

North American F-86A Sabre

F-86 Sabre



A North American F-86 during the Oshkosh Air Show

Role	Fighter aircraft
National origin	United States
Manufacturer	North American Aviation
First flight	1 October 1947
Introduction	1949, with USAF
Retired	1994, with Bolivia
Primary users	United States Air Force Japan Air Self-Defense Force Spanish Air Force Republic of Korea Air Force
Number built	9,860
Unit cost	US\$219,457 (F-86E)
Developed from	North American FJ-1 Fury
Variants	North American F-86D Sabre Canadair Sabre CAC Sabre North American FJ-2/-3 Fury North American FJ-4 Fury
Developed into	North American YF-93

The **North American F-86 Sabre** (sometimes called the **Sabrejet**) was a transonic jet fighter aircraft. Produced by North American Aviation, the Sabre is best known as America's first swept wing fighter which could counter the similarly-winged Soviet MiG-15 in high speed dogfights over the skies of the Korean War. Considered one of the best and most important fighter aircraft in the Korean War, the F-86 is also rated highly

in comparison with fighters of other eras. Although it was developed in the late 1940s and was outdated by the end of the 1950s, the Sabre proved versatile and adaptable, and continued as a front-line fighter in numerous air forces until the last active operational examples were retired by the Bolivian Air Force in 1994.

Its success led to an extended production run of more than 7,800 aircraft between 1949 and 1956, in the United States, Japan and Italy. Variants were built in Canada and Australia. The Canadair Sabre added another 1,815 airframes, and the significantly redesigned CAC Sabre (sometimes known as the Avon Sabre or CAC CA-27), had a production run of 112. It was by far the most-produced Western jet fighter, with total production of all variants at 9,860 units.

The United States Air Force's Strategic Air Command had F-86 Sabres in service from 1949 through 1950. The F-86s were assigned to the 22nd Bomb Wing, the 1st Fighter Wing and the 1st Fighter Interceptor Wing. The F-86 was the primary U.S. air combat fighter during the Korean War, with significant numbers of the first three production models seeing combat.



Jackie Cochran in the cockpit of the Canadair Sabre with Chuck Yeager.

Breaking sound barrier and other records

The F-86A set its first official world speed record of 670 miles per hour (1,080 km/h) in September 1948.

Several people involved with the development of the F-86, including the chief aerodynamicist for the project and one of its other test pilots, claimed that North American test pilot George Welch had unofficially broken the sound barrier in a dive with the XP-86 while on a test flight on 1 October 1947. Chuck Yeager broke the sound barrier on 14 October 1947 in the rocket-propelled Bell X-1 during level flight, making it the first true supersonic aircraft. Five years later, on 18 May 1953, Jacqueline Cochran became the first woman to break the sound barrier, flying a "one-off" Canadian-built F-86 Sabre Mk 3, alongside Chuck Yeager.



Sabre at NASM in livery of 4th Fighter-Interceptor Wing. The aircraft is displayed opposite its Soviet contemporary, the MiG-15.

The F-86 was produced as both a fighter-interceptor and fighter-bomber. Several variants were introduced over its production life, with improvements and different armament implemented (see below). The XP-86 was fitted with a General Electric J35-C-3 jet engine that produced 4,000 lbf (18 kN) of thrust. This engine was built by GM's Chevrolet division until production was turned over to Allison. The General Electric J47-GE-7 engine was used in the F-86A-1 producing a thrust of 5,200 lbf (23 kN) while the General Electric J73-GE-3 engine of the F-86H produced 9,250 lbf (41 kN) of thrust. The fighter-bomber version (F-86H) could carry up to 2,000 lb (907 kg) of bombs, including an external fuel-type tank that could carry napalm. Unguided 2.75 in (70 mm) rockets were used on some of the fighters on training missions, but 5 inch (127 mm) rockets were

