

# AW159

HELICOPTERS DIVISION



 **LEONARDO**

**AW**159

**MULTI-ROLE  
LAND AND NAVAL  
HELICOPTER**





# FIFTH-GENERATION HELICOPTER

AW159 is the latest-generation multi-mission, high-end war-fighting helicopter, delivering unparalleled tactical capability in a compact and robust air vehicle. As an evolution of the highly successful Lynx helicopter the AW159 delivers new technologies and capabilities, whilst building on customer operational experience gained across both Land and Maritime domains.

Technologically advanced with fully integrated avionics, mission and weapon systems the AW159 enables rapid and efficient collection, processing and assessment of information to deliver unrivalled situational awareness and tactical advantage. Whilst a comprehensive weapons suite delivers the capability to strike at an enemy at stand-off ranges across all domains.

With the ability to integrate into the modern digital battlespace the Networked enable AW159 has the capability to deliver both data and full motion video into the wider operational tactical picture.

The combination of class leading characteristics with state-of-the-art systems, delivers an adaptable, agile and highly capable platform for operations over both Land and Sea delivering the ability to find, fix and, if necessary, strike at the enemy.



## 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 cross 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 Turboshaft engines with FADEC control and integral particle separators
- › Engine Infra-Red Suppression
- › Five (5) tank fuel system
- › Single point pressure refuel / defuel system

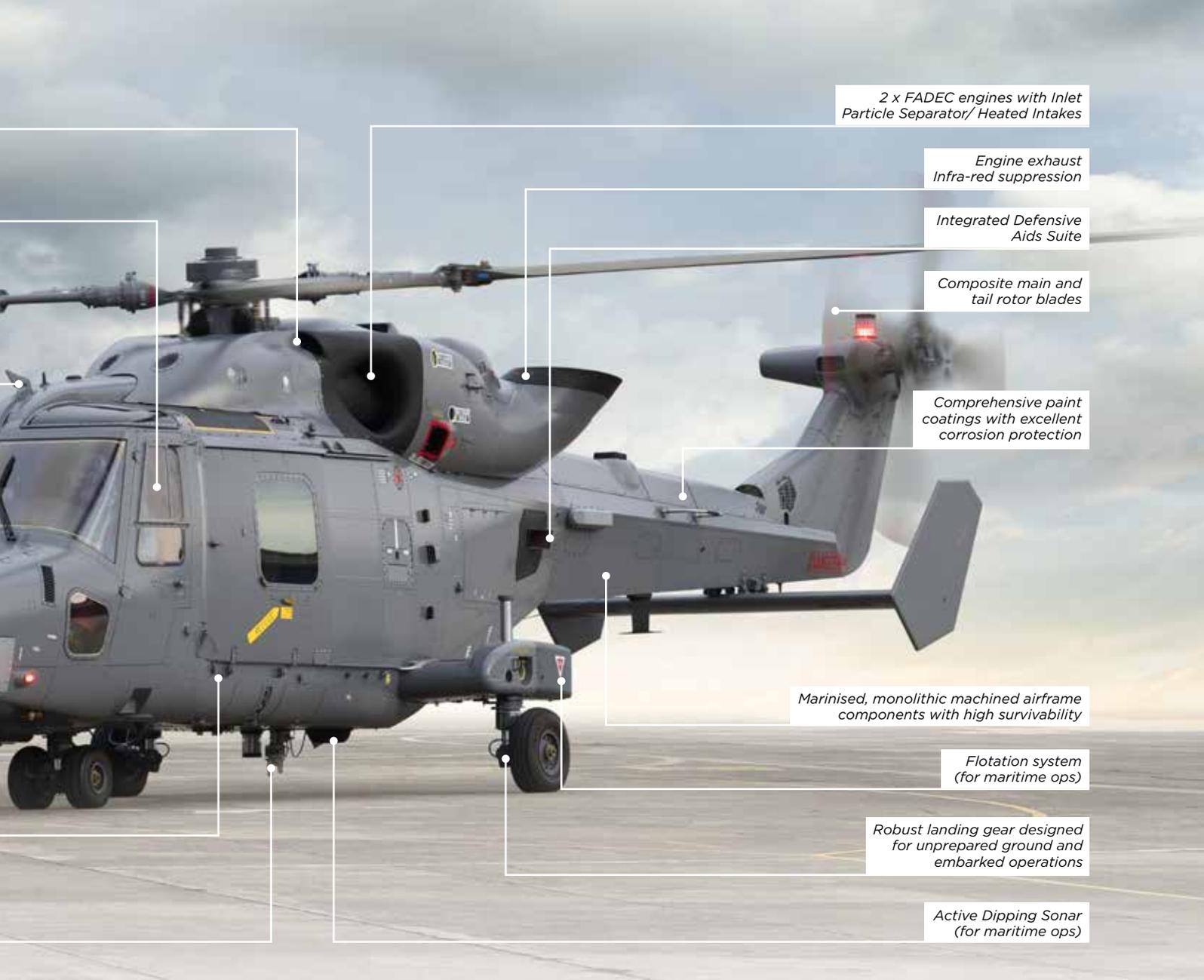
### TRANSMISSION & ROTOR

- › Main Gearbox with 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" 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





2 x FADEC engines with Inlet Particle Separator/ Heated Intakes

Engine exhaust Infra-red suppression

Integrated Defensive Aids Suite

Composite main and tail rotor blades

Comprehensive paint coatings with excellent corrosion protection

Marinised, monolithic machined airframe components with high survivability

Flotation system (for maritime ops)

Robust landing gear designed for unprepared ground and embarked operations

Active Dipping Sonar (for maritime ops)



## 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 role equipment can be installed on the AW159, further enhancing its operational effectiveness. This includes, but is not limited to the following.

