

Fighter aircraft



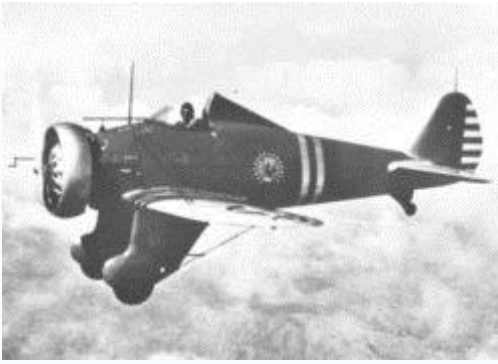
A **fighter aircraft** is a [military aircraft](#) designed primarily for attacking other [aircraft](#), as opposed to a [bomber](#), which is designed to attack ground targets, primarily by dropping [bombs](#). Fighters are comparatively small, fast, and highly maneuverable, and have been fitted with increasingly sophisticated tracking and weapons systems to intercept and attack other aircraft.

An [A-10 Thunderbolt II](#), [F-86 Sabre](#), [P-38 Lightning](#) and [P-51 Mustang](#) fly in formation during an air show at Langley Air Force Base, Virginia. The formation displays four generations of Air Force aircraft - 3 of them fighters

At one time, just before the opening of [World War II](#), there were two types of fighters. Smaller single-engine planes were used as [interceptors](#) and [day fighters](#), sometimes referred to as **pursuits**, while larger twin-engine designs were used as [heavy fighters](#). The latter role proved to be unworkable, or at least not enough effort was put into them to remain useful. They then found themselves being converted to an ever-growing list of secondary roles, including [strike fighters](#), [bomber destroyers](#) and [night fighters](#), where their two engines gave them the increased payload needed to fill these roles.

As the performance of [aircraft engines](#) improved, notably with the [jet engine](#) in the 1960s, the need for different designs gradually disappeared. First the interceptor, bomber destroyer and night fighter designs merged into a single aircraft class. Later advances in targeting systems and the ever-increasing payloads meant that modern fighters can carry a load as large as the biggest WWII bombers, eliminating many of the bomber and [ground attack aircraft](#) roles as well. Today there are typically only two general fighter designs, smaller planes which make up the backbone of most [air forces](#), and larger designs that operate at longer distances, sometimes referred to as [interdictors](#).

Fighter aircraft were developed during [World War I](#), and used to hunt down enemy [reconnaissance](#) aircraft and [balloons](#). Engine power was so limited that they were barely able to lift themselves, but by the end of the war they had become one of the primary designs in the inventory.



An early fighter: the Boeing [P-26 Peashooter](#) which first flew in 1932

By the time of [World War II](#) fighter aircraft were extremely important. Control of the sky, or [air superiority](#), had become a vital part of military doctrine, notably in the case of the [blitzkrieg](#). The [Luftwaffe](#)'s inability to destroy the British fighter squadrons during the [Battle of Britain](#) made the seaborne invasion of Britain infeasible. As engine power grew, existing designs were increasingly used in other roles, with aircraft like the [Republic P-47](#) and [Hawker Typhoon](#) becoming celebrated attack aircraft.

[Messerschmitt](#) developed the first operational jet fighter, the [Me 262](#), proving to be significantly faster than conventional propeller-driven aircraft. In general terms the jets were untouchable as long as the pilot properly used his speed advantage. The Me 262 could simply fly away from defending fighters, or, in the hands of a more competent pilot, it could run down opposing fighters so quickly that opponents simply didn't have time to get out of the way of its guns. The Me 262 was little used, partly due to German fuel shortages. Nevertheless the plane clearly pointed to the end of the piston engine for fighters. [Britain's](#) [Gloster Meteor](#), which had been in development since the late 1930's, entered production soon after, spurred by reports of the German jets, and by the end of the war almost all work on piston powered fighters had ended. The early jet engines, especially the German designs, were far from perfect. Their operational lifespans could be measured primarily in hours; the engines themselves were fragile and balky, and power could only be adjusted slowly. Upon learning this last, the US Army Air Force took to assaulting German jet fighters while landing, when the pilots had little fuel remaining and their engines were at a near-stall power setting.

In the 1950s, jet-engined fighter planes capable of [supersonic](#) flight were developed. Power remained low, and the designs were dedicated to specific roles. Any particular air force might deploy three or four designs, day fighters, night fighters, attack planes, etc.

