Jane's Pocket Guide
MODERN MILITARY HELICOPTERS
TIM RIPLEY
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"Death from Above" was the famous insignia on the nose of Lieutenant Colonel Kipper's UH-1 Navy gunship in Francis Ford Coppola's Vietnam War epic, *Apocalypse Now*. The 25-minute long section of the movie where the M18A1 'Ferwell' takes a VietCong-held village to the sound of Wagner's Ride of the Valkyries captured perfectly the essence of going to war by helicopter.

Since the Vietnam War the helicopter has been an integral part of every armed force, and rotary-winged aircraft have seen action in every major conflict and many small wars. This rapid acceptance of helicopters into the mainstream of military organisations in attack, reconnaissance, liaison, transport, medical and maritime roles has led one commentator to term them "rotary-winged fighting vehicles."

However, when helicopters first saw action during the Korean War, they were used by US armed forces for casualty evacuation and VIP transport only. Indeed, it was left to the French to first demonstrate the combat potential of the armed helicopter during their colonial conflict in Algeria. The 1950s and 60s also coincided with revolutionary developments in helicopter design, such as the tandem rotor and turboshaft powerplants.

The success of US Army and Marine Corps gunships in Vietnam spurred the Soviet, British, French, Italian, Israelis, Germans and numerous other armed forces to field their own fleets of helicopters for anti-tank and assault work. By the mid-1970s most armies had begun programmes to procure specialist attack helicopters, leading to the development of the current generation of Cobras, Apaches, Tigers, A-129s, Mi-24s, Ka-50s and Blackhaws. It must be duly noted that these developments were often made in the face of stiff opposition from air force "blue-sky" sorts, who saw the armed helicopter as a direct rival to their own fleets of long-winged close air support aircraft.

No such argument was put forward by the navies of the world, however, as they had been quick to embrace the armed helicopter for the anti-submarine and anti-surface vessel roles, as well as more conventional air transport duties.

Indeed, the 1982 Falklands War proved the worth of the helicopter in naval warfare, protecting the British fleet from Argentine submarine attack, decoying Exocet missiles with electronic jamming devices and sinking enemy shipping with guided missiles. Five years later US Army and Navy helicopters provided vital protection against Iranian fast patrol boats in the Persian Gulf.

The 1991 Gulf War saw helicopters employed successfully in a wide range of roles by Coalition forces, whilst in the aftermath of the conflict, multi-national relief efforts to help Kurdish refugees in Northern Iraq depended on helicopters to fly in supplies to remote mountain camps.

In the post-Cold War world, humanitarian aid and peacekeeping missions have seen ever-increasing military helicopters put to extensive use. Media images of United Nations relief operations in Somalia, Haiti, Rwanda, Bosnia and elsewhere are dominated by scenes of helicopters. M170 peace-enforcement missions in Bosnia have seen the Apache
attack helicopter intimidating local forces into keeping the peace.

From a communists standpoint, Soviet forces used helicopter gunships to great effect during their long conflict in Afghanistan from 1979 onwards. The simple, but rugged, Mi-8 and Mi-24 assault helicopters became familiar images on snatched footage shot by western television crews covering the Mujahedeen guerrillas at the bottom of parched Afghan valleys. In 1994 Russian helicopters were again in action against Islamic guerrillas in Chechnya. Combat helicopters from the former Soviet Union are much in demand because of their low-cost and reliability. Proof of this may come very recently when, in a remarkable vote of faith in their former enemies’ equipment, the South African-based mercenary organisation Executive Outcomes has become a regular user of Mi-8 and Mi-24s during its operations in Angola and Sierra Leone.

This Jane’s Guide aims to describe the major combat helicopters in service today, or in the final stages of development. We have classified combat helicopters as rotary-wing aircraft designed specifically for military use, or civilian machines adapted for use by military forces.

Increasingly, armed forces are making use of chartered civilian helicopters as a means to cut costs, and we have included the types used by contractors in this study, particularly those chartered by the United Nations for humanitarian and peacekeeping missions.

We also take note of a number of major changes in the helicopter industry. For example, the consolidation of helicopter manufacturers into a smaller number of larger companies is reflected in the usage of new company titles. We have, however, included details of what are termed ‘heritage companies’ for reference. As a rule, we have used the current name of the manufacturer, or last name manufacturer before production ceased.

The opening up of the Russian defence industry since the demise of the Soviet Union has meant that it is now possible to attribute long-established designs to their real manufacturers, rather than just linking products to design bureaux (known as OKB). Actual Russian helicopter and weapon designations are also used to supplement NATO reporting names.

Helicopter production continues around the world in large numbers in spite of the general down turn in global defence spending. This trend will continue as combat helicopters continue to be in the forefront of military thinking and actual operations well into the 21st Century. New technical developments such as the introduction of UH rotor and advanced compound helicopters also offer military helicopter users significant improvements in both performance and operational capabilities.
Aerospatiale Alouette II (France)

Type: Light helicopter
Accommodation: One pilot; four passengers

Development/History
After its first flight in 1965, the Alouette II became the world's first series-produced helicopter to enter production.

Variants
SE 313B: Two prototypes, Alouette III, powered by the 268 kW (360 shp) Turboméca Astazou I turboshaft.
SE 313B: Designation after Société d'Etudes with Stout Aviation in 1952, later renamed Savi-Abouès.
SE 314B: Alouette II development, powered by a 298 kW (400 shp) Turboméca Turmo II engine, but none produced.
SA 318B: Alouette III derivative powered by the same economical Astazou III with a new conventional clutch.
SA 318C: Production version of SA 318.
SA 318B: Licensed produced by Turboméca Astazou IIIB.
Assembled in India (Chetak) and Brazil (Sp 313B Gedisco).

Status
French production ended 1978; Indian production continues.

Operators
Argentina, Belgium, Kenya, Malaysia, Morocco, Chile, Congo, Ecuador, El Salvador, Dominican Republic, Egypt, Guinea, Guinea-Bissau, India, Lebanon, Nauru, Senegal, Sierra Leone, Singapore.

Manufacturers
Société d'Etudes Avions (SA), Paris, France; Aerospatiale SA (France), Barcelona, Spain; Alouette III Ltd (Canada); Brazil (Socab); Republic Aviation (USA).

Aerospatiale Alouette II
Specifications (for SA 318C)

Powerplant
One Turboméca Astazou III Turboshaft
Power: 390 shp (290 kW) de-rated to 360 shp (266 kW)

Weights
Empty: 1,961 lb (890 kg)
Max T/O: 3,530 lb (1,600 kg)
Max Payload: 1,533 lb (695 kg)

Performance
Max speed: 127 mph (205 km/h)
Range: 268 km (170 miles)

Armament
2 x 7.5 mm machine guns; 1 x 7.5 mm machine gun

Dimensions
Length: 37 ft 3 in (11.36 m)
Rotor Diameter: 31 ft 5 in (9.58 m)
Height: 9 ft 2 in (2.75 m)
Aerospatiale Alouette III (France)

**Development/History**
The first Alouette III flew in 1968 and rapidly became the standard multirole helicopter in France, with over 800 sold to 37 countries. The prototype flew in 1968 and rapidly became a best-selling machine. It has been used extensively in combat operations worldwide, including in South Africa, Portugal, Romania, and South Africa, performing roles such as transport, observation, attack, and anti-submarine warfare. It has been used extensively in conflicts in the Middle East, Africa, and South America. It has been used extensively in conflicts in the Middle East, Africa, and South America.

**Variants**
- SA 315B: Alouette III powered by one 545-kW (732-shp) Turbomeca Arrius 1B2 turboshaft, de-rated to 450-kW (601-shp).
- SA 315A: Production version of SA 315B.
- SA 315B: Basic version with one 545-kW (732-shp) Turbomeca Arrius 1B2 turboshaft, de-rated to 450-kW (601-shp).

**Specifications (for SA 319B)**

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<th><strong>Performance</strong></th>
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<tr>
<td>One 545-kW (732-shp) Turbomeca Arrius 1B2 turboshaft, de-rated to 450-kW (601-shp)</td>
<td>Max Speed: 175 mph (282 km/h)</td>
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<td>Max Takeoff Weight: 4,950 lb (2,245 kg)</td>
<td>Range: 375 nm (700 km)</td>
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<td>Length: 41 ft 9 in (12.7 m)</td>
<td>Anti-submarine warfare, anti-tank warfare, anti-aircraft, and anti-ship missiles.</td>
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<td>Net Diameter: 14 ft 6 in (4.4 m)</td>
<td>Anti-aircraft, anti-tank, and anti-ship missiles.</td>
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<td>Height: 11 ft 6 in (3.5 m)</td>
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<th><strong>Weights</strong></th>
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<td>Empty: 2,456 lb (1115 kg)</td>
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Aerospatiale Alouette III (France)

for greater performance. Produced in Romania as 1AK-21B and in India as Chetak.
SA 215C: Alouette IIII powered version built in limited numbers.
SA 315B: Basic development of the SA 316B, powered by a more efficient and more

economical (649 kW (875 shp) turbinized Astazou XVIII turboshift), (de-rated to 447
600 (500 shp)).

Bi-Place (Belgian Air Force), gunship versions
with two side-mounted 12.7-mm machine
guns. Gunship with single port firing 20 mm

Master covers in cabins known as K-Car
(200-137 Skylane; Prototype Romania gunship version, armed
with anti-tank missiles, heavy machine guns, and machine gun;
which did not enter production.
Atlas Aviation XN-9 Alphal; South Africa export system;
 Demonstrator for Rooikat attack helicopter.

Status
Production in France ceased in 1981 after 1,455 built. Some
230 built in Romania until 1989. Limited production
continued only in India, with 308 built to date.

Operators
Algeria, Angola, Argentina (navy), Austria, Belgium (navy),
Burundi, Chile, Costa Rica, Indonesia, Iran, Congo, Republika
Slovena, Dominican Republic, Ecuador (navy), Equatorial Guinea, France (army, navy)
Seychelles, Ghana, Greece (navy), Guinea, Guinea-Bissau, India
(Lokichaguel), Iraq, Ireland, Jordan, Lebanon, Libya, Malawi
(air force), Mexico (navy), Nigeria, Mozambique, Myanmar,
Namibia, Nepal, Netherlands, Nicaragua, Pakistan
(Latvija/Asia), Peru (army), Portugal, Romania, Russia, South Africa, Switzerland, Syria
(air force), USA (Air Force, Marine Corp, navy), Congo (Kinshasa,
Zaire), United States.

Manufacturers
Sud-Aviation/Aerospatiale (France), STA-Bernex (Romania);
Federal Aircraft Factory (Switzerland) and Hindustan
Aviation (India).
**Aerospatiale Super Frelon** (France)

**Type:** Heavy lift helicopter  
**Accommodation:** Two pilots, up to 37 passengers

**Development/History**
First flown in the 1960s to meet French Navy requirements for a maritime helicopter armed with anti-ship guided missiles and ASW weapons. Some remain in French service for logistic support and vertical replenishment at sea.

**Variants**
- SA 321H: Pre-production aircraft
- SA 321H: French AW version, later used by the French
- SA 321HM: Export version for Libya
- SA 321C: Civilian version
- SA 321H: Version sold to Iraq with Sacho III engines, Bowco D Howe 205D radar and Exocet missiles.
- SA 321H: Export version to Taiwan.
- SA 321H: Export transport version to Brazil.
- SA 321H: Export transport version to South Africa.
- SA 321H: Export transport version to Lebanon.
- Changhe Z-10: Chinese-built naval and combat version.

**Status**
Production continues in China only.

**Operators**
- France, Brazil, China (navy), Iraq, and Libya.

**Manufacturer**
- Aerospatiale (France) and Changhe Aircraft Factory (China).

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**Aerospatiale SA 321 Super Frelon**

**Specifications (for SA321G)**

**Powerplant**
- Two Turbomeca Turmo III turbohelicopters
- Power: 871 shp (650 kW)

**Dimensions**
- Length: 53 ft 2 in (16.2 m)
- Rotor diameter: 62 ft 11 in (19.1 m)
- Height: 16 ft 11.2 in (5.2 m)

**Weights**
- Empty: 10,320 lb (4,673 kg)
- Max: 20,600 lb (9,350 kg)
- Payload: 11,211 lb (5,090 kg)

**Performance**
- Max speed: 237 mph (381 km/h)
- Range: 549 nmi (1,020 km)

**Armament**
- ASW torpedoes, depth charges, machine guns.
Eurocopter Gazelle (France)

Type: Light helicopter
Accommodation: One pilot, four passengers

Development/History

Sud-Aviation began work on the Gazelle in the mid-1960s as a replacement for its Alouette family. By 1967 it had been put into the meeting pool of the Anglo-French Helicopter Agreement, which was to see the joint development of the Gazelle, Lynx and Puma families of helicopters by Sud-Aviation (later Aérospatiale) and Britain’s Westland. This agreement gave France the lead in Gazelle exports, and Aérospatiale was soon leading a major foreign sales drive. Export success and production levels resulted in more than 400 sales, 254 being ordered for construction in Britain (with 52 for the UK armed forces) while France bought just under 150. Total production was some 254.

A pair later the Gazelle made its first flight, and since the version with the revolutionary ‘Fennec’, or fan-in-fan tail rotor was airborne. By the mid-1970s the aircraft was in widespread use with the British and French armed forces. From 1973 the French began to field the new SA 342 version, which sported an improved engine. Britain chose to adopt the new engine for its Gazelles.

British service was limited to the Salisbury Plain, but it was in the 1982 Lebanon war that a Syrian version armed with HOT anti-tank missiles showed the Gazelle’s true potential as an armed helicopter. French HOT and Milan wheel-launched versions were used extensively during the 1990 Gulf War in the air cavalry role on the extreme left flank of the Coalition Army. Two ‘Roland’ Gazelles fought alongside US Marine Corps forces in Kuwaiti Kassim City. Yugoslav-built versions have been used extensively in troop and armament roles during the civil war that began in

Westland Gazelle AH Mk 1 of the British Army Air Corps

Specifications (for SA 341)

Powerplant
One Turboméca Arrius 2A turboshaft
Power: 600 shp (440 kW)

Dimensions
Length: 75 ft 1 in (22.8 m)
Main Diameter: 14 ft 3 in (4.33 m)
Height: 10 ft 6 in (3.2 m)

Weights
Empty: 2,970 lb (1,347 kg)
Max T/O: 2679 lb (1213 kg)
Payload: 1,540 lb (699 kg)

Performance
Max speed: 193 mph (310 km/h)
Range: 361 nm (670 km); 193 nm (360 km) with resupply

Armament
AS10, AS11, H.53M and H.54M Matra (AT-3 Sparrow) air-to-ground anti-tank missiles
H.51M Socrès-LS 1 or 2 or 4 x 37 mm, 2 x 20 mm cannon, 2 x 37 mm 100-round rocket pods mounted on front gun, two, eight rounds
In 1989, four SA 340 Gazelles were used against Scouse, Irish, and British forces.

British and French Gazelles have been used in the Sierra Leonean civil war in support of United Nations and UNICEF peacekeeping forces since 1991. British Army Gazelles operating in Northern Ireland have been fitted with a variety of special observation and other small television systems.

**Variants**

- **SA 346**: Two pre-production, built with conventional rotors and T-tail, powered with radial engine and similar Avionics to that of 250/325 (250-251)
- **SA 346-1**: First pre-production helicopter with retractable tailrotor, anti-aircraft system, 440 kts (250 dry, forward 70) and 2000 ft (1500 kg, maximum weight).
- **SA 341B**: British Army Air Corps Gazelle AH-1, 225 built.
- **SA 341C**: British Royal Navy Fleet Air Arm Gazelle HT.7, 40 built.
- **SA 341D**: British Royal Navy Fleet Air Arm Gazelle HT.3, 29 built.
- **SA 341E**: British Royal Air Force Gazelle HT.6, 25 built.
- **SA 341F**: British Royal Air Force Gazelle H.C.8, one built, and three converted to HT.3s.
- **SA 341E**: Civilian
- **SA 341F**: Israeli Army Aviation service, 150 built.
- **SA 341F**: Italian: Traczy-Army Aviation 402nd (20 pre-production; 62 converted from original H.1).
- **SA 341F**: Italian: Italian military export service.
- **SA 341C**: Partisan: Yugoslavia-built version.
- **SA 341B**: French Army Aviation 903rd; one built, and three converted to original H.1.
- **SA 342**: Civilian
Eurocopter Gazelle (France)

SA 342C: Light-twin military export version with 655 SW (610 shp) Astazou XH5. Powerplant and 4400 lb (1990 kg) maximum weight.
SA 342L: Military export model with improved navigation.
Some 50 built in Yugoslavia, including SA 342L7 GAMA attack and SA 342L2 HERR versions armed with Soviet anti-ship and air-to-air missiles.
SA 342L1: Military export version with Astazou XN4 and 4800 lb (2175 kg) maximum weight.

Status
No longer in production.

Operators
Angola, Bosnia, Herzegovina, Burundi, Cameroon, Croatia, Cyprus, Egypt, Egypt (Army), Greece ( Republic), Iraq, Ireland, Jordan, Kenya, Kuwait, Lebanon, Libya, Morocco, Guinea, Senegal, Somalia, Tanzania, UAE (PME OAE), United Kingdom, Lebanon, Yugoslavia (Serbia/Montenegro).

Manufacturer
Sud Aviation/Aerospatiale/Eurocopter (France), Westland Helicopters (UK), SOKO (Yugoslavia), Abu Dhabi Helicopter Company (UAE).

Above:
Eurocopter SA 342M Gazelle for French Army Aviation
(Tim Ripley)

Right:
Eurocopter SA 342 Gazelle fires a HOTA wire guided anti-tank missile
(Aerospatiale)
**Eurocopter Dauphin/Panther**

*France*

**Type:** Light helicopter  
**Accommodation:** Two pilots, 10 troops

**Development/History**

Aerospatiale began development of the Dauphin helicopter in the early 1960s, with the first flight taking place in 1972. The basic single-engine version first flew three years later, and it has remained in production ever since, with worldwide sales and a number of aircraft production agreements being reached. A version with Allison engines entered service with the US Coast Guard in 1987 after a successful programme to integrate the US-source powerplant. Some four years later the Belize was introduced into service, followed shortly after by the AS 565 Antar powerplant. The Dauphin-Panther has proven to be a versatile and reliable light helicopter, which holds its own in the market today.

**Variants**

- AS 365N: Initial prototype powered by single Turbomeca Astazou IIII powerplant.
- AS 365C2: Improved version with new standard undercarriage.
- AS 365N2: Further improvement with up-rated engines and updated Avionics.

**Specifications (for AS 565 Panther)**

- **Powerplant:**
  - Two Turbomeca Arriel 2E turboshaft engines
  - Power: 1,386 shp (1,030 kW)

- **Performance:**
  - Max speed: 194 mph (312 km/h)
  - Range: 497 nm (915 km)

- **Dimensions:**
  - Length: 28 ft 11 in (8.8 m)
  - Rotor diameter: 28 ft 9 in (8.8 m)
  - Height: 12 ft 11 in (3.9 m)

- **Weights:**
  - Empty: 4,855 lb (2,200 kg)
  - Max T/O: 9,560 lb (4,330 kg)

- **Armament:**
  - 65mm (2.56-inch) cannon pods, 11mm (0.4-inch) machine guns, ten 57mm (2.25-inch) rockets, four 1.1-inch (2.8-centimetre) missiles, Manned torpedoes.
AS365N2, for attack and troop transport. This was re-named the Panther, powered by Turbomeca Mak and marketed under the following versions: AS 565AR (fireflight model) and gas armed; AS 565AR util; AS 565CA anti-land. AS 565F1 (fixed-fuselage version with retractable undercarriage; AS 565F1 (ened fuselage; AS 565FA anti-shipping; AS 565AR (armed rescue; AS 565AR (South Arabian rescue.

AS 365N3X: Upgraded version with two Turbomeca Arriel 2C turboshaft. Panther versions were designated SA 565 SBA utility; SA 565 AB (canon-rocket armed; SA 565 MBC helicopter utility; SA 565 MB (canon-rocket armed.

AS 365N4: Civil multi-role version, cutting 14 and powered by Arriel 2C.

AS 565 Panther 1: Brazilian version of X model designated HM-1 by Brazilian army.


AS 365N3G: Version produced for US Coast Guard under designation HH-65A, with Textron (formerly L3) T55-A-5 engines, specialist night vision and rescue equipment. Also used by Israel.

Harbin Z-9: Harbin, Chinese version assembled from French kits.

Harbin Z-9A: Harbin, Chinese model version with RZ7-6A powerplants, rated to 546 kW (734 shp), which can be increased.

**Status**

In production in France, Brazil and China.
Eurocopter Dauphin/Panther (France)

Operators
- Angola, Bophuthatswana, Brazil (Army), Burkina Faso, Cameroon, China, Congo, Côte d'Ivoire, Dominican Republic, Fiji, France (Army, Air Force), India (Air Force), Ireland, Israel, Romania, Saudi Arabia (Army), Sri Lanka, Taiwan, Thailand (Army), UAE (Abu Dhabi), USA (Coast Guard).

Manufacturers
- Aérospatiale/Eurocopter (France), Helitras (Brazil) and Hélicoptères (France), AS 565 Panther (Six Ripley).

