

▪ NHI NH90



Description

Role:	medium transport/utility helicopter
Crew:	One to two pilots + 20 troops, 12 stretchers or one to two tacco/senso operators

Dimensions

Length:	19.56 m (rotors turning)
Fuselage length:	16.13 m
Height:	5.23 m
Rotor diameter:	16.30 m

Weights

Empty:	5,400 kg
Maximum internal fuel:	2,036 kg
Maximum take-off:	10,600 kg

Powerplant

Engines:	2 x MTU/Rolls-Royce/Turbomeca MTR322 or General Electric T700-T6E turboshafts
Power:	2 x 2,230 shp (1,660 kW)

Performance

Maximum speed:	300 km/h
Combat range (internal fuel):	
Ferry range (external fuel):	
Service ceiling:	
Maximum rate of climb:	480 m/min

Armament

Gun:	none
Missiles:	anti-submarine and/or anti-surface missiles (NFH version)

The **NHI NH90** is a twin-engine, ten-ton multi-role [helicopter](#) manufactured by [NHIndustries](#), a company established by [Agusta](#), [Eurocopter](#) and [Stork Fokker Aerospace](#).

The NH90, which can be flown by a single pilot, is designed to operate by night and day and in poor weather.

History

On [1 September 1992](#), NH Industries signed a NH90 design-and-development contract with NAHEMA (NATO Helicopter Management Agency). This agency represents the four participating nations: [France](#), [Italy](#), [Germany](#) and the [Netherlands](#). [Portugal](#) joined the agency on [21 June 2001](#).

Design started in [1993](#). The first prototype, the PT1, made its first flight on [18 December 1995](#).

The second prototype, the PT2, first flew on [19 March 1997](#) and the third prototype, the PT3, on [27 November 1998](#).

On [30 June 2000](#) an industrialisation and first-batch contract for 298 NH90s was signed between NAHEMA and NHI.

In [2001](#), three additional customers signed purchase orders:

- [Sweden](#) for 25 helicopters.
- [Finland](#) for 20 helicopters.
- [Norway](#) for 24 helicopters.

On [29 August 2003](#), [Greece](#) ordered 34 NH90s with another 14 in option.

Deliveries are due to start in [2004](#) for the first German Army and Italian Army TTH versions and also for the Finnish Defence Forces TTT version.

From [2005](#), the Italian and French navies will start to receive their NFH versions and the first Swedish and Norwegian NH90s will also be delivered.

Versions

NFH: NATO [Frigate Helicopter](#)

The primary role of the NFH version is autonomous [anti-submarine warfare](#) (ASW) and [anti-surface unit warfare](#) (ASuW), mainly from naval ships. These aircraft are equipped for day and night, adverse weather and severe ship motion operations.

Additional roles include anti-air warfare support, vertical replenishment (vertrep), search & rescue (SAR) and troop transport.

TTH: **Tactical Transport Helicopter**

The primary role of the TTH version is the transport of 20 troops or more than 2,500 kg of cargo, heliborne operations and search & rescue.

Additional roles include medical evacuation (12 stretchers), special operations, electronic warfare, airborne command post, parachuting, [VIP](#) transport and flight training.

Users

The current NH90 order book is as follows:



An NHI example MRH-90 at the 2005 Australian Airshow

- French Navy: 27 NFH
- Italian Army: 60 TTH
- Italian Navy: 46 NFH
- Italian Navy: 10 TTH
- Italian Air Force: 1 TTH/CSAR (in option)
- German Army: 50 TTH + 33 TTH (in option)
- German Air Force: 30 TTH + 24 TTH (in option)
- German Navy: 38 NFH (MH-90)
- Dutch Navy: 20 NFH
- Portuguese Army: 10 TTH
- Spain: 45 TTH and NFH
- Sweden: 13 TTT (SAR), 5 NFH (ASW) + 7 (in option)
- Finland: 20 TTT (SAR)
- Norway: 6 NFH (ASW), 8 NFH (Coast Guard) + 10 NFH (SAR) (in option)
- Greece: 16 TTH, 4 TTH (Special Operations) + 14 TTH (in option)
- Sultanate of Oman: 20 TTH
- Australian Army: 12 MRH (TTH)
- [New Zealand](#) has ordered an as yet unspecified number of NH90s (believed to be around 8), for the [Royal New Zealand Air Force](#)
- Belgium: 10 (announced December 14th 2005)

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NOTAR



MD 900 (German police)

NOTAR, an acronym for NO Tail Rotor, is a helicopter stabilization process developed by [McDonnell Douglas](#) Helicopter Systems which eliminates the use of tail [rotors](#) on [helicopters](#), yielding quieter and safer operation.

NOTAR rotorcraft utilize the [Coanda Effect](#), ducting downdraft from the main rotor blades into the tailboom. A variable pitch fan is enclosed in the aft fuselage section immediately forward of the tail boom and driven by the main rotor transmission. Anti-torque control is effected using this low pressure, high volume air ducted through the tail boom. There are currently three helicopters that take advantage of NOTAR technology, all produced by MD Helicopters:

- MD 520N, a NOTAR variant of the [MD500 Defender](#) series helicopter seen in the movie [Mission: Impossible](#)
- MD 600N, a larger version of the MD 520N
- MD 902 Explorer



MD 600N (Helicopters of America)

Retrieved from "<http://en.wikipedia.org/wiki/NOTAR>"

OH-58 Kiowa



OH-58 Kiowa



OH-58D Kiowa Warrior

The **OH-58 Kiowa** scout is a [helicopter](#) manufactured by [Bell Helicopter Textron](#). The OH-58's primary missions are reconnaissance, surveillance, and intelligence gathering. The **OH-58D Kiowa Warrior** has the additional mission capability of target acquisition and laser designation. It can operate during the day or night and in limited adverse weather. To carry out [Operation Prime Chance](#), the escort of oil tankers during the [Iran-Iraq War](#), OH-58Ds were retrofitted to carry air-to-air and air-to-ground weapons.

Following the U.S. military's naming convention for helicopters, the Kiowa is named after a [Native American](#) tribe.

General Characteristics

- Length: 42.2 ft (12.9 m) with rotors
- Width: 7.9 ft (2.4 m)
- Height: 12.9 ft (3.9 m)
- Weight: 2.3 tons (2.1 tonnes) unarmed, 2.8 tons (2.54 tonnes) under Prime Chance
- Speed: 149 mile/h (239 km/h)
- Range: 288 miles (462 km)
- Crew: 2

The [Bell JetRanger](#) civilian helicopter is an adaptation of the Kiowa.

Armament under Prime Chance

various combinations of:

- [FIM-92 Stinger](#) missiles
- [AGM-114 Hellfire](#) missiles
- [Hydra 70](#) rockets
- .50cal (12.7 mm) [machine gun](#)

Films

- The Kiowa D-variant was seen in the film [Fire Birds](#)

Games

- The Kiowa was featured in the PC game [Operation Flashpoint](#)

PZL Kania

The **PZL Kania** is a [Polish](#) multipurpose helicopter manufactured by [PZL Świdnik](#).

Development:

The **PZL Kania** ([Polish](#) *Kitty Hawk*) is a follow-up to the [Mil Mi-2](#) helicopter (of which 6,000 have been manufactured in [Poland](#)). Work on the version was started in [1969](#). The first prototype was flown on 3 June 1979. Test conducted during early 1980s led to certification according to FAR-29.

The helicopter, in a modified version PZL Kania Model 1 form, is manufactured for both domestic: Police and Border Guard air arms and foreign customers: [Cyprus](#), [Czech Republic](#), [Slovakia](#), [Venezuela](#).

General Characteristics:

- Crew: 1 pilot
- Capacity: 9 passengers
- Rotor: three-blade, glass-epoxy composite blades with [de-icing](#) system
- Main rotor diameter: 14.56 [m](#)
- Length (with main rotor): 17.35 [m](#)
- Height: 3.75 [m](#)
- Empty: 2,000 [kg](#)
- Maximum takeoff: 3,550 [kg](#)
- Powerplant: 2x Allison turboprops, 313 [kW](#) each

Performance:

- Maximum speed: 210 [km/h](#)
- Range: 480 [km](#)
- Service ceiling: 4,100 [m](#)
- Rate of climb: 8.75 [m/s](#)

Related content:

Related development: [Mi-2](#)

Comparable aircraft:

Designation sequence: [SM-1](#) - [SM-2](#) - PZL Kania - [W-3](#) - [SW-4](#)

PZL SW-4

The [PZL SW-4](#) is a Polish light single-engine multipurpose [helicopter](#) manufactured by [PZL Swidnik](#).



PZL SW-4 prototype

Development

Work on the new helicopter design, lighter than the [Mil Mi-2](#), started in [Poland](#) in the late 1980s. The Mi-2, produced in PZL Swidnik, was a standard small helicopter in former [Eastern bloc](#) countries, but it was quite big and uneconomical for many tasks. The program was slowed by lack of funds, but finally the first prototype (registration SP-PSW) was flown on [October 29, 1996](#). The second prototype (SP-PSZ) was flown in [1998](#) and shown at the Paris [Le Bourget](#) salon in [2001](#).