These distinctions continued to erode during the 1960s, not always with good results. The [McDonnell F-4 Phantom II](#) was designed as a pure interceptor for the [US Navy](#), but became a highly successful multi-role aircraft for the [US Air Force](#) and [US Marine Corps](#) as well as many other nations. Only a few years later, however, the [General Dynamics F-111](#), intended as a multi-role, multi-service fighter, proved to be a near-disaster, so ineffectual as a fighter that the Navy version was abandoned, and the type eventually matured as [bomber](#). Budgetary and political realities have increasingly forced the development of multi-role rather than specialized aircraft, but with some notable exceptions (like the [F/A-18 Hornet](#)), the demands of a good attack aircraft and a good air combat fighter remain somewhat mutually exclusive.

Current developments include reducing the [radar](#) visibility of fighters--techniques known as [stealth](#)--as well as increased range at supersonic speeds ([supercruise](#)) and better maneuverability. Ultimately, most authorities believe that there is no future for crewed fighter planes as they will eventually be replaced by [Unmanned Combat Air Vehicles](#) (UCAV) . However, the world's major air forces are all in the process of replacing their craft with a new generation of planes, so the transition is likely some time away yet.

Historical overview

Below is a list of significant fighter aircraft sorted by general design era. Since the 1990s, jet fighters have occasionally been sorted into "generations," with the newest designs representing the "fifth generation."

1914-1918



Germany's Fokker Dr.I

Although aircraft have been used in the [Italo-Turkish War](#), actual aerial combat first appeared in [World War I](#).

Combat between aircraft has its origins in encounters between opposing scout aircraft early in WWI. Combatants at first used small-arms, bricks, and grappling hooks to attack each other. Later on, observers used swiveling [machine gun](#) mounts installed on aircraft. Machine guns were also mounted above the upper wings of [biplanes](#), out of the propeller arc. French aviator [Roland Garros](#) was decorated for his innovative machine gun attachment to his plane, which fired bullets through the propeller fitted with steel deflecting plates. Although the design eventually fell into German hands, Garros used it to shoot down three enemy aircraft. Inspired by this, [Anthony Fokker](#)'s team invented the [interrupter gear](#), which enabled the widespread design of single-seat fighters.

- Significant aircraft:
 - [Nieuport](#)
 - [Rumpler Taube](#)
 - [Fokker](#): [Fokker Dr.I](#), [Fokker D.VII](#)
 - [S.P.A.D.](#), or "[Spad](#)"
 - [Sopwith Camel](#)
 - [RAE SE5a](#)
 - [Albatros](#)

1919-1938



A Hawker Fury in Yugoslav service.

During the interwar period fighter design evolved from the fabric and wood bi-planes of the Great War into metal-skinned monoplanes with enclosed cockpits and retractable landing gear.

In the last few years leading up to the Second World War, the fighters that would become famous during the Battle of Britain were developed - the [Supermarine Spitfire](#), [Hawker Hurricane](#) and [Messerschmitt Bf 109](#). The latter would be tested in the [Spanish Civil War](#).

Biplanes

- [Bristol Bulldog](#)
- [Gloster Gladiator](#) - operated in the [Mediterranean](#) during WW2
- [Hawker Fury](#) - served in Spanish Civil War

Monoplanes

- [Boeing P-26](#)
- [Brewster Buffalo](#)
- [Polikarpov I-16](#)

1939-1945



A Supermarine Spitfire.

Fighter aircraft of the second world war featured all the innovations of the 1930s. Piston-engined fighters continued to be refined and developed with increasing performance and capabilities, up until the advent of [jet aircraft](#) such as the [Messerschmitt Me 262](#) and [Gloster Meteor](#).

Many of these fighters would do over 400 mph (600 km/h) in level flight, and were fast enough in a dive that they started encountering the transonic buffeting experienced near Mach 1, occasionally breaking up in flight due to the heavy load placed on an aircraft near the so-called "sound barrier". Dive brakes were developed late in WW II to minimize these problems and restore control to the pilots.

