



■ AgustaWestland **AW**109
■ GRAND NEW 

ROTORCRAFT FLIGHT MANUAL OPTIONAL EQUIPMENT SUPPLEMENTS

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ROTORCRAFT FLIGHT MANUAL

AW109SP

OPTIONAL EQUIPMENT SUPPLEMENTS

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—	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
—	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
1	Revised Title page, A-1, B-1 and Supplement 4 (Revised Title page, A-1, B-1, pages 8 thru 10 of 182, 17 thru 32 of 182, 60, 84, 116, 138 and 139 of 182).	EASA Approval N° 10029205 dated 11 March 2010
2	Revised pages Title page, A-1, B-1, xv, xvii and Supplement 27. Added Supplement 32 and Supplement 35.	EASA Approvals N° 10030995, 10030997, 10030998, 10031061 dated 26 July 2010
	Revised Supplement 33 (Title page, A-1, B-1, i, ii, 1 and 2 of 6).	Approved under the Authority of DOA N° EASA 21J.005
	Revised Supplement 33 (pages 3 and 4 of 6 and added pages 5 and 6 of 6).	Manufacturer's Data
3	Revised Title page, A-1, B-1, xv thru xvii. Added Supplement 31.	EASA Approval N° 10031962 dated 27 September 2010
4	Revised Title page, A-1, B-1 and xiv thru xvii. Added Supplement 22, Supplement 36 and Supplement 37.	EASA Approvals N° 10032087, 10032126, 10032088, REV. 1 dated 19 October 2010
5	Revised Title page, A-1, B-1, xiv thru xvi, Supplement 8 and Supplement 9.	EASA Approvals N° 10033527, 10033532 dated 1 February 2011
6	Revised pages Title page, A-1, B-1, xiv and xvi thru xix. Reissued Supplement 4 and Supplement 6. Added Supplement 3.	EASA Approval N° 10034713 dated 26 April 2011

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9	Revised pages Title page, A-2, B-1, xv, xvi and Supplement 22. Added Supplement 23.	EASA Approval N° 10035465, REV. 1 dated 30 June 2011
10	Revised pages Title page, A-2, B-1, Supplement 8 and Supplement 9.	EASA Approval N° 10035685 dated 12 July 2011
11	Revised pages Title page, A-2, B-1, xv and xvii. Added Supplement 28.	EASA Approval N° 10035972 dated 1 August 2011
12	Revised pages Title page, A-2, B-1, xv thru xix and Supplement 4 and Supplement 32. Added Supplement 24.	EASA Approvals N° 10036512, 10036514 dated 16 September 2011
13	Revised pages Title page, A-2, B-1 and xiv thru xvii. Added Supplement 13 and Supplement 38.	EASA Approvals N° 10037736, 10037737 dated 19 December 2011
14	Revised pages Title page, A-2, B-1 and Supplement 2.	EASA Approval N° 10037552 dated 5 December 2011
15	Revised pages Title page, A-2, B-1, xiv, xvi, xix and Supplement 4. Added Supplement 12.	EASA Approval N° 10038645 dated 5 March 2012
16	Revised pages Title page, A-2, B-1, vi thru xiii, xv and xvii. Added Supplement 34.	EASA Approval N° 10038391 dated 13 February 2012
17	Revised pages Title page, A-2, B-1 and xvii. Reissued Supplement 32.	EASA Approvals N° 10038958, 10038959 dated 27 March 2012

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22	Revised pages Title page, A-3, B-1, xv and xvii. Reissued Supplement 32. Added Supplement 39.	EASA Approvals N° 10041705 dated 9 October 2012 and N° 10041709, REV. 1 dated 11 October 2012
23	Revised pages Title page, A-3, B-1, xv thru xvii and Supplement 39. Added Supplement 40.	EASA Approval N° 10041710 dated 9 October 2012
24	Revised pages Title page, A-3, B-1, xlv, xvi, xvii, xix and Supplement 4. Added Supplement 14.	EASA Approval N° 10042393 dated 3 December 2012
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26	Revised pages Title page, A-3, B-1, and xvi thru xx. Added Supplement 41.	EASA Approval N° 10043982 dated 8 March 2013
27	Revised pages Title page, A-3, B-1, xvi and Supplement 41 (Title page, A-1, B-1).	Approved under the Authority of DOA N° EASA 21J.005 dated 20 March 2013
28	Revised pages Title page, A-3, B-1, xvi and Supplement 41 (Title page, A-1, B-1).	Approved under the Authority of DOA N° EASA 21J.005 dated 16 May 2013

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32	Revised pages Title page, A-4, B-1 and Supplement 3.	EASA Approval N° 10048294, REV. 1 dated 14 March 2014
33	Revised pages Title page, A-4 and B-1. Reissued Supplement 34.	EASA Approval N° 10049181 dated 19 May 2014
34	Revised pages Title page, A-4, B-1 and Supplement 34.	EASA Approval N° 10049478, REV. 1 dated 17 June 2014
35	Revised pages Title page, A-4, B-1, xvi and xviii. Added Supplement 42.	EASA Approval N° 10050780 dated 10 October 2014
36	Revised pages Title page, A-4, B-1, xvi and Supplement 41 (Title page, A-1, B-1).	Approved under the Authority of DOA N° EASA 21J.005 dated 6 November 2014
37	Revised pages Title page, A-4, B-1, xvi and Supplement 41 (Title page, A-1, B-1).	Approved under the Authority of DOA N° EASA 21J.005 dated 5 December 2014
38	Revised pages Title page, A-4, B-1, xvi and Supplement 41 (Title page, A-1, B-1).	Approved under the Authority of DOA N° EASA 21J.005 dated 8 December 2014
39	Revised pages Title page, A-4, B-1, xvi and Supplement 41 (Title page, A-1, B-1).	Approved under the Authority of DOA N° EASA 21J.005 dated 16 February 2015

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42	Revised pages Title page, A-5, B-1, xvi and Supplement 41 (Title page, A-2, B-1).	Approved under the Authority of DOA N° EASA 21J.005 dated 28 August 2015
43	Revised pages Title page, A-5, B-1, Supplement 5 and Supplement 27.	Approved with NDC 109G9700-001 dated 24 December 2015 under the authority of DOA ref EASA.21J.005
44	Revised pages Title page, A-5, B-1, xvi, xviii and Supplement 42. Added Supplement 43.	Approved with NDC-109G2310-022, NDC-109G2310-023 dated 9 March 2016 under the authority of DOA ref EASA.21J.005
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49	Revised pages Title page, A-6, B-1, xvi and Supplement 41 (Title page, A-2, B-1).	Approved with NDC-109G3080-017 dated 19 July 2016 under the authority of DOA ref EASA.21J.005
50	Revised pages Title page, A-6, B-1, xvi and xviii. Added Supplement 44.	Approved with NDC-109G3450-010 dated 29 November 2016 under the authority of DOA ref EASA.21J.005
51	Revised pages Title page, A-6, B-1, xiv, xvii, xviii, Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, Supplement 6, Supplement 8, Supplement 9, Supplement 10, Supplement 12, Supplement 24, Supplement 26 and Supplement 30 Added Supplement 15.	EASA Approval N° 10062498 dated 4 July 2017
52	Revised pages Title page, A-6, B-1 and Supplement 14.	Approved with NDC-109G3340-012 dated 2 August 2017 under the authority of DOA ref EASA.21J.005
53	Revised pages Title page, A-6, B-1 and xvi thru xviii. Added Supplement 45 .	EASA Approval N° 10062829 dated 7 August 2017
54	Revised pages Title page, A-6, B-1, xvi and Supplement 45.	Approved with NDC-109G9300-006 dated 27 September 2017 under the authority of DOA ref EASA.21J.005

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56	Revised pages Title page, A-7, B-1, xvi and Supplement 42.	Approved with NDC-109G2310-031 dated 30 November 2017 under the authority of DOA ref EASA.21J.005
57	Revised pages Title page, A-7 B-1 and xv. Reissued Supplement 27.	Approved with NDC 109G9700-002 dated 20 April 2018 under the authority of DOA ref EASA.21J.005
58	Revised pages Title page, A-7, B-1, xvi thru xviii. Added Supplement 46.	EASA Approval N° 10066983 dated 25 September 2018
59	Revised pages Title page, A-7, B-1, xvi and xviii. Added Supplement 47.	EASA Approval N° 10069536 dated 5 April 2019
60	Revised pages Title page, A-7, B-1, xvi and Supplement 47.	Approved with NDC-109GG2310-035 dated 11 April 2019 under the authority of DOA ref EASA.21J.005
61	Revised pages Title page, A-7, B-1, xv and xviii. Reissued Supplement 34.	EASA Approval N° 10071011 dated 19 September 2019
62	Revised pages Title page, A-7, B-1, xvi and Supplement 41 (Title page, A-2, B-1).	Approved with NDC-109G3080-019 dated 13 December 2019 under the authority of DOA ref EASA.21J.005

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63	Revised pages Title page, A-8, B-1, xiv and Supplement 20.	Approved with NDC-109G4630-002 dated 31 January 2020 under the authority of DOA ref EASA.21J.005
64	Revised pages Title page, A-8, B-1 and Supplement 5.	EASA Approval N° 10073314 dated 25 May 2020
65	Revised pages Title page, A-8, B-1, xiv, xvii and Supplement 21.	Approved with NDC-109G3450-020 dated 20 December 2021 under the authority of DOA ref EASA.21J.005
66	Revised pages Title page, A-8, B-1, xvi and Supplement 47.	Approved with NDC-109G0257-004 dated 21 March 2022 under the authority of DOA ref EASA.21J.005
67	Revised pages Title page, A-8, B-1, xi, xvi, xviii thru xx. Added pages xxi and xxii. Reissued Supplement 43.	EASA Approvals N° 10079693 and N° 10079694 dated 11 July 2022
68	Revised Supplement 15.	Approved with NDC-109G2620-006 dated 21 June 2024 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-8, B-1 and i.	Manufacturer's Data
69	Revised pages xvii thru xix and Supplement 35.	Approved with NDC-109G9810-002 dated 20 December 2024 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-8, B-1 and i.	Manufacturer's Data

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70	Revised pages xvi thru xviii, xxi and Supplement 4. Added Supplement 49.	EASA Approved N° 10087294 date 11 June 2025
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LIST OF EFFECTIVE PAGES

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INTRODUCTION

GENERAL

It is responsibility of the flight crew to be familiar with the contents of this manual.

REVISIONS (REISSUES)

This manual is subject to revisions (reissues) which will be automatically distributed to all holders of the manual. It is the responsibility of the operator to assure that the revisions (reissues) are incorporated into the manual upon receipt.

At the beginning of the manual there is the “List of Revisions” table that shows all pages of the manual which have been revised as well as number and approval reference of each revision.

REVISION SYMBOL

Revised text is indicated by a black vertical line on the outer margin of the page, adjacent to the affected text and the revision is printed in the lower inner margin. The revision symbol identifies the addition of new information, a change of procedure, the correction of an error, or a rewording of the previous information.

TEMPORARY REVISIONS

Temporary Revisions are issued when immediate data is to be included in the manual. The Temporary Revision data can add to or cancel the initial data in the manual. They are numbered progressively for each section of the manual. Temporary Revision pages are not written in the “List of Effective Pages”. A complete list of **active** and **inactive** Temporary Revision are written in the “List of Temporary Revisions” page.

TERMINOLOGY

WARNINGS, CAUTIONS AND NOTES



WARNING

An operating procedure, practice, etc., which, if not correctly followed and/or not strictly observed, could result in personal injury or loss of life.



CAUTION

An operating procedure, practice, etc., which, if not correctly followed and/or not strictly observed, could result in damage to, or destruction of, equipment.

Note

An operating procedure, condition, etc., which is essential to highlight.

USE OF PROCEDURAL WORDS

The concept of procedural word usage and intended meaning which has been adhered to in preparing this RFM is as follows:

“**Shall**” or “**Must**” have been used only when application of a procedure is mandatory.

“**Should**” has been used only when application of a procedure is recommended.

“**May**” has been used only when application of a procedure is optional.

“**Will**” has been used only to indicate futurity, never to indicate a mandatory procedure.

“**Condition**” has been used to determine if the item under examination presents external damage which could jeopardize its safe operation.

“Secured” has been used to determine if the item under examination is correctly locked; mainly referred to doors and disconnectable items.

“Security” has been used to determine if the item under examination is correctly positioned and installed.

“Fly Attentive” has been used when the pilot needs to maintain close control of the flight path using hands-on when required.

“Fly Manually” has been used when the pilot needs to directly control the flight path using hands-on.

ABBREVIATION

The use of capital letters in the text, apart from normal grammatical usage indicates the actual wording or marking of indicators, controls or control positions on the helicopters.

Abbreviations and acronyms used throughout this RFM are defined as follows:

— a.c	: Alternating current
— ADC	: Air Data Computer
— ADU	: Air Data Unit
— ADF	: Automatic Direction Finder
— ADI	: Attitude Data Indicator
— ADS	: Air Data System
— AEO	: All Engines Operating
— A/F	: Airframe
— AFCS	: Automatic Flight Control System
— AFDS	: Automatic Flight Director System
— AGL	: Above Ground Level
— AHRS	: Attitude and Heading Reference System
— ALS	: Above Landing Surface
— ALT	: Baro - ALTitude mode

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— AM	: Amplitude Modulation
— AP	: Automatic Pilot
— APCP	: AutoPilot Control Panel
— APD	: Actuator Position Display
— API	: Actuator Position Indicator
■ — APMS	: Automatic Pilot Management System
— ATTD	: ATTituDe
— AWG	: Aural Warning Generator
— BC	: Back Course mode
— BIT	: Built In Test
— BRG	: BeaRinG
— BRT	: BRighTness
— CAS	: Calibrated AirSpeed
— CCW	: CounterClockWise
— CG	: Center of Gravity
— CLB	: CLimB mode
— CLR	: CLear
— CMS	: CoMmunication System
— CMU	: Communication Management Unit
— COLL	: COLLection mode
— COM	: COMMunication
— CPL	: CouPLing
— CS	: Certification Specifications
— CRS	: CouRSe
— CS	: Certification Specification
— CST	: ContraST
— CVDR	: Cockpit Voice Data Recorder

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— CVR	: Cockpit Voice Recorder
— CW	: ClockWise
— d.c	: Direct current
— DF	: Direction Finder
— DH	: Decision Height
— DME	: Distance Measuring Equipment
— DMG	: Digital Map Generator
— DP IFR	: Dual Pilot IFR
— DR	: Dead Reckoning mode
— DTK	: Desired Track
— DTM	: Data Transfer Module
— DTO	: Direct TO
— DU	: Display Unit
— DVS	: Doppler Velocity System
— EADI	: Electronic Attitude Direction Indicator
— ECU	: Engine Control Unit
— EDU	: Electronic Display Unit
— EECU	: Engine Electronic Control Unit
— EEPROM	: Electrically Erasable Programmable Read Only Memory
— ELEC	: ELECTrical
— ELT	: Electronic Locator Transmitter
— EMM	: Engine Maintenance Manual
— ENT	: ENTer
— EOP	: Engine Oil Pressure
— EOT	: Engine Oil Temperature
— ESIS	: Electronic Standby Indicating System

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— ETA	: Estimated Time of Arrival
— F()	: Function of
— FADEC	: Full Authority Digital Engine Control
— FAF	: Final Approach Fix
— FAR	: Federal Aviation Regulations
— FAS	: Final Approach Segment
— FCC	: Flight Control Computer
— FCU	: Fuel Computer Unit
— FD	: Flight Director
— FDCP	: Flight Director and Control Panel
— FDE	: Flight Deck Effect
— FDR	: Flight Data Recorder
— FLG	: Fixed Landing Gear
— FLI	: First Limit Indicator
— FLIR	: Forward Looking Infra-Red
— FM	: Frequency Modulation
— FMEA	: Failure Modes and Effects Analysis
— FMS	: Flight Management System
— FP	: Fuel Pressure
— FPAP	: Flight Path Alignment Point
— FPLN	: Flight PLaN
— FPS	: Flight Planning System
— FTP	: Fictitious Threshold Point
— FTR	: Force Trim Release
— GNSS	: Global Navigation Satellite System
— GPA	: Glide Path Angle
— GPS	: Global Positioning System

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— GS	: Ground Speed
— G/S	: Glide Slope
— Hd	: Density altitude
— HDG	: HeadInG
— HDG SEL	: HeadInG SElect
— HF	: High Frequency
— HOV	: HOVer
— Hp	: Pressure Altitude
— HTAWS	: Helicopter Terrain Awareness and Warning System
— HUMS	: Health and Usage Monitoring System
— HYD	: HYDraulic
— IAS	: Indicated AirSpeed
— ICS	: InterCommunication System
— IGE	: In Ground Effect
— IF	: Intermediate Fix
— IFR	: Instrument Flight Rules
— ILS	: Instrument Landing System
— IMC	: Instrument Meteorological Condition
— INS	: Inertial Navigation System
— ISA	: International Standard Atmosphere
— JAR	: Joint Aviation Regulations
— KCAS	: Knots Calibrated AirSpeed
— LCD	: Liquid Crystal Display
— LCF	: Low Cycle Fatigue
— LH	: Left Hand
— LNAV	: Lateral NAVigation

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— LOC	: LOCalizer
— LX	: Stormscope / Lightning detector
— MAINT	: MAINTenance
— MCDU	: Multifunction Control and Display Unit
— MCL	: Master Caution Light
— MCP	: Maximum Continuous Power
— MDA	: Minimum Descent Altitude
— MFD	: Multi Function Display
— MGB	: Main Gear Box
— MISS	: MISSion
— MON	: MONitoring
— MSG	: MeSsaGe
— MSM	: Mission System Management module
— MTR	: MoniTOr
— MWL	: Master Warning Light
— NAVM	: NAVigation Module
— ND	: Navigation Display
— NF	: Free turbine speed (= N2)
— NG	: Gas generator speed (= N1)
— NM	: Nautical Miles
— NR	: Rotor speed
— NVM	: Non Volatile Memory
— NVG	: Night Vision Goggles
— OAT	: Outside Air Temperature
— OEI	: One Engine Inoperative
— OGE	: Out of Ground Effect
— OTS	: Observation Targeting System

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— PAM	: Power Assurance Margin
— PAX	: Passenger(s)
— PCDS	: Personnel Carrying Device System
— PED	: Portable Electronic Device
— PERF	: PERFormance
— PFD	: Primary Flight Display
— PLA	: Power Lever Angle (alias engine power lever)
— PMS	: Power Management Switch (alias engine mode switch)
— PROG	: PROGress
— QTY	: QuantiTY
— RHT	: Radar Altimeter mode
— R.A	: Radar Altimeter
— RAM	: Random Access Memory
— RBP	: Remote Bug Panel
— RCP	: Reconfiguration Control Panel
— REC	: RECording
— RF	: Radio Frequency
— RFI	: Radio Frequency Indicator
— RFM	: Rotorcraft Flight Manual
— RH	: Right Hand
— RNG	: RaNGe
— RNP	: Required Navigation Performance
— ROC	: Rate Of Climb
— RPM	: Revolutions Per Minute
— SAS	: Stabilization Augmentation System
— SCP	: System Control Panel

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— SCRL	: SCRoIL
— SID	: Standard International Departure
— SPIFR	: Single Pilot IFR
— STAR	: STandard ARrival
— STD	: STandarD
— SYS	: SYStem
— TAS	: True AirSpeed
— TAWS	: Terrain Awareness and Warning System
— TCA	: Track Change Alert
— TKE	: TracK angle Error
— TOC	: Top Of Climb
— TOP	: Take Off Power
— TOT	: Turbine Outlet Temperature
— TQ	: TorQue
— TRQ	: ToRQue
— TNG	: TraiNinG
— TST	: TeST
— TTD	: Time To the end of Destination
— TTG	: Time To Go to the to way point
— UHF	: Ultra High Frequency
— UTC	: Coordinated Universal Time
— UTM	: Universal Transverse Mercator
— VFR	: Visual Flight Rules
— VHF	: Very High Frequency
— VID	: Video

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— V_{LE}	: Maximum landing gear extended speed
— V_{LO}	: Maximum landing gear operating speed
— V_{MINI}	: Minimum airspeed for flight under Instrument Flight Rules
— V_{NE}	: Velocity Never Exceed
— V_{NEI}	: V_{NE} for IFR operations
— VOR	: VHF Omni-directional Range
— VS	: Vertical Speed
— V_y	: Best Rates of Climb Speed
— WOW	: Weight On Wheels
— WX	: Weather Radar
— WxR	: Weather Radar
— XTK	: Cross Track Distance

LIST OF SUPPLEMENTS

The Rotorcraft Flight Manual Supplement for each optional equipment must be carried in the helicopter whenever the optional equipment is installed on the helicopter.

Supplement No.	Name of supplement	P/N	Helicopter applicability S/N
1	Environmental Control System	109-0813-50	All
2	Bleed Air Heater	109-B810-49	All
3	Engine Air Particle Separator (EAPS)	109-0811-55	All
4	Category A	—	All
5	External Hoist	109-B810-16	All
6	Cargo Hook	109-0810-31	All
7	Safety Cargo Hook	109-0811-75	All
8	Snow Skis	109-0811-99, 109G3271F01	All
9	Slump Protection Pads	109-0811-73, 109G3272F01	All
10	Customisation for REGA	109-B810-12-103	All
11	SX-16 Searchlight	109-B810-80	All
12	SX-16 Searchlight	109-0814-75	All
13	External Loudspeakers	109G2300F02- 101/-107	All
14	SX-16 Searchlight	109G3340F02	All
15	Cold Operations Kit	109G2500F01	All
16	Wire Strike Protection System	109-B810-78	All
17	Cabin Searchlight	109-B810-40	All
18	Copilot External Mirror	109-B810-52	All
19	Additional External Mirrors	109-B810-68	All
20	Digital Map Generator	109-B810-13, 109G4630F04	All
21	Avidyne TAS 620 / 620A Traffic Advisory System	109-B810-19	All

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Supplement No.	Name of supplement	P/N	Helicopter applicability S/N
22	Satcom Aircell	109-B811-25-109	All
23	Satcom Aircell with Handset	109-B811-25	All
24	Environmental Control System	109-B811-53	All
25	Supplementary Fuel Tanks	109-0813-32	All
26	Fixed Wheeled Landing Gear	109-B811-02	All
27	EVS-1000/1500/2300 Videocamera	109-B810-20	All
28	FDR / CVR	109-B810-94	All
29	Auxiliary Videocamera	109G9770F02	All
30	Cargo Hook with Videocamera	109G2592A01	All
31	Green Aircraft Configuration	109-B811-18	All
32	Internal Arrangement	109-B811-20	All
33	Internal Arrangement, Forward Facing Central Seat	109-B811-27	All
34	FMS Approach Operations	—	All
35	Weather Radar - RDR 2000 Bendix King	109-B810-15	All
36	Avionic Basic Variant	109G0206P02	All
37	Open Pax Windows	109-0824-83	22218
38	Automatic Deployable Emergency Locator Transmitter	109G2560F05	All
39	Cabin Operator Seat	109G2520F22	All
40	Night Vision Imaging System (NVIS) / NVG	—	All

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Supplement No.	Name of supplement	P/N	Helicopter applicability S/N
41	Weather Probe System	109G3080F01	22290, 22287, 22304, 22314, 22315, 22333, 22337, 22334, 22338, 22339, 22341, 22344, 22361, 22409.
42	V/UHF AM-FM Flexcomm II	109G2310F16	22330, 22354, 22357, 22377, 22379.
43	Satcom DZMx Flightcell	109G2310F20	All
44	Direction Finder	109G3450F13	All
45	FLIR UF350HD System	109G9300F06	All
46	SWE400 Camera System	109G9300F07	22388
47	VHF/FM NPX138	109G2310F26	All
48	External Loudspeaker	109G2300F02-117	All
49	SX-16 Searchlight	109G3340F11	All

OPTIONAL EQUIPMENT INCOMPATIBILITY

The following table shows the incompatibility of one or more optional equipment when installed on board the helicopter.

Supplement No.	Name of supplement	Incompatibility (Supplement No.)
1	Environmental Control System	(*) 2 and 24
2	Bleed Air Heater	1, 10 and 24
3	Engine Air Particle Separator (EAPS)	(*)
4	Category A	None
5	External Hoist	22, 23 and 31
6	Cargo Hook	30
7	Safety Cargo Hook	None
8	Snow Skis	9
9	Slump Protection Pads	8
10	Customisation for REGA	9 (see Note)
11	SX-16 Searchlight	12, 14, 19 and 49
12	SX-16 Searchlight	(*) 11, 14 and 49
13	External Loudspeakers	(*) 48
14	SX-16 Searchlight	(*) 11, 12, 19 and 49
15	Cold Operations Kit	32 ^(***) , 33 ^(***) , 37, 42, 43, 45 and 46
16	Wire Strike Protection System	None
17	Cabin Searchlight	None
18	Copilot External Mirror	None
19	Additional External Mirrors	11 and 14
20	Digital Map Generator	None
21	Avidyne TAS 620 / 620A Traffic Advisory System	None
22	Satcom Aircell	(*) 5, 23 and 32
23	Satcom Aircell with Handset	(*) 5 and 22
24	Environmental Control System	(*) 1 and 9
25	Supplementary Fuel Tanks	None
26	Fixed Wheeled Landing Gear	None
27	EVS-1000/1500 Videocamera	None
28	FDR / CVR	(*)
29	Auxiliary Videocamera	None

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Supplement No.	Name of supplement	Incompatibility (Supplement No.)
30	Cargo Hook with Videocamera	6
31	Green Aircraft Configuration	(*) 5, 32 and 33
32	Internal Arrangement	(*) 22, 31, 33 and 15(**)
33	Internal Arrangement, Forward Facing Central Seat	(*) 31, 32 and 15(**)
34	FMS Approach Operations	None
35	Weather Radar - RDR 2000 Bendix King	(*)
36	Avionic Basic Variant	(*)
37	Open Pax Windows	15
38	Automatic Deployable Emergency Locator Transmitter	(*)
39	Cabin Operator Seat	(*)
40	Night Vision Imaging System (NVIS) / NVG (****)	(*)
41	Weather Probe System	(**)
42	V/UHF AM-FM Flexcomm II	(**) 15
43	Satcom DZMx Flightcell	15
44	Direction Finder	None
45	FLIR UF350HD System	(**), (****) 15
46	SWE400 Camera System	(**) 15
47	VHF/FM NPX138	None
48	External Loudspeaker	13
49	SX-16 Searchlight	11, 12 and 14

- (*) This Kit is incompatible with Kit P/N 109-B810-12-101/-105/-107 (helicopters S/N 22202 and 22204 thru 22212) and kit P/N 109-B810-12-103 (S/N 22213).

Note

Kit P/N 109-B810-12-103 is incompatible with Kit P/N 109-B810-12-101/-105/-107.

- (**) Installation certified under No Hazard principle and for this reason (only for 22373, 22375) not be declared compatible with installations not included into the helicopter configuration at the moment of the certification.

- (***) The incompatibility is dependent by the specific internal arrangement. Refer to aircraft configuration limitations detailed in [Supplement 15](#).
- (****) The helicopter certified configuration consists in two FLIR control options, P/N 109G9300F06-101/-111 (with operator in cockpit) and P/N 109G9300F06-107/-117 (with operator in cabin).

LIST OF REFERENCE TO COMPATIBILITY HANDBOOKS

In this section are report the Reference to the following Compatibility Handbook:

(*****) Night Vision Imaging System (NVIS) compatibility information can be found in document AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK, Doc. 109G3360A001 latest issue.

Refer also to Night Vision Imaging System (NVIS)/NVG Operations ([Supplement 40](#)).

AW109SP has been certified as tolerant to PEDs (Portable Electronic Devices) in accordance to Doc. 109G9850A001 latest Issue.

PEDs (Portable Electronic Devices) sensitive equipment that have been assessed and declared as NON-PED tolerant or that have PED tolerance limitations, can be found in document AW109SP - PED Compatibility Reference Handbook, Doc.109G9850A001 latest issue.

PERFORMANCE CORRECTION AFTER KIT INSTALLATION

Table 5-1 shows the correction to apply to the Rate Of Climb (ROC) performance after the installation of one or more optional equipment. Optional equipments not listed in table 5-1 do not have effect on climb performance.

The performance charts from which start computing the effect of the optional equipment can be the ROC charts in Section 4 of basic RFM for the clean configuration without ECS or Heater or EAPS effect, or the ROC charts in Supplements 1 or 2 or 3 or 10 or 24 for the clean configuration with ECS or Heater or EAPS effect.

After having defined the charts from which start the computation, identify in table 5-1 the optional equipments to be considered part of the target configuration and apply to those ROC charts the sum of ROC penalties presented in table 5-1.

An example of calculation will help the comprehension.

EXAMPLE:

Determine the All Engine Operative (AEO) Rate of Climb at Maximum Continuous Power (MCP) rating with the helicopter at gross weight of 2900 kg and flying at 10000 ft Hp with 0°C of OAT and Heater ON.

The helicopter configuration includes the Fixed Wheeled Landing Gear, the Cargo Hook and the Wire Strike Protection System.

Solution:

Examine the climb chart of Fig. 4-11 in Supplement 2 (Bleed Air Heater).

The ROC from Fig. 4-11 in Supplement 2 (Bleed Air Heater) results of 1070 ft/min in clean configuration.

From the following Table 5-1 it results that the ROC performance at MCP are not penalized by the presence in configuration of the Wire Strike Protection System while the Fixed Wheeled Landing Gear reduces the ROC of 90 ft/min and the Cargo Hook of 20 ft/min.

The total reduction of ROC is 110 ft/min.

The final ROC, obtained applying the total reduction of performance above calculated, is: $1070 - 110 = 960$ ft/min.

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Effect of optional equipments on performance		Supplement	ROC			
			TOP [ft/m]	MCP [ft/m]	2.5 min. [ft/m]	MCP OEI [ft/m]
Equipment	P/N					
ECS	109-0813-50	1	see Supplement chart			
Heater	109-B810-49	2	see Supplement chart			
Heater variant	109G2106P01	10	see Supplement chart			
EAPS	109-0811-55	3	see Supplement chart			
ECS	109-B811-53	24	see Supplement chart			
Fixed wheeled L/G	109-B811-02	26	-80	-90	-100	-110
External hoist	109-B810-16	5	-50	-60	-70	-75
Cargo hook	109-0810-31	6	-20	-20	-30	-30
Cargo hook with videocamera	109G2592A01	30	-20	-20	-30	-30
Snow Skis (including FLG effect)	109-0811-99 109G3271F01	8	-100	-110	-130	-140
Slump protection pads (including FLG effect)	109-0811-73 109G3272F01	9	-100	-110	-130	-140
SX-16 Searchlight	109-B810-80	11	-80	-90	-100	-110
	109-0814-75	12				
	109G3340F02	14				
	109G3340F11	49				

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Table 5-1 Correction table after kit installation.

Note

As far the effect of optional equipments on Category A performance refer to the specific correction table in [Supplement 4](#).

Note

Performance reduction for Cargo Hook installation will be applied only to ROC data obtained for weight up to 3175 kg. For weight above 3175 kg use specific data.

Note

The ROC corrections due to presence of Cargo Hook installation do not take into account of the effect of the load aerodynamic drag depending on load size and shape.

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ENVIRONMENTAL CONTROL SYSTEM

P/N 109-0813-50

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Environmental Control System (ECS) is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 11 DECEMBER 2009
REVISION 1: 4 JULY 2017

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
1	Revised pages Title page, A-1, B-1 and 8 thru 20 of 22.	EASA Approval N° 10062498 dated 4 July 2017

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LIST OF EFFECTIVE PAGES

NOTE: Revised text is indicated by a black vertical line in the outer margin of the page and the approval revision number is printed in the lower margin

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A-2	0
B-1	1
B-2	0
i thru iv	0
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GENERAL

The Environmental Control System (ECS) P/N 109-0813-50 consists of two bleed-air shut-off valves, one pressure and regulating shut-off valve, pressure and temperature switches, air conditioning unit, outside air intake and exhaust duct, pilot and passenger area air outlets, connecting ducts and tubing, a circuit switch and two control switches to operate the shut-off valves. The ECS also comprises a cabin air recirculating system. A selecting valve, to reduce the used bleed air, can be selected by an economy mode selector switch.

Bleed air and outside air are fed into the air conditioning unit where a temperature sensor, set by a control knob (electrically connected to a temperature control system), determines the mixing ratio and the extent to which the air is then cooled to produce the desired temperature.

The system is provided with an overtemperature switch.

Note

When the economy mode selector switch is in ECON position the quantity of bleed air from the engines is less.

SECTION 1 - LIMITATIONS

ECS OPERATION

The use of ECS during One Engine Inoperative (OEI) is prohibited.

SECTION 2 - NORMAL PROCEDURES

ENGINE PRE-START CHECK

1. ECS switch : OFF
2. SHUT-OFF #1 switch : OFF
3. SHUT-OFF #2 switch : OFF

SYSTEM CHECKS

ENVIRONMENTAL CONTROL SYSTEM OPERATIONAL CHECK

The operational check may be accomplished at this time or at any time that environmental control system is desired.

1. NR / N2 : Check stabilized 100%.
2. ECS switch : ON.
Confirm no airflow from the outlets.
3. ECON / NORM selector switch : Set to NORM.
4. SHUT-OFF #1 switch : ON.
Confirm airflow from outlets, then set to OFF.
5. SHUT-OFF #2 switch : ON.
Confirm airflow from outlets.
6. SHUT-OFF #1 switch : ON.
7. TEMP CONT knob : Set to MIN.
Confirm cool airflow from outlets.

Note

Condensation may be visible from the outlets when the humidity is high

- 8. Engine temperatures (TOT) : Check within limits.
- 9. ECON / NORM selector switch : Set to ECON.
Observe TOT decrease.
Then set to NORM.
- 10. TEMP CONT knob : Set to MAX (by turning clockwise) and observe that the temperature of the airflow from the outlets increases.
- 11. ECS switch : OFF.
Confirm airflow shuts-off.
- 12. SHUT-OFF #1 and #2 switches : OFF.

TAKE-OFF

If ECS operation is desired:

1. SHUT-OFF #1 and #2 : ON
switches
2. ECS switch : ON.
3. TEMP CONT knob : As desired.
4. ECON/NORM selector switch : As desired.

IN FLIGHT

If ECS operation is desired:

1. SHUT-OFF #1 switch : ON.
2. SHUT-OFF #2 switch : ON.
3. ECS switch : ON.
4. TEMP CONT knob : As desired.
5. ECON / NORM selector : As desired.
switch

ADVISORY CAPTION DEFINITIONS

CAS Caption (Green)

ECS ON

System State

Environmental Control System (ECS)
switched ON.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

ENGINE FAILURES

Note

In case of engine failure and in OEI condition, the bleed valves of both engines are automatically closed.