In [2003](#) the [Polish Air Forces](#) ordered the first helicopter, with an option for further 30, for use as trainers. The first serial helicopter was shown on [November 15, 2004](#).

The helicopter is meant for production for a civilian or military market.

Specifications

General Characteristics

- **Crew:** one pilot
- **Capacity:** four passengers
- **Length (with main rotor):** 10.57 m (34 ft 8 in)
- **Main rotor diameter:** 9.00 m (29 ft 6 in)
- **Height:** 3.05 m (10 ft 0 in)
- **Main rotor area:** 464 m² (4,992 ft²)

- **Empty:** 1,050 kg (2,310 lb)
- **Loaded:** 1,600 kg (3,520 lb)
- **Maximum takeoff:** 1,800 kg (3,960 lb)
- **Powerplant:** 1x [Allison 250-C20R/2 turboshaft](#), 336 kW (457 shp)



PZL SW-4

Performance

- **Maximum speed:** 260 km/h (162 mph)
- **Range:** 790 km (493 mph)
- **Service ceiling:** 5,200 m (17,056 ft)
- **Rate of climb:** 618 m/min (2,027 ft/min)
- **Main rotor loading:** 3.4 kg/m² (0.7 lb/ft²)
- **Power/Mass:** 0.21 kW/kg (0.13 hp/lb)

External links

- [Description on manufacturer's page](#)

Related content

Related development:

Comparable aircraft: [Eurocopter Colibri](#) - [Schweizer 330](#) - [Bell 206](#)

Designation sequence: [SM-1](#) - [SM-2](#) - [PZL Kania](#) - [W-3](#) - **SW-4**

PZL W-3 Sokół



[Polish Navy](#) W-3RM Anakonda - version for search and rescue



One of armed versions during *Airshow 2005* in [Radom](#)

The **PZL W-3 Sokół** ([Polish Falcon](#)) is a Polish multipurpose helicopter manufactured by [PZL Świdnik](#). It's its armed versions are called **Huzar** and **Salamandra**, **Gipsówka** and **Procjon** - specialistic army's versions and [Search and rescue](#) version named **Anakonda**.

Development:

Work on the project was started at WSK [PZL](#) in 1973 in the team of Stanisław Kamiński. The **PZL W-3 Sokół** has several certificates (including FAA) and is offered in several civil variants. At present, the PZL W-3A is the basic civil version redesigned in 1989 for FAA certification and first flown on 30 July 1992. In 1995 the first 3 Sokóls were sold to South Korea, while another agreement was signed in 1996.

The 100th Sokół was completed in June 1996.

Versions



Two armed W-3WA Sokół behind [Mi-8T](#) in Iraq, 2005

- **W-3 Sokół** - basic civil multipurpose version
- **W-3A Sokół** - version with certificate FAR-29;
- **W-3AS Sokół** - version between W-3 and W-3A (W-3A with avionics of W-3)
- **W-3A2 Sokół** - version with autopilot Smith SN 350 (build only one - for [Spanish](#) customer)
- **W-3U Salamandra** - first armed version, with armament from [Mi-24W](#) (build only one, then converted into transport variant and sold to [Myanmar](#))
- **W-3W Sokół** - armed version, with gun GSz-23Ł and four pylons for weapon
- **W-3WA Sokół** - variant of W-3A armed as W-3W
- **W-3WB Huzar** - basic armed version for [Polish Land Forces](#)
- **W-3K Huzar** - armed version, modification of Kentron company tested by [South Africa](#)
- **W-3RM Anakonda** - [search and rescue](#) version
- **W-3WARM Anakonda** - W-3A equipped like W-3RM
- **W-3AM Sokół** - civil version with floats
- **W-3T Sokół** - military transport version
- **W-3P Sokół** - military, passenger version
- **W-3RL Sokół** - military land rescue version
- **W-3PPD Gipsówka** - flying command centre
- **W-3RR Procjon** - version for radioelectronic reconnaissance
- **W-3U-1 Aligator** - project of anti-submarine version

General Characteristics:

- Crew: 1 pilot
- Capacity: 12 passengers
- Rotor: four-blade, glass-epoxy [composite](#) blades with [de-icing](#) system
- Main rotor diameter: 15.70 [m](#)
- Length (with main rotor): 18.85 [m](#)
- Height: 4.2 [m](#)
- Empty: 3,300 [kg](#)
- Maximum takeoff: 6,400 [kg](#)
- Powerplant: 2x [PZL-10S](#) turboprops, 660 [kW](#) each

Performance:

- Maximum speed: 260 [km/h](#)
- Range: 1,165 [km](#) (with ad. fuel tank)

- Service ceiling: 5,100 [m](#)
- Rate of climb: 10 [m/s](#)

Operators

- Czech Republic, Germany, Italy, Myanmar, Poland, Portugal, Republic of Korea, Russia, United Arab Emirates

RAH-70



Technology demonstrator for the RAH-70

The [Bell Helicopter Textron RAH-70](#) is a [U.S. Army](#) armed reconnaissance [helicopter](#), with a crew of 2 and optimized for urban combat. It is built with off-the-shelf technology and is based on the [Bell 407](#). Currently in development, it will replace the Army's aging [OH-58D Kiowa Warrior](#) recon helicopters. It takes over part of the mission that the abandoned [RAH-66 Comanche](#) would have been responsible for.

Development

The [U.S. Army](#) has already lost over 20 of its 368 OH-58D's, with none left in the inventory for replacement. The OH-58D's are themselves based on aging Vietnam-era airframes. Following the cancellation of the Comanche in February 2004, the Army issued an RFP for the ARH (Armed Reconnaissance Helicopter) in September 2004. In a polar opposite to the long development cycle and high costs of the Comanche, the ARH was to use off-the-shelf technology and reach operational status in 4 years, unprecedented for modern aviation programs. The goal is to have an operational unit of 30 helicopters and 8 trainers ready by September 2008.

Two companies submitted bids. [Boeing](#) proposed upgrading the [MH-6 Little Bird](#) currently in service with the [160th Special Operations Aviation Regiment](#). The proposal would have rearranged the cabin, upgraded the avionics, and introduced a 4-blade tail rotor.

[Bell Helicopter Textron](#) proposed a militarized version of the [Bell 407](#) (an update of the OH-58D concept), utilizing a more powerful [Honeywell](#) HTS900 turbine engine and the [Bell 427](#) tail assembly. As there is an existing Army supply chain for the OH-58, this proposal would capitalize on existing support infrastructure, a major consideration.

On July 29, 2005, a contract for 368 helicopters was awarded to Bell.

See also

- [U.S. Army Aviation and Missile Command](#)

External links

- [Armed Reconnaissance Helicopter - Globalsecurity.org](#)
- [Urban Conflicts Shape New Recon Helicopter](#)

Armed Reconnaissance Helicopter

An armed reconnaissance helicopter is a light helicopter armed for self defense and rudimentary combat abilities. It can refer to any of the following.

[Armed Reconnaissance Helicopter](#) was a [U.S. Army](#) project to replace the [OH-58D Kiowa Warrior](#), resulting in the RAH-70.

[Tiger ARH](#) is a version of the *Eurocopter Tiger*, used by the Australian Army.

[MH-6](#)

[OH-58D](#)

Panha Shabaviz 2-75

The **Panha Shabaviz 2-75** (Persian: "Owl") is an [Iranian](#) utility helicopter built by the Iranian Helicopter Support and Renewal Company. It is a [reverse engineered](#) and marginally improved version of the [Bell 212](#). The first example was built in [1998](#) and the type was publicly unveiled the following year. It has been manufactured locally in Iran since [2002](#) and is in active service with the Iranian military and government. It has also been claimed that it can be modified to carry light weaponry.

Specifications (Shabaviz 2-75)

General Characteristics

- **Crew:** two pilots
- **Capacity:** 14 passengers or 2,500 kg (5,500 lb)
- **Length:** m (ft in)
- **Main rotor diameter:** m (ft in)
- **Height:** m (ft in)
- **Wing area:** m² (ft²)
- **Empty:** kg (lb)
- **Loaded:** kg (lb)
- **Maximum takeoff:** kg (lb)
- **Powerplant:**

Performance

- **Maximum speed:** km/h (mph)
- **Range:** 500 km (310 miles)
- **Service ceiling:** 3,800 m (12,600 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: [Bell 212](#)

Comparable aircraft:

Robinson R22



1989 Robinson R22 Beta

The **Robinson R22** is a small, light two-man [helicopter](#), designed around [1973](#) by [Frank Robinson](#) and produced since [1980](#) by the [Robinson Helicopter](#) Company.

