



LEONARDO HELICOPTERS

# AW159

 **LEONARDO**

AW<sup>159</sup>

MULTI-MISSION  
MARITIME AND LAND  
HELICOPTER





# THE FORCE MULTIPLIER

AW159 is the latest-generation multi-mission helicopter, capable of Constabulary Operations to high-end war-fighting missions, delivering unparalleled tactical capability in a compact and robust air vehicle. As an evolution of the highly successful Lynx helicopter, the AW159 delivers new technology and capability to the operational battlespace, developed from customer operational experience across both Maritime and Land domains.

Technologically advanced, with fully integrated avionics, mission and weapon systems. Through a Tactical Processor (TP), the Avionic Management System (AMS) enables rapid and efficient collection and processing of tactical information, providing excellent environmental situational awareness and tactical advantage to the crew.

The combination of class leading performance and state-of-the-art mission systems, delivers an adaptable, agile and highly efficient platform. The twin engine AW159 is designed for day and night single pilot operations.

The Network Enabled AW159 integrates into the modern digital battlespace, with capability to deliver both tactical data and full motion video into a Force operational picture. The AW159 platform delivers a day or night multi-domain autonomous Find, Fix and Strike capability, with a comprehensive weapons suite to engage adversaries at stand-off ranges.



## AW159 KEY FEATURES

### AIRFRAME & UNDERCARRIAGE

- 15g downward and 10g forward crashworthy airframe structure
- 12,000 hr fatigue life fully marinised airframe
- Faceted tail and nose design to reduce radar signature
- Large cockpit and cabin doors for ease of ingress / egress
- Fixed Tricycle configuration with 3.5m/s vertical descent capability
- Castoring / trailing nose wheel

### ENGINES & FUEL SYSTEM

- Two 1,361shp Turboshift engines with FADEC and inlet particle separators
- Engine Infra-Red Suppression Exhaust
- Five (5) tank fuel system
- Single point pressure refuel / defuel system

### TRANSMISSION & ROTOR

- Main Gearbox 30 min run dry capability
- Integrated accessory gearbox provides "APU mode" for operation of services
- Semi rigid main and fully articulated tail rotor design providing high agility handling at low level

### AVIONICS

- Fully Integrated glass cockpit with four 10" x 8" Integrated Display Units
- Four axis Digital Automatic Flight Control System (DAFCS) providing 'hands off' flight and 'wings level' safety features.
- Dual Redundant Aircraft Management System with Flight Management System providing tactical navigation capability
- Integrated Tactical Processor with mission recorder and digital map capability
- Health & Usage Monitoring System (HUMS)
- Cockpit voice / flight data recorder

### NAVIGATION

- Fully integrated Navigation Systems designed to provide high accuracy navigation solution with inherent redundancy for navigation data
- VOR / ILS Civil Radio navigation aids provide the capability to operate in controlled airspace environments

### COMMUNICATION SYSTEM

- Integrated intercom,
- Dual Multi-band V / UHF radios with VHF tactical capability

### IDENTIFICATION

- Identification Friend or Foe (IFF) with Mode S





ADDITIONAL EQUIPMENT

A wide range of mission and additional role equipment can be installed on the AW159, further enhancing the operational effectiveness of the helicopter. This includes, but is not limited to the following:

AIR VEHICLE

- Flotation System for maritime operations
- Deck Lock (Harpoon) for improved security during embarked maritime operations

AVIONICS

- Traffic Avoidance System (TAS)
- Tactical Air Navigation (TACAN) System
- Communications:
  - High Frequency Radio, SATCOM
  - Tactical Radios (Operator specific)
  - Tactical Data Link (TDL)
  - Video Down Link

MISSION KITS

- Maritime Surveillance / ISR Kit: AESA 360° Multi-Mode Surveillance Radar with integrated Automatic Identification System (AIS)
- Electro Optical Device (EOD) with optional Laser Payloads
- Scalable Integrated Defensive Aids Suite: RWR/ESM, MWS, LWR, Countermeasures Dispensing System
- Anti-Submarine Warfare (ASW) Kit: Active Dipping Sonar (ADS) and / or Sonobuoy Dispensing / Processing
- Search and Rescue Kit: Rescue hoist, Waterproof floor

MISSION EQUIPMENT

- Weapons Systems:
  - Anti-Ship and Anti-Armour Guided Missiles, Torpedo, Machine Guns

ADDITIONAL EQUIPMENT

- Co-Pilot Flying Controls
- Crashworthy Seating: Cockpit and Cabin Crew Seat, Troop Seating
- Fast Roping / Rappelling provisions
- Cargo door footsteps
- Internal Auxiliary Fuel Tank
- Armoured Cockpit Seating
- 1360 kg Cargo Hook
- Helicopter in Flight Refuelling (HIFR)
- Multi-seat Life Raft