FAILURE OF ONE ENGINE

1. ECS switch : OFF as soon as practicable.
2. SHUT-OFF #1 and #2 switches : OFF as soon as practicable.

FAILURE OF TWO ENGINES

1. ECS switch : OFF as soon as practicable.
2. SHUT-OFF #1 and #2 switches : OFF as soon as practicable.

ENGINE RESTART IN FLIGHT

Before attempting a restart:

1. ECS switch : Check OFF.
2. SHUT-OFF #1 and #2 switches : Check OFF.

FIRE

Note

In case of engine fire, the bleed valves of both engines are automatically closed.

ENGINE FIRE DURING START

1. ECS switch : OFF as soon as practicable.
2. SHUT-OFF #1 and #2 switches : OFF as soon as practicable.

ENGINE FIRE IN FLIGHT

1. ECS switch : OFF as soon as practicable.
2. SHUT-OFF #1 and #2 switches : OFF as soon as practicable.

SMOKE IN CABIN, TOXIC FUMES, ETC

1. ECS switch : OFF.
2. SHUT-OFF #1 and #2 switches : OFF.

STATIC PORT OBSTRUCTION

When the alternate static source is used:

1. ECS switch : OFF.
2. SHUT-OFF #1 and #2 switches : OFF.

ENVIRONMENTAL CONTROL SYSTEM MALFUNCTION

If a malfunction in the ECS controls occurs, deactivate the system as follows:

1. ECS switch : OFF.
2. SHUT-OFF #1 and #2 : OFF.
switches

CAUTION

Disengage ECS when:

1. The air flow does not shut-off when ECS switch is OFF. Operate the shut-off switches.
2. The ECS switch trips. Operate the shut-off switches.
3. The air flow does not shut-off when SHUT-OFF # 1, # 2 switches are OFF. Operate the ECS switch.

Proceed with flight, correct problem before next flight.

SECTION 4 - PERFORMANCE DATA

Note

For combination with other optional equipment refer to chapter "[PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#)".

GENERAL

The maximum power available with the ECS operating is less than that available with the helicopter in basic configuration.

This power loss is caused by the compressor bleed-air used for the ECS.

Performance charts with the ECS switched ON are provided for all engines operative (AEO) condition.

During One Engine Operating (OEI) operations, the compressor bleed-air valves are automatically closed. Therefore, performance in OEI conditions is the same as that shown in the Basic Rotorcraft Flight Manual.

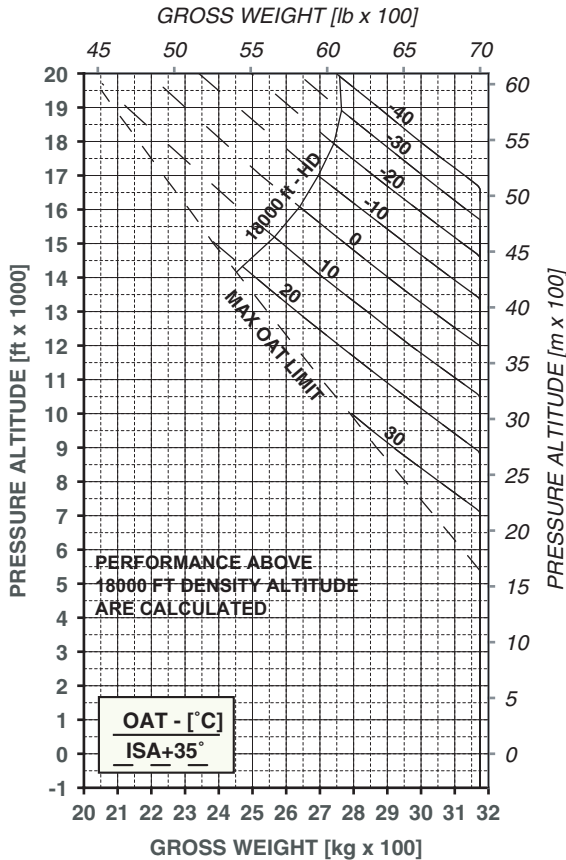
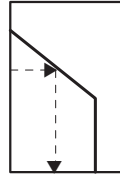
Performance with the ECS switched OFF is the same as that shown in the basic Rotorcraft Flight Manual.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

HOVER CEILING IN GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT
ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL



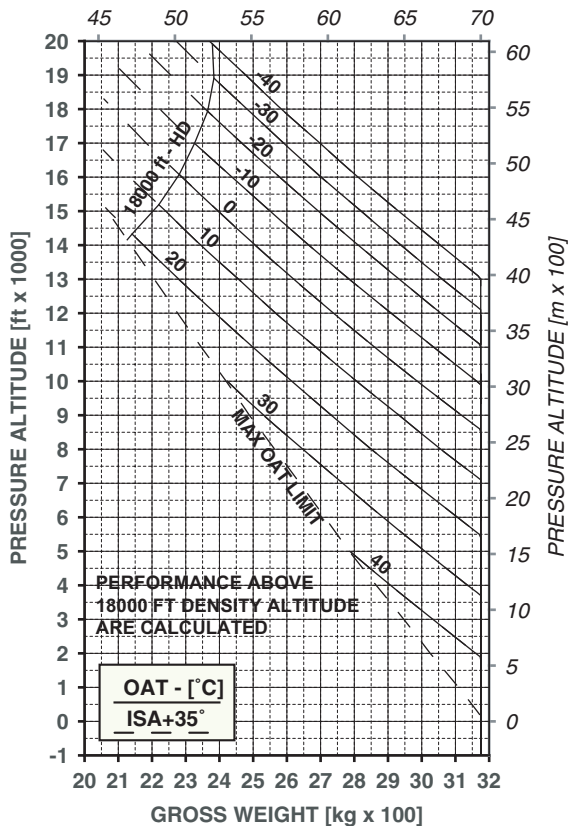
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Figure 4-1 Hover Ceiling IGE - Take-Off Power AEO
- ECS ON

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

GROSS WEIGHT [lb x 100]



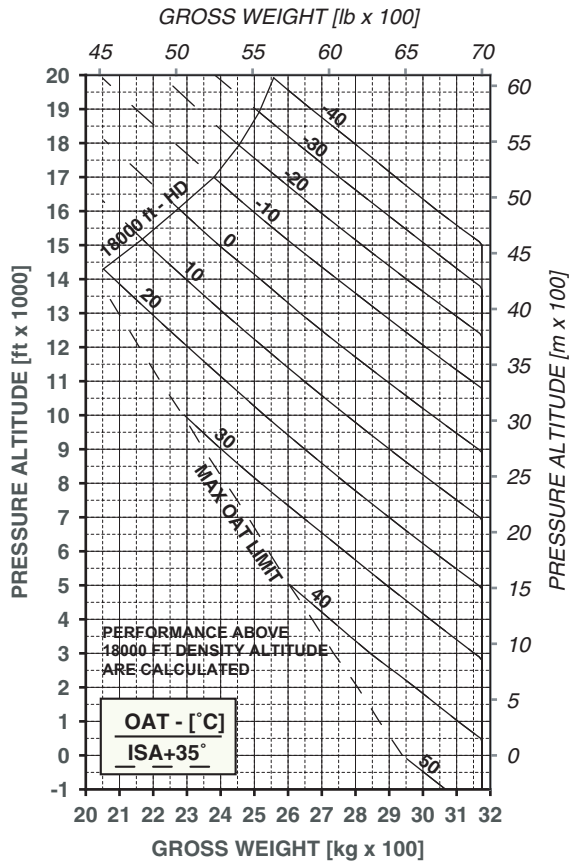
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EASA Approved

HOVER CEILING IN GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL



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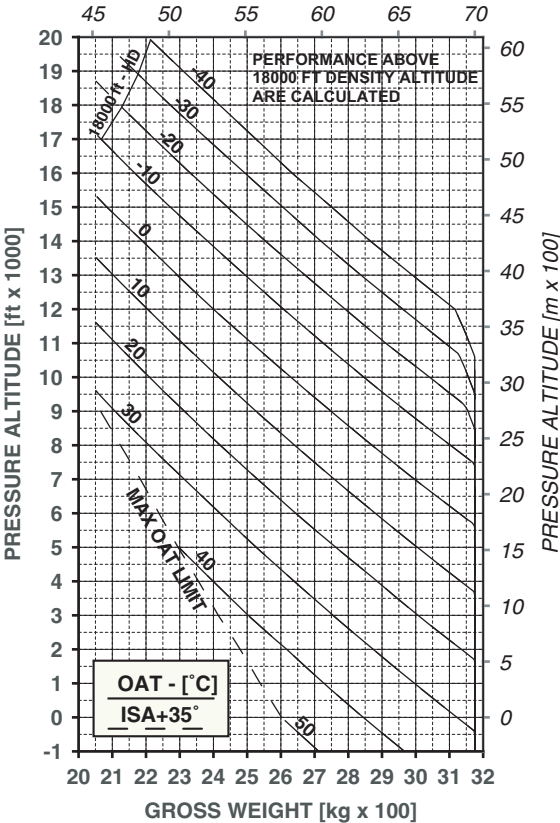
Figure 4-3 Hover Ceiling IGE - Maximum Continuous Power
AEO - ECS ON

HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVERING OPERATION MAY RESULT IN VIOLATION OF H-V
GROSS WEIGHT [lb x 100]



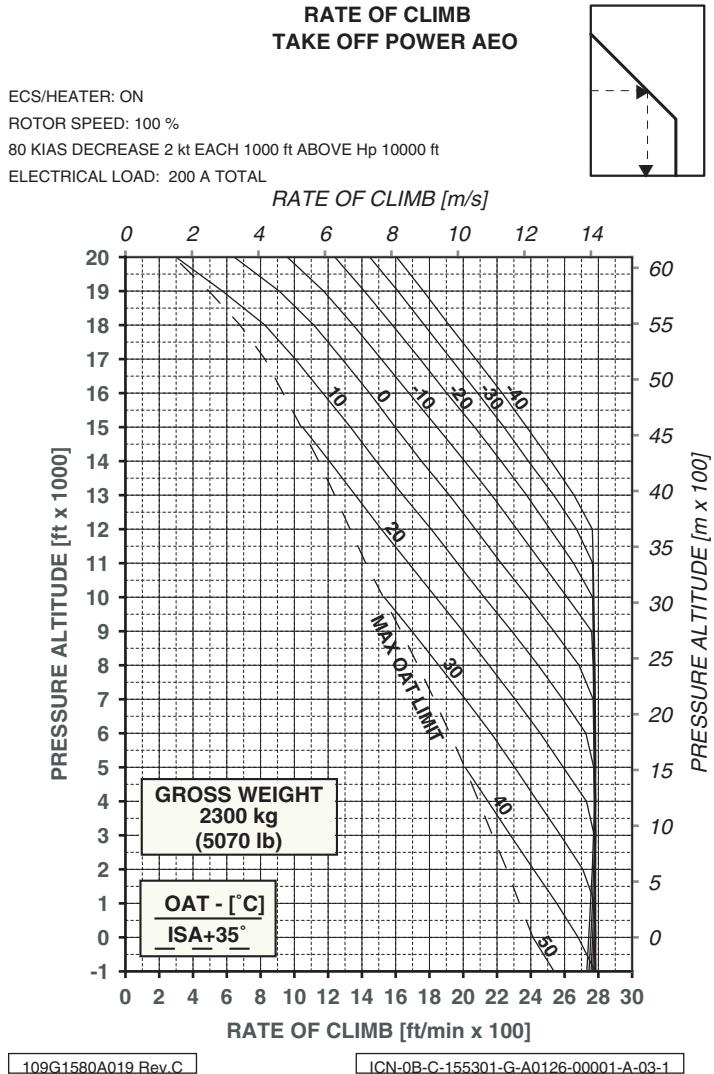
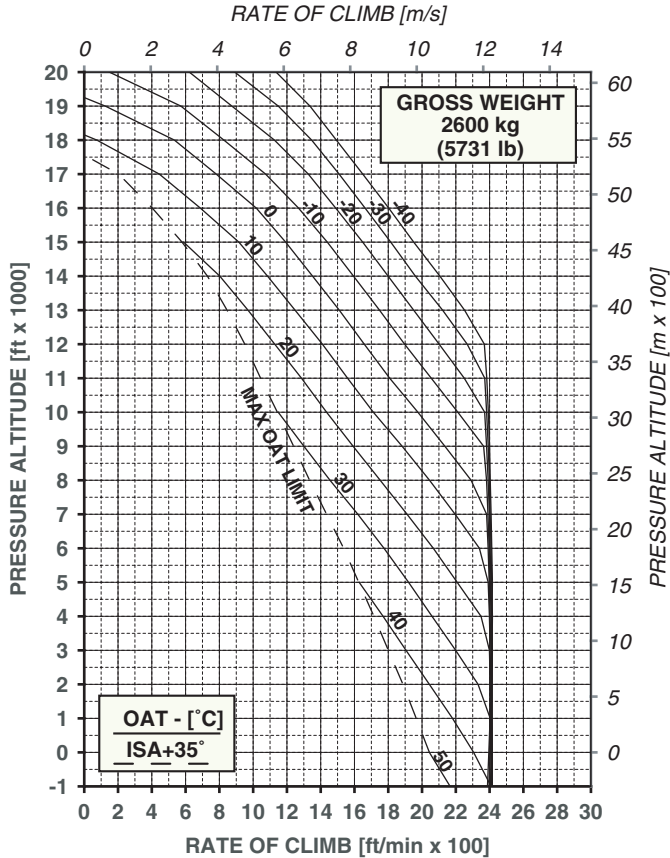


**Figure 4-5 Rate of Climb - Take-Off Power AEO - ECS ON -
Gross Weight 2300 kg**

**RATE OF CLIMB
TAKE OFF POWER AEO**

ECS/HEATER: ON
ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-6 Rate of Climb - Take-Off Power AEO - ECS ON -
Gross Weight 2600 kg**

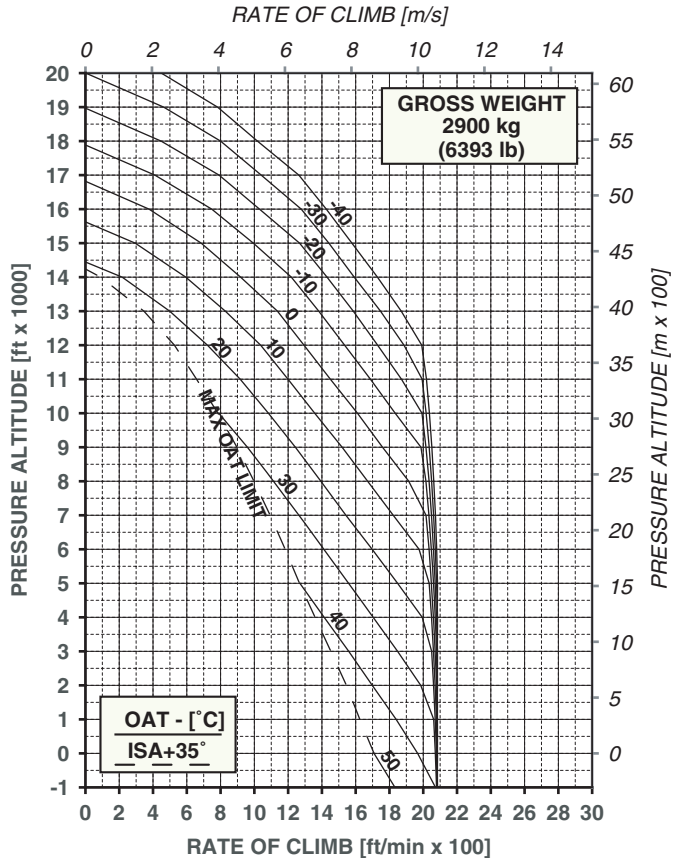
**RATE OF CLIMB
TAKE OFF POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



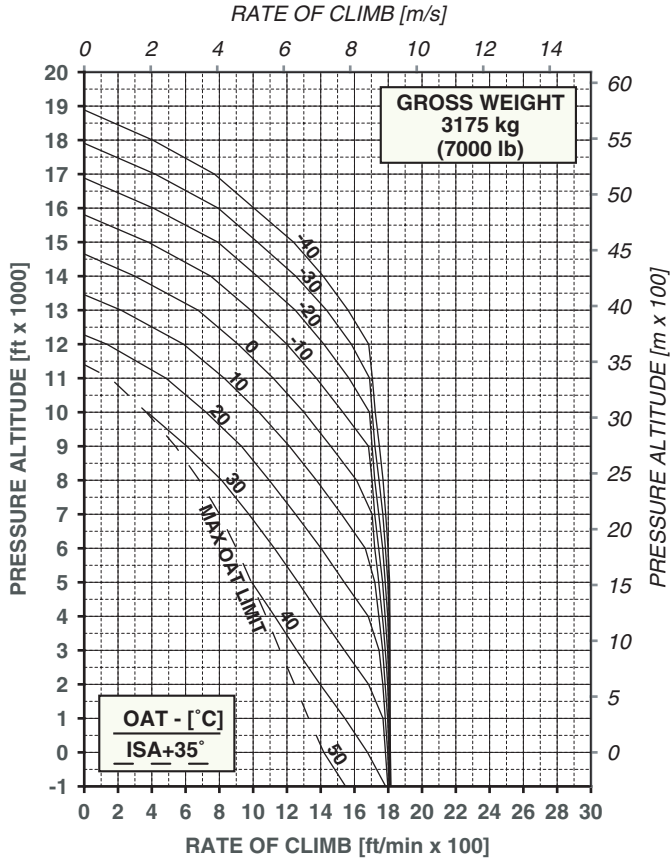
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**Figure 4-7 Rate of Climb - Take-Off Power AEO - ECS ON -
Gross Weight 2900 kg**

**RATE OF CLIMB
TAKE OFF POWER AEO**

ECS/HEATER: ON
ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL



109G1580A019 Rev.C

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Figure 4-8 Rate of Climb - Take-Off Power AEO - ECS ON - Gross Weight 3175 kg

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

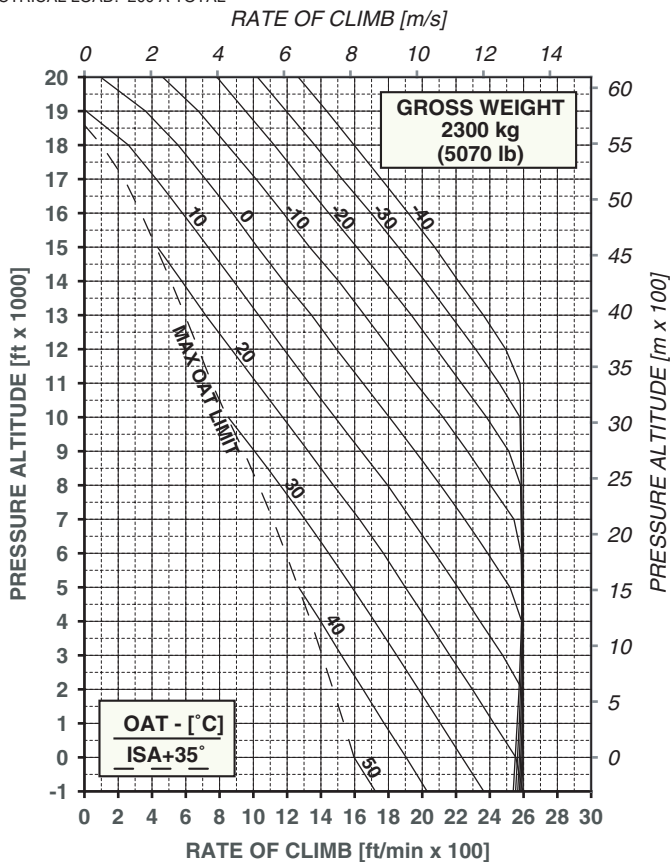


**Figure 4-9 Rate of Climb - Maximum Continuous Power AEO -
ECS ON - Gross Weight 2300 kg.**

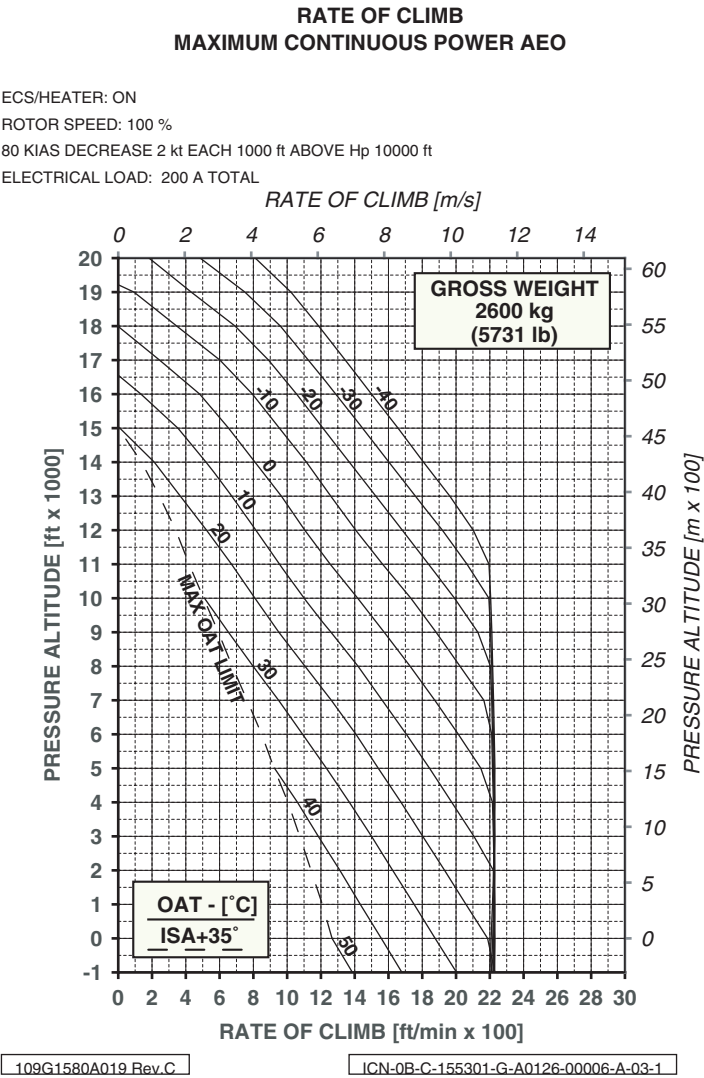


Figure 4-10 Rate of Climb - Maximum Continuous Power AEO -
ECS ON - Gross Weight 2600 kg

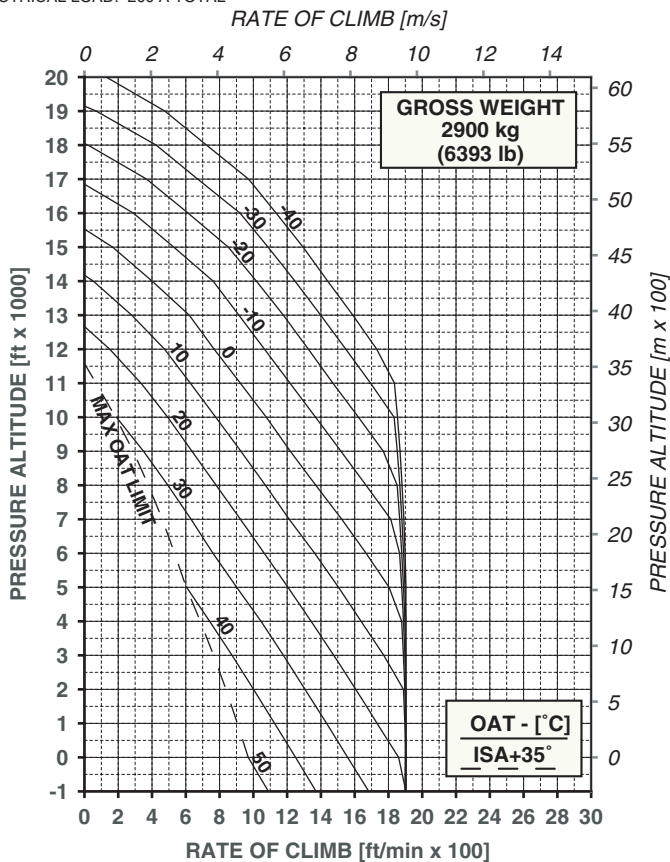
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-11 Rate of Climb - Maximum Continuous Power AEO -
ECS ON - Gross Weight 2900 kg**

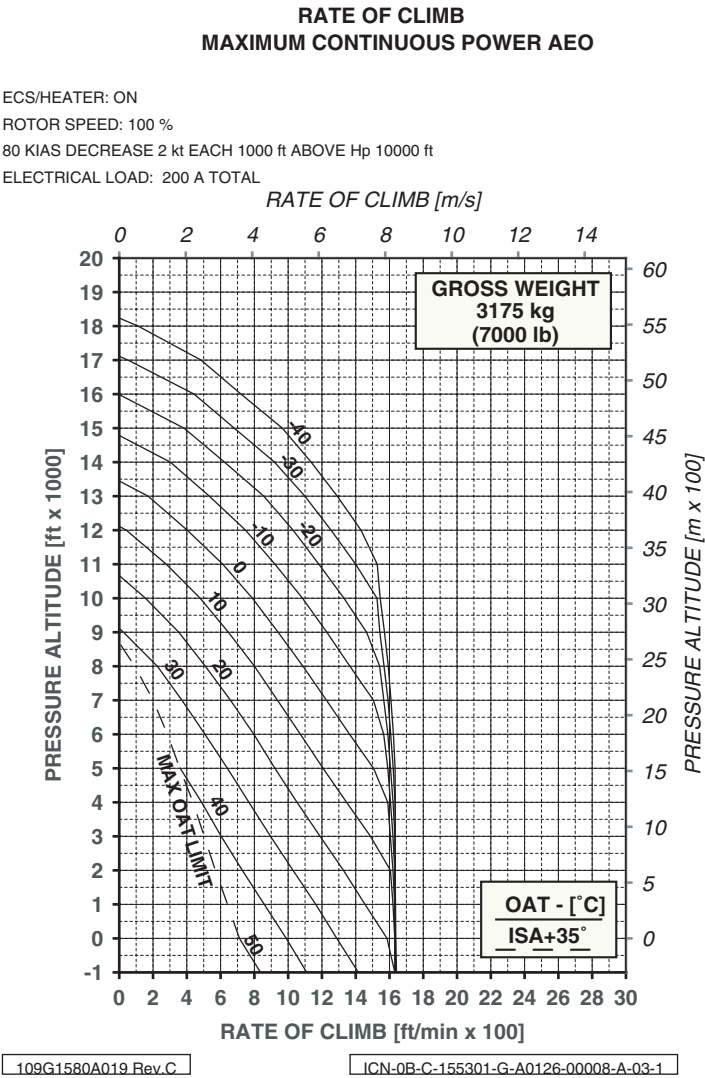


**Figure 4-12 Rate of Climb - Maximum Continuous Power AEO -
ECS ON - Gross Weight 3175 kg**

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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BLEED AIR HEATER

P/N 109-B810-49

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Bleed Air Heater is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 11 DECEMBER 2009
REVISION 3: 27 MAY 2025

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
1	Revised pages Title page, A-1, B-1, 1 and 3 thru 8 of 22.	EASA Approval N° 10037552 dated 5 December 2011
2	Revised pages Title page, A-1, B-1, ii and 8 thru 20 of 22.	EASA Approval N° 10062498 dated 4 July 2017
3	Revised page 6 of 22.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1, B-1 and ii.	Manufacturer's Data

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GENERAL

The Bleed Air Heater, P/N 109-B810-49, consists of two bleed-air shut-off valves, one mixing valve with solenoid control valve, one outside air intake, a temperature sensor control for pilot and passenger area air outlets, ducting and tubing, a master switch and three control switches to operate shut-off valves and solenoid control valve.

Bleed air and outside air are fed into the mixing valve where a temperature sensor determines the mixing ratio to produce the required temperature. The temperature is regulated by a manual control knob and cable connected to a variable remote sensor in the mixing valve.

The system is provided with an overtemperature switch.

When the P/N P/N 109-B810-49-251 is installed, it introduces a three position switch (ALL/UPR/DEMIST) which allows the airflow to be directed as follows:

- ALL Upper and lower duct;
- UPR Pilots and cabin upper zone duct;
- DEMIST Pilots upper duct only.

SECTION 1 - LIMITATIONS

BLEED AIR HEATER OPERATION

The bleed air heater shall be switched OFF during the following flight conditions:

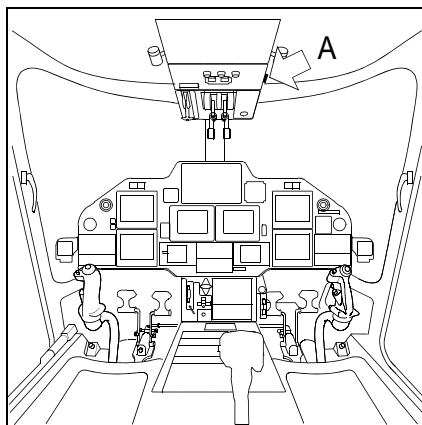
- single engine operations;
- outside air temperatures above 21°C.
- Category A Operation Training.

When the P/N 109-B810-49-251 is installed, the following additional limitations apply:

When the heater is OFF the ventilation fan must be ON.

When the heater is OFF and passenger(s) are in the cabin, the cabin doors sliding window(s) must be open below 60 KIAS.

PLACARD



A

DO NOT OPERATE HEATER ABOVE 21°C OAT

ICN-0B-C-155002-G-A126-01501-A-01-1

Figure 1-1 Internal Placard

SECTION 2 - NORMAL PROCEDURES

ENGINE PRE-START CHECKS

INITIAL CHECKS

Overhead Panel:

1. HEATER switch : OFF.
2. MIX switch : OFF.
3. SHUT-OFF #1 and #2 : OFF.
switches

SYSTEM CHECKS

MISCELLANEOUS

1. NR / N2 : Check stabilized 100%.
- 2. TEMP CONT knob : Set to MIN.
- 3. HEATER switch : ON.
Confirm no airflow from the outlets.
- 4. ALL/UPR/DEMIST switch : ALL.
(When the P/N 109-B810-49-251 is installed)
- 5. TEMP CONT knob : Set to MAX.
Confirm no airflow from the outlets.
- 6. MIX switch : ON.
Confirm no airflow from the outlets.
- 7. SHUT-OFF #1 switch : ON.
Confirm warm airflow from outlets, then set to OFF.
- 8. SHUT-OFF #2 switch : ON.
Confirm warm airflow from outlets.
- 9. SHUT-OFF #1 switch : ON.
- 10. TEMP CONT knob : Set to MIN.
Confirm airflow decreases or stops, then set to MAX.
- 11. MIX switch : OFF.
Confirm airflow stops, then set to ON.
- 12. HEATER switch : OFF.
Confirm airflow stops.
- 13. TEMP CONT knob : Set to MIN.
- 14. MIX switch : OFF.
- 15. SHUT-OFF #1 and #2 switches : OFF.

TAKE-OFF

If bleed air heater operation is required:

1. TEMP CONT knob : Set to MIN.
2. SHUT-OFF #1 and #2 switches : ON.
3. MIX switch : ON.
4. HEATER switch : ON.
5. ALL/UPR/DEMIST switch : ALL.
(When the P/N 109-B810-49-251 is installed)
6. TEMP CONT knob : As required.

IN FLIGHT

If bleed air heater operation is required:

1. TEMP CONT knob : Set to MIN.
2. SHUT-OFF #1 and #2 switches : ON.
3. MIX switch : ON.
4. HEATER switch : ON.
5. ALL/UPR/DEMIST switch : ALL.
(When the P/N 109-B810-49-251 is installed)
6. TEMP CONT knob : As required.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

ENGINE RESTART IN FLIGHT

Note

In OEI condition, the bleed valves of both engines are automatically closed.

Before attempting a restart

- 1. HEATER switch: — OFF.

ENGINE SHUTDOWN IN AN EMERGENCY

Note

In case of engine failure, the bleed valves of both engines are automatically closed.

- 1. HEATER switch: — OFF as soon as practicable.

FIRE

Note

In case of engine fire, the bleed valves of both engines are automatically closed.

ENGINE FIRE ON GROUND

- 1. HEATER switch: — OFF as soon as practicable.

ENGINE FIRE IN FLIGHT

1. HEATER switch: — OFF as soon as practicable.

SMOKE IN CABIN, TOXIC FUMES, ETC

1. HEATER switch : OFF.
2. MIX switch : OFF.
3. SHUT-OFF #1 and #2 switches : OFF.

When the P/N 109-B810-49-251 is installed:

4. Sliding Windows (of cabin door) : Open at least one sliding window.

STATIC PORT OBSTRUCTION

When the alternate static source is used:

1. HEATER switch : OFF.
2. MIX switch : OFF.
3. SHUT-OFF #1 and #2 switches : OFF.

BLEED AIR HEATER MALFUNCTION

If a malfunction in the bleed air heater controls occurs, deactivate the system as follows:

1. HEATER switch : OFF.
2. MIX switch : OFF.
3. SHUT-OFF #1 and #2 switches : OFF.

Continue flight.

VENTILATION FAN MALFUNCTION

(When the P/N 109-B810-49-251 is installed)

In case of ventilation fan malfunction and heater OFF, open the cockpit door sliding window(s) and, if there are passenger(s) open the cabin door sliding window(s).

SECTION 4 - PERFORMANCE DATA

Note

For combination with other optional equipment refer to chapter “PERFORMANCE CORRECTION AFTER KIT INSTALLATION”.

GENERAL

The maximum power available with the Heater system operating is less than that available with the helicopter in basic configuration. This power loss is caused by the compressor bleed-air used for the Heater.

Performance charts with the Heater ON are provided for All Engine Operating (AEO) condition.

During One Engine Inoperative (OEI) operations, the compressor bleed-air valves are automatically closed. Therefore, performance in OEI conditions is the same as that shown in the Basic Rotorcraft Flight Manual.

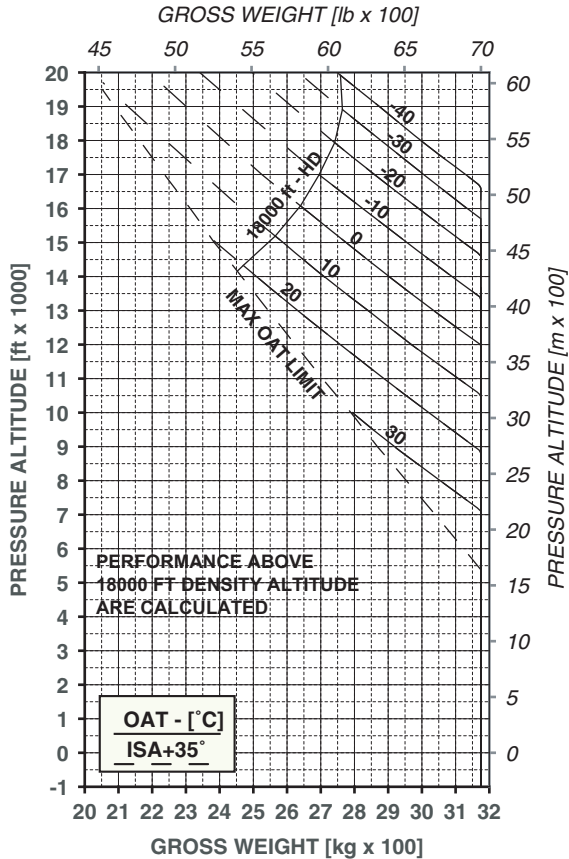
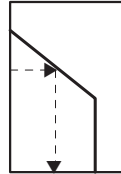
Hover Ceiling..... Figures 4-1 thru 4-4
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The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit (Supplement 15).

