The Bell UH-1 Iroquois, commonly (or officially in the USMC) known as the "Huey", was a multipurpose military helicopter, famous for its use in the Vietnam war.

Overview

The Huey was developed from 1955 US Army trials with the Bell Model 204. The initial designation of HU-1 (helicopter utility) led to its nickname. It was first used by the military in 1959 and went into triservice production in 1962 as the UH-1. The last were produced in 1976 with more than 10,000 made in total, of which the majority (7,000 or so) were deployed in Vietnam. In Vietnam, 2,202 Huey pilots were killed and approximately 2,500 aircraft were lost, roughly half to combat and the rest to operational accidents.

In Vietnam primary missions included general support, air assault, cargo transport, aeromedical evacuation, search and rescue, and electronic warfare. During the conflict, the craft was upgraded, notably to a larger version based on the Model 205. This version was initially designated the UH-1D and flew operationally from 1967.

The Huey was phased out with the introduction of the UH-60 Black Hawk, although the Army UH-1 Residual Fleet has around 700 UH-1s that were supposed to be retained until 2015. Army support for the craft was intended to end in 2004. Modern twin-engine versions of the aircraft continue in service for the USMC.

USAF Lieutenant James P. Fleming piloted a UH-1F on a 26 November 1968 mission that won him the Medal of Honor.

Vietnam era usage

In Vietnam, the Huey was used for various purposes and had different designations for each task. Hueys tasked with an attack role were outfitted with rocket launchers, grenade launchers, and/or machine guns were called "Hogs" or "Frogs". Hueys used for troop transports were called "Slicks" due to the absence of weapons pods. Slicks did have door gunners, but for the most part they were strictly troop carriers and medevacs. They also flew hunter-killer teams with "Loach" observation
helicopters, namely the Bell OH-58 Kiowa and the Hughes OH-6 Cayuse. Towards the end of the conflict, Hueys were fitted with TOW missiles to defeat the ever-increasing number of North Vietnamese tanks.

The three basic missions of the helicopter in Vietnam were troop transport, reconnaissance, and attack. The troop transports were designated by "Blue" teams, hence the nickname for troops carried in by these Hueys as "Blues". The reconnaissance or observation teams were "White" teams. The attack ships were called "Red" teams. Over the duration of the conflict the tactics used by the military evolved and teams were mixed for more effective results. "Purple" teams with one or two "Blue" slicks dropping off the troops, while a "Red" attack team provided protection until the troops could defend themselves. Another highly effective team was the "Pink" Recon/Attack team.

During the course of the war, the Huey went through several upgrades. The UH-1A, B, and C models (short fuselage, Bell 204) and the UH-1D and H models (stretched-fuselage, Bell 205) each had improved performance and load-carrying capabilities. The UH-1B and C performed the gunship and some of the transport duties until 1967, when the new AH-1 Cobra arrived on the scene. The newer Cobra was faster, sleeker, harder to hit, and could carry more ordnance. Devotees of the UH-1 in the gunship role cited its proven history and its ability to act as an impromptu dustoff if the need arose. Another important fact was, a four-member Huey crew could effectively observe the front, sides, and rear of the helicopter, and the door gunners could continue to fire on a target even after the completion of a gun-run, which the Cobra could not. After Vietnam the Cobra was adopted as the Army's main attack helicopter.

Foreign users

The Iroquois was widely sold abroad. Users include;

The Royal Australian Air Force (though now operated by the Australian Army). Australian Iroquois pilots have served in Vietnam and East Timor.

The Italian Air Force (Iroquois were license produced in Italy),

The Royal New Zealand Air Force No. 3 Squadron RNZAF. (New Zealand) Iroquois pilots served in Vietnam the Sinai and East Timor.

The Royal Norwegian Air Force, until replaced by the Bell 412.

The Philippine Air Force has used its UH-1H helicopters to fight Communist insurgents and Muslim separatists in various parts of the country.

The Japan Ground Self-Defense Force has used UH-1B and UH-1Hs produced under license by Fuji Heavy Industries Ltd., who made original improvements to create the UH-1J version. These are now being replaced by the UH-60JA Black Hawk.

The German Army and Airforce still use some UH-1D for transport and special dutys. They are going to be replaced by the NHIndustries NH90.
General characteristics

- Length: 57.1 ft (17.4 m) with rotors
- Width: 8.6 ft (2.6 m)
- Height: 14.5 ft (4.4 m)
- Weight: 4.7 tons
- Payload: 1.5 tons internal, 2 tons external
- Engines:
  - (UH-1D) Lycoming T53-L-11
  - (UH-1H) Lycoming T53-L-13
  - (UH-1N) Pratt and Whitney T400-CP-400
- Speed: 127 kias (204 km/h)
- Range: 318 miles (512 km)
- Service ceiling 14,200 ft (4,300 m)
- Crew: varies depending on role, usually 2-4
- Passengers: 11 to 14
- Armament: M240 7.62 mm machine gun, or GAU-17 7.62 mm machine gun, or GAU-16 .50 caliber (12.7 mm) machine gun (Bell UH-1F). 2 x 7 shot or 19 shot 2.75 in (70 mm) rocket pods
- Bell UH-1F

<table>
<thead>
<tr>
<th>Modern USAF Series</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attack--OA/A-10,AC-130H/U</td>
<td>RC-135V/RC-135W Rivet Joint</td>
</tr>
<tr>
<td>Bomber--B-52,-2,-1B,F-117A</td>
<td>OC-135B Open Skies</td>
</tr>
<tr>
<td>Fighter--F-15/E ,F-16</td>
<td>KC-10 Extender</td>
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<tr>
<td>Electronic--E-3,-4B,-8C EC-130E/J, HC-135 Stratotanker</td>
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<tr>
<td>Transport--C-5,-17,-141B, -20,-21</td>
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<tr>
<td>C-22B, -32, -130, -37A, -40B/C</td>
<td>MC-130E/H HC-130P/N</td>
</tr>
<tr>
<td>Trainers--T-1, -37, -38, -43, -6</td>
<td>MC-130P Combat Shadow</td>
</tr>
<tr>
<td>Weather--WC-130, -135</td>
<td>MH-53J/M Pave Low</td>
</tr>
<tr>
<td>UAV--RQ-1/MQ-1 UAV, Global Hawk</td>
<td>HH-60G Pave Hawk</td>
</tr>
<tr>
<td>UH-1N Huey</td>
<td></td>
</tr>
<tr>
<td>U-2S/TU-2S</td>
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</tr>
<tr>
<td>VC-25 - Air Force One</td>
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</table>
## UH-60 Black Hawk

![UH-60 Black Hawk](image)

### Description

<table>
<thead>
<tr>
<th>Role</th>
<th>Utility and <a href="#">assault</a></th>
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<tbody>
<tr>
<td>Crew</td>
<td>3 or 4</td>
</tr>
<tr>
<td>First Flight</td>
<td></td>
</tr>
<tr>
<td>Entered Service</td>
<td></td>
</tr>
</tbody>
</table>

**Manufacturer** [Sikorsky Aircraft Corporation](#) of [Stratford, Connecticut](#), a division of [United Technologies Corporation](#).

