Avincis

Every mission matters

AIRBUS H145 - D3

Specifications

www.avincis.com

Avincis
Every mission matters

ABOUT US

Avincis is one of the **world's leading emergency aerial services operators.** The environment we work in is challenging and complex, but our purpose is clear - we exist to save lives and protect communities wherever we serve.

As the largest provider of emergency aerial services in Europe – with additional operations in Africa and South America – governments trust us to deliver safe, reliable, and efficient services when their people are most in need.

Our areas of focus are: helicopter emergency medical services, air ambulance services, search and rescue, aerial firefighting, as well as dedicated emergency aerial transport for oil and gas platforms.

If you haven't heard of us that's because although we have been doing this vital work for decades, we often operate invisibly on behalf of our customers who are predominantly government organisations.

In total, we operate from more than 180 bases across Spain, Portugal, Italy, Norway, Sweden, Finland, Mozambique and Chile.

We oversee our global operations, from our headquarters in Lisboa, Portugal where we moved in 2023.

With a fleet of approximately **220 helicopters (180) and aeroplanes (40)**, Avincis counts on a team of more than **2,400 courageous and talented professionals**, including experienced pilots, crews, technicians, and support teams to deliver its unique service.

We are extremely proud of our diverse and multi-cultural workforce.

Our mixed fleet and global network of bases, means we can mobilise aircraft between countries, which not only provides us with efficiency gains, but also demonstrates the size, capacity and resources of the company as a group. These factors mean we can offer our customers more cost-effective solutions and distinguish us from other operators in the market.

We don't just fly amazing aircraft, we also maintain and fix them in our facilities where our on-site engineers and technicians have the capability to carry out complex repairs, rebuilds and modifications.

We also have an awesome in-house R&D team who focus on developing new innovative technologies as well as new training capabilities for the next generation of pilots, technical crew and engineers.

Our experienced pilots are trained to fly in the most challenging environments – they are there when lives are at risk and time is of the essence.

With a unique combination of cutting-edge technology and highly skilled personnel we can run emergency operations with the world's best safety standards wherever we fly.

Our mission is to save lives and protect communities wherever we serve.