later carried on combat operations. The F-86 could also be fitted with a pair of external jettisonable jet fuel tanks (four on the F-86F beginning in 1953) that extended the range of the aircraft. Both the interceptor and fighter-bomber versions carried six 0.50 in (12.7 mm) M3 Browning machine guns with electrically-boosted feed in the nose (later versions of the F-86H carried four 20 mm (0.79 in) cannons instead of machine guns). Firing at a rate of 1,200 rounds per minute, the .50 in (12.7 mm) guns were harmonized to converge at 1,000 ft (300 m) in front of the aircraft, using armor-piercing (AP) and armor-piercing incendiary (API) rounds with one armor-piercing incendiary tracer (APIT) for every five AP or API rounds. The API rounds used during the Korean War contained magnesium, which were designed to ignite upon impact but burned poorly above 35,000 ft (11,000 m) as oxygen levels were insufficient to sustain combustion at that height. Initial planes were fitted with the Mark 18 manual-ranging computing gun sight. The last 24 F-86A-5-Nas and F-86E were equipped with the A-1CM gun sight-AN/APG-30 radar which used radar to automatically compute the range of a target. This would later prove to be a significant advantage against MiG opponents over Korea.

The F-86 entered service with the United States Air Force in 1949, joining the 1st Fighter Wing's 94th Fighter Squadron "Hat-in-the-Ring" and became the primary air-to-air jet fighter used by the Americans in the Korean War. While earlier straight-winged jets such as the F-80 and F-84 initially achieved air victories, when the swept wing Soviet Mikoyan-Gurevich MiG-15 was introduced in November 1950, it immediately outperformed all UN-based aircraft. In response, three squadrons of F-86s were rushed to the Far East in December. Early variants of the F-86 could not outturn, but they could outdrive the MiG-15, and the MiG-15 was superior to the early F-86 models in ceiling, acceleration, rate of climb, and zoom. With the introduction of the F-86F in 1953, the two aircraft were more closely matched, with many combat-experienced pilots claiming a marginal superiority for the F-86F. MiGs flown from bases in Manchuria by Red Chinese, North Korean, and Soviet VVS

pilots were pitted against two squadrons of the 4th Fighter-Interceptor Wing forward-based at K-14, Kimpo, Korea.

Many of the American pilots were experienced World War II veterans, while the North Koreans and the Chinese lacked combat experience, thus accounting for much of the F-86's success. However, United Nations pilots suspected many of the MiG-15s were being flown by experienced Soviet pilots who also had combat experience in World War II. Former Communist sources now acknowledge Soviet pilots initially flew the majority of MiG-15s that fought in Korea, and dispute that more MiG-15s than F-86s were shot down in air combat. Later in the war, North Korean and Chinese pilots increased their participation as combat flyers. The North Koreans and their allies periodically contested air superiority in MiG Alley, an area near the mouth of the Yalu River (the boundary between Korea and China) over which the most intense air-to-air combat took place. The F-86E's all-moving tail plane was more effective at speeds near or exceeding the speed of sound, so the plane could safely recover from a sonic dive, where the MiG-15 could not safely exceed Mach 0.92, an important advantage in near-sonic air combat. Far greater emphasis has been given to the training, aggressiveness and experience of the F-86 pilots. American Sabre pilots were trained at Nellis, where the casualty rate of their training was so high they were told, "If you ever see the flag at full staff, take a picture." Despite rules-of-engagement to the contrary, F-86 units frequently initiated combat over MiG bases in the Manchurian "sanctuary." The hunting of MiGs in Manchuria would lead to many reels of gun camera footage being 'lost' if the reel revealed the pilot had violated Chinese airspace.



51st FIG "Checkertails" at K-13 air base (Suwon, South Korea) are prepared for a mission.

The needs of combat operation balanced against the need to maintain an adequate force structure in Western Europe led to the conversion of the 51st Fighter-Interceptor Wing from the F-80 to the F-86 in December 1951. Two fighter-bomber wings, the 8th and 18th, converted to the F-86F in the spring of 1953. No. 2 Squadron, South African Air Force also distinguished itself flying F-86s in Korea as part of the 18 FBW.