### Dimensions

<table>
<thead>
<tr>
<th>Length</th>
<th>64 ft 10 in 19.76 m</th>
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</thead>
<tbody>
<tr>
<td>Height</td>
<td>16 ft 10 in 5.13 m</td>
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</tbody>
</table>

### Weights

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<tr>
<th>Empty</th>
<th>10,624 lb 4,819 kg</th>
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<tr>
<td>Loaded</td>
<td>16,260 lb 7,375 kg</td>
</tr>
<tr>
<td>Maximum takeoff</td>
<td>20,250 lb 9,185 kg</td>
</tr>
</tbody>
</table>

### Powerplant
Engines

Two General Electric T700-700 free-turbine turboshafts

Power

1,560 hp 1,163 kW

Performance

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Maximum speed</td>
<td>184 mph</td>
<td>296 km/h</td>
</tr>
<tr>
<td>Combat range</td>
<td>368 miles</td>
<td>592 km</td>
</tr>
<tr>
<td>Ferry range</td>
<td>1,380 miles</td>
<td>2,220 km</td>
</tr>
<tr>
<td>Service ceiling</td>
<td>ft</td>
<td>5,790 m</td>
</tr>
<tr>
<td>Rate of climb</td>
<td>ft/min</td>
<td>213 m/min</td>
</tr>
<tr>
<td>Wing loading</td>
<td>lb/ft²</td>
<td>kg/m²</td>
</tr>
<tr>
<td>Thrust/Weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power/Mass</td>
<td>hp/lb</td>
<td>kW/kg</td>
</tr>
</tbody>
</table>

Avionics

Avionics

Armament

Guns

Two 7.62 mm M60 machine guns, M134 miniguns, or M2 .50 caliber machine guns

Bombs

Missiles

Rockets

Other

Can be equipped with VOLCANO minefield disbursement system

The Sikorsky UH-60 Black Hawk is a medium-lift utility or assault helicopter used by over 20 nations. It is in service with the armies of Argentina, Australia, Austria, Bahrain, Brazil, Brunei, the People's Republic of China, Colombia, Egypt, Israel, Japan, Jordan, Malaysia, Mexico, Morocco, the Philippines, Saudi Arabia, South Korea, Republic of China (Taiwan), Thailand, and Turkey, but is best known as the primary utility and assault helicopter of the United States Army.

It can perform a wide array of missions, including air cavalry, electronic warfare, and aeromedical evacuation: several Black Hawks are even used to transport the President of the United States as Marine One. In air assault operations it can move a squad of 11 combat troops and equipment or reposition the 105 mm M102 howitzer, thirty rounds of ammunition, and a six-man crew in a single lift. Alternatively, it can carry 2,600 lb (1,170 kg) of cargo or sling load 9,000 lb (4,050 kg) of cargo. The
Black Hawk is equipped with advanced avionics and electronics, such as the **global positioning system**.

The **HH-60G Pave Hawk** is a highly modified version of the Black Hawk primarily designed to recover downed aircrew or other isolated personnel during war. Some versions, such as the Air Force **MH-60G Pave Hawk** and the United States Coast Guard **HH-60J Jayhawk**, are equipped with a rescue hoist with a 200 ft (60.96 m) cable that has a 600 lb (270 kg) lift capability, and a retractable **in-flight refueling** probe.

The Black Hawk was developed to meet a US Army requirement for a **UH-1 Iroquois** replacement in 1972. Three prototypes were constructed, the first (YUH-60) flying in October 1974, and evaluated against a rival (YUH-61) **Boeing-Vertol** design. The Black Hawk was selected for production and the UH-60A entered service with the US Army in 1979. In the late 1980s the model was upgraded to the UH-60L (First production aircraft 89-26179) which featured more power and lift with the upgrade to the 701 model of the GE engines. A newer model being engineered (UH-60M), which will extend the service life of both UH-60A’s and UH-60L’s well into the 2020s, features still more power and lift and state of the art electronic instrumentation, flight controls and aircraft navigation control.

The United States Navy received the first navalized **SH-60B Seahawks** in 1983 and the SH-60F in 1988. The United States Air Force received the MH-60G Pave Hawk in 1982 while the United States Coast Guard received the HH-60J Jayhawk in 1992. The unit cost varies with the version. For example, the unit cost of the Army’s UH-60L Black Hawk is $5.9 million while the unit cost of the Air Force MH-60G Pave Hawk is $10.2 million.

The **S-70A Firehawk** is a version of the Black Hawk designed for **firefighting, rescue, medical evacuation**, and external lift of bulky cargo and equipment. The Oregon National Guard was the first military organization in the world to add the Firehawk to its inventory; the Los Angeles County Fire Department was the first municipal organization.

The Army also flies medical evacuation models which are configured as rotary winged medical suites. They also used the Blackhawks for special operations by the 160th Special Operations Aviation Regiment ("Night Stalkers") known as the **MH-60K** at Fort Campbell, Kentucky. Many pilots in the United States Army refer to the Black Hawk as the "**Night Hawk**" (Tom Clancy also uses this term in his 1998 novel "**Rainbow Six**").

When firing the GAU minigun, voice communications in the cabin is greatly impaired and so alternative communications should be planned for.
Dimensions of a UH-60 helicopter

- Sikorsky S-70

External links

- Photos & Info about H-60 Series aircraft
  - Ft. Rucker (Army Aviation Training Center) Black Hawk page

Target Acquisition Designation Sight, Pilot Night Vision System

The Target Acquisition Designation Sight, Pilot Night Vision System (TADS/PNVS) is the combined sensor and targeting unit fitted to the AH-64 Apache helicopter. It comprises two independent systems, described below:

Target Acquisition Designation Sight (TADS)

TADS contains stabilised electro-optical sensors, a laser rangefinder and laser target designator. The TADS assembly can rotate +/-120 degrees in azimuth, +30/-60 degrees in elevation and can move independently of the PNVS. The movements of TADS can be 'slaved' to the head movements of the helicopter crew to point where they are looking. This allows images from TADS to be projected onto the crew helmet-mounted optical sights, overlaid upon their view of the cockpit and battle space.

TADS contains a thermal imaging infrared camera and daylight television camera. It also contains direct-view optics for use by the copilot/gunner (CPG).

Pilot Night Vision System

Mounted above the TADS, the PNVS contains an infrared camera slaved to the head movements of the pilot. PNVS can rotate +/-90 degrees in azimuth and +20/-45 degrees in elevation. PNVS has a high rate of movement so as to accurately match the head movements of the pilot.

Westland Aircraft

Privately owned ex-military Westland Wasp HAS.1.

Westland Aircraft was a British aircraft manufacturer located in Yeovil in Somerset, formed just before the start of World War II. During the war the company produced a number of generally
unsuccessful designs, but their Lysander would serve as an important liaison aircraft with the RAF. After the war the company focussed on helicopters and was eventually merged with several other British firms to create Westland Helicopters in 1961. In 2000 it merged with Agusta to become AgustaWestland.

History

The company was founded in 1935 when Petters Limited split its aircraft manufacturing from its aircraft engine concerns to form Westland Aircraft Limited, based in Yeovil, Somerset. During World War II the company produced a number of undistinguished military aircraft including the Lysander, the Whirlwind and the Welkin. For much of the war their factories were used to build Supermarine Spitfires, after the Supermarine factory in Southampton was bombed out of action during the Battle of Britain. Westland would then go on to be the major designers of the Supermarine Seafire, a navalized conversion of the Spitfire.

