

UH-1 Iroquois



UH-1 Iroquois

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](#)

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

UH-60 Black Hawk



UH-60 Black Hawk

UH-60 Black Hawk helicopter		
Description		
Role	Utility and assault	
Crew	3 or 4	
First Flight		
Entered Service		
Manufacturer	Sikorsky Aircraft Corporation of Stratford, Connecticut , a division of United Technologies Corporation .	
Dimensions		
Length	64 ft 10 in	19.76 m
Height	16 ft 10 in	5.13 m
Weights		
Empty	10,624 lb	4,819 kg
Loaded	16,260 lb	7,375 kg
Maximum takeoff	20,250 lb	9,185 kg
Capacity		
Powerplant		

Engines	Two General Electric T700-700 free-turbine turboshafts	
Power	1,560 hp	1,163 kW
Performance		
Maximum speed	184 mph	296 km/h
Combat range	368 miles	592 km
Ferry range	1,380 miles	2,220 km
Service ceiling	ft	5,790m
Rate of climb	ft/min	213 m/min
Wing loading	lb/ft ²	kg/m ²
Thrust/Weight		
Power/Mass	hp/lb	kW/kg
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.

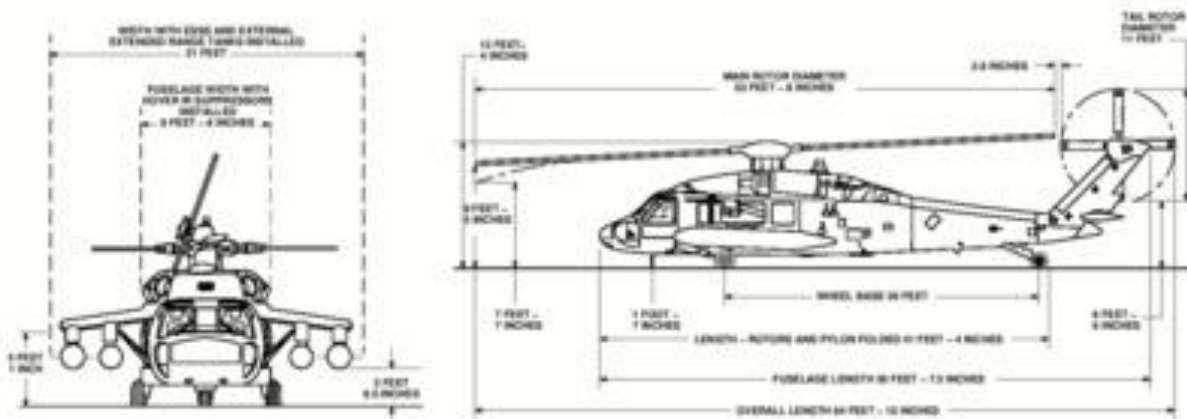
The Black Hawk was developed to meet a US Army requirement for a [UH-1 Iroquois](#) replacement in 1972. Three prototypes were constructed, the first (YUH-60) flying in October [1974](#), and evaluated against a rival (YUH-61) [Boeing-Vertol](#) design. The Black Hawk was selected for production and 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.



- [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 targetting 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 led 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](#)

Westland Lynx



Description

Role	Helicopter
Crew	2
Manufacturer	Westland
Nationality	British

Dimensions

Length	13.33 m
Main rotor diameter	12.80 m
Height	3.67 m
Main rotor area	129 m ²
Mass (empty)	3,291 kg
Mass (Maximum takeoff)	5,330 kg
Powerplant	2x Rolls-Royce Gem 42-1 turboshafts , 1,000 hp (746 kW) each
Maximum speed	256 km/h
Range	1,045 km
Rate of climb	606 m/min
Armament	Naval: 2 x torpedoes <i>or</i> 4x Sea Skua missiles <i>or</i> 2 x depth charges Attack: 8 x TOW ATGM Either: GPMGs

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 license 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

- Westland WG.13: prototype that first flew on [21 March 1971](#).
- 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](#).
- Battlefield 800: Project abandoned in 1992.
- 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](#)

Westland Scout

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](#) -

Designation sequence:

Westland Sea King



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 presence. 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



[Indian Navy](#) Sea King 42B on INS Mumbai at [Portsmouth](#), UK



[Royal Australian Navy](#) Sea Kings, Shark 07 and Shark 02

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 helicopter 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 updated 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

- [helis.com Section on the Westland Sea King](#)
- [RAN Sea King](#)
- [Royal Navy Sea Kings](#)
- [RAF Sea Kings](#)

WAH-64 Apache



Description

Role	Attack
Crew	2 — one pilot, one co-pilot/gunner (CPG)

Dimensions

Length	17.7 m (58.3 ft) with rotors
Wingspan	4.9 m (16.3 ft)
Height	3.87 m (12.7 ft)
Wing area	168.11 m ² (1,809.5 ft ²) main rotor disc

Weights

Empty	5,165 kg (11,387 lb)
Loaded	8,006 kg (17,650 lb)
Max take-off	9,525 kg (21,000 lb)

Powerplant

Engines	2 × Rolls-Royce RTM322 Turboshfts
Power	1,671 kW (2 240.84791 hp)

Performance

Maximum speed	365 km/h (197 kt)
Combat range	482 km (260 n miles)
Ferry range	1,899 km (1,024 n miles)
Service ceiling	6,400 m (21,000 ft)
Rate of climb	762 m/min (2,500 ft/min)

Armament

Guns	M230 30mm automatic cannon , 1200 rds
Missiles	Hellfire missiles (and Stinger , Starstreak , Sidewinder/Sidearm proposed)
Rockets	CRV7

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
- [BAE Systems](#) (formerly [GEC](#)) Helicopter Integrated [Defensive Aids System](#) (HIDAS).
- [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](#)

Westland Wasp



Westland Wasp HAS.1



Westland Wasp

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 maneuvered 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 Fenec](#).

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 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.

Related content

Related development: [Westland Scout](#) [Saro Skeeter](#)

Comparable aircraft: [Kamov Ka-15](#) - [Aérospatiale Alouette II](#) - [Aérospatiale Alouette III](#) -

Designation sequence:

Westland Whirlwind (rotary wing)

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.

Retrieved from "http://en.wikipedia.org/wiki/Westland_Widgeon_%28helicopter%29"

[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.



Hiller YH-32 Hornet in museum display

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

- Display information at [Museum of Flight](#) in [Seattle, Washington](#).
- Hiller Aviation Museum timeline "The First 100 Years of Aviation" [\[1\]](#)

External links

- [Hiller Aviation Museum](#)

Related content

Related development:

Comparable aircraft:

Designation sequence: [H-29](#) - [H-30](#) - [YH-31](#) - [YH-32](#) - [XH-33](#) - [H-34](#) - [H-35](#)

Yakovlev Yak-24



Yakovlev Yak-24

The [Yakovlev Yak-24](#) ([NATO reporting name](#) *Horse*) was a twin engine, twin rotor transport [helicopter](#) developed in the [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)

Related content

Related development:

Comparable aircraft: [H-21 Shawnee](#) - [Piasecki PV-17](#) - [Bristol Belvedere](#) - [CH-46 Sea Knight](#) - [CH-47 Chinook](#)

Designation sequence: [Yak-20](#) - [Yak-21](#) - [Yak-23](#) - **Yak-24** - [Yak-25](#) - [Yak-26](#) - [Yak-27](#)