HOVER CEILING IN GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT
ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL



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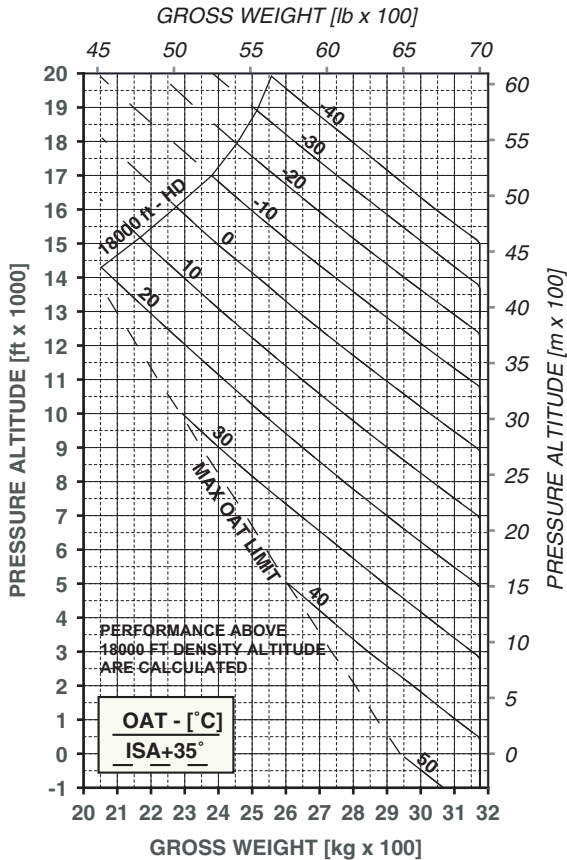
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Figure 4-1 Hover Ceiling IGE - Take-Off Power AEO
- Heater ON

HOVER CEILING IN GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL



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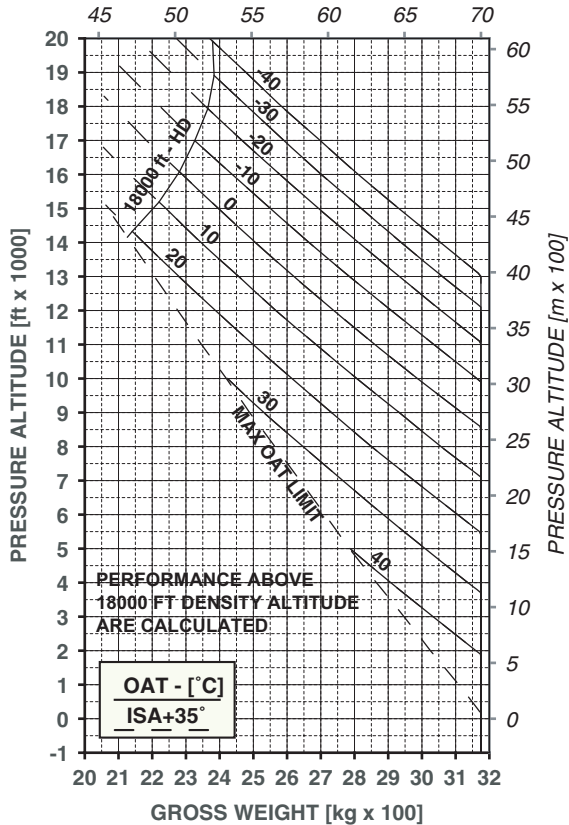
Figure 4-2 Hover Ceiling IGE - Maximum Continuous Power
AEO - Heater ON

HOVER CEILING OUT OF GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVERING OPERATION MAY RESULT IN VIOLATION OF H-V
GROSS WEIGHT [lb x 100]



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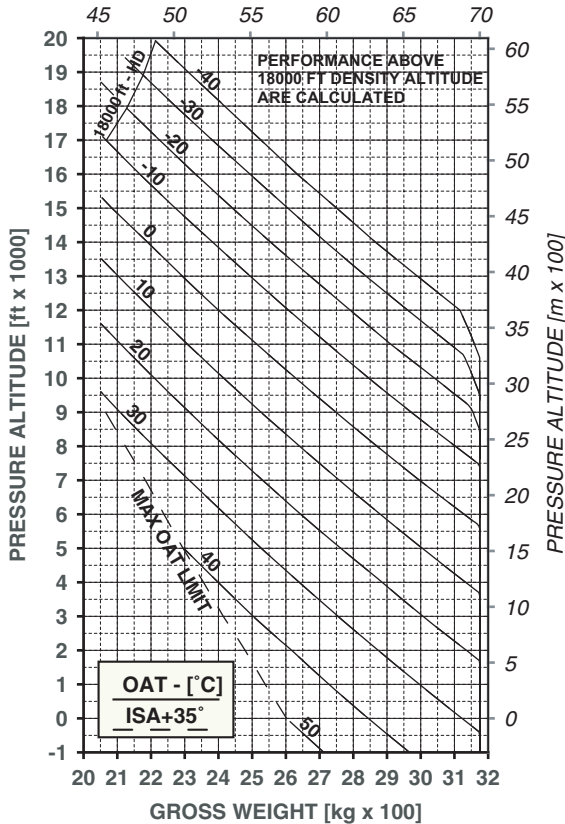
Figure 4-3 Hover Ceiling OGE - Take-Off Power AEO
- Heater ON

HOVER CEILING OUT OF GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVERING OPERATION MAY RESULT IN VIOLATION OF H-V
GROSS WEIGHT [lb x 100]



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Figure 4-4 Hover Ceiling OGE - Maximum Continuous Power
AEO - Heater ON

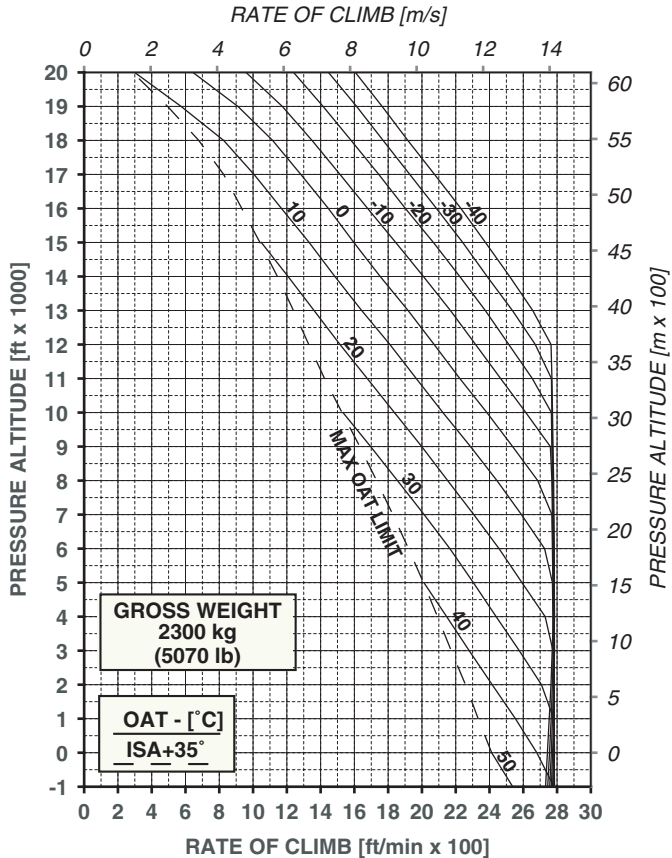
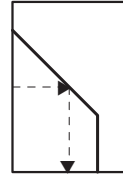
**RATE OF CLIMB
TAKE OFF POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



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Figure 4-5 Rate of Climb - Take-Off Power AEO - Heater ON - Gross Weight 2300 kg

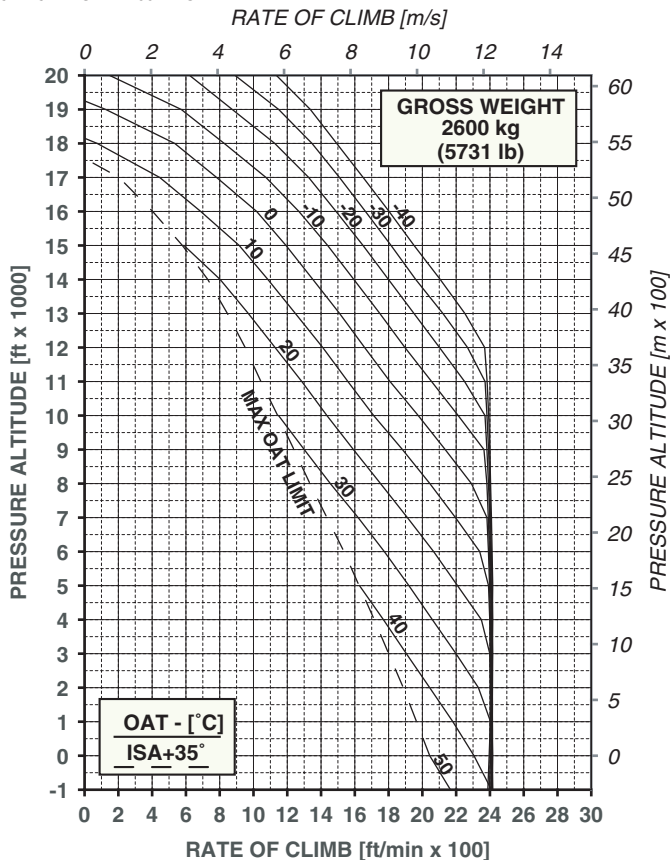
RATE OF CLIMB
TAKE OFF POWER AEO

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



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Figure 4-6 Rate of Climb - Take-Off Power AEO - Heater ON - Gross Weight 2600 kg

**RATE OF CLIMB
TAKE OFF POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

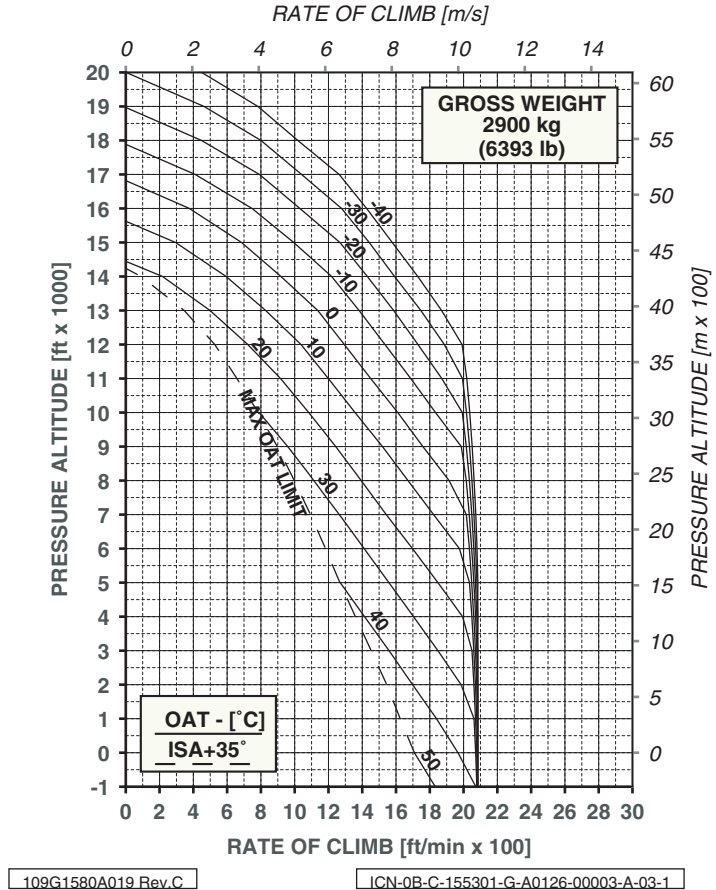


**Figure 4-7 Rate of Climb - Take-Off Power AEO - Heater ON -
Gross Weight 2900 kg**

**RATE OF CLIMB
TAKE OFF POWER AEO**

ECS/HEATER: ON
ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL

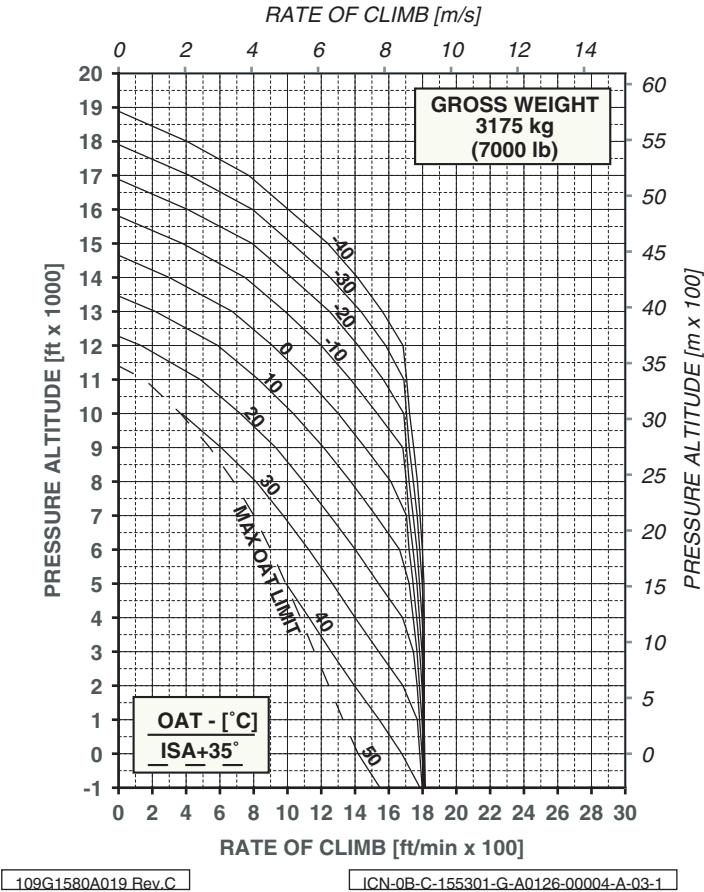


**Figure 4-8 Rate of Climb - Take-Off Power AEO - Heater ON -
Gross Weight 3175 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

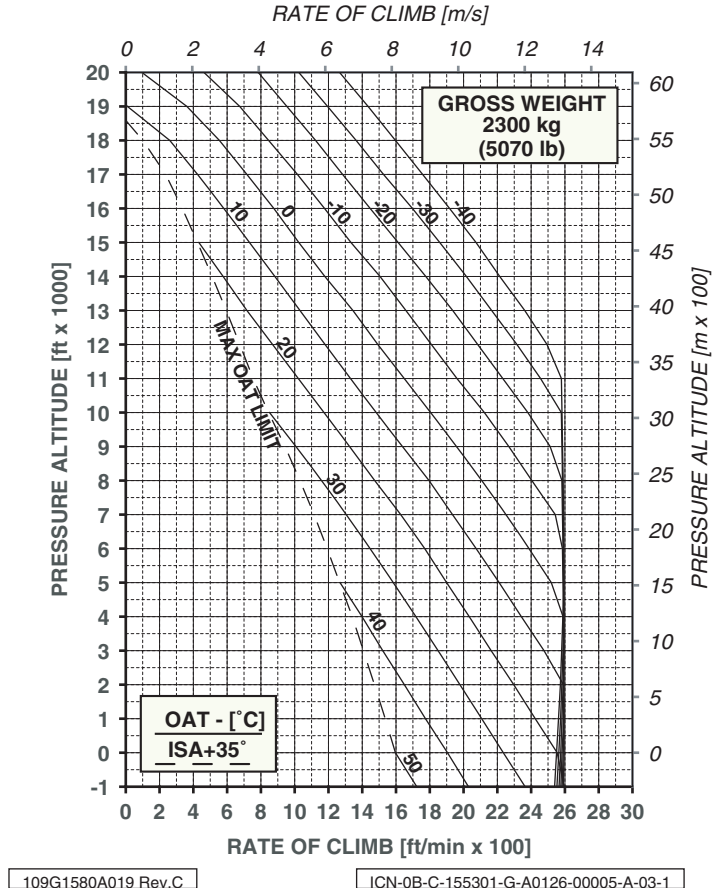
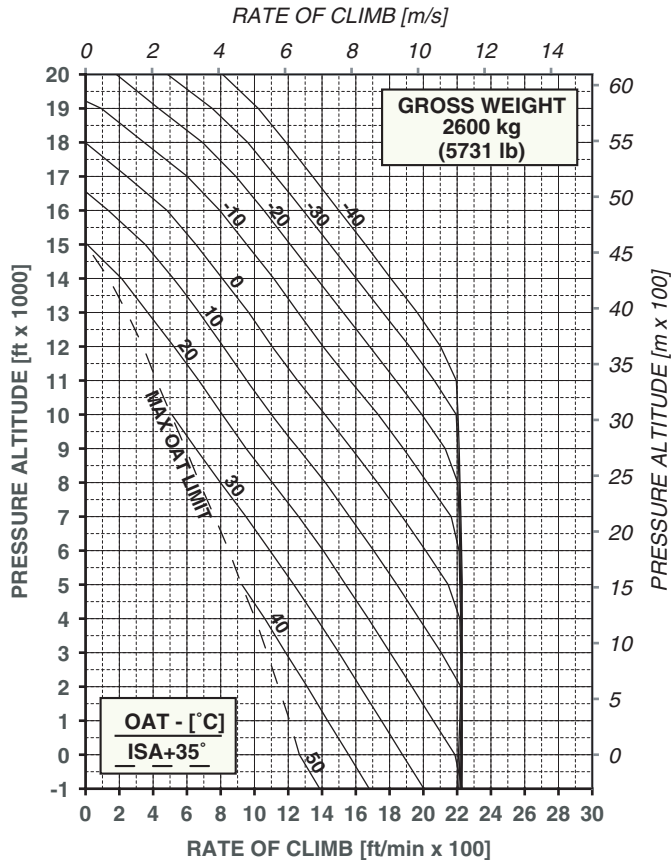


**Figure 4-9 Rate of Climb - Maximum Continuous Power AEO -
Heater ON - Gross Weight 2300 kg.**

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ECS/HEATER: ON
ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL



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ICN-0B-C-155301-G-A0126-00006-A-03-1

Figure 4-10 Rate of Climb - Maximum Continuous Power AEO -
Heater ON - Gross Weight 2600 kg

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

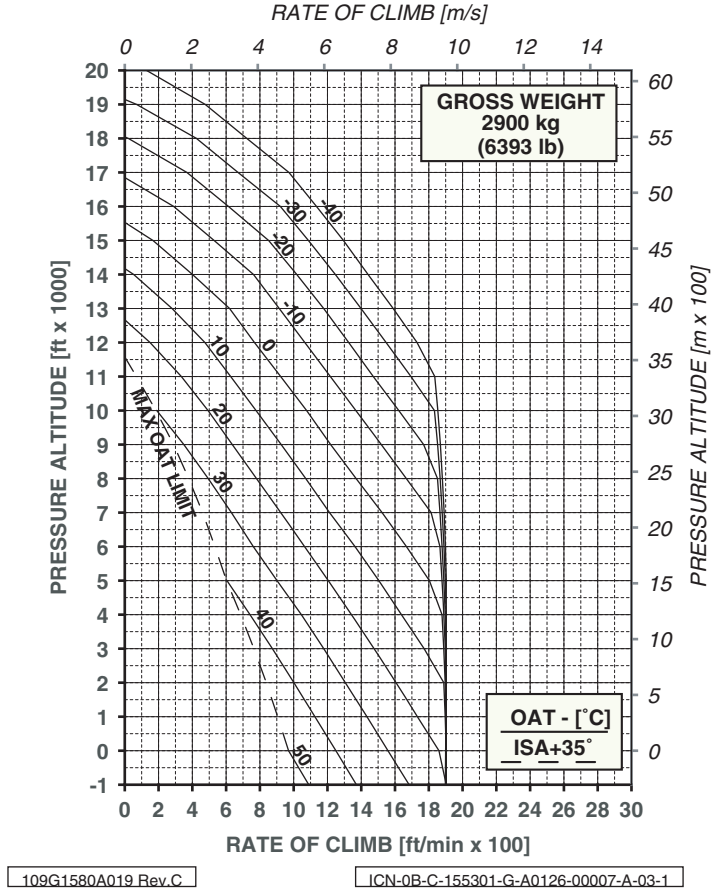


**Figure 4-11 Rate of Climb - Maximum Continuous Power AEO -
Heater ON - Gross Weight 2900 kg**

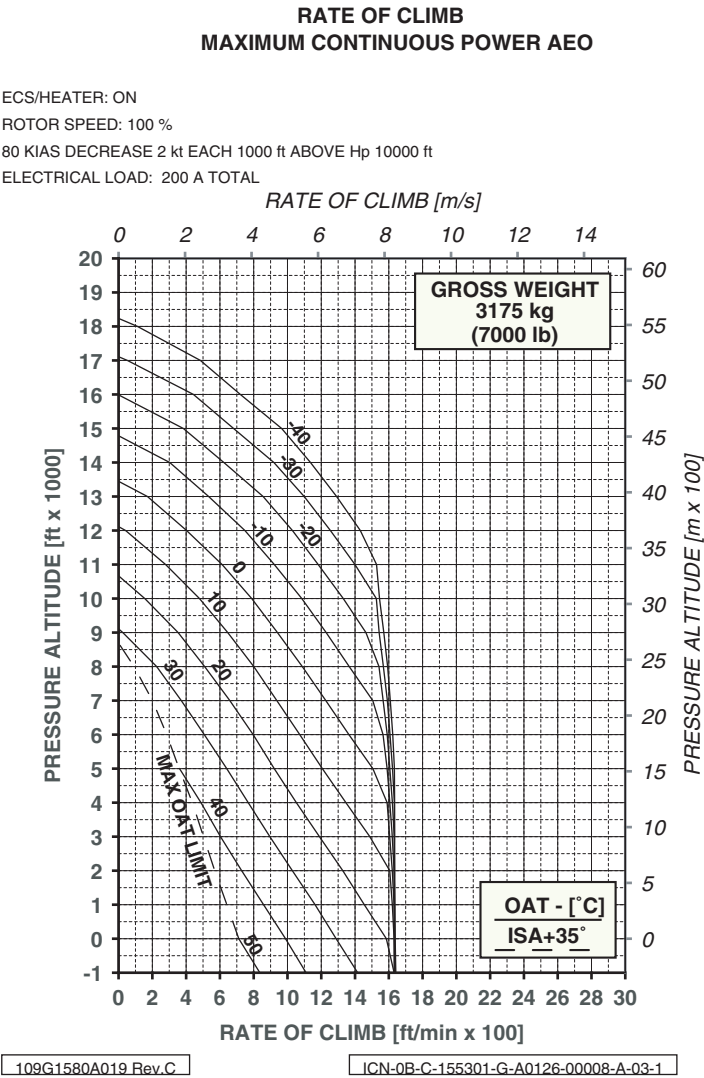


Figure 4-12 Rate of Climb - Maximum Continuous Power AEO -
 Heater ON - Gross Weight 3175 kg

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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**ENGINE AIR
PARTICLE SEPARATOR
P/N 109-0811-55**

This Supplement with Supplement 4 (if Category A Operations are required) and Supplement 6 (if Cargo Hook Operations are required) shall be attached to the AW109SP RFM (Section 5) when the Engine Air Particle Separator (EAPS) is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE A: 26 APRIL 2011
REVISION 3: 11 JUNE 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10034713 dated 26 April 2011
1	Revised pages Title page, A-1, B-1, 11 thru 13 of 94.	EASA Approval N° 10048294, REV. 1 dated 14 March 2014
2	Revised pages Title page, A-1, B-1, 9, 15 thru 35, 37 thru 43 and 45 thru 93 of 94.	EASA Approval N° 10062498 dated 4 July 2017
3	Revised pages Title page, A-1 and B-1, ii, iv, v, vi and viii.	Manufacturer's Data

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GENERAL

The Engine Air Particle Separators (EAPS), P/N 109-0811-55, protect the engines against the ingestion of air contaminated with sand, dust and other foreign particles or objects.

The EAPS system consists of a particle separator located in front of each engine air intake. Additional hardware (tubing, hoses, electrical cables) and control units for the engine bleed air shut-off valves complete the installation.

In the EAPS foreign particles are separated by the swirling action of the air passing through the vortex generators contained in the particle separator. The clean air then enters the engine air intake, while the foreign particles are directed into a lower chamber by the scavenge flow. From this chamber, the foreign particles are discharged outboard through an ejector activated by the engine bleed-air.

The EAPS is activated via a control switch on the overhead panel. This switch permits air to be bled from the engine for the air separation and ejection process. The EAPS can also be operated without bleed-air, however its efficiency is then reduced by 50%. Should the EAPS be used without bleed air the particles are accumulated in the lower chamber of the ejector unit until the chamber is completely full. When the chamber is full the EAPS can no longer separate the air and subsequently contaminated air will then flow into the engine intake.

SECTION 1 - LIMITATIONS

No change.

SECTION 2 - NORMAL PROCEDURES

EXTERNAL PREFLIGHT CHECKS

PILOT'S PREFLIGHT CHECK

Area N°2 (Fuselage - RH side)

➡ EAPS : Cover removed; integrity; free of foreign matter and/or obstruction.

Area N°6 (Fuselage - LH side)

➡ EAPS : Cover removed; integrity; free of foreign matter and/or obstruction.

ENGINE PRE-START CHECK

At the end of ENGINE PRE-START CHECK sequence: .

EAPS 1 and EAPS 2 switches : ON.
Check that #1 EAPS ON and #2 EAPS ON advisory messages are displayed on EDU 2, and #1 EAPS PRES and #2 EAPS PRES caution messages are displayed on EDU 1.

EAPS 1 and EAPS 2 switches : OFF.
Check that #1 EAPS ON and #2 EAPS ON advisory messages on EDU 2 are suppressed, and #1 EAPS PRES and #2 EAPS PRES caution messages on EDU 1 are suppressed.

SYSTEM CHECKS

EAPS 1 and EAPS 2 switches : ON.
Check that #1 EAPS ON and #2 EAPS ON advisory messages are displayed on EDU 2.

Engine temperature (TOT) : Note increase by about 15 °C.

On completion of systems check: :

EAPS 1 and EAPS 2 switches : As required.

IN FLIGHT

EAPS 1 and EAPS 2 switches : As required.

APPROACH AND LANDING

EAPS 1 and EAPS 2 switches : As required.

SHUTDOWN

Before ENG 1 and ENG 2 MODE switches to OFF:

EAPS 1 and EAPS 2 switches : OFF (if utilized).
Check that #1 EAPS ON and
#2 EAPS ON advisory messages
on EDU 2 are suppressed.

ADVISORY CAPTION DEFINITIONS

CAS Caption (Green)	System State
#1 EAPS ON	Engine 1 Air Particle Separator activated
#2 EAPS ON	Engine 2 Air Particle Separator activated

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

ENGINE FAILURE

SINGLE ENGINE FAILURE PROCEDURE

After a safe OEI flight has been established:

EAPS 1 and EAPS 2 switches : OFF.
Check that #1 EAPS ON and #2 EAPS ON advisory messages on EDU 2 are suppressed.

FIRE

ENGINE FIRE IN FLIGHT

(with or without engine fire extinguisher installed)

EAPS 1 and EAPS 2 switches : OFF.
Check that #1 EAPS ON and #2 EAPS ON advisory messages on EDU 2 are suppressed.

FLIGHT IN THUNDERSTORM - LIGHTNING STRIKE

Induced current overloads caused by lightnings could trip the EAPS switches.

If required, reset EAPS switches to ON.

CAUTION SYSTEM

CAUTION MESSAGE

CAS Caption

#1(2) EAPS PRES

Failure/System State

Associated engine bleed air shut-off valve malfunction.

EAPS MALFUNCTION

#1(2) EAPS PRES

Malfunction of affected engine bleed air shut-off valve:

- non-opening of the valve with EAPS switch in ON position.
- non-closure of the valve with EAPS switch in OFF position.

**Proceed
with flight.**

**Correct problem
before next flight.**

ENGINE MALFUCTIONS

ENGINE RESTART IN FLIGHT

Before attempting a restart in flight, either in AUTO mode or MANUAL mode:

EAPS switch (on affected engine) : OFF.

Check that #1(2) EAPS ON of affected engine advisory message on EDU 2 is suppressed.

ENGINE START IN MANUAL MODE (ON GROUND)

EAPS switch (on affected engine) : OFF.

Check that #1(2) EAPS ON of affected engine advisory message on EDU 2 is suppressed.

ENGINE SHUTDOWN IN MANUAL MODE

Before engine power lever to OFF:

EAPS switch (on affected engine) : OFF.

Check that #1(2) EAPS ON of affected engine advisory message on EDU 2 is suppressed.

SECTION 4 - PERFORMANCE DATA

GENERAL

This section provides the performance data for AW109SP helicopters equipped with EAPS in the following configurations:

- Basic helicopter
- Helicopter equipped with Environmental Control System (ECS) or Bleed Air Heater.

Refer to [Supplement 4](#) for Category A Operations and [Supplement 6](#) with helicopters equipped with Cargo Hook.

The presence of the particle separators (EAPS installed), even with bleed-air shut-off valve closed (EAPS OFF), causes an increase of power losses due to a pressure reduction of the engine intake. The increase of power losses is more evident when the bleed-air shut-off valves is open (EAPS ON).

Whenever the EAPS is installed the helicopter performance is reduced when compared to the basic helicopter configuration without the EAPS installed.

Performance charts with EAPS (ON and OFF) and ECS /Heater ON are provided for all engine operative (AEO).

During single engine operations (OEI) performance charts with the EAPS (ON and OFF) are provided.

ENGINE POWER ASSURANCE CHECKS

([Figures 4-1](#) to [4-3](#))

The purpose of the Engine Power Assurance Checks, with EAPS installed, is to provide a means of monitoring engine health on an on-going basis. Three check types are provided for this purpose:

- a Ground/Hover Power Assurance Check
 - EAPS OFF
 - EAPS ON
- a Level Flight Power Assurance Check
 - EAPS OFF.

A Ground/Hover Power Assurance Check procedure (EAPS OFF or ON as required) is provided to the operator. The procedure should be used to check if the engine power available, before take-off, is within the limits to guarantee the performance presented in this Section.

