



- *Introduction*

The F-5 is a supersonic fighter combining low cost, ease of maintenance, and great versatility. More than 2,000 F-5 aircraft have been procured by the USAF for use by allied nations. The F-5, which resembles the USAF Northrop T-38 trainer, is suitable for various types of ground-support and aerial intercept missions, including those which would have to be conducted from sod fields in combat areas.

The F-5 first flew on July 30, 1959 and deliveries to the Tactical Air Command for instructing foreign pilots began in April 1964. Pilots from Iran and South Korea were the first to be trained in the F-5, followed by pilots from Norway, Greece, Taiwan, Spain, and other Free World nations which have adopted the F-5. In 1966-67, a USAF squadron of F-5C's flew combat missions in Vietnam for operational evaluation purposes.

The F-5 Freedom Fighter product provides you with an enjoyable flight model and numerous external configurations to suit your flying needs as well as a fully functioning 3D virtual cockpit.

Featuring the latest in graphic effects and XML gauge technology, we are sure that the F-5 will provide you with hours of enjoyable flying.

If you have any requests or questions regarding the DSB Design F-5 Freedom Fighter, or other products available from DSB Design, please drop us an e-mail at [support@dsbdesign.com](mailto:support@dsbdesign.com) or alternately you can visit our forums at <http://www.dsbdesign.com/forum>

David Brice  
Product Manager  
DSBdesign  
<http://www.dsbdesign.com>

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- *Credits*

Project Manager _____	David Brice
Visual Models _____	David Brice, Darren Taylor
Aircraft Textures _____	David Brice, Jens-Ole Kjoelberg, Dyl Roberts, Ken Scott, Dag Roger Strangeland
Gauges Programming _____	David Brice, Herbert Pralle
Panel Textures _____	David Brice, Herbert Pralle
Specialist XML Gauges _____	Rob Barendregt
Flight Dynamics _____	David Brice, David Friswell
Beta Testing _____	Jon Watkins, Shane Shrenaski, Chris Larvin
Manual _____	David Brice

## *Northrop F-5 Freedom Fighter History*

### Origins

The F-5 is a lightweight, easy-to-fly, simple-to-maintain, and (relatively) cheap supersonic fighter. In configuration the F-5 is a low-wing monoplane equipped with an all-moving horizontal tail mounted in the low position; the fuselage is carefully contoured in accordance with the transonic area rule.

Small side-mounted inlets supply air for the two General Electric J85 afterburning turbojet engines. The 4.8-percent-thick wing has 24 sweepback at the quarter chord line. The wing trailing edge is nearly straight, giving a trapezoidal shape to the platform. Lateral control is provided by small ailerons located near mid semi span; single-slotted high-lift flaps extend from the inboard end of the ailerons to the sides of the fuselage.

Leading-edge flaps are used to improve manoeuvring performance. (These flaps are not incorporated in the wings of the T-38.) Speed brakes are mounted on the bottom of the fuselage. Turning performance is enhanced by an aileron-rudder interconnect system, and handling characteristics are improved by artificial damping about the pitch and yaw axes. The F-5 is reported to have good handling characteristics and, in contrast with the F-4, does not have a propensity for entering unintentional spins.

The development of the Northrop F-5 began in 1954 when a Northrop team toured Europe and Asia to examine the defence needs of NATO and SEATO countries. A 1955 company design study for a lightweight supersonic fighter that would be relatively inexpensive, easy to maintain, and capable of operating out of short runways. The Air Force did not initially look favourably upon the proposal, since it did not need for a lightweight fighter. However, it did need a new trainer to replace the Lockheed T-33, and in June of 1956 the Air Force announced that it was going to acquire the trainer version, the T-38 Talon.

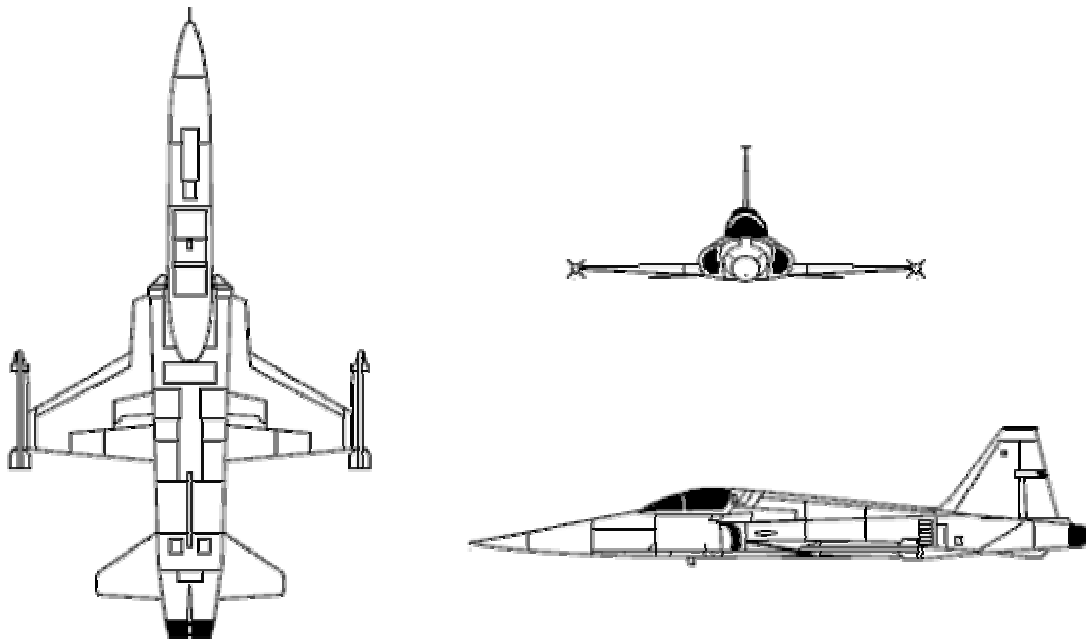
First flight of the prototype of the fighter version of the aircraft, designated F-5, occurred in July 1959. On April 25, 1962, the Department of Defence announced that it had chosen the aircraft for its Military Assistance Program (MAP). America's NATO and SEATO allies would now be able to acquire a supersonic warplane of world-class quality at a reasonable cost. On August 9, 1962 the aircraft was given the official designation of F-5A Freedom Fighter. Later known as the Tiger, initial deliveries of the F-5 were made to Iran in January 1965. Attracted by its performance, reliability, and low cost (in 1972, the cost of an F-5 was about one-third that of an F-4), other countries outside MAP soon began buying the F-5.