Eurocopter AS 565F Panther
Eurocopter Ecureuil/Fennec (France)

Type: Light Helicopter
Accommodation: Two pilots, two/three passengers.

Development/History

The twin-propeller Helicotper Ecureuil first flew in 1964 and has remained in production ever since, attracting several hundred military and civilian customers around the globe. The single-engined 350 series version was soon supplemented by the twin-engined 355 series aircraft, which provided greater performance. Since 1990 special mission versions of the Ecureuil have been marketed under the Fennec brand name, using the series 555 series designation.

Versions

- AS 350 Ecureuil: First prototype with single Turbomeca Astazou III H1 turbo-shaft
- AS 350B (B3): Government/military version with single Turbomeca Astazou III H1 (Avial 101) or III H1 (Avial 2)
- AS 350C: Civilian version with single Turbomeca Lynx III H1 turbo-shaft. Known as MBB in USA
- AS 350D: Firefighter: Specialized version

Eurocopter AS 355 Ecureuil

(Tim Ripley)

Specifications (for AS 350B)

- Powerplant: One Turbomeca Astazou III H1 turbo-shaft
- Max takeoff weight: 4414 kg (9758 lb)

Dimensions

- Length: 35 ft 10 in (10.9 m)
- Rotor diameter: 55 ft 7 in (16.9 m)
- Height: 19 ft 11 in (5.7 m)

Weights

- Empty: 2175 lb (986 kg)
- Max takeoff weight: 4414 lb (9758 kg)

Performance

- Max speed: 171 mph (274 km/h)
- Range: 204 nm (377 km)

Armament

- One 57-mm cannon pod; 7.62-mm machine gun pod; four rocket pods; 20mm unguided anti-tank missiles; laser air-to-air missiles; anti-infantry torpedos.
AS 350BA in service with the Australian Army

AS 350B Ecureuil: First production version with two 300-shp (224-kW)Alouette III-C20F turboshafts.
AS 350N Ecureuil 2: Improved version with two 346-shp (258-kW) Turbomeca Arrius 1A, Civil version known as AS 350P2 from 1990 in USA.
AS 350P: Improved rotor blade version.

AS 350AF: French training version, F2 list approved.
AS 350AF2: French armoured version.
AS 550F: French, armed version with 30 mm cannon.
AS 550F2N training and utility version.
AS 550F1R armed naval version.
AS 550F3R armed attack helicopter.
AS 550F3R armed utility version.
AS 550F3R naval utility version.
AS 550F3N armed naval version.

Z-11: Chinese produced copy with 1,000-shp Powerplant, sold to 160VIP (SH-90).

AS 505: Brazilian version, designated OH-55 and VH-50, to Spetzen 5, by Brazilian air force, VH-129 by Brazilian navy.

Status
In service in France, China and Brazil.

Operators
Argentina (coast guard), Australia (army, navy, air force), Benin, Botswana, Brazil (army, navy, air force), Central Africa Republic, China (VH-129), Nigeria, Equatorial army. UK, France (army, navy, air force), United States (army, navy, air force), Brazil (air force), China.

Manufacturers
Eurocopter (France), China and Brazil.
Eurocopter Puma (France)

Type: Medium lift helicopter

Development/History
Work on the SA 330 began in 1963 but the programme became multi-national as a result of the 1967 Anglo-French helicopter agreement. This resulted in Westland building 40 for the British Royal Air Force. Under this arrangement future development and export work on the design was the responsibility of Aerospatiale, later Eurocopter, who began a vigorous sales drive in the 1970s. British and French Pumas have seen action in the 1991 Gulf War and supporting peacekeeping missions in the former Yugoslavia. South African forces used the Puma extensively in their bush war in Angola and South West Africa. French production ceased in 1987 after 487 built. The design was superseded by Super Puma (CGR4) versions from the late 1980s. Most countries of Puma development are now in South Africa (see Dene entry) and Romania, whose extensively upgraded versions are produced.

Variants
SA 330: First eight French prototypes.
SA 330B: French Army Aviation version.
SA 330C: Military export version.
SA 330B: Royal Air Force version, designated Puma HE.
SA 330FRB: Civilian versions with 1,124 kW (1,500 shp) Turbomeca Makila IV/Turboméca LMV10Turbojet engine.
SA 330M: Military version with 1,124 kW (1,500 shp) Turbomeca Makila IV/Turboméca LMV10Turbojet engine. Designated SA 330M by French Army, even though different from the French Army's SA 330R.
SA 330M H: Upgraded H model versions with glass-blade rotor blades.

Specifications (for SA 330)

Powerplant
Two Turbomeca Turmo IV (turboshaft) engines: 3,150 shp (2,350 kW)

Dimensions
Length: 49 ft 1 in (14.9 m)
Rotor diameter: 49 ft 2 in (15 m)
Height: 16 ft 10 in (5.1 m)

Weights
Empty: 8,500 lb (3,856 kg)
Max T/O: 13,215 lb (6,000 kg)

Performance
Max speed: 165 mph (265 km/h)
Range: 510 nm (949 km)

Armament
Main armament: Four machine guns or two 2.75-in (70 mm) rocket pods; 8 x 27-mm (1.06-in) machine guns; four 20-mm cannon; 226 lb (102 kg) Forward-looking IR design, A-50 air-to-air missiles.
SA 330B: Portuguese version with OHB 31 radar for maritime surveillance, and M696 powerplant.
MR-330B: Romanian-built version. System upgrade underway including installation of SOCAF (Optical Search and Combat Anti-Tank) weapon package.
Puma 3000: Proposed Romanian version with glass cockpit.
RSA 330: Indonesian-built version.
AS 330B: Helicopter: Experimental French test bed for Helicopter ground surveillance radar.

Status
Production continues only in Romania.

Operators
Argentina (coast guard/Army), Algeria, Cameroon, Chile, Djibouti, Congo (Brazzaville), Côte d’Ivoire, Ecuador, Ethiopia, France, Lebanon (spare), Libanon, Gabon, Gabonese Republic, Indonesia (air Force), Iraq, Kenya, Kuwait, Lebanon, Maldives, Mexico, Monaco, Nepal, Nigeria, Pakistan (Army/air Force), Philippines, Portugal, Romania, Senegal, South Africa, Spain, Sudan, Tajikistan, UN (UNPROFOR), United Kingdom (air Force).

Manufacturer
Sud-Aviation/Verone (Italy)/Eurocopter (France), Westland Helicopters (UK), Hiller (Indonesia), MB SA-Broue (Romania).

Eurocopter SA 330B Puma
(Tim Ripley)
**Eurocopter Super Puma/Cougar**  (France)

**Type:** Medium lift helicopter

**Accommodation:** Two pilots, loadmaster, 25 passengers

**Development/History**

A "grown" development of the basic Puma, the Super Puma first flew in 1976 before entering service in 1979. Although sharing many of the basic elements, the Super Puma (Super Puma) has unique military specific features. The Super Puma has a high-speed side-stick control, and a wide range of armament options are available. Recent developments have included a variety of night vision options and an attack helicopter. The French Navy has been planning to use the Super Puma as the platform for their HORIZON general reconnaissance and attack system.

**Variants**

- **AS 332H1:** First military version with MBB-Bo105 powerplants.
- **AS 332H2:** Civil transport.
- **AS 332H1:** "Stretched" civil transport.
- **AS 332L2 Super Puma Mk 2 (Civil transport).**
- **AS 332L2:** Super Puma Mk 2 (Civil transport).
- **AS 355F:** Skid-equipped military version.
- **AS 355M:** "Stretched" military version.
- **AS 532 Cougar Mk 1:** In 1950 N, II and M versions re-designed, and the same features adopted for military use.
- **AS 532HC, UB and UC for short-haul and military use/Demolition; AS 532AL and UL for long-haul/military use/Demolition; AS 532HC naval, ground and anti-submarine/anti-ship.

**Specifications (for AS 532UL Cougar Mk 1)**

**Powerplant**

- Two turboshafts: MBB-Bo105 (305 shp; 228 kW)

**Dimensions**

- Length: 56 ft 11 in (17.25 m)
- Rotor diameter: 51 ft 2 in (15.6 m)
- Height: 15 ft 3 in (4.6 m)

**Weights**

- Empty: 12,465 lb (5650 kg)
- Max T/O: 16,841 lb (7600 kg)

**Performance**

- Max speed: 172 mph (276 km/h)
- Range: 314 nm (668 km)

**Armament**

20 mm or 30 mm guns, anti-aircraft power, naval version can carry the AS 20 Baccarat anti-submarine or homing torpedoes.
Eurocopter AS 532 UL Cougar Mk 1 with Horizon battlefield surveillance system
Eurocopter Super Puma/Cougar (France)

AS 532 Cougar Mk 2: Stretched version with 1600 kW (2176 shp) Makita 1A7 powerplant. Civilian counterpart designated Super Puma B. In-flight refueling optional. AS-532AR armed coastal rescue version; AS-532UL utility with stretched fuselage; AS-532M naval, armed anti-submarine.

Cougar 100: Improved capability export version.

AS 5321H: HORIZON, armed surveillance version developed from Ochotiere system.

NAS: 332H: Indonesian utility designation.

NAS: 332F: Indonesian naval designation.

CH-34: Brazilian designation for 332M.

H.17: Spanish Army designation for 332B.

MD.21: Spanish Air Force search and rescue designation.

H.11A: Spanish VIP designation.

Hip.10: Swedish search and rescue designation.

Status
In production in France and Indonesia.

Operators
Argentina (Coast Guard), Brazil (coastal forces), Cameroon, Chile (coastal forces), China, Congo (Air Force), Costa Rica (Air Force), Ecuador, France (Air Force), Gabon, Indonesia (Air Force), Iraq, Japan, Jordan, Korea, Malaysia, Mexico (Air Force), Myanmar, Netherlands, Nigeria, Panama, Peru (Army), Qatar, Saudi Arabia (Army/Naval), Singapore, South Korea (Air Force), Spain (Army, Air Force), Switzerland, Thailand (Air Force), in Laos, Turkey (Army, SAR), UAE, and United Arab Emirates.

Manufacture
Aircopter/Eurocopter France, OCP不好意思and Singapore models were assembled in-country from kits. MA (Turkey) has signed a deal for co-production.

Eurocopter AS 532SC
Cougar
(Tim Ripley)
Eurocopter Super Puma/Cougar (France)

Eurocopter AS 332A2 Cougar rescue version with in-flight refuelling probe

(Tim Rigby)
**Eurocopter BO 105** (Germany)

**Type:** Light helicopter

**Accommodation:** Two pilots, three passengers

### Development/History

This German light helicopter made its first flight in 1977, and by the mid-1980s was in widespread service with the German Army — some 160 light observation and 300 BO105s were delivered in this role, and variants are also exported. Designated BO105CBS by the Spanish Army, the French-German type programme means it will have to soldier on in these roles until well into the next decade. It has been widely exported to civilian and military customers around the world.

### Variants

- **BO 105C:** Initial version.
- **BO 105C-1:** Basic light combat utility version.
- **BO 105C-2:** Stretch utility version; two seats.
- **BO 105C-3:** Two seats stretch utility version; five seats.
- **BO 105C-7:** Proposed German export version with four MTR036A engines.

### Specifications (for BO 105C)

#### Powerplant

- Two Alouette 3P0-C96B turboshafts.

#### Performance

- Max level 199 mph (320 km/h)
- Range: 250 nm (463 km)

#### Armament

- 12.7 mm (0.50 in) GAU-19/A 7.62 mm (0.30 in) M240B

#### Weights

- Max take-off weight: 1,894 lb (855 kg)
- Empty: 994 lb (451 kg)
BO 105S/RHRAH: Spanish armed search version with 20-mm cannon.
BO 105S/DSRH: Spanish observation version.
NBO 105S: Basic Indonesian-built version.
NBO 105S2: Stretched Indonesian version.
BO 105SBS/SMP: Search and rescue/maritime version with surveillance role.
BO 105 ES C-3: Powered by two Allison 250-C-28C engines.
Super Offner, optimised for heavy sling loads.
EC-Super Fire: High-performance version of DBS for civil market.

Status
In production.

Operators
Bahrain, Botswana, Chile (Escuadra Aerea), Chile, Colombia (Army), Germany (Army), Indonesia (Armymarinecorps), Iraq, Jordan, Kenya, Lebanon, Mexico (Army), Netherlands (Army), Nigeria, Peru (Army), Philippines (Army), Spain (Army), Sweden (Army), Thailand, UAE (Arab).  

Manufacturer
Stromer-Moehle-Blohm-Eurocopter (Germany), NPS (Indonesia), CASA (Spain), Eurocopter-Canada (Canada).
HAL Advanced Light Helicopter (ALH) (India)

**Type:** Light multi-role helicopter

**Accommodation:** Two pilots, 12-14 passengers

**Development/History**

India's indigenous light helicopter programme was slowed by financial problems throughout the 1980s, delaying the first flight until August 1990. Three prototypes are now flying, but questions marks still remain over when it will enter service with the Indian armed forces. The first order for eight was placed in 1993, and the second order is expected in 1998. A production rate of 26 per year is expected from 1992 onwards.

**Variants**

- Army/Air Force: standard landing gear
- Naval: wheels and folding tail
- Light Attack Helicopter: Proposed ground-attack version

**Status**

In pre-production

**Operators**

ID, India

**Manufacturer**

 Hindustan Aeronautics Limited (HAL) (India)

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**Specifications**

**Powerplant**

Two Turbomaps TM312-29.

**Power:** 2000 shp (1491 kW)

**Dimensions**

- Length: 43.0 ft (13.14 m)
- Rotor diameter: 47.7 ft (14.5 m)
- Height: 16.5 ft (4.05 m)

**Weights**

- Empty: 5,500 lb (2500 kg)
- Max TOL: 11,023 lb (5000 kg)

**Performance**

- Cruise speed: 152 mph (245 km/h)
- Range: 496.5 nm (900 km)

**Armament**

- 30 mm cannon, heat; two-rocket pods; four air-to-surface guided missiles; two air-to-air missiles; mine dispensers; dipping sonar; two forward-looking infrareds

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[Image of HAL Advanced Light Helicopter]
Eurocopter Tiger (International)

Type: Attack helicopter  
Accommodation: Pilot (front), weapons operator (rear) in tandem

Development/History

Intended to replace the Gazelle in French service and the Bo-105 in German service, the Tiger has its origins in a memorandum of understanding signed by the two countries in 1986. After a protracted process, a development contract was signed in November 1996 and work began in earnest to produce first prototypes.

In the early years of the programme both France and Germany were keen supporters of the Tiger, but defence cutbacks in the 1990s have forced the delivery programme to be stretched out, with the first batch of 80 aircraft for each country not entering service until the next century (Germany in 2007 and France in 2008). Initially, Germany will receive only MRU-clear support version, while the French set to receive 25 search-and-destroy and 50 anti-tank models. Production of the remaining aircraft will then last until 2025, with a total of 215 being built for France and 312 for Germany.

Anti-Tank versions are armed with HOT or Fagil anti-tank missiles, a multi-channel forward-looking infra-red sight and air-to-air missiles are also optional. The search-and-destroy support versions are armed with a later-mounted 30 mm GAT cannon under the nose, air-to-air missiles, and rocket pods.

Variants

HAP (French): Initial German export version.
HAP (French export version)

Eurocopter Tiger

Specifications

Powerplant

Two MTU/Rolls-Royce/Usabruce M53-350 turbo-shaft

Power: 2790 hp (2016 kW)

Dimensions

Length: 45 ft 11 in (14 m)
Radar diameter: 42 ft 2 in (13 m)
Height: 14 ft 1 in (4.3 m)

Weights

Empty: 2725 lb (1280 kg)
Max T/O: 12,797 lb (5800 kg)

Performance

Max speed: 174 mph (280 km/h)
Endurance: 2 hours at 50 km

Armament

HAP-2G: 30mm cannon, Mistral anti-air missiles, 68 mm rockets, 8 HARPIE-255MC
HOT-2G: 30mm cannon, anti-tank missiles, launches, TOW infra-red guided anti-tank missiles, RAP-11 (interception anti-tank missiles, 50mm or 68 mm anti-air missiles, single

Machine gun pods

Machine gun pods
Eurocopter Tiger (International)

UHT: German multi-role close support version, originally designated UHTS.
HDP: Export multi-role version, without roof-mounted sight.

Status
In pre-production.

Operators
85.

Manufacturer
Eurocopter (France/Germany)
EH Industries EH.101 Merlin (International)

Type: Shipborne ASW helicopter/utility helicopter

Development/History
This joint British-Italian collaborative programme began in 1973 to develop a Sea King replacement by both countries' navies. Funding was agreed in 1984 to proceed with building nine prototypes and subsequent development. The first prototype flew at Sicily in 1987, and since then the programme has led to the development of dedicated maritime, utility, airborne early warning and anti-submarine versions. Current order books stand at 44 maritime versions for the British Royal Navy and 22 utility for the Royal Air Force as search and rescue and para-military work. Italy's Navy has ordered eight maritime, four airborne early warning and four utility versions.

Major orders were expected from Canada but the programme was cancelled in 1989 after a change of government. Export orders are being keenly sought from Canada, Egypt, Portugal, Japan and the Middle East. The Merlin programme for the Royal Navy is unique because Westland - the aircraft manufacturer - is not the prime contractor. Lockheed Martin is prime contractor, being responsible for integrating the complex anti-submarine warfare and weapon systems with the airframe.

Variants
- Merlin HC.3: Royal Navy maritime helicopter.
- Merlin ASW/ASW: Italian maritime helicopter.
- Merlin AH: Italian airborne early warning version.
- Merlin UH: Italian naval transport version.
- Merlin HC.3: RAF search helicopters.

Location: Westland

EH Industries EH.101 Merlin Specifications (Basic Naval version)

Powerplant:
- Three Rolls-Royce Turbines RTM 322
- Turboshifts (UK), General Electric T80-GE-GEAE (Italy)
- Power: 650kW (875 shp) / 1242shp (1634 hP)

Weights:
- Empty: 15 700 lb (7121 kg)
- Max T/O: 28 000 lb (12 700 kg)
- Payload: 7 590 lb (3 442 kg)

Performance:
- Max speed: 132 mph (213 km/h)
- Range: 625 km (388 miles)

Armament:
EH Industries EH.101 Merlin (International)

CH-148 Petrel: Proposed Canadian maritime version.
CH-148 Chinook: Proposed Canadian version.
Cavendish: Proposed Canadian version.

Status
In production.

Operators
Italy (navy), UK (naval air force).

Manufacturer
Agusta (Italy) and Westland Helicopters (UK).

Left
EH Industries EM.101 Merlin (GKN Westland)

Right
EH Industries EM.101 Merlin (GKN Westland)
NATO Helicopter Industries NH 90 (International)

**Type.** Multi-role medium-lift/maritime helicopter

**Development/History**
This multi-national project began in 1985 and originally involved five nations, however, Britain pulled out in 1987. Today France, Germany, Italy and the Netherlands continue building the NATO Hagat Helicopters (NH90) and Tactical Transport Helicopter (TH6) full-scale development began in 1992 and the first prototype flew in 1995. The second prototype equipped with fly-by-wire flight control system flew in 1997.

Defence cutbacks in Western Europe have led to the programme being scaled down and delivery dates slipped. In mid-1994 the funding for the production delivery schedule was agreed. The Netherlands is taking 26 NH90 versions from 2002. Italy is buying 23 24 TTHs from 2003 and 34 NH90s from 2007. France has ordered 25 NH90s from 2003 and 131 TTHs from 2011. Italy requires 63 NH90s and 143 TTHs from 2004. In total, 642 helicopters are on order, but five countries expect the programme to suffer further European defence budget cuts.

**Variants**
- NH 90: NATO Hagat Helicopters for deployable anti-submarine and utility tasks.
- TTH: Tactical Transport Helicopters

**Status**
In production

**Operators**
None

**Accommodation:** Two pilots, (NFI) three systems operators, (TTH) 20 troops

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**NH Industries NH 90**

**Specifications (For NFH)**

<table>
<thead>
<tr>
<th>Powerplant</th>
<th>Twin Rolls-Royce Turboshaft / Piaggio TM312-612F or General Electric T408-GE-400X Turboshafts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Power rating (Anti), 5290 shp (3940 kW) or 4940 shp (3650 kW)</td>
</tr>
</tbody>
</table>

**Weights**
- Empty: 14,741 lb (6682 kg)
- Max takeoff: 37,522 lb (17,011 kg)
- Payload: 4409 lb (2000 kg)

**Performance**
- Max speed: 186 mph (300 km/h)
- Max range: 560 miles (900 km)

**Dimensions**
- Length: 52 ft 10 in (16.11 m)
- Rotor diameter: 51 ft 5 in (15.62 m)
- Height: 12 ft 6 in (3.82 m)

**Arrestment**
Anti-submarine, harpoon, anti-ship missiles, depth charges, 7.62 mm and 20 mm cannon.

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Manufacturer

NH, with Eurocopter (France/Germany), Agusta (Italy) and Fokker (Netherlands).
Agusta A 109

Type: light helicopter (for A 109CM)
Accommodation: Two pilots, six passengers

Development/History
Agusta's stylish light helicopter first flew in 1982 and has sold well around the world since. Its military versions first entered service with the Italian Army in 1988, although Belgium is the only export nation for this model. In service, more than 500 have been produced in all military and civil services.