Avincis
Every mission matters

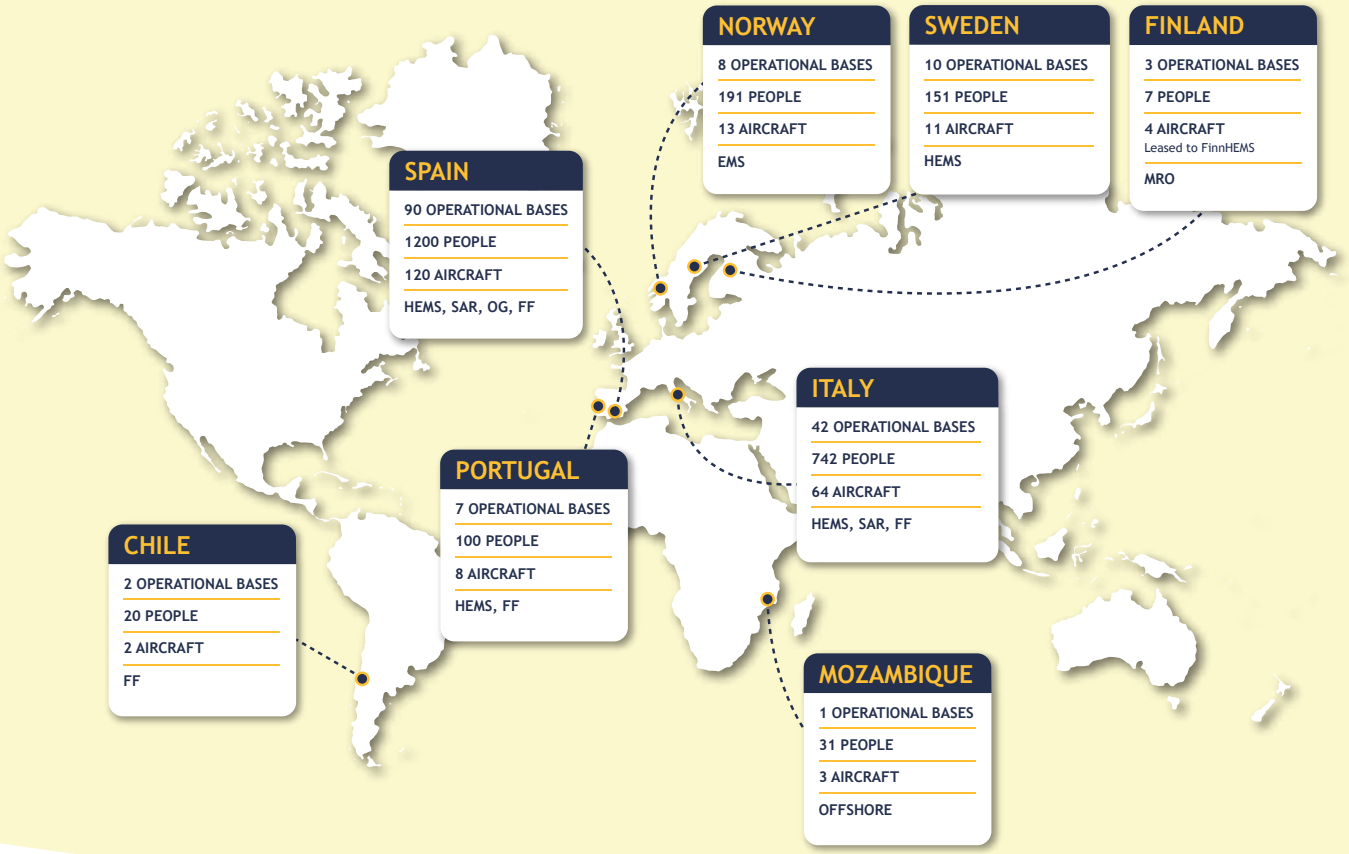
OUR NETWORK

55,000

WE COMPLETE APPROXIMATELY
55,000 LIFESAVING MISSIONS A YEAR

73,000

WE FLY APPROXIMATELY
73,000 HOURS A YEAR



Avincis
Every mission matters

AIRBUS H145 - D3

OEM

AIRBUS HELICOPTERS

TYPE
H145

VARIANT
D3

TYPE
Rotary-Wing

CLASS
Light-intermediate

CRUISE SPEED
240 Km/h

NUMBER IN FLEET
n.42 (BK 117 type) -
D3 variant n. 10

MISSION PROFILE TYPE
Hems - Helicopter Emergency Medical Service

ENGINE TYPE
2 x Safran Engines Arriel 2E

STANDARD FUEL TANK CAPACITY
723 Kg

FUEL CONSUMPTION
240 kg/h

AGE
2014 - 10 YEARS
(D2 variant EASA certification)

MAXIMUM TAKE-OFF WEIGHT (MTOW)
3.800 Kgs

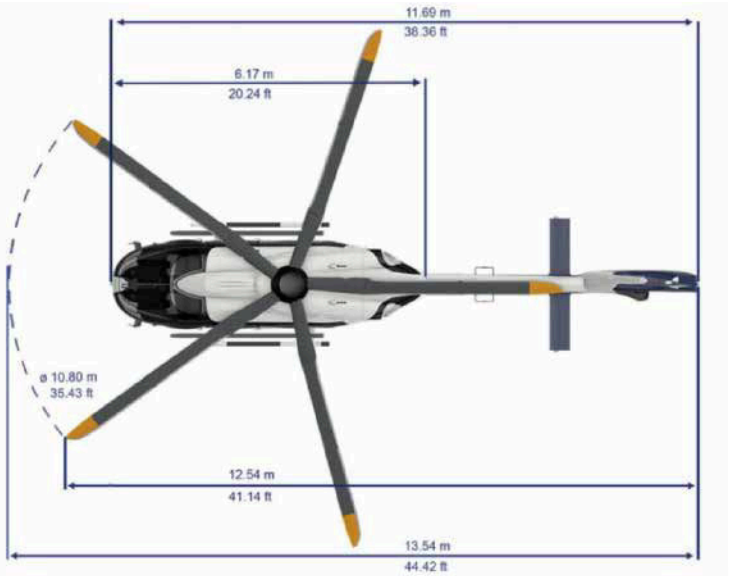
EMPTY WEIGHT, EMS EQUIPPED
2040 Kg

MAXIMUM RANGE, STANDARD TANKS
660 Km (no reserve considered)

