

# FIGHTER PILOT

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## FIGHTER PILOT

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FIGHTER PILOT is a real-time flight simulation based upon the F15 Eagle, USAF air-superiority jet fighter. This supreme simulation offers many of the features found on modern flight simulators including 3-D view from the cockpit, fully aerobatic performance, air-to-air combat and blind landing. The program offers training modes for each option and a pilot skill rating for varying difficulty levels.

### OPTIONS

**(a) Landing Practice** — Your aircraft is positioned at an altitude of 1700 ft, 6 miles from touchdown at runway BASE. The undercarriage is lowered, ready for landing. Use the throttle and elevator controls to adjust your rate of descent and approach speed. Guidance may be taken from the Instrument Landing System (ILS) or the Flight Computer. Once you have landed, reduce the thrust to zero and apply the brakes.

**(b) Flying Training** — Your aircraft is positioned at the threshold of runway BASE, facing due North. Take off by opening the throttle, typically to 100% or full reheat, and pulling back on the joystick (or key 6) when you reach take-off speed. Maximum acceleration on take-off is achieved by applying the brakes until full thrust is reached. Raise the undercarriage shortly after take-off if you intend to exceed 300 kts. Take-off is possible at a lower speed with full flaps. Steer on the ground by using the rudder controls, easiest if your speed is below 10 kts.

**(c) Blind Landing** — This selection gives no visual display above 50 ft for options (a) and (b). The horizon is not displayed at any time. Navigate by using your radar, flight computer and map.

**(d) Air-to-Air Combat Practice** — You are positioned 2 miles behind the enemy aircraft at the same altitude. Select Combat Mode and the Flight Computer to obtain a readout of enemy bearing, range and altitude. The enemy will be flying at 550 kts and will not return fire during the dogfight. Manoeuvre your aircraft when you see the enemy and open fire as he passes through your sights.

**(e) Air-to-Air Combat** — In this final option, you are responsible for defending the four airfields BASE, TANGO, DELTA and ZULU. Your mission begins with a scramble

from runway BASE. Use your radar and flight computer to determine the location of the enemy aircraft, and after assessing his likely target, fly your aircraft on an intercept course. Visual contact will occur at less than 1 mile and less than 5000 feet altitude difference and the dogfight begins with the enemy manoeuvring to gain advantage. Damage to your own aircraft is indicated by a colour change of the aircraft symbol on your radar. A fourth strike by the enemy is fatal! If you wish to break-off during the dogfight because of extensive damage or no ammunition left, the enemy will cease to attack once you are over 1 mile away or more than 5000 feet altitude difference. At this stage he will lock-on to his original ground target and pursue his ultimate objective of destroying all airfields. This will leave you free to return to any remaining runway for repairs, re-armament and refuelling.

## **CONTROLS**

During flight, your aircraft is manoeuvred using the elevator, aileron and rudder controls. The **ELEVATORS** are operated using keys 6 and 7 (back and forward on a joystick) to pitch the aircraft up and down. The **AILERONS** are on keys 5 and 8 (left and right on a joystick) used to roll the aircraft left and right. Finally, the **RUDDER** control uses keys Caps Shift and Z for left and right rudder. The rudder gives both a heading change and a roll change. During aerobatic manoeuvres, the effectiveness of the controls will vary. For example, at near 90 degrees roll, the elevator control will have a primary effect on heading, not pitch. The aircraft will also tend to pitch nose down when in a steep turn. Your pitch rate, roll rate and yaw (heading) rate will all increase in proportion to how long the control is applied. This feature gives a good approximation to the feel of a real aircraft.

The **THROTTLE** control uses keys Q and A; Q to increase engine **THRUST**, and A to decrease thrust. As well as affecting the aircraft speed, your pitch angle will vary when changing the thrust setting. The amount of thrust required to maintain a particular speed depends primarily on pitch angle and altitude. At low speeds, for example on the approach, the aircraft must adopt a nose-up attitude to maintain lift on the wings. This generates more drag and will require more thrust as a result. At higher speeds, this nose-up attitude is no longer necessary and the same thrust will maintain a higher speed. Your maximum speed will increase with altitude because of the decreasing air density.

The **FLAPS** are on keys W (up) and S (down) next to the throttle controls. The flaps are used to give a slower runway approach speed and a reduced rate of descent. The stall speed varies with flap setting, and operation of the flaps during flight will affect the pitch angle.

The **UNDERCARRIAGE** is raised and lowered using the key U. Lowering the undercarriage will have a small effect on aircraft speed. **BRAKES** remain on whenever the key B is pressed, indicated by the panel **BRAKES** light. The brakes do not function when airborne.

The **GUNS** are fired by pressing key 0 (zero) after selecting **COMBAT** mode with key C. The ammunition status is shown at the bottom right hand corner of the instrument panel. The 3 lightning symbols above the ammo indicate that enemy aircraft are present. The number of enemy aircraft destroyed is to the right of these.

One final point . . . flying a fighter aircraft is not easy and will take a little practise — particularly air-to-air combat!

## **INSTRUMENTS**

**Artificial Horizon** — This instrument, in the centre of the panel, shows the roll angle and pitch angle of your aircraft and is particularly useful during aerobatic manoeuvres or air-to-air combat when you will frequently lose your view of the horizon. The small aircraft symbol rotates to show your roll angle relative to the ground, and the roll angle, Left or Right, is shown underneath. A roll angle over 90 degrees equates to inverted flight. The pitch angle is shown on a "moving tape" with blue to indicate nose-up (skywards) and yellow to indicate nose-down, towards the ground. 90 degrees equates to a vertical climb or dive.