Variants
A 109A: Mk II: Civil service.
A 109C: 'Wide body' version with improved transmission.
A 109EDA: Basic Italian army service.
A 109E: Current production military version with increased weapon improvements.
A 109K: Improved transmission and tensioners now for more robust.
A 109LC: Swiss export service.
A 109MKM: Fixed undercarriage, with 510 RPM (235 shp) Turboméca Arriel 9K1 Powerplant for 'soft' and 'high' operations.
A 109MKA: Naval variant.
A 109MAG: Medical evacuation service.
A 109MAGP: Coast guard version.
A 109I: Power: Two Pratt & Whitney 200C powerplants, each rated to 212 shp (160 kW).

Status
In production.

Italian army Agusta A.109

Specifications
Powerplant:
Turboshaft: 2 x 200C (990 shp)
Power: 1100 shp (820 kW)

Dimensions:
Length: 45 ft 3 in (13.8 m)
Rotor diameter: 45 ft 9 in (14.0 m)
Height: 16 ft 5 in (4.9 m)

Weights:
Empty: 3990 lb (1810 kg)
Max T/O: 7700 lb (3500 kg)

Payload: Underwing 2000 lb (907 kg)

Performance:
Max speed: 190 mph (306 km/h)
Range: 430 nm (800 km)

Armament:
1 x 25 mm, 1 x 70 mm, 1 x 30 mm, 1 x 20 mm, 1 x 12.7 mm, 1 x 7.62 mm, 1 x 5.56 mm
Stinger all-weather version.
Operators
Argentina (navy/army), Belgium, Italy (army), Malaysia, Peru (army), Slovenia, UK (army), Venezuela (army).

Manufacturer
Agusta (Italy).

Right
Agusta A109 Mangusta
(Tom Replay)
Agusta A 129 Mangusta (Italy)

Type: Light attack helicopter
Accommodation: Two pilots in tandem

Development/History
Italy's distinctive Mangusta (Mangusta) is the first custom-designed Western European attack helicopter to enter frontline service with a Nato country. Both a brick in the block of helicopter construction dating back to 1952, Agusta began working on the Mangusta in the mid-1960s in response to an Italian Army requirement for a specialist anti-armour helicopter.

US experiments with the Colfax and early versions of the Apache obviously influenced the design of the Mangusta, which made its first flight in 1983. The prototypes were flying by 1985, with a delivery date scheduled for the end of 1987. However, the first production aircraft were not delivered until 1993, with 70 being substantially produced per month. The delay is attributed, in part, to funding problems with the Hughes/Hercules S-64E ratio-rocket anti-armour sight system.

The initial Italian Army order for 55 aircrafts has since been followed by plans to develop a multi-role attack/guided weapon system. This variant features a chin-mounted turret armed either with a 7.62 mm N.54 or a 12.7 mm M730 machine gun. A new-build version in mid-1987, with 13 of the original airframes now converted. Despite the A129 seeing combat service with the Italian United Nations contingent in Somalia during 1991, export orders have not been forthcoming - it has lost out to its Bolk, Eurocopter and several Middle Eastern attack helicopter competitors.

Agusta A129 Mangusta

Specifications
Powerplant
Two Rolls-Royce 1004B turboshafts
Power: 703 shp (520 kW)

Dimensions
Length: 48 ft 5 in (14.7 m)
Rotor diameter: 38 ft 6 in (11.7 m)
Height: 11 ft 10.5 in (3.6 m)

Weights
Empty: 10,751 lb (4,920 kg)
Max take-off: 13,016 lb (5,900 kg)

Performance
Max speed: 183 mph (294 km/h)
Endurance: 2 hours 3 minutes

Armament
Four hardpoints: 400, 520, 2 x 24mm cannon, 2 x 90mm anti-tank missiles, 1 x 12.7mm guided anti-armour missile, 2 x 12.7mm or 30mm guns. Externally, on 12.7mm or 30mm machine gun pods, fireflight rocket pods, 20mm Gatling gun pod or 2 x 24mm cannon, or 2 x 30mm or 12.7mm guns for self-defence. In all, the Mangusta has been exported to 10 countries, with 72 in service.
Variants
A 129: Basic Italian Army anti-tank version.
A 129 Smart: Proposed reconnaissance version with mast-mounted sight and chin gun turret.
A 129 International: Export version with two LM900 engines, five main rotor blades and improved weapon systems.
A 129 Skipper: Proposed navalized version.
A 129 Multi-Role: Proposed follow-on to current in-service versions, similar in capability to international version, and armed with turreted 26 mm Gatling gun.

Status
In production.

Operators
Italy (naval).

Manufacturer
Agusta-Feidt.

Right
Agusta A 129 Mangusta
(Im Ripley)
Agusta-Bell AB 212 (Italy)

Type: shipborne anti-submarine helicopter

Development/History
This specialized anti-submarine version of the popular 112 airframe has become the standard shipborne helicopter for many NATO navies. They are easily identified by the large rotor bearings above the cockpit and under the forward hull. A variety of surface surveillance radars have been installed, including BR: AB-500s, EDAWPS-300s, or Leonardo Sognessi Bodola ANDERS-150F/ECM listening sensors. Some have been fitted for anti-submarine work. All aircraft are equipped with either a pair of Ferial anti-submarine torpedos or anti-ship-missile HC and sonar systems in action during the 1980s-90s Gulf War, while Italian, Greek, Spanish and Turkish versions were used to enforce UN sanctions against the former Yugoslavia.

Variants
AB 212 ASW: Basic version.
AB 212 ASW: Turkish electronics; warfare version.
AB 108: Spanish designation.

Status
In production

Operators
 deceive, navy, Iran (navy), Italy (navy), Peru (navy), Spain (navy), Turkey (navy), Venezuela (navy)

Manufacturer
Agusta (Italy)

Accommodation: two pilots, sonar operator, radar operator, or seven passengers

Agusta-Bell AB 212 ASW

Specifications (for AB 212 ASW)

Powerplant:
One Pratt & Whitney PW220E turboshaft engine (Power: 1675 shp (1250 kW))

Performance:
Max speed: 122 mph (196 km/h)
Range: 360 nmi (664 km)

Armament:
45-12.7 mm Gatling 2, 25mm or 40mm radar-guided anti-aircraft cannon, MK 46, 46 or 500 44 torpedoes, depth charges, machine guns

Dimensions:
Length: 47 ft 4 in (14.4 m)
Rotor diameter: 48 ft 3 in (14.7 m)
Height: 15 ft 8 in (4.5 m)

Weights:
Empty: 7450 lb (3380 kg)
Max loaded: 1176 lb (5320 kg)
Empty: 5000 lb (2270 kg)

Max speed: 122 mph (196 km/h)
Range: 360 nmi (664 km)
Kawasaki OH-1 (Japan)

Type: Light attack and observation helicopter

Development/History
The first military helicopter developed entirely in Japan is intended to replace the OH-6, in Japanese Ground Self Defense Force service in the early part of the next century. A mock-up was unveiled in 1994, and the first prototype flew two years later. Similar in appearance to the Agusta A 109, but the OH-1 features a four-blade tail rotor and 1990s generation materials, sensors and weapon systems. The 1990 delivery budget included funding for the first three production aircraft.

Variants
N1.

Status
In pre-production.

Operator
N.

Manufacturer
Kawasaki and Fuji Heavy Industries (Okinawa).

Accommodation: Pilot, gunner/observer

Kawasaki OH-1

Specifications

Powerplant
Two MHI SH-10 turboshafts
Power: 1200 shp (900 kW)

Dimensions
Length: 38 ft 4 in (11.6 m)
Rotor diameter: 57 ft 9 in (17.5 m)
Height: 12 ft 5 in (3.8 m)

Weights
Empty: n/a
Max T/O: 7716 lb (3500 kg)
Fuel: n/a

Performance
Cruising speed: 151 mph (243 km/h)
Range: 124 nm (228 km)

Armament
Aimda Type 91 air-to-air missiles; anti-tank guided missiles; free-flight rockets; turret- and gun-mounted cannon/guns
PZL Swidnik W-3 Sokol (Poland)

Type: Medium-lift multi-purpose helicopter

Development/History
PZL Swidnik began to work on upgrading the old W-3 design during the 1970s, and the result of that work, the W-3 Sokol, first flew in 1992. Production began in 1998, and it has since entered service with the Polish air force.

Development in light armed versions is underway, with the help of South Africa and Brazil, to improve the export potential of the helicopter by giving customers options and custom request options.

Variants
W-3 Sokol: Standard civil and military service.
W-3R: Bandit: Stretched service with up-rated engine to 744kW (1000 hp) and capacity for 14 passengers.
W-3R1: Swidnik: Polish Navy search and rescue version.
W-3R2: Saharan: Search and rescue.
W-3R-W: Basic civil armed version for Poland.
W-3R-W: Proposed naval strike version.
W-3R-C: Proposed armed version for export markets.
W-3R-2A: An Ir-2A with turrets and gunship.
W-3R-2B: Heavily: Armament upgraded with assistance from South Africa's Denel, using the Rooivalk gunship system.
W-3 Sahar: VIP transport.
W-3 CR: Proposed civil armoured version.
W-3 KS: Proposed gunship version with turrets.
W-3V-5: Proposed up-graded with Pratt & Whitney PT6A-68 turboshafts.

Accommodation: Two pilots, 12 passengers.

Specifications (for Sokol)

Powerplant
Two W-300-B5, Rooks (300 kW) turboshafts.

Performance
Max speed: 180 mph (290 km/h)
Range: 600 nm (1110 km)

Dimensions
Length: 40 ft 7 in (12.4 m)
Rotor diameter: 61 ft 6 in (18.7 m)
Height: 13 ft 5 in (4.12 m)

Weights
Empty: 3775 lb (1710 kg)
Max T/O: 14,100 lb (6400 kg)
Payload: 4634 lb (2099 kg)

Armament
8x 7.62mm (0.30 in) machine guns in nose and tail; 2x 20mm cannon in nose; 1x 20mm cannon in tail; 10x 70mm rockets; 4x 90mm missiles, 2x 820mm rocket pods, 8x 250kg bombs, 2x 1000kg bombs

Status
In production

Operators
Czech Republic, Poland, Indonesia, Vietnam

Manufacturer
PZL Swidnik (Poland)
Kamov Ka-25 (Russia) NATO reporting name ‘Hormone’

Type: Shipborne anti-submarine helicopter

Development/History
Some 360 Ka-25s were built for service aboard Soviet Navy ships from 1968. It has since been withdrawn from Soviet Navy service, but a few are operational elsewhere.

Variants
Ka-25PL: Basic version.
Ka-25F: Proposed land-based attack helicopter.
Ka-25K-1: Hormone-B: Specialised version to provide long acquisition and long range tracking for submarines and ship-launched cruise missiles. Partially retractable undercarriage.
Ka-25PS: Hormone-C: Specialist search and rescue version, with improved anti-submarine and fire control equipment.
Ka-25MA: Marine version.
Ka-25MK: Prototype flying crane.

Status
No longer in production.

Operators
India (Indian), Russia (three), Syria (two), Vietnam, Yugoslavia (one).

Manufacturer
Kamov Aviation Plant, Moscow, Russia, and Blue Line (Russia) based on Kamov OKB Brazil design.

Accommodation: Two pilots, optional 12 passengers.

Specifications (for Ka-25Bsh)

<table>
<thead>
<tr>
<th>Powerplant</th>
<th>Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two M342-3F turboshaft</td>
<td>Empty: 10,575 lb (4,793 kg)</td>
</tr>
<tr>
<td></td>
<td>Max T/O: 15,473 lb (7,020 kg)</td>
</tr>
<tr>
<td></td>
<td>Power: 1,175 shp (874 kW)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max speed: 140 mph (225 km/h)</td>
</tr>
<tr>
<td>Length: 62 ft 5.3 in (19.02 m)</td>
<td>Range: 325 nm (600 km) with external tank</td>
</tr>
<tr>
<td>Rotor diameter: 57 ft 7 in (17.52 m)</td>
<td></td>
</tr>
<tr>
<td>Height: 17 ft 11 in (5.4 m)</td>
<td></td>
</tr>
</tbody>
</table>

Armament
Anti-submarine torpedoes, depth charges
Kamov Ka-27/28/32 (Russia) NATO reporting name ‘Helix’

Type: Shipborne anti-submarine helicopter

Development/History

The Ka-27 series has a longer heritage than the Ka-25. The first prototype flew in 1974, and it entered frontline service with the Soviet Navy in the early 1980s. Its robust design and rugged construction have proven popular with crews.

Variants

Ka-27PK: ‘Helix-D’ Basic version for Soviet Navy, also known as Ka-25PK.
Ka-27PV: Armored version of PS.
Ka-28 ‘Wella-A’: Export version of PL.
Ka-28 ‘Wella-C’: Civilian version and rescue version, with upgraded avionics and search radar.
Ka-32P ‘Helix-C’: Civil utility version.
Ka-32B: Civil Flying Circus.
Ka-32R: Civil utility version.
Ka-31R: Fire fighting version.
Ka-32WA: Civil version.

Status

In production.

Operators

India, Israel, Brazil (Brazil), Vietnam, Turkey (Turkey).

Manufacturer

Kamov/Aviaexport (Blinov/Kamov/Aviaexport) to Kamov OKB (Kamov design).

Accommodation: two pilots, systems operator

Kamov Ka-32 ‘Helix’

Specifications (Ka-28)

Powerplant

Two Klimov Ti-117V turboshafts

Power: 4,090 shp (3,060 kW)

Weights

Empty: 14,200 lb (6,439 kg)
Max LOF: 24,250 lb (11,000 kg)
Payoff: 11,830 lb (5,360 kg)

Performance

Max speed: 148 kts (274 km/h)
Range: 432 nm (800 km)

Armament

Anti-submarine torpedoes; depth charges.
**Kamov Ka-29** (Russia) NATO reporting name ‘Helix-B’

**Type**: Assault helicopter  
**Accommodation**: Two pilots, 16 troops

**Development/History**
Capitalising on the success of the Ka-27 family, Kamov embarked on a specialist assault helicopter version in the late 1980s. It was designed to operate off the Soviet Navy’s replenishment landing ships, and is considered to be the ‘hard’ Mi-24, combining firepower with a troop-hauling capability.

**Variants**
- **Ka-29B Helix-B**: Basic assault transport version, also known as Ka-29DTB.
- **Ka-29KL**: Airborne early warning and surface surveillance version, redesignated Ka-27K.
- **Ka-27K**: Prototype anti-submarine version based on Ka-25 helicopter.

**Status**
In production.

**Operators**
- Russian Navy.

**Manufacturer**
Kamanasy Aviation (Каманский авиаполет) to Kamov OAO (ОАО Камов).

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**Kamov Ka-29**

**Specifications**

**Powerplant**
- Two Kamov KTV-17P turboshaft engines.
- Power: 1,300 shp (970 kW)

**Dimensions**
- Length: 37 ft 1 in (11.3 m)
- Rotor diameter: 52 ft 2 in (16.0 m)
- Height: 17 ft 9 in (5.4 m)

**Weights**
- Empty: 13,186 lb (5,990 kg)
- Max T/O: 21,775 lb (9,860 kg)
- Payload: 8,519 lb (3,900 kg)

**Performance**
- Max speed: 174 mph (280 km/h)
- Range: 246 nm (460 km)

**Armament**
- Two 7.62 mm Gatling-type machine guns in turrets; four hard points; 9M14 Shtorm (9K-6) Spiral radio- and laser-guided anti-tank missiles; 23 mm or 30 mm gun pods.
Kamov Ka-50/52 (Russia) NATO reporting name ‘Hokum’

**Type:** Attack helicopter  
**Accommodation:** One pilot

### Development/History

The Kamov OKB has built an interest in attack helicopters since the mid-1960s, when its design lost out to the Mi (Mi-24) in the contest for the Soviet army’s battlefield attack helicopter. Kamov reported work in the 1970s, again with Mi as a rival, to hold a requirement for the Mi-28 replacement.

The Kamov Ka-50 first flew in 1985, and won the contest against the Mi-28 design due to its better agility, better armour and lower noise. However, the military establishment remained sceptical about the Ka-50’s single-seat requirement, so work continued on the proposed Mi-28 until announced in public in 1990. The Ka-50 is now being offered for export as the ‘Firewolf’ or ‘Helicopter Shark’, although it has also been called the ‘Black Shark’ in promotional material.

The collapse of the Russian defence budget in recent years has left Russian army aviation in tatters, and the Ka-50 and Mi-28 have editorially different status, although production versions of the Ka-50 have not been cancelled and work continues on new versions, with 8-night attack and two-seat versions flying as prototypes here.

The Ka-50 design is revolutionary, with the usual rotor allowing the traditional tail rotor to be dispensed with. By flying as a single-rotor design, Kamov OKB had to accommodate a significant number of elaborations, but, as helicopters mounted, it used up-space and complex aerodynamic devices. Defensive equipment includes active self-defence radars and armoured cabins. The pilot has an ejection seat, and...
Kamov Ka-50/52 Werewolf/Alligator (Russia) NATO reporting name 'Heliver'

First triggers an explosive device to blow off the rotor blades and point to bring the pilot safely away from the fuselage.

Variants
V.100, initial prototype.
Ka-50 Werewolf/Black Shark/Helicopter Soldier (unofficially Heliver-K) V-805AM: basic single-seat variant.
Ka-52 Alligator (unofficially Heliver-R) V-805AK: twin-seat variant.

Status
In limited production.

Operators
Russia (ex-RU).

Manufacturer
Progress Aeromotor Aviation Co (Russia) to Kamov OKB.

Timeline designs.

Kamov Ka-50/52 Werewolf
(Tim Ripley)
**Mil Mi-2** (Russia/Poland) NATO reporting name ‘Hoplite’

Type: Light helicopter  
Accommodation: One or two pilots, eight passengers

**Development/History**

Under Warsaw Pact era Soviet defense plans, the PZL Swidnik plant was nominated as the sole production site for the Mi-2GRS Mi-2 design, the first Polish-built Mi-2 flew in 1966, and more than 5200 were built up until production ceased in 1981. The light utility helicopter saw extensive service with Soviet and Warsaw Pact armed forces, including combat operations in Afghanistan and off-the-hoof theatres. Civil versions have been licence-produced in the USA.

**Variants**

- Mi-2T: Unarmed utility/transport version.  
- Mi-2BS: Dual control trainer.  
- Mi-2B: Agricultural crop sprayer.  
- Mi-2S: Medical evacuation version.  
- Mi-2RS Adder: Armed version with 23 mm cannon pod and cabin machine gun.  
- Mi-2RBM Salamandra: Armed reconnaissance version with 23 mm cannon and free-flight rocket pods.  
- Mi-2RBP Anakonda: Anti-tank version with Malyszka guided missiles.  
- Mi-2RBS: Up-graded version with improved electronics for export to Middle East.  
- Mi-2BSM: naval service version.  
- Mi-2BSac: Reconnaissance version.  
- Mi-2BS: Chemical reconnaissance version.  
- Mi-2S: Dual control trainer.

**Specifications (for Mi-2T)**

**Powerplant**

- Two Klimov (550-350) turboshaft engines
- Power: 800 shp (600 kW)

**Dimensions**

- Length: 37 ft 4 in (11.3 m)  
- Rotor diameter: 67 ft 9 in (11.3 m)  
- Height: 12 ft 5 in (3.8 m)

**Weights**

- Empty: 5295 lbs (2400 kg)  
- Max: 8112 lbs (3700 kg)  
- Payload: 1453 lbs (650 kg)

**Performance**

- Max speed: 124 mph (200 km/h)  
- Range: 207 nautical miles (240 km)

**Armament**

- Free-flight rockets, guns and cannon pods, 60/75 mm Malyszka (30-2 Sagger) anti-tank missiles, BM12 Shilka (2 SA-7 Grail) air-to-air missiles.
Mil Mi-2 (Russia/Poland) NATO-reporting name: "Hoplite"

Mi-2FM: Survey version.
Mi-2B: Attack version.
Mi-2PK: Reconnaissance version.
Mi-2PKB: Reconnaissance battalion.
Variant 5A: East German reconnaissance version.
Variant 5N: East German maritime version.
Variant 5K: East German version.
Kassiopeia/High Rank: Version with Allison 250-C20B turboshaft, also known as Kassiopeia Model II.
Spitfire: Russian UB-hull version.

Status
Production suspended.

Operators
Bulgaria (air force), Czech Republic, Estonia, Ghana, Guinea Republic, Iraq, Latvia, Libya, Lithuania, Nicaragua, Poland (army), Romania (air force), Russia (air force), Ukraine (air force), Slovakia, Syria (air force), Ukraine, USA (army).

Manufacturer
PK, Sochaczew (Poland) and Spatfer Helicopter Company (USA) on a Mil OKB-Bielaw design.