MAXIMUM HOOK LOAD
1600 Kg

GENERAL FEATURES

MAIN DIMENSIONS

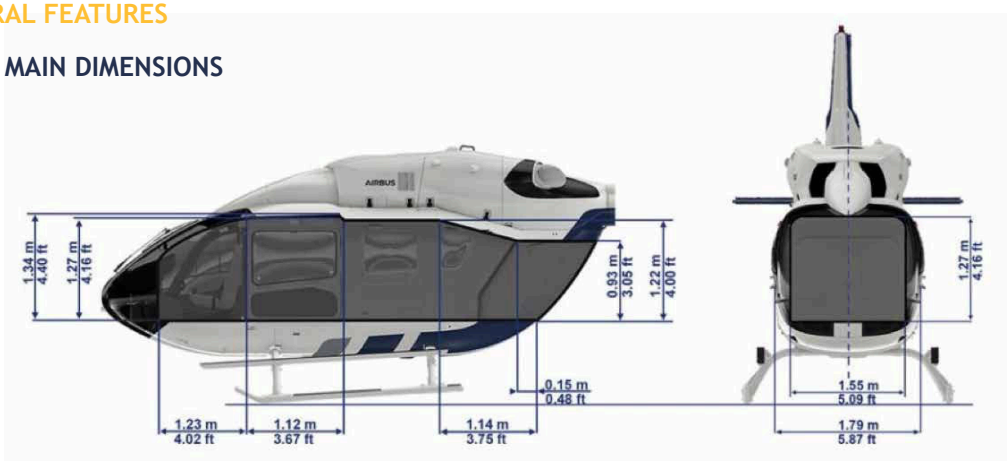


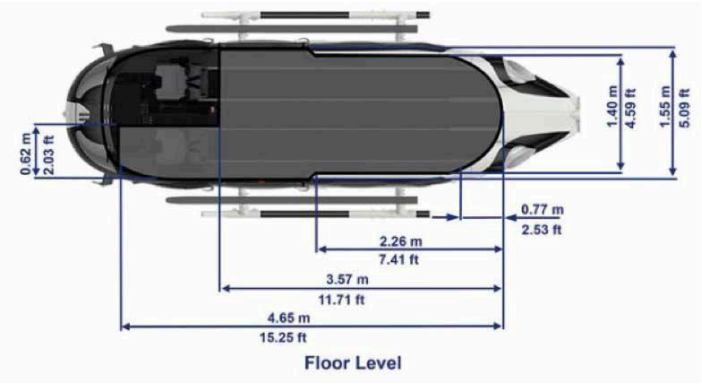
Avincis
Every mission matters

AIRBUS H145 - D3

GENERAL FEATURES

CABIN MAIN DIMENSIONS





GENERAL

- The newest H145®, with certification name BK117 D-3, embodies a major customer expectation,namely operating an aircraft with a great useful load. On that point H145 is over-performing and surpassing all the competitors in its class. The latest version of H145 family is offering additional 150 kg useful load, leading to the best useful load to maximum take-off weight ratio for a light twin helicopter.

- The H145 has no equivalent which is offering such a multi-role capability and transportation capacity while remaining that compact. The D-value of the new H145 is further reduced which is enabling the aircraft to land in even more confined area. This agility makes the H145 the best choice for EMS and Public Services challenging missions.

- The H145 innovates further and sets a new standard in smoothness and comfort of flight thanks to the new bearingless and hingeless 5-blades main rotor. The strain on the crew is thus considerably reduced which is improving missions' efficiency in the same proportion. This innovation is on top simplifying the maintenance scheme and increasing consequently the availability rate which is already remarkable on the H145.

Avincis
Every mission matters

AIRBUS H145 - D3

- Finally, the H145 fully entered in the era of connectivity on board, and it is one of the forerunners of its range range in this domain. The aircraft is equipped with a wireless airborne communication server (wACS), allowing wireless data exchange with a ground station in the most secured way which has ever been developed.

- The enabled data collection, exchange and analysis associated are opening a limitless world of improvement in the field of maintenance and flight management for instance, further supported by the development of its connected services.

ADVANCED FEATURES

- As a further evolution of the BK117 family, the H145 provides latest technologies, like the advanced cockpit design with the most modern Human Machine Interface (HMI) and state-of-the-art Helionix® avionics and a Fenestron® antitorque-device.

