

APPENDIX B

Helicopter Specification

Leonardo AW139

HELICOPTERS DIVISION



AW139



This document contains data related to aircraft description, specification that are supplied for general information purposes only. The exact description, characteristics, and performance capabilities of any particular aircraft may vary and are wholly dependent on the final configuration requested by the Customer and on the specific aircraft usage, operation and maintenance. For performance data and operating limitations reference must be made to the approved Rotorcraft Flight Manual and other appropriate documentation.

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1.1 AW139 EXTERNAL DIMENSIONS

FUSELAGE		
Length	13.77 m	45 ft 02 in
Width (at Cabin Doors)	2.26 m	7 ft 05 in
Width (Elevator)	4.22 m	13 ft 10 in
Height (Tail Fin)	3.73 m	12 ft 03 in
Fuselage Ground Clearance	0.42 m	1 ft 05 in
ROTORS		
Main Rotor Diameter	13.80 m	45 ft 03 in
Tail Rotor Diameter	2.70 m	8 ft 10 in
LANDING GEAR		
Wheel Track	3.04 m	9 ft 12 in
Wheel Base	4.34 m	14 ft 03 in
OVERALL DIMENSIONS (ROTORS TURNING)		
Length	16.66 m	54 ft 08 in
Height	4.98 m	16 ft 04 in
Main Rotor Tip Blades Clearance ¹	3.01 m	9 ft 11 in
Tail Rotor Tip Blades Clearance	2.34 m	7 ft 08 in

¹ Control in Neutral Position.