Left
Mil Mi-2 "Hoplite" (Tim Ripley)

Right
Mil Mi-2 "Hoplite" (Tim Ripley)
# Mil Mi-6

**(Russia) NATO reporting name: 'Hook'**

**Type:** Heavy-lift helicopter  
**Accommodation:** Two pilots, flight engineer, navigator, radio operator, 65-75 troops, 41 stretchers

## Development/History

Mil's giant heavy lift helicopter made its first flight in 1973 and quickly set new standards in load carrying capacity. The largest helicopter of its generation, the Mi-6 saw widespread service with the Soviet army in Europe and Afghanistan.

### Variants
- Mi-6 Hook-A: Basic version.
- Mi-6P: Civilian passenger service.
- Mi-6E: Military version.
- Mi-6WP/NY: Hook B: Combat version.
- Mi-6BP/650A: Hook-C: Combat variant, also called Mi-12.
- Mi-6A: Military aviation service.
- Mi-6 WP/650: Firefighting version.
- Mi-6S: Medical evacuation service.
- Mi-6Z: Convertible service.
- Mi-6Z2: Fuel transport.

### Status
No longer in production.

### Operators
- Algeria
- Egypt
- Ethiopia
- Iraq
- Libya
- Somalia
- Vietnam
- Yemen

### Manufacturer
- Soviet (Factory 985/Birobidzhan and Factory No. 35/Birobidzhan in VEF OKB Birobidzhan design)

## Specifications (for Mi-6T)

### Powerplant
- Two Lyul'ka So-25M turbo shaft engines: Nine 800 shp (600 kW)

### Weights
- **Empty:** 61,805 lb (27,581 kg)
- **Max TOL:** 86,657 lb (39,248 kg)
- **Max takeoff:** 26,450 lb (11,980 kg)

### Dimensions
- **Length:** 161 ft 10 in (50.5 m)
- **Rotor diameter:** 114 ft 15 in (34.9 m)
- **Height:** 12 ft 6 in (3.81 m)

### Performance
- **Max speed:** 150-170 mph (240-270 km/h)
- **Range:** 1,400 nm (1,600 miles)
**Mil Mi-8/17** (Russia) NATO reporting name 'Hip'

**Type:** Medium-lift helicopter  
**Accommodation:** Two pilots, optional flight engineers, 24 troops, 12 stretchers

**Development/History**

The Mi-8 was the workhorse of both the Soviet Union's armed forces and their Communist Bloc allies from the mid-1960s. Since the demise of the Soviet Union, the basic structure of the design, and its low price, has enabled it to serve a major niche for itself in the world helicopter market. Although lacking the avionics of modern machines, the glass-nosed Mi-8 combines a useful carrying capacity with the performance to allow it to operate in the most extreme climatic regions.

The Mi-8 first flew in 1961, and has been continually upgraded throughout its long production life. The most significant improvement was the fitting of the up-engined Mi-8MTV version, which was designated Mi-17 for export customers - this version proved its worth in the 'hot and high' conditions experienced during the 1979-89 Afghan war. The bloody conflicts on the borders of the old Soviet republics and in the former Yugoslavia have seen the Mi-8 employed extensively in European war zones since 1991. The United Nations has also hired numerous Mi-8s to support its peacekeeping and humanitarian operations. To date, some 12,000 have been built for home and more than 80 export customers.

**Variants**

Mi-8 'Hip-C': Single engine prototype.  
Mi-8 'Hip-B': Two engine prototype powered by Khimov TVD turboshafts.  
Mi-8 'Hip-A': Standard production version powered by two Khimov engines, each rated at 309 kW (420 shp). Capable of hover at 3,000 m (9,840 ft) altitude.

**Specifications (for Mi-8MT)**

**Powerplant**
Two Khimov TVD-11MT turboshafts  
**Power:** 309 kW (420 shp)

**Dimensions**
Length: 20 ft 7 in (6.67 m)  
Rotor diameter: 43 ft 1 ft 10 in (13.15 m)  
Height: 14 ft 6 in (4.45 m)

**Weights**
Empty: 14,500 lb (6,575 kg)  
Max TO: 26,400 lb (12,000 kg)  
Fuel load: 4,000 lb (1,814 kg)

**Performance**
Max speed: 115 mph (185 km/h)  
Range: 542 nm (1,000 km) with auxiliary tanks

**Armament**
12.7 mm machine guns: BGM-17  
9M14 Malyutka  
14.5 mm: VSS Vintorez  
12.7 mm: Strela-10 (SA-10) surface-to-air missile  
12.7 mm: Strela-2 (SA-2) ground-to-air missile  
480 mm: R-100-52 DShka 40 mm autocannon
of being armed with four-flight rocket pods, 60x100 UPA air
launched versions.

Mi-8T: Passenger and VIP transport version, also known as
Mi-8TR, S, or P.

Mi-8TVP: Airborne liaison and command version.

Mi-8M/D: Russian military designation for ex-engaged
version with TVT-11TM turboshafts. TV has minor
equipment changes. Ultra-lightweight version known as
Mi-8MTL/Mi-17. Mi-8 M/Mi-8T/Mi-8TVP-12-21-2 are conversions to
Mi-17 standard with part 121-21 cert.

Mi-8TVM: TVT-11TM powered version, with paramotor
rotors.

Mi-8MTVM 'Hip-F': Armored version with 12.7 mm machine
guns in two and pilot-mounted Shkopi rockets.

Mi-8MTKE 'Hip-F': Armored export version with B-200R dual
for Mabaski engines.

Mi-8MIL: An accident investigation version.

Mi-8HN: Reconnaissance/Artillery spotting version.

Mi-8MPS: Search and rescue version.

Mi-8MPSU or VIPC: Airborne radio or command post version.

Mi-8PS 'Hip-B': Airborne command post version.

Mi-8PS 'Hip-H': Yat in high' desert version.

Mi-8MV 'Hip-G': Airborne command post and radio
relay version.

Mi-8MV 'Hip-H': Communications, post-900V version.

Mi-8PRP 'Hip-K': Export electronic warfare version.

Mi-8PRD: Polish airframe conversion post version.

Mi-8AM: Antitank exploration version.

Mi-8AM: Military ambulance version, also known as Mi-16
version.

Mi-8/17 'Hip-N' of the Ukrainian Army Aviation on UN duty in
Croatia
(Tom Rigley)
Mil Mi-8/17  (Russian) NATO reporting name "Hip"

Mi-8TD: Liquid-mercury fuel version, with external tanks.
Mi-8AMTSh: Night attack and combat rescue version with Strobo and Wite guided missiles.
Mi-17 "Hip-H": Export designation for up-engined Mi-8MT/MTA variant with TV3-117FMB turboshafts.
Mi-17LP: "Hip-H(W)"; Export radar jamming version with large fairings for antennas on either side of fuselage.
Russian version designated Mi-8MT/MTA/MTBM/MTBCP/MTB-117FMB.
Mi-17LP-2: Czech electronic warfare version.
Mi-17LP: Export version, with TV3-117FMB engines, new chin-hull nose and landing ramp.
Mi-17K: Export version with new avionics.
Mi-17-1M: High-altitude operating version with TV3-117FMB engines.
Mi-17: Proposed Korean-built Mi-17-1 version.
Mi-17-1R: Military transport and gunship version, with TV3-117FMB engines.
Mi-17-1HR: Flying hospital version.
Mi-172 (Mi-171MV): Export version to Mi-8 MTV-2 standard.
Mi-17P: Export passenger version.
Mi-17R: Re-used designation for original arcologic, new cargo version.
Mi-19: Similar to Mi-8 air-transport command post.

Mi-8T/MT Hip C of Coast Air Force
seen over Bosnia

(Tim Ripley)
Status
in production.

Operators
Algeria, Angola, Armenia, Azerbaijan, Bangladesh, Belarus, Bosnia-Herzegovina, Bulgaria (air force), Cambodia, China, Colombia, Croatia, Cuba, Czech Republic, Democratic Republic of South Africa, Egypt, Ethiopia, France, Finland, Germany (armed forces), Hungary, India (air force), Indonesia (air force), Iraq, Kazakhstan, Latvia, Libya (air force), Lithuania, Macedonia, Mali, Moldova, Mongolia, Mozambique, Mexico (armed forces), Nicaragua, North Korea, Pakistan (armed forces), Peru (armed forces), Poland, Romania (air force), Russia (armed forces), Slovakia, Slovenia, Sri Lanka, Sudan, Syria (air force), Tajikistan, Turkey (armed forces), Uzbekistan, Ukraine (armed forces), Vietnam, Yemen, Yugoslavia (air force), Zambia, Georgia, USA (armed forces), United Nations.

Manufacturer
Kovrov Helicopter Plant (Kuban), Mil Moscow Helicopter Plant (Russia), Progress Asanavory Aviation Co (Kazakhstan), Elvan Life Aviation Plant, Russia, Kuewen (Korea) to OKE Mi-8 (Russia) design.
**Mil Mi-14** (Russia) NATO reporting name "Haze"

**Type:** Land-based ASW helicopter

**Development/History**

The Mi-14 is an amphibious version of the Mi-8 developed for the Soviet Navy as a three-based ASW and rescue helicopter. The first prototypes flew in 1973, and it has since been exported to a number of pro-Soviet states.

**Variants**

- **Mi-14P:** Prototype.
- **Mi-14P1/MAE "Haze-A":** ASW version with dipping sonar, search radar, automatic search table, and mast-mounted dispensors. The PSh-11 engine, rated to 1437 shp (1093 kW), was adopted during the later stages of production.
- **Mi-14P1M:** Later version with better engines and equipment.
- **Mi-14P1M1:** "Haze-B": More versatile version produced.
- **Mi-14P1M2/MAE "Haze-C":** Search and rescue version, with more search light and anti-submarine gear removed.
- **Mi-14P1M3/MAE "Haze-P":** Polish rescue training version.
- **Mi-14:** Eliminates Mi-8T converted to fire bomber.

**Status**

No longer in production.

**Operators**

- Bulgaria (Army), China, Ethiopia, Libya (Army), North Korea, Poland (navy), Romania (navy), Russia (navy), Syria (navy), Syria (army), Yugoslavia (navy).

**Manufacturer**

Kazan Helicopter Plant (Zavod prom) in MAI 142 (Russia)

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**Specsifications (for Mi-14PL)**

**Powerplant**

Two Klimov VK-107A 1,130 shp (840 kW)

**Dimensions**

- Length: 60 ft 11 in (18 4 m)
- Rotor diameter: 78 ft 10 in (24 0 m)
- Height: 21 ft 11 in (6 8 m)

**Weights**

- Empty: 22,900 lb (10,351 kg)
- Max T/O: 36,665 lb (16,630 kg)
- Fuel: 6,600 lb (3,000 kg)

**Performance**

- Max speed: 142 mph (228 km/h)
- Range: 412 mi (665 km)

**Armament**

- Anti-submarine weapons, depth charges, mines, torpedoes.
**Mil Mi-24 (Russia) NATO reporting name “Hind”**

**Type:** Attack/raidsault helicopter

**Development/History**
This distinctive Soviet assault helicopter was developed by Mil OKB in response to American experience in Vietnam. Sometimes called a “flying tank” because it was the first attack helicopter to combine heavy armor and be armed with a large caliber cannon, its Soviet/Russian service is nicknamed the “Bundhauzer.”

The first prototype made its maiden flight in 1970, but this version lacked a full glass, or “green house,” cockpit, rather than the more familiar tandem layout of later models. In 1975, the production versions were completed, operating with Soviet troops in East Germany, and they went into battalion service throughout Eastern Europe.

The invasion of Afghanistan in 1979 gave the Mi-24 its first combat experience, and Soviet pilots soon came to value its front-line performance. Due to the arrival of US-made Stinger missiles in the hands of Mujaheddin rebels, the threat Soviet air superiority to Soviet tanks to its defensive systems in the USSR was increased.

With the fall of the Soviet Union, the Mi-24 has seen extensive service in the wars in the Caucasus - Russian Army Aviation used them to spearhead their invasion of Ossetia in 1992. But the end of the Cold War saw Russian plans to replace the Mi-24 with more advanced models, but the Russian Air Force has taken up the Mi-24 for several wars. To boost the Mi-24’s appeal to export customers, several versions and variants have been designed into the latest new-built versions.

**Variants**
- M-24A, M-24A.10 “Hind-AF”: Pre-production version, with TV-3-117

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**Specifications (for Mi-24P)**

**Powerplant**
- Two Klimov TV-3-117 turboshafts
- Power: 4350 shp (3250 kW)

**Dimensions**
- Armlength: 57 ft 5.5 in (17.51 m)
- Rotor diameter: 58 ft 5 in (17.8 m)
- Weight: 13.5 ft (3.6 m)

**Weights**
- Empty: 14,098 lb (6400 kg)
- Max T/O: 26,653 lb (12,000 kg)
- Fuel: 5200 lb (2350 kg)

**Performance**
- Max speed: 205 mph (330 km/h)
- Range: 540 nm (620 km) with auxiliary tanks

**Armament**
- 12.7 mm GSh-23M machine gun or 23 mm cannon
- Two AG-17-500 23-misses, AG-17-1000 laser-guided anti-aircraft missiles, AGM-114 Hellfire 900 mm (35 in) long-range guided missiles, AGM-65 Maverick 1200 mm (47 in) long-range guided missiles
- AGM-65A-6 (GSU-9+2) and AGM-65A-6 (GSU-9+2) 2.75 in 2.75 in air-to-air missiles, laser-guided anti-tank missiles
MIL Mi-24 (Russian NATO reporting name “Koal”)
engines, rated to 1500 shp.
Mi-24A/B: Initial production series with two "green house" front canopies, standard tail rotor, TV-3-117 engines and FAB-6000 rockets.
Mi-24 A: Early production version.
Mi-24 A/B: Standard production version.
Mi-24 B/C: Standard production version.
Mi-24 D/E: Standard production version.
Mi-24 F/G: Standard production version.
Mi-24 H: Standard production version.
Mi-24 I: Standard production version.
Mi-24 J: Standard production version.
Mi-24 K: Standard production version.
Mi-24 L: Standard production version.
Mi-24 M: Standard production version.
Mi-24 N: Standard production version.
Mi-24 O: Standard production version.
Mi-24 P: Standard production version.
Mi-24 Q: Standard production version.
Mi-24 R: Standard production version.
Mi-24 S: Standard production version.
Mi-24 T: Standard production version.
Mi-24 U: Standard production version.
Mi-24 V: Standard production version.
Mi-24 W: Standard production version.
Mi-24 X: Standard production version.
Mi-24 Y: Standard production version.
Mi-24 Z: Standard production version.

Left: Mil Mi-24V 'Hind-E'
Right: Mil Mi-24V 'Hind-E'
Mil Mi-24 (Russia) NATO reporting name "Hind"
Status
In production.

Operators
Afghanistan, Algeria, Angola, Armenia, Azerbaijan, Belarus, Bulgaria (air force), Cambodia, Croatia, Czech Republic, Executive Outcomes (South Africa), Ethiopia, Finland, Hungary, India (air force), Iraq, Kazakhstan, Iran, Ghana (air force), Mongolia, Mozambique, Peru (air force), Poland (Gendarmerie), Russia (air force), Ecuador, Sierra Leone, Slovenia, Sri Lanka, Sudan, Syria (air force), Tajikistan, Uzbekistan, Ukraine (gendarmerie), Vietnam, Yemen, Georgia, USA (armed forces).

Manufacturer
Rostvertol (Russia) and Progress Aviayep Aviayep Aviayep Aviation Co (Russia) in MI-171 (Russia) design.

Left: MI-24W 'Hind-E' of the Polish Air Force (Nik Ripley)
Right: MI-35 (Nik Ripley)
**Mil Mi-26** (Russia) NATO reporting name "Halo"

**Type:** Heavy-lift helicopter  
**Accommodation:** Two pilots, flight engineer, navigator, 80 troops, 60 stretchers

**Development/History**
Designed to replace the Mi-6, the Mi-26 is the most powerful helicopter in the world. It has a cargo carrying capacity equivalent to that of the C-130 transport aircraft. First flown in 1981, the Mi-26 entered Soviet Army service in 1985. The UN has chartered a number to support operations in Somalia and the former Yugoslavia.

**Variants**
- Mi-26C: Basic version.
- Mi-26L: Civil version with D-136 engines.
- Mi-26M: Flying hospital version.
- Mi-26S: Planned upgrade.
- Mi-26ED: Export.
- Mi-26KD: Upgraded version with D-135 engines.
- Mi-26HP: Proposed 26-seat passenger version.
- Mi-26TS: Export.
- Mi-26KA: Upgraded navigation system.
- Mi-26TC: Wide-bodied version with D-136 engines.

**Status**
In production.

**Operators**
- India (Army)
- Peru (Army)
- Ukraine (Army, United Nations)

**Manufacturer**
Pomorskiye (Russia) to MI OKB (Russian) design.

**Specifications (for Mi-26)**

**Powerplant**
Two 25,000 shp (18,700 kW) D-136 engines

**Weights**
- Empty: 62,150 lb (28,200 kg)
- Max takeoff: 417,430 lb (190,000 kg)
- Payload: 199,900 lb (90,000 kg)

**Dimensions**
- Length: 140 ft 8 in (43.7 m)
- Rotor diameter: 122 ft 2 in (37.2 m)
- Height: 70 ft 8 in (21.2 m)

**Performance**
- Max speed: 182 mph (293 km/h)
- Range: 432 nm (803 km)
Mil Mi-28 (Russia) NATO reporting name ‘Havoc’

Type: Attack helicopter  Accommodation: Pilot (rear) and gunner (front)

Development/History
Superficially similar in appearance to the American Apache, the Mi-28 made its first flight in 1982. Since the aircraft lost the Soviet Army Aviation attack helicopter contest to the Ka-50, the Mi-28 has had a troubled history. The Russian Army Aviation has repeatedly been persuaded to place an order for the aircraft, but funding difficulties have so far prevented series production taking place. The aircraft has been undergoing almost continuous development for over 15 years to allow it to fly armed attack missions at very low altitudes. Latest versions on display at airshows include state of the art night vision systems and multimodal sights.

Variants
Mi-28: Basic version.
Mi-28N: Night attack version with engine and rotor mounted sight.

Status
In low rate production.

Operators
Russia (only).

Manufacturers
Rosvertol (Ilyushin) to a Mi-28 design

Specifications (for Mi-28)

Powerplant
Two Klimov TV-11-7PM turboshafts

Performance
Max speed: 500 mph (805 km/h)
Range: 655 mi (1,060 km)

Dimensions
Length: 56 ft 3 in (17.1 m)
Radius: 6 ft 5 in (1.9 m)
Height: 15 ft 8 in (4.8 m)

Weights
Empty: 15,432 lb (6996 kg)
Max T/O: 25,381 lb (11,500 kg)
Max load: 10,947 lb (4,964 kg)

Armament
One 2A42-30 anti-aircraft cannon; (30mm
klyv VKh-10] two FGM-148 Javelin and 12 SA-7 launchers;
M-132 Shkvet, 4 AT-6 Spiral anti-tank guided missiles; M-120 Skat-M (9M-110) laser
beam riding guided anti-tank missiles; Fire
drill rocket pods.
**Mil Mi-34** (Russia) NATO reporting name "Hermit"

**Type:** Light utility helicopter  
**Accommodation:** Two pilots, two passengers

**Development/History**

Designed as a light utility, observation, training, and liaison helicopter for military, police, border guard and civil use, the Mi-34 made its maiden flight in 1986. It was the first Soviet helicopter to be capable of executing a loop or roll. Production began in 1987, but landing problems slowed deliveries after six had been built. In 1987 production resumed after a corporate restructing.

**Variants**

Mi-34: Basic version.
Mi-34T: Twin-engined version, fitted with VVS-100 twin rotary engines, each rated at 165 HP (123 kW).

**Status**

In production.

** Operators**

Russia (Air Force).

**Manufacturer**

Progress Aeroflot Aviation Co (Russia) and VVS Motor Co (Russia) build Mi-34B (Russia) design.

**Specifications (for Mi-34)**

**Powerplant**

Vezd [in-house] M-148-26 air-cooled radial engine:
- Horsepower: 330 shp (247 kW)

**Dimensions**

- Length: 28 ft 7 in (8.71 m)
- Rotor diameter: 32 ft 9 in (10 m)
- Height: 10 ft 1 in (3.1 m)

**Weights**

- Empty: as
- Max takeoff: 2976 lb (1350 kg)

**Performance**

- Cruising speed: 112 mph (180 km/h)
- Range: 234 nm (430 km)
Mil Mi-38 (Russia)

Type: Medium lift helicopter

Accommodation: Two pilots, 32 passengers.

Development/History

Considered as the replacement for the Mi-12 in the medium-transport role, the Mi-38 programme has not really got beyond the prototype stage because of lack of funding. Development began back in the mid-1980s, and a maiden flight was expected for 1993, but did not occur. It bears many similarities to the CIH140 and Mi-12.

The helicopter has many unique features, including a co-bladed main rotor, a delta 3-type tail similar to the Mi-20’s, CRT cockpit displays and extensive use of composite materials. Cargo can be carried under-wing or positioned in the cabin via clam-shell rear doors and a loading ramp.

Variants

No.

Status

In pre-production.

Operators

N/A.

Manufacturer

Kuzov Helicopter Plant (Torsont) is MI-38 (Russian design).