Another procedure is provided, to enable the operator to check the engine power in level flight. The procedure should be used to check if the power available is within the limits to guarantee the performance presented in this Section and maintain a trend chart to monitor the deterioration of the engine with operating hours.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

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- HEATER/ECS OFF
- GENERATOR LOAD TO MINIMUM

POWER ASSURANCE CHECK PW207C ENGINES HOVER - EAPS OFF

- SET NR to 102%
- TEST ENGINE MODE SWITCH: FLIGHT
- OTHER ENGINE MODE SWITCH: IDLE
- INCREASE COLLECTIVE UNTIL LIGHT ON WHEELS OR HOVERING AT 3 FEET, NOSE ON WIND. DO NOT EXCEED 840°C TOT OR 97.1% N1 OR 125% TQ
- STABILIZE POWER 1 MINUTE, THEN RECORD OAT, PRESSURE ALTITUDE, ENGINE TORQUE, TOT AND N1
- ENTER CHART AT INDICATED TQ, MOVE DOWN TO INTERSECT PRESSURE ALTITUDE, PROCEED TO THE RIGHT TO INTERSECT OAT, THEN MOVE UP TO READ VALUES FOR MAXIMUM ALLOWABLE TOT AND N1
- IF INDICATED TOT OR N1 EXCEEDS MAXIMUM ALLOWABLE, REPEAT CHECK, STABILIZING POWER FOR TWO MINUTES.
- REPEAT CHECK USING OTHER ENGINE
- IF EITHER ENGINE EXCEEDS ALLOWABLE TOT OR N1, PUBLISHED PERFORMANCE MAY NOT BE ACHIEVABLE. REFER TO EMM

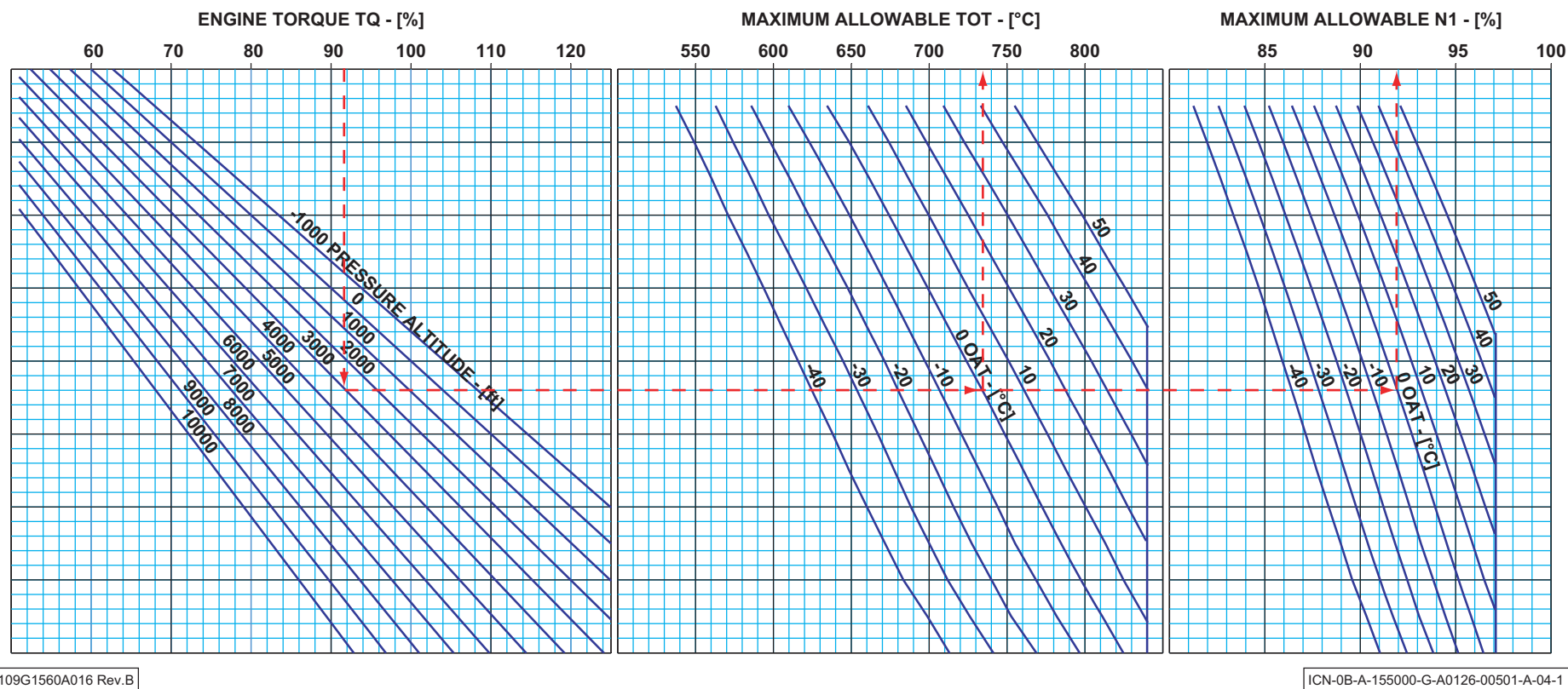


Figure 4-1 Power Assurance Check in Hover - EAPS OFF

POWER ASSURANCE CHECK PW207C ENGINES HOVER - EAPS ON

- HEATER/ECS OFF
- GENERATOR LOAD TO MINIMUM
- SET NR to 102%
- TEST ENGINE MODE SWITCH: FLIGHT
- OTHER ENGINE MODE SWITCH: IDLE
- INCREASE COLLECTIVE UNTIL LIGHT ON WHEELS OR HOVERING AT 3 FEET, NOSE ON WIND. DO NOT EXCEED 840°C TOT OR 97.1% N1 OR 125% TQ
- STABILIZE POWER 1 MINUTE, THEN RECORD OAT, PRESSURE ALTITUDE, ENGINE TORQUE, TOT AND N1
- ENTER CHART AT INDICATED TQ, MOVE DOWN TO INTERSECT PRESSURE ALTITUDE, PROCEED TO THE RIGHT TO INTERSECT OAT, THEN MOVE UP TO READ VALUES FOR MAXIMUM ALLOWABLE TOT AND N1
- IF INDICATED TOT OR N1 EXCEEDS MAXIMUM ALLOWABLE, REPEAT CHECK, STABILIZING POWER FOR TWO MINUTES.
- REPEAT CHECK USING OTHER ENGINE
- IF EITHER ENGINE EXCEEDS ALLOWABLE TOT OR N1, PUBLISHED PERFORMANCE MAY NOT BE ACHIEVABLE. REFER TO EMM

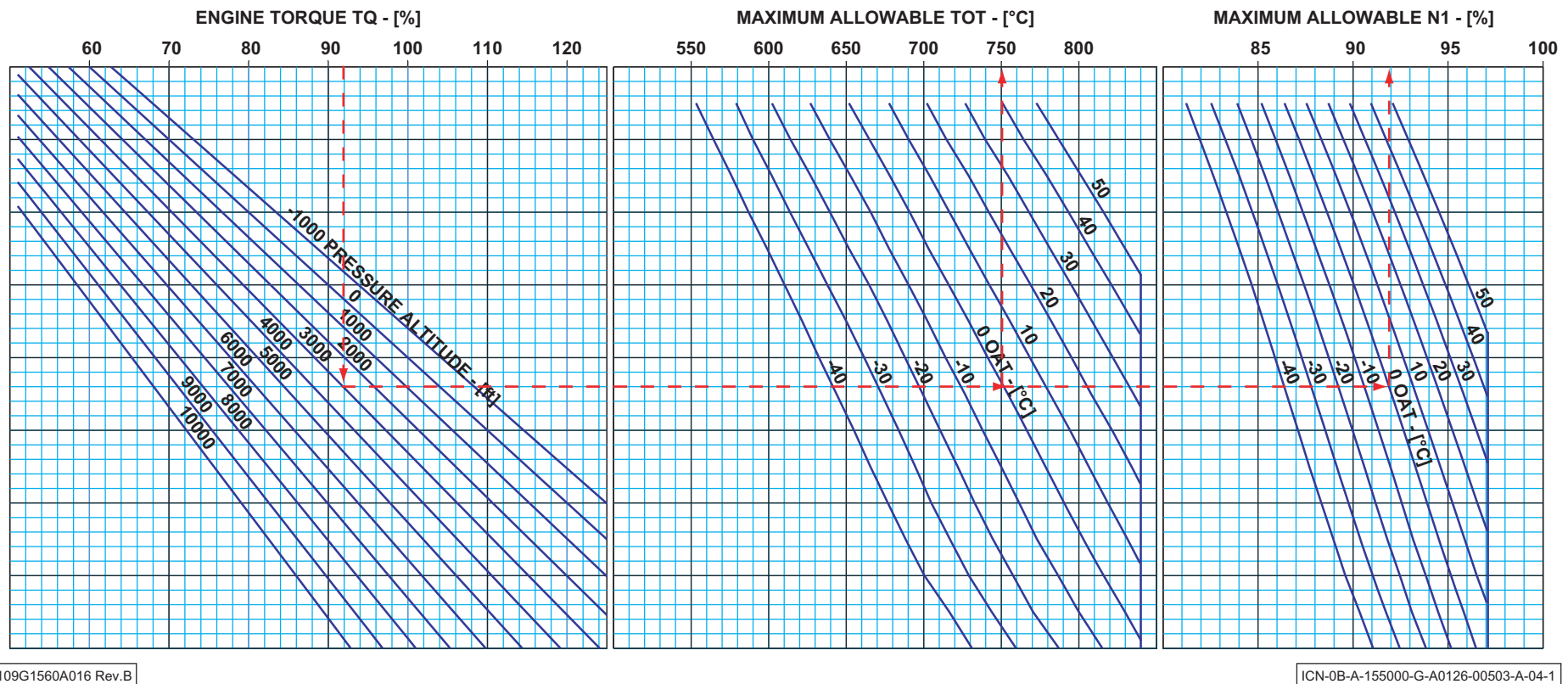


Figure 4-2 Power Assurance Check in Hover - EAPS ON

- HEATER/ECS OFF
- GENERATOR LOAD TO MINIMUM
- SET NR to 100%
- ESTABLISH LEVEL FLIGHT AT LEAST 1000 ft AGL and AIRSPEED=100±10 KIAS
- TEST ENGINE: SET ENG. GOV. SWITCH to MANUAL
- OTHER ENGINE: LEAVE ENG. GOV. SWITCH to AUTO
- OPERATE TEST ENG. TRIM TO INCREASE POWER UNTIL ENGINE TORQUE IS WITHIN TEST RANGE. DO NOT EXCEED 840°C TOT OR 97.1% N1 OR 100% TQ
- STABILIZE POWER 1 MINUTE, THEN RECORD OAT, PRESSURE ALTITUDE, ENGINE TORQUE, TOT AND N1
- ENTER CHART AT INDICATED TQ, MOVE DOWN TO INTERSECT PRESSURE ALTITUDE, PROCEED TO THE RIGHT TO INTERSECT OAT, THEN MOVE UP TO READ VALUES FOR MAXIMUM ALLOWABLE TOT AND N1
- IF INDICATED TOT OR N1 EXCEEDS MAXIMUM ALLOWABLE, REPEAT CHECK, STABILIZING POWER FOR TWO MINUTES.
- REPEAT CHECK USING OTHER ENGINE
- IF EITHER ENGINE EXCEEDS ALLOWABLE TOT OR N1, AFTER STABILIZING TWO MINUTES, CARRY OUT A POWER ASSURANCE CHECK IN HOVER.

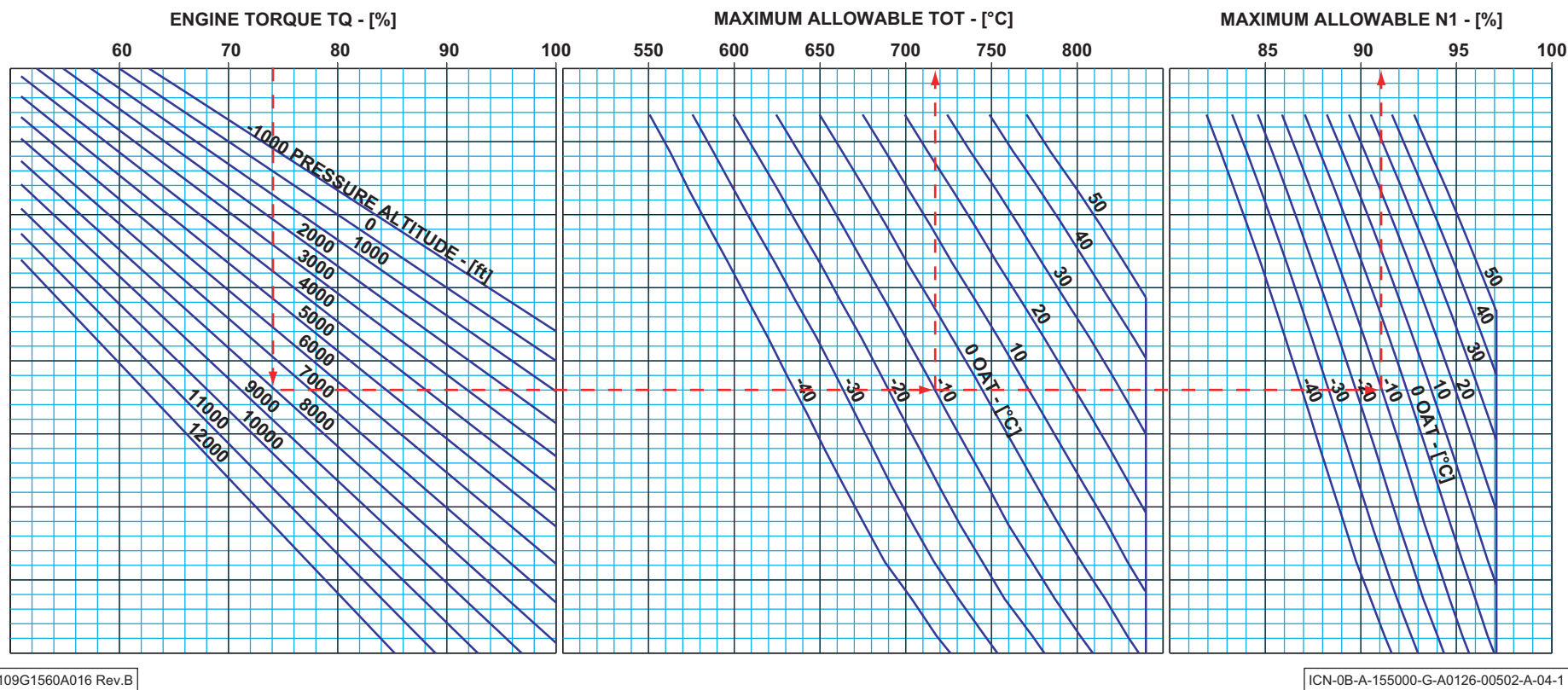


Figure 4-3 Power Assurance Check in Flight - EAPS OFF

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HOVER CEILING

([Figures 4-4 to 4-19](#))

The Hover Ceiling charts define the maximum weights at which an IGE hover (at 3 ft wheel height) or an OGE hover (60 ft AGL) is possible for varying combinations of Pressure Altitude and OAT with main rotor speed (NR) at 102% and zero wind conditions.

For hover in sidewind condition, refer to OPERATION VS ALLOWABLE WIND procedure either Section 4 of the basic RFM or the applicable Optional Equipment Supplement.

Information is presented for All Engines Operating (AEO) at Take-Off Power (TOP) and Maximum Continuous Power (MCP) with EAPS OFF and ON, and with the ECS / Heater in ON conditions.

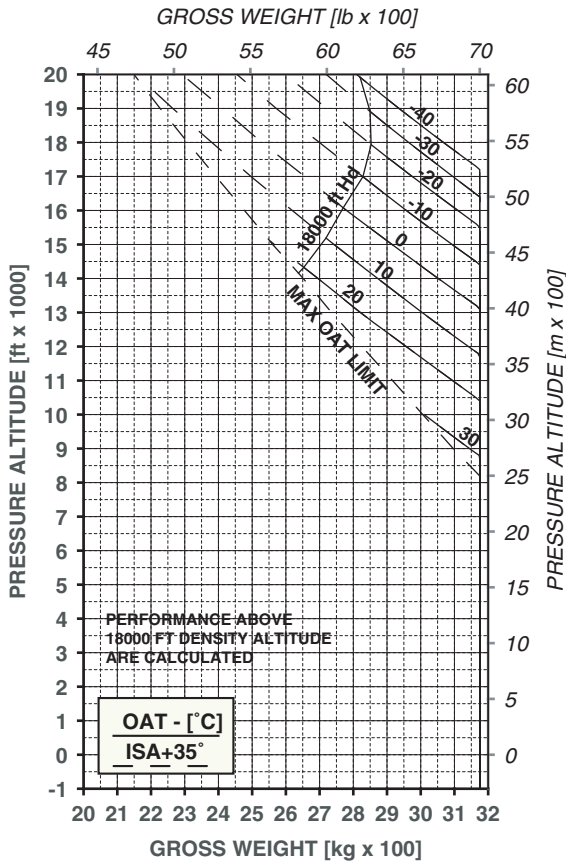
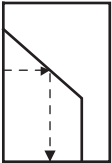
CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

HOVER CEILING IN GROUND EFFECT
 TAKE OFF POWER AEO

ROTOR SPEED: 102 %
 ZERO WIND
 WHEEL HEIGHT: 3 FT

EAPS: OFF
 ECS/Heater: OFF
 ELECTRICAL LOAD: 200 A TOTAL



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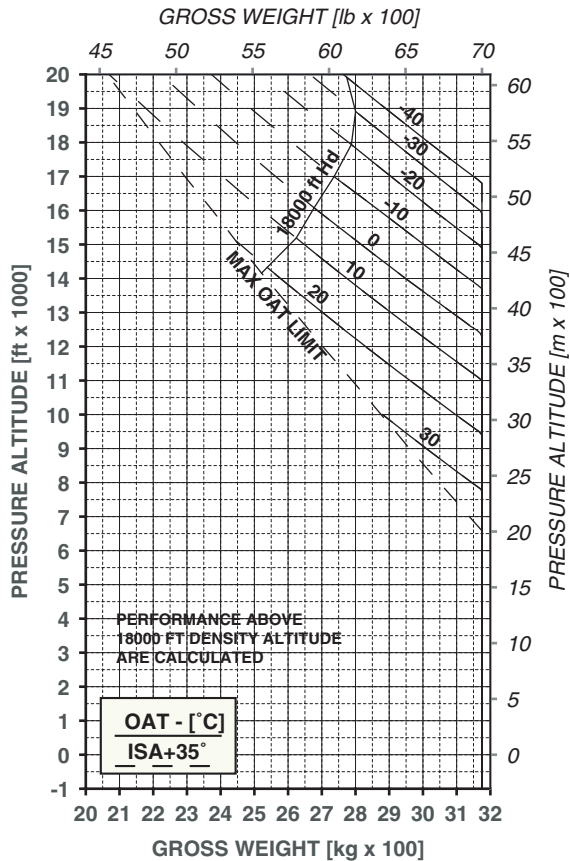
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Figure 4-4 Hover Ceiling - IGE at Take-Off Power - AEO
 - EAPS OFF

HOVER CEILING IN GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

EAPS: ON
ECS/Heater: OFF
ELECTRICAL LOAD: 200 A TOTAL



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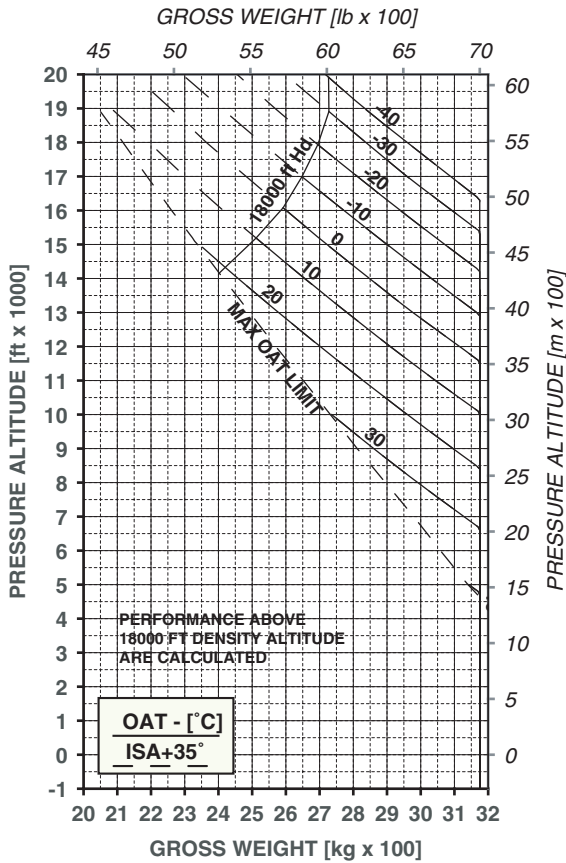
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Figure 4-5 Hover Ceiling - IGE at Take-Off Power - AEO
- EAPS ON

HOVER CEILING IN GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

EAPS: OFF
ECS/Heater: ON
ELECTRICAL LOAD: 200 A TOTAL



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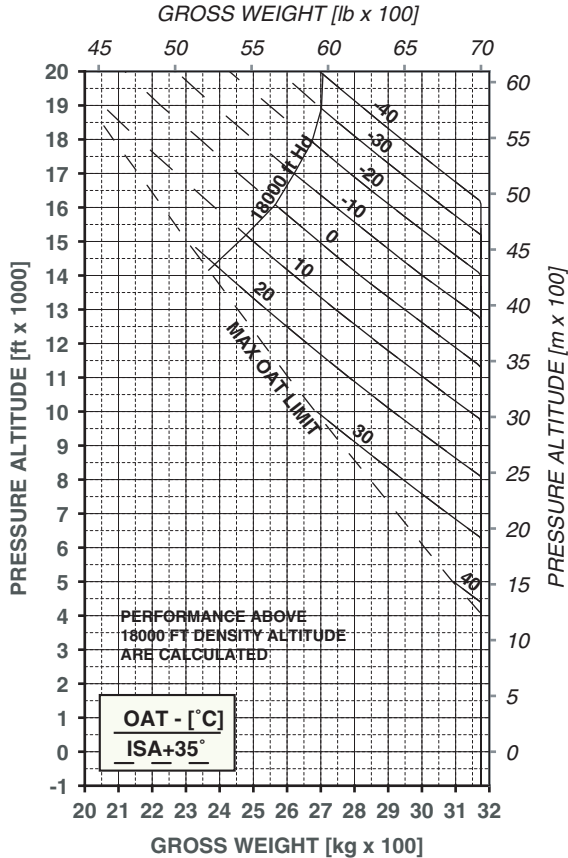
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Figure 4-6 Hover Ceiling - IGE at Take-Off Power - AEO
- EAPS OFF - ECS / Heater ON

HOVER CEILING IN GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

EAPS: ON
ECS/Heater: ON
ELECTRICAL LOAD: 200 A TOTAL



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Figure 4-7 Hover Ceiling - IGE at Take-Off Power - AEO
- EAPS ON - ECS / Heater ON

**HOVER CEILING IN GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

EAPS: OFF
ECS/Heater: OFF
ELECTRICAL LOAD: 200 A TOTAL

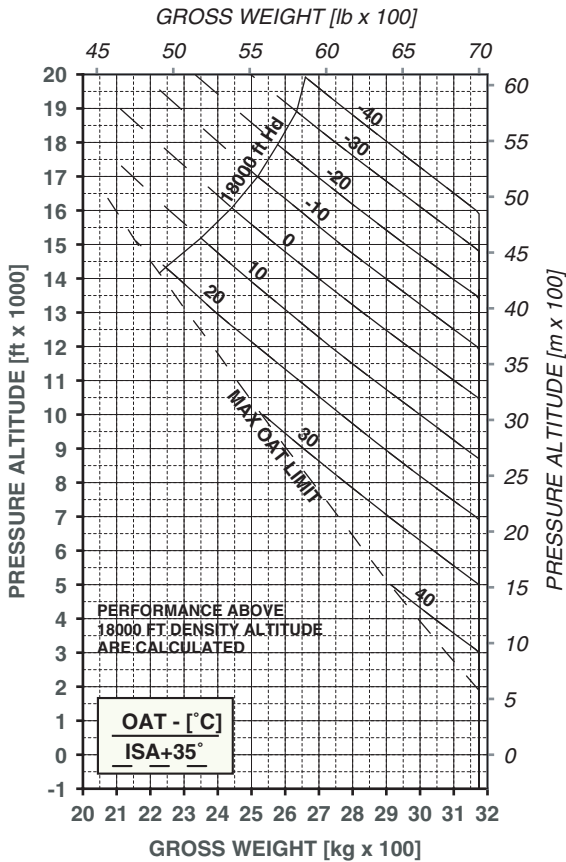
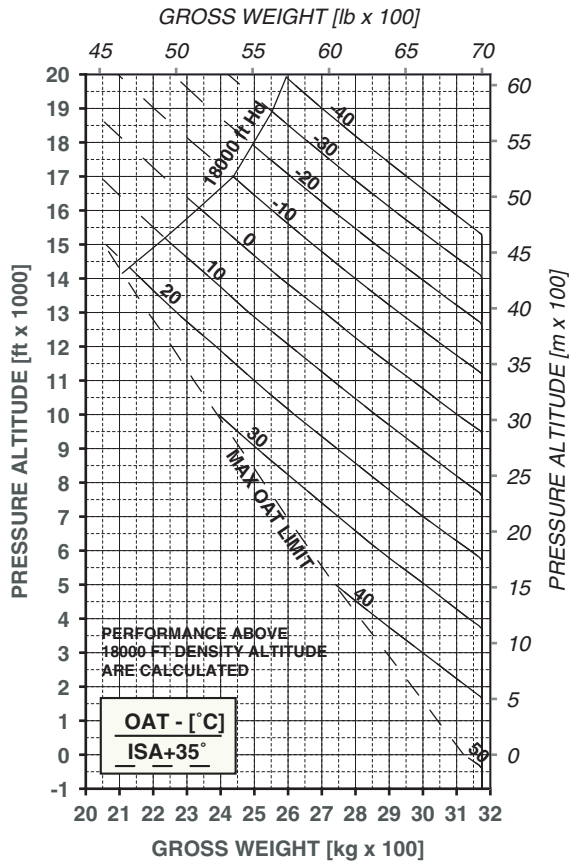


**Figure 4-8 Hover Ceiling - IGE at Maximum Continuous Power
- AEO- EAPS OFF**

**HOVER CEILING IN GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

EAPS: ON
ECS/Heater: OFF
ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-9 Hover Ceiling - IGE at Maximum Continuous Power
- AEO - EAPS ON**

HOVER CEILING IN GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

EAPS: OFF
ECS/Heater: ON
ELECTRICAL LOAD: 200 A TOTAL

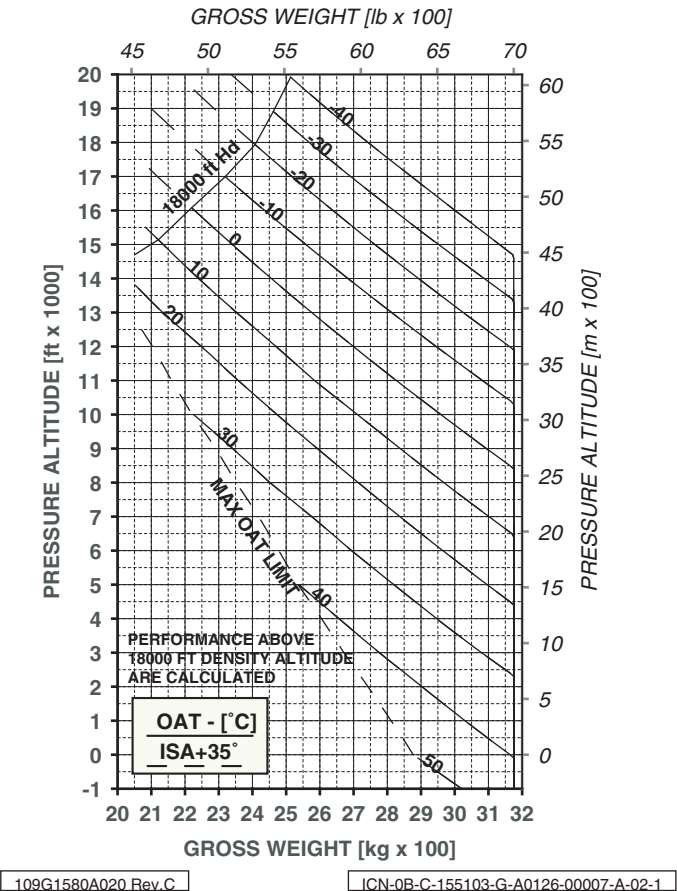


Figure 4-10 Hover Ceiling - IGE at Maximum Continuous Power
- AEO - EAPS OFF - ECS / Heater ON

HOVER CEILING IN GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %

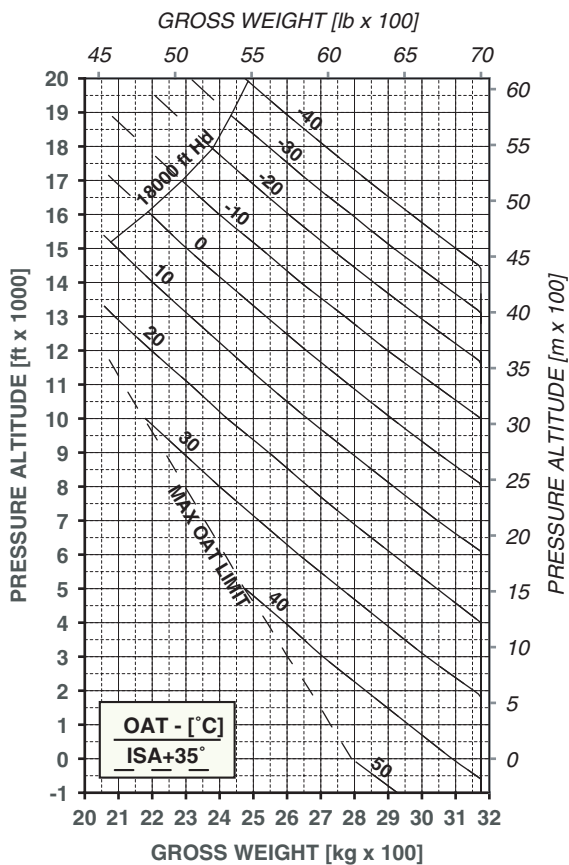
ZERO WIND

WHEEL HEIGHT: 3 FT

EAPS: ON

ECS/Heater: ON

ELECTRICAL LOAD: 200 A TOTAL



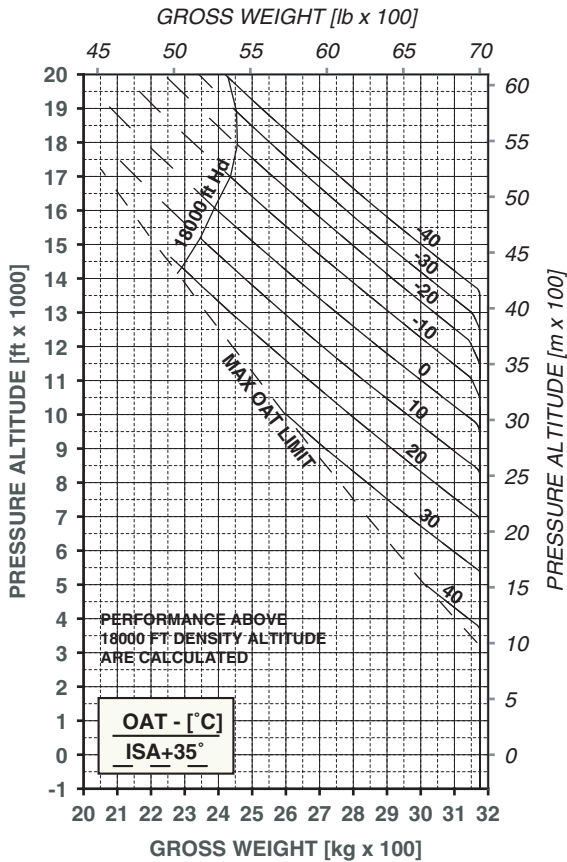
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**Figure 4-11 Hover Ceiling - IGE at Maximum Continuous Power
- AEO - EAPS ON - ECS / Heater ON**

HOVER CEILING OUT OF GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
EAPS: OFF
ECS/Heater: OFF
ELECTRICAL LOAD: 200 A TOTAL



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Figure 4-12 Hover Ceiling - OGE at Take-Off Power - AEO
- EAPS OFF

HOVER CEILING OUT OF GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: ON
ECS/Heater: OFF
ELECTRICAL LOAD: 200 A TOTAL

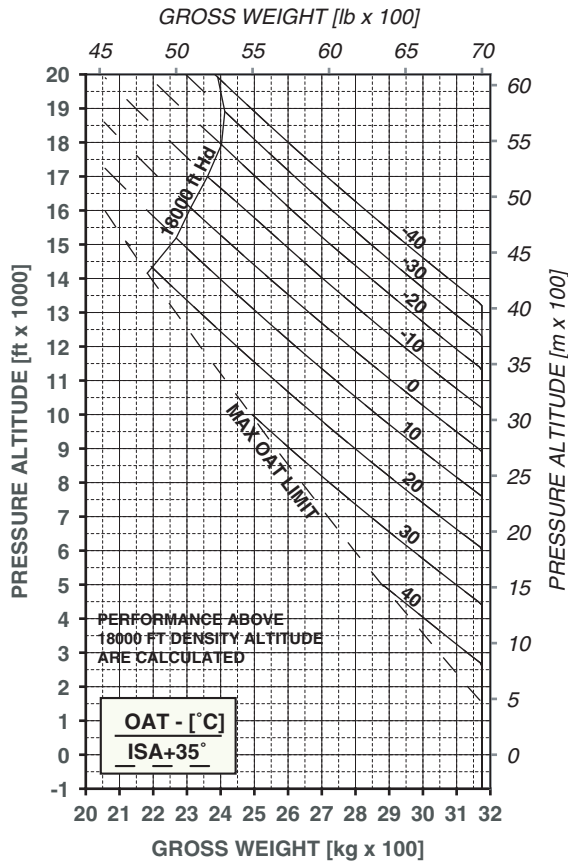
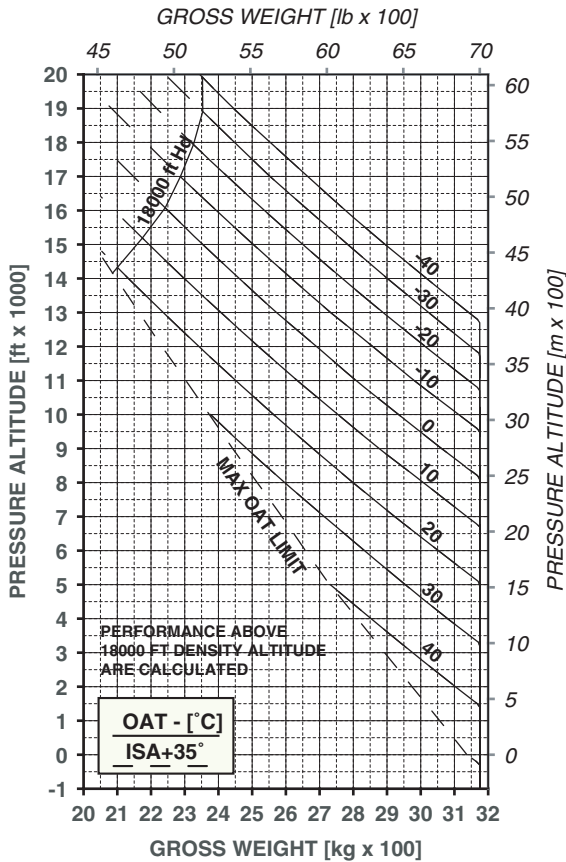


Figure 4-13 Hover Ceiling - OGE at Take-Off Power - AEO
- EAPS ON

HOVER CEILING OUT OF GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
EAPS: OFF
ECS/Heater: ON
ELECTRICAL LOAD: 200 A TOTAL



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Figure 4-14 Hover Ceiling - OGE at Take-Off Power - AEO
- EAPS OFF - ECS / Heater ON

HOVER CEILING OUT OF GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: ON
ECS/Heater: ON
ELECTRICAL LOAD: 200 A TOTAL

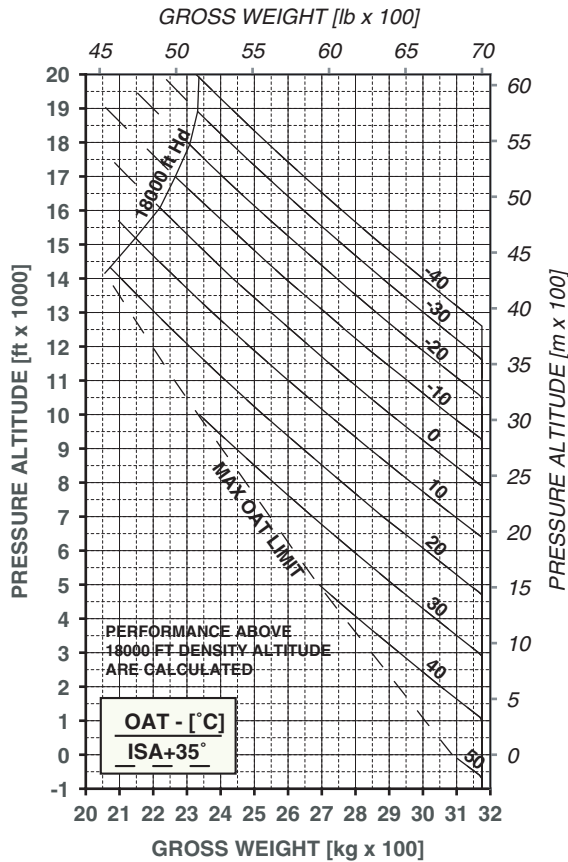


Figure 4-15 Hover Ceiling - OGE at Take-Off Power - AEO
- EAPS ON - ECS / Heater ON

HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
EAPS: OFF
ECS/Heater: OFF
ELECTRICAL LOAD: 200 A TOTAL