Optimized for the air-to-ground role, the F-5A had only a very limited air-to-air capability, and was not equipped with a fire-control radar. The F-5B was the two-seat version of the F-5A. It was generally similar to the single-seat F-5A but

had two seats in tandem for dual fighter/trainer duties. The F-5 was originally designed as a daytime, air-to-air fighter, but it has also been extensively used as a ground-attack aircraft. Photoreconnaissance versions of the F-5 have also been produced. Armament for the air-to-air combat role consists of two 20-mm cannons and two Sidewinder missiles. Radius of a typical air combat mission with this armament and external fuel tanks is 375 miles, and average mission speed is 541 miles per hour. In the ground-attack mode, about 7000 pounds of external ordnance may be carried.

Although all F-5A production was intended for MAP, in October 1965, the USAF "borrowed" 12 combat-ready F-5As from MAP supplies and sent them to Vietnam with the 4503rd Tactical Fighter Wing for operational service trials. This program was given the code name of \*Skoshi Tiger" ("little" Tiger). and it was during this tour of duty that the F-5 picked up its Tiger nickname. Evaluated in Vietnam by the USAF, the F-5 was later used by Vietnamese forces.

- *Aircraft Specifications*



Crew: One

Dimensions: 47 feet, 2 inches; Height 13 ft 2 in; Wing Span 25 ft 3 in;

Engines: Two General Electric J85s of 4,080 lbs. thrust each with afterburner.

Weights: Empty Equipped 8,085 lb; Normal Take-off 11,100 lb; Maximum Take-off 20,677 lb

**Armament:** Two 20-mm cannon in the fuselage nose. Two AIM-9 Sidewinder at the wingtips. Five pylons carry up to 6200 pounds of ordinance or fuel tanks. Loads can include four air-to-air missiles, Bullpup air-to-surface missiles, bombs, up to 20 unguided rockets, or external fuel tanks.

**Performance:** Maximum level speed Mach 1.4 at 36,000 Feet; Maximum rate of climb at sea level 52,800 ft/min; Service ceiling 50,500 ft; G-Limits 9G.

- *System Specifications*

- Pentium II 500
  - 128 Mb RAM
  - 140 Mb of free available hard disk space
  - Sound Card
  - Microsoft Flight Simulator 2002 (Professional or Standard Version)
- OR*
- Microsoft Flight Simulator 2004
  - Microsoft Windows 98(SE), Windows ME, Windows 2000 or Windows XP
  - Adobe Acrobat Reader to view and print this manual\*
  - Video Card with at least 32mb on board RAM

\*Adobe Acrobat Reader is available for free from  
<http://www.adobe.com/products/acrobat/readstep2.html>

- *F-5 Key Assignments*

### Operating the Drag Chute

Operation of the Drag Chute is controlled by the Wing Fold function in Flight Simulator. When the aircraft is above 40 knots and on the ground, pressing Shift + F will open the drag chute and slow the aircraft down with no need for additional braking.

When the aircraft reaches 40 knots, the drag chute will automatically break away from the aircraft.

To ensure this function works, you may have to assign the Shift+F key to the wing fold command within Flight Simulator first.

## *F-5 Freedom Fighter Cockpit*

The DSB Design F-5 Freedom Fighter comes with a custom made gauges and a centre pedestal with radio and electrical systems on.

The following section details the F-5 Cockpit with full operating controls.





## F-5 Freedom Fighter Main View.

The Main View consists of an old style cockpit featuring a large number of analogue dials. They are split into 3 sections as detailed below;

The analogue displays directly under the HUD mounting are the **Altitude Indicator** and **Vertical Speed Indicator**. Directly below the Vertical Speed Indicator is the **NAV/COM Radio**.

The section to the right of the Centre 3 gauges are as follows, from left to right, top to bottom;

Radar Altimeter, Turn/Slip Coordinator, G-Load Indicator, Left Engine RPM, Left Engine TGT, Left Engine N1 RPM, Left Engine Fuel Flow, Right Engine RPM, Right Engine TGT, Right Engine N1 RPM, Right Engine Fuel Flow, Hydraulic Pressure Gauge (Static), Left Engine Oil Pressure, Left Main Fuel Tank Capacity, Fuel Pressure Gauge, Right Engine Oil Pressure and Right Main Fuel Tank Capacity.

The section to the left of the Centre 3 gauges are as follows, from left to right, top to bottom;

Elevator Trim, Airspeed, ILS, Standby Attitude Indicator, Primary Attitude Indicator, NAV1/ADF Indicator, Clock.

The pedestal view opens and shows your Transponder Radio, Com/Nav Radio, ADF Radio, Engine Start and Fuel Cutoff Switches, Lighting Systems and Electrical Systems.