Model of the proposed Mi-38

Specifications (for Mi-38)

Powerplant

Turboshaft: 4 x Klimov TV3-117W turboshaft

Power: 4 x 3,050 shp (2,260 kW)

Dimensions

Length: 64 ft 3 in (19.57 m)

Wing span: 64 ft 3 in (19.57 m)

Height: 56 ft 3 in (17.14 m)

Weights

Empty: N/A

Max T/O: 99,900 lb (45,300 kg)

Payload: 11,020 lb (5,000 kg)

Performance

Cruising speed: 155 mph (250 km/h)

Range: 760 nm (1,400 km)

Armament

N/A
**Mil Mi-40 (Russia)**

**Type:** Assault transport helicopter  
**Accommodation:** Two pilots, 10 troops

**Development/History**  
Intended as an assault transport version of the Mi-35 attack helicopters. It shares many of the systems of the Mi-28, including engine transmission, main and tail rotors.

**Variants:**  
No.

**Status**  
In pre-production.

**Operators**  
Bel.

**Manufacturer**  
Assumed to be MI OKB Russian design.

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**Model of the proposed Mi-40**  
(Paul Jackson)

**Specifications (for Mi-40)**

**Powerplant**  
Two Klimov TV3-117MA turbo-shaft engines  
Power: 4,000 shp (2,984 kW)

**Dimensions**  
Length: 54 ft 5 in (16.60 m)  
Rotor diameter: 54 ft 5 in (16.50 m)  
Weight: 16 ft 0 in (4.80 m)

**Weights**  
Empty: 16,020 lb (7,265 kg)

**Performance**  
Max V/CR: 250 mph (400 km/h)  
Payload: 2,000 lb (907 kg)

**Armament**  
Anti-tank guided missiles; free-flight rockets; gun pods.
Denel Aviation CSH-2 Rooivalk (South Africa)

Type: Attack helicopter  Accommodation: Pilot (rear), co-pilot/gunner (front)

Development/History
South Africa’s Rooivalk (Red Vulture) has its origins in an attack helicopter programme that commenced in 1984 in order to develop a successor to the Aérospatiale BA 64 gunships then being used in Angola and South West Africa. The South African Air Force has ordered a squadron’s worth, but defence cuts have put the order in doubt. Malaysia’s new army aviation command may well be the first customer for the Rooivalk.

Variants
- XDM: Experimental Development Model
- CSH-2: Basic production model
- AMD: Advanced development model

Status
In pre-production

Operators (proposed)
- Malaysia (Army), South Africa (Air Force)

Manufacturer
- Denel Aviation (Before: Aviation South Africa)

Denel Aviation Rooivalk

Specifications (for CSH-2)

Powerplant
- Two Turbomeca Sarrion 1B engines, Power: 1,000 shp (746 kW)

Dimensions
- Length: 54 ft 1 in (16.5 m)
- Rotor diameter: 49 ft 6 in (15.08 m)
- Height: 15 ft 4 in (4.6 m)

Weights
- Empty: 11,618 lb (5313 kg)
- Max LO: 20,723 lb (9400 kg)
- Max fuel: 3,220 lb (1,460 kg)
- Max takeoff: 30,220 lb (13,710 kg)

Performance
- Max speed: 192 mph (309 km/h)
- Range: 507 mi (815 km), 720 km (324 nmi)

Arms
- One 20 mm GA-1 Baboon cannon, 25-mm Swift, 21-mm or 21-calibre M103 laser-guided anti-tank missiles, 9401 short or 1G-2G anti-air missiles, 1,000-lb glide bombs.
Denel Aviation Oryx  (South Africa)

Type: Transport helicopter  
Accommodation: Two pilots, 20 passengers

Development/History
This South African-developed version of the Puma is being aggressively marketed by Denel to even the smallest helicopters optimised for 'not so high' bush conditions. In many ways it is similar to the Super Puma because it uses Mote  
M104 powerplants, but Denel have gone further by modifying the tail section, plus building in the provision for an extensive array of weapons. Previously known as Scoldix.

Variants
Option 1: Basic transport.
Option 2: Side-mounted fire-flight rocket launchers.
Option 3: Nose-mounted fire-flight rocket armament.
Option 4: Fire concealed gunship.

Status
In production.

Operators
South Africa.

Manufacturer
Denel Aviation (South Africa).

Specifications (for Oryx)

Powerplant
Two Turbomeca Makila MA1 free turbines
Power: 375 shp (280 kW)

Dimensions
Length: 59 ft 6 in (18.15 m)
Babor diameter: 41 ft 2.5 in (12.6 m)
Height: 16 ft 10 in (5.14 m)

Weights
Empty: n/a
Max G/L: n/a
Payload: n/a

Performance
Cruising speed: n/a
Range: 303 nm (567 km)

Armament
Fire-flight rockets: 8 or 16.21-3 Swift or 21-35 laser-guided anti-tank missiles; Barret or Viper air-to-air missiles; 30 mm cannon gun barrel;
Westland Wasp (UK)

Type: Light general-purpose helicopter

Development/History
Once the primary shipborne small helicopter of the British Royal Navy, the Wasp is now obsolete and is in the process of being phased out of service by its last remaining user.

Variants
Wasp N2S 1: Shipborne version.

Status
No longer in production.

Operators
Indonesia (used); Malaysia (used); New Zealand (air force).

Manufacturer
 Saunders-Roe/Westland Helicopters (UK).

Accommodation: One pilot, three passengers.

Westland Scout AH.Mk 1

Specifications

Powerplant
One Rolls-Royce Bristol Nimbus 503 turboshaft
Power: 700 shp (520 kW)

Dimensions
Length: 30 ft 6 in (9.3 m)
Rear diameter: 22 ft 3 in (6.8 m)
Height: 11 ft 8 in (3.6 m)

Weights
Empty: 3453 lb (1568 kg)

Max. 130: 5500 lb (2495 kg)
Max. load: 1500 lb (680 kg)

Performance
Max speed: 120 mph (193 km/h)
Range: 262 nm (490 km)

Armament
Mk 46 torpedoes; AS12 anti-ship missiles;
Mk 44 depth charges.
Westland Lynx (Army version) (UK)

Type: Light, multi-purpose, military helicopter

Development/History

The British Army's primary light helicopter is another product of the Anglo-French helicopter Agreement of 1967. Britain's Westland brought Lynx design to the table, and it duly became responsible for its design, production and marketing, some 120 Ah1s were built for the British Army with initial delivery by 1971. Development of AH 2 version began in 1980, but export sales proved elusive. The British Army Air Corps and Royal Marines/Royal Navy later converted their Lynx to armed helicopters HELARM by fitting 25mm TOW anti-tank missiles. A further 24 Ah1s light battlefield helicopter versions were produced from 1986 to equip 24 Armoured Brigade.

Variants

AH 1: Original British Army utility version. Some examples armed with TOW missiles.
AH 1G: Initial armed version until AH 2 developed.
AH 5: Experimental version.
AH 7: British Army upgraded armed helicopter HELARM version with eight 25mm anti-tank missiles.
AH 9: British Army light battlefield helicopter version with Honey-Benz 42-34 engine and 665-lb TOW missile.
Battlefield Lynx: Proposed export version with provision for helistrip and 90-lb anti-tank missiles.
Battlefield 800: Proposed export version with URETC 1800 engines.
MK 24/35: Proposed Iraqi export version.
MK 87: Proposed Egyptian export version.

Specifications (for AH 1)

Powerplant:
Two Honeywell Gem 2 turboshafts
Power: 1800 shp (1342 kW)

Dimensions:
Length: 49 ft 9 in (15.2 m)
Height: 13 ft 3 in (4.1 m)
Weight: 11 ft 6 in (3.6 m)

Weights:
Empty: 6040 lb (2740 kg)
Max T/O: 10,000 lb (4540 kg)

Performance:
Cruising speed: 147 mph (236 km/h)
Range: 240 nm (440 km)

Armament:
1x 7.62 mm or 12.7 mm gun or pod-mounted machine gun, free-flight rocket
Westland Lynx (Army version) (UK)

* Mk 83: Proposed Saudi export version.
* Mk 84: Proposed Qatari export version.
* Mk 85: Proposed UAE export version.

**Lynx ACR**: Experimental advance composite helicopter with wings for additional lift.

**Status**
No longer in production.

**Operators**
UK (unengaged).

**Manufacturer**
Westland Helicopters (UK).

*Westland Lynx AAT/Mk 7* (Tim Ripley)
Westland Lynx (Navy version) (UK)

Type: Light multi-purpose naval helicopter

Development/History
Westland's development of the military Lynx has proved far more successful than its efforts with the army versions. In addition to the 91 bought by the British Royal Navy, more than 280 have been sold for export, with new orders continuing to be received.

As well as the Sea Lynx missile, the Lynx proved a potent ship killer both during the Falklands conflict and the 1990 Gulf War. After the Falklands, the Royal Navy began major upgrade programmes to improve the now proven, powerful, weapon, weapon systems and defensive aids. This programme has continued through to the current HAS II standard, which is dubbed the Super Lynx.

Variants
HAS 2: Original British Royal Navy version, with Aérospatiale Super Lynx ASW and HAGS 450T engine.
HAS 2: Improved British Royal Navy version with two Rolls-Royce Gem 41-1 T400/16 engines.
HAS 3: Specialised British version for Arctic operations from HMS Endurance.
HAS 3T: Specialised British version with sonar search and scan communications equipment.
HAS 300: Improved British version for Gulf War with RAE-967 electronic counter-measures pod and infra-red jammers.
HAS 3TCS: Improved British version with coastal-tactical

Accommodation: Pilot, observer/gunner, 10 troops

Westland Lynx Mk 21

Specifications (for HAS 2)

Powerplant
Two Rolls-Royce Gem 2 turboshaft engines.
Power: 3689 shp (2712 kW)

Dimensions
Length: 91 ft 7 in (27.9 m)
Height: 11 ft 6 in (3.5 m)

Weights
Empty: 8000 lbs (3600 kg)
Max T/O: 19,000 lbs (8620 kg)

Performance
Max Speed: 145 knots (269 km/h)
Range: 340 nm (630 km)

Armament
MK 44, MK 46 or Sting Ray anti-submarine torpedoes, Mk 81 depth charges; Sea Skua air-launched anti-ship missile; 4.5 in armoured ventral; 12.7 mm or 20 mm gun pods.
Westland Lynx (Navy version) (UK)

systems and Rotational bag.

HAS-4 (FN): Improved French Navy version with new Gem
4.5-1 engine, and gearbox.

Mk 21: Export version for Brazil, designated SAB-11.

Mk 21A: Export version of Super Lynx to Brazil.

Mk 23: Export version to Argentina (later sold to Brazil and
Denmark).

Mk 25/26-14A: Export utility version for Netherlands.

Mk 27 (Mk-14B): Export version for Netherlands with uses.

Mk 29: Export version for Denmark.

Mk 31/32-14C: Export version for Netherlands with HAS
Mk 33: Export version for Norway.

Mk 37: Export version for Argentina.

Mk 88: Export version for Germany.

Mk 89: Export version for Nigeria.

HAS-8: Super Lynx upgraded version, with up-rated Rolls-
Royce Gem 42-1 engine, 1200 rotor blades, thermal
imaging sensors and improved electronic warfare systems.

Above:
Westland Lynx HAS
Mk 8/9uper Lynx
(DKN Westland)

Left:
Westland Lynx
HAS-8 Mk 2 (FM)
(Tom Ripley)
Mk 95: Export Super Lynx for Portugal.
Mk 99: Export Super Lynx for South Korea.
SH-140: Export version for Netherlands with up-rated Rolls Royce Gem 42-1 engines and full HSV system.
Super Lynx Series 300/500: Export version with LFIEC CT5600, improved avionics and 'glass' cockpit.

Status
In production.

Operators
Brazil (navy), Denmark (navy), France (navy), Germany (navy), Malaysia (navy), Netherlands (navy), Nigeria (navy), Norway (navy), Pakistan (navy), Portugal (navy), South Korea (navy), UK (navy).

Manufacturer
Westland Helicopters/LAI Westland UK.

Right:
Westland Lynx HAS Mk 3/ Super Lynx
(GKN Westland)
Kaman Seasprite (USA)

Type: Shipborne anti-submarine helicopter

Development/History
Making its first flight in 1969, the SH-2F version of the Sea Sprite utility helicopter was selected in 1971 by the US Navy for use on frigates, destroyers, and cruisers of the anti-submarine role, under the LAMPS-I programme. It lost out to the SH-60 in the LAMPS-II contest, and the bulk of the US Navy's fleet have been either relegated to reserve service or retired into storage. A programme to upgrade some surplus US versions to the anti-submarine-armed SH-2G standard is underway, and the improved helicopter has recently found export success in Australia and New Zealand.

Variants
- SH-2D: Initial winner of US Navy light helicopter Multi-Purpose System (LAMPS) platform contest for embarked small ship helicopters. Powered by two F107-GE-100 turboshaft engines.
- SH-2E: Improved version with F107-GE-401 turbo-shaft powerplant.
- SH-2KZ: Improved mission avionics and weapon carriage capabilities.
- SH-2M: Proposed version for Malaysia.

Status
Development continues on SH-2G standard upgrades.

Accommodation: Two pilots, sensor operator, four passengers

Kaman SH-2F of HSL-34

Specifications (for SH-2G)

Powerplant
- Two General Electric T500-GE-401 twin-shaft turboshaft engines

Performance
- Max speed: 150 mph (240 km/h)
- Range: 470 nm (881 km) with external fuel

Dimensions
- Length: 44 ft 3 in (13.46 m)
- Rotor diameter: 64 ft 4 in (19.64 m)
- Height: 15 ft 6 in (4.66 m)

Weights
- Empty: 10,000 lb (4,536 kg)
- Max LO: 11,500 lb (5,217 kg)
- Max MWL: 12,000 lb (5,442 kg)
- Payload: 4,000 lb (1,814 kg)

Armament
- Mk 46-50 torpedoes, depth-charges, 12.7 mm machine gun, Puma Mk 2/3, Sidewinder anti-ship missiles, AGM-109A/ASLCM, Mark-60 or to-surface guided missiles.
Operators
Argentina (navy), Australia (navy), Pakistan (navy), New Zealand (air force).

Manufacturer
Kaman Aerospace (US).

Right:
Kaman SH-2F of WSL-34
Jeremy Flack/AFI
Bell Model 47 Sioux (USA)

Type: Light helicopter
Accommodation: Two pilots, one passenger

Development/History
One of the first helicopters to go into large-scale production after making its first flight in 1946, some 5,000 have since been built. Although it has now been withdrawn from frontline service by most NATO users, it can still be found in use in obscure corners of Asia and South America.

Variants
HHL-1, L: US Navy version for training and ice breaking ship operations.
AB-41: Italian-built version.

Status
No longer in production.

Operators
Cambodia, Congo (Kinshasa), Greece (air force), Italy (Army), Jordan, Libya (Army), New Zealand, Pakistan (Army), Paraguay, Peru (air force) (navy), South Korea (Army), Uruguay (navy), Zambia.

Manufacturer
Bell Aircraft Corporation (Bell Helicopter Company USA), Agusta (Italy), Westland Helicopters (UK), Kawasaki Heavy Industries (Japan).

Specifications (for Model 47G-3B-2A)

Powerplant
One Lycoming T415-15A piston engine
Power: 395 hp (290 kW)

Weights
Empty: 2885 lb (1310 kg)
Max T/O: 2960 lb (1342 kg)

Dimensions
Length: 31 ft 7 in (9.6 m)
Rotor diameter: 37 ft 1 in (11.3 m)
Height: 9 ft 3 in (2.8 m)

Performance
Max speed: 155 mph (250 km/h)
Range: 275 nm (507 km)
Bell Model 204/UH-1 Iroquois (Huey) (USA)

Type: Light utility helicopter
Accommodation: Two pilots, seven passengers

Development/History
The first of the General 'Huey' family of helicopters which saw the front of the US Army campaign in Vietnam. Several thousand built for the US armed forces from 1956 through to the late 1960s.

Variants
BH-1A: Initial production version for US Army with Lycoming T53-L-1 turboshaft, rated at 825 hp (615 kW).
V: Capacity of six passengers, source of 'Navy nickname.'
BH-1B: Export version with capacity for seven passengers and revised main rotor blades.
BH-1C: Re-designation in 1961 of UH-1 A.
BH-1D: Re-designation in 1962 of UH-1 B.
BH-1E: Improved version of BH-1 B, with T53-L-71 powerplant.
BH-3: US Marine Corps version with fixed and twin 7.62mm chain gun turret.
BH-4: US Marine Corps dual control trainer.
BH-6: USAF ballistic missile site security service with General Electric T56-A-7, rated at 962 hp (715 kW).
BH-11: Trainer version of UH-1.
BH-12: US Navy rescue version with fixed and T53-L-13 powerplant, rated at 1044 hp (778 kW).
BH-15: US Army version with eight passengers model.
AB-204: Italian basic version with powerplant consisting of T53-L-3A or Bristol-B rigid Drive 91200, rated at 1000 hp (750 kW).

Apertura Bell AB 204B

Specifications (UH-1C)

Powerplant
One Textron Lycoming T53-L-11
Power: 1100 shp (820 kW)

Dimensions
Length: 42 ft 3 in (12.88 m)
Rotor diameter: 44 ft 11 in (14.1 m)
Height: 13 ft 7 in (4.24 m)

Weights
Empty: 5011 lb (2270 kg)
Max (G): 10500 lb (4750 kg)
Payload: 1500 lb (680 kg)

Performance
Cruising speed: 194 mph (312 km/h)
Range: 322 km (199 mi)

Armament
One 7.62mm machine gun; smoke grenade pods; Anti-flight weapon pods; AGM-40 missiles

Jeremy Flack/PIT
Bell Model 204/UH-1 Iroquois (Huey) (USA)

532 kW (715 shp).
Hkp. 38: Swedish designation of AB 204.
AB 204AAS: Italian-built naval version, with T53-GE-3 powerplant, rated at 962 kW (1290 shp).
Fujimarui 204B-1: Japanese-built version, also known as HI-yokori.
Huey Yag: UH-1C with up-rated engines.
RH-1: Research version.

Status
No longer in production.

Operators
Argentina, Austria, Brazil, Chile, Canada, Colombia, Costa Rica, Ecuador, El Salvador, Fiji, Ghana, Germany, Greece, Guatemala, Hungary, Indonesia (Army), Italy (Army), Japan (Army), Kenya, Korea (Army), Spain, Sweden (Army), Switzerland (Army), Tanzania (Army), Turkey (Army), Vietnam.

Manufacturer
Bell Aircraft Company/Bell Helicopter Company (USA), Agusta (Italy), Fujimarui (Japan).

The Swedish army operates the AB 204 as the Hkp. 38.
(Jeremy Flack/WP)
Bell Model 205/UH-1 Iroquois (Huey) (USA)

Type: Medium-lift helicopter
Accommodation: Two pilots, 12 passengers, six stretchers

Development/History
The first major upgrade of the war-popular Huey, which featured a revised and enlarged cabin interior, carrying capacity. The first of 2,500 ordered for the US armed forces entered service in 1963, while the last H-model was produced as recently as 1990. It is set to continue in US military service until well into the next century.

Variants
- UH-1B: Original US Army service, with Lycoming T53-L-11 powerplant, armed to 20mm 1100 mph. capable of carrying 12-14 passengers.
- UH-1H: US Army military and rescue version with tandem.
- UH-1H: Canadian training version, designated CH-146.
- UH-1H: Electronic warfare. Quick Fix version.
- UH-1H: USAF rescue version.
- UH-1I: Iroquois II. Commercial upgraded service with improved powerplant.
- UH-1H: Commercial upgraded service with T55-L-3 powerplant.
- HH-1H: Japanese-built service.
- AH-1B: Italian-built military version, designated FM-1, with T55-L-3 powerplant.
- AH-1B: Replacement for AH-1B.
- AB-205B: Prototype Italian version with two T55-10 powerplants.

Specifications (for UH-1H)

Powerplant
One Lycoming T53-L-11 turboshaft
Power: 1400 shp (1070 kW)

Dimensions
Length: 43 ft 8 in (13.36 m)
Rotor diameter: 45 ft 1 in (13.74 m)
Height: 7 ft 3 in (2.21 m)

Weights
Empty: 7700 lb (3490 kg)
Max: 13900 lb (6300 kg)

Performance
Max speed: 127 mph (204 km/h)
Range: 274 nm (507 km)

Armsment
Four machine guns (left: optional weapon) and machine gun pods.
Bell Model 205/UH-1 Iroquois (Huey) (USA)

1700 powerplants.
AB 205AR: Prototype Turbomeca Arrius powerplant.
HE.105B: Spanish designation for AB 205.
Advanced 205B: Proposed Japanese upgrade.

Status
No longer in production.