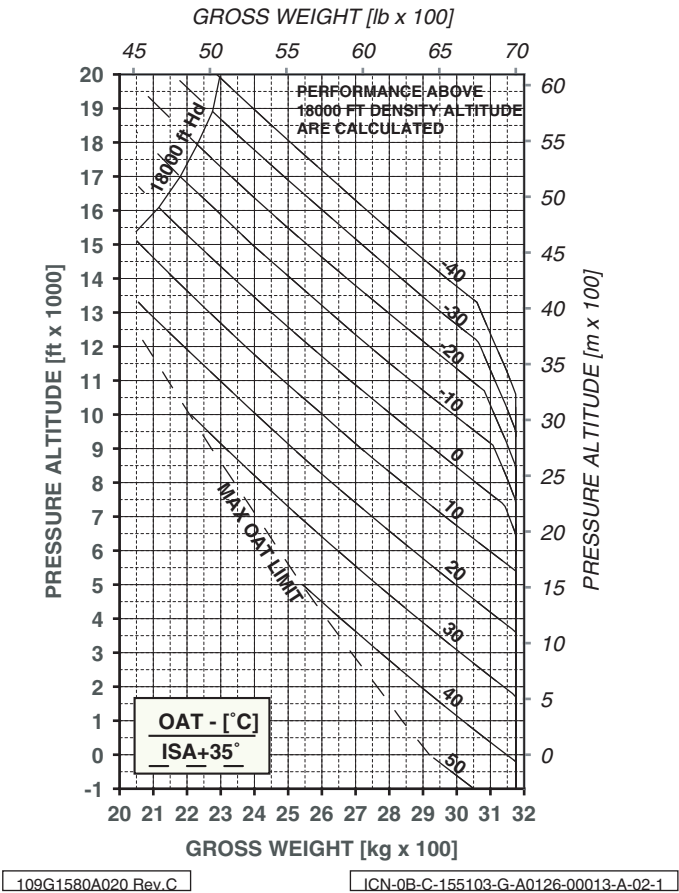


Figure 4-16 Hover Ceiling - OGE at Maximum Continuous Power
- AEO - EAPS OFF

**HOVER CEILING OU OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 102 %
ZERO WIND

EAPS: ON
ECS/Heater: OFF
ELECTRICAL LOAD: 200 A TOTAL

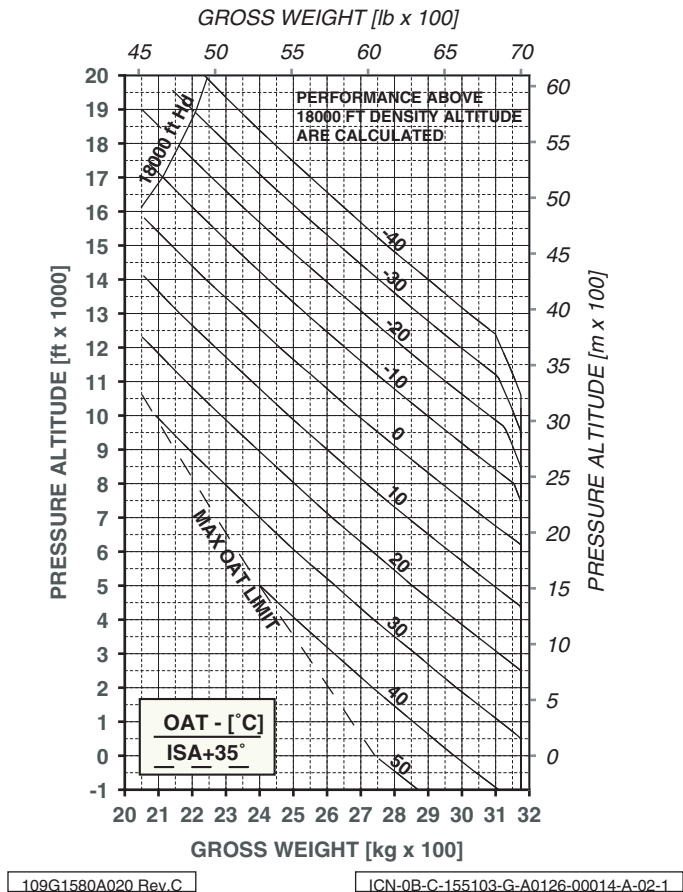


**Figure 4-17 Hover Ceiling - OGE at Maximum Continuous Power
- AEO - EAPS ON**

HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
EAPS: OFF
ECS/Heater: ON
ELECTRICAL LOAD: 200 A TOTAL

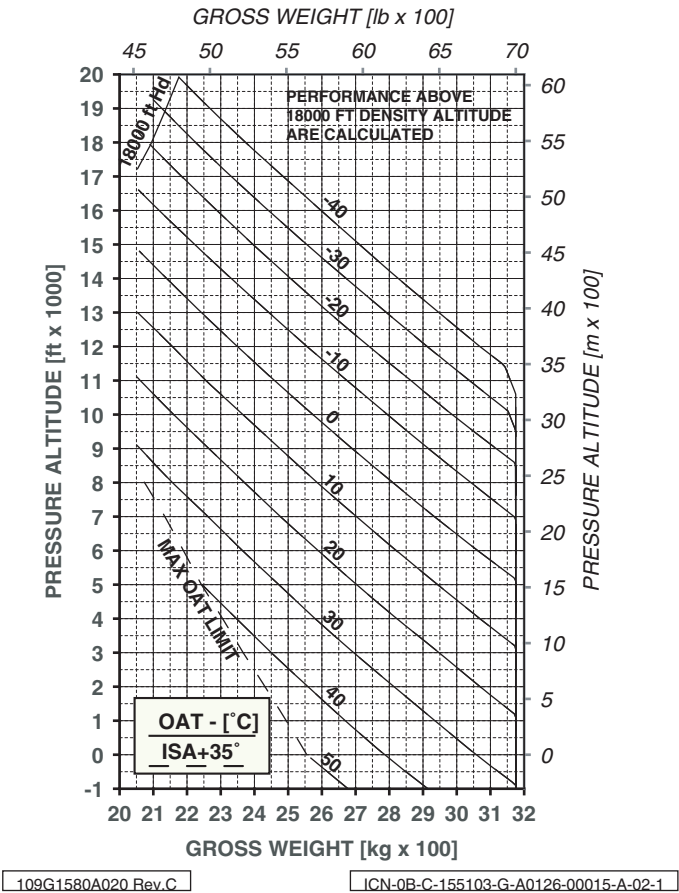


Figure 4-18 Hover Ceiling - OGE at Maximum Continuous Power
- AEO - EAPS OFF - ECS / Heater ON

HOVER CEILING OUT OF GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: ON
ECS/Heater: ON
ELECTRICAL LOAD: 200 A TOTAL

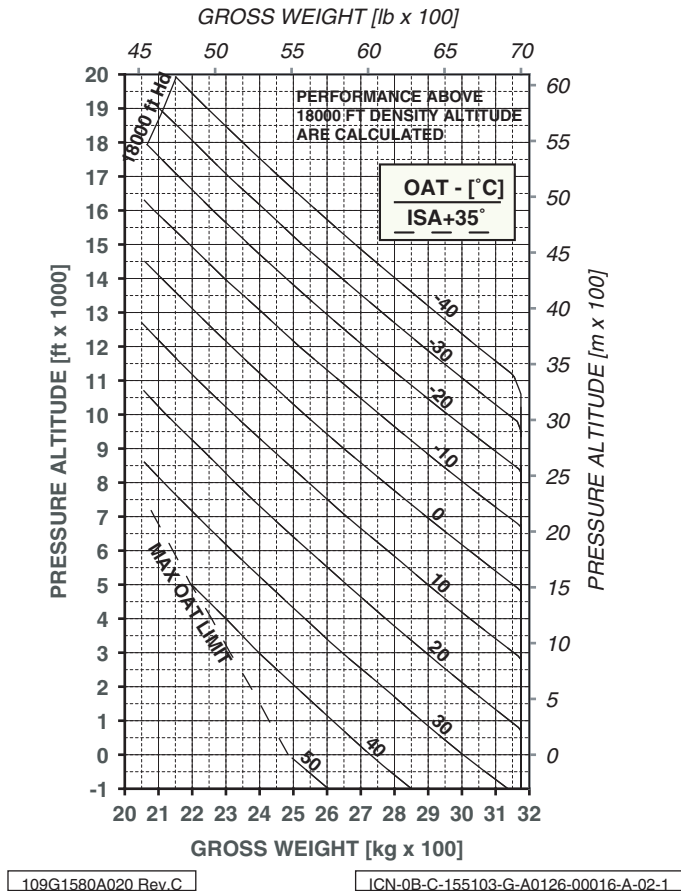


**Figure 4-19 Hover Ceiling - OGE at Maximum Continuous Power
- AEO - EAPS ON - ECS / Heater ON**

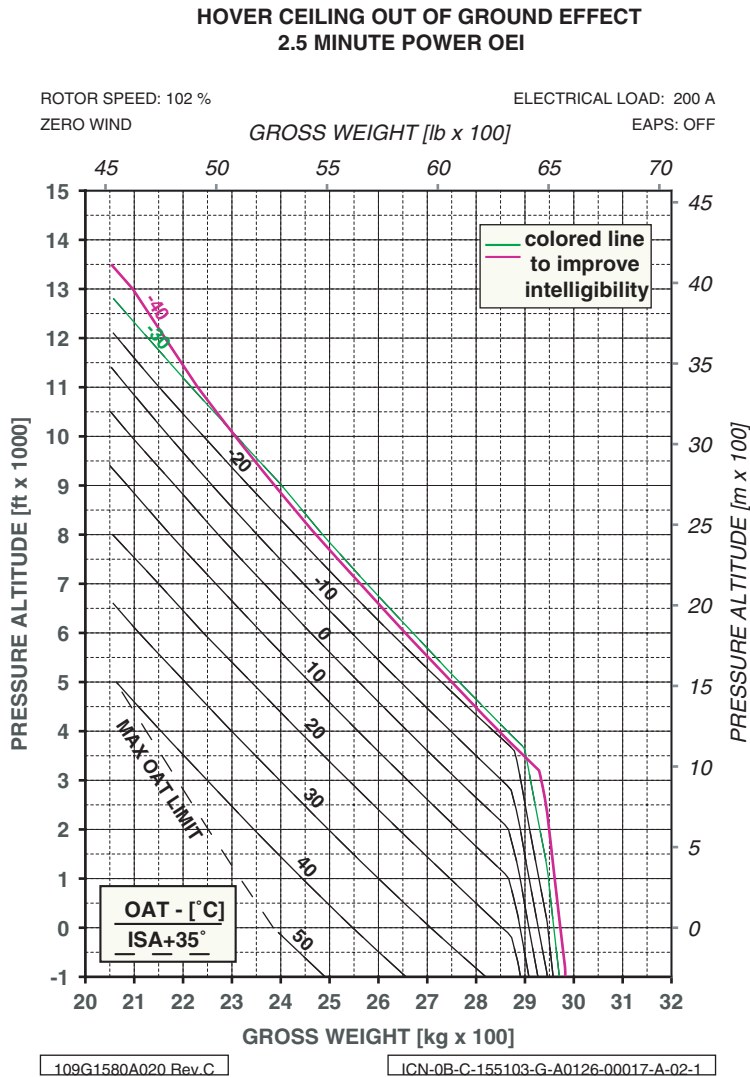


**Figure 4-20 Hover Ceiling - OGE at 2.5 Minute Power
- OEI - EAPS OFF**

**HOVER CEILING OUT OF GROUND EFFECT
2.5 MINUTE POWER OEI**

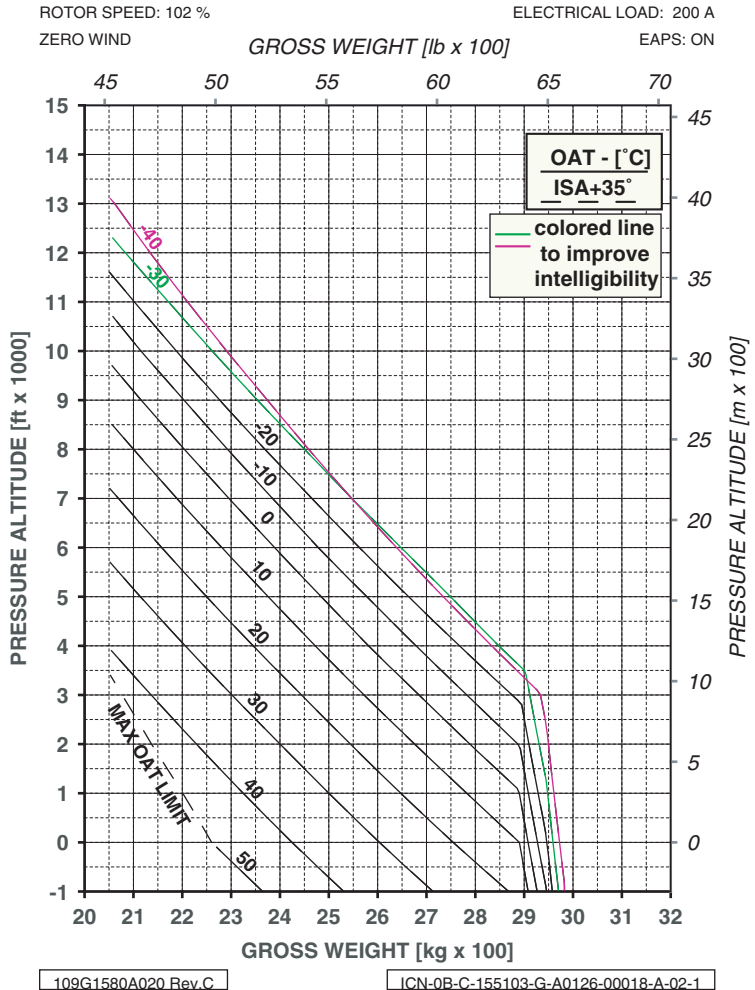


**Figure 4-21 Hover Ceiling - OGE at at 2.5 Minute Power
- OEI - EAPS ON**

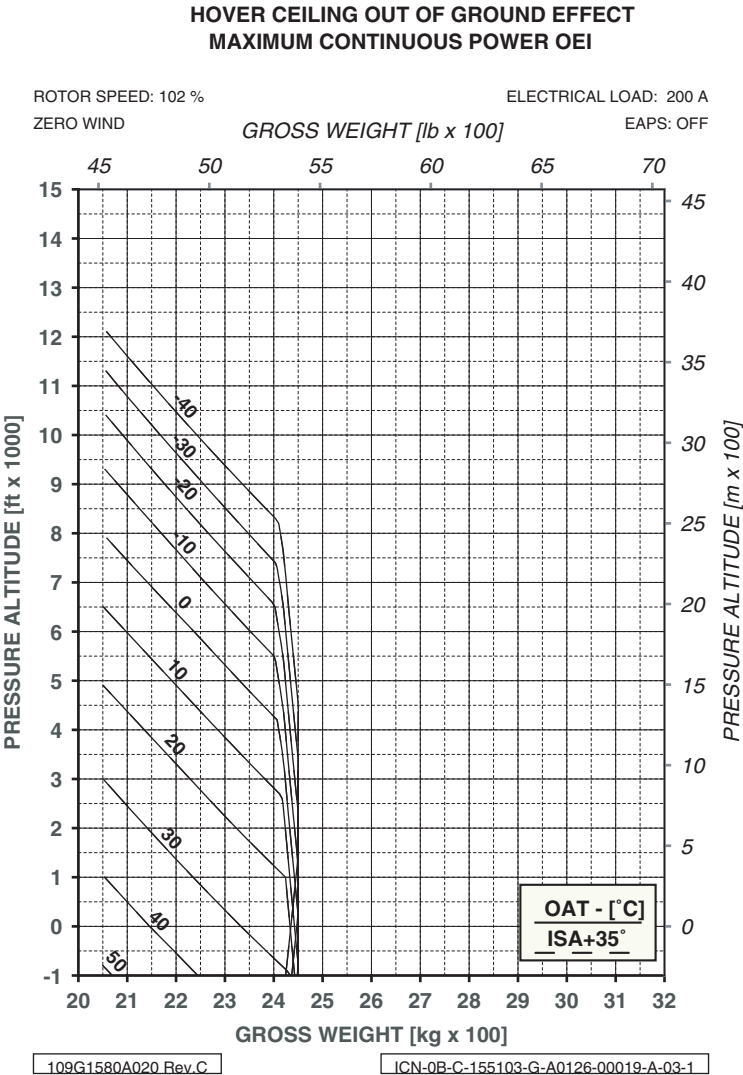


**Figure 4-22 Hover Ceiling - OGE at Maximum Continuous Power
- OEI - EAPS OFF**

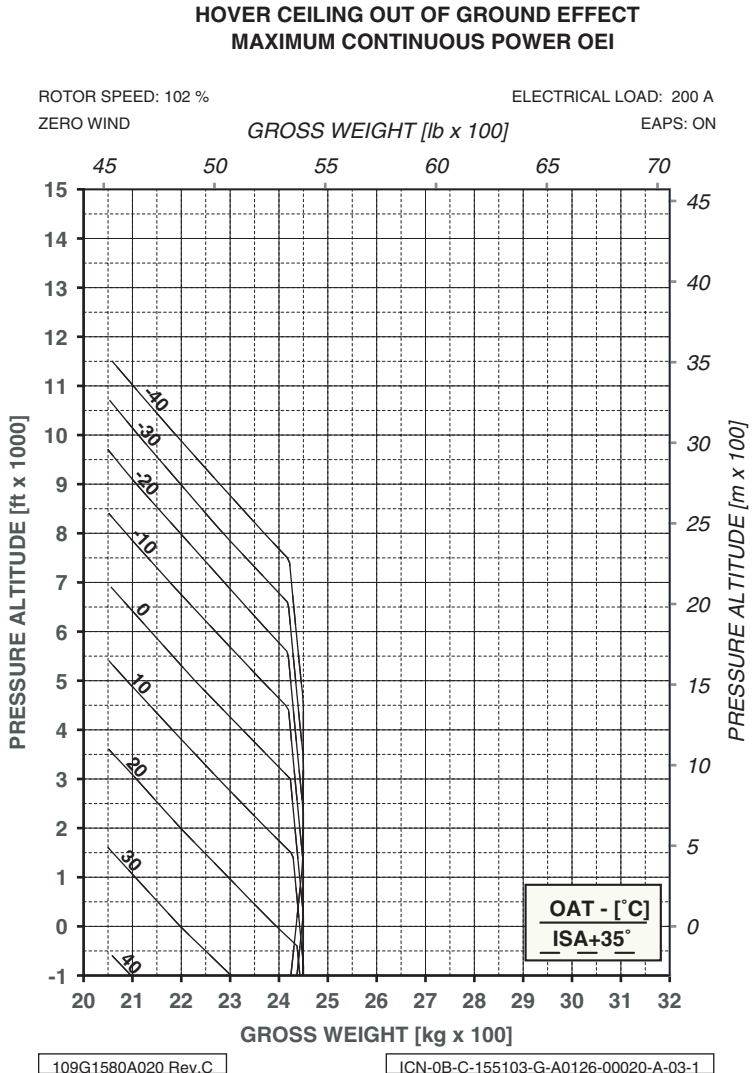


**Figure 4-23 Hover Ceiling - OGE at Maximum Continuous Power
- OEI - EAPS ON**

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HEIGHT-VELOCITY DIAGRAM

(Figures 4-24 to 4-28)

The Height-Velocity diagram is used to establish if, with EAPS installed, in the event of a single engine failure during take-off, landing or other operations near the surface, a combination of airspeed and height above ground exists for which a safe single engine landing on a smooth, level and hard surface cannot be assured (dangerous zone).

The Height-Velocity diagram is split in three charts (Charts A, B and C).

The live engine is operating at 2.5 minute OEI Power rating limit, with EAPS OFF and ON.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit (Supplement 15).

Chart A

Common Chart A (Figure 4-24) defines a transfer value, as a function of weight, altitude and temperature, and defines the use of Chart B (Figures 4-25 and 4-26) or Chart C (Figures 4-27 and 4-28), if entering respectively, in Area 1 or Area 2.

Charts B and C

Charts B and C define the shape of the H-V curve. The H-V shape is obtained by joining the high hover point (**HH**), determined by entering the appropriate chart with the pressure altitude, H_p , OAT and transfer value, with the fixed points **KN** = 40 ft / 30 kts and **LH** = 10 ft / 0 kts.

Chart B is applicable to H_d below 7000 ft (Area 1 of Chart A).

Chart C is applicable to H_d from 7000 ft to the altitude limit, which is 14000 H_p or 14000 H_d whichever comes first. (Area 2 of Chart A).

NO H-V Area (Green area of Chart B and C)

Combination of weight/altitude/temperature at which no H-V curve exists.

Yellow Area of Chart B and C

Combination of weight/altitude/temperature at which the shape of the H-V curve is fixed by **LH** = 10 ft / 0 kts, **KN** = 40 ft / 30 kts, **HH**₁ = 80 ft / 0 kts.

FLY-AWAY MANOEUVRE

Fly-away is the manoeuvre that, in case of an engine failure occurring in hovering out of ground effect at **High Hover point (HH) plus 20 ft**, allows enough height to gain a suitable speed for a single engine flight condition with **a ground clearance of 10 ft**.

Fly-away Height Calculation

Whenever the Height-Velocity diagram exists, it is possible to successfully carry out a fly-away manoeuvre by adding 20 ft to the High Hover point (HH) of the H-V curve.

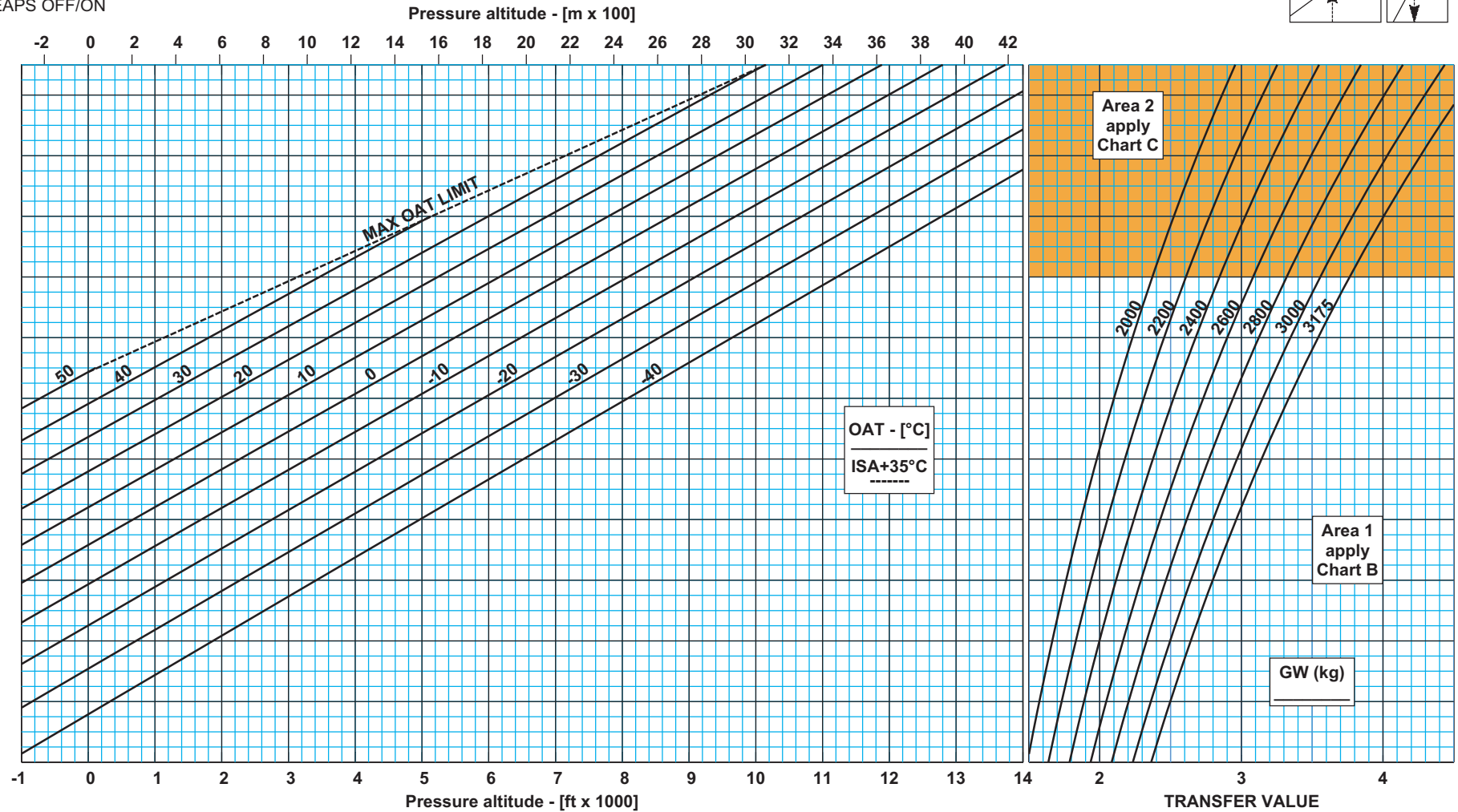
In all other conditions with NO H-V AREA, it is possible to complete a fly-away manoeuvre from a minimum height of 80 ft.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

HEIGHT-VELOCITY CHART A

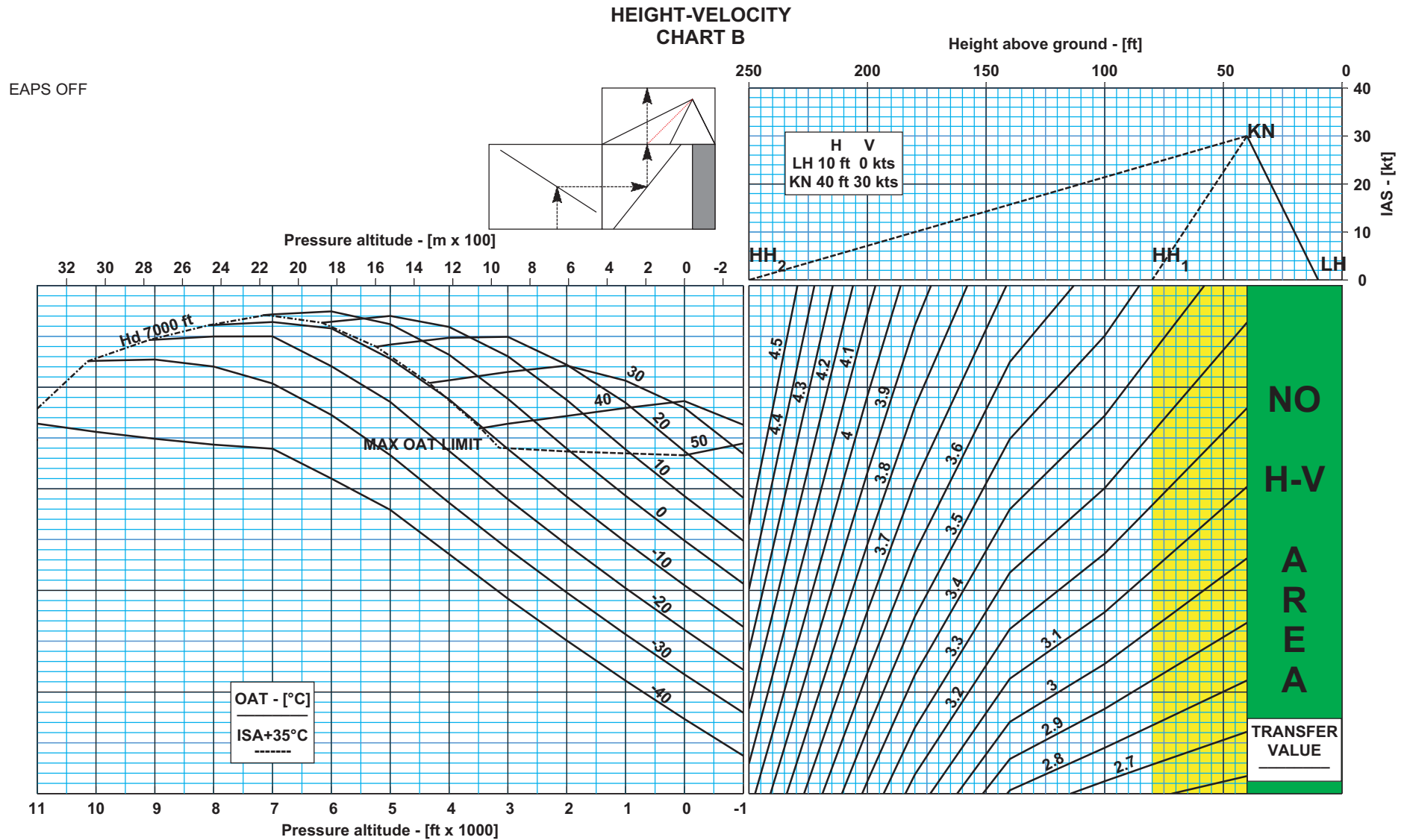
EAPS OFF/ON



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Figure 4-24 Height - Velocity Diagram - Common Chart A

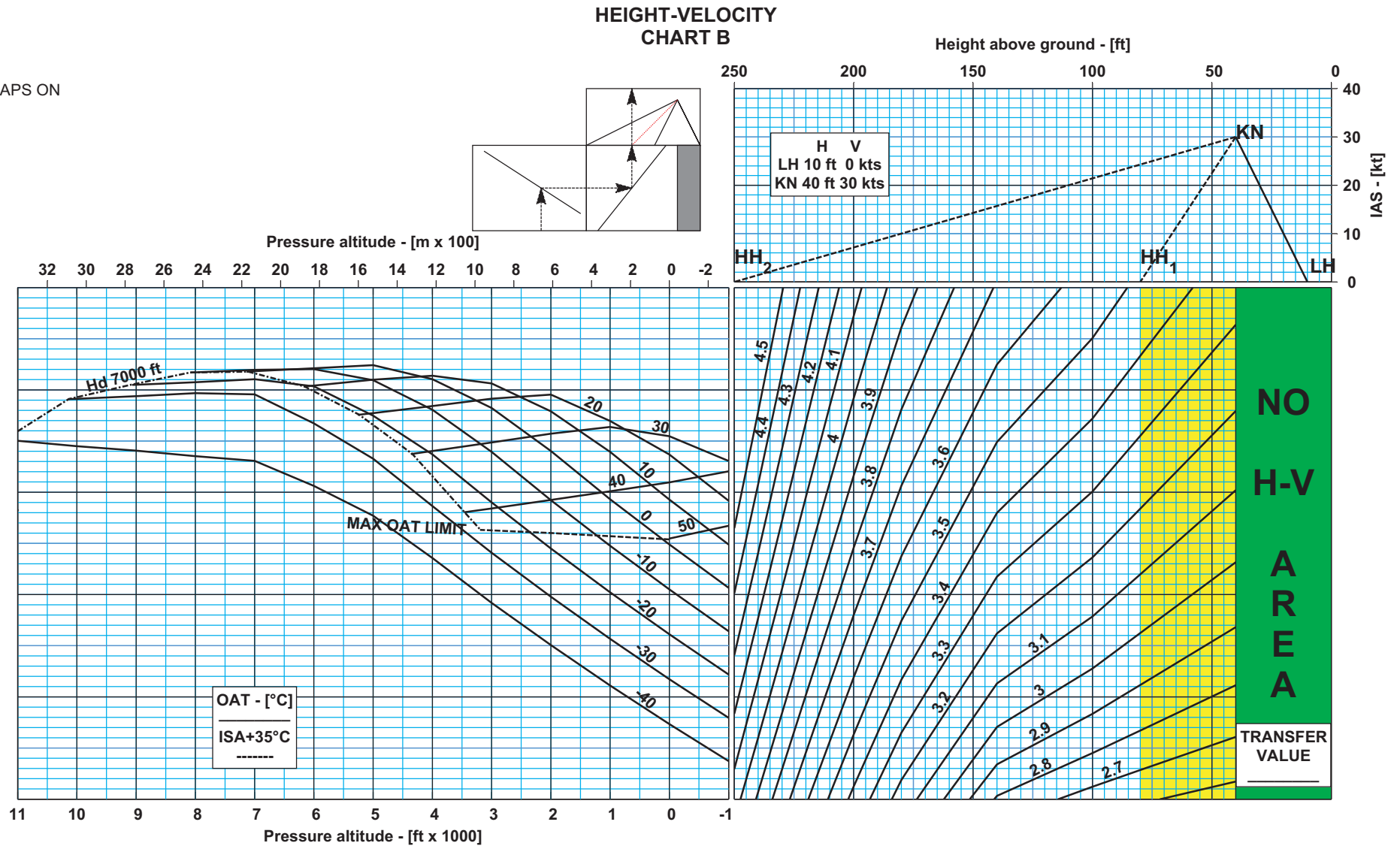


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Figure 4-25 Height - Velocity Diagram - Chart B - EAPS OFF

EAPS ON



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Figure 4-26 Height - Velocity Diagram - Chart B - EAPS ON