The first version was produced as the R22, followed by the R22 Alpha, R22 Beta and R22 Beta II. Superficially, the machines look similar. The landing skid assembly on the R22 Alpha was modified by extending the rear struts, giving it a slightly nose-down attitude on the ground and better matching its attitude in a low altitude hover. The R22 Beta added an engine speed governor, rotor brake and auxiliary fuel tank. It has been offered as an instrument trainer version, with optional floats as the R22 Mariner, and other special configurations for police work, electronic news gathering, and so on.

The R22 became the world's top selling civil helicopter soon after its introduction. Due to relatively low acquisition and operating costs, it has been popular as a primary rotorcraft trainer around the world and as a livestock management tool on large [ranches](#) in [North America](#) and [cattle stations](#) in [Australia](#). With its quick response to control inputs, it emulates the performance of turbine powered helicopters, making it easier for flight students to transition to larger aircraft.

Instead of a floor-mounted cyclic stick between the pilot's knees, the R22 uses a unique teetering "T-Bar" control connected to a stick that emerges from the console between the seats. This makes it easier for occupants to enter and exit the cabin and reduces chances for injury in the event of a hard

landing. The teeter bar can be handled from either seat, but the left part of the bar can be removed if the left seat occupant is a non-pilot or needs the room for technical or observer duties.

The [helicopter rotor](#) system consists of a two-bladed main rotor and two-bladed anti-torque rotor on the tail, each equipped with a teetering hinge. Collective and cyclic pitch inputs to the main rotor are transmitted through pushrods and a conventional swash plate mechanism. Control inputs to the tail rotor are transmitted through a single pushrod inside the aluminum tail cone.

The R22 uses a horizontally mounted, four cylinder, air cooled, normally aspirated piston engine, fueled with 100LL grade aviation gasoline. At sea level it is capable of producing more power than the transmission and rotor system can safely handle, and must thus be *derated*, or operated at less than maximum power. As the air becomes thinner with increasing altitude, engine performance decreases, and the pilot can open the throttle to compensate. By derating the engine at sea level, the R22 achieves acceptable high-altitude performance without use of [supercharging](#) or [turbocharging](#), thus saving weight and lowering cost.

A [carburetor](#) is used to provide the air-fuel mixture. Carbureted engines are susceptible to carburetor icing, a condition most likely to occur in the R22 in conditions of low (-15°C to 5°C) outside air temperature, high humidity, and low power settings. Carburetor icing can cause a loss of engine power. A carb heat control is available to supply heated air to the carburetor; this can prevent or cure icing, but does cause a reduction in engine power output. The R22 employs a carburetor air temperature gauge, marked to indicate temperatures conducive to icing. The Beta II version of the R22 also includes a "carb heat assist" which automatically applies carburetor heat when the collective is lowered below a certain point. While earlier models were also carbureted, as of introduction the Raven II, the [Robinson R44](#) uses a fuel-injected engine and avoids the extra workload involved in preventing carburetor icing.

Specifications (R22)

General characteristics

- **Crew:** one pilot
- **Capacity:** 1 passenger
- **Length:** 20 ft 8 in (6.30 m)
- **Main rotor diameter:** 25 ft 2 in (7.67 m)
- **Height:** 8 ft 11 in (2.72 m)
- **Main rotor area:** 497 ft² (46 m²)
- **Empty:** 796 lb (361 kg)
- **Loaded:** lb (kg)
- **Maximum takeoff:** 1,300 lb (590 kg)
- **Powerplant:** 1x [Lycoming O-360-A2B](#), 124 hp (93 kW)

Performance

- **Maximum speed:** 113 mph (180 km/h)
- **Range:** 240 miles (385 km)
- **Service ceiling:** 14,000 ft (4,268 m)
- **Rate of climb:** 1200 ft/min (m/min)
- **Main rotor loading:** lb/ft² (kg/m²)
- **Power/Mass:** hp/lb (kW/kg)

Related content

[An-2](#)

Robinson R44



1989 Robinson R44

The **Robinson R44** is a small light four-seat, piston-driven civilian [helicopter](#) produced by the [Robinson Helicopter Company](#) since 1992.

While resembling the company's earlier [Robinson R22](#), the R44 is somewhat larger and faster than its predecessor. It also features boosted flight controls, a feature not found on the R-22. The Astro model has electrically boosted cyclic control whilst the Raven models have hydraulically assisted cyclic and collective controls.

History

The R44, designed during the 1980s by company president [Frank Robinson](#) and his staff of engineers, first flew on [March 31, 1990](#). It was awarded an [FAA Type Certificate](#) in December [1992](#), with the first deliveries taking place shortly thereafter. Originally, the R44 Astro was the main production model, but was dropped in favour of the hydraulically-assisted R44 "Raven" in 2000. The Raven II model (2002 onwards) used a fuel injected engine and modified blades for increased performance.

Variants

Astro

This was the main production model from 1992 to 2000

Raven

This is the current main production model, featuring hydraulic controls. Available as carbureted engine (Raven) and fuel injected (Raven II).

Clipper

A Raven or Astro, modified with floats, for water-borne operations.

Police

A law enforcement modification of one of the main production models, with a belly-mounted searchlight, a nose gimbal [FLIR](#) system, and enlarged windows.

Newscopter

An ENG modification of one of the main production models. Modified with a gyro-stabilized nose camera and air-to-ground video transmission capability.

Specifications

- **Length:** 11.76 m (38 ft 7 in)
- **Rotor Diameter:** 10.06 m (33 ft)
- **Height:** 3.28 m (10 ft 9 in)
- **Engine:** [Lycoming O-540](#) flat-six piston engine
- **Rotors:** 2-bladed main rotor and tail rotor, teetering hinge
- **Empty weight:** 635 kg (1400 lb)
- **Maximum Take-Off Weight:** 1090 kg (2400 lb)
- **Cruise Speed:** 209 km/h (113 knots)
- **Maximum Speed (Vne):** 240 km/h (130 knots)
- **Range:** 635 km (340 nm)
- **Endurance:** approx. 3 hours
- **Capacity:** Pilot and 3 passengers
- [2](#) - [An-24](#) - [An-32](#) - [An-70](#) - [An-72](#) - [An-74](#) - [An-124](#)

-23 Raven



The four-place **Hiller H-23 Raven** light observation [helicopter](#) was based on the [United States Navy](#) UH-12, which was first flown in [1948](#). The H-23 Raven performed as a utility, observation, and MedEvac helicopter during the [Korean war](#). Model numbers ranged A through D, F and G. The **H-23A** had a sloping front windshield. The **H-23B** was used as a primary helicopter trainer. Beginning with the **UH-23C**, all later models featured the "Goldfish bowl" canopy similar to the Bell model 47, and also featured the Bell-designed short weighted gyro-stabilizer bar. The OH-23 had a speed of 97 mph (84 knots). The Raven had a two-bladed main rotor, a metal two-bladed tail rotor. Both the OH-23B and the OH-23C were powered one O-335-5D engine.

The **OH-23D** was a purely military version with a O-435-23C engine and a more reliable transmission. Most OH-23Ds were replaced by the **OH-23G**, the most common version of the Raven, with a more powerful Lycoming O-540-9A six-cylinder, horizontally opposed, air cooled 305 hp engine. The OH-23G could seat four. The MedEvac version carried two external skid-mounted litters or pods. The

Raven saw service as a scout during the early part of the Vietnam war before being replaced by the OH-6A Cayuse in early 1968. The Raven could be armed with twin M37C .30 Cal. machine guns on the XM1 armament subsystem or twin M60C 7.62mm machine guns on the M2 armament subsystem. The XM76 sighting system was used for sighting the guns.

SH-2 Seasprite



SH-2F Seasprite of the US Navy.

Description

Role	ASW, ASuW, ASMD, ASST
Crew	3: Pilot Co-Pilot/Tactical Coordinator (TACCO), Sensor Operator (SENSO)

Dimensions

Length	52 ft 9 in (15.9 m)
Wingspan	44 ft (13.4 m) rotor
Height	15 ft (4.5 m)
Wing area	N/A

Weights

Empty	9,110 lb (4,100 kg)
Loaded	
Maximum take-off	13,500 lb (6075 kg)

Powerplant

Engines	Two T700-GE-401/401C turboshaft engines (SH-2G) Two T58-GE-8F turboshaft engines (SH-2F)
Power	

Performance

Maximum speed	150 knots maximum (170 mph, 280 km/h)
Combat range	
Ferry range	
Service ceiling	10,000 ft (3,000 m) at 13,500 lb (6,075 kg)
Rate of climb	

Armament

Guns	N/A
Bombs	N/A
Torpedoes	2 Mk. 46 torpedoes

The [Kaman SH-2G Seasprite](#) is a [United States Navy](#) ship-based [helicopter](#) with [anti-submarine](#), [anti-surface threat](#) capability, including over-the-horizon targeting. This aircraft extends and increases shipboard sensor and weapon capabilities against several types of enemy threats, including [submarines](#) of all types, [surface ships](#), and patrol craft that may be armed with [anti-ship missiles](#).