Operators
Argentina (Army), Australia (Army, Air Force), Bangladesh, Bolivia, Brazil (Air Force), Brazil (Army), Canada, Chile (Army), Colombia (Air Force), Costa Rica, Dominican Republic, El Salvador, Germany (Army), Greece (Army/Avro), Guatemala, Honduras, Indonesia (Air Force, Navy, Army), Iraq (Army), Italy, Japan (Air Force), Kenya, Korea (Air Force), Lebanon, Libya, Mexico (Air Force), Nicaragua, Nigeria, Oman, Pakistan (Air Force), Peru (Air Force), Philippines, Rwanda (Army), Singapore, South Africa (Armour), South Korea (Armour), Spain (Army), Switzerland, Taiwan (Armour), Tanzania, Thailand (Armour/Avro), Turkey, Uganda (Avro), US Army Reserve, USA (Army), Uruguay (Air Force), Venezuela (Armour/Avro), Zambia, Zimbabwe.

Manufacturer
Bell Helicopter Company/Bell Helicopter Textron (USA), Agusta (Italy), AUC (Switzerland), Berstorfer (Germany), Fuji-Bell (Japan).
Bell Model 212 UH-1N Iroquois (Twin Huey) (USA)

Type: Medium-lift helicopter

Development/History
A twin-engined 'Huey' was first proposed by Bell Helicopters, Pilot in Whitby, Canada and the Canadian Government in 1965. The USAF took delivery of the first aircraft in 1968, and it soon became the standard utility helicopter of the US Marine Corps. Foreign sales followed in large numbers, with more than 600 being built to date.

Variants
VH-1N: USAF and US Marine Corps VIP transport.
CHU-1H: Canadian version, later designated UH-1H Twin Huey.

Bell 212: Civil commercial version.
AB 212: Italian-built utility version, with Pratt & Whitney Canada PT6A-3 Turboshaft powerplant.
AB 212A500H: Italian maritime version (reduced structure).
AB 212: Spanish Army designation.
SN-1N (HIB): Four-blade USMC upgraded version.

Specifications (UH-1N)

Powerplant:
Two R2000-2A1 (Hamilton Canada PT6-3B) Turboshafts
Power: 1200 shp (1422 kW)

Dimensions:
Length: 62 ft 6 in (18.9 m)
Rotor diameter: 49 ft 7 in (14.7 m)
Height: 16 ft 11 in (5.2 m)

Weights:
Empty: 6000 lb (2721 kg)
Max: 13,000 lb (5907 kg)
Payload: 5000 lb (2268 kg)

Performance:
Max. speed: 173 mph (278 km/h)
Range: 243 nm (452 km)

Status:
In production.

Operators:
Argentina, Australia, Austria, Bangladesh, Belize, Bolivia, Brazil, Chile, Costa Rica, Dominican Republic, Ecuador, El Salvador, Ghana, Greece, Greenland, Guatemala, Guinea, Iran, Iraq, Israel, Italy, Kuwait, Libya, Malaysia, Mozambique, Panama, Peru, Pakistan, Poland, Portugal, Romania, South Korea, Tanzania, Thailand, Turkey, United States, Venezuela, Vietnam.
Bell Model 212 UH-1N Iroquois (Twin Huey) (USA)

Manufacturers
Bell Helicopter Company/Bell Helicopter Textron
BUSA/Castrol, Agusta (Italy)

United Nations, South Arabia (Air Force), Singapore, Slovenia,
South Korea (Air Force), Spain (Arménia), Sri Lanka,
Somalia, Sudan, Thailand (Air Force), Tunisia, Turkey,
Uganda, Uruguay (Air Force), Venezuela (Army),
Yemen, Zambia, UPV (Belux), UK (Army), USA (Marine Corps).

Bell UH-1N of the USMC
(Tim Ripley)
Bell Model 214 (USA)

Type: Medium utility and transport helicopter

Development/History
The first customer for this high specification version of the ‘Huey’ was the Imperial Iranian armed forces during the final years of the Shah’s regime. Sales have followed to a number of customers who have been prepared to pay premium prices for a superior helicopter.

Variants
214A: Basic two-seat training model. 
214B: Fast Attack helicopter. 
214C: VIP transport. 
214D: Four-blade model. 
214E: AGR-200. 
214KH: Improved model with greater speed. 
214ST: Improved model with greater speed. 

Status
In production.

Operators
Air Corps, Colombia (air force), Ecuador, Iran (imperial Iranian Air Force), Iraq, Brazil, Peru (air force), Philippines, Thailand (navy), UAR (El Salvador), Venezuela.

Manufacturer
Bell Helicopter Company/Bell Helicopters Division (USA)

Accommodation: two pilots, 16 passengers

Bell 214

Specifications (for 214ST)

Powerplant
Two General Electric CT7-2A turboshafts
Power: 1525 shp (1131 kW)

Dimensions
Length: 44.67 m (146 ft 6 in)
Rotor diameter: 52.3 m (171.5 ft)
Height: 15.2 m (50 ft 0 in)

Weights
Empty: 5445 lb (2464 kg)
Max. Ld: 14,695 lb (6665 kg)
Structural: 7900 lb (3580 kg)

Performance
Cruising speed: 167 mph (268 km/h)
Range: 550 nm (1025 km)

Armament
Four mounted machine guns.
Bell Model 412 (USA)

Type: Medium utility and transport helicopter

Development/History
The most recent version of the 'Bury' still manages to find customers around the world. A number of companies are also offering upgrade packages to basic versions.

Variants
412: Basic production version.
412S: Special Performance version, with improved fuel capacity, known as Augusta in Norwegian service.
412HP: Emergency medical services version, with improved transmission and TBO 1800 time.
Military 412: Arctic version.

Designated Griffie NE 1 in UK service.
CH-54A Griffie: Canadian military version in 412SP.
MB-412: Indonesian-built version.
AB-412: Indonesian-built military version. Designated 1P-9 in Indonesian service.
AB-412 CBO: Italian-built military version. Designated 1P-9 in Italian service.
AB-412 CRASS: Italian-built special surveillance radar platform.
Hip 31: Swedish designation.

Status
In production.

Operators
Albania, Bolivia, Canada, Colombia (Air Force), Guatemala, Guyana, Finland (Coast Guard), Netherlands, Indonesia (Maritime Guardian), Italy (Nato), Jordan, Korea, India, Netherlands (Air Force).

Accommodation: two pilots, 14 passengers.

Specifications (for 412HP)

Powerplant
One Pratt & Whitney Canada F107-101 Turbo Twin Pac
Power: 1800 shp (1342 kW)

Weights
Empty: 6634 lb (3010 kg)
Max: 13010 lb (5900 kg)

Performance
Cruising speed: 144 mph (231 km/h)
Range: 450 nm (837 km)

Armament
Dox-aerospace machine gun, cannon pods; air-to-air and air-to-surface missiles.
Bell Model 412 (USA)

Norway, Peru (Air Force), Poland (Air Force), Saudi Arabia (Air Force), Slovenia, South Korea (Air Force), Sri Lanka, Sudan, Sweden (Lamley), Thailand (Air Force/Lamley), Uganda, UAE (Dubai), United Nations, UK (MoD), Zimbabwe.

Manufacturer
Bell Helicopters Textron (USA/Canada), Agusta-Bell, (RPN-Bellows)

Bell 412 of Dubai
Police Air Wing
(Tim Ripley)
Bell Model 206 JetRanger (USA)

Type: Light helicopter
Accommodation: Two pilots, three passengers

Development/History
The first-selling JetRanger first flew in 1966, and three years later the US Army began its Like Delivery of the OH-58 variant (see separate entry). It has since been adopted by a large number of armed forces around the world. Some 7,900 had been built by 1995.

Variants
Model 206A JetRanger: First production version, with Allison 250-C14 engine, rated to 235.5 lb (107 kip).
Model 206B JetRanger II: Second production version, with Allison 250-C20, rated to 298 lb (136 kip).
Model 206B-3 JetRanger III: Improved version with 250-C25A powerplant.
Model 206B-4 JetRanger IV: Used in various configurations, including the AL-206B, which is a system version, and the AL-206B, which is a system version.
Model 206L-1 LongRanger II: Improved S-3, with Allison 250-C26B turboshaft, rated to 365 lb (165 kip).
Model 206L-2 LongRanger II: Improved version with Allison 250-C20F turboshaft, rated to 400 lb (181 kip).
Model 206L-3 LongRanger III: Canadian-built version.
Model 206L-4 LongRanger IV: Canadian-built version.
Model 206L-5 LongRanger V: Canadian-built version.
Model 206L-6 TexasRanger: Proposed military version of S-3.
Model 206L-7C: Proposed military version for Iraq, built in Chile.
Model 206L-8A: Plastics, US Navy training version to 206A.

Bell 206 in United Nations service in Croatia (Tim Aglietti)

Specifications (206B-3 JetRanger III)

Powerplant
One Allison 250-C20F turboshaft
Power: 420 shp (313 kW)

Weights
Empty: 1,025 lb (465 kg)
Max: 2,200 lb (1,000 kg)
Payload: Under–army 1,500 lb (680 kg)

Dimensions
Length: 31 ft 2 in (9.5 m)
Height: 9 ft 9 in (2.9 m)

Performance
Max speed: 140 mph (225 km/h)
Range: 310 nm (570 km)

Armament
Dual gun, projectiles.
Bell Model 206 JetRanger (USA)

**Status**
In production.

**Operations**
- Austria, Bangladesh, Brazil (navy), Brazil, Cameroon, Chile (army/navy), Colombia (navy), Cyprus, Croatia, Ecuador (air force), Georgia (army/navy), Guatemala, Guyana, Jamaica, Israel, Iran (army/navy), Italy (army), Libya (navy), Malta, Morocco (air force), Mozambique, Oman, Pakistan (army), Peru (army/navy), Qatar (navy), Saudi Arabia (air force), Slovenia, South Korea (navy), Sri Lanka, Sweden (army), Tanzania, Thailand (air force), Turkey (army), Uganda, UAE (Bahrain), USA (army/navy), United Nations, Venezuela (governmental guard), Yemen.

**Manufacturer**
Bell Helicopter Company/Bell Helicopter Textron (USA/Canada); Agusta (Italy); Comacchi Industries (Chile).
Bell Model 206/OH-58 Kiowa (USA)

Type: Light observation and utility helicopter

Development/History
The US Army bought some 2800 versions of the OH-58 Kiowa from 1969 onwards for short scout missions with specialist equipment fitted. The basic design has since undergone a number of upgrades to enhance its battlefield survivability.

Variants
OH-58B: Export version for Austrian Army.
OH-58C: Exported US Army version with flat glass canopies and Allison 1190 S720 turboshafts, speed to 180 mph (289 km/h)
OH-58A: Canadian version to OH-58A standard; later re-designated OH-13A Kiowa.
Model 206B-1 Kiowa: Australian produced version, later renamed Kalkutan.

Status
No longer in production.

Operators
Australia, Austria, Canada, USA (Army).

Manufacturer
Bell Helicopter Company/Bell Helicopter Textron (USA), Commonwealth Aircraft Company (Australia).

Accommodation: Pilot, co-pilot side-by-side, three passengers.

US Army OH-58A Kiowa

Specifications (for OH-58A)

Powerplant
One Allison 1190-S720 turboshaft
Power: 317 shp (235.8 kW)

Weights
Empty: 1543 lb (700 kg)
Max T/O: 2000 lb (907 kg)

Dimensions
Length: 31 ft 5.5 in (9.44 m)
Rotor diameter: 51 ft 4 in (15.71 m)
Height, hub to tail: 8 ft 5 in (2.57 m)

Performance
Cruising speed: 122 mph (196 km/h)
Range: 289 nm (531 km)
Bell Model 406/OH-58D Kiowa Warrior (USA)

Type: Light armed reconnaissance helicopter

Development/History

The "ultimate" version of the OH-58, the Kiowa Warrior boasts an impressive weapon and sensor fit to allow it to operate alongside the AH-64 Apache as part of joint air attack teams. The Army Helicopter Improvement Program (AHIP) began in 1983, and the first helicopters entered service in 1985.

Variants

OH-58D Kiowa Warrior: US Army armed Scout version
Multi-Role Multi-Purpose Light Helicopter (MRMPL): US Army modification including folding main blades and tail to allow transport on C-130 transport aircraft.
Prime Chieftain: Code name for first aircraft fitted with helmet and Stinger missiles for scouting escort duties in Middle East in 1987.

Status

In production.

Operators

South African Army, Turkish armed forces

Manufacturer

Bell Helicopter Textron (USA)

Accommodation: Two pilots side-by-side

Specifications

Powerplant:

Gas turbine: 1 x T55-A-710 (1,065 shp)

Dimensions:

Length: 34 ft 6 in (10.5 m)
Wingspan: 45 ft (13.7 m)
Height: 12 ft 10 in (3.9 m)

Weights:

Empty: 5,045 lb (2,301 kg)
Max T/O: 9,010 lb (4,090 kg)
Wing: 2,950 lb (1,339 kg)

Performance:

Max speed: 160 mph (257 km/h)
Range: 290 nm (535 km)

Armament:

Stinger air-to-air missiles RM-701 Bitter laser-guided anti-tank missiles, machine gun pods, fire-flight weapon pods
Bell Model 209/AH-1F/G Huey Cobra (USA)


Development/History

Bell Helicopters first produced a gunship version of the Huey in 1962 as a private venture. Its distinctive tandem seating androke barrel have since been copied by attack helicopter designers around the world. Some 1000 G-models were bought by the US Army, and it proved very effective when used in action during the later years of the Vietnam war. To meet its counterinsurgency requirements formed during the Cold War, it received a series of upgrades to improve the Cobra's performance. It has been produced in various versions, including the AH-1G and AH-1W, which have been exported to several countries.

Variants

Model 209: Original prototype.
AH-1F: Dual control trainer version.
AH-1E: Enhanced Cobra armament version with T53-L-701 engines.
AH-1P: 105mm rocket pod option.
AH-1Q: Upgraded version to allow T53-L-701 engines.
AH-1W: Upgraded version with T53-L-703 powerplant.
AH-1S: Improved AH-1S US Army common upgrade standard for its-GO models, with T53-L-703 powerplant.
AH-1S-1: First production AH-1S with T53-L-703 powerplant.
AH-1S-2: Second production AH-1S with T53-L-703 powerplant.
AH-1S-3: Third production AH-1S with T53-L-703 powerplant.
AH-1S-4: Fourth production AH-1S with T53-L-703 powerplant.
AH-1S-5: Fifth production AH-1S with T53-L-703 powerplant.
AH-1S-6: Sixth production AH-1S with T53-L-703 powerplant.
AH-1S-7: Seventh production AH-1S with T53-L-703 powerplant.
AH-1S-8: Eighth production AH-1S with T53-L-703 powerplant.
AH-1S-9: Ninth production AH-1S with T53-L-703 powerplant.
AH-1S-10: Tenth production AH-1S with T53-L-703 powerplant.
AH-1S-11: Eleventh production AH-1S with T53-L-703 powerplant.
AH-1S-12: Twelfth production AH-1S with T53-L-703 powerplant.
AH-1S-13: Thirteenth production AH-1S with T53-L-703 powerplant.
AH-1S-14: Fourteenth production AH-1S with T53-L-703 powerplant.
AH-1S-15: Fifteenth production AH-1S with T53-L-703 powerplant.
AH-1S-16: Sixteenth production AH-1S with T53-L-703 powerplant.
AH-1S-17: Seventeenth production AH-1S with T53-L-703 powerplant.
AH-1S-18: Eighteenth production AH-1S with T53-L-703 powerplant.
AH-1S-19: Nineteenth production AH-1S with T53-L-703 powerplant.
AH-1S-20: Twentieth production AH-1S with T53-L-703 powerplant.
AH-1S-21: Twenty-first production AH-1S with T53-L-703 powerplant.
AH-1S-22: Twenty-second production AH-1S with T53-L-703 powerplant.
AH-1S-23: Twenty-third production AH-1S with T53-L-703 powerplant.
AH-1S-24: Twenty-fourth production AH-1S with T53-L-703 powerplant.
AH-1S-25: Twenty-fifth production AH-1S with T53-L-703 powerplant.
AH-1S-26: Twenty-sixth production AH-1S with T53-L-703 powerplant.
AH-1S-27: Twenty-seventh production AH-1S with T53-L-703 powerplant.
AH-1S-28: Twenty-eighth production AH-1S with T53-L-703 powerplant.
AH-1S-29: Twenty-ninth production AH-1S with T53-L-703 powerplant.
AH-1S-30: Thirtieth production AH-1S with T53-L-703 powerplant.
AH-1S-31: Thirty-first production AH-1S with T53-L-703 powerplant.
AH-1S-32: Thirty-second production AH-1S with T53-L-703 powerplant.
AH-1S-33: Thirty-third production AH-1S with T53-L-703 powerplant.
AH-1S-34: Thirty-fourth production AH-1S with T53-L-703 powerplant.
AH-1S-35: Thirty-fifth production AH-1S with T53-L-703 powerplant.
AH-1S-36: Thirty-sixth production AH-1S with T53-L-703 powerplant.
AH-1S-37: Thirty-seventh production AH-1S with T53-L-703 powerplant.
AH-1S-38: Thirty-eighth production AH-1S with T53-L-703 powerplant.
AH-1S-39: Thirty-ninth production AH-1S with T53-L-703 powerplant.
AH-1S-40: Fortieth production AH-1S with T53-L-703 powerplant.
AH-1S-41: Forty-first production AH-1S with T53-L-703 powerplant.
AH-1S-42: Forty-second production AH-1S with T53-L-703 powerplant.
AH-1S-43: Forty-third production AH-1S with T53-L-703 powerplant.
AH-1S-44: Forty-fourth production AH-1S with T53-L-703 powerplant.
AH-1S-45: Forty-fifth production AH-1S with T53-L-703 powerplant.
AH-1S-46: Forty-sixth production AH-1S with T53-L-703 powerplant.
AH-1S-47: Forty-seventh production AH-1S with T53-L-703 powerplant.
AH-1S-48: Forty-eighth production AH-1S with T53-L-703 powerplant.
AH-1S-49: Forty-ninth production AH-1S with T53-L-703 powerplant.
AH-1S-50: Fiftieth production AH-1S with T53-L-703 powerplant.
AH-1S-51: Fifty-first production AH-1S with T53-L-703 powerplant.
AH-1S-52: Fifty-second production AH-1S with T53-L-703 powerplant.
AH-1S-53: Fifty-third production AH-1S with T53-L-703 powerplant.
AH-1S-54: Fifty-fourth production AH-1S with T53-L-703 powerplant.
AH-1S-55: Fifty-fifth production AH-1S with T53-L-703 powerplant.
AH-1S-56: Fifty-sixth production AH-1S with T53-L-703 powerplant.
AH-1S-57: Fifty-seventh production AH-1S with T53-L-703 powerplant.
AH-1S-58: Fifty-eighth production AH-1S with T53-L-703 powerplant.
AH-1S-59: Fifty-ninth production AH-1S with T53-L-703 powerplant.
AH-1S-60: Sixtieth production AH-1S with T53-L-703 powerplant.
Bell Model 209/AH-1F/G Huey Cobra (USA)


Advanced AH-1F/Model 209 King Cobra: Experimental version with single Lycoming T55-L-7F powerplant.

Status
No longer in production.

Operators
Australia, Israel, Japan (JGSDF), Jordan, Pakistan (Army), South Korea (Army), Thailand (Army), Turkey (Army), United States.

Manufacturer
Bell Helicopter Company/Bell Helicopters Textron (US/F), Fuji-Bell (Japan).

Right:
AH-1G Huey Cobra of the Maryland National Guard
(Jeffrey Flack/AP)
Bell Model 209/AH-1W Super Cobra (USA)

Type: Attack helicopter
Accommodation: Pilot, co-pilot gunner in tandem

Development/History
US Marine Corps requirements for a twin-engined helicopter to allow Safe over sea operations led to the holding of the AH-1E (Bell 412) onwards. In the US Marine Corps, the AH-1G was used in the attack role from the late 1970s until the early 1990s. The AH-1W is a major update of the AH-1G, retaining the original airframe while replacing the powerplant and avionics with modern technology. It entered service in the late 1990s, with the US Marine Corps and the US Army.

Variants
AH-1G: Initial production model.
AH-1W: Improved version with modern avionics and improved weapons system.
AH-1W-1: Upgrade to improve endurance and range.
AH-1W-2: Advanced version with enhanced electronic warfare capabilities.

Specifications (AH-1W)

Powerplant:
Two General Electric TFE-731-4G turboshafts, rated at 3,000 shp (2,240 kW).

Dimensions:
Length: 43.9 ft (13.4 m)
Height: 18.1 ft (5.5 m)
Diameter: 14.2 ft (4.4 m)

Weights:
Empty: 6,200 lb (2,812 kg)
Max. takeoff: 14,000 lb (6,350 kg)

Armament:
The AH-1W can carry a wide range of weapons, including 70mm and 120mm rocket pods, 2.75-inch rockets, and 70mm and 105mm projectiles. It can also carry AGM-114 Hellfire missiles and fragmentation munitions.

Performance:
Max speed: 173 mph (278 km/h)
Range: 365 nm (680 km)

Bell Model 209/AH-1W Super Cobra (USA)

Status
In production.