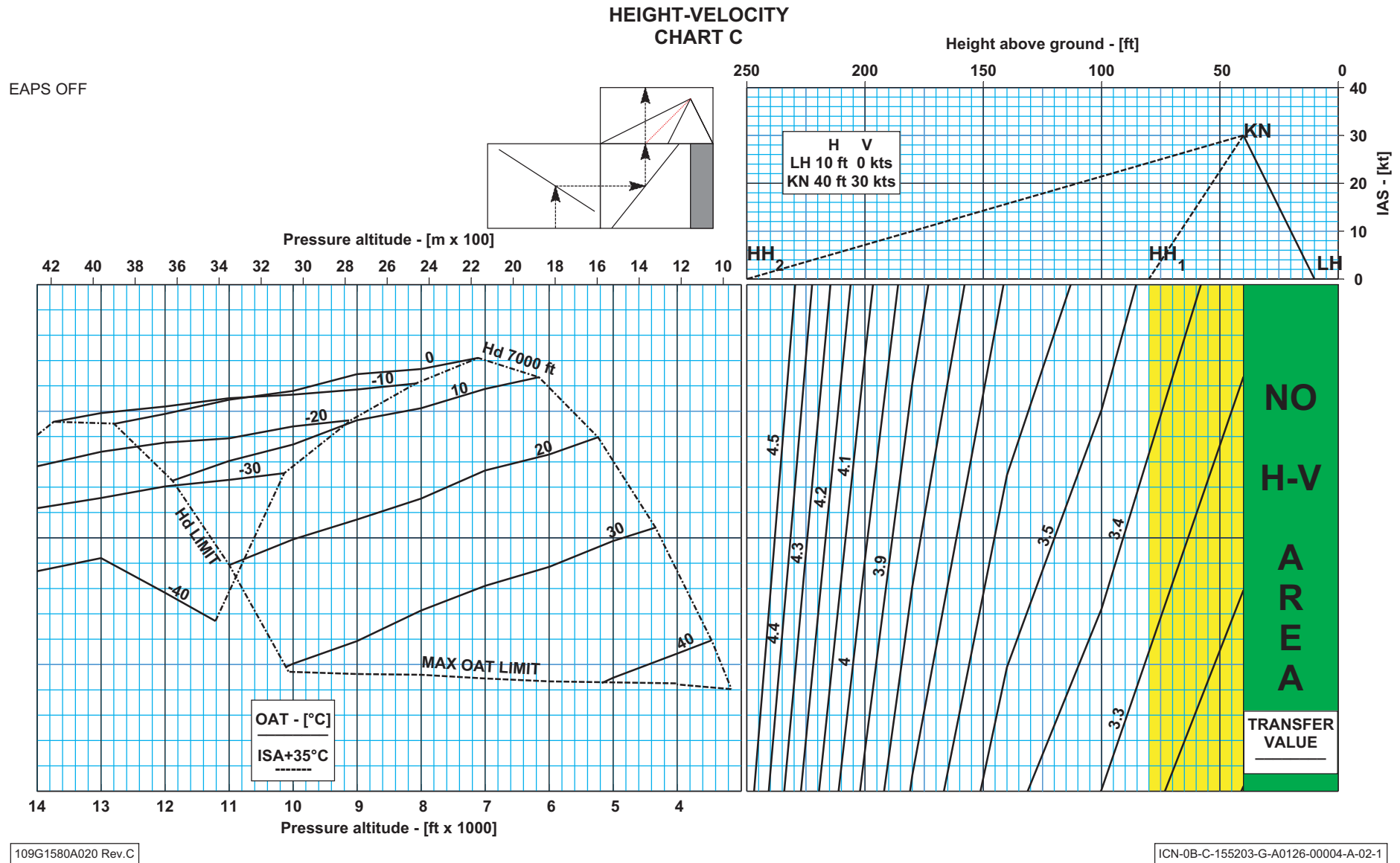


Figure 4-27 Height - Velocity Diagram - Chart C - EAPS OFF

EAPS ON

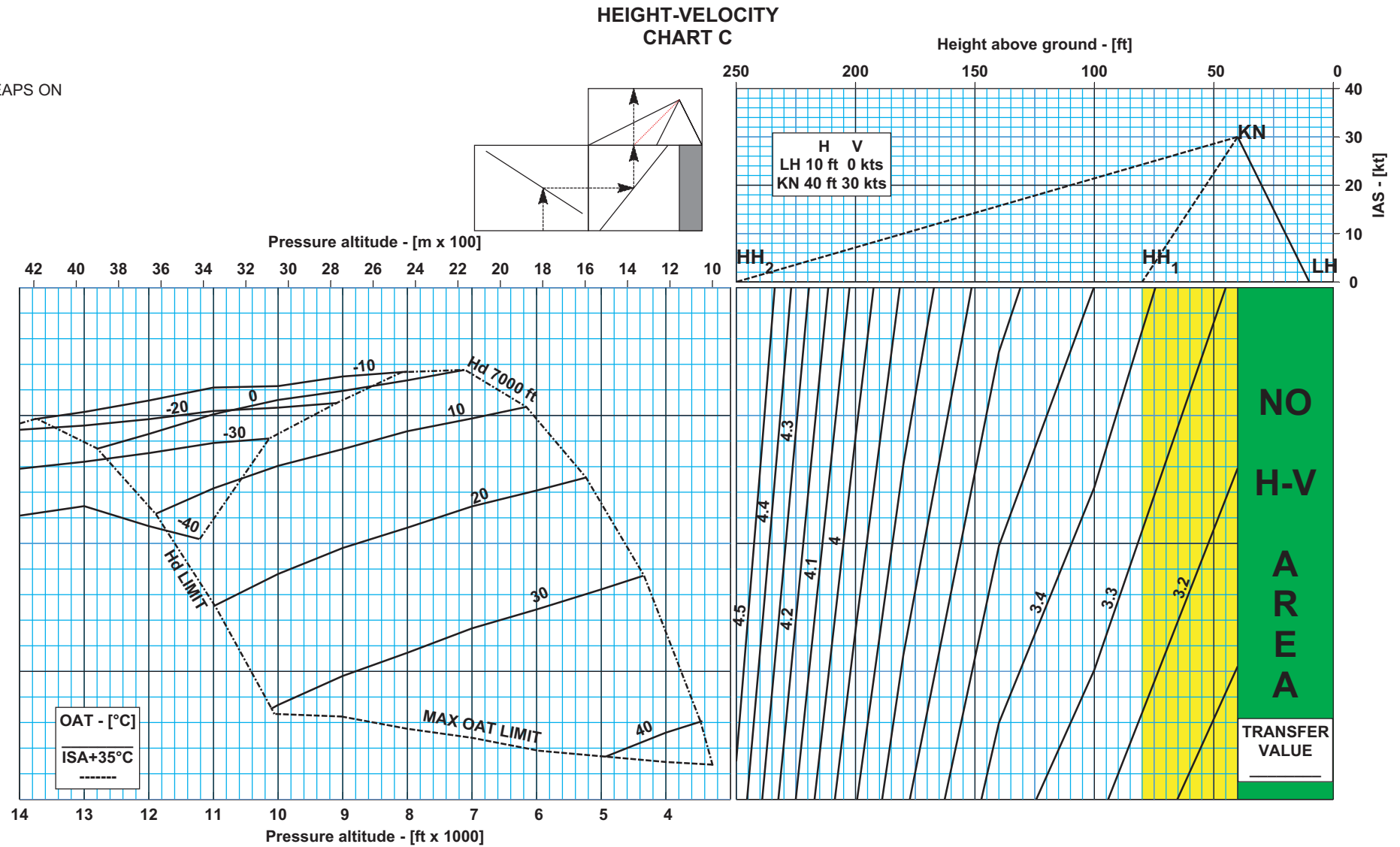


Figure 4-28 Height - Velocity Diagram - Chart C - EAPS ON

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RATE OF CLIMB

([Figures 4-29 to 4-76](#))

The effect of the EAPS on Rate of Climb (ROC) performance is given for the All Engines Operating (AEO) case and for the One Engine Inoperative (OEI) case.

The climb performance shown are based on flight test results and cover the range of gross weights from 2300 kg to the Maximum Gross Weight of 3175 kg.

For the AEO case, rate of climb is given with the engines operating at the Take-Off Power (TOP) rating limit and at the Maximum Continuous Power (MCP) rating limits, with EAPS OFF and ON, and ECS / Heater ON.

For the OEI case, rate of climb is given with the engine operating at the 2.5 minute Power rating limit and at the Maximum Continuous Power rating limits, with EAPS OFF and ON, and ECS OFF. The datum speed for all Rate of Climb graphs is V_y , which is 75 KIAS up to 10000 ft and then decreases by 2 knots every 1000 ft to become 55 KIAS at 20000 ft.

Each graph presents the information for a specific Gross Weight. On each graph, additional information is provided relative to the applicable engine power rating. Care should be taken to ensure that the correct graph is utilized in obtaining Rate of Climb data.

CAUTION

The curves below OAT -25°C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

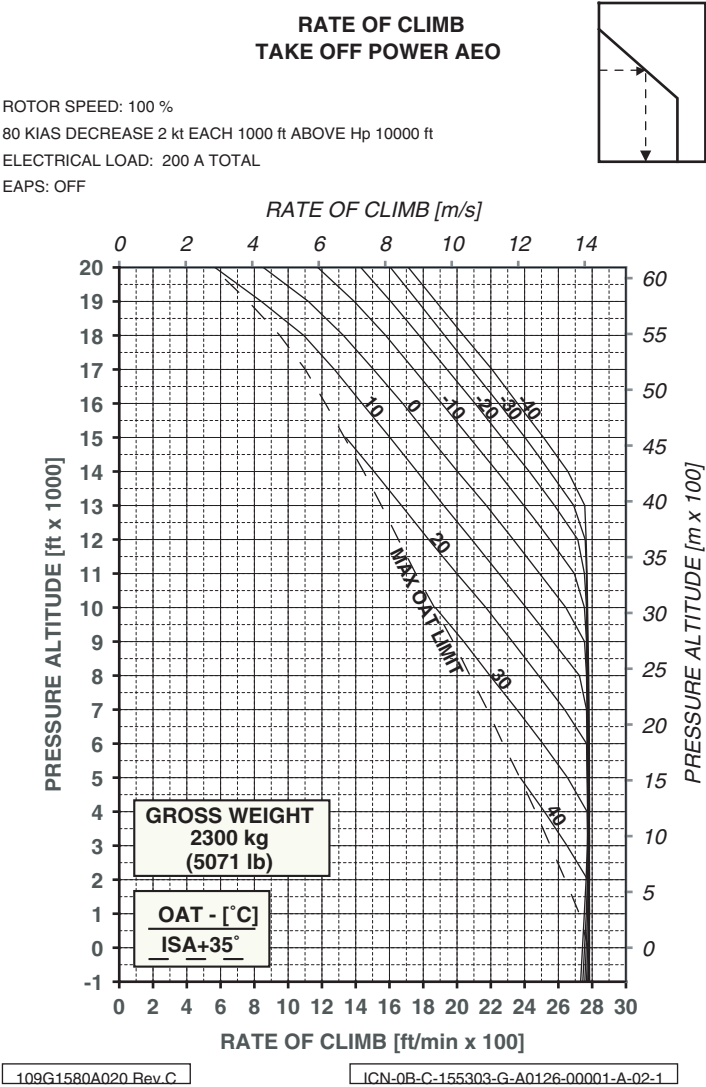


Figure 4-29 Rate of Climb at Take-Off Power - AEO
 - Gross Weight 2300 kg - EAPS OFF

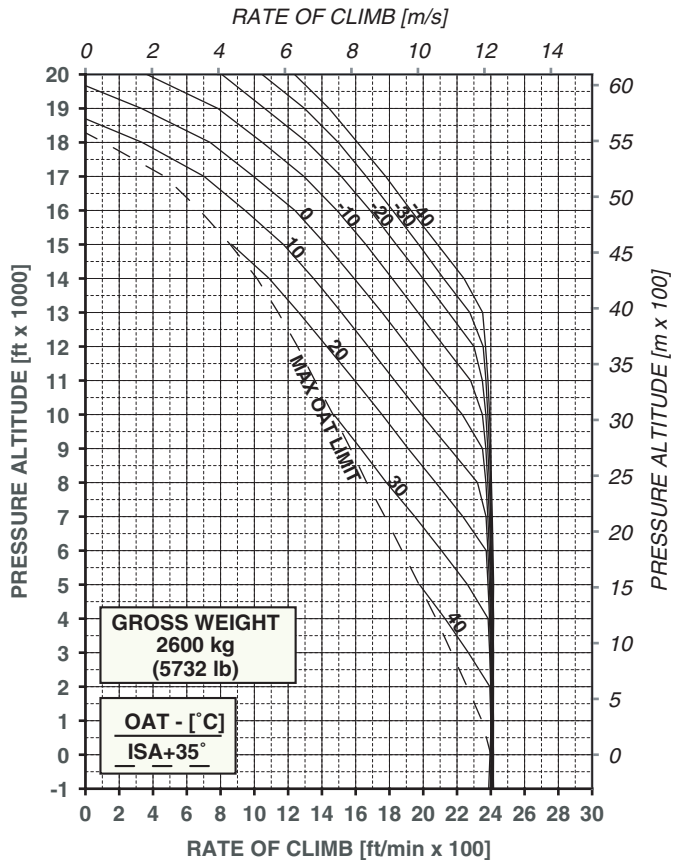
**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-30 Rate of Climb at Take-Off Power - AEO
- Gross Weight 2600 kg - EAPS OFF**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF

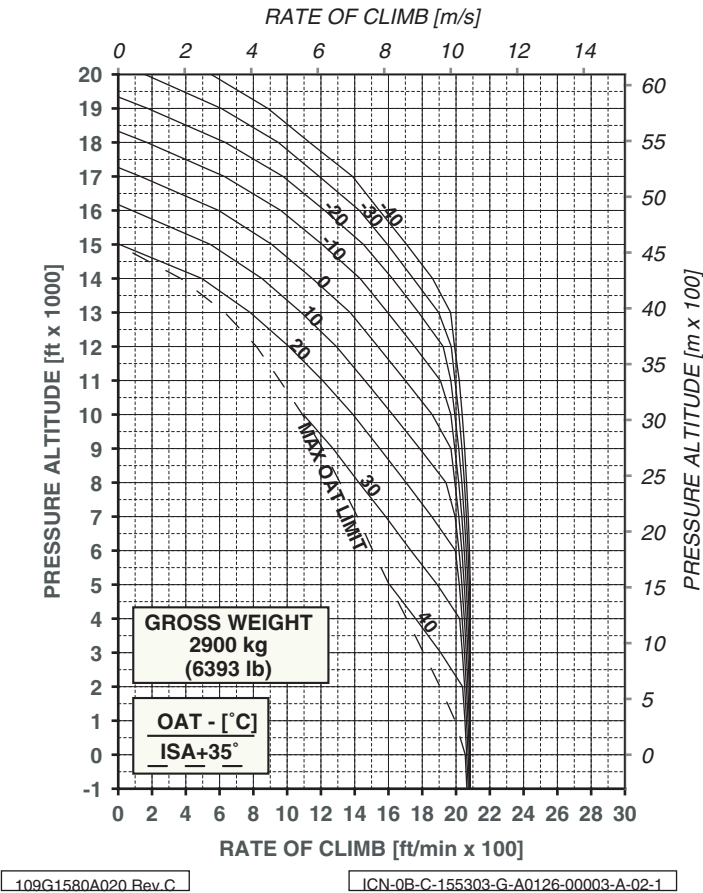


Figure 4-31 Rate of Climb at Take-Off Power - AEO
- Gross Weight 2900 kg - EAPS OFF

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

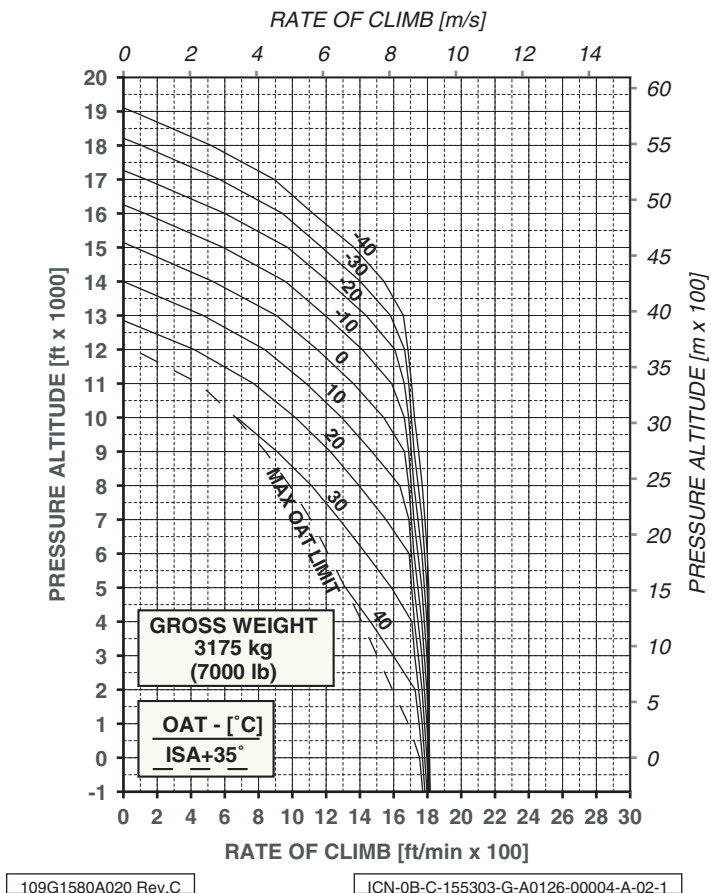


**Figure 4-32 Rate of Climb at Take-Off Power - AEO
- Gross Weight 3175 kg - EAPS OFF**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
EAPS: ON

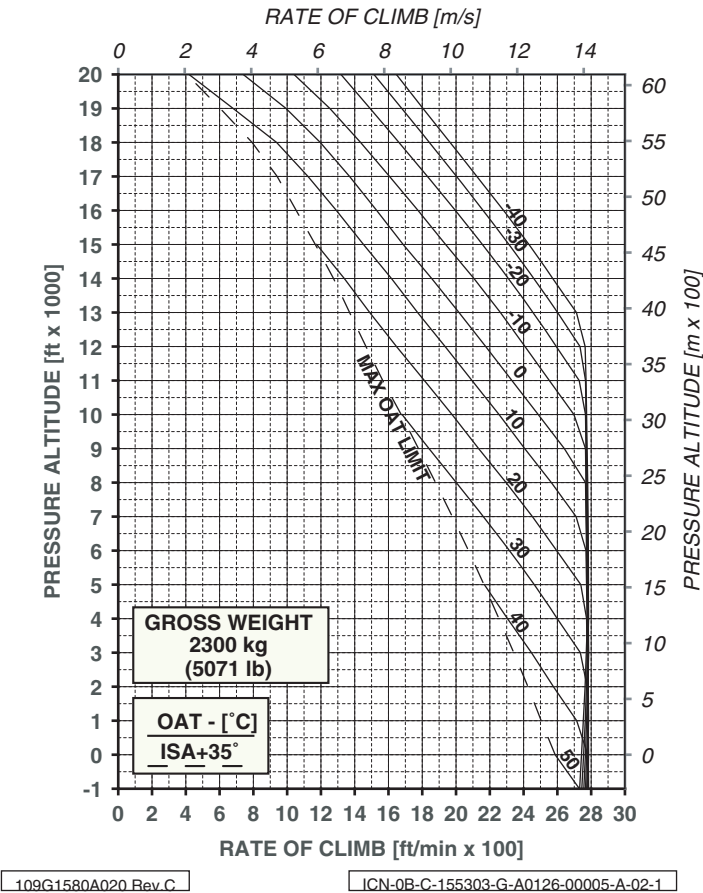


Figure 4-33 Rate of Climb at Take-Off Power - AEO
- Gross Weight 2300 kg - EAPS ON

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100 %

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

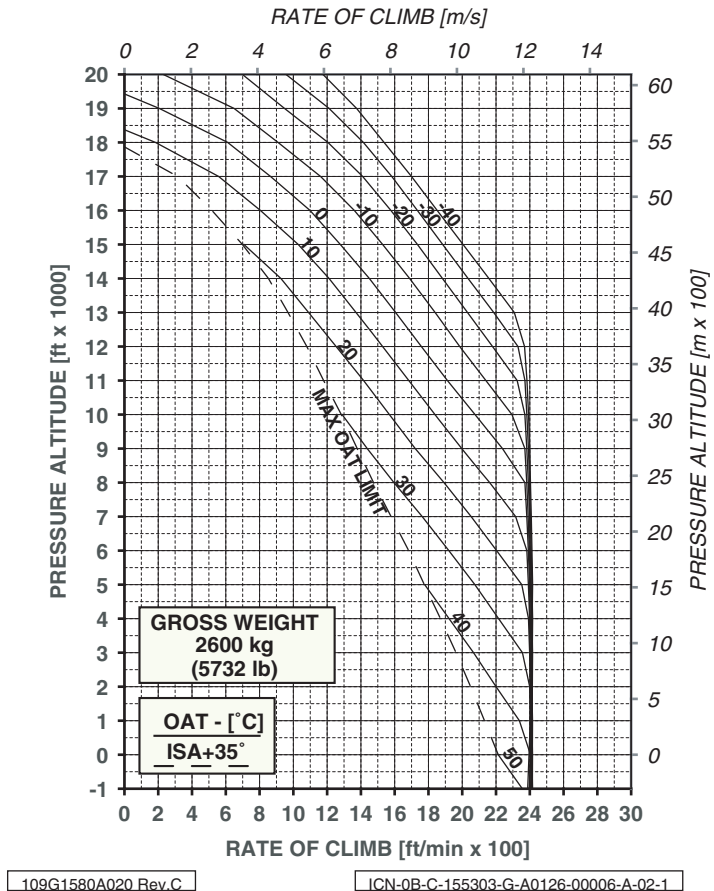
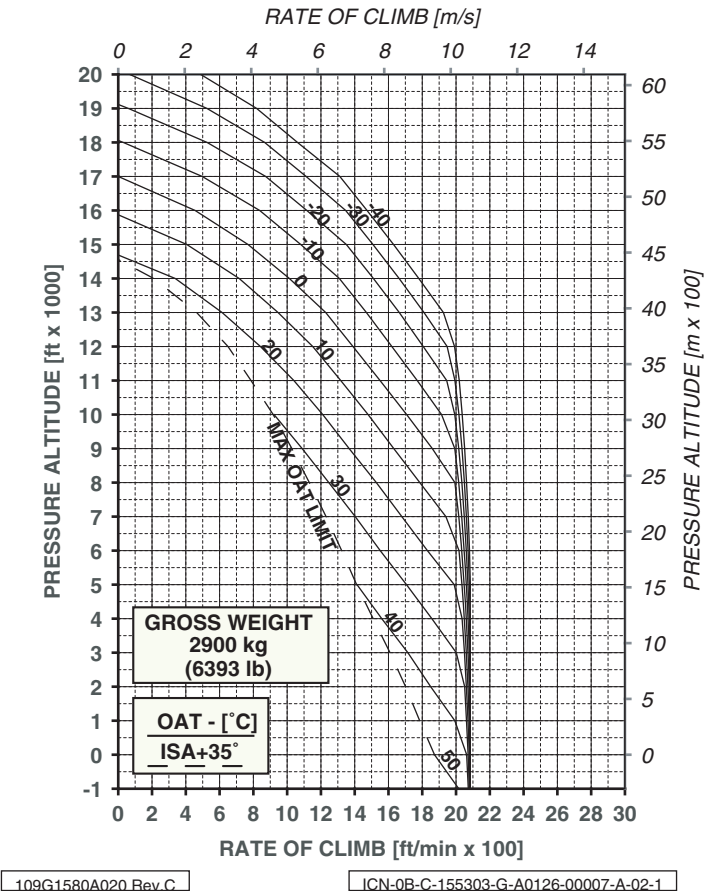


**Figure 4-34 Rate of Climb at Take-Off Power - AEO
- Gross Weight 2600 kg - EAPS ON**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
EAPS: ON



**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100 %

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

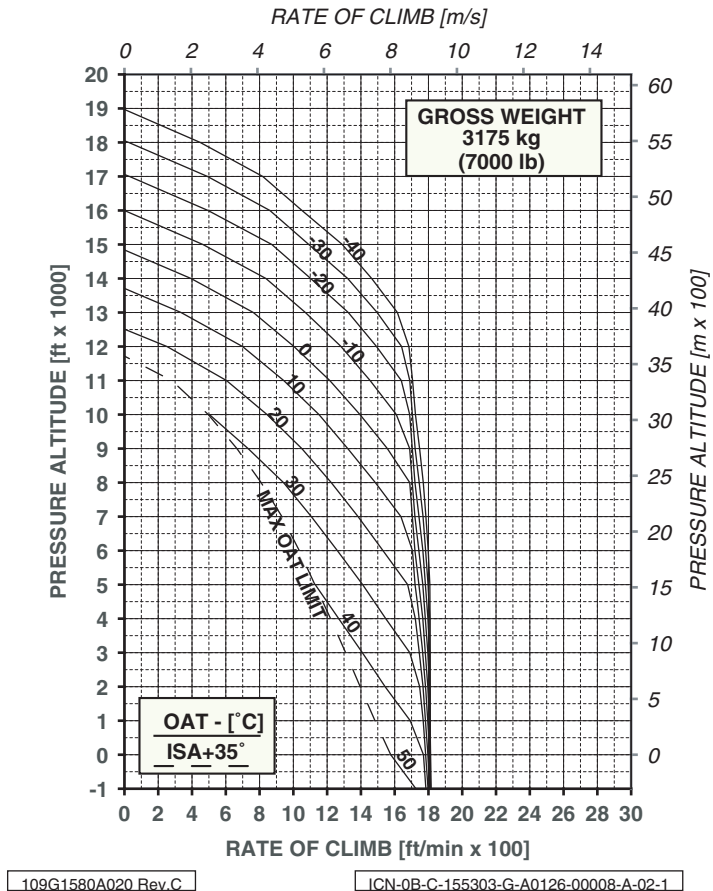


**Figure 4-36 Rate of Climb at Take-Off Power - AEO
- Gross Weight 3175 kg - EAPS ON**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF
ECS/Heater: ON

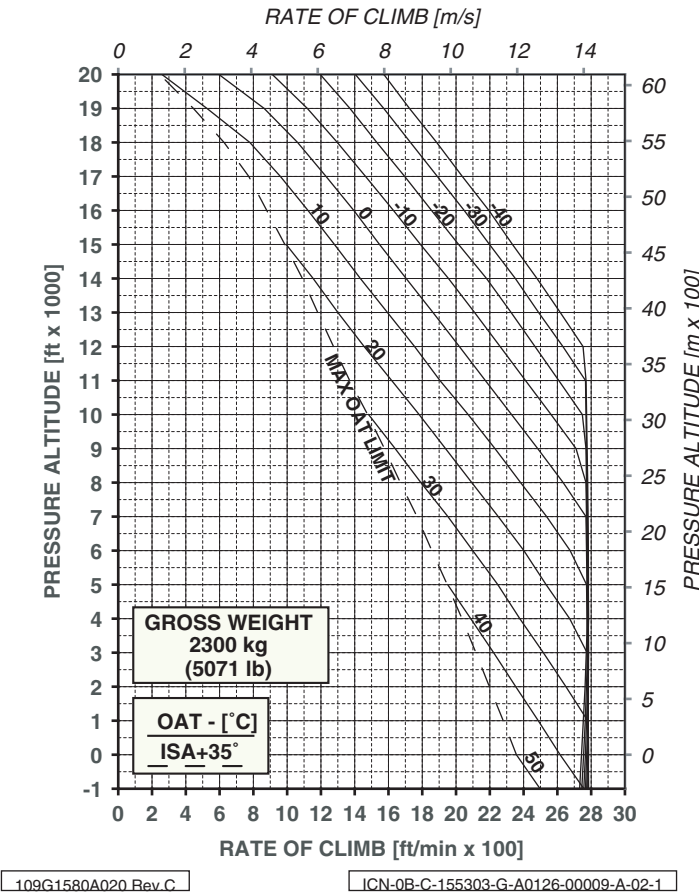


Figure 4-37 Rate of Climb at Take-Off Power - AEO
- Gross Weight 2300 kg - EAPS OFF - ECS / Heater ON

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF

ECS/Heater: ON

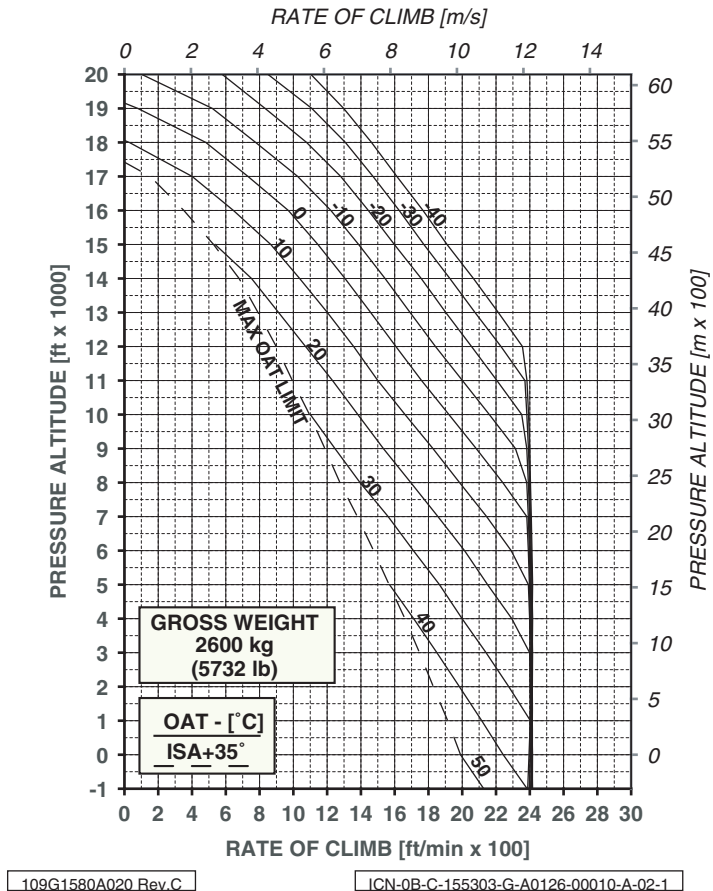


**Figure 4-38 Rate of Climb at Take-Off Power - AEO
- Gross Weight 2600 kg - EAPS OFF - ECS / Heater ON**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF
ECS/Heater: ON

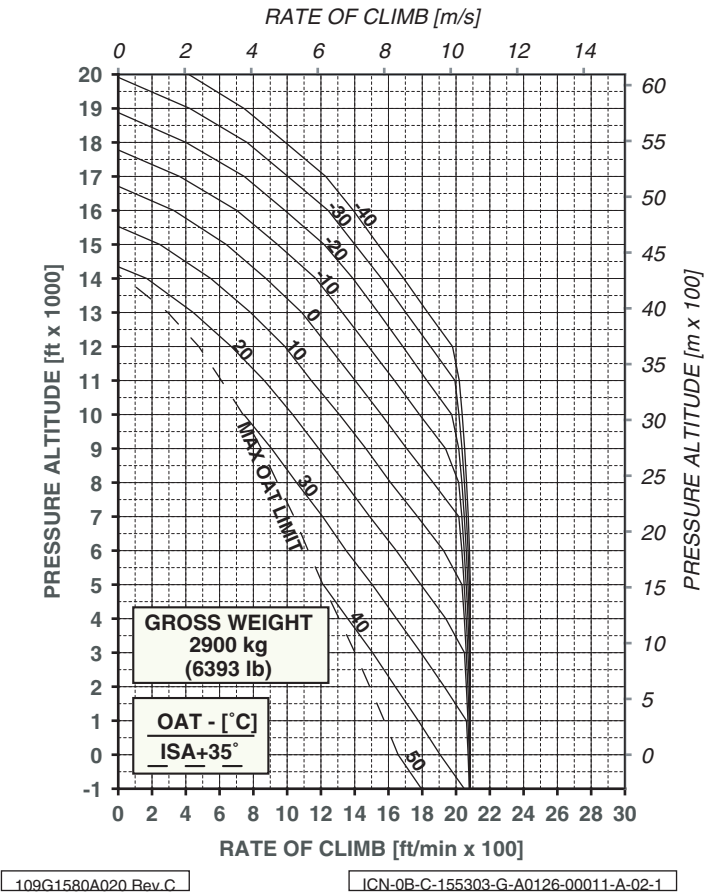


Figure 4-39 Rate of Climb at Take-Off Power - AEO
- Gross Weight 2900 kg - EAPS OFF - ECS / Heater ON

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF

ECS/Heater: ON

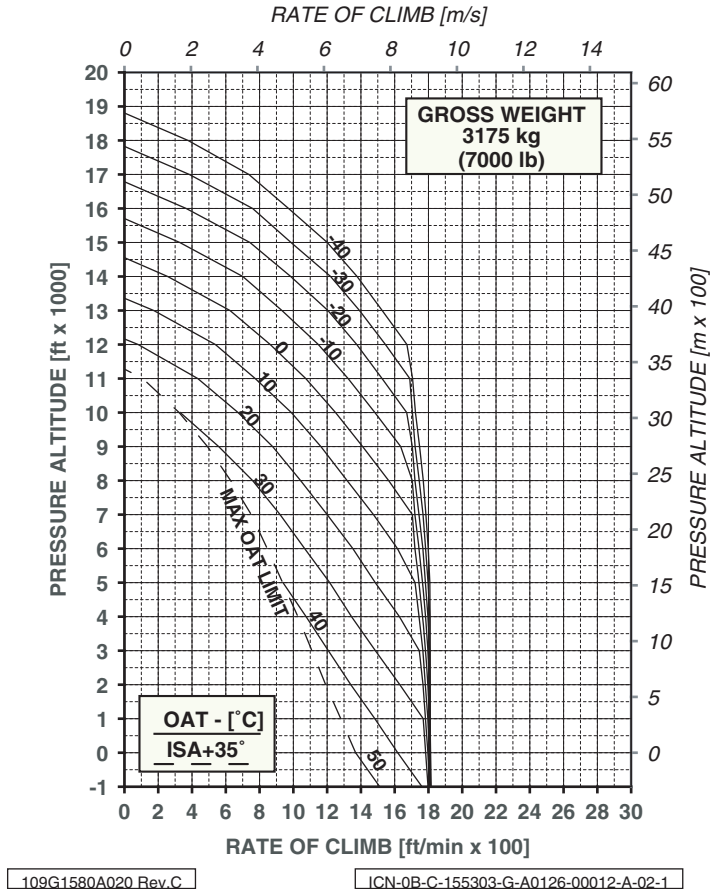
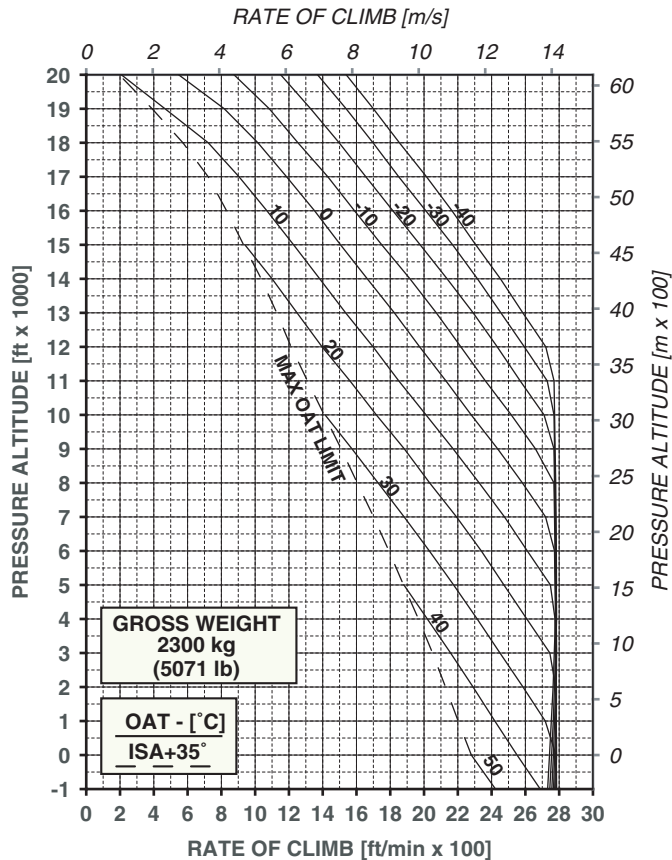


**Figure 4-40 Rate of Climb at Take-Off Power - AEO
- Gross Weight 3175 kg - EAPS OFF - ECS / Heater ON**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL

EAPS: ON
ECS/Heater: ON



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Figure 4-41 Rate of Climb at Take-Off Power - AEO
- Gross Weight 2300 kg - EAPS ON - ECS / Heater ON