Post-war the company decided to get out of fixed-wing aircraft and concentrate solely on helicopters under a licensing agreement with Sikorsky. This upset W.E.W. Petter, the chief designer, who left to form a new aircraft division at English Electric that would go on to be very successful.

Production started with the Sikorsky S-51, which became the Dragonfly, flying for the first time in 1948, and entering service with the Royal Navy and RAF in 1953. Success with the Dragonfly was repeated with the Sikorsky S-55 which became the Whirlwind, and a re-engined Sikorsky S-58 using a turboshaft engine to become the Wessex. Other craft included those produced under license from Sikorsky (Sea King), or Bell (Sioux) as well as some of their own design (Wasp, Scout, Merlin).

The chairmanship of Eric Mensforth from 1953-1968 marked the start of the transition which was aided by the government when in 1959-1961 they forced the merger of the 20 or so aviation firms into three groups, British Aircraft Corporation and Hawker Siddeley Group took over fixed-wing designs, while the helicopter divisions of Bristol, Fairey and Saunders-Roe (with their hovercraft) were merged with Westland to form Westland Helicopters in 1961. In the late 1960s they started a collaboration with Aerospatiale to design three new helicopters, the Puma, Gazelle and Lynx, with the later being primarily a Westland design.

For many years Westland owned the main London heliport at Battersea.

Privately owned ex-military Westland Scout AH.1 (XV134)

Despite good support from the British establishment the company gradually fell into unprofitability, Sikorsky approached with a bail-out deal in 1985 that split the cabinet and lead to the resignation of Defence Secretary Michael Heseltine in January 1986 over the fate of Britain's sole helicopter
manufacturer. The split, which became known as the **Westland affair** was over whether to push the company into a European deal or accept the US company’s offer.

Recently examples of the **Boeing AH-64 Apache** attack helicopter have also been built by Westland as the **WAH-64** although, beset by problems, some technical ones arising from specific UK requirements, these have yet to become operational with the **Army Air Corps**. Some of the company’s Whirlwind and Wessex helicopters served the **Royal Flight**, latterly being part of No.32 Squadron **RAF**.

**GKN plc** bought into Westland in **1988**, initially acquiring a stake owned by **Hanson plc** they soon acquired the shares owned by **Fiat** which gave them absolute control. In **1994** Westland became a wholly-owned subsidiary of GKN. It was merged with Finmeccanica's **Agusta** helicopter division in **1999**. In **2004**, **Finmeccanica S.p.A.** acquired GKN's share in the joint venture.

**Fixed-wing Designs**

(pre-war)

- **Westland Wapiti**
- **Westland Wallace**
- **Westland-Hill Pterodactyl**
- **Westland Wizard**

(wartime)

- **Westland Lysander**
- **Westland Whirlwind**
- **Westland Welkin**

**WZ-10**

The **WZ-10** is an attack helicopter produced by the **People’s Republic of China**. It is designed primarily for anti-tank missions, but is thought to have a secondary air-to-air capability as well. Although it is known that the WZ-10 is a third-generation design, estimates for its capabilities are subject to some debate. Some consider it to be inferior to contemporary western designs, such as the **AH-64**. Other sources place the WZ-10 in the same class as the **Eurocopter Tiger** and other "high-end" attack helicopters.

**History**

Very little is known about the development history of the WZ-10, the project having been kept under tight security. However, the program may have begun in the mid to late 1990’s to replace the WZ-9 aircraft currently in service.
Design

A recent photo published on the internet allows some general observations about the WZ-10 design. The WZ-10 appears to have a conventional attack helicopter layout, with the pilot and weapons system officer (WSO) seated in tandem, stepped cockpits. A five-bladed main rotor is utilized, in addition to a four-blade tail rotor. Two engines are podded to the aircraft just to the rear of the cockpit. Built-in armament consists of a cannon installed in the chin of the aircraft (likely to be of 30mm calibre) and two stub wings provide attachment points for external ordinance.

It is assumed that the WZ-10 has a fly-by-wire control system, and a fully modern "glass" cockpit with MFD screens. A sensor suite is located in the nose of the aircraft, probably consisting of television and forward looking infrared (FLIR) sensors, as well as a laser rangefinder (similar to the AH-64). A full complement of ECM systems is likely present as well.

The aforementioned stub wings have one or two hardpoints, making for a possible total of two or four. Anti-tank missiles are probably carried in groups of four, and may be of the HJ-9 type (comparable to the US TOW missile). It has been suggested also that the new HJ-10 missiles could also be carried. This would significantly improve the WZ-10's anti-tank capability, as the HJ-10 is thought to be similar to the US Hellfire ATM. A rudimentary anti-air capability is possibly present with the TY-90 AAM, a small missile intended for use against helicopters and slow-moving fixed-wing aircraft.

Estimated specifications

Maximum speed
  over 260 km/h

Maximum acceleration
  +3 g (29 m/s²)

Maximum range
  over 400 km (internal fuel)?

Resources

- Chinese Defence Today
- GlobalSecurity.org
The Westland Lynx is a helicopter designed by Westland and built at Westland's factory in Yeovil, first flying on 21 March 1971 as the Westland WG.13. Originally intended as a utility craft for both civil and naval usage, military interest led to the development of the Army and Navy Lynx, which went into operational usage in 1977 and was later adopted by the armed forces of over a dozen nations.

Several aircraft were built under licsense by French company Aerospatiale for French usage.

When piloted by Roy Moxam in 1972, it broke the world record over 15 and 25 km by flying at 321.74 km/h. It also set a new 100 km closed circuit record shortly afterwards, flying at 318.504 km/h.

The British Army ordered 100 Lynx AH (Attack Helicopter) Mk.1 for various roles, including tactical transport, armed escort, antitank warfare (with eight TOW missiles), reconnaissance and evacuation.
The Army have fitted a Marconi Elliot AFCS system to the Lynx for automatic stabilisation on three axes.

**Service history**

In British service it equips the Army Air Corps (AAC) and the Fleet Air Arm (FAA). For the AAC the Lynx AH.7 and AH.9 operate as attack helicopters. The Lynx AH.7 is service with the FAA where it operates as an attack/utility helicopter in support of the Royal Marines, and the Lynx HMA.8 as anti-submarine warfare helicopter equipped with the Sea Skua anti-ship missile for Royal Navy warships.

The Lynx most prominent combat role was operating the Sea Skua, to devastating effect against the Iraqi Navy during the 1991 Gulf War. The Lynx also saw service with British Army forces during that conflict. It had already made its first combat operations in British service during the Falklands War in the 80s. Three were lost but not in combat, one on the MV Atlantic Conveyor and one each on board HMS Coventry and HMS Ardent.

The most recent wartime mission for the Lynx was during the invasion of Iraq in 2003. It has also seen extensive service during peacekeeping operations and exercises, and it is standard equipment for most Royal Navy surface combatants when they deploy.