**Speed** — To the left of the artificial horizon is your speed, in knots.

**Altitude** — Aircraft height, in feet.

**Vertical Speed Indicator, VSI** — This gives your rate of climb or descent in feet per second. When your aircraft is gaining height the arrow will point upwards, and when you are losing height the arrow will point downwards. Your rate of descent on the approach should be approximately 10 ft per sec.

**Flaps** — Flaps may be set at any angle from zero to Full. The stall speed varies from 130 kts at zero flaps, to 120 kts at full flaps.

**Thrust** — The engine thrust indicator is a bar scale running along the bottom of the instrument panel. The green region represents 0% to 100% engine thrust, and the red region indicates reheat. Reheat gives a considerable boost to your thrust at the expense of heavy fuel consumption.

**Radar and Compass** — This is the instrument on the far left of the panel. The readout above the aircraft symbol is your compass heading. At the bottom of the instrument is shown the bearing and range of the beacon on which you are currently logged. As you select the Next Beacon by pressing N, the beacon identifier will change and new range and bearing information will be displayed. The flashing cross shows the bearing of the beacon relative to your own aircraft. To fly to the beacon, bank your aircraft until your heading matches the beacon bearing. You should now see the flashing cross at the nose of the aircraft symbol on the radar.

**Combat Mode** — Switch to Combat Mode using key C. This switches on your sights, activates the guns, and locks your radar and flight computer onto the enemy. Combat mode is shown on your radar by the lightning symbol. The range and bearing is now that of the enemy, and his bearing is shown as the flashing cross. Select the Flight Computer to find his altitude.

**ILS / Flight Computer** — To the right of your altitude and VSI is a dual-purpose instrument used for landing guidance and air-to-air combat. Switch between the two modes by pressing Symbol Shift ("symbol change").

**(a) Instrument Landing System** — This mode gives the pilot direction guidance when approaching a runway and may be demonstrated by selecting the "landing practice" option. By keeping the flashing square in the centre of the instrument, you will be flying on the correct glideslope to the runway at the correct rate of descent (3 degrees) for a good landing. As the flashing square drifts from the centre of the instrument, turn towards it and you will return to the correct approach. For example, if the square drifts left and up, bank your aircraft to the left and pull back on the joystick (or key 6) and the flashing square will slowly return to the centre.

**(b) Flight Computer** — Select the Flight Computer by pressing Symbol Shift. This displays your precise ground position, in units of feet, North, South, East or West of any runway with a beacon within a radius of 6 miles. The distances are relative to the beacon currently indicated on your radar. However, if the runway has been destroyed or it is out of range, the computer will be inactive, shown by black and yellow stripes.

The Flight Computer will also display the altitude of enemy aircraft when the radar is in combat mode. During a dogfight, try and keep your altitude roughly equal to that of the enemy, pointed to by the arrow on the flight computer.

**Fuel** This is a simple fuel gauge showing the amount of fuel left.

**Undercarriage** The indicator for the undercarriage is below the fuel gauge.

3 reds and an UP arrow = undercarriage UP

3 greens and a DOWN arrow = undercarriage DOWN

**MAP** — Switch between the map and normal visual display using key M. Your instruments are displayed at all times enabling safe flight to continue.

## **SUMMARY OF CONTROLS**

5 — Joystick LEFT

6 — Joystick BACK

7 — Joystick FORWARD

8 — Joystick RIGHT

Caps Shift — RUDDER LEFT

Z — RUDDER RIGHT

Q — Increase THRUST

A — Decrease THRUST

W — Flaps UP

S — Flaps DOWN

U — Undercarriage UP and DOWN

B — Brakes ON

N — Next Beacon

M — Map

Symbol Shift — ILS / Flight Computer

O — GUNS (active only in Combat mode)

H — Hold

J — Release

## PILOT'S NOTES

**Take-off speed:** zero flaps — 140 kts, full flaps — 130 kts

**Stall speed:** zero flaps — 130 kts, full flaps — 120 kts

**Flaps:** Vmax full flap — 352 kts, Vmax any flap — 472 kts

**Undercarriage:** Vmax = 300 kts, Vmax on ground = 250 kts

**Performance:** Vmax = 802 kts, at sea level, full reheat, Vmax = 1439 kts at 60,000 ft., level flight

**Ceiling:** Approx 65,000 ft.

**Approach:** Thrust 74%, Flaps Full, U/C Down, Pitch +3, VSI -9, Speed, kts 125

Thrust 62%, Flaps Zero, U/C Down, Pitch +6, VSI -12, Speed, kts 135

### Technical Data — McDonnell Douglas F15 Eagle

**Role:** Air superiority fighter

**Performance:** Max. speed 800 kts at sea level (Mach 1.2) 1440 kts at 60,000 ft. (Mach 2.54)

Landing speed: 130 kts.

Take-off: run 900 ft., 8 secs. with reheat

Ceiling: 65,000 ft.

Initial climb rate greater than 50,000 ft/min.

**Engines:** 2 Pratt & Whitney F100-PW-100 turbofans

Each giving 17,600 lbf thrust, dry

25,000 lbf thrust, reheat

**Dimensions:** Wing span 42 ft. 9 ins.

Length 63 ft. 9 ins.

Wing area 608 sq. ft.

**Weight:** Intercept mode, full internal fuel 41,500 lbf

All of the above information is approximate and widely published. Although considerable effort has been given to achieving a realistic simulation, approximations have been made due to the limitations of the Spectrum and certain technical data not being available to the public.

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