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: ON

ECS/Heater: ON

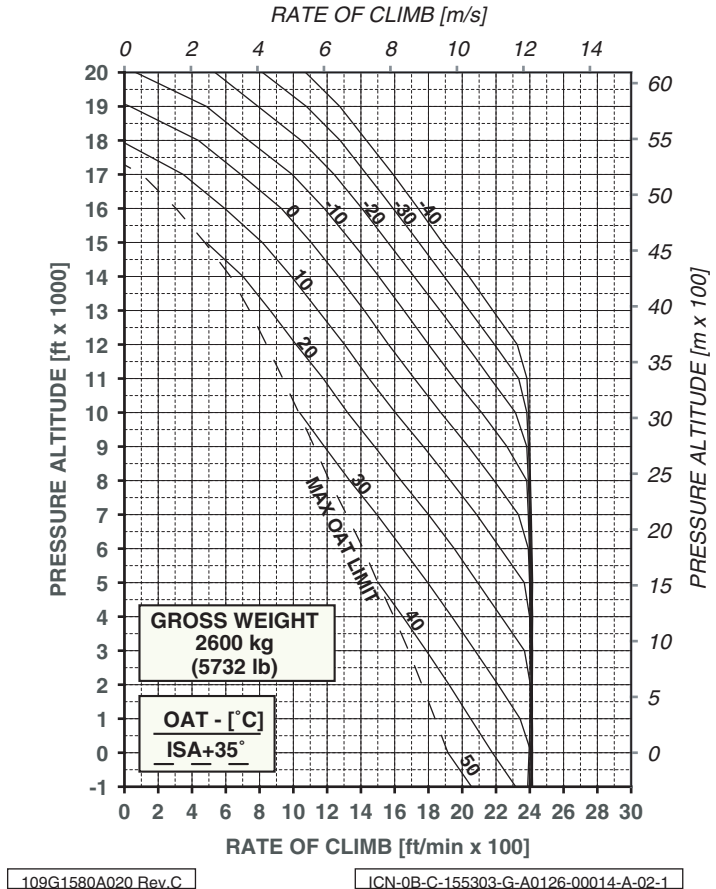


**Figure 4-42 Rate of Climb at Take-Off Power - AEO
- Gross Weight 2600 kg - EAPS ON - ECS / Heater ON**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL

EAPS: ON
ECS/Heater: ON

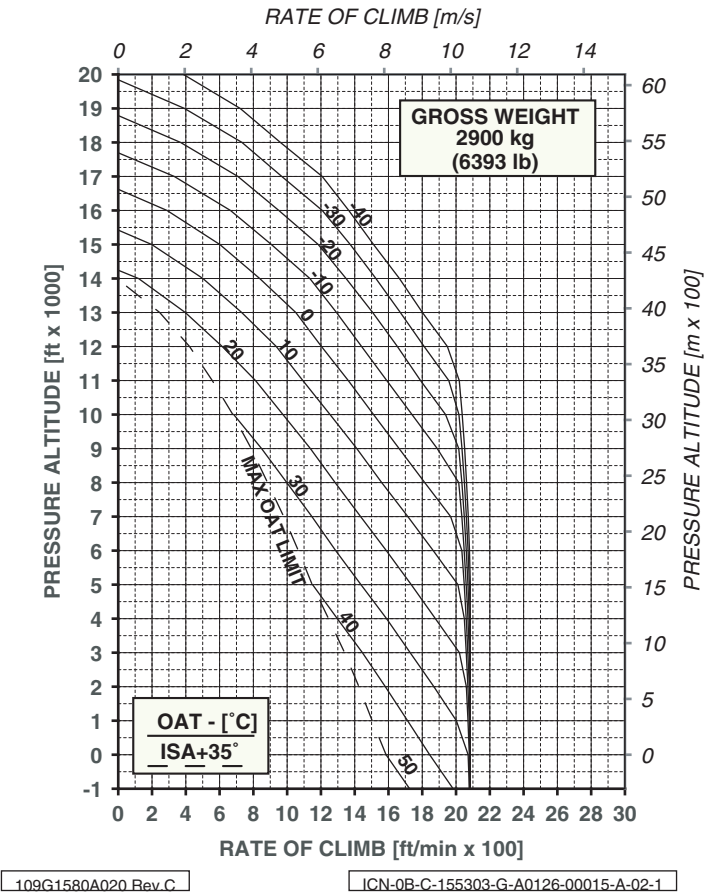


Figure 4-43 Rate of Climb at Take-Off Power - AEO
- Gross Weight 2900 kg - EAPS ON - ECS / Heater ON

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: ON

ECS/Heater: ON

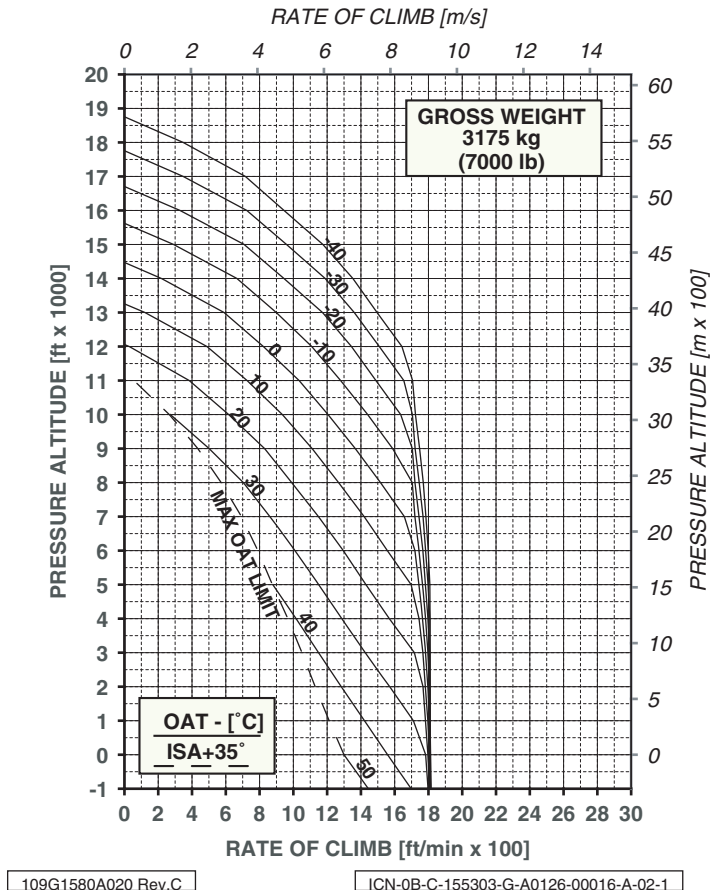


**Figure 4-44 Rate of Climb at Take-Off Power - AEO
- Gross Weight 3175 kg - EAPS ON - ECS / Heater ON**

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
EAPS: OFF

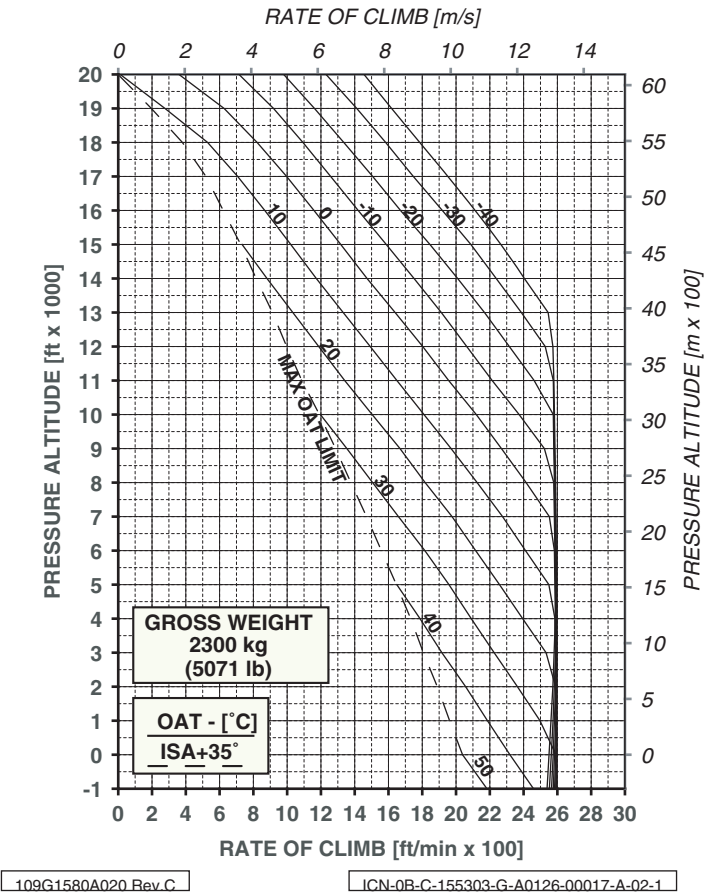


Figure 4-45 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2300 kg - EAPS OFF

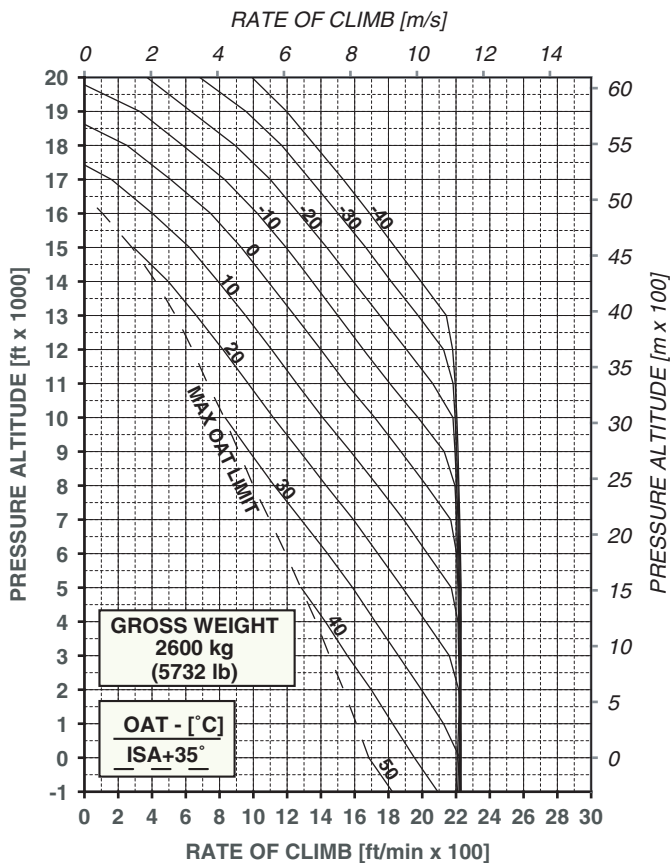
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-46 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2600 kg - EAPS OFF**

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
EAPS: OFF

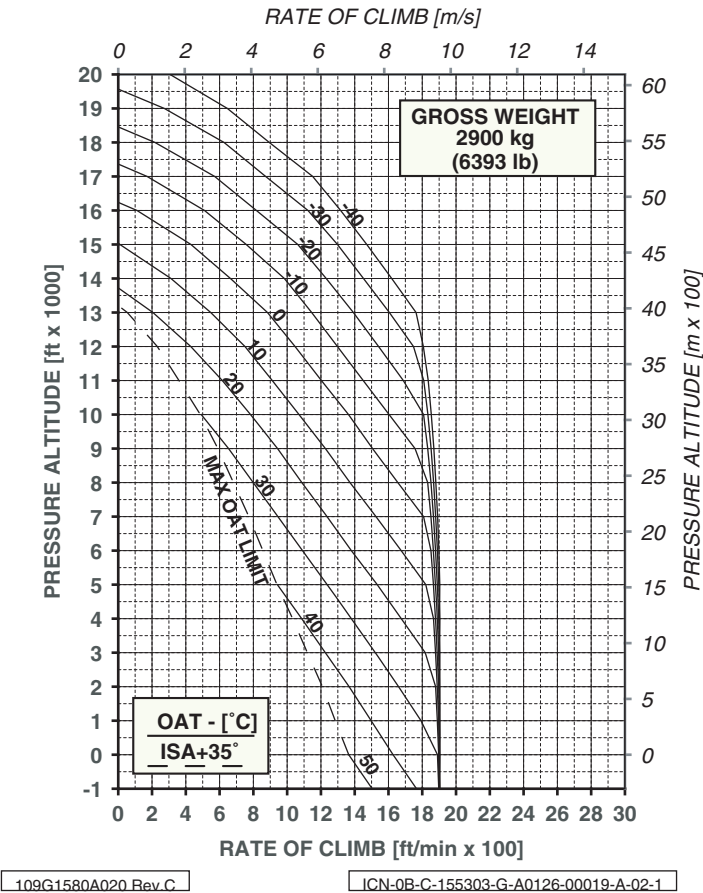


Figure 4-47 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2900 kg - EAPS OFF

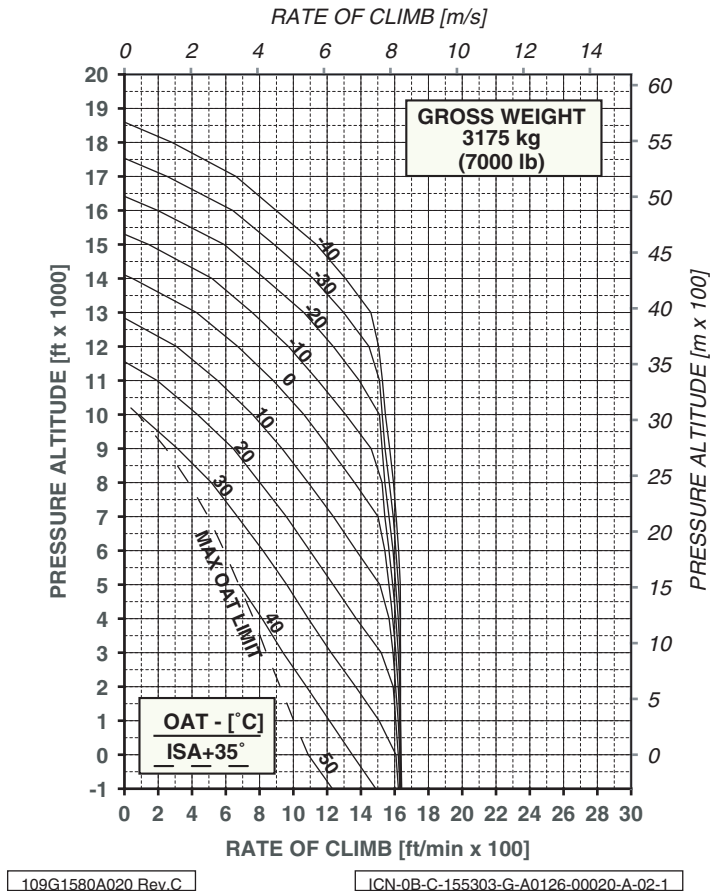
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
EAPS: ON

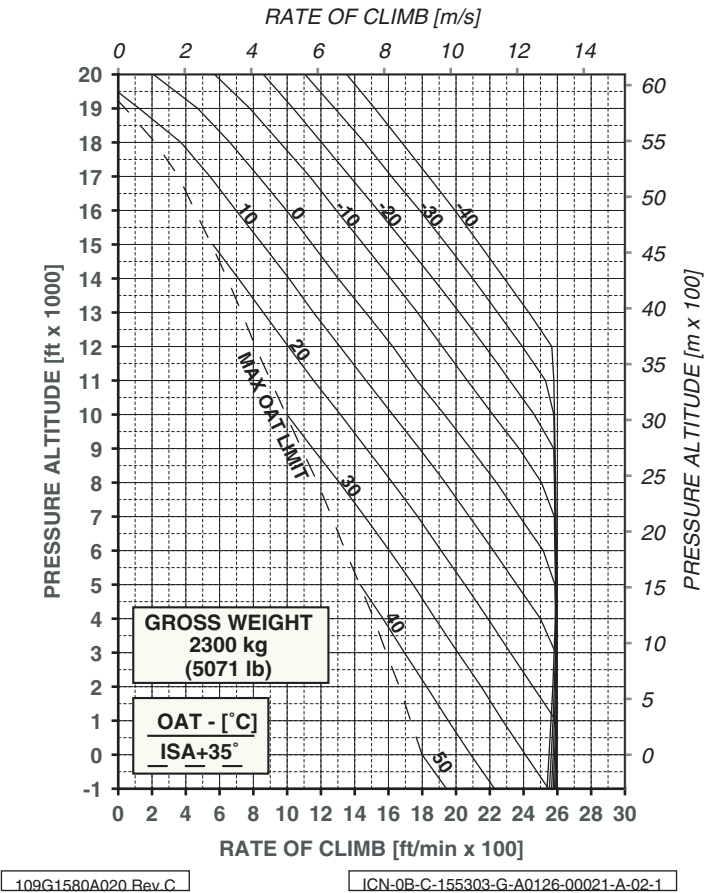


Figure 4-49 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2300 kg - EAPS ON

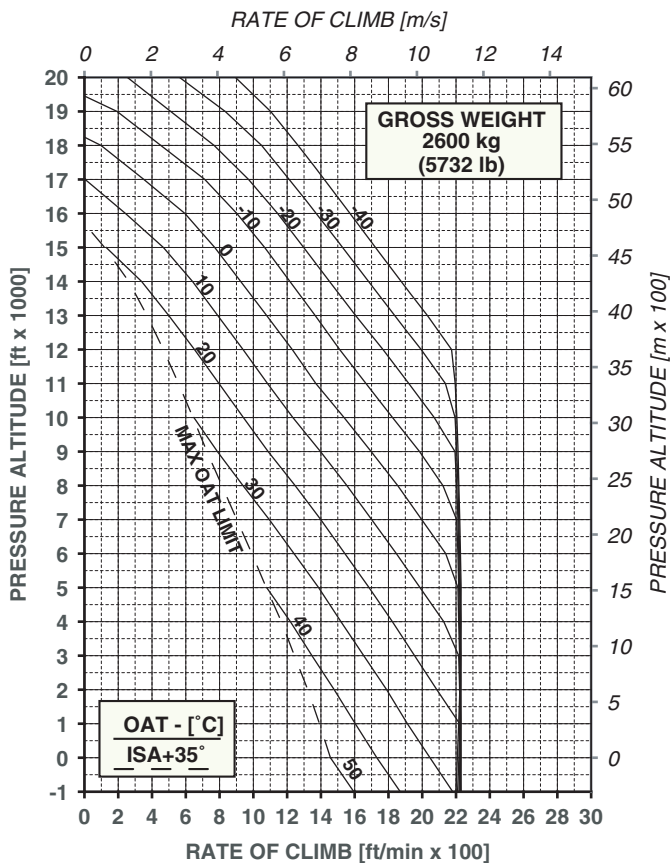
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100 %

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-50 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2600 kg - EAPS ON**

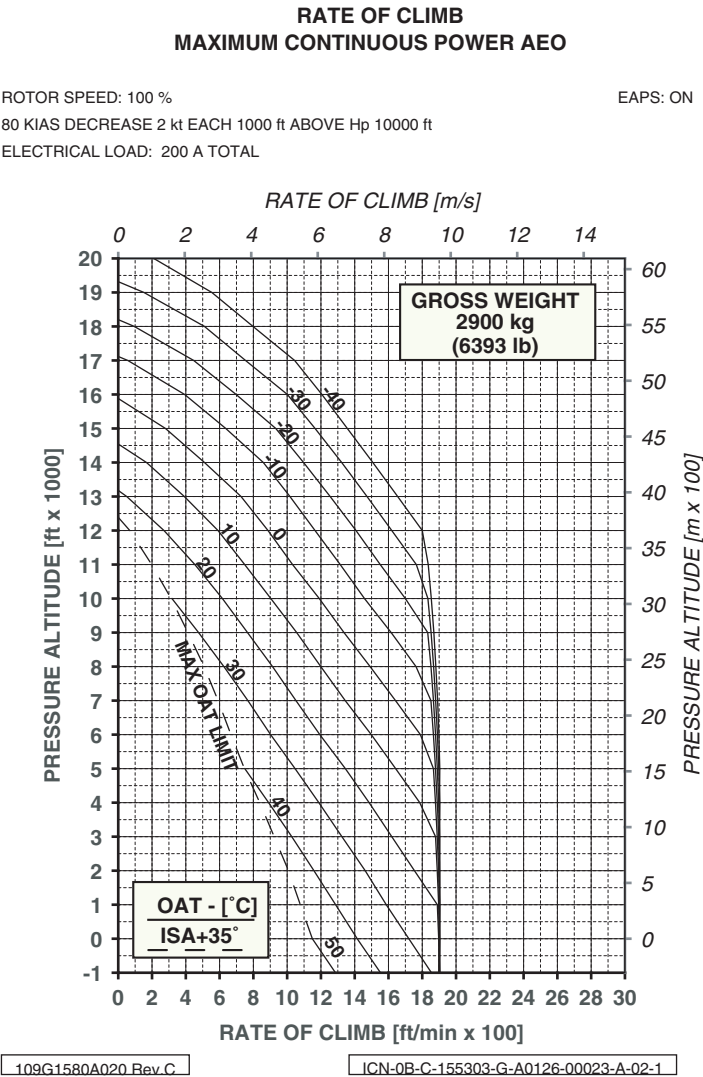


**Figure 4-51 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2900 kg - EAPS ON**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100 %

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

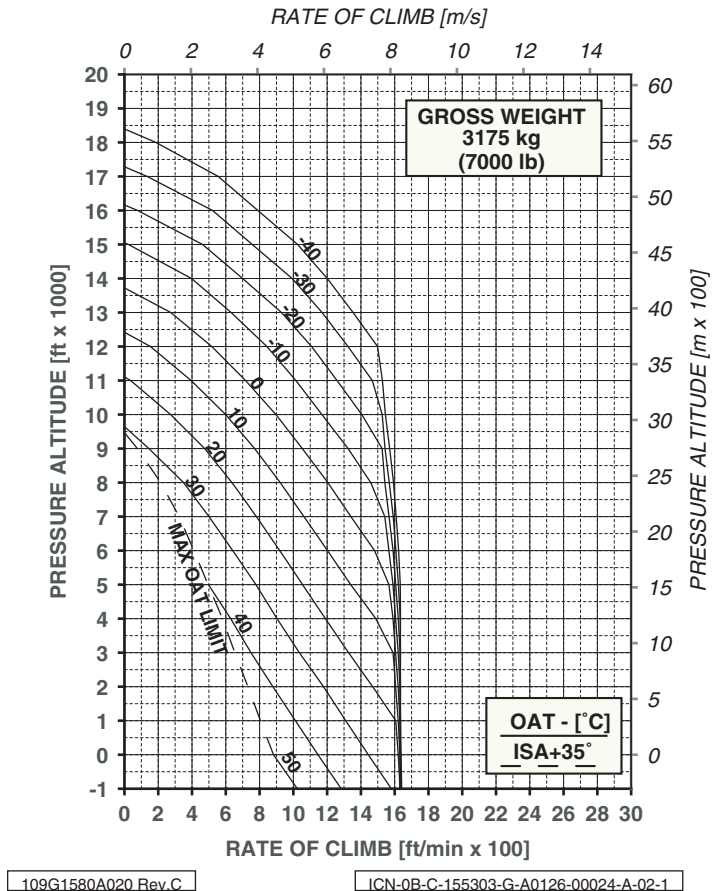


**Figure 4-52 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 3175 kg - EAPS ON**

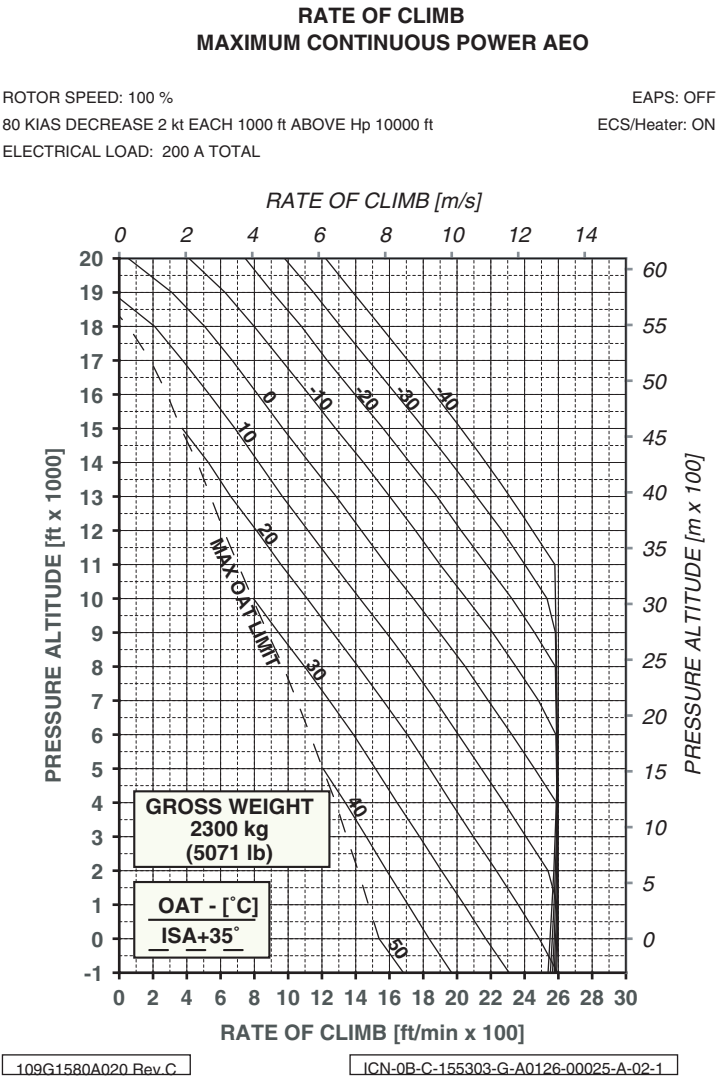


Figure 4-53 Rate of Climb at Maximum Continuous Power - AEO
 - Gross Weight 2300 kg - EAPS OFF - ECS / Heater ON

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF

ECS/Heater: ON

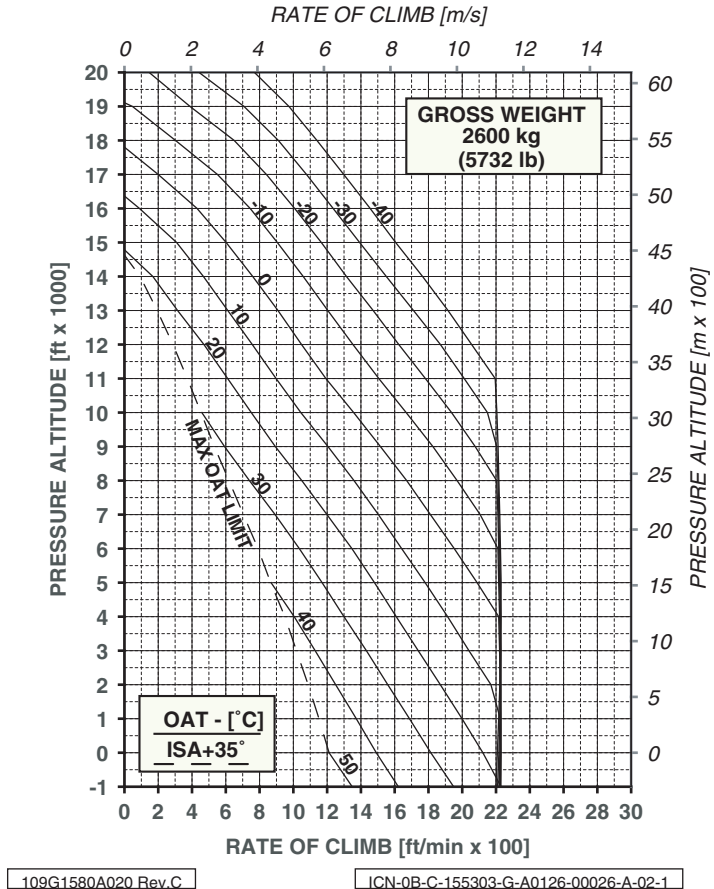


**Figure 4-54 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2600 kg - EAPS OFF - ECS / Heater ON**

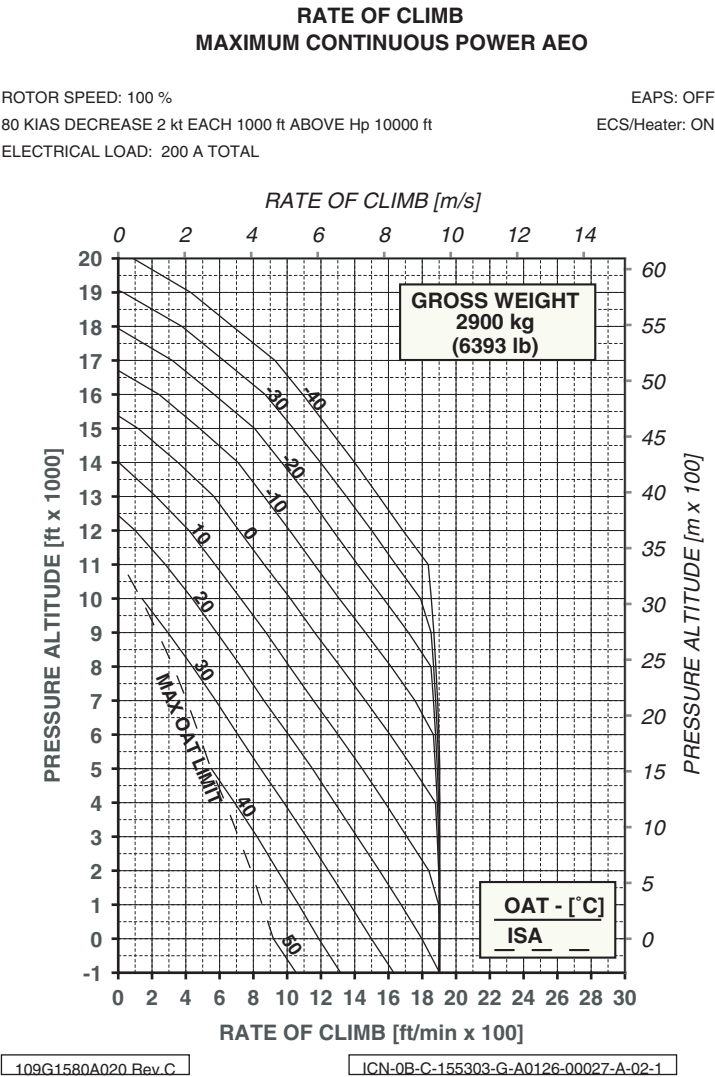


**Figure 4-55 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2900 kg - EAPS OFF - ECS / Heater ON**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF

ECS/Heater: ON

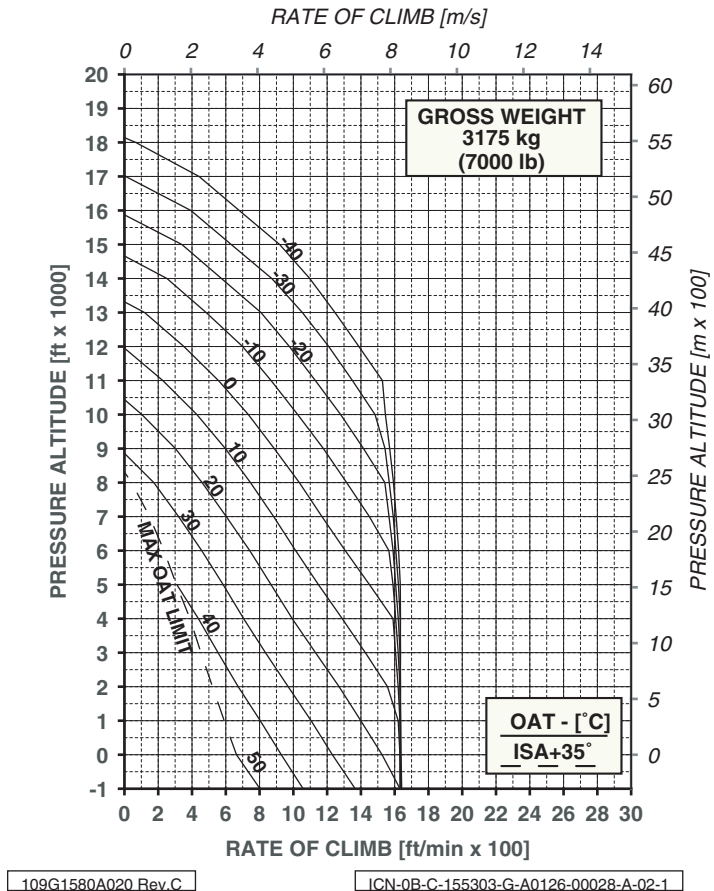


**Figure 4-56 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 3175 kg - EAPS OFF - ECS / Heater ON**

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

EAPS: ON
ECS/Heater: ON

ELECTRICAL LOAD: 200 A TOTAL
EAPS: OFF

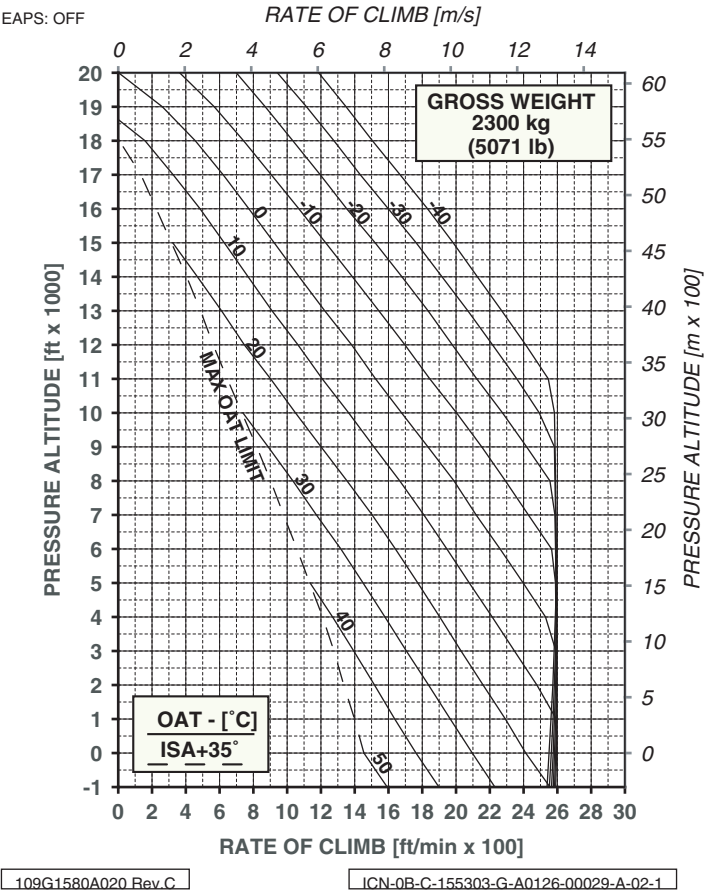


Figure 4-57 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2300 kg - EAPS ON - ECS / Heater ON