AW159 CHARACTERISTICS

<b>Weight</b>		
Max Gross Weight	6,050 kg	13,338 lb

<b>Engine Ratings (2 x turbo shaft engines)</b>		
Take-off power (5 min)	2 x 1,014 kW	2 x 1,361 shp
Max Continuous Power (MCP)	2 x 955 kW	2 x 1,280 shp
OEI 2 minute rating <sup>1</sup>	1 x 1,108 kW	1 x 1,484 shp
OEI continuous rating	1 x 1,014 kW	1 x 1,361 shp

<b>Transmission Ratings</b>		
Max Continuous Power (MCP)	1,604 kW	2,151 shp
Inter Contingency OEI	938 kW	1,258 shp
Max Contingency OEI	1,016 kW	1,363 shp

<b>Fuel Capacity</b>		
Standard Internal Fuel Tanks	798 kg	262 USG
Internal Auxiliary Fuel Tanks are available		

<b>Seating</b>		
Crew	1 Pilot, 1 Co-pilot/TACCO	
Passenger Seating	Up to 6 crashworthy seats	

<b>Dimensions</b>		
Length overall	15.24 m	50 ft 0 in
Length overall (MRH folded)	13.49 m	44 ft 3 in
Overall height	3.73 m	12 ft 3 in
Rotor diameter	12.80 m	42 ft 0 in

<b>All Engines Operating Performance (ISA, MGW)</b>		
Max Cruise Speed (ISA, MGW, SL, MCP)	264 kph	143 kt
Rate of climb (ISA, MGW, SL, MCP)	10 m/s	2,000 ft/min
Hovering IGE (ISA, MGW)	2,267 m	7,440 ft
Hovering OGE (ISA, MGW)	1,307 m	4,290 ft
Service Ceiling (density altitude)	3,657 m	12,000 ft
OEI max service ceiling	1,382 m	4,535 ft
Max Range (ISA, MGW, SL, MCP)	518 km	280 nm
Max Endurance (ISA, MGW, SL, MCP)	3 hours	

<sup>1</sup> OEI = One Engine Inoperative



## OPERATIONAL ADVANTAGES

Designed around state-of-the-art, fully integrated avionics and mission equipment, the AW159 delivers world leading collection, filtering and dissemination of tactical information. Systems integration through the Tactical Processor, cockpit Human Machine Interface (HMI), developed in conjunction with UK Military crews, affords the crew a rapid and efficient method of tactical plot compilation and appreciation, during an Intelligence, Surveillance and Reconnaissance (ISR) mission. Operational data can be disseminated within a Force via Tactical Data Link (TDL).

Future AW159 capability for Crewed Uncrewed Teaming (CUC-T) and Airborne Launched Effects (ALE) has been proven during UK MoD Operational Demonstrations.

## UNPRECEDENTED SAFETY

The design of the AW159 is focussed on safety and survivability, driven by operator demands to operate autonomously in adverse and contested operational environments. The Infra-Red engine exhaust suppression and faceted tail design reduce thermal and radar signatures of the helicopter, and extensive redundancy in structures, avionics and critical systems, combined with a proven 30 minute run-dry main gearbox capability, ensures the highest standards of safety.

Operational safety is enhanced when configured with a fully integrated Defensive Aids Suite (DAS).



## EASE OF MAINTENANCE

The AW159 is designed from concept for military maintenance when deployed at a forward operating base (FOB) or embarked on a naval combatant with minimum personnel and support equipment. An extensive fault analysis and diagnosis system is fully integrated within supporting electronic technical publications, thereby significantly reducing aircraft turn-around times and maximising operational availability.

## FLEXIBLE AVIONIC ARCHITECTURE

The flexible avionic architecture and comprehensive suite of additional mission kit equipment, enables delivery of configurations and capabilities to meet operator mission requirements. This facilitates capability for growth, to strategically adapt the AW159 to meet future and developing operational tasking.



## MARITIME OPERATIONS

Leonardo has over 60 years heritage and experience developing Maritime helicopters, AW159 is the latest generation, multi-mission maritime helicopter. The robust design, compact dimensions, high thrust margins and excellent control response delivers excellent operational capability for embarked operations from single spot flight deck vessels in adverse environments. A Deck Lock (Harpoon) system and pilot initiated negative main rotor thrust capability, assures maximum safety and security on the flight deck during operations in adverse conditions up to Sea State 6.

The fully integrated avionic and mission systems permit the crew to efficiently collect and process vast amounts of battlespace information, disseminating tactical data to the Force Maritime Commander via Tactical Data Link (TDL). The AW159 can be configured with a comprehensive suite of surface and sub-surface weapons for engagement of adversaries in both the Maritime and Littoral Domains.