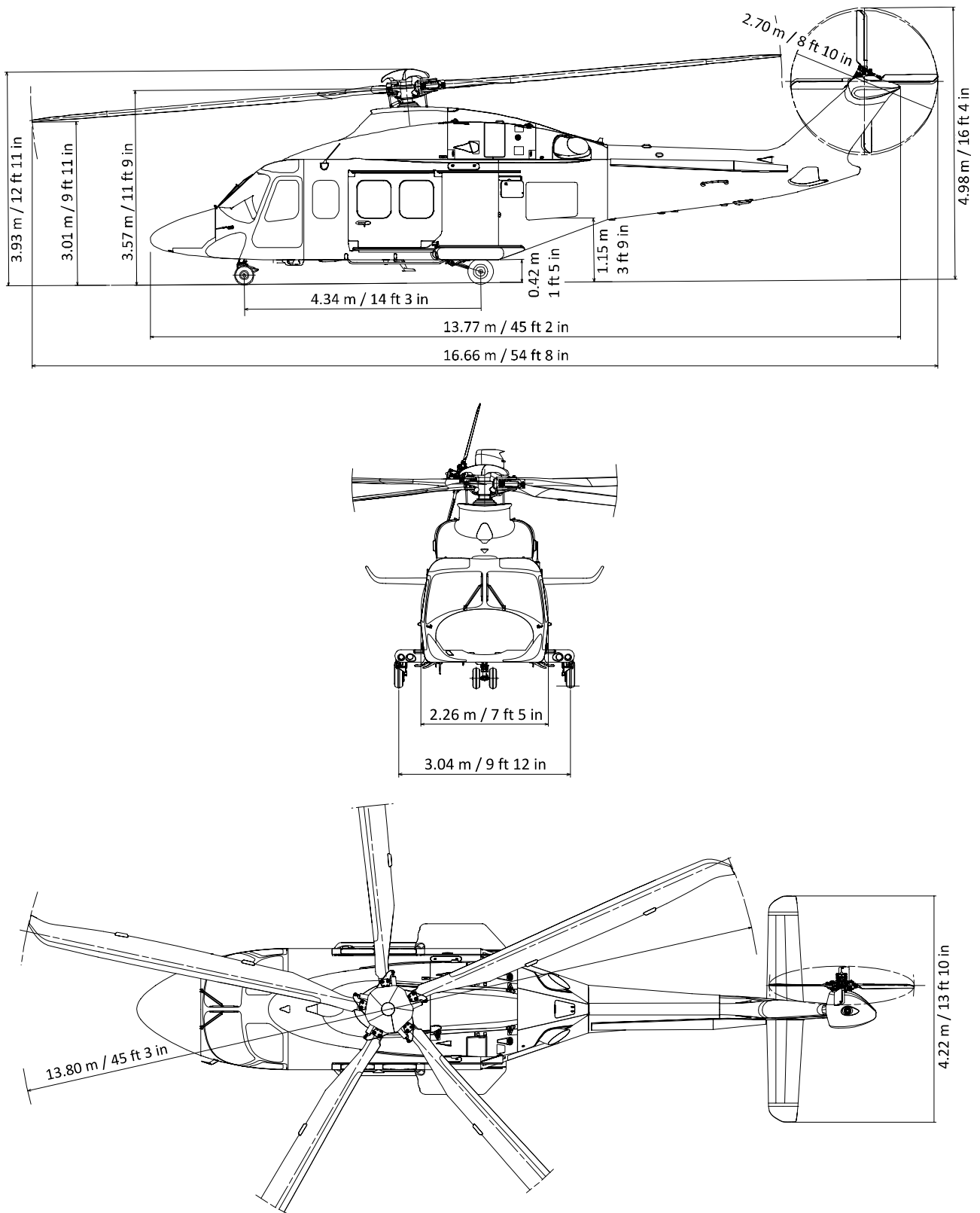


Figure 1. AW139 External Dimensions – Image for reference only

1.2 STATIC LANDING GEAR LOADING

The loads reported below refer to the helicopter at the take-off weights in the medium CG configuration (average CG and laterally centred).

AW139 Static Configurations		Landing Gear Load		Tyre Vertical Load	
MTOW (kg)	CG STA (mm)	NLG (N)	MLG (N)	NLG (N)	MLG (N)
6400	5342	14827	23968	7413	23968
6800	5359	15522	25582	7761	25582
7000	5368	15857	26395	7929	26395

1.2.1 Tyre Contact Ellipse Area

Considering a Maximum Take-Off Weight (MTOW) equal to 6800 kg, the tyre contact ellipse area both for the Nose Landing Gear (NLG) and Main Landing Gear (MLG) is reported below.

Landing Gear	Tyre Contact Ellipse Area	
	cm ²	in ²
NLG	87.81	13.61
MLG	276.25	42.82

1.2.2 Aircraft Classification Number (ACN)

The ACN-PCN is an international standard methodology developed by ICAO in order to classify aircrafts and airport runways pavement strength.

Using this method, one may express the effect of an individual aircraft on different pavements with a single unique number that varies according to aircraft weight and configuration (e.g. tyre pressure, gear geometry, etc.), pavement type and subgrade strength. This number is the ACN. Conversely, the load-carrying capacity of a pavement can be expressed by a single unique number. This number is the PCN.

The ACN-PCN system is structured so that a pavement with a particular PCN value can support an aircraft that has an ACN value equal to or less than the pavement's PCN value.

FAA developed a software (COMFAA) application that calculates ACN values using the procedures and conditions specified by ICAO.

1.2.2.1 ACN Main Landing Gear (MLG)

Load Case Description	RIGID Pavement Subgrade (MN/m ³)			
	Ultra Low	Low	Medium	Strong
	20	40	80	150
Static 6400 kg CG Average	4.8	5	5	5.1
Static 6800 kg CG Average	5.2	5.4	5.4	5.4
Static 7000 kg CG Average	5.4	5.5	5.6	5.1



Load Case Description	FLEXIBLE Pavement Subgrade (CBR)			
	Ultra Low	Low	Medium	Strong
	3	6	10	15
Static 6400 kg CG Average	4.9	4.9	4.9	5.1
Static 6800 kg CG Average	5.2	5.2	5.2	5.5
Static 7000 kg CG Average	4.9	4.9	4.9	5.1

1.2.2.2 ACN Nose Landing Gear (NLG)

Load Case Description	RIGID Pavement Subgrade (MN/m ³)			
	Ultra Low	Low	Medium	Strong
	20	40	80	150
Static 6400 kg CG Average	1.7	1.8	1.7	1.6
Static 6800 kg CG Average	1.9	2	1.8	1.7
Static 7000 kg CG Average	1.9	2	1.9	1.8

Load Case Description	FLEXIBLE Pavement Subgrade (CBR)			
	Ultra Low	Low	Medium	Strong
	3	6	10	15
Static 6400 kg CG Average	1.8	1.5	1.4	1.3
Static 6800 kg CG Average	1.9	1.7	1.5	1.4
Static 7000 kg CG Average	2	1.7	1.6	1.5



1.3 CENTRE OF GRAVITY ENVELOPE

The AW139 Helicopter is approved for flight within longitudinal and lateral centre of gravity range limits according to the diagrams presented henceforth.

