

## **F-15 EAGLE**

### **Mission**

The F-15 Eagle is an all-weather, extremely maneuverable, tactical fighter designed to permit the Air Force to gain and maintain air supremacy over the battlefield.

### **Features**

The Eagle's air superiority is achieved through a mixture of unprecedented maneuverability and acceleration, range, weapons and avionics. It can penetrate enemy defense and outperform and outfight any current enemy aircraft. The F-15 has electronic systems and weaponry to detect, acquire, track and attack enemy aircraft while operating in friendly or enemy-controlled airspace. The weapons and flight control systems are designed so one person can safely and effectively perform air-to-air combat.



The F-15's superior maneuverability and acceleration are achieved through high engine thrust-to-weight ratio and low wing loading. Low wing-loading (the ratio of aircraft weight to its wing area) is a vital factor in maneuverability and, combined with the high thrust-to-weight ratio, enables the aircraft to turn tightly without losing airspeed.

A multimission avionics system sets the F-15 apart from other fighter aircraft. It includes a head-up display, advanced radar, inertial navigation system, flight instruments, ultrahigh frequency communications, tactical navigation system and instrument landing system. It also has an internally mounted, tactical electronic-warfare system, "identification friend or foe" system, electronic countermeasures set and a central digital computer.

The pilot's head-up display projects on the windscreen all essential flight information gathered by the integrated avionics system. This display, visible in any light condition, provides information necessary to track and destroy an enemy aircraft without having to look down at cockpit instruments.

The F-15's versatile pulse-Doppler radar system can look up at high-flying targets and down at low-flying targets without being confused by ground clutter. It can detect and track aircraft and small high-speed targets at distances beyond visual range down to close range, and at altitudes down to treetop level. The radar feeds target information into the central computer for effective weapons delivery. For close-in dogfights, the radar automatically acquires enemy aircraft, and this information is projected on the head-up display. The F-15's electronic warfare system provides both threat warning and automatic countermeasures against selected threats.

A variety of air-to-air weaponry can be carried by the F-15. An automated weapon system enables the pilot to perform aerial combat safely and effectively, using the head-up display and the avionics and weapons controls located on the engine throttles or control stick. When the pilot changes from one weapon system to another, visual guidance for the required weapon automatically appears on the head-up display.

The Eagle can be armed with combinations of four different air-to-air weapons: AIM-7F/M Sparrow missiles or AIM-120 advanced medium range air-to-air missiles on its lower fuselage corners, AIM-9L/M Sidewinder or AIM-120 missiles on two pylons under the wings, and an internal 20mm Gatling gun in the right wing root.

The F-15E is a two-seat, dual-role, totally integrated fighter for all-weather, air-to-air and deep interdiction missions. The rear cockpit is upgraded to include four multi-purpose CRT displays for aircraft systems and weapons management. The digital, triple-redundant Lear Siegler flight control system permits coupled automatic terrain following, enhanced by a ring-laser gyro inertial navigation system.

For low-altitude, high-speed penetration and precision attack on tactical targets at night or in adverse weather, the F-15E carries a high-resolution APG-70 radar and low-altitude navigation and targeting infrared for night pods

## Background

The first F-15A flight was made in July 1972, and the first flight of the two-seat F-15B (formerly TF-15A) trainer was made in July 1973. The first Eagle (F-15B) was delivered in November 1974. In January 1976, the first Eagle destined for a combat squadron was delivered.

The single-seat F-15C and two-seat F-15D models entered the Air Force inventory beginning in 1979. These new models have Production Eagle Package (PEP 2000) improvements, including 2,000 pounds (900 kilograms) of additional internal fuel, provision for carrying exterior conformal fuel tanks and increased maximum takeoff weight of up to 68,000 pounds (30,600 kilograms).

The F-15 Multistage Improvement Program was initiated in February 1983, with the first production MSIP F-15C produced in 1985. Improvements included an upgraded central computer; a Programmable Armament Control Set, allowing for advanced versions of the AIM-7, AIM-9, and AIM-120A missiles; and an expanded Tactical Electronic Warfare System that provides improvements to the ALR-56C radar warning receiver and ALQ-135 countermeasure set. The final 43 included a Hughes APG-70 radar.

F-15C, D and E models were deployed to the Persian Gulf in 1991 in support of Operation Desert Storm where they proved their superior combat capability. F-15C fighters accounted for 34 of the 37 Air Force air-to-air victories. F-15E's were operated mainly at night, hunting SCUD missile launchers and artillery sites using the LANTIRN system.

They have since been deployed for air expeditionary force deployments and operations Southern Watch (no-fly zone in Southern Iraq), Provide Comfort in Turkey, Allied Force in Bosnia, Enduring Freedom in Afghanistan and Iraqi Freedom in Iraq.

## General Characteristics

**Primary function:** Tactical fighter

**Contractor:** McDonnell Douglas Corp.

**Power plant:** Two Pratt & Whitney F100-PW-100, 220 or 229 turbofan engines with afterburners

**Thrust:** (C/D models) 23,450 pounds each engine

**Wingspan:** 42.8 feet (13 meters)

**Length:** 63.8 feet (19.44 meters)

**Height:** 18.5 feet (5.6 meters)

**Weight:** 31,700 pounds

**Maximum takeoff weight:** (C/D models) 68,000 pounds (30,844 kilograms)

**Fuel Capacity:** 36,200 pounds (three external plus conformal fuel tanks)

**Payload:** depends on mission

**Speed:** 1,875 mph (Mach 2 class)

**Ceiling:** 65,000 feet (19,812 meters)

**Range:** 3,450 miles (3,000 nautical miles) ferry range with conformal fuel tanks and three external fuel tanks

**Crew:** F-15A/C: one. F-15B/D/E: two

**Armament:** One internally mounted M-61A1 20mm 20-mm, six-barrel cannon with 940 rounds of ammunition; four AIM-9L/M Sidewinder and four AIM-7F/M Sparrow air-to-air missiles, or eight AIM-120 AMRAAMs, carried externally.

**Unit Cost:** **A/B models** - \$27.9 million (fiscal 98 constant dollars); **C/D models** - \$29.9 million (fiscal 98 constant dollars)

**Initial operating capability:** September 1975

**Inventory:** Total force, 522