McDonnell Douglas (now Boeing) AH-64 Apache Attack Helicopter



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| DESCRIPTION Following the failure of the Lockheed AH-56 Cheyenne, the US Army was forced to issue a new requirement for an advanced attack helicopter for anti-armor and ground support missions. The Army stressed high performance, survivability, and the use of sophisticated weapons and targeting systems to maximize impact on the battlefield. To meet these challenges, Hughes Helicopter (later purchased by McDonnell Douglas) designed a rugged tandem two-seat aircraft with powerful engines, advanced avionics, and armor protection over key portions of the vehicle able to absorb up to 23-mm fire. In addition to an armor-plated cockpit able to withstand 12.7-mm strikes, the AH-64 Apache was fitted with energy absorbing landing gear and a collapsible chain gun to maximize crew survivability in a crash.  Offensive capability is also excellent thanks in large part to the nose-mounted target acquisition and night vision system that pivots in coordination with the gunner's helmet. The primary armament of Hellfire anti-tank missiles, unguided rocket pods, and a 30-mm chain gun makes the Apache well-equipped to deal with any form of ground target. In addition, the AH-64 can be armed with Stinger or Sidewinder missiles for use against other helicopters or low-flying aircraft.  The Apache performed well in Panama and the 1991 Gulf War. Iraqi soldiers were so terrified of the helicopter that 10,000 troops once surrendered when three of them appeared. Due to these successes, the more advanced AH-64D was developed to further improve the design's capabilities. At the heart of the AH-64D is the Longbow fire control radar capable of detecting, locating, classifying, and prioritizing targets while minimizing the vehicle's exposure to detection by the enemy. With the radome mounted high above the main rotor, the Apache can hide behind natural terrain while scouting the battlefield before popping up to make precision strikes with its fire-and-forget weapons.  In total, over 1,000 Apaches are to be built for the US Army with about 227 of these being AH-64D Longbow models. The remainder are to be upgraded to near AH-64D standard, with only the Longbow radar and uprated engines lacking, by about 2010. Several allies in Europe and the Middle East have also purchased variants of the Apache.  *Data below for AH-64A and AH-64D* *Last modified 29 November 2005* | |
| HISTORY: | |
| First Flight | (AH-64A) 30 September 1975 (AH-64D) 15 April 1992 |
| Service Entry | (AH-64A) 26 January 1984 (AH-64D) 1997 |
| CREW: | 1 pilot and 1 weapons officer |
| ESTIMATED COST: | (AH-64A) $10 million (AH-64D) $35 million (new build) |
| AIRFOIL SECTIONS: |  |
| Rotor Blade Root | HH-02 |
| Rotor Blade Tip | NACA 64A006 |
| DIMENSIONS: | |
| Length | 58.26 ft (17.76 m) with rotors turning 48.17 ft (14.68 m) ignoring rotors |
| Rotor Diameter | 48.00 ft (14.63 m) |
| Height | 14.13 ft (4.30 m) to top of tail rotor 12.89 ft (3.84 m) to top of main rotor 16.25 ft (4.95 m) to top of radome |
| Rotor Disk Area | 1,809.5 ft2 (168.11 m2) |
| WEIGHTS: | |
| Empty | (AH-64A) 11,385 lb. (5,165 kg) (AH-64D) 11,800 lb. (5,350 kg) |
| Normal Takeoff | (AH-64A) 15,075 lb. (6,840 kg) (AH-64D) 16,025 lb. (7,270 kg) |
| Max Takeoff | (AH-64A) 17,650 lb. (8,005 kg) (AH-64D) 22,280 lb. (10,105 kg) |
| Fuel Capacity | *internal:* 2,440 lb. (1,110 kg) *external:* 5,980 lb. (2,710 kg) |
| Max Payload | 1,700 lb. (770 kg) |
| PROPULSION: | |
| Powerplant | (AH-64A) two General Electric T700-701 turboshafts (AH-64D) two General Electric T700-701C turboshafts |
| Thrust | (AH-64A) 3,392 shp (2,530 kW) (AH-64D) 3,880 shp (2,894 kW) |
| PERFORMANCE: | |
| Max Level Speed | (AH-64A) 180 mph (295 km/h) (AH-64D) 160 mph (260 km/h) |
| Maximum Climb Rate | (AH-64A) 3,240 ft (990 m) / min (AH-64D) 3,090 ft (940 m) / min |
| Maximum Vertical Climb Rate | (AH-64A) 2,500 ft (760 m) / min (AH-64D) 1,555 ft (475 m) / min |
| Service Ceiling | 21,000 ft (6,400 m) |