1.3.1 Longitudinal Envelope

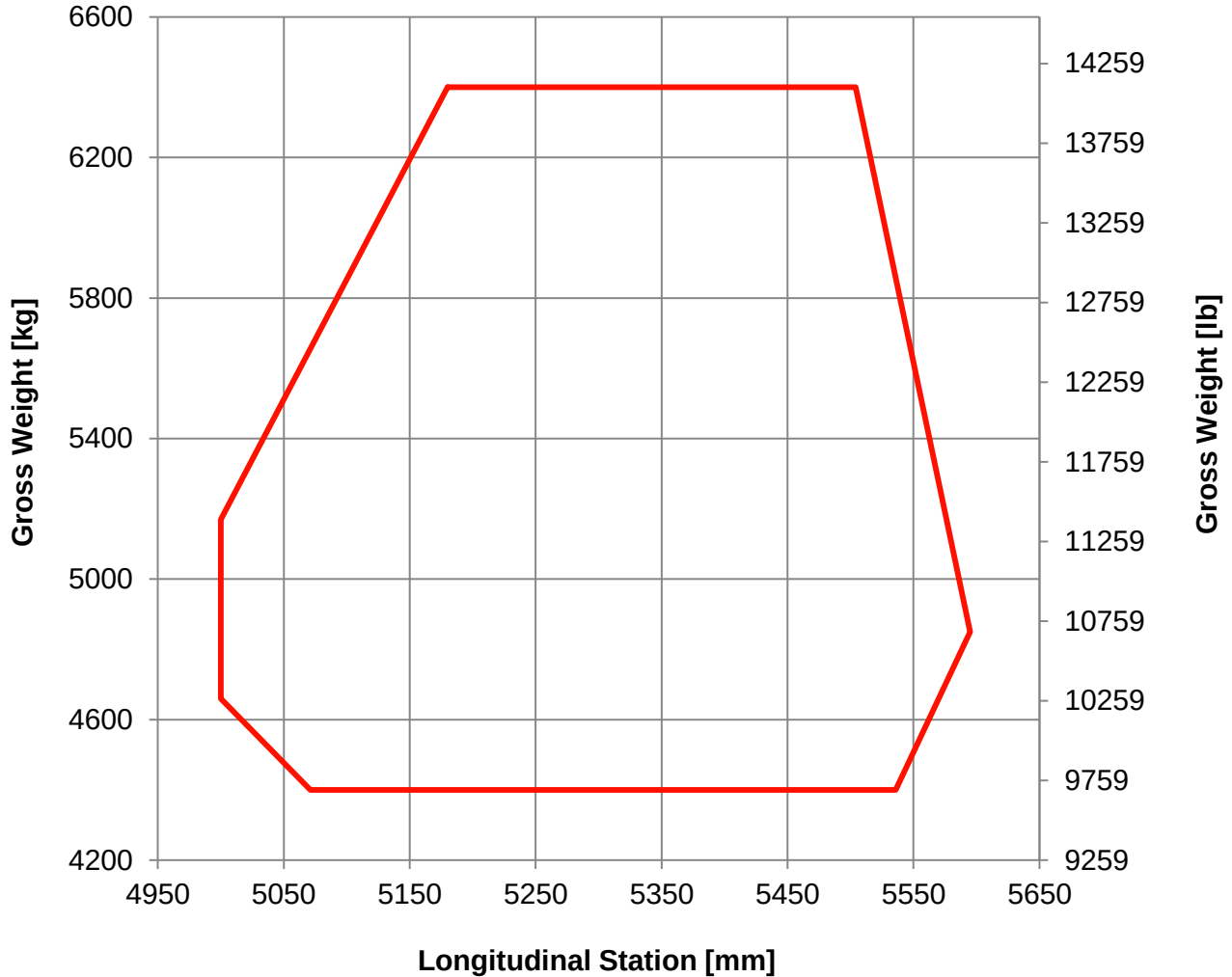


Figure 2. AW139 CG Longitudinal Envelope

