, and 270 rounds for each of the outer two pair), or 4 of the same guns with 1,600 total rounds (400 per gun).

P-51s in film

- *Ladies Courageous* (1944), starring [Loretta Young](#), the fictionalized story of the [Women's Auxiliary Ferrying Squadron](#) depicts a unit of female pilots during WW2 who primarily flew bombers from the factories to their final destinations. Reissued as *Fury in the Sky*, has early-model P-51As used mainly as backdrops.

- *Fighter Squadron*, (1948), depicted a P-47 unit based loosely on the 4th Fighter Group (sometimes known as "Blakeslee's Bachelors"). The 4th FG flew P-47s in combat from April 1943 to March 1944, when they converted to Mustangs. In this film, the German Bf 109s are actually painted P-51s. Much of what was depicted with the P-47s (e.g. the fighter escorts going all the way to Berlin, one pilot bailing out over enemy territory and his buddy landing to pick him up) actually happened with P-51s in real life.
- *Dragonfly Squadron* (1953): B-movie flick of Korean War flyers featuring the P-51.
- *Battle Hymn* (1956), is based on the real-life experiences of Lt Col [Dean E. Hess](#) (played by [Rock Hudson](#)) and his cadre of US Air Force instructors in the early days of the Korean War, training the pilots of the Republic of Korea Air Force and leading them in their baptism of fire in F-51D/Ks.
- *Lady Takes a Flyer* (1958), features a P-51D prominently in the final sequence when [Lana Turner](#) (as Magie Colby) crashes dramatically at the end of a perilous ferry flight to England.
- *Cloud Dancer* (1980): a melodramatic tale of aerobatic flyers includes aerial sequences with a P-51.
- *Empire of the Sun* (1987): the [Steven Spielberg](#) film features a flight of three P-51Ds in a spectacular attack that destroys the Japanese airbase near Soochow Creek Internment Camp, wartime home to the story's protagonist, Jim Graham, played by [Christian Bale](#).
- *Memphis Belle* (1990): Based on the acclaimed Second World War documentary, the crew of the Memphis Belle, a B-17 bomber, have to make one final bombing raid over Europe before they complete their 25th mission and are able to return home. Five P-51D Mustangs serve as escorting fighters although they were not in the European theatre during the actual mission.
- *Tuskegee Airmen* (1995): The story of how a group of African American pilots overcame racist opposition to become one of the finest US fighter groups in World War II, utilizes the P-51 as their primary mount although the 99th Squadron would have used [P-39s](#) during their North African stint.
- *Saving Private Ryan* (1998): in Spielberg's film, two P-51Ds, engaged in the destruction of German Tiger I tanks, dramatically appear briefly at the end of the final battle in the fictional French town of Ramelle.
- Spielberg's television miniseries "[Band of Brothers](#)" (2001) also features the P-51.
- *Hart's War* (2002) includes two major scenes involving P-51s, one in which a German train carrying American prisoners of war (while not properly marked) is strafed by P-51s, and in a dogfight between a [332nd Fighter Group](#) P-51 and a [Bf 109](#) over the prisoner of war camp.
- *One Six Right* (2005) includes some scenes involving the P-51.

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