

# Douglas A-4 “Skyhawk”

The Hickory Aviation Museum’s A-4L, Bureau Number 148538 is on loan from the National Museum of Naval Aviation. It was delivered in Aug of 2007. Coordinated by Kyle and Kregg Kirby.



The Douglas A-4 Skyhawk is a single seat carrier-capable attack aircraft developed for the United States Navy and United States Marine Corps. The delta winged, single-engined Skyhawk was designed and produced by Douglas Aircraft Company, and later by McDonnell Douglas. It was originally designated A4D under the U.S. Navy's pre-1962 designation system. The Skyhawk is a lightweight aircraft with a maximum takeoff weight of 24,500 pounds (11,100 kg) and has a top speed of more than 670 miles per hour (1,080 km/h).

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|------------------------|---|
| <b>Role</b>            | Attack aircraft, fighter, aggressor   |
| <b>National Origin</b> | United States   |
| <b>Manufacturer</b>    | Douglas Aircraft Company<br>McDonnell Douglas   |
| <b>First flight</b>    | 22 June 1954  |
| <b>Introduction</b>    | October 1956  |
| <b>Retired</b>         | 2003, U.S. Navy<br>1998, USMC<br>2015, Israeli Air Force  |
| <b>Status</b>          | In service with non-U.S. users  |
| <b>Primary users</b>   | United States Navy<br>United States Marine Corps<br>Israeli & Argentine Air Forces                          |
| <b>Produced</b>        | 1954–1979   |
| <b>Number built</b>    | 2,960   |
| <b>Propulsion</b>      | 1 x Pratt-Whitney J52-P8 Turbojet   |
| <b>Unit cost</b>       | US\$860,000 (avg \$/ first 500)   |
| <b>Variants</b>        | Lockheed Martin A-4AR<br>Fightinghawk<br>McDonnell Douglas A-4G Skyhawk<br>ST Aerospace A-4SU Super Skyhawk |

## General characteristics

Crew: one (two in OA-4F, TA-4F, TA-4J)  
 Length: 40 ft 3 in (12.22 m)  
 Wingspan: 26 ft 6 in (8.38 m)  
 Height: 15 ft (4.57 m)  
 Wing area: 259 ft<sup>2</sup> (24.15 m<sup>2</sup>)  
 Airfoil: NACA 0008-1.1-25 root, NACA 0005-0.825-50 tip  
 Empty weight: 10,450 lb (4,750 kg)  
 Loaded weight: 18,300 lb (8,318 kg)  
 Max. takeoff weight: 24,500 lb (11,136 kg)  
 Powerplant: 1 × Pratt & Whitney J52-P8A turbojet, 9,300 lbf (41 kN)

## Performance

Maximum speed: 585 kn (673 mph, 1,083 km/h)  
Range: 1,700 nmi (2,000 mi, 3,220 km)  
Combat radius: 625 nmi, 1,158 km ()  
Service ceiling: 42,250 ft (12,880 m)  
Rate of climb: 8,440 ft/min (43 m/s)  
Wing loading: 70.7 lb/ft<sup>2</sup> (344.4 kg/m<sup>2</sup>)  
Thrust/weight: 0.51  
 g-limit: +8/-3 g  
**Armament**  
**Guns**: 2× 20 mm (0.79 in) Colt Mk 12 cannon, 100 rounds/gun. Hardpoints: Rockets, Missiles, Bombs.

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## Design and development

The Skyhawk was designed by Douglas Aircraft's Ed Heinemann in response to a U.S. Navy call for a jet-powered attack aircraft to replace the older Douglas AD Skyraider (later redesignated A-1 Skyraider). Heinemann opted for a design that would minimize its size, weight, and complexity. The result was an aircraft that weighed only half of the Navy's weight specification. It had a wing so compact that it did not need to be folded for carrier stowage. The diminutive Skyhawk soon received the nicknames "Scooter", "Kiddiecar", "Bantam Bomber", "Tinker Toy Bomber", and, on account of its nimble performance, "Heinemann's Hot-Rod".

The aircraft is of conventional post-World War II design, with a low-mounted delta wing, tricycle undercarriage, and a single turbojet engine in the rear fuselage, with two air intakes on the fuselage sides. The tail is of cruciform design, with the horizontal stabilizer mounted above the fuselage. Armament consisted of two 20 mm Colt Mk 12 cannons, one in each wing root, with 100 rounds per gun (the A-4M Series Skyhawk II have 200 rounds per gun), plus a large variety of bombs, rockets, and missiles carried on a hardpoint under the fuselage centerline and hardpoints under each wing

## Operational history

The Skyhawk proved to be a relatively common US Navy aircraft export of the postwar era. Due to its small size, it could be operated from the older, smaller World War II-era aircraft carriers still used by many smaller navies during the 1960s. These older ships were often unable to accommodate newer Navy fighters such as the F-4 Phantom II and F-8 Crusader, which were faster and more capable than the A-4, but significantly larger & heavier than older naval fighters.

The Navy operated the A-4 in both Regular Navy and Naval Reserve light attack squadrons (VA). Although the A-4's use as a training and adversary aircraft would continue well into the 1990s, the Navy began removing the aircraft from its frontline attack squadrons in 1967, with the last ones (Super Foxes of VA-55/212/164) being retired in 1976. The Marine Corps would not take the U.S. Navy's replacement warplane, the LTV A-7 Corsair II, instead keeping Skyhawks in service with both Regular Marine Corps and Marine Corps Reserve attack squadrons (VMA), and ordering the new A-4M model. The last USMC Skyhawk was delivered in 1979, and they were used until the mid-1980s before they were replaced by the equally small, but more versatile STOVL AV-8 Harrier II. VMA-131, Marine Aircraft Group 49 retired its last four OA-4Ms on 22 June 1994. Trainer versions of the Skyhawk remained in Navy service, however, finding a new lease on life with the advent of "adversary training", where the nimble A-4 was used as a stand-in for the Mikoyan-Gurevich MiG-17 in dissimilar air combat training (DACT). It served in that role at *TOPGUN* until 1999. A-4F Skyhawk of the *Blue Angels* US Navy aerobatic team in 1975.

The A-4's nimble performance also made it suitable to replace the McDonnell Douglas F-4 Phantom II when the Navy downsized its aircraft for the Blue Angels demonstration team, until McDonnell Douglas F/A-18 Hornets were available in the 1980s. The last U.S. Navy Skyhawks, TA-4J models belonging to the composite squadron VC-8, remained in military use for target towing, and as adversary aircraft, for combat training at Naval Station Roosevelt Roads. These aircraft were officially retired on 3 May 2003. Skyhawks were well loved by their crews for being tough and agile. These attributes, along with their low purchase and operating cost as well as easy maintenance, have contributed to the popularity of the A-4 with American and international armed forces. Besides the U.S., at least three other nations used A-4 Skyhawks in combat (Argentina, Israel and Kuwait).

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