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LEONARDO AW169

Specifications

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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.

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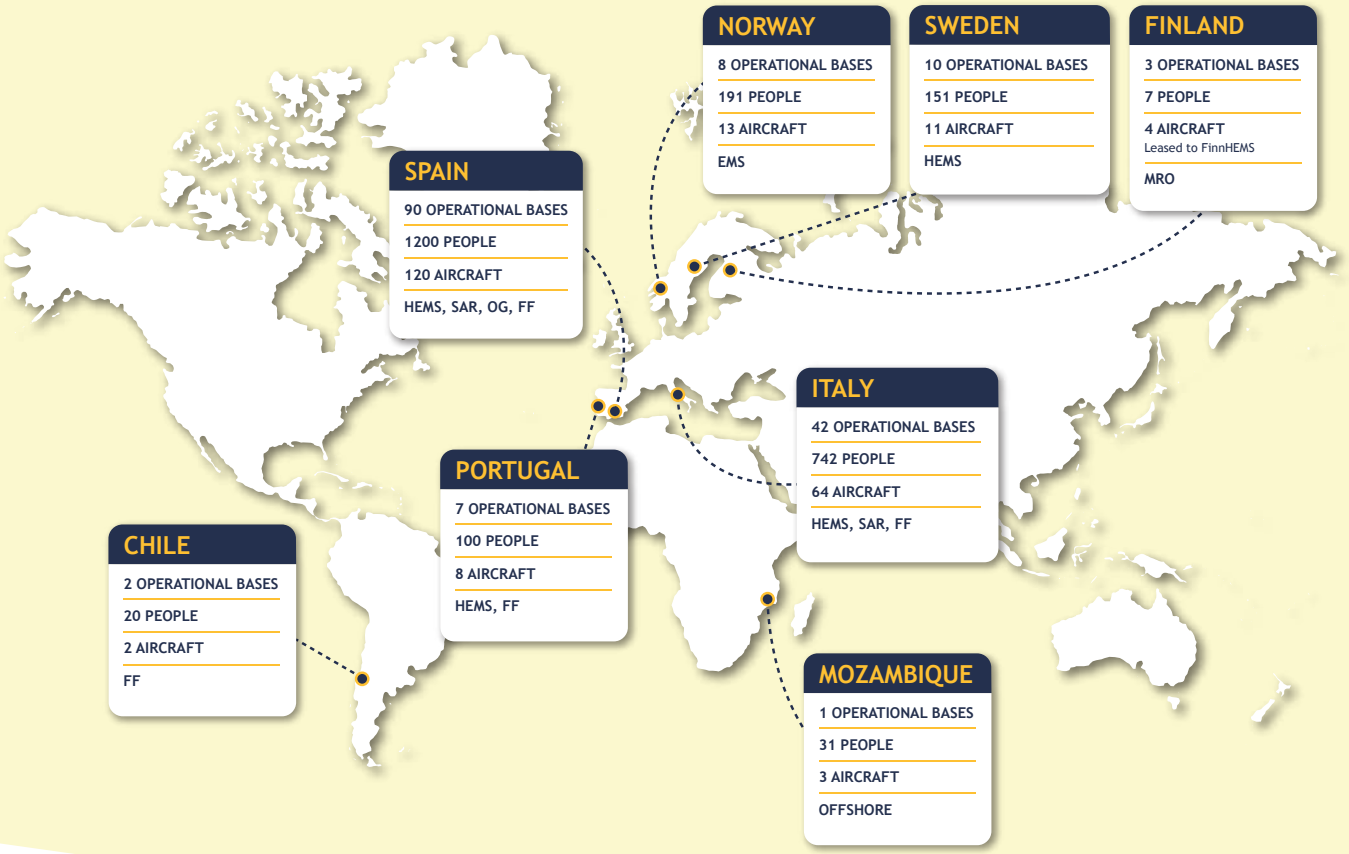
OUR NETWORK