- The innovative Helionix avionics system has an open architecture and modular design with very high redundancy (double duplex) incorporating embedded functions as well as the capability for further integration of mission functions.

- The most significant embedded function is the 4-axis dual duplex Automatic Flight Control System (AFCS). The functionalities, level of safety and the mission capability enhancements offered by this autopilot are the most performing in the helicopter industry.

- Furthermore, the rotor blades are optimized to provide high performance with low sound and vibration levels. These features, combined with a Fenestron with unequal blade spacing, make the H145 the quietest helicopter in its class.

- In addition to environmental aspects, the simplified rotor system and airframe components together with the enhanced main gear box grant for low maintenance costs and high in-service-time of the helicopter.

- The engines also significantly contribute to the reduced maintenance costs through high TBO and an evolved maintenance concept with usage monitoring, which increases the availability of the engine.

- The H145 is equipped with two very powerful Safran Helicopter Engines Arriel 2E engines, each controlled by a dual channel FADEC, which, in combination with its lifting system, provide outstanding performance in AEO operations and vital power reserves in One Engine Inoperative (OEI) scenarios.

- Twin-engine reliability is complemented by a fully separated fuel supply system, a duplex hydraulic system, dual electrical system and redundant lubrication for the main transmission. A key safety aspect of the H145 is its inherent crashworthiness thanks to energy absorbing fuselage and seats, as well as crash resistant fuel cells. The Fenestron anti-torque-device increases significantly the safety in flight and on ground.

Avincis
Every mission matters

AIRBUS H145 - D3

- A wide range of rapidly interchangeable optional equipment, such as emergency floats, rescue hoist, searchlight and cargo hook are available for the H145. Together with its inherently versatile cabin layout, the H145 is ready to take on diverse missions, from EMS, passenger transportation, internal and external load transport, to law enforcement and offshore transportation.

AVIONICS

Advanced glass cockpit - flight and mission management

The H145 offers a glass cockpit solution with a highly efficient HMI designed to reduce the pilot workload and increase the flight safety. The Helionix avionics system is the latest generation of Airbus avionics family, designed to provide enhanced safety and mission capability along with simplified maintainability. Helionix benefits from the long experience accumulated by Airbus in the development of innovative avionics.

The Helionix Flight Display Subsystem (FDS) is composed of 3 Smart Multifunction Displays (MFD) providing state-of-the-art quality and precision imaging of flight parameters, as well as mission equipment from a moving map functionality to a High Definition (HD) Electro Optical System.
The pilot display offers all the flight, navigation and vehicle relevant data while the remaining displays are configurable for flight, vehicle or mission data. All Active-Matrix Liquid Crystal Displays (AMLCD) feature perfect readability from any angle and in any light condition.

With the Helionix suite, the flight crew will experience:

- Enhanced pilot assistance thanks to the most advanced 4-axis digital AFCS with innovative upper modes expanding the aircraft capabilities in low visibility conditions and over water, SAR, for both day and night missions
- Enhanced situation awareness with integrated Helicopter Terrain Awareness and Warning System (H-TAWS), Synthetic Vision System (SVS) and moving map as optional equipment
- Reduced pilot workload with innovative crew alerting concept such as the one hundred feet alert (required by EASA AIR-OPS) and Vehicle Management System (VMS)
- Reduced pilot workload with an intuitive Human Machine Interface (HMI)
- Unrivalled level of redundancy with all functions embedded in each MFD, dual duplex aircraft management computers and 3 Attitude and Heading Reference Sensors (AHRS), plus one Integrated Electronic Stand-by Instrument (IESI)
- Full Usage Monitoring System (UMS) included in the basic Helionix package
- A new concept for enhanced maintainability with user-friendly software management, failure codes recording and troubleshooting algorithm.

Avincis
Every mission matters

AIRBUS H145 - D3

The unique color coding, warning and information concept helps the pilot/s to collect all relevant parameters while suppressing presentation of non-relevant information. Additionally, the H145's unique First Limit Indicator (FLI) considerably simplifies engine and torque monitoring. The pilot/s workload is minimized thus allowing their attention to be concentrated on the mission.
In addition, the H145 digital avionics initialization procedures and self-test sequences are automatically performed in the background, minimizing the time to become airbone.