- Australia
 - [CAC Boomerang](#)
- France
 - [Dewoitine D.520](#)
 - See also [List of aircraft of the Armée de l'Air, World War II](#)
- Germany
 - [Messerschmitt Bf 109](#)
 - [Messerschmitt Bf 110](#)
 - [Focke-Wulf Fw 190](#)
 - [Messerschmitt Me 163](#)
 - [Messerschmitt Me 262](#)
 - [Heinkel He 162](#)
 - See also [List of aircraft of the Luftwaffe, World War II](#)
- Italy
 - [Fiat CR.42](#)
 - [Fiat G.50](#)
 - [Fiat G.55](#)
 - [Macchi C.200](#)
 - [Macchi C.202](#)
 - [Macchi C.205](#)
- Japan
 - [Kawanishi N1K-J](#)
 - [Mitsubishi Zero](#)
 - See also [List of military aircraft of Japan](#)
- Latvia
 - [VEF Irbitis I-16](#)
- Poland
 - [PZL P.7a](#)
 - [PZL P.11c](#)
- Soviet Union
 - [Mikoyan-Gurevich MiG-3](#)
 - [Lavochkin La-5](#)
 - [Yakovlev Yak-9](#)
- United Kingdom
 - [Supermarine Spitfire](#)
 - [Hawker Hurricane](#)
 - [Hawker Typhoon](#)
 - [Hawker Tempest](#)
 - [De Havilland Mosquito](#)
 - [Gloster Meteor](#)
- United States
 - [Vought F4U Corsair](#)
 - [Grumman F6F Hellcat](#)

- [Lockheed P-38 Lightning](#)
 - [Bell P-39 Airacobra](#)
 - [Curtiss P-40](#)
 - [Republic P-47 Thunderbolt](#)
 - [North American P-51 Mustang](#)
 - See also [List of aircraft of the USAAF, World War II](#)
- Sweden
 - [Saab J21](#)
 - [FFVS J22](#)
- Yugoslavia
 - [Rogozarski IK-3](#)

1945-1952



A MiG-15 in [Polish](#) markings.

Although capable of greater speeds, "first generation" fighter jets performed much like previous piston-engined fighters, and were used as such. They typically did not operate at [supersonic](#) speeds, and usually lacked radar. Fighters of this era were armed primarily with machine guns, and unguided rockets. Technology such as [swept wings](#), [ejector seats](#), and all-moving [tailplanes](#) became commonplace during these years.

- U.S.
 - [Lockheed P-80 Shooting Star](#)
 - [Republic F-84 Thunderjet](#)
 - [North American F-86 Sabre](#)
 - [Northrop F-89J Scorpion](#)
 - [Lockheed F-94C Starfire](#)
 - [Grumman Panther](#)
 - [Grumman Cougar](#)
 - [McDonnell XF-85 Goblin](#)
- U.S.S.R.
 - [Mikoyan-Gurevich MiG-15](#)
 - [Mikoyan-Gurevich MiG-17](#)
- United Kingdom
 - [de Havilland Vampire](#)
 - [Hawker Hunter](#)
 - [Gloster Javelin](#)
- France
 - [Dassault MD 450](#)
 - [Dassault Mystere IVB](#)
 - [Dassault MD 550 Mirage I](#)
- Sweden
 - [Saab Tunnan](#)

- [Canada](#)
 - [Avro CF-100](#)

[\[edit\]](#)

1953-1967



A "second generation" North American F-100 Super Sabre.



A "third generation" F-4 Phantom II.

During this era, high-performance [supersonic](#) and [transsonic fighters](#) became the norm. Specialized fighter designs were still common, ranging from [fighter-bombers](#) such as the [F-105](#) and the [Sukhoi Su-7](#) to interceptors such as the [English Electric Lightning](#) and [Mikoyan-Gurevich MiG-25](#).

Interceptor aircraft often sacrificed agility and payload in favor of speed and [rate of climb](#). Since [guided missiles](#) were seen to be the wave of the future, many fighters of this period lacked gun armament and the maneuverability needed to [dogfight](#). In order to achieve supersonic speeds, most aircraft of this era were designed (and in the case of the [Republic F-105](#) and [Convair F-102](#), redesigned) with [area ruled](#) fuselages. Early designs using area-rule often have "[Coke](#) bottle curves" in the fuselage. Fighters listed here are mostly of the "second generation."