AW159 is capable of conducting a wide range of roles including:

- Maritime Surveillance / Intelligence Surveillance Reconnaissance (ISR)
- Anti-Surface Warfare (ASuW)
- Anti-Submarine Warfare (ASW)
- Supports to Fires / Over the Horizon Targeting (OTHT)
- Search and Rescue (SAR)
- Medical Evacuation (MEDEVAC) / Casualty Evacuation (CASEVAC)
- Maritime Interdiction Operations (MIOPS) / Boarding Party Insertion
- Close Air Support (CAS) / Over Watch
- Internal Personnel and Materiel Transfer and External Vertical Replenishment (VERTREP)



## LAND OPERATIONS

The compact dimensions and agility of the AW159, coupled with Engine Infra-red suppression, radar signature reducing structure and comprehensive self-protection measures, enables the helicopter to be operated worldwide from Forward Operating Bases (FOB) in adverse and contested environments.

The AW159 integrated avionic and mission systems provide operational commanders with an excellent Intelligence, Surveillance, Targeting and Reconnaissance (ISTAR) platform. Equipped with fully integrated Defensive Aids suite (DAS), providing capability to discern and suppress encountered threats. A comprehensive suite of weapons solutions, ranging from Crew Served Machine Guns to guided missiles, deliver capability to conduct Close Air Support (CAS) and Ground Attack operations.

AW159 is capable of performing a wide range of Missions including:

- Intelligence, Surveillance, Targeting Acquisition and Reconnaissance (ISTAR)
- Ground Attack
- Close Air Support (CAS)
- Support to Fires
- Specialist Team insertion
- Medical Evacuation (MEDEVAC) / Casualty Evacuation (CASEVAC)
- Search and Rescue (SAR)
- Transfer of Personnel and Materiel / External Lift





## CUSTOMER SUPPORT SOLUTIONS

The Leonardo Helicopters Support mission is to assist operators to perform their missions successfully. Fundamental to this mission is to ensure that operational safety is as high as possible. The company continues to develop its support services and advanced solutions in line with Customer's evolving requirements.

Today Leonardo Helicopters offers a full range of Support services to operators. These can be contracted individually or organised under some form of integrated support scheme where Leonardo Helicopters is responsible for elements of availability, moving the boundaries of traditional support. In the most comprehensive schemes the Customer specifies where and when he wants to fly and Leonardo Helicopters is accountable and responsible for the complete service.

The range of services includes:

- **Spare & Repairs:** the Material Support Services Organisation is accountable for all material and logistics aspects of spares, repairs and overhauls, including a material AOG service. The organisation can also provide logistic modelling.
- **Maintenance:** in support of operators worldwide, Leonardo Helicopters can provide line and base maintenance at operators facilities, utilising an extensive network of maintenance centres, or through company-owned and third party organisations.
- **Technical Services:** an extensive range of capabilities exist including the latest standards of integrated electronic technical publications, technical query resolution, repair design and modification assistance.
- **Advanced Services:** including HUMS analysis, flight planning tools, various logistics packages, electronic replacements for traditional paperwork systems, internet portals for direct access to company data.
- **Fleet Operation Centres:** located across the globe, available 24/7, to promptly help operators resolve issues and get back to flight.



Repair Services



Maintenance Services



Full Motion Simulators

## CUSTOMER TRAINING SOLUTIONS

Leonardo Helicopters is a world leading provider of professional training services, systems and solutions to a global customer base. The company is fully committed to a training policy that enables our customers to make the most effective safe use of their helicopters.

With over 300 professional training personnel, Leonardo Helicopters has delivered essential training to helicopter operators for over 75 years. Our team includes flying and technical instructors with considerable military and civilian helicopter experience.

This training capability is underpinned by four Training Academies at Sesto Calende in Italy, Yeovil in the UK, Philadelphia in the United States and Kuala Lumpur in Malaysia. All feature the latest synthetic training devices combined with a comprehensive programme of training courses for aircrew, rear crew, ground crew and maintainers. In addition Leonardo Helicopters is developing a network

of regional Authorised Training Centres to ensure that customers can access world-class training at a time and place convenient to them.

The range of training solutions is evolving constantly. Services include civil type rating courses in conjunction with basic training, refresher training and complete turnkey solutions. Leonardo Helicopters is also focusing on a variety of mission-specific training so that customers can do more with their aircraft to deliver total crew operational capability.

To meet the demands of an ever changing operating environment our Training and Helicopter Support Systems (THSS) teams have leveraged Commercial-Off-The-Shelf technology combined with OEM software solutions to provide award-winning, cost effective training devices. These range from simple computer based training courses through to maintenance training devices and full flight simulators.



Ground Instruction



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