55,000

WE COMPLETE APPROXIMATELY
55,000 LIFESAVING MISSIONS A YEAR

73,000

WE FLY APPROXIMATELY
73,000 HOURS A YEAR



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LEONARDO AW169

OEM
LEONARDO

TYPE
AW169

VARIANT
AW169

TYPE
Rotary-Wing

CLASS
Light-intermediate

NUMBER IN FLEET
14

MISSION PROFILE TYPE
Hems - Helicopter Emergency Medical Service

ENGINE TYPE
2 x Pratt & Whitney Canada PW210/A

STANDARD FUEL TANK CAPACITY
904 Kg

CRUISE SPEED
256 Km/h

AGE
2015 - 9 YEARS
(first type certification)
2019 - SE-JSK - 5 years

MAXIMUM TAKE-OFF WEIGHT (MTOW)
4.800 Kg

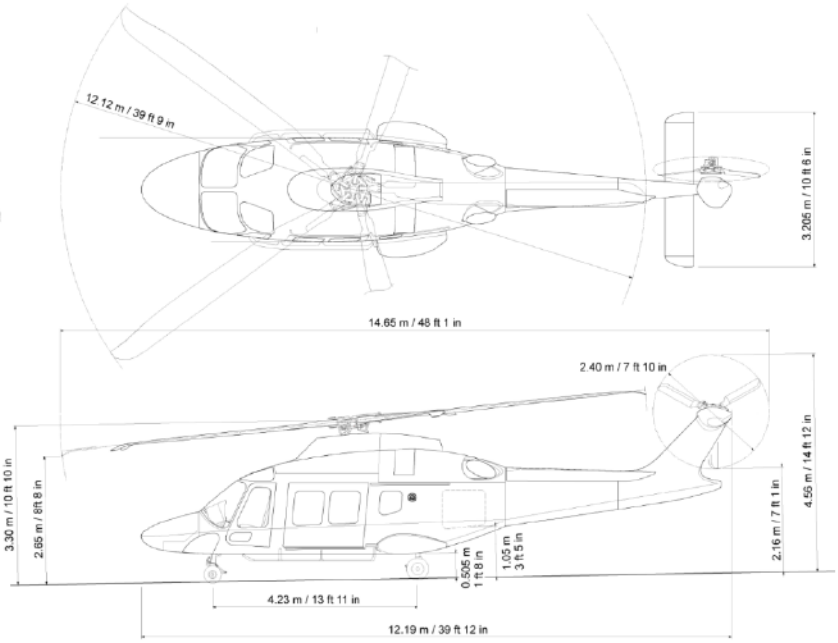
EMPTY WEIGHT, EMS EQUIPPED
3270 Kg fully EMS equipped

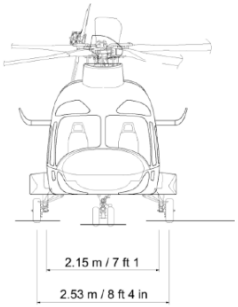
MAXIMUM RANGE, STANDARD TANKS
695 Km (no reserve considered)