- U.S.
 - [Chance-Vought F-8 Crusader](#)
 - [North American F-100 Super Sabre](#)
 - Republic [F-105 Thunderchief](#)
 - Convair [F-102 Delta Dagger](#)
 - Convair [F-106 Delta Dart](#)
 - Douglas [F5D Skylancer](#)
 - Douglas [F4D Skyray](#)
 - Northrop [F-5 Freedom Fighter](#)
 - Lockheed [F-104 Starfighter](#)
 - [F-111 Aardvark](#)
 - [F-101 Voodoo](#)
 - [F-4 Phantom II](#)

- U.S.S.R
 - [Mikoyan-Gurevich MiG-19](#)
 - [Mikoyan-Gurevich MiG-21](#)
 - [Mikoyan-Gurevich MiG-25](#)
 - [Sukhoi Su-7](#)
 - [Sukhoi Su-15](#)
 - [Tupolev Tu-28](#)
- United Kingdom
 - [English Electric Lightning](#)
 - [De Havilland Sea Vixen](#)
- [France](#)
 - [Dassault Super Étendard](#)
 - [Dassault Mirage III](#)
- Canada
 - [Avro Arrow](#)
- Sweden
 - [Saab Lansen](#)
 - [Saab Draken](#)
- [India](#)
 - [HAL HF-24 Marut](#)

1967-1990



A "fourth generation" F-15 Eagle.

When dedicated designs showed deficiencies in the late 1960s, most fighters designed since then were conceived with versatility in mind. New technology such as [swing-wings](#), [smart weapons](#), and more powerful engines enabled airframes to be designed with more flexibility. Fighters such as the [MiG-23](#) and [Panavia Tornado](#) have versions specially suited for various roles,

while the multirole warplanes including the [F/A-18 Hornet](#) and [Dassault Mirage 2000](#) designed to be just as capable of ground attack as they are for aerial combat. As development costs increased, economics further pushed the development for multirole aircraft.

Unlike interceptors of the previous era, most modern air-superiority fighters have been designed to be agile dog-fighters. [Fly-by-wire](#) controls and [relaxed stability](#) is common among modern fighters. Aircraft here make up most of the "third" and "fourth generations" of fighter jets.

- U.S.
 - [F-14 Tomcat](#)
 - [F-15 Eagle](#)
 - [F-16 Fighting Falcon](#)
 - [F-117 Nighthawk](#) (Note: designated a fighter; in design and usage much more a tactical bomber)
 - [F/A-18 Hornet](#)
 - [F-20 Tigershark](#)
- U.S.S.R./Russia
 - [Mikoyan MiG-23](#)
 - [Mikoyan MiG-27](#)
 - [Mikoyan MiG-29](#)
 - [Mikoyan MiG-31](#)
 - [Sukhoi Su-24](#)
 - [Sukhoi Su-27](#)
- France
 - [Dassault Mirage F1](#)
 - [Dassault Mirage 2000](#)
- United Kingdom
 - [Hawker Siddeley Harrier](#)
- Sweden
 - [Saab Viggen](#)
- Israel
 - [IAI Kfir](#)
- China
 - [J-7](#)
 - [J-8](#)
- International
 - [Panavia Tornado](#)

1991-Present



India's "4.5th generation" Su-30 MKI



The F-35 Joint Strike Fighter, a "fifth generation" jet fighter.

The current cutting edge of fighter design combines previous emphasis on versatility with new developments such as [glass cockpits](#), [thrust vectoring](#), [composite materials](#), [supercruise](#), and [stealth technology](#). With the exception of the [F/A-18E/F Super Hornet](#), none of these fighters have been tested in combat to date. Fighters listed here are representative of the 4.5th and 5th generation, including the [PAK FA](#), the first fighter to be assigned one(fifth).

- U.S.
 - [F/A-18E/F Super Hornet](#)
 - [F/A-22 Raptor](#)
- Russia
 - [Mikoyan Project 1.44](#)
 - [Mikoyan MiG-35](#) (MiG-29 with thrust vectoring)
 - [Sukhoi Su-37](#)
- India
 - [HAL Tejas](#)
 - [Su-30MKI](#) (from Russia)
- France
 - [Dassault Rafale](#)
 - [Dassault Neuron](#)
- Sweden
 - [Saab Gripen](#)
- China
 - [J-10](#)
 - [J-XX](#)
 - [FC-1](#)
 - [JH-7](#)
- Japan
 - [Mitsubishi F-2](#)
- International
 - [Eurofighter Typhoon](#) (U.K., Germany, Italy and Spain)
 - [F-35 Joint Strike Fighter](#) (U.S. and U.K.)
 - [Sukhoi Su-47](#) (Russia and India)
 - [JF-17](#) (China and Pakistan)

See also: [Military aircraft list](#), [Comparison of 21st century fighter aircraft](#)