**Versions**

- Lynx AH.1: Initial production version for the Army Air Corps, with over 100 examples built. Used for a variety of tasks, including tactical transport, armed escort, anti-tank warfare (equipped with eight TOW missiles), reconnaissance and casualty evacuation.
- Lynx AH.1GT: Conversion of the AH.Mk 1 for the British Army.
- Lynx HAS.2: Initial production version for the Royal Navy and the French Aeronavale. When it is used in the anti-submarine role, it is equipped with two torpedoes or depth charges and a dipping sonar. For anti-surface warfare, it is equipped with either four Sea Skua missiles (Royal NAvy) or four AS.12 missiles (Aeronavale).
- Lynx HAS.3
  - HAS.3 GM: Nineteen modified helicopters for the Royal Navy, for service in the Persian Gulf.
  - HAS.3 ICE: Two helicopters for the Royal Navy for use in the Arctic.
  - HAS.3: Upgraded version for the Royal Navy.
  - HAS.3S: Improved version of the HAS.Mk 3 for the Royal Navy.
- Lynx HAS.4: Upgraded version for the Aeronavale.
- Lynx HAS.2(FN): French version of the HAS.Mk 2 for the Aeronavale.
- Lynx AH.5: Upgraded version for the Army Air Corps.
- Lynx AH.7: Attack version for the Army Air Corps.
- Lynx HMA.8 ("Super Lynx"): Upgraded maritime attack version.
- Lynx AH.9 ("Battlefield Lynx"): British Army version of the Super Lynx.
- Lynx Mk.21: Export version of the HAS.2 for the Brazilian navy.
- Lynx Mk.22: Unbuilt export version for the Egyptian navy.
- Lynx Mk.23: Export version of the HAS.2 for the Argentine navy.
- Lynx Mk.24: Unbuilt export version for the Iraqi army.
- Lynx Mk.25: Export version of the HAS.2 for the Royal Netherlands Navy, also designated "UH-14A" in Dutch service.
- Lynx Mk.26: Unbuilt export version for the Iraqi army.
Lynx Mk.27: Export version for the Royal Netherlands Navy, also designated "SH-14B" in Dutch service.
Lynx Mk.28: Export version of the AH.Mk 1 for the Qatar State Police.
Lynx Mk.80: Export version of the HAS.Mk 2 for the Royal Danish Navy.
Lynx Mk.81: Export version for the Royal Netherlands Navy, designated "SH-14C" in Dutch service.
SH-14D: Upgraded helicopters for the Royal Netherlands Navy.
Lynx Mk.82: Unbuilt export version for the Egyptian army.
Lynx Mk.83: Unbuilt export version for the Saudi Arabian army.
Lynx Mk.84: Unbuilt export version for the Qatar army.
Lynx Mk 85: Unbuilt export version for the United Arab Emirates army.
Lynx Mk.86: Export version of the HAS Mk 2 for the Royal Norwegian Air Force.
Lynx Mk.87: Embargoed export version of the Argentine navy.
Lynx Mk.88: Export version for the German Navy.
Lynx Mk.89: Export version for the Nigerian navy.
Lynx Mk.90: One helicopter exported to Denmark.
Super Lynx Mk.95: Export version of the HAS.8 for the Portuguese Navy.
Super Lynx Mk.99: Export version of the HAS.8 for the South Korean Navy.
Super Lynx 300

Notes:

- HMA: Helicopter Maritime Attack

Users

- Argentine Navy
- Brazilian Navy
- British Army
- British Royal Navy
- Danish Royal Navy
- French Navy
- German Navy (Twelve ordered in 1981 for use on navy frigates.)
- South Korean Navy
- Royal Malaysian Navy
- Netherlands Royal Navy (Six search and rescue and 18 anti-submarine warfare models.)
- Nigerian Navy
- Norway (Six operated on behalf of the Kystvakt by 337 Skvadron, Luftforsvaret from the Nordkapp Class cutters.)
- Royal Air Force of Oman
- Portuguese Navy (Used on "Vasco da Gama class frigates").
- South African Air Force (Four of the Super Lynx 300 version for use on the SAN's Valour class patrol corvettes.)
- Qatar State Police
The **Westland Scout** was a general purpose military light helicopter developed by **Westland Aircraft Limited**.

It was the older brother to the **Westland Wasp**, both of them developed from the **Saunders-Roe** ("Saro") **P.531**, itself an extension of the **Saro Skeeter**. With the acquisition of Saunders Roe, Westland took over the project which became the prototype for the Scout and Wasp.

The P.531 was developed with both 635 shp **Bristol Siddeley Nimbus** and 685 shp **de Havilland Gnome H.1000** engines. The production Scout AH.1 used a 1,050 shp **Rolls-Royce** (RR having acquired Bristol Siddeley by then) Nimbus 101 engine. The Scout first flew on **29 August** 1960.

The Scout had a skid undercarriage. Behind the two front seats was a three-seat bench. It was used for general light work including observation, liaison, training, and search and rescue. When fitted as a light attack helicopter it carried two machine guns (**L7 GPMG**) and 4 anti-tank guided missiles (the **SS.11**). In use for casualty evacuation, the Scout could carry two stretchers internally and two externally.

About 150 Scouts were built by 1968

**Specification**

- **Dimensions**
  - Rotor Diameter: 32 ft 3 in
  - Length: 30 ft 4 in
  - Height: 8 ft 10 in
- **Weight**
  - Empty: 3,084 lb
  - Loaded: 5,350 lb
- **Performance**
  - Speed: 131 mph
  - Rate of Climb: 1,670 ft/min at sea level
  - Service Ceiling: 17,700 ft
  - Range: 316 miles

**Operators**

- **British Army**
- **Royal Australian Navy** (2),
- **Royal Jordanian Air Force** (3),
- **Ugandan** Police (2)
- **Bahrain Police** (2).

**Related content**

**Related development:** **Westland Wasp** **Saro Skeeter**

**Comparable aircraft:** **Kamov Ka-15** - **Aérospatiale Alouette II** - **Aérospatiale Alouette III**
The Sea King helicopter is the only helicopter used by the Norwegian rescue service.

The **Westland Sea King** is a license-built version of the Sikorsky helicopter of the same name, built by Westland Helicopters. The aircraft differs considerably from the American version, with British Rolls-Royce Bristol Gnome engines, along with British made anti-submarine warfare systems and a fully computerised control system. The Westland Sea King was also designed for a wider range of missions than the Sikorsky Sea King.

**General history**

The first flight of the Westland Sea King, a Mk. 1, took place on 7 May 1969, with the first production aircraft entering Royal Navy service that same year. The basic ASW Sea King has been upgraded numerous times, becoming the HAS. Mk 2, 5 and 6, the latter of which has been replaced by probably the most advanced ASW helicopter currently in the world, the Westland Merlin.

Other versions of the Sea King have also been produced. The HC.Mk 4 variant is still in service and remains an important asset for amphibious assaults. It is capable of transporting 28 fully equipped troops with a range of 400 miles (640 km). Some Mk. 5s of the ASW Sea King were adapted for Search and Rescue or SAR.

One of the most vital variants of the Sea King is the ASaC (Airborne Surveillance and Area Control), formally known as Airborne Early Warning (AEW). The AEW capability had been lost when the Fairey Gannet was withdrawn after the last of the RN's Fleet carriers, HMS Ark Royal, was decommissioned in 1978. During the Falklands War a number of warships were lost, with casualties, due to the lack of an AEW preence. The first of this Sea King variant came into operational service in 1985, being deployed by No. 849 Squadron FAA. The current ASaC Sea King is the Mk. 7, which is deployed on the RN's aircraft carriers.