The Seasprite's primary missions include anti-submarine and anti-surface warfare, anti-ship missile defense, and anti-ship surveillance and targeting. Secondary missions may include medical evacuation, search and rescue, personal and cargo transfer, as well as small boat interdiction, amphibious assault air support, gun fire spotting, mine detection and battle damage assessment.

The H-2 originally entered Naval service as the **Kaman HU2K-1**, a single-engine light utility helicopter primarily deployed aboard aircraft carriers in a Search-and-Rescue (SAR) role. When the aircraft numbering system was changed in 1962, the HU2K-1 was redesignated the **UH-2A** and the **HU2K-1U** was redesignated **UH-2B**. The airframe continued to undergo upgrades, most significantly the addition of a second engine and external stores stations, and the HH-2D was selected to be the airframe for the Light Airborne Multi Purpose System (LAMPS) when the program was stood up in 1972. LAMPS evolved in the late 60's from an urgent requirement to develop a manned helicopter that would support a non-aviation ship and serve as its tactical Anti-Submarine Warfare arm. Known as LAMPS Mk I, the advanced sensors, processors, and display capabilities aboard the helicopter enabled ships to extend their situational awareness beyond the line-of-sight limitations that hamper shipboard radars and the short distances for acoustic detection and prosecution of underwater threats associated with hull-mounted sonars. H-2s reconfigured for the LAMPS mission were redesignated **SH-2D**. The first operational SH-2D/LAMPS helicopter embarked on the USS Belknap (CG-26) in December 1971. Eventually all but two H-2s in the Navy inventory were remanufactured into **SH-2Fs**, and 59 SH-2Fs were built from the ground up in the 1980s. The final production procurement of the SH-2F was in Fiscal Year 1986. The SH-2F was retired from active service in October 1993, at roughly the same time that the Navy retired and/or sold the last of its (Viet Nam era) Knox Class Frigates that could not accommodate the newly acquired (and larger) SH-60 Seahawk. Some late-production SH-2Fs were either completed as, or have been converted to the upgraded **SH-2Gs Super Seasprite** variant.

The final variant of the **SH-2(F)** type took place in 1987 when several aircraft were up-fitted with chin mounted Forward Looking Infrared Sensors (FLIR), Chaff (AIRBOC)/Flares, dual rear mounted IR scramblers, Missile/Mine detecting equipment and M-60D machine guns mounted on both sides of the aircraft, these SH-2F's were not so commonly called Seawolf and/or Attack Wolf's. They were utilized to enforce Operation Ernest Will (July, 1987) and later Operation Praying Mantis (April, 1988) and Desert Storm (Jan 1991) in the Persian Gulf region. The added countermeasures and equipment gave the SH-2F's enhanced survivability while taking on more surface related combat tasking in an environment of limited submarine threat.

The SH-2F was infamous with Naval aircrew for its high accident rate and dismal 30+ maintenance-hour-per-flight-hour requirement, the highest of any aircraft in the Navy at the time this type was retired from active service. Many of the accidents and maintenance costs were attributed to the severe environment in which this aircraft was operated. This aircraft was "lovingly" referred to as the "Kaman Coffin" by enlisted Anti-Submarine Warfare System Operators.

The SH-2G Super Seasprite was retired from service with the U.S Navy Reserve in May 2001 but currently remains in active service with the [Royal Australian Navy](#), the [Royal New Zealand Navy](#), the [Polish Navy](#), and the Egyptian Navy.

General Characteristics

- Primary Function: ASW, ASuW, ASMD, ASST, SAR, Utility
- [Contractor](#): [Kaman](#)
- Unit Cost: \$26 million (SH-2G)
\$16 million (SH-2F)
- Propulsion: Two T700-GE-401/401C turboshaft engines (SH-2G)
Two T58-GE-8F turboshaft engines producing 1,450 shp (SH-2F)
- Length: 52 ft 9 in (15.9 m)
- Fuselage length: 40 ft 6 in (12.2 m)
- Height: 15 ft (4.5 m)
- Weight: 9,110 lb (4,100 kg) empty
- Maximum Takeoff Weight: 13,500 lb (6075 kg) normal takeoff
- Range: 450 (SH-2F) 540 (SH-2G) nautical miles (490 statute miles) 4.5 Hours (SH-2F) 5.3 Hours (SH-2G) with maximum fuel (including external aux tanks).
- Ceiling: 10,000 ft (3,000 m) at 13,500 lb (6,075 kg) (SH-2G)
11,850 ft (3,600 m) at 13,500 lb (6,075 kg) (SH-2F) with a max service ceiling of 20,400 ft (SH-2G) 23,000 (SH-2F)
- Max Rate of Climb: 2,400 ft per minute (SH-2F) 2,070 ft per minute (SH-2G)
- Speed: 150 knots maximum (170 mph, 280 km/h) (SH-2G)
139.5 knots maximum (159 mph, 255 km/h) (SH-2F)
- Crew: Three (2 pilots + 1 aircrew)
- Armament: Two Mk 44, 46 or Mk 50 [torpedoes](#) M-60 (7.62mm) Machine Guns (2)
- Date Deployed:
 - First flight: [July 2, 1959](#) (HU2K-1)
 - Operational: December [1962](#) (HU2K-1)
- Last West Coast Deployment:
 - HSL-33 - A two aircraft deployment on the USS Callaghan

Deployment in Australia

[As of 2005](#), [Australia](#) has purchased a 11 Seasprites for the [Fleet Air Arm](#) for the [Anzac class](#). However, an extensive range of deficiencies have been identified in the avionics which were only for the Australian version, and the existing helicopters have been restricted to performing simple tasks, until the validation of the avionics is complete for all weathers.[\[1\]](#).

Deployment in New Zealand





A SH-2G inside HMNZS Te Mana

[New Zealand](#) purchased 5 SH-2G at the same time as Australia, (but with different avionics, and the [Kiwi](#) aircraft were new-build airframes, not rebuilt American SH2-Fs. The SH2G purchase was brought in NZ\$12 million under the \$338 million, budgeted, excluding GST, when the contract was let in 1997. The first RNZAF SH2G was delivered in mid-2001, the last was delivered February 2003.

The [Royal New Zealand Navy](#) operates the type from it's [Anzac class frigates](#), supply and research vessels. They were initially operated by [No. 3 Squadron RNZAF](#), but now form [No. 6 Squadron RNZAF](#).

Prior to receiving SH-2Gs, the RNZN replaced [Westland Wasp](#) with SH-2Fs. [RNZN](#) Seasprites have seen service in [East Timor](#). An SH2F is preserved in the [Royal New Zealand Air Force Museum](#).

External links

- [Kaman Aerospace Seasprite page \(manufacturer\)](#)
- [Ray Trygstad: Naval Officer: The SH-2F Seasprite](#)
- [Naval-Technology.com: SH-2G Super Seasprite](#)
- [Seasprite Central](#)
- ["SH-2 Seasprite" by the Federation of American Scientists](#)

Schweizer 300C



The Schweizer 300C

The **Schweizer 300C** is a piston-powered light utility [helicopter](#) produced by the [Schweizer Aircraft Corporation](#). Mostly used for training and agriculture, it is a very cost effective platform. Its design is based upon the older [Hughes Aircraft](#) model 269 series [helicopter](#), which first flew in October of [1956](#) and began civil production in [1961](#).

Description

The 300C is powered by a 4 cylinder, fuel injected Bell-Lycoming HIO-360-D1A 190 shaft-[horsepower](#) (141 kw) piston engine. It uses a fully articulated, counter-clockwise rotating, 3 bladed main [rotor](#), and a 2 bladed [tail rotor](#). It is of the conventional pod and boom design with shock absorber damped, skid type landing gear. The 300C normally seats 2 adults. It is capable of seating a third passenger in between the two main seats if the middle collective control stick is removed and a seat cushion is put in its place. The flight controls are directly linked to the control surfaces of the [helicopter](#). There are no [hydraulics](#) in the 300C. There are generally 2 sets of controls. The controls on the right side of the [cockpit](#) are removable.

Performance

The 300C has a 950 lb (430 kg) payload. The 300C has a cruising speed of 99 mph (159 km/h or 86 knots) and a maximum speed ([VNE](#)) of 109 mph (176 km/h or 95 knots). Its maximum endurance with two 32 gallon (121 liter) fuel tanks is 5.5 hours and has a range of 365 miles (587 km). It has an in [ground effect](#) (IGE) hover ceiling of 10800 ft (3300 m) and an out of [ground effect](#) (OGE) hover ceiling of 8600 ft (2600 m).