MAXIMUM HOOK LOAD
1500 Kg

GENERAL FEATURES

MAIN DIMENSIONS





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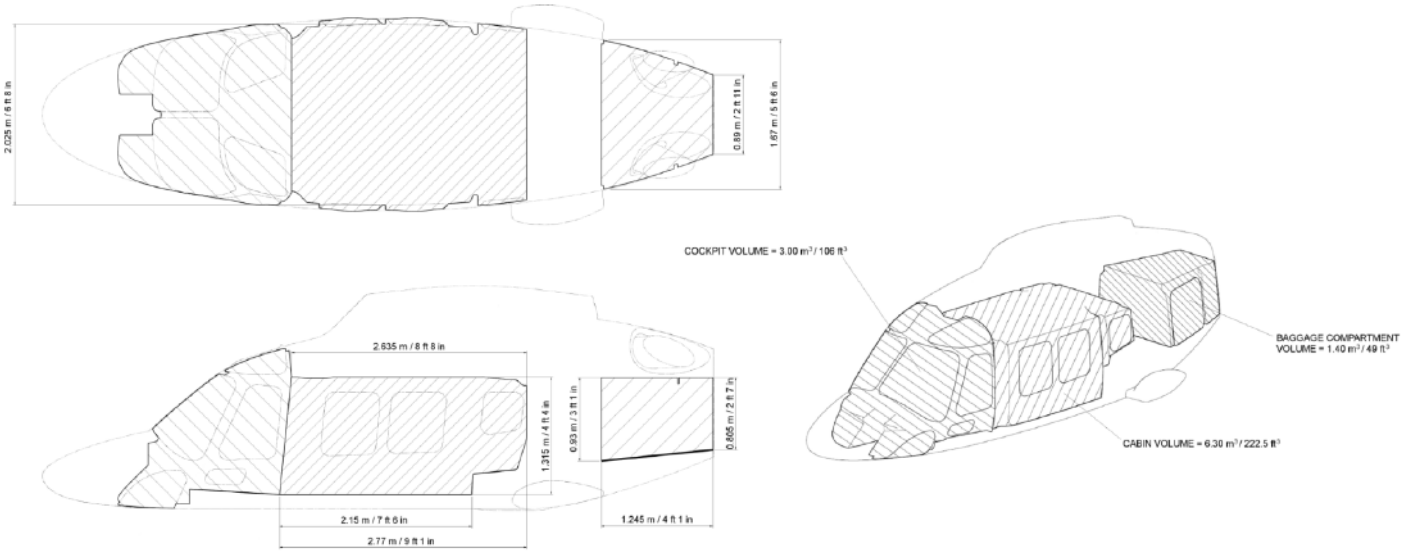
GENERAL FEATURES

CABIN MAIN DIMENSIONS



GENERAL

- The AW169 is a new twin-engine helicopter type designed to meet the market request for a versatile and multirole 4-tonne class transport category rotorcraft. Engineered to satisfy the operational and mission requirements of the most demanding missions, the AW169 employs new technologies to achieve unique adaptability across multiple applications.
- Mixed construction crashworthy fuselage: aluminium for main loads path frames and subfloor, composite for cockpit, main cabin sides, rear fuselage, tail boom and external skins. Tail boom is removable and physically separated from the cabin and joined in shear with a minimum number of bolts.
- Five bladed fully articulated main rotor with fluido-elastic inter-blades rotational dampers and three bladed fully articulated tail rotor with elastomeric dampers.
- Robust, energy absorbing tricycle landing gear for ground operations

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GENERAL

- Two powerful engines, PW210/A with dual channel digital FADEC system, capable of operating in APU mode and to run from 96% to 103% of nominal RPM. The helicopter is equipped with an Automated Variable Speed Rotor (AVSR) which automatically varies the rotor RPM as a function of speed and altitude to optimize performance and fuel consumption in any situation.
- Fully integrated avionics system with three 10”x 8”colour Active Matrix Liquid Crystal Displays (AMLCDs), a 4-axis dual-duplex Automatic Flight Control System (AFCS), HTAWS and an integrated redundant Aircraft Management and Monitoring System with HUMS function.
- Low pilot workload in all flight conditions thanks to the design characteristics and cockpit management aids and ergonomic. The cockpit is also designed to provide outstanding external visibility in all flying conditions.
- Easily reconfigurable cabin for mission flexibility. Up to 10 passengers seating capacity in a large and unobstructed cabin (6.3 m^3). The cabin is characterized by the flat floor and ceiling providing a constant height throughout the whole cabin volume allowing the maximum comfort in any position and situation. The AW169 is also equipped with a roomy separate baggage compartment of 1.4 m^3.
- Cockpit and cabin heating and ventilation system plus the possibility to install optional full environmental control system. Among the innovative features of this system is the possibility to control independently the temperatures in cabin and in cockpit (dual zone control) through an intuitive interface based on touch screen displays.