**Users**
The Westland version has been exported to Australia, Belgium, Egypt, Germany, India, Norway, Pakistan and Qatar. The last Sea King to be built by Westland was at Yeovil in 1990 and the last of the Sea King ASW helicopters was retired in 2003, being replaced by the Westland Merlin. The ASaC or AEW variant is expected to be replaced in time for the two Queen Elizabeth-class aircraft carriers. The types in contention is a Merlin derivative, a V-22 Osprey variant or a derivative of the E-2C Hawkeye. The HC4 commando variant is also expected to be replaced within the next decade along with SAR variants. 330 were produced in total.

**Australian Experience**

The Sea King Mk.50 replaced the Westland Wessex HAS.31 as the RAN's ASW helicopter from 1974. A typical fit included Racal ARI 5955/2 lightweight radar, Racal Navigation System RNS252, Racal Doppler 91, ADF Bendix/King KDF 806A and Tacan AN/ARN 118. All serving Mk50 airframes were upgraded to Mk50A standard, through a mid-life extension. In 1995, the AQS-13B sonar was removed and since then, the Sea King’s main role changed to maritime utility support. During the first five years of operation, a number of aircraft were lost due primarily to a loss of main gearbox oil.

The future of the Fleet Air Arm’s Sea King fleet is in question after what is speculated to be mechanical failure (investigation pending) caused a Sea King providing humanitarian aid in Indonesia in April, 2005, to crash. The crash resulted in the deaths of nine Australian military personnel. Australian Sea Kings played an integral part in the relief effort for the December 2004 Indian Ocean Tsunami, particularly in Indonesia’s Aceh province where they delivered medical teams and aid supplies from Royal Australian Navy ships.

**Operational history**
Falklands War

The Sea King proved her remarkable versatility and endurance during the Falklands War, performing mainly anti-submarine search and attack, also replenishment, troop transport and Special Forces insertions into the occupied islands. On 23 April 1982, a Sea King HC4 was ditched while performing a risky vertical replenishment mission, at night, while operating from the flagship HMS Hermes.

Another Sea King was lost, again from ditching into the sea, due to a systems malfunction. All of the Sea King's crew were rescued. Five days later another Sea King, again from Hermes, crashed into the sea due to an altimeter problem; all crew were rescued.

Royal Air Force Westland Sea King HAR.3 search and rescue variant, seen at Ilfracombe, north Devon, England

One of the most mysterious events of the war occurred on 17th May, when a Sea King HC Mk4 landed at Punta Arenas, Chile and was subsequently destroyed by its crew. The three crew later gave themselves up to Chilean authorities. They were returned to the UK and were given gallantry awards for the numerous dangerous missions that they had undertaken.

One of the most tragic accidents during the Falklands War came on 19 May. A helicopter had been transporting SAS troops to HMS Intrepid from Hermes and was attempting to land on Intrepid. A thump was heard, and the Sea King dipped and crashed into the sea, killing 22 men. However, nine survived this accident, but only after jumping out of the Sea King just before the helicopter crashed. Bird feathers were found in the debris of the crash, which appeared to suggest that this accident was the result of a bird, though this theory is debated. The SAS lost 18 men in that crash, their highest number of casualties on one day since World War II. The Royal Signals lost one man and the RAF one man.

Gulf War I and II

The Sea Kings during the 1991 Gulf War had a limited role, compared to their wide ranging task during the Falklands War. Its roles included air-sea rescue, inter-ship transporting duties and transporting Royal Marines onto any suspect ships that refused to turn around during the enforced embargo on Iraq.

During the 2003 invasion of Iraq, Sea King ASaC Mk7 from 849 NAS operated off the flagship of the Royal Navy Task Force HMS Ark Royal. Sea King HC Mk4s also deployed from HMS Ocean (operated by 845 NAS) landing the lead invasion forces on the Al Faw peninsula, as well as Sea King HAS Mk6 from RFA Argus (operated by No. 820 NAS).
On March 22, 2003, two AEW Sea Kings from 849 NAS operating from Ark Royal collided over the Persian Gulf, killing six Britons and one American.

During the Gulf Wars the Sea Kings provided logistical support, transporting Royal Marines from their off-shore bases on Ark Royal, Ocean and other ships on to land in Kuwait.

Balkans

The Sea King participated in the UN's intervention in Bosnia, with Sea Kings operated by No. 820 NAS, No. 845 NAS. The Sea Kings from 820 NAS were deployed from Royal Fleet Auxiliary ships Fort Grange and Olwen. They provided logistical support, rather than the ASW role that the Squadron was geared towards, ferrying troops as well as supplies across the Adriatic Sea. They performed over 1,400 deck landings, flying in excess of 1,900 hours. The Sea Kings from 845 NAS performed vital casualty evacuation and other tasks. Their aircraft were hit numerous times, though no casualties were incurred.

During NATO's intervention in Kosovo, a British led operation, Sea Kings from No. 814 Squadron FAA, operated aboard HMS Ocean and RFA Argus and also on destroyers and frigates. They provided search and rescue (SAR), as well as transporting troops and supplies.

Variants

- **Sea King HAS.Mk 1** - The first basic ASW Westland Sea King. First flew in 1969.
- **Sea King HAS.Mk 2** - Upgraded ASW variant. Some were later converted for AEW (Airborne Early Warning) duties.
  - **Sea King AEW.Mk 2A** - Originally HAC2s but were later converted for the AEW role after shortcomings in that role were revealed with tragic consequences during the Falklands War.
- **Sea King HAR.3** - Search and Rescue variants. The first SAR Sea Kings were produced for the Royal Norwegian Air Force and the German Navy. In UK service with 22 and 202 Squadrons of the RAF.
- **Sea King HAR.3A** - Updated SAR variant for the Royal Air Force.
- **Sea King HC.Mk 4** - Commando variant. Is capable of transporting 28 fully equipped troops.
- **Sea King Mk.41** - SAR variant for the Federal German Navy.
- **Sea King Mk.4X** - two helicopters for the Royal Aircraft Establishment at Farnborough.
- **Sea King Mk.42** - ASW variant for the Indian navy.
- **Sea King Mk.42A** - Upgraded ASW variant for the Indian navy.
- **Sea King Mk.42B** - Anti-ship model for the Indian navy.
- **Sea King Mk.43** - SAR variant for the Royal Norwegian Air Force.
- **Commando Mk.1** - Tactical transport helicopter for the Egyptian air force.
- **Commando Mk.2** - Upgraded tactical transport helicopter for the Egyptian air force.
- **Sea King Mk.43A** - Upgraded SAR variant for the Royal Norwegian Air Force.
- **Commando Mk2A** - Tactical transport helicopter for the Qatar Emiri Air Force.
- **Sea King Mk.45** - ASW variant for the Pakistan navy.
- **Commando Mk.2B** - VIP transport helicoter for the Egyptian air force.
- **Sea King Mk.47** - ASW variant for the Egyptian navy.
- **Commando Mk.2C** - VIP transport helicopter for the Qatar Emiri Air Force.
- **Sea King Mk.48** - SAR variant for the Royal Belgian Air Force.
- **Sea King Mk.50** - Multi-role model for the Royal Australian Navy.
- **Sea King Mk.50A & B** - Upgraded multi-role model for the Royal Australian Navy.
- **Sea King HAS.Mk 5** - Upgraded ASW variant and later converted for SAR (Search and Rescue) duties.
- **Sea King HAS.Mk 6** - Upgraded ASW variant.
- **AEW7** - Upgraded AEW variant.
- **ASaC7** - AEW7s uprated for the ASaC role