Technical details

Performance

Maximum Speed [Vne](#) (Kias) SeaLevel: 95 knots (176 km/h)
Cruise Speed: 86 knots (159 km/h)
Maximum Endurance: 3.8 h (5.5 h with auxiliary fuel tank)
Hover Ceiling IGE: 10800 ft (3300 m)
Hover Ceiling OGE: 8600 ft (2600 m)

Dimensions

Height (overall): 8.72 ft (2.65 m)
Length (overall): 30.83 ft (9.40 m)
Fuselage length: 22.19 ft (6.76 m)
Landing gear tread width: 6.54 ft (1.99 m)

Weight

Empty weight: 1100 lb (499 kg)
Gross weight: 2050 lb (930 kg)
Useful load: 950 lb (431 kg)

Power Plant

Engine: Textron Lycoming H10-360 D1A
Maximum Take Off: 190 shp (141 kW)
Maximum Continuous: 190 shp (141 kW)

Rotor System

Main rotor diameter: 26.83 ft (8.18 m)
Main rotor disk area: 565 ft² (52.49 m²)
Main rotor RPM: 471
Tail rotor diameter: 4.25 ft (1.30 m)

Fuel

Type: AVGAS (100LL)
Standard capacity: 32 US gal, 192 lb (121 L, 87 kg)
Auxiliary capacity: 32 US gal, 192 lb (121 L, 87 kg)

Seating capacity

Training: 2
Utility: 3

Sikorsky Cypher

The **Cypher** is a type of [unmanned aerial vehicle](#) developed by [Sikorsky Aircraft Corporation](#). It is a [vertical takeoff and landing aircraft](#) which uses two opposing [rotors](#) enclosed in a [circular](#) shroud for propulsion.

The single prototype first flew in April [1992](#) and flew untethered the following year. Since then, over 550 flights have been made in a series of demonstrations for the US government.

The doughnut-shaped Cypher can carry a sensor package on struts above its hull, or can be used to transport loads of up to 50 lb (23 kg).

Specifications (Cypher)

General Characteristics

- **Crew:** none
- **Capacity:** 50 lb (23 kg)
- **Diameter:** 6 ft 2 in (1.88 m)
- **Height:** ft in (m)
- **Main rotor area:** 25.2 ft² (2.4 m²)
- **Empty:** lb (kg)
- **Loaded:** 250 lb (114 kg)
- **Maximum takeoff:** lb (kg)
- **Powerplant:** 1x [UEL AR-801](#), 50 hp (37 kW)

Performance

- **Maximum speed:** 90 mph (144 km/h)
- **Range:** 36 miles (58 km)
- **Service ceiling:** 5,000 ft (1,524 m)
- **Rate of climb:** ft/min (m/min)

- **Main rotor loading:** 9.9 lb/ft² (47.5 kg/m²)
- **Power/Mass:** 0.2 hp/lb (0.32 kW/kg)

Trivia

The Cypher was featured heavily in the videogame Metal Gear Solid 2: Sons of Liberty.

External links

- [Cypher](#)

Related content

Related development:

Comparable aircraft:

Designation sequence: Cypher - [Cypher II](#)

Sikorsky H-92 Superhawk



Sikorsky H-92



[CHC Helicopter](#) Sikorsky S-92

The [Sikorsky H-92 Superhawk](#) is the military version of the [Sikorsky S-92](#) helicopter. It inherits technology from the older [S-70A](#) and was unveiled at the [2003 Paris Air Show](#)

[Canadian Forces Air Command](#) have ordered 28 of these [helicopters](#) to replace their ageing fleet of [CH-124 Sea King](#) maritime helicopters. They have been designated the **CH-148 Cyclone**, and are to be delivered one each month beginning in [2008](#). The purchase contract also covers twenty years of maintenance. The maritime helicopter selection process was very [politically controversial](#).

Other major customers are [CHC Helicopter Corporation](#) the United States [Air Force](#), the [Navy](#) and the [Marine Corps](#).

Specifications (H-92)

General Characteristics

- **Crew:** two pilots
- **Capacity:** up to 22 troops
- **Fuselage length:** 68 ft 6 in (20.88 m)
- **Main rotor diameter:** 58 ft 1 in (17.71 m)
- **Height:** 15 ft 5 in (4.70 m)
- **Main rotor area:** 2,650 ft² (246 m²)
- **Empty:** 15,965 lb (7,257 kg)
- **Loaded:** 25,944 lb (11,793 kg)
- **Maximum takeoff:** 28,241 lb (12,837 kg)
- **Powerplant:** 2x [General Electric CT7-8C](#) turboshafts, 3,000 shp (2,238 kW) each

Performance

- **Maximum speed:** 225 mph (306 km/h)
- **Range:** 550 miles (880 km)
- **Service ceiling:** ft (m)
- **Rate of climb:** ft/min (m/min)
- **Main rotor loading:** 9.8 lb/ft² (48 kg/m²)
- **Power/Mass:** 0.23 hp/lb (0.38 kW/kg)

External links

- [Manufacturer's Official Web page](#)

See also

- [Sikorsky S-92](#) (civilian variant)
- [Sikorsky S-70](#) (comparable earlier model)

Sikorsky Piasecki X-49

The **X-49A** is an experimental helicopter [currently](#) under development. It is the subject of a \$US 26.1-million [U.S. Navy](#)-sponsored project that consists of a [Sikorsky YSH-60F](#) helicopter modified by [Piasecki](#) as a testbed to test the "Vectored Thrust Ducted Propeller" (VTDP) system. One YSH-60F will be converted to test the feasibility of VTDP under an advanced technology demonstration program. The YSH-60F is powered by two [General Electric T700-GE-401C](#) engines.



Piasecki: VTDP/H-60

Piasecki X-49A technology demonstrator

The demonstration contract was awarded in October [2000](#) by the [Naval Air Systems Command](#) to Piasecki Aircraft. Piasecki will install a lifting wing with flaperons and a vectored-thrust ducted propeller (VTDP), or "ring tail," to a U.S. Navy Sikorsky YSH-60F.

The compound helicopter technology that will be added to the **YSH-60F** was first demonstrated in trials of the [Piasecki 16H-1](#) and 16H-1A in the early 1960's, when the helicopters were flown at speeds up to 225 mph (360 km/h).

The **X-49A** YSH-60F flight demonstrator will be updated with a lifting wing taken from an [Aerostar FJ-100](#) business jet. A ring tail will also be added and the helicopter drive train will be modified to accommodate VTDP. Piasecki will conduct integrated tests of the modified drive train at the Navy's helicopter transmission test facility.

The cockpit controls will be modified with the addition of a manual prop pitch override on the collective for the ring tail. This will be the only visible change to the aircraft's existing mechanical controls in the cockpit. The other controls needed to operate the compound helicopter's systems will be integrated into the aircraft's existing mechanical controls to reduce pilot workload. Weight added to the **X-49A YSH-60F** will be about 1,600 lb (725 kg).

[As of 2004](#) the **X-49A YSH-60F/VTDP** demonstration program was being transitioned from the U.S. Navy to the [U.S. Army](#).

Related content

Related development:

Comparable aircraft:

Designation sequence: [X-45](#) - [X-46](#) - [X-47 Pegasus](#) - [X-48](#) - [X-49](#) - [X-50 Dragonfly](#)

Sikorsky S-67 Blackhawk

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See rationale on the [talk page](#), or replace this tag with a [more specific message](#). [Editing help](#) is available.

(Tagged March 2005)

Sikorsky (S-67) Blackhawk (Prototype) (1970). When the Cheyenne failed to live up to expectations, Sikorsky offered an intermediate aircraft consisting of an armed version of its S-61 (which evolved into the Sea King). Sikorsky then designed a simplified AAFSS using the maximum number of components from the S-61. The result was the Sikorsky (S-67) Blackhawk, which featured a five-bladed main rotor and tail rotor. The main wheels were retractable. It had speed brakes on the wing trailing edges, which also improved maneuverability. The Blackhawk was put through a long series of tests from 1970 to 1974, but was judged unsatisfactory by the Army. The S-67 was fitted with night vision systems, a Tactical Armament Turret (TAT-140) with a 30mm cannon, 16 130mm TOWs, and 2.75 inch rockets or Sidewinder air-to-air missiles. The S-67 established an E-1 class world speed record on December 14, 1970 by flying at 216.84 mph (249.53 knots) over a 1.86 mile (3km) course. Near the end of the test program, the Blackhawk, by substituting a ducted fan for the tail unit, reached a speed of 230 mph (264.7 knots) in a test dive in 1974. The Blackhawk was powered by two General Electric T58-GE-5 1500 shp engines.

Sikorsky S-70



HH-60 Jayhawk

The **Sikorsky S-70** is a medium-lift military [helicopter](#) family manufactured by [Sikorsky](#).

The S-70 is used by over 20 nations. It is in service with the armed forces 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](#). The S-70 family was developed to meet a US Army requirement for a

replacement of the venerable [UH-1 Iroquois](#) family of utility medium-lift helicopters in 1972. Its US military designation is H-60.