Operators
USA (Marines), Thailand
Turkey (Army)

Manufacturer
Bell Helicopter Company/Bell Helicopters Textron (USA), IMB
SA Banov (Romania)
Bell/Boeing V-22 Osprey (USA)

Type: tilt-rotor transport

Accommodation: five pilots, crew chief; 24 troops

Development/History

This revolutionary aircraft has gone through a protracted development phase but has now progressed to production with the first examples being delivered in 1999. The Osprey can take-off and land vertically and hover. It is capable of providing the power for horizontal flight. Current plans call for some 452 to be purchased by the US Marine Corps to replace their CH-46 assault helicopters. The first unit, VMAT-204 "The White Knights", is scheduled to become operational at MCAS Cherry Point, North Carolina, by 2001. The USN has a requirement for 75 Ospreys for special operations missions to be in service by 2005. The US Navy wants 40 Ospreys for combat search and rescue. Low rate initial production began in 1997 at Fort Worth Aircraft, a year ahead of schedule in 2000, with a decision on full production due that same year.

Variants

V-22 (US): Engineering and manufacturing development aircraft.
MV-22B: US Marine Corps assault production version.
CV-22B: USAF special operations production version.
MV-22B: US Navy combat search and rescue production version.
Bell Boeing MV-2: Civilian passenger/cargo transport (11 passenger, 2 crew), built to a smaller scale.

Status

In production.

Specifications (V-22B)

Powerplant
Two Allison 1500 shp turboshaft engines

Performance

Max speed: 258 mph (416 km/h) at 15,000 ft (4570 m)
Max ceiling: 20,000 ft (6096 m)
Range: 1200 km (746 miles)

Weights

Empty: 14,484 lb (6570 kg)
Max: 31,230 lb (14,123 kg)

Armament

Over-wings mounted machine guns; marine version may be adapted to carry torpedoes and depth charges.
Operators
US Marine Corps/air force.

Manufacturer
Bell Helicopters Textron and Boeing Helicopters (USA).
Boeing CH-47 Chinook (USA)

**Development/History**

The 'mighty' Chinook first flew in 1960 to fulfill a US Army requirement for a heavy-lift helicopter. Voted by the US Army as a 'flying beast', it proved its worth in Vietnam supporting air-mobile troops and flying supply and artillery pieces to remote jungles. The large under-slung load capacity of the Chinook soon led it to being nicknamed 'Huey' by US troops. Some 254 A-models were built for use during the Vietnam War, and many others were followed. A constant upgrade programme has significantly improved the capability of the US Army's Chinooks over the ensuing decades. As a result, 900 were in service with the US Army, US Army Reserve and National Guard in 1997.

During the 1991 Gulf War CH-47Ds played a key role moving the air mobile forces of the 101st Airborne Division deep behind Iraqi lines. They also opened the way for US power-hungry forces to redeploy to Kuwait in 1990 by lifting personnel bridge sections into position across the Suez line. Foreign customers have also found the Chinook useful in their own ways, with variants being used in the United Kingdom by the Royal Air Force in Afghanistan as well as being exported to Belgium and the United States.

Following Britain's example of using the Chinook to move personnel, Boeing CH-47D

**Specifications (for CH-47D)**

**Powerplant**

Two General Electric T55-L-712 turboshaft engines.

**Weights**

Empty: 23,194 lbs (10,512 kg)
Max T/O: 54,690 lbs (24,790 kg)

**Dimensions**

Length: 51 ft 11 in (16.2 m)
Rotor diameter: 66 ft 10 in (20.3 m)
Height: 18 ft 11 in (5.8 m)

**Performance**

Max speed: 117 mph (190 km/h)
Range: 1,600 nm (1,850 km)

**Armament**

One machine gun
In an initial brigade, the Netherlands has ordered Chinooks to provide mobility for its new rapid reaction force; the US Army sees these Chinooks for special forces operations, with night vision devices and in-flight refueling equipment fitted to allow low-level penetration behind enemy lines at night. Britain's Royal Air Force is also procuring a version with similar capability for long range combat search and rescue missions.

Boeing's Chinook won the battle for international orders against Sikorsky's Sea Stallion, with more than 900 built, or ordered, for the US Army and export by 1990.

Variants

- CH-47B: Updated US Army version with T55-L-7A turboshafts, rated to 2135 shp (1600 kW) and increased safe load.  
- CH-47C: Further improved US Army version with T55-L-7A turboshafts, rated to 2796 shp (2090 kW), and extra fuel capacity.  
- CH-47F: Canadian version to CH-47C standard.  
- CH-47F-1: Spanish version to CH-47C standard.  
- CH-47HC 1: British version to CH-47C standard, but with triple-lift capacity.  
- CH-47HC 1B: British version retrofitted with glass fiber blades.  
- CH-47HC 2: British version to CH-47D standard.
Boeing CH-47 Chinook (USA)

Chinook HC.3: British version to MH-47E standard.
MH-47D Special Operations aircraft limited upgrade for US Army special operations units (tail lift of MH-47).
MH-47E: Special forces version with in-flight refueling, night flying capability and T55-L-710 SS engines, each rated to 3200 shp (2400 kN).
Model 414: Export model to CH-47F standard.
International Chinook: Export model to CH-47F standard.
CH-47F Plus: Italian-built version with T55-L-413E powerplants and composite blades.
CH-47C, H: Civilian version.
CH-47DH: Improved Cargo helicopter upgrade for US Army, possibly to be designated CH-49.
Advanced Chinook: Proposed version with 5000 shp (3700 kW) class engines, redesigned rotor and additional fuel.

Status
In production.

Operators
Argentina (air force), Australia (Army), Belgium (Air Force), Greece (Army), Iraq (Army), Japan (Army), South Korea (Army), Spain (Army), Turkey (Army), UK (Air Force), USA (Army).

Manufacturer
Vertol Aircraft: Corporation/Boeing Vertol/Boeing Helicopters (USA), Kawasaki Heavy Industries (Japan), Eurocopter, Menasco/Aguila (Italy).

Boeing CH-47 HC.Mk 2

(Tim Ripley)
**Boeing 107/CH-46 Sea Knight**  (USA)

**Type:** Medium-lift helicopter  
**Accommodation:** Two pilots, crew chief, 25 troops

**Development/History**

The tandem-rotor Model Vertol Model 107 made its first flight in 1954 and entered service with the US Marine Corps in 1964. Nicknamed the "Tarsky", it saw extensive service as an assault helicopter during the Vietnam War. Subsequent operations in Cambodia, the Persian Gulf, Somalia, Liberia and Haiti have seen the CH-46 in the cockpit of the action. An upgrade programme kept the aircraft flying through the 1970s, 80s and 90s as the mainstay of the Marine Corps' embarked helicopter fleet. The Pentagon is keen to replace the ageing, and increasingly unsuitable, CH-46 with the Osprey V-22 tilt-rotor. Despite the V-22 programme since the 'Tarsky' will have to soldier on into the 21st century.

US Navy Fleet support squadrons are large users of the CH-46, operating them from bases or supply ships. Foreign exports have been small, with Japanese production lines being the main source of activity. Of the many Super Stallions of the aircraft was used by the Swedish Navy to hunt Soviet submarines in the Baltic Sea during the 1960s.

**Variants**

1107 Model B: Civilian version.

**107/106-66A:** Original US Marine Corps assault version with two T59-GE-6A propulsion units, each (2500 shp (1864 kW))

**106-66A:** US Navy utility and cargo transport version.

**106-66D:** Upgraded US Marine Corps version with T55-GE-10 turboshaft.

**106-66D:** Upgraded US Navy version with T55-GE-10 turboshaft.

**Boeing CH-46E Sea Knight**

**Specifications (for CH-46E)**

**Powerplant**

Two General Electric T55-GE-16 turboshaft.

**Performance**

Max speed: 155 mph (250 km/h)

**Range:** 306 nm (568 km)

**Armsments**

Four machine guns

**Weights**

Empty: 10,967 lb (5023 kg)

Max takeoff: 23,000 lb (10401 kg)

Max fuel: 9000 lb (4082 kg)
**Boeing 107/CH-46 Sea Knight** (USA)

**HB-46D**: US Marine Corps rescue version.

**CH-46F**: Final production version for US Marine Corps, with improved avionics.

**CH-46E**: Upgrade R- and F-models for US Marine Corps, includes glass fiber rotor blades, improved avionics and T58-GE-16 powerplants.

**VH-46F**: VIP version for US Marine Corps.

**KJ-107 AHR**: Japanese-built utility version, exported to South Korea.

**Bkp 4**: Swedish designation for KJ-107.

**CH-113 Labrador**: Canadian search and rescue version.

**CH-113A Voyageur**: Canadian army version.

**Status**

No longer in production.

**Operators**

- Canada
- Korea (Republic)
- Sweden
- Saudi Arabia
- USA (Marine Corps)

**Manufacturer**

Ventral Aircraft Corporation/Bellevue Vertol/Bell Helicopter (USA), Kawasaki Heavy Industries (Japan).
Boeing/Sikorsky RAH-66 Comanche (USA)

**Type:** Reconnaissance/Attack helicopter

**Development/History**

The US Army's stealth helicopter replacement programme has received significant funding, but its actual production is still uncertain. Boeing and Sikorsky won the 1995 contract to replace the AH-64 and AH-6 helicopter, their first prototype flying in 1996. They have been contracted to supply six aircraft for testing to the US Army by 2002 under a $1.35 billion contract. The second aircraft is to fly in 1998.

The Comanche has a number of unique features, including a hovering main rotor and underslung tail rotor. It is the first helicopter to be developed using 'shaped' technology to minimize its radar cross-section, front signature, and engine noise.

**Variants**

RAH-66

**Status**

In pre-production.

**Operators**

US Army

**Manufacturer**

Boeing Helicopters and Sikorsky Aircraft.

**Accommodation:** Two pilots in tandem

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**Specifications (for RAH-66)**

**Powerplant**

Two GE T400 engine turboshafts

**Power:** 2600 shp (1940 kW)

**Weights**

Empty: 7140 lb (3240 kg)

Max T/O: 10,303 lb (4672 kg)

**Max take-off:** 2642 lb (1195 kg)

**Performance**

Max speed: 294 mph (471 km/h)

**Range:** 1250 nm (2344 km) with external tanks

**Armament**

Under development.
Boeing OH-6 Cayuse/MD500/MD530 (USA)

Type: Light utility helicopter

Development/History
The OH-6 Cayuse was developed by the Hughes Helicopter Inc for the US Army’s Light Observation Helicopter (LOH) requirement in the early 1960s. Soon nicknamed the ‘Loach’, it saw active service in Vietnam in large numbers. Hughes, and later McDonnell Douglas, have continued to develop and upgrade the basic design, with more than 1,500 Cayuse being built by 1990.

Variants
Model 204/206C (OH-6) (Formerly of 508) units, which later reworked for the new. Military versions designated TH-55A. Schweizer Aircraft Inc since developed the design.

OH-6A (Model 203H) Cayuse: Original US Army light observation helicopter, known as the ‘Loach’.

OH-6B Re-engined version with M3-A-720 powerplant rated at 230.5 HP (172 kW).

OH-6C: Improved five-bladed version with improved Allison 250-C20B engine, rated at 290 HP (216 kW). Commercial derivatives designated Model 500D and L.

OH-6A Liquefied-butan version as OH-6A/A.

MH-6B Special forces version.

MH-6C Special forces version.

EH-6B Special forces command post/electronic warfare aircraft.

AH-6C Special forces attack version.

Hughes Model 500: Civil version of the OH-6A/Model 300 with Allison 250-C20B turboshaft, rated at 230 HP (172 kW).

Model 500C: Export version modified for ‘host and stop’ operation.

Boeing MD500 in Israeli service

Specifications (for Model 500E)

Powerplant
- One Allison 250-C20B (turbo-shaft)
- Power: 250 shp (186 kW)

Dimensions
- Length: 23 ft 8 in (7.21 m)
- Main rotor diameter: 56 ft 10 in (17.25 m)
- Height: 8 ft 0 in (2.44 m)

Weights
- Empty: 2,145 lb (973 kg)
- Max. MTO: 3,000 lb (1361 kg)

Performance
- Max speed: 150 mph (241 km/h)
- Range: 273 mi (443 km)

Armament
- 12.7mm machine gun; 20mm cannon; 30mm cannon; 7.62mm machine gun pod; fire-flight rocket pods; 40mm grenade launcher; 5.56mm or 40mm rockets
Model 500M Defender: Commercial version of OH-6A.
Model 500K: Japan-built version based on up-engined Hughes 500, five-bladed main rotor and T-tail.
Model 500MA: Italian-built version based on up-engined Hughes 500.
Model 500MB/ANV: Export version for Spain with MAD boom.
Model 500MB Defender: Military version with armor and infra-red exhaust suppressors.
Model 500KD Scout Defender: Armed reconnaissance version.
Model 500MS/10W Defender: Maritime version with search radar and MAD boom.
Model 500MS/10W Defender: Anti-tank missile armed version.
Model 500MB/MMS-10W Defender: Anti-tank missile version with gun-mounted sight.
Model 500MB/ASAT Advanced Scout Defender: Four-bladed version with noise suppressors.
Model 500MB Defender R: Armed version with Quiet Shroud four-bladed rotor.

An OH-6 of the Danish army (API)
Model 500E: Revised version with pointed nose, improved tailplane and Allison 250-C30B powerplant.
NH-500E: Italian-built version of 500E.
Model 500M: Defender: Specialist military version of Model 500E.
Model 520M: Black Hawk: Canadian-built military version.
MD530F: Either five-bladed main rotor fitted with pointed nose, powered by Allison 250-C30 turboshaft, rated to 317 kW (425 shp).
EH-6E: Special forces command post/electronic warfare version with Allison 250-C30 powerplant.
MR-6E: Special forces version with Allison 250-C30 powerplant.
AH-6F: Special forces attack version with Allison 250-C30 powerplant.
MD630M: Defender: Military version with Allison 250-C30 powerplant.
MD630N: Nightline: Night attack version with improved sensors and powerplant.
MD630N: Paramilitary Defender: Specialist version powerplant for police and border patrol.
MD630H: Lifter: Special forces version of MD630N, standard, with glass cockpit and 'people pack'.
AH-6: Special forces attack version of MD530 standard.
MH-6: Special forces version with improvements to MH-6L.
AH-6D: Special forces attack similar to MH-6L standard.

MD530H on test at Mesa, Arizona (AP)
Boeing OH-6 Cayuse/MD500/MD530 (USA)

Status
In production.

Operators
OH-6
Brazil (Air Force), Japan (Army), Taiwan (Air Force).

MD500
Argentina (Air Force), Bolivia (Air Force), Columbia (Air Force), Costa Rica, Croatia, Cyprus, Denmark (Armed), El Salvador, Finland, Greece (Air Force), Indonesia (Air Force), Israel, Italy (Air Force), Kenya, Mauritania, Mexico (Air Force), North Korea, South Korea (Army), Jamaica (Army).

MD530
Chile (Army), Columbia, Mexico (Air Force).

Manufacturers
Hughes Tool Company/Hughes Helicopter Inc./McDonnell Douglas Helicopter Company/Boeing Helicopters U.K./Bell Helicopter Textron (Italy), Kawasaki Heavy Industries (Japan), Korean Air (South Korea), RAD (Argentina).
Boeing MD 520N/Explorer (USA)

Type: Light utility helicopter

Accommodation: One or two pilots, six passengers

Development/History

The MD 520N is a revolutionary tail-sitter helicopter concept, which has been under development since 1981. Its tail-sitter configuration allows for a smaller, more agile design suitable for military and law enforcement applications. The helicopter is powered by two turboshafts, providing reliable and efficient performance.

Variants

CH-46A: Experimental version, first two MDs delivered.
MD520N: Experimental version with NOAR engines, tail-sitter main rotor and Allison 250-C29B-2 turboshaft, rated at 305 HP (227 kW), 1,500 lb (680 kg).
MD Explorer: Twin-engine NOAR version, military version called Combat Explorer.
MD600N: Side-body single-engine NOAR version.
Preproduction MD520A.
MD500: Eight-seat version of Explorer.

Status

In production.

Operators

All

Manufacturer

Hughes Helicopter Inc./ McDonnell Douglas Helicopter Company/Boeing Helicopters (USA).

The revolutionary Boeing Combat Explorer is reported to be in service with the US Army Special Forces. (Boeing)

Specifications (for MD Explorer)

Powerplant:

Two Pratt & Whitney Canada PT6-112A turboshafts

Power: 1,250 shp (935 kW)

Performance:

Max speed: 172 mph (278 km/h)

Range: 574 nm (1,052 km)

Armament:

AGM-404 Helidart, four-quart gun pods, machine gun pods, fire-depot rocket pods

Weights:

Empty: 3,015 lb (1,368 kg)

Max takeoff: 6,000 lb (2,722 kg)

Payload: Under-3000 lb (1,358 kg)

Dimensions:

Length: 52 ft 6 in (16.06 m)

Rotor diameter: 31 ft 10 in (10.34 m)

Height: 12 ft 10 in (3.66 m)

112
Boeing AH-64 Apache

Type: Attack helicopter
Accommodation: Pilot (rear), co-pilot/gunner (front)

Development/History
After the successful combat debut of the Cobra in Vietnam, the US Army began formulating requirements in the early 1980s for advanced attack helicopters. Bell Helicopters and Boeing Helicopters were selected to develop competing designs, and the latter company was declared the winning contractor in 1984, although it was not until 1989 that the contract was issued for the first batch of heavily-armed and armoured AH-64A Apaches. Hughes was bought by McDonnell Douglas in 1991, just as the first Apache entered service. Since then the US Army has received some 1020 A-helicopters, and more than 500 have been sold to export customers.

The AH-64A showed its potential during N.A.D.A. Desert Storm exercises during the late 1980s, but it was not until the 1990 US operation in Iraq that the Apache first saw action.

In the 1990 Gulf War the Apache showed its full potential in fighting heavy-action missions behind enemy lines. A US Army attack force used Apaches to fly the first missions of Operation Desert Storm, destroying a key Iraqi radar site. Supporting the Coalition ground assault, Apache helicopters accounted for more than 500 Iraqi tanks, 120 APCs, 70 armor systems, 120 artillery pieces, 325 other vehicles, 10 helicopters, 104 gunboats, 10 helicopters and 10 aircraft on the ground. Eight AH-64As were lost by enemy fire, but only one was shot down, with its crew surviving. Iraqi forces have used the Apache extensively against Marine paratroops in northern Lebanon, and in a number of incursions. They have employed helicopters for 'tank kills' and US Army commanders have used the AH-64A for direct attacks against Iraqi command posts.

Specifications (for AH-64A)

Powerplant
Two General Electric T700-GE-701 turboshaft engines
Power: 3900 shp (29.20 kN)

Performance
Max speed: 195 mph (313 km/h)
Range: 650 miles (1047 km)

Armament
One 30-mm GAT-AWS gun, AGM-114 Hellfire missiles

Weights
Empty: 17,256 lb (7830 kg)
Max (52, 71,000 lb (32,573 kg)

Boeing AH-64 Apache

Boeing AH-64A Apache

(Boeing)
The intensive fighting between forces from former Yugoslavia involved US Army Apache helicopters. The US Army is upgrading its Apache fleet by installing the Longbow millimetric radar and new radio frequency guided version of the Hellfire missile, which effectively allows for very long range engagements to be fought at night and in bad weather. All the US Army fleet will be modified to allow use of the new Longbow radar, but only some 25 F radar sets are being purchased. The Netherlands and Britain are the first export customers for the Longbow Apache. To prepare for deployment of the highly capable AH-64D, the Dutch have already received a number of old AH-64A models for use until new build machines are ready. Britain is setting up its own production line to produce its AH-64D upgrade, which will feature unique engines, weapon systems and defensive aids — the first helicopters are due to make its premier flight in March 1996.

Variants

AH-64A: Basic US Army version.
AH-64A/D: Proposed PAVN service for German Army.
AH-64D: Longbow version with millimetric radar equipped with GBU-15 precision-guided munitions.
AH-64D(E): Longbow version with Rolls-Royce/Technomatica T55-1B engines.
AH-64E: US Army version uprated to allow installation of Longbow radar. New to be designated D models.
Boeing AH-64 Apache

Status
In production.

Operators
Egypt (air force), Greece (army), Israel, Saudi Arabia (army), Netherlands, UAE (Abu Dhabi), UK (army), USA (army).

Manufacturers
Hughes Helicopters
Incorporated
Boeing Helicopters
AgustaWestland

Boeing AH-64D
Longbow Apache
(Boeing)
Sikorsky S-58 Choctaw/Wessex (USA)

Type: Medium-lift helicopter

Accommodation: Two pilots, optional crew chief, 16 troops

Development/History
The first versions of the S-58 first flew in 1954, and the US armed forces operated large numbers until the US-I I Harrier entered service in the 1960s. The British-built version, the Wessex, also saw extensive service. Westland improved the Sikorsky single piston-epoxy design by installing single- and then twin-turboshafts. Users are now withdrawing them from service, although Uruguay has recently bought up surplus British machines.

Variants (still in service)
Westland Wessex HC/HC Mk 2: RAF utility and rescue version. Also operated by Uruguay.
Westland Wessex HC Mk 3: RAF transport and support helicopter.
Westland Wessex HC Mk 4: RAF 'Royal Flight' VIP version.
Westland Wessex HC Mk 5: BAEB: Rescue version used by Uruguay.
CH-146: Transport version.
Westland Wessex HC Mk 4: Transport version.
S-58B: Twin-turboshaft engine-powered version.