**Specifications (Sea King HAS.5)**

**General characteristics**

- **Crew:** Two to Four dependant on role
- **Length:** 54 ft 9 in (16.69 m)
- **Main rotor diameter:** 61 ft 0 in (18.90 m)
- **Height:** 16 ft 10 in (5.13 m)
- **Main rotor area:** 3,020 ft² (280 m²)
- **Empty:** 13,672lb (6202kg)
- **Loaded:** 21,000lb (9525kg)
- **Maximum takeoff:** 21,400 lb (9,707 kg)
- **Powerplant:** 2x Rolls-Royce Gnome H1400-2 turboshafts, 1,660 shp (1,238 kW) each

**Performance**

- **Maximum speed:** 144 mph (232 km/h)
- **Range:** 764 miles (1230 km)
- **Service ceiling:** 10,000ft (m)
- **Rate of climb:** 2,020 ft/min (616 m/min)
- **Main rotor loading:** lb/ft² (kg/m²)
- **Power/Mass:** hp/lb (kW/kg)

**Related content**

**Related development:** H-3 Sea King

**Comparable aircraft:**

**Designation sequence:**

**External links**

- [heli.com Section on the Westland Sea King](#)
- [RAN Sea King](#)
- [Royal Navy Sea Kings](#)
- [RAF Sea Kings](#)
# WAH-64 Apache

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Role</strong></td>
<td>Attack</td>
</tr>
<tr>
<td><strong>Crew</strong></td>
<td>2 — one pilot, one co-pilot/gunner (CPG)</td>
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<table>
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<tr>
<th>Dimensions</th>
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<tr>
<td><strong>Length</strong></td>
<td>17.7 m (58.3 ft) with rotors</td>
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<tr>
<td><strong>Wingspan</strong></td>
<td>4.9 m (16.3 ft)</td>
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<tr>
<td><strong>Height</strong></td>
<td>3.87 m (12.7 ft)</td>
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<tr>
<td><strong>Wing area</strong></td>
<td>168.11 m² (1,809.5 ft²) main rotor disc</td>
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<table>
<thead>
<tr>
<th>Weights</th>
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<tbody>
<tr>
<td><strong>Empty</strong></td>
<td>5,165 kg (11,387 lb)</td>
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<tr>
<td><strong>Loaded</strong></td>
<td>8,006 kg (17,650 lb)</td>
</tr>
<tr>
<td><strong>Max take-off</strong></td>
<td>9,525 kg (21,000 lb)</td>
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<tr>
<th>Powerplant</th>
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<tbody>
<tr>
<td><strong>Engines</strong></td>
<td>2 × Rolls-Royce RTM322 Turboshafts</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>1,671 kW (2,240.84791 hp)</td>
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<table>
<thead>
<tr>
<th>Performance</th>
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<tbody>
<tr>
<td><strong>Maximum speed</strong></td>
<td>365 km/h (197 kt)</td>
</tr>
<tr>
<td><strong>Combat range</strong></td>
<td>482 km (260 n miles)</td>
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<tr>
<td><strong>Ferry range</strong></td>
<td>1,899 km (1,024 n miles)</td>
</tr>
<tr>
<td><strong>Service ceiling</strong></td>
<td>6,400 m (21,000 ft)</td>
</tr>
<tr>
<td><strong>Rate of climb</strong></td>
<td>762 m/min (2,500 ft/min)</td>
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<th>Armament</th>
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<tbody>
<tr>
<td><strong>Guns</strong></td>
<td>M230 30mm automatic cannon, 1,200 rds</td>
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<tr>
<td><strong>Missiles</strong></td>
<td>Hellfire missiles (and Stinger, Starstreak, Sidewinder/Sidearm proposed)</td>
</tr>
<tr>
<td><strong>Rockets</strong></td>
<td>CRV7</td>
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The WAH-64 is a licence-built version of the Boeing AH-64 Apache Longbow attack helicopter for the British Army. The first eight helicopters were built by Boeing, the remaining 59 by Westland at Yeovil.

In British Army service the Apache AH Mk.1 will replace the Westland Lynx Anti-tank helicopters and will be operated by three regiments of the Army Air Corps as part of 16 (Air Assault) Brigade. The Apache will also operate in attack raids as US Army Apaches did on the first night of the Gulf War, destroying a major air defence node. Another mission is armed reconnaissance. Like the US Apache Longbow AH-64Ds the Westland Apache carries a Fire Control Radar (FCR) and Radar Frequency Interferometer (RFI), providing an integrated surveillance and attack system. The 'Longbow' radar is the bulbous unit over the rotor hub assembly.

The UK's Strategic Defence Review called for Apaches to undertake amphibious attack missions, operating from HMS Ocean, the Invincible class aircraft carriers and their successors, the (Royal Navy CVF programme), and possibly the amphibious assault vessels HMS Bulwark and HMS Albion.

As such, one of the major differences between the WAH-64 and AH-64 Apache variants is the folding blade mechanism, required to stow the helicopters in the confined space onboard ship.

There are other differences between them, including

- Rolls-Royce (ie British) RTM322 engines instead of the US General Electric T700s.
- Blade anti-ice protection
- Bowman secure communications system
- Capability to carry CRV7 rockets
- Capability to carry the advanced Brimstone missile.

Project history

Procurement of the Apache has been somewhat protracted. The UK began the search in 1991 with an initial requirement for 127 aircraft. This number was further reduced to 97, and then 67, by the time the contract was signed in March 1996. The first helicopter, built by Boeing, was delivered in March 1999. The first Westland built aircraft was delivered in July 2000. The 67th and final Apache was handed over in July 2004. The cost of the helicopter is currently expected to be £3.1 billion, £71 million above the original approved cost. This increase is due to increased costs of trials. The total acquisition cost of the project, including the training package, is expected to be £4.117 billion.

Further problems occurred when it was realised that there were not enough trained pilots for the new aircraft and as such many were put into storage at RAF Shawbury in 2004.

External links

- Army Technology: Apache
- BBC News: MoD condemned for Apache delays
- BBC News: Army grounds Apache helicopters
- National Audit Office: The Introduction of the Apache Helicopter

Retrieved from "http://en.wikipedia.org/wiki/Westland_WAH-64_Apache"

Category: Helicopters
The **Westland Wasp** was a small first-generation, gas-turbine powered, shipboard anti-submarine helicopter. It came from the same P.531 program as the British Army **Scout** and was based on the earlier piston-engined **Saro Skeeter**. It fulfilled the 'MATCH' (MAnned Torpedo-Carrying Helicopter) requirement of the **Royal Navy** for a helicopter small enough to land on the deck of a frigate and carry a useful load of two homing torpedoes.

**Design History**

The MATCH system came about because of the increasing speed and attack range of the submarine threat, and the increased range at which this threat could be detected. Contemporary shipboard weapons did not have the necessary range, therefore MATCH was in essence a stand-off weapon with the helicopter carrying the torpedo to the target and being instructed when and where to drop it. Unlike more modern aircraft, the Wasp carried no sonar of its own, and was limited strictly to working in partnership with its' parent ship.