## AIR VEHICLE

- › Flotation System
- › Deck Lock Harpoon

## AVIONICS

- › Traffic Avoidance System
- › Automatic Identification System
- › Tactical Air Navigation (TACAN) System
- › I-Band Transponder
- › Communications: High Frequency Radio, SATCOM

## MISSION SYSTEMS

- › EO Sensor (Optional Laser Payloads)
- › AESA (360°) Multi-Mode Surveillance Radar
- › Scalable Integrated Defensive Aids Suite: RWR, MWS, LWR, Countermeasures Dispensing System
- › Electronic Surveillance Measures (ESM)
- › Tactical Data Link
- › Video Downlink
- › Battle radios (customer specific)

## MISSION EQUIPMENT

- › Anti-Submarine Warfare: Active Dipping Sonar, Sonobuoy Dispensing / Processing, Sonobuoy Homing
- › Search and Rescue: Rescue hoist, Waterproof floor
- › Weapons Systems: Anti-Ship and Anti-Armour Guided Missiles, Torpedo, Machine Guns

## UTILITY EQUIPMENT

- › Crashworthy Seating: Cockpit, 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)





# AW159 CHARACTERISTICS

## WEIGHT (MTOW)

Max Gross Weight 6,050 kg 13,338 lb

## ENGINE RATINGS (2 X TURBO SHAFT ENGINES)

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

## TRANSMISSION RATINGS

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

## FUEL CAPACITY

Standard internal fuel tanks 798 kg 262 USG

A range of internal auxiliary fuel tanks are also available

## SEATING

Cockpit / cabin 2 / 6 crashworthy

## DIMENSIONS

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

## PERFORMANCE (ISA, 6050 KG)

Max Cruise Speed (SL - MCP)	264 kph	143 kt
Rate of climb (SL - MCP)	10 m/s	2,000 ft/min
Hovering IGE	2,267 m	7,440 ft
Hovering OGE	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
Maximum range	518 km	280 nm
Maximum endurance		3 hours

(1) 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 battle information. The highly integrated Tactical Processor and HMI, developed in conjunction with UK Military, facilitates the fastest OODA (Observation, Orientation, Decision, Action) loop from any helicopter currently available in its class.

## UNPRECEDENTED SAFETY

AW159's design is focussed on safety and survivability, driven by customer demands to operate autonomously in harsh weather and hostile locations. The helicopters Infra-Red engine suppression and faceted tail design reduces its thermal and radar signatures, whilst extensive redundancy in structures, avionics and critical systems, combined with a proven 30 minute run-dry transmission capability, ensures the highest standards of safety.

Equipped with a fully integrated Defensive Aids Suite the AW159 has the capability to deploy in operationally hostile environments over Land and Sea.



## EASE OF MAINTENANCE

The AW159 is designed from concept for military maintenance in the field, with attributes and support features facilitating maintenance with minimum personnel and support equipment. An extensive in-built fault analysis and diagnosis system is fully integrated with the 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 available equipment, enables delivery of configurations and capabilities to meet customer mission requirements, whilst providing growth capability in both Avionics and Mission Systems capability thereby enabling customers to strategically adapt the AW159 to meet future operational needs.



# LAND OPERATIONS

The AW159's compact dimensions and agility, coupled with Engine Infra-red suppression, radar signature reducing structure and comprehensive self-protection measures enable AW159 to operate worldwide in the most demanding theatres.

The combination of mission systems available makes the helicopter a powerful Intelligence, Surveillance, Targeting and Reconnaissance (ISTAR) platform. Equipped with fully integrated Defensive Aids suite, that provides the capability to discern and suppress encountered threats, and weapons solutions ranging from Crew Served to guided missiles deliver the inherent capabilities to conduct Close air support and Ground Attack operations.

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

- › Intelligence, Surveillance, Targeting and Reconnaissance (ISTAR)
- › Ground Attack
- › Close air support
- › Over the Horizon Targeting (OTHT)
- › Specialist Team insertion
- › Medical Evacuation (MEDEVAC)
- › Search and Rescue (SAR)
- › Cargo Re-Supply / External Lift



# MARITIME OPERATIONS

With over 60 years' experience developing Maritime helicopters; AW159 is the best small ships helicopter available today. The robust design, compact dimensions, high thrust margins and excellent control response delivers excellent operational capabilities from small decks in extreme weather conditions. These attributes coupled with a Deck Lock system and negative thrust capability assures maximum safety during deck operations in adverse conditions up to Sea State 6.