By the end of hostilities, F-86 pilots were credited with shooting down 792 MiGs for a loss of only 78 Sabres, a victory ratio of 10:1. More recent research by Dorr, Lake and Thompson has claimed the actual ratio is closer to 2:1. The Soviets claimed to have downed over 600 Sabres, together with the Chinese claims, although these are thought by some to be an over count as they cannot be reconciled with the 78 Sabres recorded as lost by the US. A recent RAND report made reference to "recent scholarship" of F-86 v MiG-15 combat over Korea and concluded that the actual kill:loss ratio for the F-86 was 1.8:1 overall and likely closer 1.3:1 against MiGs flown by Soviet pilots. Of the 41 American pilots who earned the designation of ace during the Korean War, all but one flew the F-86 Sabre, the exception being a Navy Vought F4U Corsair night fighter pilot.



MAPS F-86A – Serial Number 48-0263

The MAPS F-86A (Serial # 48-0263) was manufactured at the North American Aviation plant in Inglewood, California and delivered to the USAF on August 4, 1949.

The aircraft's first assignment was with the 4th Fighter-Interceptor Wing of the Continental Air Command (CAC) located at Langley Air Force Base in Virginia. In September of 1949, the aircraft was re-assigned to the 2757th Air Base Squadron which was part of the Air Material Command (AMC) located in Cleveland, Ohio.

During this initial assignment, the F-86A participated in the Thompson Trophy Race (Jet Division) at the National Air Races held in Cleveland, Ohio on September 3 – 5, 1949. The winner of the race was Captain Bruce Cunningham, flying F-86A serial number 48-263.



Four F-86 “A” models were entered in the race. One of the four was unable to start do to engine trouble. The other three flew the three mile course at such high speed that it was estimated that they actually flew 25 miles each lap.

During the second lap, Captain Vernon Henderson pulled out of the race after a high “G” turn broke the bolts holding the seat in place. Captain Henderson was able to control the jet while in a crouching position to make a safe landing.

Captain Martin Johansen also had a problem when a 10 X 16 inch inspection door flew open on the left wing causing considerable drag. Johansen had just taken the lead when a check of his fuel supply required him to throttle back thereby losing the lead. When he landed, he did not have enough fuel to taxi to the hangars.

Captain Cunningham was doing well until he made the last high speed turn. That is when most of his elevator was torn off causing him to consider ejecting.



Tail of Capt. Cunningham's F-86A
(Note missing elevator)

Place	Pilot	Aircraft	Speed
1	Capt. Bruce Cunningham	F-86A	586.173
2	Capt. Martin Johansen	F-86A	580.152 **
*	Capt. Vern Henderson	F-86A	

* Out 2nd lap seat broke

** Capt. Johnson's fastest lap 635.444 mph



Captain Bruce Cunningham

In May of 1950, 48-0263 was returned to the 4th Fighter-Interceptor Wing (CAC), Langley, Virginia. In August of 1950, the aircraft was again moved, this time to the 336th Fighter-Interceptor Squadron (CAC) located at Dover Air Force Base (AFB), Delaware.

The aircraft began its overseas duty with an assignment in November of 1950 to the Sacramento Air Material Area at McClelland AFB in California. Its next assignment was again with the 4th Fighter-Interceptor Wing (now part of the Far East

Air Forces) stationed at Johnson Air Base in Japan. This assignment started in December of 1950. During the next two years, 48-0263 was deployed to Taegu Air Base, Suwon Air Base and Kimpo Air Base all in the Republic of Korea. During one of these deployments, there is a record of damage to this aircraft. On September 12, 1951, while assigned to the 334th Fighter-Interceptor Squadron of the 4th FIW the aircraft, then piloted by Thiel M. Reese, was damaged during landing due to a mechanical failure at Kimpo Air Base. In May of 1952, the aircraft was reassigned to the 6400th Air Depot Wing of the Far East Air Forces in Kisarazu Air Base in Japan.

Upon return to the United States in May of 1952, the F-86A was initially returned to North American Aviation in Fresno, California for upgrades. In January of 1953, the aircraft was assigned to the 93rd Fighter-Interceptor Squadron of the Air Defense Command (ADC) at Kirtland AFB in New Mexico. In August of 1953 the airframe was flown to the Sacramento Air Material Area at McClelland AFB. The final active duty assignment for this aircraft was in December of 1953 with the 15th Fighter-Interceptor Squadron (ADC) at Davis-Monthan AFB in Arizona.