The first flight of the prototype P.531 model took place on **28 October 1962**. The prototype differed in having a fixed, wheel-less 'pogo-stick' undercarriage, and full production soon commenced, 98 in total being procured for the RN. She was a very successful aircraft, being exported to Brazil, The Netherlands, Indonesia, Malaysia, New Zealand and South Africa. An impressive total of 125 aircraft was built in total.

**Features**

Wasp was essentially a marinised Scout, indeed it was originally to be called the **Sea Scout**, and differed mainly in design details. It had a unique 4-wheeled castoring undercarriage that allowed the aircraft to be manoeuvred on the small, pitching flightdeck without the danger of rolling off. Additional fuel tankage was installed in the cabin doors and the tail and main rotor blades were foldable to allow stowage in the tiny hangars fitted to the first generation helicopter-carrying escorts.

Later modifications included the ability to carry the Sud **SS.11** wire-guided missile, with the fitting of an observer's sight in the cabin roof, and the installation of large inflatable emergency floats in sponsons on either side of the cabin to prevent capsizing of the top-heavy aircraft in the event of ditching. With the capacity to seat 2 passengers Wasp was useful for short-range transport missions
and by adding the SS.11 it had limited abilities to target small surface targets such as patrol boats or shore positions.

Service

Royal Navy

The Wasp HAS.1 was introduced to service in the small ships role in 1964, after an intensive period of trials by 700(W) IFTU between June 1963 and March 1964. It served in this primary role with 829 Naval Air Squadron, but also in training units to supply crews for the front line with 705 NAS between 1965 and 1967 and in 703 NAS between 1972 and 1981. Single airframes also served for light liaison duties in the Commando Assault squadrons, 845 NAS and 848 NAS until 1973. Although effective as a submarine killer, it was best deployed paired with a Wessex HAS.3 submarine hunter. It was taken out of front-line service in the late 1970s with the introduction of the Westland Lynx, a more capable and deadly aircraft.

Westland Wasp HAS.1 G-CBUI as XT420 in markings of 829 Squadron, HQ Flt at RNAS Yeovilton in September 2005

It was brought back into full operational service when war with Argentina broke out in 1982 after the latter had invaded and then occupied the Falkland Islands. Seven reserve frigates and their helicopters were recommissioned for active service in the South Atlantic. During the conflict, a Wasp, operating from HMS Endurance, the Antarctic patrol ship, launched a number of torpedoes which homed in on and damaged the Argentine submarine Santa Fe, which posed a potential risk to the British Task Force that was steaming towards the Falkland Islands. The submarine was later run aground by her crew due to the damage she had sustained, thus becoming the first casualty of the sea war, as well as the first direct engagement by the Royal Navy Task Force.

The last Wasp was finally withdrawn from service in 1988 when the last of the frigates for which the Wasp had been designed, was decommissioned.

Royal Malaysian Navy

The Wasp came into service with the Royal Malaysian Navy quite late, compared to the others nations who procured the aircraft. She joined the RMN on 11 May 1990. She had a relatively short career with that Navy though, being phased out just ten years later. Her replacement is to be the Eurocopter Fennec.

Royal New Zealand Navy
The first Wasp was purchased in 1966 being immediately assigned to the new Leander class frigate of the Royal New Zealand Navy (RNZN), HMNZS Waikato. They provided numerous tasks, as well as taking part in the Armilla Patrol in the Persian Gulf during the 1980s.

In 1997, four Wasps performed a flypast, marking the arrival of the new ANZAC-class frigate, HMNZS Te Kaha. Like all New Zealand naval helicopters, the Wasps were flown by RNZN pilots but owned and maintained by ground crews of No. 3 Squadron RNZAF.

They were very venerable and long-serving aircraft for the RNZN, two continuing in service until 1998, after an astonishing 32 years in service. HMNZS Waikato, the ship that had first operationally deployed the Wasp, was herself decommissioned that same year. They have since been been replaced by the far more capable SH-2 Seasprite.

RNZN Wasps are preserved in the Royal New Zealand Air Force Museum in Christchurch and the Museum of Transport and Technology in Auckland. A number were sold into private ownership, at least one of which continues to fly.

Other operators

The Wasps though carried on in service with the Brazilian, Indonesian, and South African navies. The Indonesian aircraft are all ex-Dutch airframes and are the last of the type in active service. In the Royal Netherlands Navy, the AH-12A Wasp has been replaced by the same helicopter that had replaced it in the Royal Navy.

Specifications (Wasp HAS.1)

General Characteristics

- **Crew:** one pilot, one Aircrewman
- **Capacity:** up to four passengers
- **Length:** 40 ft 4 in (12.29 m)
- **Main rotor diameter:** 32 ft 3 in (9.83 m)
- **Height:** 8 ft 11 in (2.72 m)
- **Main rotor area:** 816 ft² (76 m²)
- **Empty:** 3,452 lb (1,566 kg)
- **Loaded:** lb ( kg)
- **Maximum takeoff:** 5,500 lb (2,495 kg)
- **Powerplant:** 1x Rolls-Royce Nimbus 103 turboshaft, 1,050 shp (783 kW)

Performance

- **Maximum speed:** 120 mph (193 km/h)
- **Range:** 303 miles (488 km)
- **Service ceiling:** ft ( m)
- **Rate of climb:** ft/min ( m/min)
- **Main rotor loading:** lb/ft² ( kg/m²)
- **Power/Mass:** hp/lb ( kW/kg)

External links

- [Helicopter History site](#) section on the Wasp.
The Westland Whirlwind helicopter was a British-built version of the U.S. Sikorsky S-55/H-19 Chickasaw. It primarily served with the Royal Navy (Fleet Air Arm) in anti-submarine and search-and-rescue roles.

### History

The first prototype British Whirlwind HAR.1 flew in August 1953, with the 600 hp Pratt & Whitney R-1340-40 Wasp, and it entered service shortly afterwards. They served in non-combat roles, including search and rescue and communications functions. The HAR.3 had a larger 700 hp Wright Cyclone R-1300-3 engine. It was not until 1955 that the HAR.5 flew for the first time with a British power plant, the Alvis Leonides Major.

The HAS.7 became the first British helicopter designed for anti-submarine work in the front-line when it entered service in 1956. It was equipped with radar and dipping ASDIC for submarine detection and designed to be equipped with a torpedo, but could not carry both simultaneously. In this version the engine was a 750 hp (560 kW) Alvis Leonides Major 755/1. This helicopter had a hovering ceiling at 9,400 ft and a range of 334 miles at 86 mph.

Later in their lives, some HAR.9s were converted to use the Rolls-Royce Gnome turbine engine.

From its start with the Navy, the Whirlwind came to be used by the British Army and RAF. More than 400 Whirlwinds were built, of which nearly 100 were exported to the following countries: Austria, Brazil, Canada, Cuba, France, Ghana, Jordan, Iran, Kuwait, Spain, Saudi Arabia and Yugoslavia.