| Hover Ceiling (in ground effect) | (AH-64A) 15,000 ft (4,570 m) (AH-64D) 17,210 ft (5,245 m) |
| Hover Ceiling (out of ground effect) | (AH-64A) 11,500 ft (3,505 m) (AH-64D) 9,810 ft (2,990 m) |
| Range | *typical:* 260 nm (480 km) [AH-64A] *typical:* 220 nm (410 km) [AH-64D] *ferry:* 1,025 nm (1,900 km) |
| Endurance | 3 hr. 9 min [maximum] 2 hr. 30 min [typical mission] |
| g-Limits | +3.5 / -0.5 |
| ARMAMENT: | |
| Gun | one M230A1 30 mm chain cannon (up to 1,200 rds.) |
| Stations | 2 stub wings with 4 hardpoints and 2 wingtip rails |
| Air-to-Air Missile | AIM-9 Sidewinder, AIM-92 Stinger |
| Air-to-Surface Missile | AGM-114 Hellfire, AGM-122 Sidearm, TOW |
| Bomb | none |
| Other | 70 mm rocket pods, 127 mm rockets |
| KNOWN VARIANTS: | |
| YAH-64A | Prototype built by Hughes Helicopter to compete with Bell YAH-63 for US Army Advanced Attack Helicopter contract |
| AH-64A | First production model, all to be upgraded to AH-64D standard (but without for Longbow radar) by 2010 |
| GAH-64A | AH-64A models grounded for use as trainers; 17 modified |
| JAH-64A | AH-64A models used for special testing; 7 modified |
| AH-64B | Proposed interim upgrade to improve 254 AH-64As with GPS, new radios, new rotor blades, and improved navigation systems; cancelled in 1992 |
| AH-64C | Designation originally applied to AH-64A models upgraded to near AH-64D standard, including all upgrades except Longbow radar and new engines; approximately 540 to be so upgraded, but designation abandoned in 1993 |
| AH-64D Longbow | New build model equipped with mast-mounted Longbow radar, uprated engines, and improved avionics; 227 to be built; older AH-64A models upgraded to AH-64Ds not to be equipped with Longbow radar but capability exists to convert such aircraft to the full Longbow standard in 4-8 hours |
| WAH-64D | AH-64D model for British Army license built by Westland, essentially same as AH-64D but powered by Rolls Royce engines; 67 to be built |
| KNOWN COMBAT RECORD: | Panama - Operation Just Cause (US Army, 1989) Iraq - Operation Desert Storm (US Army, 1991) Kosovo - Operation Allied Force (US Army, 1999) Israeli-Palestinian conflict (Israel, 2000-present) Afghanistan - Operation Enduring Freedom (US Army, 2001-present; Netherlands, 2004-present) Iraq - Operation Iraqi Freedom (US Army, 2003-present) |
| KNOWN OPERATORS: | US Army Bahrain Egypt Greece Israel Kuwait Netherlands Saudi Arabia South Korea United Arab Emirates United Kingdom |
| 3-VIEW SCHEMATIC: | |
| SOURCES:   * Bishop, Chris, ed. The Encyclopedia of Modern Military Weapons: The Comprehensive Guide to Over 1,000 Weapon Systems from 1945 to the Present Day. NY: Barnes & Noble, 1999, p. 321. * [Boeing AH-64 site](http://www.boeing.com/rotorcraft/military/ah64d/ah64d.htm) * Bonds, Ray, ed. [The Modern US War Machine: An Encyclopedia of American Military Equipment and Strategy](http://www.amazon.com/exec/obidos/ASIN/0517560976/aerospacewebo-20). NY: Military Press, 1987, p. 194. * Donald, David, ed. [The Complete Encyclopedia of World Aircraft](http://www.amazon.com/exec/obidos/ASIN/0760705925/aerospacewebo-20). NY: Barnes & Noble, 1997, p. 618. * [FAS AH-64 site](http://www.fas.org/man/dod-101/sys/ac/ah-64.htm) * Frase, Tuesday and Spohrer, Jennifer. Jane's Combat Simulations: Longbow Gold User’s Manual. Austin: Origin Systems, 1997, p. 7.1-7.37. * Gunston, Bill, ed. [The Encyclopedia of Modern Warplanes](http://www.amazon.com/exec/obidos/ASIN/1586632078/aerospacewebo-20). NY: Barnes & Noble, 1995, p. 171. * Gunston, Bill and Spick, Mike. [Modern Fighting Helicopters](http://www.amazon.com/exec/obidos/ASIN/0861019458/aerospacewebo-20). London: Salamander Books, 1998, p. 132-133. * Munro, Bob and Chant, Christopher. [Jane's Combat Aircraft](http://www.amazon.com/exec/obidos/ASIN/0004708466/aerospacewebo-20). Glasgow: Harper Collins Publishers, 1995, p. 148-151. * Rendall, David. [Jane's Aircraft Recognition Guide](http://www.amazon.com/exec/obidos/ASIN/0007137214/aerospacewebo-20), 2nd ed. London: Harper Collins Publishers, 1999, p. 420. * [US Army AH-64 Fact Sheet](http://www.army.mil/fact_files_site/aircraft.html) | |

Bottom of Form