1.3.2 Lateral Envelope

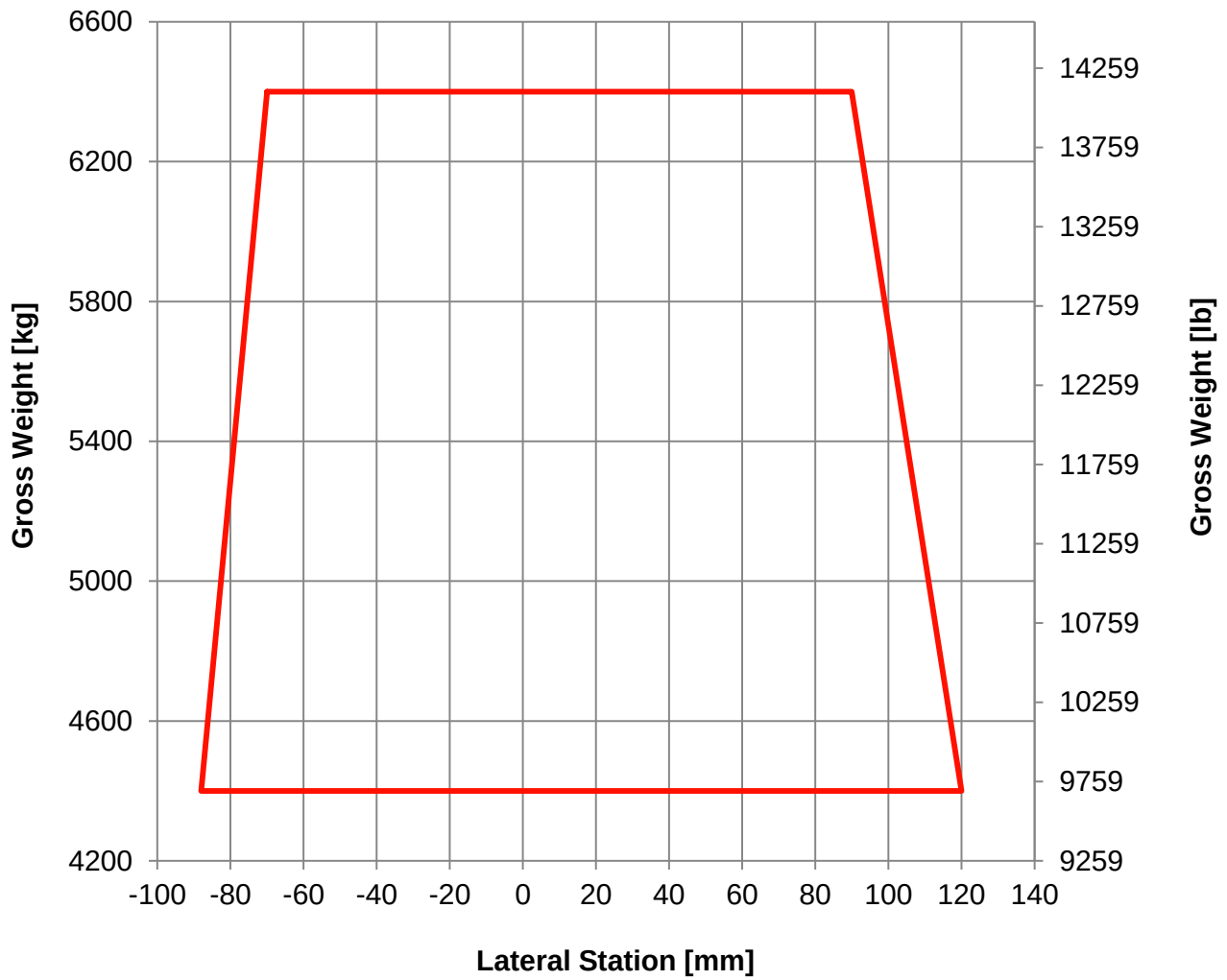


Figure 3. AW139 CG Lateral Envelope