### Variants

(With production numbers)

- **WS-55 Series 1: 44**
  - American engines, transport helicopters for military and civilian use

- **WS-55 Series 2: 19**
  - Alvis engines, civilian use

- **WS-55 Series 3: 5**
  - Gnome turboshaft, civilian use
- HAR.1 : 10
  RN service
- HAR.2 : 33
  RAF service from 1955
- HAR.3 : 25
  Wright Cyclone engine
  RN service
- HAR.4 : 24
  Improved HAR.2 for hot and high conditions
- MAR.5 : 3
  Alvis engines
  RN service
- HAS.7 : 129
  RN anti-submarine duties - 1 torpedo
  12 used for Royal Marine transport use
- HCC.8 : 2
  Royal Flight transport, VVIP
- HAR.9 :
  RN service
- HC.10
  RAF service
- HAR.10: 68
  RAF, transport and air-sea rescue
- HCC.12: 2
  Royal Flight,

The model numbers for the US-built evaluation models were
- HAR.21 10 rescue
HAS.22 12 anti-submarine

Specifications (Whirlwind HAS7)

General Characteristics

- **Crew**: two pilots
- **Length**: 41 ft 9 in (12.71 m)
- **Main rotor diameter**: 53 ft 0 in (16.15 m)
- **Height**: ft in ( m)
- **Main rotor area**: 2,205 ft² (205 m²)
- **Empty**: lb ( kg)
- **Loaded**: lb ( kg)
- **Maximum takeoff**: 7,800 lb (3,538 kg)
- **Powerplant**: 1x Alvis Leonidas Major 9-cylinder radial, 750 hp (559 kW)

Performance

- **Maximum speed**: 104 mph (167 km/h)
- **Range**: 334 miles (534 km)
- **Service ceiling**: ft ( m)
- **Rate of climb**: ft/min ( m/min)
- **Main rotor loading**: lb/ft² ( kg/m²)
- **Power/Mass**: hp/lb ( kW/kg)

Armament

- **1x torpedo (carried in place of dipping sonar)**

External links:

- Navy News
- Helicopter museum
- RAF museum

Related content

Related development:

Comparable aircraft:
Westland Widgeon

The Westland Widgeon was a private venture improvement on the Westland WS-51 Dragonfly helicopter, which essentially increased the cabin capacity and replaced the Dragonfly's rotor head, blades and gearbox by the units used in the Westland Whirlwind. Three Dragonfly Series 1As were converted to WS-51 Series 2 Widgeons and the first one flew on 23 August 1955.

There was a plan to take up to 24 existing Fleet Air Arm Dragonflies to Dragonfly HC.7 standard (as the Naval Widgeon was to become) but this was abandoned and it contributed to the decision to stop progress.

The Widgeon was a technical triumph and Widgeons flew in many parts of the world (Brazilian Navy, Hong Kong Police, for example), but it never achieved commercial success.


Category: Helicopters

YH-32 Hornet

The Hiller YH-32 Hornet was built by Hiller Aircraft in the early 1950's. It was a small and unique design because it was powered by two Hiller 8RJ2B ramjet engines mounted on the rotor blade tips. Versions of the YH-32 Hornet were built for the U.S. Army and the U.S. Navy in the early 1950's.

The Hiller Museum identifies the YH-32A, named the Sally Rand, as the first helicopter gunship.

Specifications (YH-32)

General characteristics

- **Crew:** two pilots
- **Length:** ft (m)
- **Main rotor diameter:** 23 ft 0 in (6.9 m)
- **Height:** 7 ft 10 in (2.4 m)
- **Main rotor area:** 402 ft² (37.4 m²)
**Empty:** 544 lb (244.8 kg)
**Loaded:** 1,080 lb (486 kg)
**Maximum takeoff:** lb ( kg)
**Powerplant:** 2 x Hiller 8RJ2B ramjets, 40 lbf (178 N) thrust each

**Performance**

- **Maximum speed:** mph (km/h)
- **Range:** 28 miles (km)
- **Service ceiling:** 6,900 ft ( m)
- **Rate of climb:** 700 ft/min (213 m/min)
- **Main rotor loading:** 2.7 lb/ft² (13 kg/m²)
- **Power/mass:** hp/lb ( kW/kg)

**Sources**

- Hiller Aviation Museum timeline "The First 100 Years of Aviation" [1]

**External links**

- [Hiller Aviation Museum](https://www.hilleraviationmuseum.org)

**Related content**

**Related development:**

**Comparable aircraft:**


**Yakovlev Yak-24**

The **Yakovlev Yak-24** ([NATO reporting name Horse](https://en.wikipedia.org/wiki/Yakovlev_Yak-24)) was a twin engine, twin rotor transport [helicopter](https://en.wikipedia.org/wiki/Helicopter) developed in the [USSR](https://en.wikipedia.org/wiki/USSR).
History

The Yak-24 was designed in the construction bureau of Alexander Sergeyevich Yakovlev, not specializing in helicopters so far, to meet a demand for a heavy transport helicopter to supplement the medium Mil Mi-4. The first prototype was flown on 3 July, 1952. It was powered with two 1,700 hp Shvetsov ASh-82V radial engines and was built in a tandem rotor layout, not typical for Soviet helicopters, which soon brought it nick-name Letayushchiy Vagon (Летающий вагон) - 'the Flying Wagon'. The engines and transmission system were the same, as already proven in the single-engine Mi-4, but the Yak-24 appeared not as successful design. Its engines were linked together so each could drive one or both rotors, but such arrangement caused strong vibrations. After problems were partially solved, the new helicopter was order for production, which started in 1955. In July 1955 it was first presented to the public, and on 17 December 1955 it set two new world payload records, lifting a 2,000 kg load to 5,082 m and 4,000 kg to 2,902 m.

Initial variant was the Yak-24 - Army transport helicopter, that could carry up to 30 airborne troops, 18 stretchers or 3,000 kg of cargo. From 1958, the improved model Yak-24U was produced, with all-metal rotors of bigger diameter (21 m) and all-metal fuselage. It could carry 40 soldiers or 3,500 kg of cargo, including 2 GAZ-69 jeeps or anti-tank guns. A civilian variant for 30 passengers was the Yak-24A, produced from 1960 in a small series. It was also used as a flying crane, lifting an external load of 5,000 kg. There were two proposed models: the Yak-24K 9-seat VIP salon with shorter fuselage and civilian Yak-24P for 39 passengers with stronger 2,700 hp turboshaft engines, but they were not built.

Exact number of produced Yak-24 helicopters is not sure, but due to technical problems, the series was very small. The need for a heavy transport helicopter was satisfied with the successful Mil Mi-6 by then. Most often a number of about 100 produced Yak-24 helicopters is given, some sources state about 40. According to some sources, the passenger Yak-24A was not actually produced.

Specifications (Yak-24)

General characteristics

- **Crew:** three
- **Capacity:** 30 soldiers, 18 stretchers, or 3,000 kg (6,600 lb) of cargo
- **Length:** 21.34 m (70 ft 0 in)
- **Main rotor diameter:** 2x 20.20 m (66 ft 3 in)
- **Height:** m ( ft in)
- **Main rotor area:** 640.9 m² (6,895 ft²)
- **Empty:** 10,607 kg (23,335 lb)
- **Loaded:** kg ( lb)
- **Maximum takeoff:** 14,270 kg (31.394 lb)
- **Powerplant:** 2x Shvetsov ASh-82V radials, 1,268 kW (1,700 hp) each

Performance

- **Maximum speed:** 195 km/h (122 mph)
- **Range:** 430 km (268 miles)
- **Service ceiling:** 5,000 m (16,400 ft)
- **Rate of climb:** m/min ( ft/min)
- **Main rotor loading:** kg/m² ( lb/ft²)
- **Power/Mass:** kW/kg ( hp/lb)
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