The fully integrated mission systems coupled with role installable Active Dipping Sonar/Sonics solutions and a range of weapons from Torpedoes and Anti-Ship Missiles to crew served machine guns enable the AW159 conduct Anti-Submarine/ Surface Warfare and Maritime Patrol/Interdiction operations.

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

- › Anti-Surface Warfare (ASuW)
- › Anti-Submarine Warfare (ASW)
- › Surface Surveillance
- › Maritime interdiction
- › Over the Horizon Targeting (OTHT)
- › Search and Rescue (SAR)
- › Medical Evacuation (MEDEVAC)
- › Boarding Party Insertion
- › Over Watch
- › Freight Transfer & Vertical Replenishment

# CUSTOMER SUPPORT SOLUTIONS

The Leonardo Helicopters Support mission is to assist Customers 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 Customers. 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.

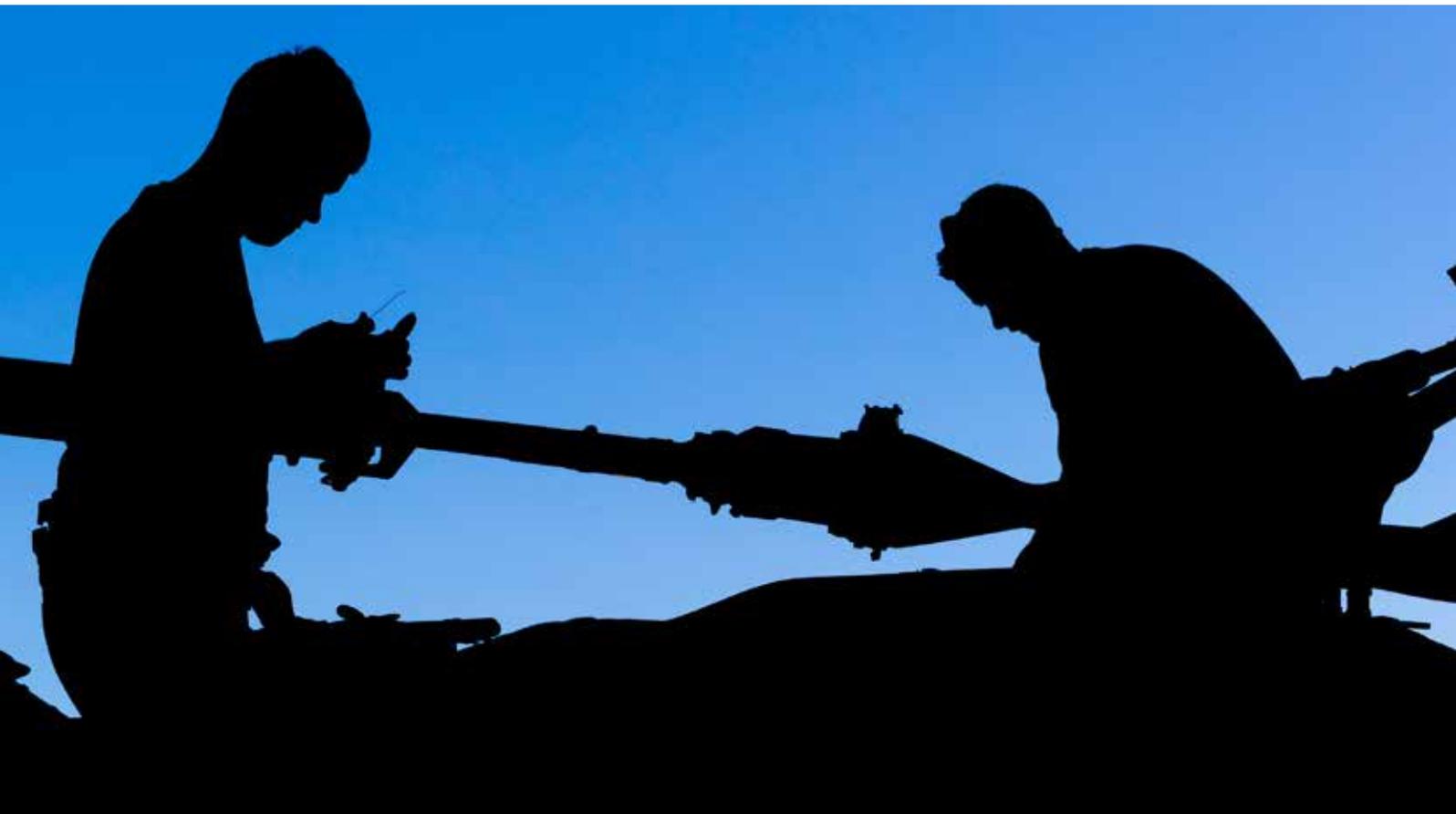
The range of services includes:

- › **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 customers worldwide, Leonardo Helicopters can provide line and base maintenance at Customers 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, modification assistance, etc.
- › **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, etc.
- › **Fleet Operation Centres:** located across the globe, available 24/7, to promptly help Customers 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 the world's helicopter operators for over 65 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 air crew, 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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