48-0263 was transferred to the Air National Guard in December of 1953 and assigned to the 194th Fighter-Bomber Squadron of the California Air National Guard, Haywood, California. In June of 1954, the aircraft was transferred to the 196th Fighter-Bomber Squadron of the California Air National Guard stationed at Ontario.

In February of 1957, 48-0263 was dropped from the inventory and transferred to the New England Air Museum at Bradley International Airport in Windsor Locks, Connecticut. The air frame was transferred to the United States Air Force Museum in Dayton, Ohio in May of 2004 and placed into storage.

The F-86A arrived at the MAPS Air Museum on April, 8, 2014 on loan from the Air Force Museum.

Variants North American F-86

XF-86

Three prototypes, originally designated **XP-86**, North American model NA-140

YF-86A

This was the first prototype fitted with a General Electric J47 turbojet engine.

F-86A

554 built, North American model NA-151 (F-86A-1 block and first order of A-5 block) and NA-161 (second F-86A-5 block)



Preserved airworthy F-86A Sabre at Kemble Air Day 2008, England.

DF-86A

A few F-86A conversions as drone directors

RF-86A

11 F-86A conversions with three cameras for reconnaissance

F-86B

188 ordered as upgraded A-model with wider fuselage and larger tires but delivered as F-86A-5, North American model NA-152

F-86C

Original designation for the YF-93A, two built, 48-317 & 48-318, order for 118 cancelled, North American model NA-157

F-86E

Improved flight control system and an "all-flying tail" (This system changed to a full power-operated control with an "artificial feel" built into the aircraft's controls to give the pilot forces on the stick that were still conventional, but light enough for superior combat control. It improved high speed maneuverability); 456 built, North American model NA-170 (F-86E-1 and E-5 blocks), NA-172, essentially the F-86F airframe with the F-86E engine (F-86E-10 and E-15 blocks); 60 of these built by Canadair for USAF (F-86E-6)

F-86E(M)

Designation for ex-RAF Sabres diverted to other NATO air forces

QF-86E

Designation for surplus RCAF Sabre Mk. Vs modified to target drones

F-86F

Up-rated engine and larger "6-3" wing without leading edge slats, 2,239 built; North American model NA-172 (F-86F-1 through F-15 blocks), NA-176 (F-86F-20 and -25 blocks), NA-191 (F-86F-30 and -35 blocks), NA-193 (F-86F-26 block), NA-202 (F-86F-35 block), NA-227 (first two orders of F-86F-40 blocks comprising 280 aircraft which reverted to leading edge wing slats of an improved design), NA-231 (70 in third F-40 block order), NA-238 (110 in fourth F-40 block order), and NA-256 (120 in final F-40 block order); 300 additional airframes in this series assembled by Mitsubishi in Japan for Japanese Air Self-Defense Force. Sabre Fs had much improved high speed agility, coupled with a higher landing speed of over 145 mph (233 km/h). The F-35 block had provisions for a new task: the nuclear tactical attack with one of the new small "nukes" ("second

generation" nuclear ordnance). The F-40 had a new slatted wing, with a slight decrease of speed, but also a much better agility at high and low speed with a landing speed reduced to 124 mph (200 km/h). The USAF upgraded many of previous F versions to the F-40 standard.

F-86F-2

Designation for 10 aircraft modified to carry the M39 cannon in place of the M3 .50 caliber machine gun "six-pack". Four F-86E and six F-86F were production-line aircraft modified in October 1952 with enlarged and strengthened gun bays, then flight tested at Edwards Air Force Base and the Air Proving Ground at Eglin Air Force Base in November. Eight were shipped to Japan in December, and seven forward-deployed to Kimpo Airfield as "Project GunVal" for a 16-week combat field trial in early 1953. Two were lost to engine compressor stalls after ingesting excessive propellant gases from the cannons.