With the autopilot, the advanced rate command / attitude and heading hold mode and upper modes significantly enhance the capabilities for flight in Instrument Meteorological Conditions (IMC) and other degraded visual environments (e.g with night vision goggles).

NVG friendly & NVIS Certification

To increase mission capabilities and flight safety during night operations, the H145 can be fitted with NVG friendly cockpit and cabin layouts as well as NVG friendly exterior lighting.

Helicopters in an "NVG friendly" configuration are designed and built to not degrade the NVG image performance, by considering the design standards detailed hereafter:

- The internal lighting is designed and built to fulfill RTCA/DO-275 "Minimum Operational Performance Standard for Integrated Night Vision Imaging System Equipment".
- All NVIS equipment items installed (excluding BFE) are not degrading the NVG image performance or the NVG image performance degradation is kept within acceptable limits in NVG mode.
- The interior of the helicopter is kept in dark, matt colors, showing no or only little reflectance of radiation, not degrading the NVG image performance in NVG mode.
- An appropriate Day/Night/NVG switch is provided.
- The external lighting is designed and built to fulfill SAE-ARP 4392, "Lighting, Aircraft Exterior, Night Vision Imaging System (NVIS) Compatible", i. e. the NVG performance degradation caused by the external lighting system in NVG mode is kept within acceptable limits.

APPLICATIONS

The H145 offers different type of configurations for specific mission profiles such as:

- Emergency Medical Services - EMS
- Offshore Transportation
- Law Enforcement
- Aerial Work

Avincis
Every mission matters

AIRBUS H145 - D3

EMS/SAR

General the H145 is appropriate for the following missions:

- Light Helicopter Emergency Medical Service for rapid transport of the patient to the hospital
- Helicopter Emergency Medical Service (HEMS) for rapid transport of medical personnel and equipment to the scene and rapid transport of the patient to the hospital
- Helicopter Intensive Care Medical Service (HICAMS) for air ambulance transport of patients, doctors as well as organs from a hospital or a prepared site to a hospital

The H145 is particularly adapted to primary and secondary EMS missions. Due to its extremely low sound level, operation over cities and landing in the hospital area is supported. With its high set main rotor and Fenestron anti-torque-device easy loading and unloading of patients is provided even with rotors turning.
The two large rear clam-shell doors enable quick, easy and safe patient loading. The spacious and unobstructed cabin allows all the necessary medical life-saving treatment to patients during flight.
A fixed provisions package has been created for the H145 to prepare the helicopter for the installation of various EMS packages.

OFFSHORE/WINDMILL

The H145 offers exceptional reliability and performance parameters in extreme weather conditions.
An optimal level of safety in One Engine Inoperative (OEI) scenarios is provided by the powerful Safran Helicopter Engines Arriel 2E engines. Furthermore, the high-set main rotor and the Fenestron improve safety for the personnel on the platform.
The compact size allows the aircraft to land on very small platforms, while still carrying many passengers. The fixed landing gear facilitates landings on unprepared terrain.
The standard Offshore Transportation configuration features a seating layout for eight passengers.
To enhance the safety for over water flights a color weather radar, an emergency floatation system, an helicopter emergency egress lighting system as well as an automatic deployable ELT is proposed.
Additionally, an emergency floats system with integrated life rafts (DART - STC) can be installed.
Alternative seating arrangements can be selected for up to 10 passengers in the cabin.

Avincis
Every mission matters

AIRBUS H145 - D3

AERIAL WORK

The unobstructed cabin of the H145 is easily reconfigurable to maximize mission flexibility and the sliding and rear clam-shell doors optimize access to the cabin. The high-set main rotor and Fenestron anti-torque-device provide high safety, while loading and unloading passengers or cargo even when rotors are running.
The empty weight of the Aerial Work configuration, equipped with the provisions for cargo hook and external hoist, is intentionally kept low to maximize the payload for external and internal transport missions.
For further adaptation to specific mission needs, the configuration can be complemented with stretchers, provisions for bambi bucket and a variety of seating arrangements.

LAW ENFORCEMENT/PATROL

Thanks to its multi-mission flexibility the H145 can be configured to cover the wide range of law enforcement missions, ranging from observation and airborne surveillance, Search and Rescue (SAR) to passenger transport and deployment of specialized personnel to inaccessible places.