ADVANCED FEATURES

AVIONICS

- The AW169 benefits from the extensive maturity and experience accumulated with the other products of the Leonardo Helicopters Family as numerous avionics features and components are shared through the C3 (Common Cockpit Concept) design philosophy.
- The most modern single/dual pilot VFR/IFR day/night integrated navigation suite in its class, with ADS-B Out and based on integrated dual Flight Management System (FMS), dual duplex 4-axis autopilot and dual GPS with precision satellite navigation capacity (SBAS/WAAS) granting LPV approaches.
- The open architecture is flexible and suitable for integration of customer requested equipment and evolutions of navigation technologies
- The Glass Cockpit based on three 8’x10’ screens incorporate the largest displays solution available today in civil certified helicopters (providing 65% more area for pilot information, if compared to typical 6’x8’ displays).
- The screens allow all relevant flight information to be displayed on PFDs, devoting the MFD to mission specific information such as FLIR, moving map etc. The MFD screen can also split into four separate areas and show images with Picture in Picture (PIP) capability.
- The most advanced and pilot friendly Human Machine Interface, integrating situational awareness information on cockpit displays (Radar, TCAS II, Synthetic Vision, HTAWS, etc); displaying simplified Primary Vehicle Indications (just limited to NF/NR indications and Power Index that includes First Limit Indicator) and integrating management of radio Navigation and mission equipment through Enhanced Control Display Units (ECDUs) based on touch screen technology.

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Engine 30 minutes TOP rating

- Designed to be a powerful and reliable workhorse, the AW169 can maintain the Take-off Rating (TOP), that is the highest rating available under regular conditions, for up to 30 minutes.
- Operations requiring extended period in hovering, such as hoisting, lifting of loads and Search and Rescue activities will greatly benefit from this capability.

Transmission Run-Dry 33 minutes

- Based on the renowned AW heritage and design capability, an evolution of the AW139 and AW189 design has been applied to the AW169 allowing the engineering, proof, test and certification of a 33 minute run-dry capable transmission.
- Clear indications are provided to the pilots in the RFM, stating that the run-dry capacity of 33 minutes is achieved when torque is equal or below 55%. This means flying at cruise speed exceeding 100 knots at MTOW for typical operational altitudes.

Latest Generation Capabilities

The AW169 features a full On-Board RNP Performance and Monitoring Alerting, Advisory/Approved Vertical Guidance in Terminal area and Approach phase with Automatic Deceleration at Missed Approach Point for any FMS approach. The navigation suite is certified for ARNP and RNP 0.3 “all phases of flight” navigation, Non-Precision Approaches (NPA), GPS and RNP APCH approaches with LNAV, LNAV/VNAV, LP/LPV and RNP (AR) minima, Point in Space (PinS) approach and departure and Radius to Fix leg capability in Terminal and Approach procedures.

The AW169 will be able to perform GAST-C GLS precision approach thanks to the Ground Based Augmentation System (GBAS); this system, embedded in the FMS, augments the existing GNSS to improve its accuracy and provide integrity to navigational position. The system allows the pilot to use CAT-I GBAS approach down to a minimum decision height of 200 ft above the ground.

Ditching capability

The optional Automatic Float Deployment System (AFDS), designed in accordance with JAR/FAR 29.801, is activated by water electronic sensor switches on ditching via squib valves, and provides floatation capability for the helicopter demonstrated and approved up to Sea State 6.

Safety and capacities without compromises

Systems such as ADS-B Out, HUMS, Flight Data Monitoring (FDM), Helicopter Terrain Avoidance & Warning System (HTAWS), CVR/FDR, ELT and Synthetic Vision System (SVS) are part of the baseline configuration showing no compromises in the application of latest technologies to enhance safety and operational capacities.

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Touch Screens

The AW169 flight deck has been fitted with two latest technology wide touchscreens that allow pilots to intuitively control and interact with different helicopter subsystems and functionalities including, but not limited to:

- VHF frequencies
- Transponder settings
- ADF and NAV
- Electrical system, including interaction with virtual circuit breaker panel
- Fuel system
- Air conditioning system, including independent cockpit and cabin temperature and fan speed setting
- Hydraulic system
- Internal & External light management
- Kits management
- Flight Management System functionalities
- Aircraft Management System including Weight and Balance and HUMS management pages.