QF-86F

About 50 former Japan Self-Defense Forces (JASDF) F-86F airframes converted to drones for use as targets by the U.S. Navy

RF-86F

Some F-86F-30s converted with three cameras for reconnaissance; also 18 Japan Self-Defense Forces (JASDF) aircraft similarly converted

TF-86F

Two F-86F converted to two-seat training configuration with lengthened fuselage and slatted wings under North American model NA-204



TF-86F

YF-86H

Extensively redesigned fighter-bomber model with deeper fuselage, uprated engine, longer wings and power-boosted tail plane, two built as North American model NA-187

F-86H

Production model, 473 built, with Low Altitude Bombing System (LABS) and provision for nuclear weapon, North American model NA-187 (F-86H-1 and H-5 blocks) and NA-203 (F-86H-10 block)



F-86H s/n 53-1308, Restorations, Wings Museum, Denver, CO.

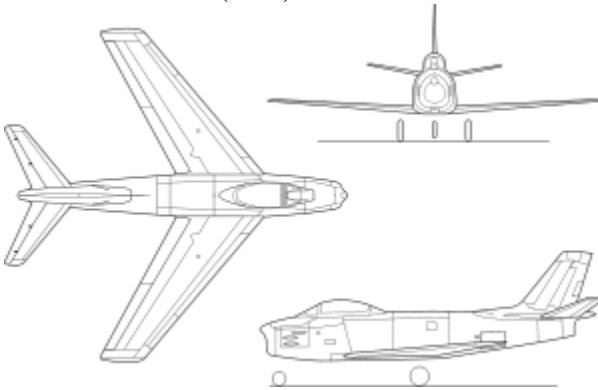
QF-86H

Target conversion of 29 airframes for use at United States Naval Weapons Center

F-86J

Single F-86A-5-NA, 49-1069, flown with Orenda turbojet under North American model NA-167 – same designation reserved for A-models flown with the Canadian engines but project not proceeded with.

General characteristics (F-86)



- **Crew:** 1
- **Length:** 40 ft 4 in (11.4 m)
- **Wingspan:** 39 ft 1 in (11.3 m)
- **Height:** 15 ft 0 in (4.5 m)
- **Wing area:** 313.4 sq ft (29.11 m²)
- **Empty weight:** 13,822 lb (5,046 kg)
- **Loaded weight:** 15,198 lb (6,894 kg)
- **Max takeoff weight:** 18,152 lb (8,234 kg)
- **Power plant:** 1 × General Electric J47-GE-33 turbojet, 5,500 lbf (maximum thrust at 7.950 rpm for five min) (26.3 kN)
- **Fuel provisions** Internal fuel load: 437 gallons (1,650 l), Drop tanks: 2 x 200 gallons (756 l) JP-4 fuel

Performance

- **Maximum speed:** 687 mph (1,106 km/h) at sea level at 14,212 lb (6,447 kg) combat weight also reported 678 mph (1,091 km/h) and 599 at 35,000 feet

(11,000 m) at 15,352 pounds (6,960 kg). (597 knots, 1,105 km/h at 6446 m, 1,091 and 964 km/h at 6,960 m.)

- **Stall speed:** 124 mph (power off) (108 kt, 200 km/h)
- **Range:** 1,525 mi, (1,753 NM, 2,454 km)
- **Service ceiling:** 49,600 ft at combat weight (15,100 m)
- **Rate of climb:** 9,000 ft/min at sea level (45.72 m/s)
- **Wing loading:** 49.4 lb/ft² (236.7 kg/m²)
- **Lift-to-drag:** 15.1
- **Thrust/weight:** 0.38
- **Landing ground roll:** 2,330 ft, (710 m)
- **Time to altitude:** 5.2 min (clean) to 30,000 ft (9,100 m)

Armament

- **Guns:** 6 × 0.50 in (12.7 mm) M2 Browning machine guns (1,602 rounds in total)
- **Rockets:** variety of rocket launchers; e.g.: 2 × Matra rocket pods with 18× SNEB 68 mm rockets each
- **Bombs:** 5,300 lb (2,400 kg) of payload on four external hard points, bombs are usually mounted on outer two pylons as the inner pairs are wet-plumbed pylons for 2 × 200 gallons drop tanks to give the Sabre a useful range. A wide variety of bombs can be carried (max standard load out being 2 × 1,000 lb bombs plus two drop tanks); napalm bomb canisters and can include a tactical nuclear weapon.