Thanks to its multi-mission flexibility the H145 can be configured to cover the wide range of law enforcement missions, ranging from observation and airborne surveillance, Search and Rescue (SAR) to passenger transport and deployment of specialized personnel to inaccessible places.

The Law Enforcement configuration in NVG layout is equipped with a powerful Trakka A800 searchlight, an external loudspeaker as well as a moving map system. The provisions for cargo hook, external hoist, external rope down operations and tactical radio are provided.

Depending on the required mission, additional mission packages and equipment can be installed such as the Star SAFIRE 380X-HD camera package (including video recorder, downlink, operator workstation), a variety of seating arrangements, cargo hook, external hoist and external rope down system detachable parts. Additional workstation options (e.g. a second monitor) and other camera packages are available on request.

Avincis
Every mission matters

AIRBUS H145 - D3

STANDARD SPECIFICATIONS

General

- Energy absorbing fuselage
- Tail boom with fixed horizontal stabilizer and vertical fin with faired-in Fenestron®
- Upper deck with fittings for main gearbox, engines,hydraulic and cooling system
- Cowlings for main transmission and engine
- Improved engine cowling heat protections
- Skid-type landing gear with skid protectors, capable of taking ground-handling wheels
- Long boarding steps, LH and RH
- Cold weather kit
- Built-in maintenance steps and grips
- Exterior painting (single color)

Cockpit, Cabin and Cargo Compatment

- One-level cabin and cargo compartment floor with integrated rails
- Two hinged cockpit doors with sliding window
- Map case in pilot´s door
- Two wide passenger sliding doors with window of push-out type
- Two rear hinged clam-shell doors
- Longitudinally adjustable energy absorbing pilot and copilot seats with head rest and 4-point safety belts with automatic locking system
- Cabin & cockpit boarding grips (LH and RH)
- Flight controls (pilot side)
- Covers for copilot collective lever, cyclic stick and pedals
- Single pilot instrument panel with glare shield
- Interior paneling
- Ram-air and electrical ventilating system for cockpit and cabin
- Bleed air heating system
- Ventilation for avionics deck
- Helmet holder in the cockpit, rotatable
- Portable fire extinguisher
- Stowage net for first aid kit at the LH rear clam-shell door
- 2 flashlights (torches)
- Slant console
- Center console
- Windscreen wiper for pilot and copilot
- Door open warning
- Pilot ‘s and copilot‘s collective control guard

Avincis
Every mission matters

AIRBUS H145 - D3

STANDARD SPECIFICATIONS

Instruments

- Flight Display Subsystem (FDS) composed of 2 smart multifunction displays (6 x 8 inch) providing the following functions:
  - Flight Navigation Display (FND) format (incl. PFD, FLI, Master list, NAV, RPM, mast moment & fuel indication)
  - Vehicle Monitoring System (VMS) format (incl. engine, gearbox, hydraulic, fuel, electrical system, RPM and clock indication)
- Vehicle Management System (VMS) including:
  - 2 duplex Aircraft Management Computer (AMC)
- Reference sensors:
  - 3 Attitude and Heading Reference Systems (AHRS)
  - 2 Air Data sensors (electrically heated pitot tube and static port)
  - 2 Three Axis Magnetometers (TAM)

Stand-by instruments:

- Integrated Electronic Standby Instrument (IESI)
- Stand-by compass
- Usage Monitoring System (UMS)
- Flight Data Continuous Recorder (FDCR)
- „One hundred feet“ alert
- Directional Gyro Free Steering Mode

- Warning unit:
  - Engine fire warning with fuel emergency shut-off
  - Warning lights
  - Fire extinguishing system warning
- Cockpit Control Panel (CCP) for FDS
- Wireless Airborne Communication Server (wACS)
- Engine switch panel:
  - Digital engine control (FADEC)
  - Radar altimeter

Avincis
Every mission matters

AIRBUS H145 - D3

STANDARD SPECIFICATIONS

Power Plant

- Two Safran Helicopter Engines ARRIEL 2E turbine engines with electronic engine control (double channel FADEC)
- Crash resistant fuel system with a flexible bladder-type fuel main tank and supply tank (split into two sections)
- Two independent oil cooling and lubrication systems of the engines
- Fire detection and extinguishing system
- Chip detectors with quick-disconnect plugs
- Twin-engine OEI-training mode
- Automatically controlled variable rotor speed system
- Cycle counter
- Drain system
- Fire walls