APU mode

The "APU mode" unique feature allows to power avionics, electrical system, hydraulics, environmental control systems and cabin equipment (i.e. electromedical, laptops etc) while on ground with rotors stopped, without using helicopter batteries.

The left engine can be declutched and effectively used as a dedicated APU, without impacting on the engine lifetime or cycles.

Passengers comfort is maximized increasing public acceptance when the helicopter stops in populated areas, since better fuel efficiency is achieved eliminating rotor noise and downwash on ground. The system is fully automatic and can be enabled by pilots using simple switches.

HUMS & FDM

HUMS and FDM systems are basic features on the AW169; The user-friendly interface for data download is provided through the Heliwise™ platform.

Different download modes, including hot download (with engines on), are available to fit different operational requirements and constraints. Data acquisition is managed through intuitive interface on the touch screen displays.

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APPLICATIONS

Designed to be durable and affordable, the AW169 is suitable for several different operations, thanks to its large and accessible cabin, high performance, advanced avionics and a large selection of dedicated role equipment.

EMS/SAR

Suited to both primary and secondary EMS missions, the AW169 can accommodate one or two stretchers, either longitudinally or transversally, facilitating also operations where in-flight recovery of stretchered patients is required. The cabin can also accommodate wheeled stretchers and can be configured with a full suite of advanced life support equipment. Long range maritime SAR missions are enabled by a flexible fuel tank design.

OFFSHORE/WINDMILL

The AW169 can carry 2 pilots and up to 8/10 passengers in the main cabin, all on individual crashworthy seats. Extensive cabin space and low levels of noise and vibration ensure high comfort standards. Full safety provisions such as floatation system (up to sea state 6) and external life rafts together with easy egress make the AW169 a suitable platform also for overwater and offshore operations.

Taking advantage of the considerable single engine performance, with more than the 96% of the MTOW retained in OEI conditions (2’30”) thanks to the unique combination of engine, transmission and high efficiency rotor design, the AW169 is the helicopter of choice for windfarm maintenance operations.

UTILITY

The AW169 can also perform a variety of other utility roles for both commercial and government users worldwide. With a large quickly reconfigurable cabin and a heavy-duty cargo hook, the number of applications for which the AW169 can be employed is virtually unlimited. Large-size tyres and high ground clearance facilitate operations also on unprepared, soft terrain. Advanced performance and mission avionics make the AW169 the perfect choice for sophisticated observation and reconnaissance/patrol roles.

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STANDARD SPECIFICATIONS

- Airframe
- Airframe structure including nose radome, cockpit, main cabin with flat floor and baggage compartment, tail boom, vertical fin, horizontal stabilizers, fuel tank housing
- Attachments for main gearbox and engines
- Upper deck cowlings
- Landing gear attachments
- Heated Pitot tubes (2)
- Forced fan ventilation
- Bleed air heater and defroster with air noise suppression
- Cockpit air adjustable outlets
- Cockpit instrument panel, overhead panel and interseat console
- Cockpit Windshields
- Pilot and co-pilot windshield wipers
- Overhead cockpit windows
- Lower cockpit windows
- Lockable pilot doors with emergency exit windows and “storm window” on pilot side
- Lower pilot/co-pilot doors windows
- Lockable plug in sliding doors (2) for passengers’ cabin access with four emergency exit windows
- Baggage compartment (one door-access from left hand side)
- Baggage compartment cargo tie-down fittings
- Lockable baggage compartment door

Landing Gear

- Wheeled fixed tricycle landing gear with two wheels on nose gear, one wheel with brakes on main landing gears and mooring rings

Rotors and Controls

- Main Rotor System with composite blades
- Tail Rotor System with composite blades
- Rotating M/R and T/R flight controls
- Pilot fixed flight controls (cyclic, collective, anti-torque pedals)
- Copilot fixed flight controls (cyclic, collective, anti-torque pedals)
- Force trim system
- Four parallel actuators (4-axis autopilot)