The S-70 can perform a wide array of missions, including air cavalry, electronic warfare, and aeromedical evacuation: several versions are even used to transport the [President of the United States](#), which while carrying the President is known as [Marine One](#). In air assault operations it can move a squad of 11 combat troops and equipment or carry the 105 mm [M102 howitzer](#), thirty rounds of ammunition, and a six-man crew. Alternatively, it can carry 2,600 lb (1,170 kg) of cargo or sling load 9,000 lb (4,050 kg) of cargo. The S-70 is equipped with advanced avionics and electronics, such as the [global positioning system](#).

Three prototypes were constructed, the first (YUH-60A) flying in October [1974](#), and evaluated against a rival (YUH-61A) [Boeing-Vertol](#) design. The S-70 was selected for production and entered service as UH-60A Black Hawk with the US Army in [1979](#). In the late [1980s](#) the model was upgraded to the UH-60L (first production aircraft 89-29179) which featured more power and lift with the upgrade to the -701C model of the GE engines.

A newer model being engineered, 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 navalised SH-60B Sea Hawk in [1983](#) and the SH-60F in [1988](#).

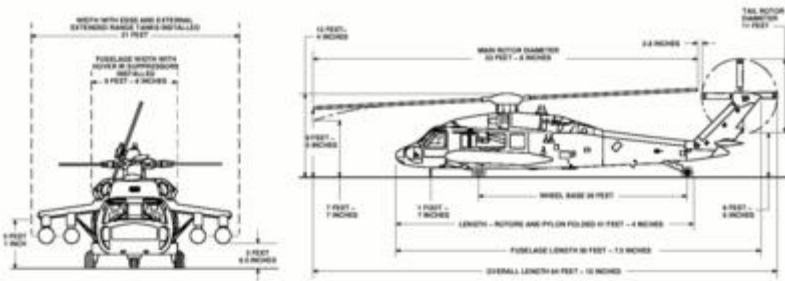
The HH-60G Pave Hawk is a highly modified version of the S-70 primarily designed to recover downed aircrew or other isolated personnel during war and equipped with a rescue hoist with a 250 ft (75 m) cable that has a 600 lb (270 kg) lift capability, and a retractable [in-flight refueling](#) probe. The [United States Air Force](#) received the MH-60G Pave Hawk in [1982](#).

The [United States Coast Guard](#) received the HH-60J Jayhawk in [1992](#). It is similar to the HH-60G Pave Hawk, but navalised.

The S-70A Firehawk is a version of the S-70 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 S-70 for special operations by the [160th Special Operations Aviation Regiment](#) ("Night Stalkers") known as the MH-60K at [Fort Campbell, Kentucky](#).

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.



Dimensions of a UH-60 helicopter

H-60

- [Sikorsky UH-60 Black Hawk](#) - The basic military utility helicopter.
 - Sikorsky UH-60A Black Hawk
 - Sikorsky UH-60B Black Hawk - Improved utility model. Perhaps planned, but never produced.
 - Sikorsky UH-60J Black Hawk - Export variant for the Japanese Air Self Defence Force and Maritime Self Defence Force.
 - Sikorsky UH-60JA Black Hawk - Export variant for the Japanese Ground Self Defence Force.
 - Sikorsky UH-60L Black Hawk
 - Sikorsky UH-60M Black Hawk - Next generation Black Hawk. Expected to be in service by 2007.
 - Sikorsky UH-60P Black Hawk - Export variant for the South Korean Army.
 - Sikorsky UH-60Q Black Hawk - Aeromedical evacuation variant. Based on the -60A airframe. Very few produced. Aircraft stationed with the Tennessee National Guard.
 - Sikorsky HH-60L Black Hawk - Aeromedical evacuation variant. Similar to UH-60Q, but based on the -60L airframe.
- [Sikorsky MH-60K Black Hawk](#) - Special operations variant for the US Army.
 - Sikorsky MH-60A Black Hawk - Early special operations model for the US Army.
 - Sikorsky MH-60L Black Hawk - Special Operations variant for the US Army.
 - Sikorsky YEH-60A Black Hawk - Prototype electronic warfare, radio jamming model for the US Army.
 - Sikorsky YEH-60B - Prototype stand-off acquisition model for the US Army.
 - Sikorsky YUH-60A Black Hawk - Three prototypes of the UH-60A for the US Army.
 - Sikorsky EH-60C Black Hawk - Electronic warfare, radio jamming helicopter for the US Army. Planned but never produced.
 - Sikorsky GUH-60A Black Hawk - Static instructional aircraft. Used for technician training at Fort Eustis, VA.
 - Sikorsky JHU-60A Black Hawk - Designated for test purposes.
- [Sikorsky SH-60 Sea Hawk](#) - [US Navy](#) variant for [search and rescue](#), maritime patrol, [ASW](#), all-weather and day/night.
 - Sikorsky SH-60B Sea Hawk
 - Sikorsky SH-60F Sea Hawk or Ocean Hawk
 - Sikorsky HH-60H Rescue Hawk - Combat search and rescue variant for the US Navy.
 - Sikorsky SH-60J Jay Hawk - Export variant for the Japanese Maritime Self Defence Force.
 - Sikorsky SH-60R Sea Hawk

- Sirorsky YSH-60B Sea Hawk - Five prototypes of the SH-60B for the US Navy.
- [Sikorsky HH-60 Pave Hawk](#) - [USAF](#) heli-rescue variant for [search and rescue](#), [MEDEVAC](#), on day and night operations.
 - Sikorsky HH-60A - Prototype for the HH-60D rescue helicopter.
 - Sikorsky HH-60D - Prototype of early search and rescue variant for the US Air Force.
 - Sikorsky HH-60E - Proposed search and rescue variant for the US Air Force
 - Sikorsky HH-60G Pave Hawk - Search and rescue helicopter for the US Air Force.
 - Sikorsky MH-60G Pave Hawk - Special Operations, search and rescue model for the U.S. Air Force.
- [Sikorsky CH-60 Knight Hawk](#) - [US Navy](#) medium-heavy lift helicopter.
 - Sikorsky CH-60E - Proposed troop transport variant for the [US Marine Corps](#).
 - Sikorsky CH-60S Knight Hawk
- [Sikorsky HH-60 Jay Hawk](#) - [US Coast Guard](#) variant for maritime patrol, interdiction, and [search and rescue](#)
 - Sikorsky HH-60J Jay Hawk
- [Sikorsky VH-60](#) - VIP transport
 - Sikorsky VH-60A - Presidential transport helicopter, later designated VH-60N.
 - Sikorsky VH-60N Presidential Hawk - The US Presidential transport chopper, [Marine One](#).

S-70

The corporate name for the H-60/S-70 family is the **S-70 Black Hawk**

- [Sikorsky S-70A Black Hawk](#) - Military model for the export market.
- [Sikorsky S-70A Fire Hawk](#) - Firefighting variant of the UH-60L.
- Sikorsky S-70A-1 Desert Hawk - Export version for the Royal Saudi Land Forces.
- Sikorsky S-70A-L1 Desert Hawk - Aeromedical evacuation version for the Royal Saudi Land Forces.
- Sikorsky S-70A-9 Black Hawk - Export version for the Australian army.
- [Sikorsky S-70A \(N\) Naval Hawk](#) - Maritime variant that blends the S-70A Black Hawk and S-70B Sea Hawk designs.
- [Sikorsky S-70B Sea Hawk](#) - Maritime military model for the export market.
- [Sikorsky S-70C Sea Hawk](#) - Export version of the SH-60F Sea Hawk.
- [Sikorsky S-70C\(M\)-1 Super Blue Hawk](#) - Export model for the Taiwanese military.
- Sikorsky S-70C(M)-2 Super Blue Hawk - Export model for the Taiwanese Military.
- [Sikorsky S-70B-6 Aegean Hawk](#) - the Greek military variant which is a blend of the SH-60B and F models

Sikorsky S-76



Description

Role: medium transport/utility helicopter

Crew + passengers: 2 + 12

Dimensions

Length: 13.22 m (main rotor to tail rotor)

Fuselage length: 11.63 m

Height: 4.42 m

Rotor diameter: 11.94 m

Weights

Empty: kg

Maximum take-off: 5,703 kg

Powerplant

Engines: 2 x Turboméca Arriel 2S1 turboshafts (S76C+)

Power: 856 hp

Performance

Maximum speed: 2875 km/h

Combat range (internal fuel): 813 km

Ferry range (external fuel):

Service ceiling: 3,871 m

Maximum rate of climb: 8.26 m/s

Payload

Maximum payload: 1,900 kg

Maximum external payload on sling: 1,600 kg

The [Sikorsky S-76](#) was designed, from the wheels up as a commercial [helicopter](#). Its first flight was on March 1977. The S-76 is in use around the world with airlines, corporations, hospital, government operators and, notably, the [British Royal Family](#). The world's largest civilian fleet (59) of Sikorsky S-76 helicopters is operated by [CHC Helicopter Corporation](#).