Transmission System

- Main transmission including an independent redundant lubrication system and monitoring sensors
- Chip detector system with quick-disconnect plug (main transmission)
- Free wheel assemblies in the engine input drives
- Rotor brake system
- Tail rotor transmission system with splash lubrication and oil level sight gauge
- Chip detector system with quick-disconnect plug (tail rotor gearbox)

Rotor and Flight Controls

- Bearingless Main Rotor system (BMR), consisting of:
  - Rotor head / mast in one piece
  - Five glass and carbon fiber reinforced blades with erosion protection strip, control cuff, Detachable outer blade, elastomeric lead-lag dampers
- Fenestron®-type tail rotor with ten composite blades (asymmetric blade spacing) and stator
- Tail rotor gearbox cover
- Basic provisions for an easy integration of a track and balance system
- Dual hydraulic boost system for cyclic and collective blade control of the main rotor

Avincis
Every mission matters

AIRBUS H145 - D3

STANDARD SPECIFICATIONS

- Electrical hydraulic pump for main rotor
- Tail rotor control system with flexball cable and dual hydraulic booster
- Main rotor blade tip painting (yellow)
- Vector Mast Moment System (VMMS)
- Dual Duplex 4-axis Digital Automatic Flight Control System including upper modes

Electrical Installation

- Power generation system:
  - Two starter/generators (2 x 200 A, 28 VDC)
  - Nickel-Cadmium battery, (24 VDC, 40 Ah)
  - External power connector (STANAG 3302)
- Power distribution system:
  - Two main busbars
  - Two essential busbars
  - Two shedding busbars
  - Two non-essential busbars (80 A) for optional equipment only
- Battery bus
  - One utility receptacle in RH side of cargo compartment (28 VDC, 20 A)
- DC power control
- Two avionic master switches
- Headset electrical power supply (28 VDC)
- Lighting:
  - Dual color anti-collision warning light (red flashing) with integrated white strobe light (400 Cd), LED
  - Fixed landing light, LED
  - Three position lights (red, green, white), LED
  - Adjustable instrument lighting
  - One utility light in the cockpit, LED
  - Lights in the cabin and cargo compartment
  - Boarding illumination
  - Emergency lights

Avincis
Every mission matters

AIRBUS H145 - D3

EMS CONFIGURATION

The helicopter H145 is able to install a wide range of H145 EMS solutions and missions' concepts, certified as STC by the world-leading EMS equipment suppliers. The EMS kits are grouped according to the type of mission: Primary Mission and Secondary Mission.
The H145 Helicopter Emergency Medical Service (HEMS) kit concepts, including state of the art medical devices, are based on a modular concept with various components for primary and secondary missions.
The EMS interior is designed to give maximum space and comfort to the medical crew and patient. The single patient EMS configuration allows full body access. The installation of different medical devices is possible thanks to available power and gas supply. The medical floor has an integrated, easy-to-clean drainage system for handling the fluids and spills, thus preventing corrosion.

H145 fixed provisions

The H145, which has established itself as the reference EMS missions helicopter, offers the option of EMS fixed provisions as „plug-and-play" interface for EMS equipment. The EMS fixed provisions have been developed together with EMS suppliers and integrators in order to provide a standardized interface for customized EMS equipment.
The standardized interface includes electrical and mechanical provisions to minimize the installation effort for the EMS equipment.
One example for the provisions is a trunk underneath the floor, where space is reserved for EMS power distribution/converters or other equipment, including the possibility for passive or active cooling.
The result is a harmonized, straight-forward assembly concept combined with an effective way for the installation of highly customized EMS equipment.