Status
No longer in production.

 Operators
Argentina (air force), UK (air force), Uruguay (navy), Italy, South Korea, Thailand (air force), Turkey (air force).

Manufacturers
Sikorsky Aircraft (USA), Westland Helicopters (UK).

Westland Wessex HC Mk 5

Specifications (for Wessex HC 2)

Powerplant
Two Bristol Siddeley Tyne MK 1111 (2,035 hp (1,519 kW))

Weights
Empty: 4,309 lb (1,953 kg)
Max: 13,015 lb (5,900 kg)
Max Takeoff: 8,030 lb (3,640 kg)

Dimensions
Length: 50 ft 4 in (15.3 m)
Length: 35 ft 10 in (11.1 m)
Rotor diameter: 62 ft (18.9 m)
Height: 16 ft 12 in (5.1 m)

Performance
Max speed: 140 mph (225 km/h)
Range: 204 nm (375 km)

Armament
2 .50 cal machine guns.
**Sikorsky S-61/SH-3 Sea King** (USA)

Type: Medium-lift/ naval helicopter  

**Development/History**  
This Sikorsky design made its first flight in 1956 and the American company made a special contract for the United States Navy during the 1960s. The SH-2 proved a very sound acoustic helicopter and 400 ships ordered it in large numbers from American and local production lines.

Boeing Helicopters of Ridley began to develop its own versions in 1960, including anti-submarine, rescue, autonomous early warning and search and rescue. Production continued until the late 1970s, with some SH-3s being built for domestic and export markets.

**Variants**  
- **SH-3D**: Prototype versions.  
- **SH-3A/SH-3D**: Original US Navy production versions for anti-submarine warfare (ASW) powered by T58-GE-8B turbo-shafts rated at 952.5 kW (1,300 hp). Fitted with dipping sonar and capable of carrying torpedoes or nuclear depth charges.  
- **SH-3G**: Utility version without ASW equipment for US Navy and USAF.  
- **SH-3H**: U.S. Navy combat search and rescue version, replacing early used models and Meggitt equipment.  
- **SH-3F**: Experimental versions with torpedoes and weapons.  
- **SH-3D**: US Navy multi-role version.  
- **SH-3A**: U.S. Marine Corps versions for Presidential transport.  
- **SH-3D**: Improved US Navy ASW version with T58-GE-16 engines and improved sensor systems. License-built in UK, Italy and Japan.  
- **SH-3G**: US Marine Corps versions for Presidential transport.

**Specifications (for SH-3H Sea King)**

**Powerplant**  
Two General Electric T58-GE-16B turboshaft engines (1,300 hp)  

**Dimensions**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>16.7 m (55 ft)</td>
</tr>
<tr>
<td>Rotor diameter</td>
<td>12.8 m (42 ft)</td>
</tr>
<tr>
<td>Height</td>
<td>11.5 m (38 ft)</td>
</tr>
</tbody>
</table>

**Weights**

<table>
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<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empty</td>
<td>11996 kg (26500 lb)</td>
</tr>
<tr>
<td>Max T/O</td>
<td>20100 kg (44300 lb)</td>
</tr>
</tbody>
</table>

**Performance**

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max speed</td>
<td>250 kts (467 kmh)</td>
</tr>
<tr>
<td>Range</td>
<td>342 nm (629 km)</td>
</tr>
</tbody>
</table>

**Armament**

- Mk. 44, 46, 59, 63/45, Sting Ray torpedoes.  
- 11-inch depth charges.  
- Mk. 57 and 60 anti-submarine depth charges.  
- Sea Eagle, Mark 144, Mark 142 anti-aircraft missiles.
Sikorsky S-61/SH-3 Sea King (USA)

with T58-GE-45 propeller.
SH-3D: US Navy improvement of D-model with extra cargo and passenger carrying capacity.
SH-3H: US Navy improvement of D-model with improved mission systems for ASW work.
SH-3J: US Navy utility version without ASW mission equipment.
SH-3D-1S: ASW version.
SH-3H AEW: Spanish navy airborne early warning version with Searchwater radars.
S-61A-As: Export version for Brazil to SH-3A standard.
AS-61A-4: Search and rescue export version for Malaysia, known as MHS.
S-61D-3: Brazilian export version to SH-3D standard, later upgraded to SH-3H standard.
S-61D-4: Argentinean export version to SH-3D standard.

Italian-built versions
ASH-3B: Italian version, with T58-GE-100 engines rated to 1,150 shp (859 kW), ASW mission equipment, and equipped to fly Escorts and Marte Mk. 2 anti-ship missiles.
ASH-3B: ASW version with improved mission equipment.
ASH-3D-1S: VIP transport version, designated ASH-3D/TS.
ASH-61A-4: Export utility version with ASH-3D propulsion.

Canadian-built versions
CH-124A-13: SH-3D.
Sikorsky S-61/SH-3 Sea King (USA)

Westland Sea King HC.Mk 4 'Jungle'
Sikorsky S-61/SH-3 Sea King (USA)

Japanese-built versions
S-61B: ASW version to SH-3A, later a S-61B-2 with improved weapons systems also modified to SH-3B standard.

British-built versions
Sea King HAS 1: ASW version with Bell's Royal Osprey H140B turboshafts rated to 1200 lb (540 kg) max.
Sea King HAS 2: Improved ASW version with upgraded Osprey H140B-1s.
Sea King HC 4: Assault and troop transport version
Sea King HAS 5: Improved ASW version with new radar and mission systems.
Sea King HAS 6: Improved ASW version.
Sea King HAS 7: Search and rescue version for NAV.
Sea King HAS 2A: Improved search and rescue version for NAV.
Sea King HAS 5c: Royal Navy designation for its search and rescue version.
Sea King Mk 4A: UK Ministry of Defence trials version.
Sea King Mk 4B: Export version of Germany for search and rescue.
Sea King Mk 4B: Export version for India to HAS 1 standard.
Sea King Mk 42: Export version for India to HAS 2 standard.
Sea King Mk 42A: Export version for India to HAS 2 standard.
Sea King Mk 42B: Export version for India with upgraded Osprey H140B-17 propulsion.
Sea King Mk 42C: Export version for India to HAS 2 standard.
Sea King Mk 43/41R: Export version to Korea for search.

Westland Sea King HC.Mk 8 "Jungle"
Sikorsky S-61/SH-3 Sea King (USA)

Sea King Mk 45 Mk: Export version to Pakistan to HMA.12 standard.
Sea King Mk 47: Export ASW version for Egypt to HMS.2 standard.
Sea King Mk 48: Export version for Belgium to HMS.2 standard.
Sea King Mk 50 Mk: Export version for Australia to HMS.2 standard.
Sea King ASW 24: Antisubmarine warfare version with Searchwater radar.
Sea King ASW 31: Improved antisubmarine warfare version with upgraded Searchwater radar.
Commando Mk 1 Sea King Mk 90: Assault and troop transport version for Egypt.
Commando Mk 2 Sea King Mk 90: Assault and troop transport version for Egypt.
Commando Mk 2A (Sea King Mk 90): Assault and troop transport version for Egypt.
Commando Mk 2B (Sea King Mk 90): Assault and troop transport version for Qatar.
Commando Mk 2C (Sea King Mk 90): WP version for Qatar.
Commando Mk 2D (Sea King Mk 93): Electronic warfare version for Egypt.
Commando Mk 3 (Sea King Mk 140): Naval version for Qatar, fitted to fire Exocet missiles.

Status
No longer in production.

Operators
Argentina (towed), Australia (towed), Belgium, Brazil (towed).

Sea King HC Mk 4 'Jungle' over Bosnia (S.A. Photo: Terry Morgan)
Sikorsky S-61/SH-3 Sea King

Canada, Denmark (air force), Egypt, Germany (navy), India (navy), Iraq, Iran, Italy (navy), Japan (navy), Malaysia (air force), Norway, Pakistan (navy), Peru (navy), Qatar, Saudi Arabia (air force), Spain (navy), Thailand (navy), Venezuela (navy), UK (Royal Navy), USA (navy)

Manufacturer
Sikorsky Aircraft (USA), Agusta (Italy), Westland Helicopters (UK), Mitsubishi Heavy Industries (Japan), United Aircraft (Canada)

Westland Sea King
HC.4 Mk 4 ‘Jungle’ in service with the Royal Navy

(Media Production
ColLAND)
Sikorsky S-61N-1 Silver  (USA)

Type: Passenger transport helicopter  
Accommodation: Two pilots, 30 passengers

Development/History
A development of the Sea King, deeply for the civil market, this version has been employed by a number of military users for troop transport and rescue work. Civil operators have also chosen them for military customers in the Middle East and the Falklands.

Variants
S-61N: Civil version.
S-61NR: Export search and rescue version for Argentina.
A5-61A-1: Italian-made export version for Malaysia.

Status
No longer in production.

Operators

Manufacturer
Sikorsky Aircraft (USA), Agusta (Italy).

Sikorsky S-61N-1 Silver

Specifications (for S-61N)

Powerplant
Two General Electric T700-14GA turboshafts.
Power: 1000 hp (745 kW)

Weights
Empty: 12,531 lb (5685 kg)
Max LO: 22,800 lb (10300 kg)
Payload: 7030 lb (3200 kg)

Dimensions
Length: 77 ft 9 in (23.7 m)
Rotor diameter: 62 ft 11 in (19.0 m)
Height: 57 ft 1 in (17.4 m)

Performance
Max speed: 148 mph (235 km/h)
Range: 420 nm (770 km)
Sikorsky S-65A/CH-53 Sea Stallion (USA)

Type: Heavy-lift transport helicopter

Accommodation: Two pilots, crew chief, 37 troops, 24 stretchers

Development/History

Sikorsky's big lift first flew in 1964, and was quickly adopted by the US Marine Corps as its heavy troop transport. Some 124 helicopters were bought by the Marine Corps, and have remained in service through to the 1990s. The USAF adopted the aircraft as its principal long-range special operations and combat search and rescue helicopter, indicating several upgrades to maintain its drop-generation capabilities.

Variants


CH-53H: USMC training version similar in capability to CH-53A.

CH-53E: USAF combat search and rescue version with in-flight refueling probes.


CH-53K: Improved USMC version with upgraded T406-GE-415 engines, each rated at 2567 hp (1915 kW) each.

CH-53S: US Army missioner, powered by two T406-GE-415s each rated at 2567 hp (1915 kW) each.

CH-53J Air to Air Refueling: USAF special operations version, fitted with in-flight refueling, night vision equipment and terrain following radar and powered by two T406-GE-139 each rated at 2387 hp (1780 kW) each.

S-470C-399: Austrian export version built to CH-53C standard, later sold to Israel.

S-470C-3: Greek export version similar to USAF CH-53D.

Specifications (for CH-53A)

Powerplant

Two General Electric T402-GE-1 turbofans

Power: 5124 shp (3810 kW)

Dimensions

Length: 62 ft 2 in (18.97 m)

Rotor diameter: 12 ft 3 in (3.73 m)

Weight: 24 ft 11 in (7.6 m)

Weights

Empty: 9000 lb (4082 kg)

Normal: 22000 lb (10000 kg)

Payload: (normal) 12000 lb (5443 kg)

Performance

Max speed: 190 mph (306 km/h)

Range: 217 nm (404 km) with auxiliary tanks

Armament

12.7 mm or 12.7 mm autocannon
Sikorsky S-65A/CH-53 Sea Stallion (USA)
Sikorsky S-65A/CH-53 Sea Stallion (USA)

CH-53 2000: initial upgrade also known as YCH-53, designed to extend life into the next century. Turkey is interested in buying this version.

CH-53D: German-built version.

Status
No longer in production.

Operators
Germany (armed), Iran, Israel, USA, UK, Greece, Spain.

Manufacturer
Sikorsky Aircraft (USA), MVP-Feiden (Germany).

Sikorsky MH-53J
Pave Low
(USA/Air Force)
Sikorsky S-80/CH-53E Super Stallion (USA)

Type: Heavy-lift transport helicopter

Accommodation: Two pilots, crew chief, 55 troops

Development/History
The S-80 series Super Stallion utilizes these engines to make it one of the most powerful heavy-lift helicopters in the world. It is used by the US Marine Corps and US Navy, with delivery of the first aircraft in 1983. The Hughes 500D variant was also built for the US Navy and Marine Corps.

S-60A: Proposed export version of CH-53E.

Variants:

Status
No longer in production.

Operator

Manufacturer
Sikorsky Aircraft, USA.

Specifications (for CH-53E)

Powerplant
Three General Electric T64-GE-416 turboshafts
Power: 12,100 shp (9,070 kw)

Weights
Empty: 32,400 lb (14,692 kg)
Max T/O: 75,000 lb (33,990 kg)
PayLoad: Under slung 20,000 lb (9,080 kg)

Dimensions
Length: 73 ft 4 in (22.3 m)
Rotor diameter: 93 ft 6 in (28.6 m)
Height: 29 ft 6 in (8.9 m)

Performance
Max speed: 190 mph (305 km/h)
Ferry Range: 1,300 nm (2,394 km)

Armament
1.62 in (41 mm) door guns.
Type: Medium-lift utility helicopter

Development/History

In the early 1970s, the US Army began looking for a UH-1 replacement with a more advanced design that would be suitable for a variety of roles. The model selected for development was the Sikorsky S-70, and an initial flight model was achieved in mid-1973. The first flight took place in June 1974, and it was not until 1978 that the model was officially designated as the UH-60 Blackhawk. The Blackhawk was initially developed for the US Army, but it has since been exported to other countries as well, with variants such as the UH-60M introduced in 2005.

Variants

- UH-60A: Original US Army utility version
- UH-60A SOAMS: Proposed armed surveillance radar version
- UH-60K: US Army version with night vision system and Tri- PAC engines
- UH-60P: South Korean version as locally assembled
- UH-69D Nightstalker: Proposed vertical precision version, with external stores
- EB-60A Quick Fix: Electronic warfare version
- EB-60C Quick Fix: Improved electronic warfare version
- MH-60A: US Army special forces version
- MH-60K: Pre-Flight USAF special forces version with night vision capability
- MH-60K: US Army special forces version with in-flight refueling
- HH-60: USAF search and rescue version
- HH-60A: US Army special forces version with in-flight refueling

Accommodation: Two pilots, crew chief, 14 troops

Specifications (for UH-60A)

Powerplant
- Two General Electric T64-GE-219 turboshfts
- Power: 3,144 shp (2,350 kW)

Dimensions
- Length: 50 ft 1 in (15.2 m)
- Rotor diameter: 58 ft 8 in (17.8 m)
- Height: 18 ft 10 in (5.7 m)

Weights
- Empty: 9,964 lb (4,471 kg)
- Max LO: 20,250 lb (9,177 kg)
- Payload: 10,000 lb (4,536 kg) internally

Performance
- Max speed: 160 knots (184 mph)
- Range: 519 nmi (962 km) (390 nmi [722 km] with external fuel)

Armament
- 12.7 mm or 12.7 mm crew guns and pods (front and rear)
- AGM-114 Hellfire laser-guided anti-tank missiles

Pre-production model of Sikorsky UH-60A Blackhawk (USA)
Sikorsky S-70/UH-60 Blackhawk (USA)

MH-60M: US Army special forces version with in-flight refueling probe and upgraded F120 GE-100 engines.

MH-60R: US Presidential transport version.

S-30A-1: Saudi-led forces version.


S-30A-8: Australian-assembled version.

S-30A-11: Jordanian export version.

S-30A-12: Japanese search and rescue version, designated UH-60J.

S-30A-14: Indian export version.

S-HRA-14: Test bed for Rolls-Royce/Allison/BM 101.

S-HRA-17: Turkish export version.

S-PHA-10: Bangladesh-produced version, designated WSH-1.

S-PHA-21: Egyptian export version.

S-PHA-24: Mexican export version.

S-PHA-28: Moroccan export version.

S-PHA-32: Hong Kong export version.

S-PHA: Chinese export version.

S-PHC-31: Rescue version with hoist used by Taiwan and Brunei.

**Status**

In production.

**Operators**

Australia (Army), Bangladesh, Brazil (Army), Brunei, China, Colombia (Army/Naval Air), Egypt, Israel, Greece (Army), Hong Kong, Japan (Army/Naval Air), Jordan, Malaysia, Mexico, United Technologies/Sikorsky Aircraft.
Sikorsky S-70/UH-60 Blackhawk (USA)

Monaco, Philippines (air force), Saudi Arabia (army), South Korea (army), Taiwan (air force), Turkey (army), Thailand (army), USA (army/coalition air force).

Manufacturer
Sikorsky Aircraft (USA), Mitsubishi Heavy Industries (Japan), Westland Helicopters (UK), Rotor de Havilland (Australia), Korean Hyundai (South Korea).

Sikorsky S-70A
Blackhawk of Royal Brunei Armed Forces
(United Technologies/Sikorsky Aircraft)
Sikorsky S-70B/SH-60 Seahawk (USA)

Type: Maritime helicopter

Accommodation: Two pilots, mission specialist

Development/History

Nursery version of the S-92 series won the US Navy's LAMPS competition with a development contract being issued in 1993. The SH-60B has 80 per cent commonality with the SH-60, but includes some features necessary for antisubmarine warfare, including anti-corrosion treatment for the airframe, improved engines and a BRSet recovery device to secure the helicopter to a rolling ship deck in heavy seas. The US Navy has continued to develop the basic design, including a non-subsonic version with dazing gear and a special combat search and rescue variant. Many are now in use to standardise the fleet under the SH-60B programme.

Status

In production.

Variants


SH-60F Seahawk: Carried four ZUMA sonar torpedoes.

SH-60L Seahawk: Upgraded version with new ASW systems.

SH-60K: US Navy programme to standardise A-1 and F-1 versions.

S-97B-2 SH-60K: Australian version with increased ASW capability.

S-70C: ASW helicopter with dipping sonar, secondary and other systems. Also equipped with Sea Sparrow and Phoenix radar-guided anti-ship missiles.

Specifications (for SH-60B)

Powerplant

Two General Electric T700-GE-401C turboshafts.

Tonne: 1203 (2546 lb)

Payload: n/a

Performance

Max speed: 145 kts (270 km/h)

Range: 500 nautical miles (930 km)

Armament

10.57 mm and 12.7 mm (0.51-caliber) cannon: 4000-7000 RDS

Penguin anti-ship missiles: Mk 46 or Mk 50 torpedoes, Fire-Flight missiles

Weights

Empty: 524 kg (1151 lb)
Sikorsky S-70B/SH-60 Seahawk (USA)

S-ROC (4): Thunderhawk: Low-cost version of SH-60F; local conversion to Signals intelligence role has taken place.

NH-60H Rescue Hawk: US Navy specialised combat search and rescue version, with extra equipment and night vision systems.

NH-60H Seahawk: US Coast Guard search and rescue version.

S-70B-4: Greek export version.

S-70B-7: Dual naval version with P70B-36B engines.

CH-40: Proposed US Navy utility version for support and vertical replenishment.

Maplehawk: Proposed Canadian rescue version.

Operators
Australia (navy), Greece (navy), Japan (navy), Spain (navy), Taiwan (navy), USA (independent guard).

Manufacturers
Sikorsky Aircraft (USA), Mitsubishi Heavy Industries (Japan), ASTA (Australia).

Sikorsky SH-60B Seahawk
(United Technologies/ Sikorsky Aircraft)
Sikorsky S-76 (USA)

Type: Medium-lift utility helicopter

Accommodation: Two pilots, 14 passengers

Development/History
The private venture product has sold well to a number of civil and military customers around the world, but it has not found favour with the US armed forces.

Variants
S-P6: Original version powered by Allison 250-C20 turboshafts, rated to 416 kW (560 shp).
S-P6 Mk II: Improved version.
S-P6 Utility: Basic version.
AAR-P6: Armed utility derivative, with provisions for anti-personnel, rockets and guns.
S-P6AVC: Version with S700 1101 shp turboshaft engines and FLU powerplant.
S-P6B: Production version, with PT6B-36A (powerplant).
H-1H6: Military version of S-P6B, with weapon provision.
H-1H6C: Naval version.
HIL2: Spanish designation.

Status
In service.

Operators
China (Hong Kong), Ecuador, Honduras, Hong Kong, Iraq, Japan, Jordan, Philippines (air force), South Korea (navy).

Manufacturer
Sikorsky Aircraft (USA) and Daewoo (Korea).

Sikorsky S-76C

Specifications (for H-76)

Powerplant
Turboshaft (2) Pratt & Whitney Canada PT6B-36A

Performance
Max speed: 178 mph (286 km/h)
Rate of climb: 357 ft/min (110 m/min)
Armament
2.62 mm, 12.7 mm or 20 mm machine guns; Stinger air-to-air missiles; Hellfire laser-guided missiles; 500 lb wire-guided anti-tank missiles; fire-flight rockets.

Dimensions
Length: 44 ft (13.4 m)
Height: 14 ft 3 in (4.3 m)

Weights
Empty: 6,541 lb (2,967 kg)
Max T-O: 17,950 lb (8,130 kg)
Fuel load: 1,950 lb (882 kg)

Status
In service.
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