Disasters

Specific accidents

- [10 August 2005 helicopter crash near Tallinn](#)

External link

- [S-76](#) - Official company website.
- [BBC News - "Which party is winning the air war?"](#) - Details of the S-76's used in the [United Kingdom general election, 2005](#).



S-76A in Helijet livery.

Sikorsky SH-60 Seahawk



SH-60F of the United States Navy, with external fuel tank.

The [Sikorsky SH-60 Seahawk](#) (or **Sea Hawk**) is a twin-engine multi-mission [United States Navy](#) helicopter based on the airframe of the [United States Army/Air Force UH-60 Black Hawk](#).

The US Navy utilizes the H-60 airframe under the model designations **SH-60B (Bravo)**, **SH-60F (Foxtrot)**, **HH-60H (Hotel)**, **MH-60S (Sierra)** and the **MH-60R (Romeo)** which is still in development. Able to deploy aboard any air-capable [frigate](#), [destroyer](#), [cruiser](#), fast combat supply ship, [amphibious assault ship](#) or [aircraft carrier](#) the "Seahawk" provides multi-mission capabilities for the fleet. Missions include [antisubmarine warfare](#) (ASW), undersea warfare (USW), [anti-surface warfare](#) (ASUW), naval special warfare (NSW) insertion, [search and rescue](#) (SAR), combat search and rescue (CSAR),

vertical replenishment (VERTREP) and [medical evacuation](#) (MEDEVAC). All Navy H-60s carry either the Lucas Western or Breeze Eastern rescue hoist for SAR/CSAR missions.

Models & Missions

The SH-60B (Bravo) Light Airborne Multi-Purpose System (LAMPS III) deploys primarily aboard [frigates](#), [destroyers](#) and [cruisers](#). The primary missions of the Bravo are surface warfare and antisubmarine warfare, which it accomplishes through a complex system of sensors carried aboard the helicopter including a towed [Magnetic Anomaly Detector](#) (MAD) and air launched [sonobuoys](#). Other sensors include the APS-124 search radar, ALQ-142 ESM system and optional nose mounted [forward looking infrared](#) (FLIR) turret. The primary means of attack is with the Mk-46 or Mk-50 [torpedo](#), AGM-114 Hellfire missiles and the capability of a single cabin door mounted M-60D or GUA-16 machine gun for defense. A standard crew for a Bravo is one pilot, one ATO/Co-Pilot (Airborne Tactical Officer) and an enlisted aviation systems warfare operator (sensor operator). Operating Bravo squadrons are designated Helicopter Antisubmarine Light (HSL).

The SH-60F (Foxtrot) is the carrier-based version of the Bravo. It is the primary means of antisubmarine warfare (ASW) and search and rescue (SAR) for carrier battle group commanders. It differs from the Bravo in means of submarine detection, utilizing the AQS-13F dipping [sonar](#) rather than a MAD detector and carrying fewer sonobuoys (12 vice 25). The Foxtrot is capable of carrying the Mk-46 torpedo and a choice of cabin-mounted guns including the M-60D, M-240 and GAU-16 machine guns for defense. A standard crew for the Foxtrot is one pilot, one copilot, one enlisted tactical sensor operator (TSO) and one enlisted acoustic sensor operator (ASO). Operating Foxtrot squadrons are designated Helicopter Antisubmarine (HS).



An HH-60H ready to deploy a SAR swimmer.

The HH-60H (Hotel) is the primary combat search and rescue (CSAR), naval special warfare (NSW) and anti-surface warfare (ASUW) helicopter. It carries a variety of defensive and offensive sensors making it one of the most survivable helicopters in the world. Sensors include a FLIR turret with laser designator and the Aircraft Survival Equipment (ASE) package including the ALQ-144 Infrared Jammer, AVR-2 Laser Detectors, APR-39(V)2 Radar Detectors, AAR-47 Missile Launch Detectors and ALE-47 chaff/flare dispensers. Additionally, airframe improvements in engine exhaust deflectors provide infrared thermal reduction reducing the threat of heat-seeking missiles. The Hotel can carry up to four [AGM-114 Hellfire](#) missiles on an extended wing using the M-299 launcher and a variety of cabin and port window mounted guns including M-60D, M-240, GAU-16 and GAU-17 machine guns. The standard crew for a Hotel is one pilot, one copilot and two “door gunner” crewmen. Hotels are operated in Helicopter Antisubmarine (HS) squadrons with a standard dispersal of four Foxtrots and three Hotels.

The MH-60S (Sierra) was developed after the navy decided to phase out the venerable [CH-46 Sea Knight](#) helicopter. The Sierra is deployed aboard amphibious assault ships and fast combat supply ships. It has two missions- troop transports and vertical replenishment (VERTREP) but can also perform search and rescue (SAR). The Sierra has no offensive sensors but can carry the ALQ-199 Infrared Jammer. However, the Sierra is the first US Navy helicopter to field the “glass cockpit” where-by the flight data information is relayed to pilots using four digital screens rather than [electromechanical](#) gauges and dials. The primary means of defense is with the M-60D, M-240 or GAU-17, though a 'batwing' refit based on the Army's [UH-60L](#) Blackhawk is in development which will accommodate [Hellfire](#) or [Penguin](#) missiles, or larger guns and cannon. A standard crew for the Sierra is one pilot, one copilot and two crewmen. With the retirement of the Sea Knight the squadron designation of Helicopter Combat Support Squadron (HC) was also retired from the navy. Operating Sierra squadrons were re-designated Helicopter Sea Combat (HSC). MH-60S is officially known as the Knighthawk, rather than Seahawk, reflecting its role as the designated successor of the Sea Knight.

The MH-60R (Romeo) is currently undergoing final testing for incorporation into the fleet. The first operational fleet squadron to receive the Romeo will be [HSL-43](#) in fiscal year 2006. The Fleet Replacement Squadron (FRS), HSM-41, received the Romeo aircraft in December 2005 and has begun training the first set of pilots. It is designed to replace the legacy Foxtrots and Bravos and provide a true multi-mission helicopter. Incorporated sensors include the ASE package, FLIR, an advanced airborne fleet data link system, the elimination of the MAD suite and incorporating a more advanced lightweight airborne sonar system (possibly the UYS-2A processor). Additional improvements will allow the Romeo to perform mine countermeasure operations using Light Imaging Detection and Ranging ([LIDAR](#)) laser technology. Pilot instrumentation will be based on the Sierra's “[glass cockpit](#)” using several digital monitors instead of the complex array of dials and gauges in Legacy Bravo/Foxtrot aircraft. Additionally attacking power is increased through the development of the new Mk-50 air launched torpedo and incorporating the HH-60H extended wing allowing four Hellfire missiles to be carried.

Foreign Service

The SH-60 is in service with numerous allied naval forces including the [Fleet Air Arm](#) of the [Royal Australian Navy](#), the [Hellenic \(Greek\) Navy](#) and the [Spanish Navy](#).

See the Wiki entry for information on the US Coast Guard [HH-60J Jayhawk](#).

General characteristics

- Crew: 2 Pilots, 1-3 Aircrew, depending on variant and mission
- Capacity: 8 passengers or slung load of 6,000 lbs. for -B, -F and -H models and 11 passengers or slung load of 9,000 lbs for -S
- Length (rotors turning): 19.76m (64ft 10in)
- Rotor diameter:
- Height: 5.18m (17 ft)
- Empty: 6191kg (13,648 lb)

- Maximum takeoff: 9926kg (21,884 lb)
- Powerplant: Two 1260-kW General Electric T700-GE-401C turboshaft engines
- Armament: varies but includes [Mark 46 torpedo](#), [Mark 50 torpedo](#), AGM-114 [Hellfire missile](#), AGM-119 [Penguin missile](#) (extremely limited use), [M-60 machine gun](#), [M-240](#) machine gun, [GAU-16](#) machine gun, [GAU-17](#) minigun

Performance

- Maximum speed: 233km/h (145mph)
- Range: varies with model but generally 380 [nautical miles](#)
- Service ceiling: 5790m (19,000 ft)
- Rate of climb: 213m/min (700 ft/min)

Operational US Navy Squadrons

SH-60B

- HSL-37 "Easyriders"
- HSL-40 "Airwolves"
- HSM-41 "Seahawks"
- HSL-42 "Proud Warriors"
- HSL-43 "Battle Cats"
- HSL-44 "Swamp Fox"
- HSL-45 "Wolfpack"
- [HSL-46 "Grandmasters"](#)
- HSL-47 "Saberhawks"
- HSL-48 "Vipers"
- [HSL-49 "Scorpions"](#)
- HSL-51 "Warlords"
- HSL-84

SH-60F/HH-60H

- HS-2 "Golden Falcons"
- HS-3 "Tridents"
- HS-4 "Black Knights"
- HS-5 "Nightdippers"
- HS-6 "Indians"
- HS-7 "Dusty Dogs"
- [HS-8](#) "Eightballers"
- HS-10 "Warhawks"
- HS-11 "Dragonslayers"
- HS-14 "Chargers"
- HS-15 "Red Lions"
- HS-75 (US Navy Reserve)

MH-60S

- HSC-2 "Fleet Angels"
- HSC-3 "Merlins"
- HSC-21 "Blackjacks"
- HSC-25 "Island Knights"
- HSC-26 "Chargers"
- HSC-28 "Dragon Whales"

MH-60R

- HSL-43 (FY 2006)

Sikorsky R-4



Sikorsky R-4B at [National Museum of the United States Air Force](#)

The [Sikorsky R-4](#) was the world's first production [helicopter](#) and the [United States Air Force](#)'s first service helicopter. The original military model, the **XR-4**, was developed from the famous experimental VS-300 helicopter, invented by [Igor Sikorsky](#) and publicly demonstrated in [1940](#). The XR-4 made its initial flight on [January 13, 1942](#) and as a result of its successful flight tests, the [United States Army Air Forces](#) ordered 3 **YR-4As** and 27 **YR-4Bs** for service testing and flight training.