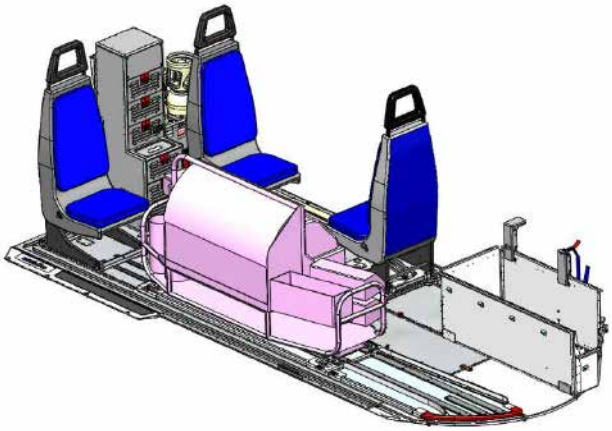
Example of Hems Interior Configuration

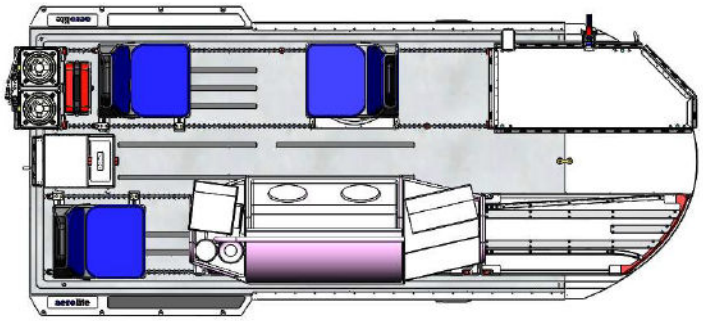
- Full covering flat metallic integral floor system with integrated seat tracks and drain system
- Comfort "Cirrus" stretcher, Series CI-2030, adjustable backrest, 4-point harness, leg belt
- Copilot medical seat, 360-degree swivelling/tracking, Aft facing, LH, fits to aft extended copilot seat tracks
- 360-degree swivelling/tracking, Fwd & Aft facing, RH, fits to cabin seat tracks, quick release (2 pcs.)
- Medical cabinet unit (3 small, 1 medium and 1 large drawer), quick release
- Container unit (Large container RH aft, attached to the cabin seat tracks)
- Door box kit (Box attached to the RH clam shell door)
- Misc. pouch set (Several conveniently placed pouches to the interior panelling)
- Adjustable equipment rack at cabin wall LH side. Upper part equipped with a main EMS control panel
- LH overhead equipment rack (Attachment provisions for medical devices)
- Medical device retainer basic set (4 pcs.)
- Retainer for portable hospital type oxygen bottles. Capacity: up to 3,000 lt oxygen
- DC/AC-power system 50 Amp
- AC shore power (on ground)
- Standard medical lighting system, NVG compatible

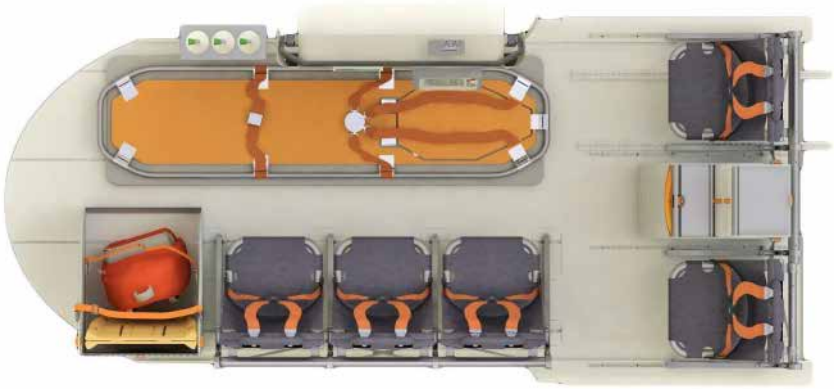
Avincis
Every mission matters

AIRBUS H145 - D3

COMMON HELICOPTER EQUIPMENT FOR HEMS CONFIGURATION







Avincis
Every mission matters

AIRBUS H145 - D3

COMMON HELICOPTER EQUIPMENT FOR HEMS CONFIGURATION

- High visibility paint for main rotor blades
- Colour weather radar
- Hms
- H-TAWS
- Moving Map
- External multi-purpose camera
- Heels
- IRIDIUM satellite phone
- Flight Cell
- Tactical Radios
- Wire strike protection system
- Snow skids
- Settling protectors
- External hoist
- Cargo hook mirrors
- Dual cargo hook system
- External loudspeaker system with siren
- Landing & search light 400/200 W, NVG compatible
- Emergency float
- Separation curtain for cockpit
- High-density seating, 9 seats - Simula (STC)
- Multi-purpose fittings in cabin