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STANDARD SPECIFICATIONS

Power Plant and Fuel System

- Two Pratt & Whitney Canada 210A turboshaft engines
- APU mode on left hand side engine
- Two anti-icing fuel systems and two magnetic chip detectors (one per engine)
- Two independent dual-channel FADEC systems (one per engine)
- Engines Control Panel
- Engine bay group (engine mounts, firewalls, cowlings, drains, exhausts)
- Fire detection system
- Fire extinguisher system
- Fire Detection and Extinguisher Control Panel (1)
- Crashworthy fuel cells
- Filler port for gravity refuelling (on left hand side)
- Fuel quantity gauging system

Transmission drive system and hydraulic system

- Main transmission gearbox with two direct drive engine inputs, lubrication system with oil ducts integrated in the casing and oil cooling system
- Three main transmission chip detectors/debris collectors with burning capability
- Intermediate gearbox with sight gauge and magnetic drain plug/chip detector with burning capability
- Tail gearbox with sight gauge and magnetic drain plug/chip detector with burning capability
- Dual independent, redundant hydraulic system
- Two hydraulic Power Control Modules (PCMs)
- Two main transmission driven hydraulic mechanical pumps for controls and wheel brake actuation
- Three Main Rotor dual servo actuators
- One Tail Rotor dual servo actuator
- One Tail Rotor actuator shut off valve

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STANDARD SPECIFICATIONS

Electrical Systems

- DC primary power generation system: 28 V DC provided by two independent 300 A starter generators
- One heavy duty battery (33 Ah)
- One auxiliary battery (13 Ah)
- 28 V DC External Power Receptacle
- DC Power Distribution System (including bus bars, circuit breaker panels and controls)

Lighting System

- Internal Lighting
- Instrument cockpit panel lighting
- Inter seat cockpit console lighting
- Overhead cockpit console lighting
- Cockpit dome light (1)
- Cockpit utility Light (2)
- Cockpit storm lights (2)
- Baggage compartment light
- External Lighting
- Anti-collision light (1)
- Navigation lights (red, white, green)
- Retractable swivelling Landing / taxiing lights (2)
- External emergency lights (2)
- External lights Night Vision Goggles friendly

Standard Avionics Package

- Cockpit Display System (CDS)
- Three Rockwell Collins Display Units 10” X 8” colour AMLCD with LED backlight and NVIS compatibility: 2 Primary Flight Displays (PFD) and 1 Multi-Function Display (MFD)
- One Integrated Standby Instrument System (ISIS)
- Two Display Control Panels (DCP)
- Two Cursor Control Devices (CCD)
- One Reversionary Control Panel (RCP)
- One Display Dimming Panel
- Two Master Caution Lights (MCL)
- Two Master Warning Lights (MWL)
- Two Avionics Full Duplex Ethernet (AFDX) switches

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STANDARD SPECIFICATIONS

Electrical Systems

- Aircraft Monitoring and Management System (AMMS)
- Two Aircraft Monitoring & Management Computers (AMMC)
- One Data Transfer Device (DTD)
- Two touch screen control panels
- Four Axis Automatic Flight Control System (AFCS)
- Flight Control Computer (FCC)
- One Flight Control System (FCS) Control Panel
- Radio Comm and Navigation System
- Two VHF-AM radios
- Two NAV (VOR/ILS/MB) receivers
- One DME
- One Transponder with Enhanced Surveillance Mode (Mode S)
- First SBAS GNSS (GPS)
- Second SBAS GNSS (GPS)
- Interphone Communication System
- Two Audio Control Panels (Pilot and Co-pilot stations)
- One Audio Management Unit interfacing external transceivers
- One Passenger Intercom Amplifier
- Primary Flight Instruments
- Two flux valves
- Two Air Data and Altitude Heading Reference Systems
- One Radar Altimeter
- Pilot Clock integrated in the display
- Co-Pilot Clock integrated in the display
- One Standby magnetic Compass