Of these 30, one went to [Burma](#) and one to [Alaska](#), while several others were assigned to the [United States Navy](#), [United States Coast Guard](#) and [British Royal Navy](#) who named it the **Gadfly**. In [Royal Air Force](#) service it was called the **Hoverfly**. The R4 equipped the first British military unit to be equipped with helicopters, the Helicopter Training School, formed in January 1945 at [RAF Andover](#).

The R4 showed such promise that the AAF ordered 100 **R-4Bs**. It was first used in combat in May [1944](#). In a letter to a friend, Col. Philip G. Cochran, Commanding Officer (CO) of the 1st Air Commando Group, wrote "Today the 'egg-beater' went into action and the damn thing acted like it had good sense."

R-4 Museum displays

- [National Museum of the United States Air Force](#) at [Wright-Patterson AFB](#) near [Dayton, Ohio](#)
- [RAF Museum](#) at [Hendon](#) in north [London](#)
- [Canada Aviation Museum](#) in [Ottawa, Ontario](#)

Specifications (R-4B)

- Rotor diameter: 38 ft (11.5 m)
- Length: 33 ft 7 3/4 in (10.2 m)
- Height: 12 ft 5 in (3.8 m)
- Weight: 2,581 lb (1170 kg) loaded
- Armament: None
- Engine: Warner R-550 - 200 hp. (149 kW)

- Maximum speed: 75 mph (120 km/h)
- Cruising speed: 65 mph (105 km/h)
 - Service Ceiling: 8,000 ft (2400 m)

External links

- [Sikorsky R-4 page at the National Museum of the United States Air Force](#)
- [RAF Museum Sikorsky R4 Hoverfly webpage](#)

Sikorsky H-5



Sikorsky YH-5A at [National Museum of the United States Air Force](#)

The [Sikorsky H-5](#) is a [helicopter](#) used by the [United States Air Force](#).

The H-5 was designed to provide a helicopter having greater useful load, endurance, speed, and service ceiling than the [Sikorsky R-4](#). The first XR-5 of four ordered made its initial flight on [August 18, 1943](#). In [March 1944](#), the [United States Army Air Forces](#) ordered 26 YR-5As for service testing, and in [February 1945](#), the first YR-5A was delivered.

During its service life, the H-5 was used for rescue and mercy missions throughout the world. It gained its greatest fame, however, during the [Korean War](#) when it was called upon repeatedly to rescue [United Nations'](#) pilots shot down behind enemy lines and to evacuate wounded personnel from frontline areas.

More than 300 H-5s had been built by the time production was halted in [1951](#).

Specifications

- Main rotor diameter: 48 ft (14.6 m)

- Tail rotor diameter: 8 ft 5 in (2.5 m)
 - Fuselage Length: 41 ft 2 in (12.5 m)
 - Height: 12 ft. 11 in. (3.9 m)
 - Weight: 4,815 lb (2,184 kg) loaded
 - Armament: None
 - Engine: Pratt & Whitney R-985 of 450 hp (335.5 kW)
-
- Maximum speed: 90 mph (144.8 km/h)
 - Cruising speed: 70 mph (112.6 km/h)
 - Range: 280 miles (450.6 km)
 - Service ceiling: 10,000 ft (3000 m)

H-5 Museum displays

- [National Museum of the United States Air Force](#) at [Wright-Patterson AFB](#) near [Dayton, Ohio](#)

Sikorsky X-Wing



Sikorsky X-Wing

The **Sikorsky X-Wing** was an experimental hybrid [helicopter/fixed-wing aircraft](#) developed between [1983](#) and [1988](#) by helicopter manufacturer [Sikorsky](#) with [NASA](#) and [DARPA](#) funding.

Intended to [take off vertically](#) like a helicopter, the craft's rigid rotors could be stopped in mid-flight to act as X-shaped wings to provide additional lift during forward flight, as well as having more conventional wings.

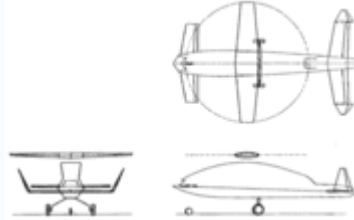
Instead of controlling lift by twisting its blades as more conventional helicopters do, the craft used compressed air fed from the engines and expelled from its blades to generate a virtual wing surface, similar to [blown flaps](#) on a conventional platform. Computerized valves made sure the compressed air came from the correct edge of the rotor, the correct edge changing as the rotor rotated. This approach appears to have been abandoned for the [tiltrotor](#) configuration employed by the [V-22 Osprey](#).

The X-Wing may have been named after the fictional [X-Wing](#) starfighter from the [Star Wars](#) movies, but is more likely named that because of its 4 bladed rotors' ability to double as a wing.

Boeing X-50



First flight of the Boeing X-50A



The **Boeing X-50A** Dragonfly, formerly known as the [Canard Rotor/Wing](#) Demonstrator, is a [UAV](#) being developed by [Boeing](#) and [DARPA](#) to demonstrate the principle that a helicopter's [rotor](#) can be stopped in flight and act as a fixed wing. The X-50A builds upon the work of the [Sikorsky X-Wing](#) program of the 1980's by designing the vehicle as a multi-mode aircraft from the ground up. The X-50A is powered by a single conventional [turbofan](#) engine, the exhaust of which is directed to the tips of the blades for rotary wing flight, the rear nozzle for fixed wing flight, and mixed for transition between the two.

Ship 2 was completely destroyed in a crash at the Yuma Proving Grounds on April 12th, 2006. No further details about the incident are currently available.

Specifications

- Length overall: 5.39m
- Height overall: 1.98m
- Wing span/rotor diameter: 3.66m
- Foreplane(canard) span: 2.71m
- Tail unit span: 2.47m
- Power unit: 1 x Williams Research F-112
- Empty weight: 574kg
- Fuel weight: 66kg
- Max payload: 91kg
- Max. take-off weight: 645kg
- Max level speed: 278km/h
- Max speed: 700 km/h

American [X-planes](#)

- [Bell X-1](#)
- [Bell X-2](#)
- [Douglas X-3 Stiletto](#)
- [Northrop X-4 Bantam](#)
- [Bell X-5](#)
- [Convair X-6](#)
- [Lockheed X-7](#)
- [Aerojet General X-8](#)
- [Bell X-9 Shrike](#)
- [North American X-10](#)
- [Convair X-11](#)
- [Convair X-12](#)
- [Ryan X-13 Vertijet](#)
- [Bell X-14](#)
- [North American X-15](#)
- [Bell X-16](#)
- [Lockheed X-17](#)
- [Hiller X-18](#)
- [Curtiss-Wright X-19](#)
- [Boeing X-20 Dyna-Soar](#)
- [Northrop X-21](#)
- [Bell X-22](#)
- [Martin-Marietta X-23](#)
- [Martin-Marietta X-24](#)
- [Bensen X-25](#)
- [Schweizer X-26 Frigate](#)
- [Lockheed X-27](#)
- [Pereira X-28 Sea Skimmer](#)
- [Grumman X-29](#)
- [Rockwell X-30](#)
- [Rockwell-MBB X-31](#)
- [Boeing X-32](#)
- [Lockheed Martin X-33](#)
- [Orbital Sciences X-34](#)
- [Lockheed Martin X-35](#)
- [McDonnell Douglas X-36](#)
- [Boeing X-37](#)
- [X-38](#)
- X-39 - reserved
- [Boeing X-40](#)
- [X-41 Common Aero Vehicle](#)
- [X-42 Pop-Up Upper Stage](#)
- [Boeing X-43](#)
- Lockheed Martin [X-44 MANTA](#)
- [Boeing X-45](#)
- [Boeing X-46](#)
- Northrop Grumman [X-47 Pegasus](#)
- [Boeing X-48](#)
- [Sikorsky Piasecki X-49](#)
- **[Boeing X-50](#)**
- [Boeing X-51](#)