Interior

- Cockpit compartment utility finishing interior
- Cockpit panel sun-glare shields
- Pilot/ Co-pilot crashworthy adjustable seats (with inertial reels and separate 5 points safety belts)
- 28V DC / 10A cockpit/cabin utility power socket
- Baggage compartment utility finishing interior rear tail separation
- Baggage smoke sensor
- Pilot / copilot headsets
- Cockpit Door Pockets
- Pilot / Co-pilot headset holders
- Cockpit Access Handles

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STANDARD SPECIFICATIONS

Additional Baseline Equipment

- Steps for cockpit / cabin access
- Rotor brake system
- Second radar altimeter
- One solid state Cockpit and Voice Flight Data Recorder with provision for image recording and 90 days ULB battery (as per AIR OPS)
- One Emergency Locator Transmitter (ELT – 3 frequencies) (fixed)
- Overhead cockpit windows sunshades
- First aid kit (as per AIR OPS)
- One cockpit and one cabin fire extinguisher (as per AIR OPS)
- USB Interseat Console Socket
- Maritime and Corrosion Protection
- AW169 Enhanced Performance Pack

Additional navigation and fleet management systems / capabilities

- ADS-B Out (Automatic Dependent Surveillance – Broadcast) with provision for TCAS II
- Health and Usage Monitoring System (HUMS)
- Flight Data Monitoring system (FDM)
- Helicopter Terrain Avoidance and Warning System (HTAWS)
- Synthetic Vision System (SVS)
- RNP Approach with LPV/LP minima
- “RNP 0.3 navigation in all phases of flight ” FMS capability
- TCAS II

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EMS CONFIGURATION

The AW169 offers the maximum mission flexibility providing the best combination of patient care and mission effectiveness on the market. Different interiors are available to cope with the country specific clinical standards and operational scenarios. Thanks to the inherent flexibility of the cabin further bespoke solutions can be studied and developed upon customer requirement.

EMS Standard Interior

- EMS Rigid liners
- Passenger cabin ambient LED lights, PSU with reading lights and ventilation outlets, emergency lights, emergence exit signs, passenger advisory lights (safety belt chimes) and Passenger Addressing Loudspeakers.
- EMS Soundproofing
- Ceiling Tracks
- Multirole floor (EMS)
- Oxygen System in cabin (Oxygen bottles excluded)
- EMS Standard Electrical System
- Patient Lights
- EMS Storage cabinet in lieu of RH rear window
- EMS furnishing rack in rear cabin bay Right Side
- Medical Rack
- Foldable stretcher (185 x 45 cm)
- Crashworthy Foldable passenger seat (Qty. 4)
- ICS Configuration "EMS 235"
- Comprises 2 control panels, 3 crew headset plugs and 5 passenger headset plugs.
- Sliding loading platform for transversal stretcher
- Crashworthy seat in the rear cabin bay
- Internal vertical tracks and grab handle (RH Side)
- Soft separation wall quick removable, NVG compatible
- Sliding door fastener mechanism

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'EMS / SAR' HELICOPTER RECOMMENDED PACKAGE

- Enhanced Utility Active Vibration Absorber
- Co-pilot hinged window (storm window)
- Approach plates chart holders with lights for pilot and co-pilot (USB power outlet included)
- Moving map
- Weather Radar Rockwell Collins RTA-4112 MultiScan - Provision
- Weather Radar Rockwell Collins RTA-4112 MultiScan - Removable
- Increased Gross Weight (4800 kg MTOW)
- Baggage compartment extension
- Camera on the tail fin
- Rescue hoist - Single type Goodrich - Provision
- Includes RH step protection and Auxiliary cabin door handle
- Rescue hoist - Single type Goodrich - Removable
- Wireless Communication Polycon Next Generation
- Cable Cutter
- Strobe lights
- OEI Fuel transfer system
- Internal Roof Hooks
- Cockpit NVG lighting compatibility
- Main rotor high visibility painting