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

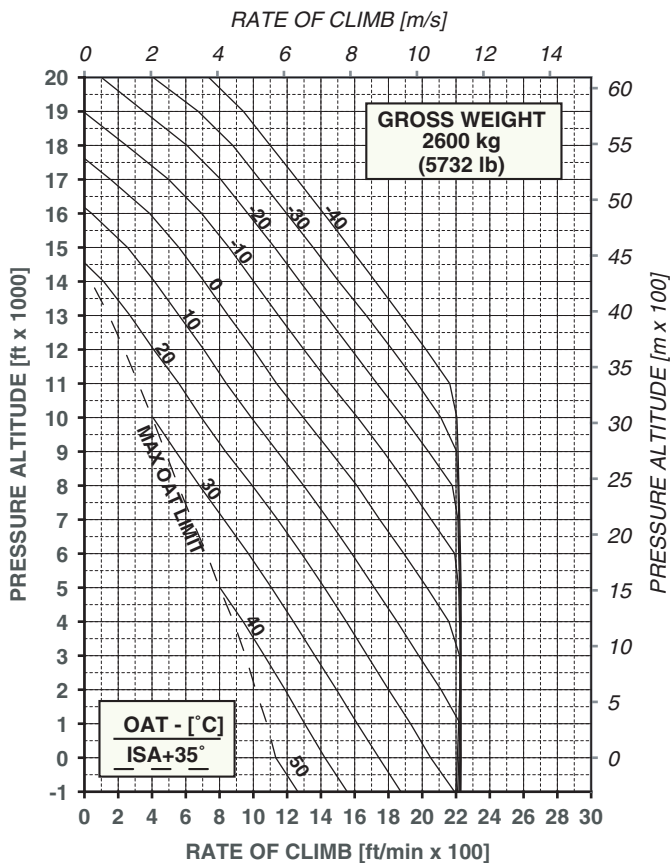
ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: ON

ECS/Heater: ON



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**Figure 4-58 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2600 kg - EAPS ON - ECS / Heater ON**

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL

EAPS: ON
ECS/Heater: ON

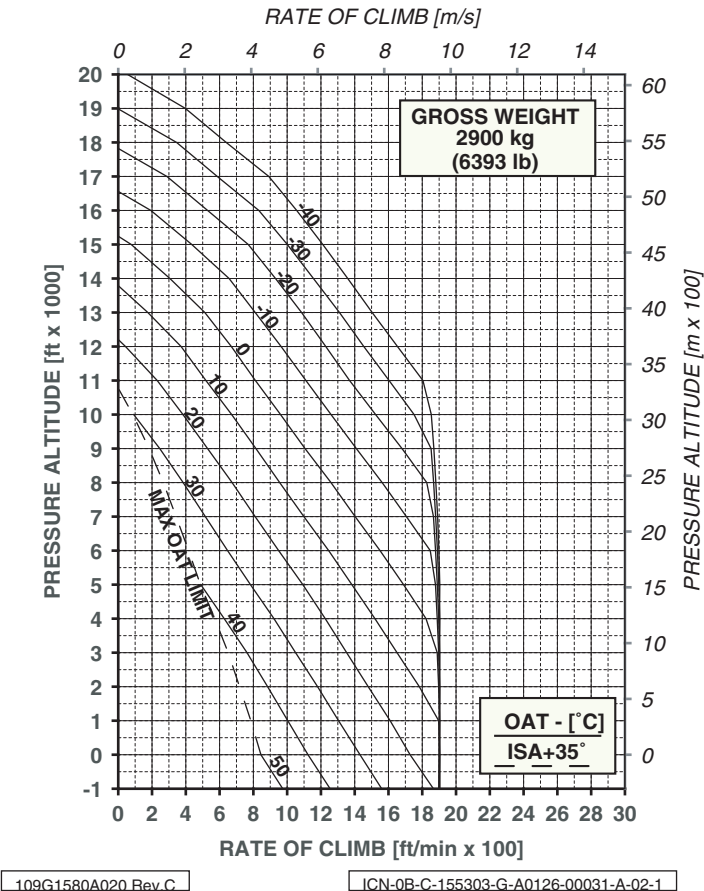


Figure 4-59 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 2900 kg - EAPS ON - ECS / Heater ON

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: ON

ECS/Heater: ON

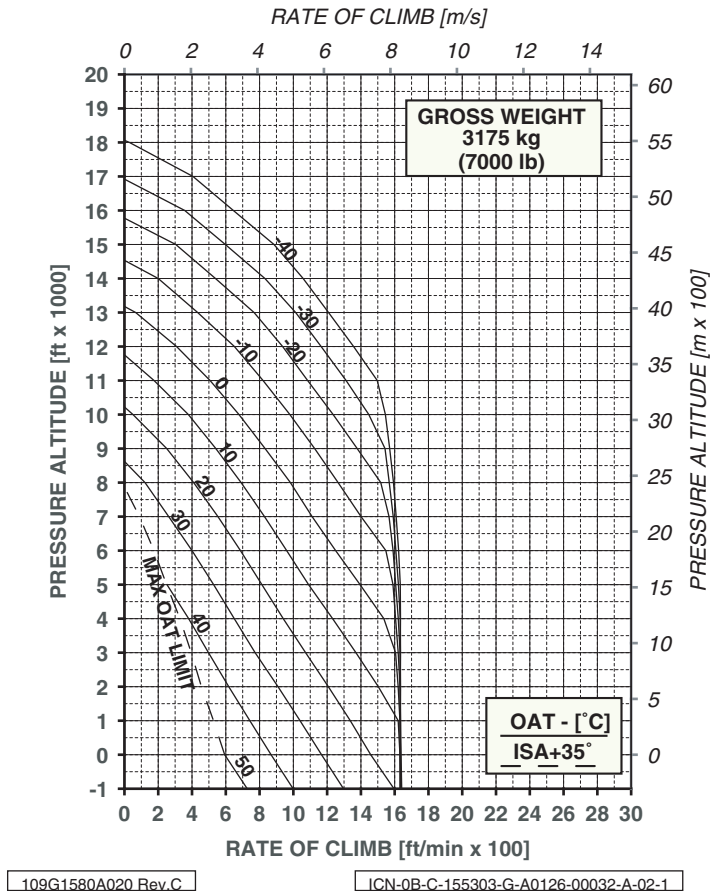


**Figure 4-60 Rate of Climb at Maximum Continuous Power - AEO
- Gross Weight 3175 kg - EAPS ON - ECS / Heater ON**

**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A
EAPS: OFF

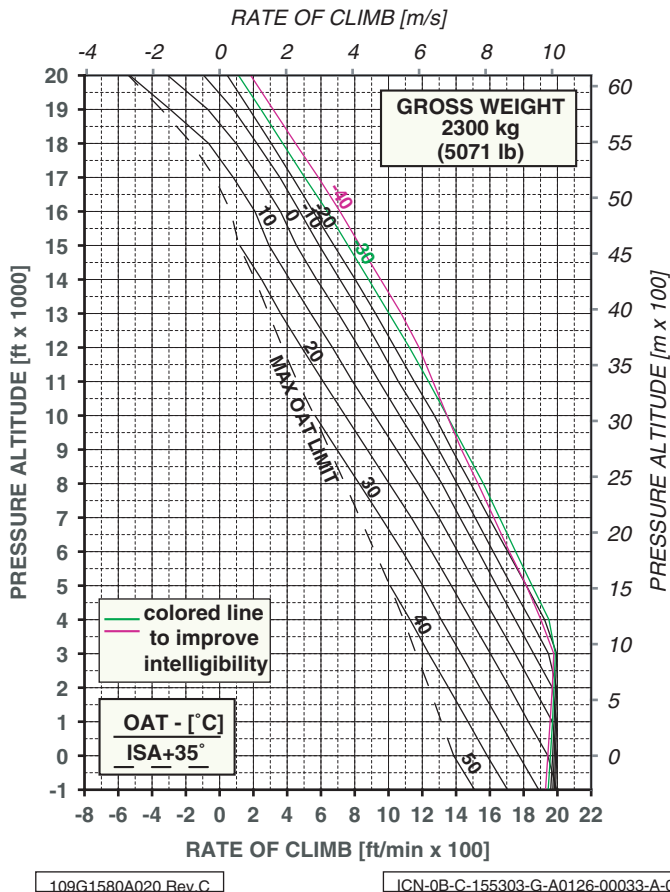


**Figure 4-61 Rate of Climb at 2.5 Minute Power - OEI
- Gross Weight 2300 kg - EAPS OFF**

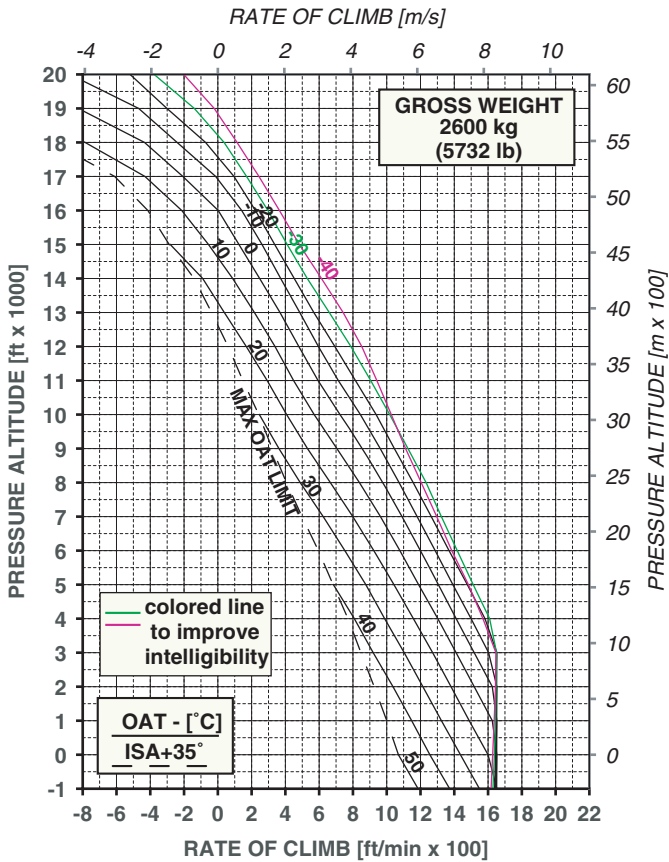
**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A



**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A

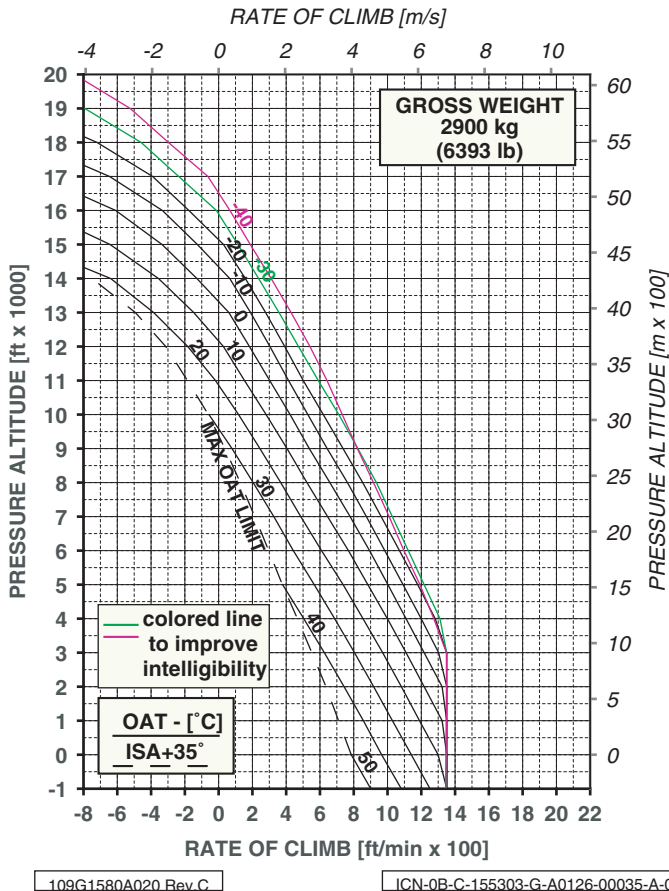


**Figure 4-63 Rate of Climb at 2.5 Minute Power - OEI
- Gross Weight 2900 kg - EAPS OFF**

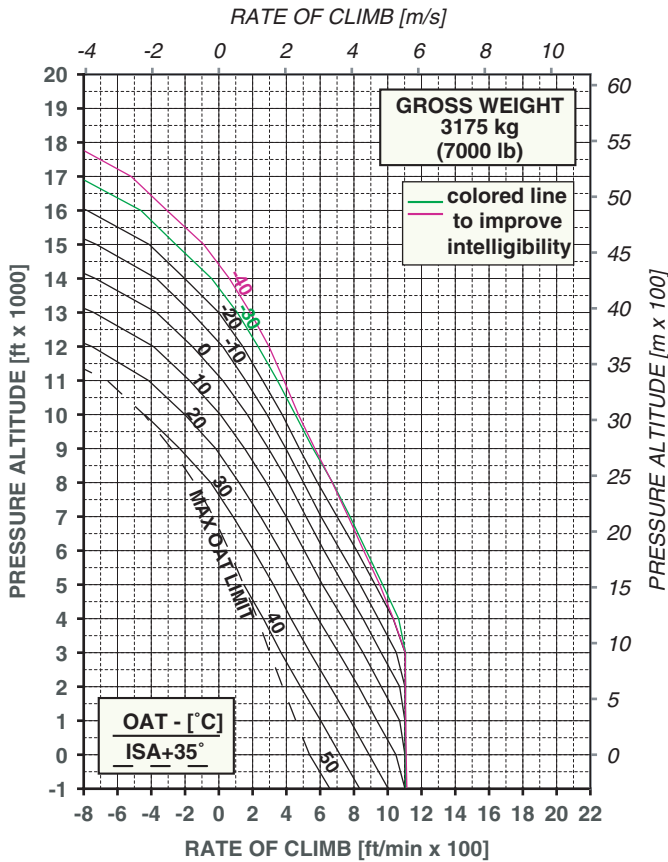
**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A



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**Figure 4-64 Rate of Climb at 2.5 Minute Power - OEI
- Gross Weight 3175 kg - EAPS OFF**

RATE OF CLIMB
2.5 MINUTE POWER OEI

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A

EAPS: ON

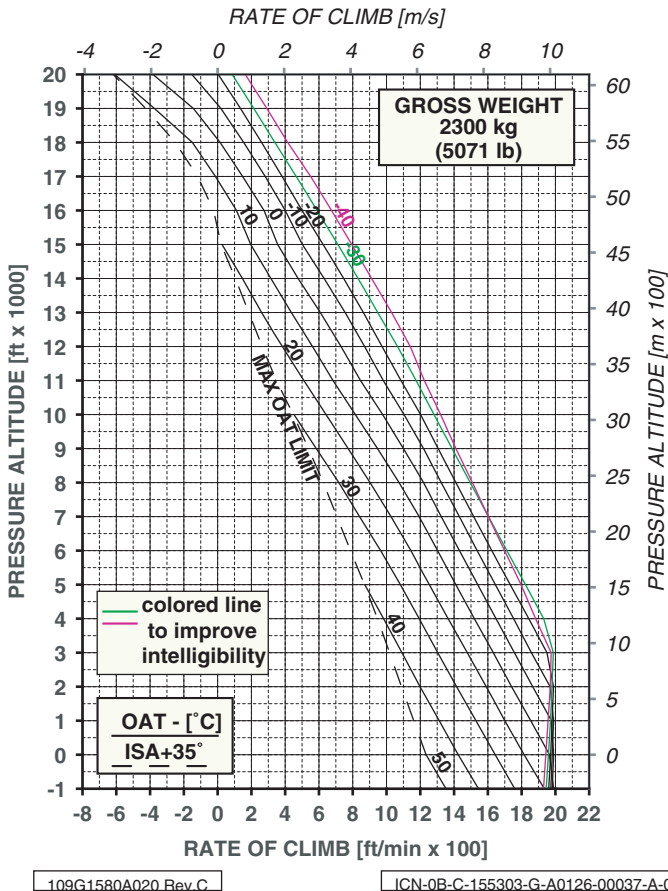


Figure 4-65 Rate of Climb at 2.5 Minute Power - OEI
- Gross Weight 2300 kg - EAPS ON

**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A

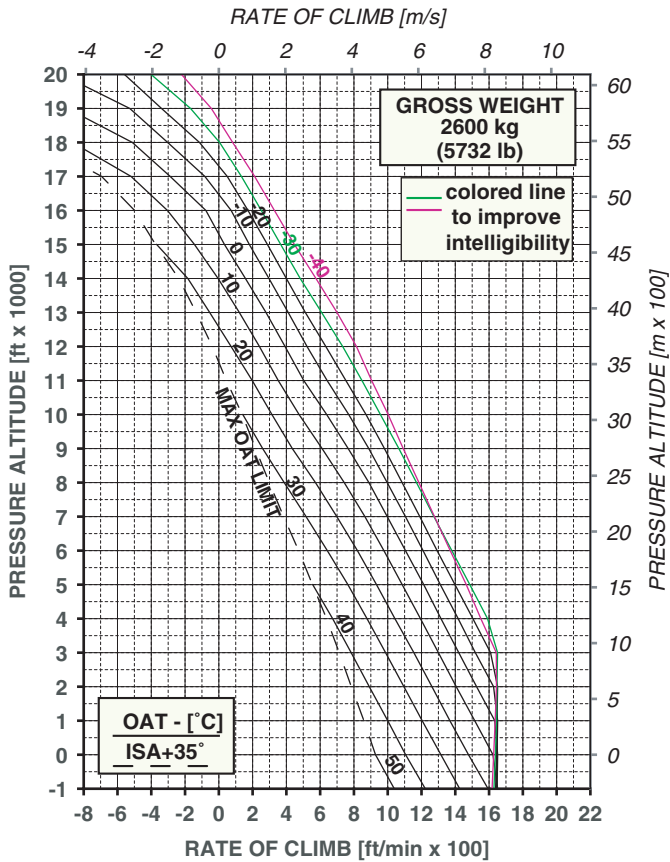
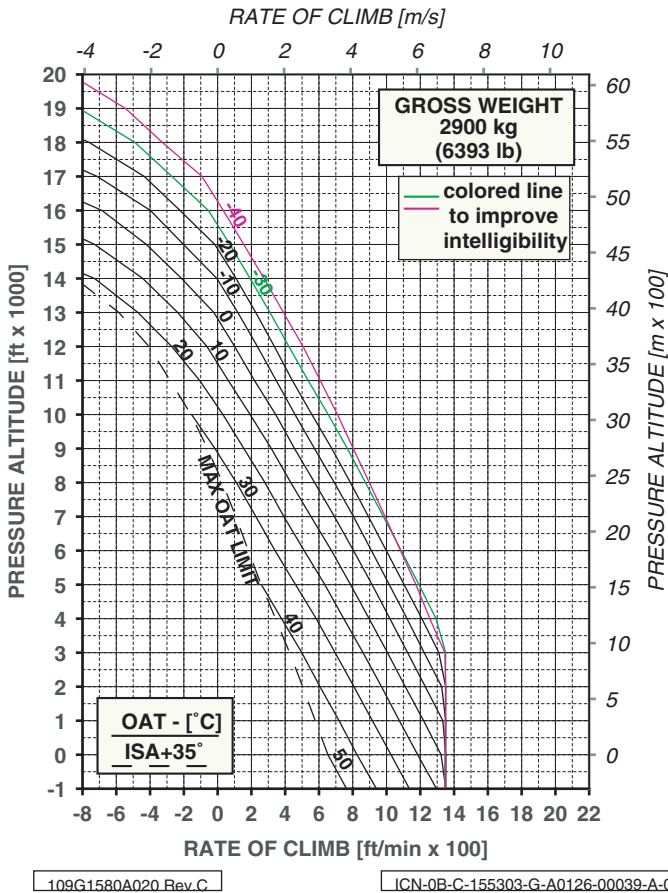


**Figure 4-66 Rate of Climb at 2.5 Minute Power - OEI
- Gross Weight 2600 kg - EAPS ON**

RATE OF CLIMB
2.5 MINUTE POWER OEI

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A

EAPS: ON



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Figure 4-67 Rate of Climb at 2.5 Minute Power - OEI
- Gross Weight 2900 kg - EAPS ON

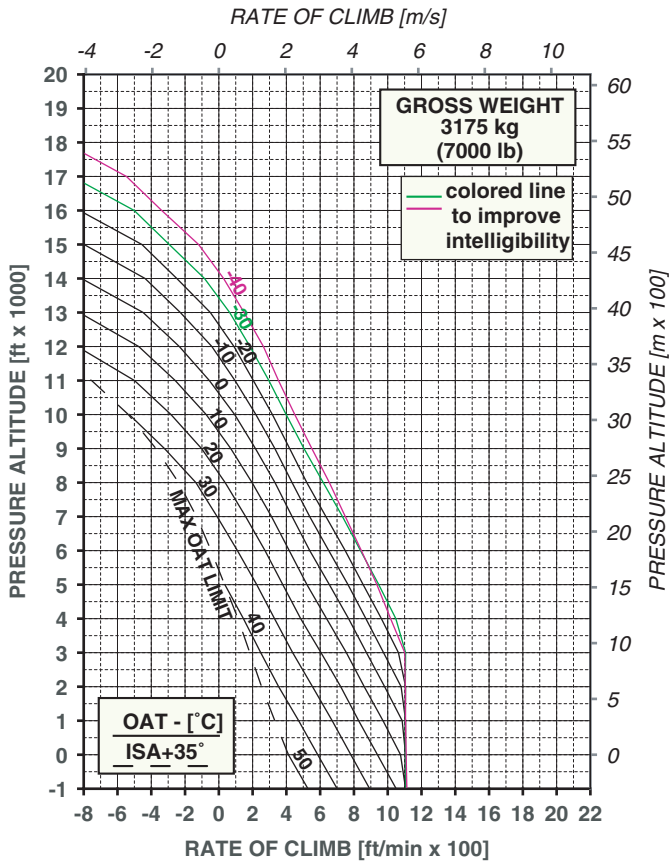
**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A



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ICN-0B-C-155303-G-A0126-00040-A-02-1

**Figure 4-68 Rate of Climb at 2.5 Minute Power - OEI
- Gross Weight 3175 kg - EAPS ON**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A

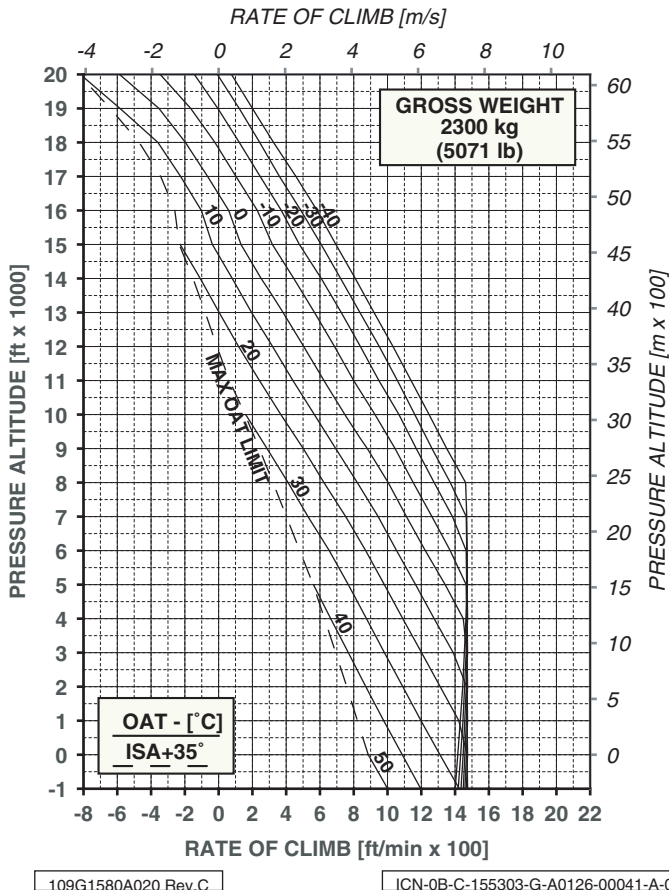


**Figure 4-69 Rate of Climb at Maximum Continuous Power - OEI
- Gross Weight 2300 kg - EAPS OFF**

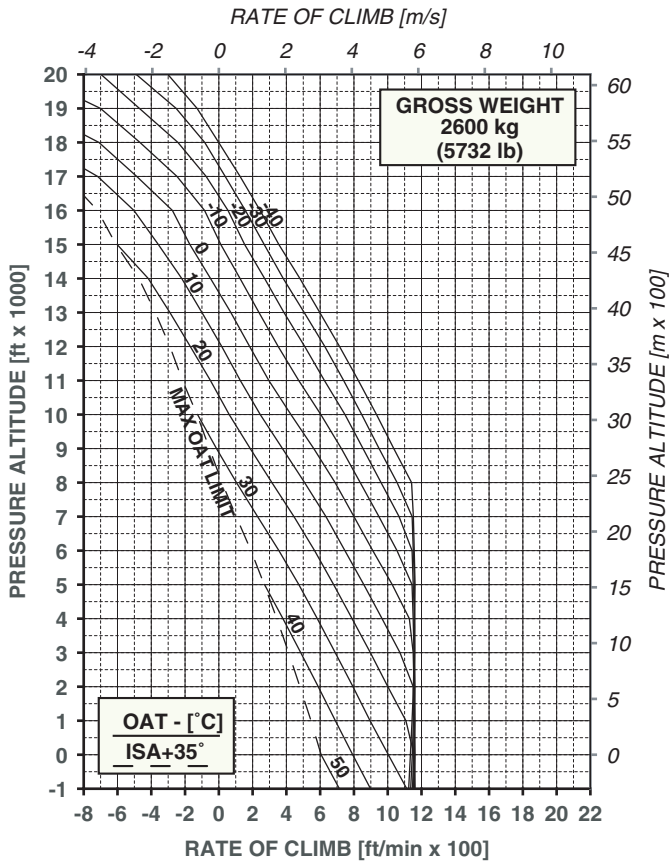
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A



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**Figure 4-70 Rate of Climb at Maximum Continuous Power - OEI
- Gross Weight 2600 kg - EAPS OFF**

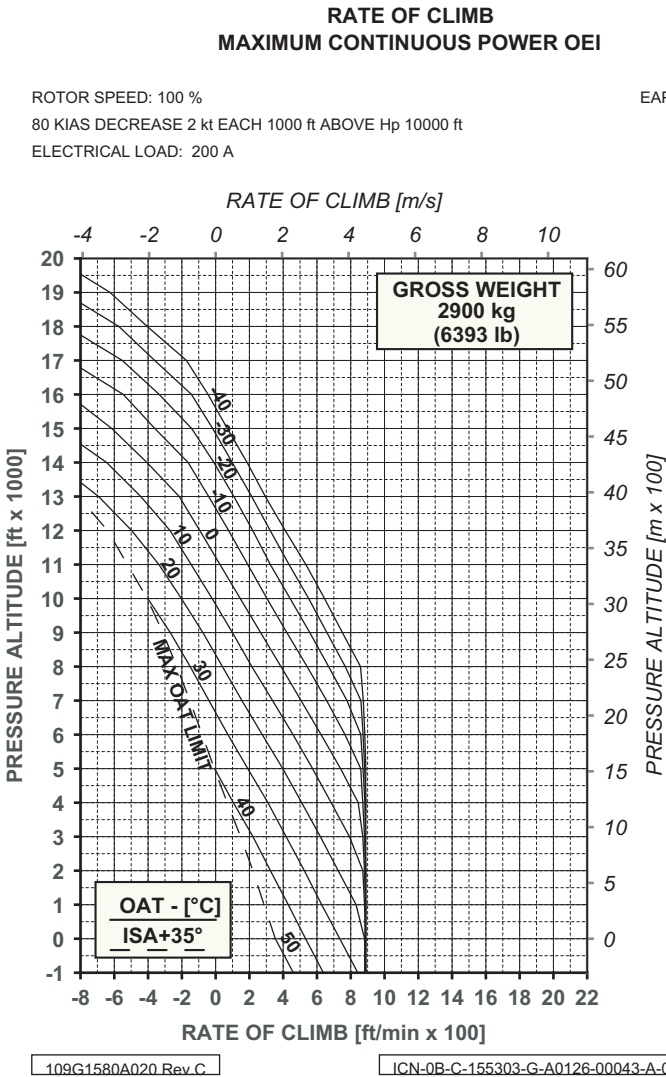


**Figure 4-71 Rate of Climb at Maximum Continuous Power - OEI
- Gross Weight 2900 kg - EAPS OFF**

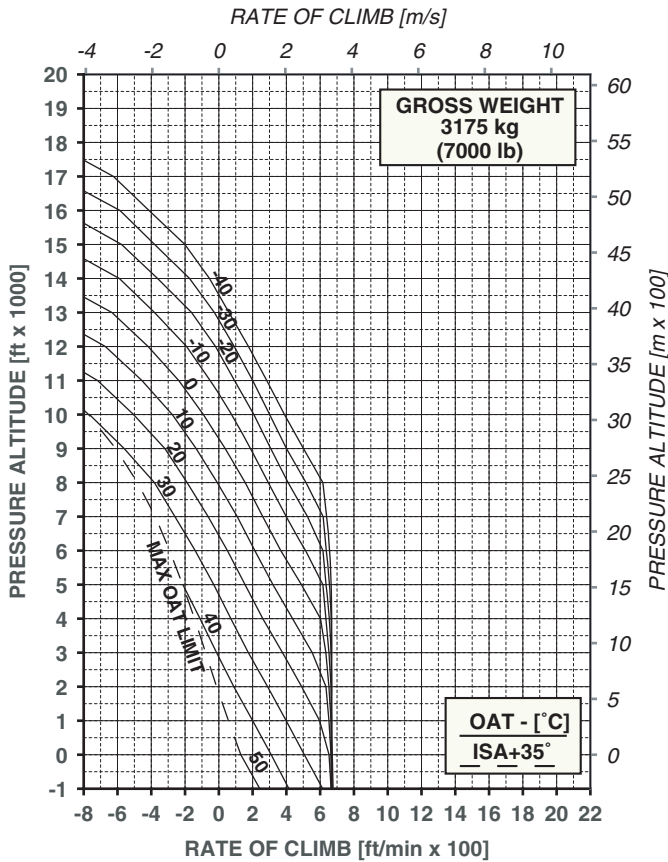
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

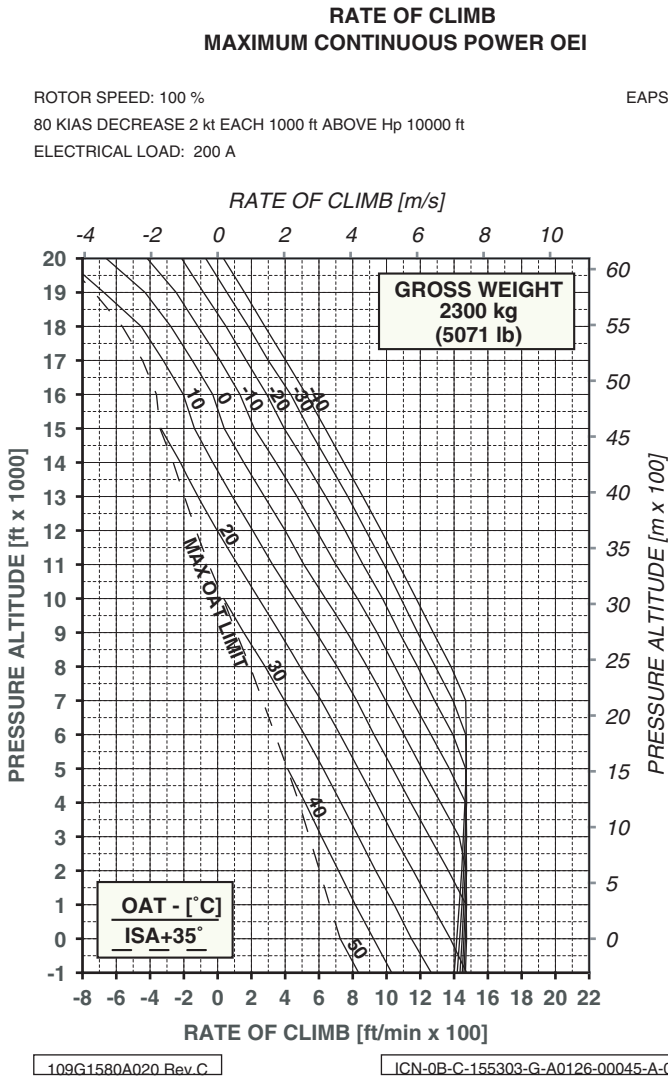
ELECTRICAL LOAD: 200 A



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**Figure 4-72 Rate of Climb at Maximum Continuous Power - OEI
- Gross Weight 3175 kg - EAPS OFF**



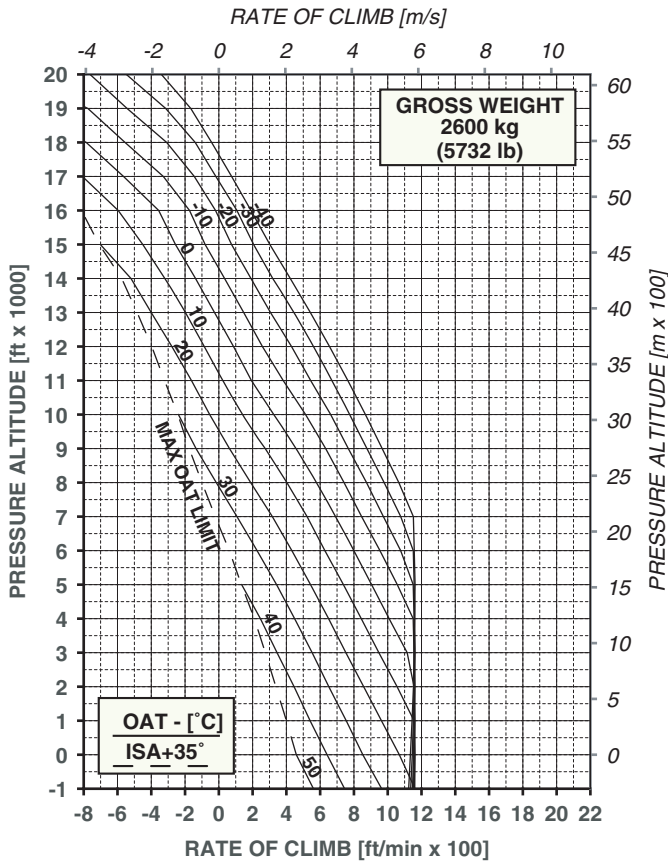
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A



RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A
EAPS: ON

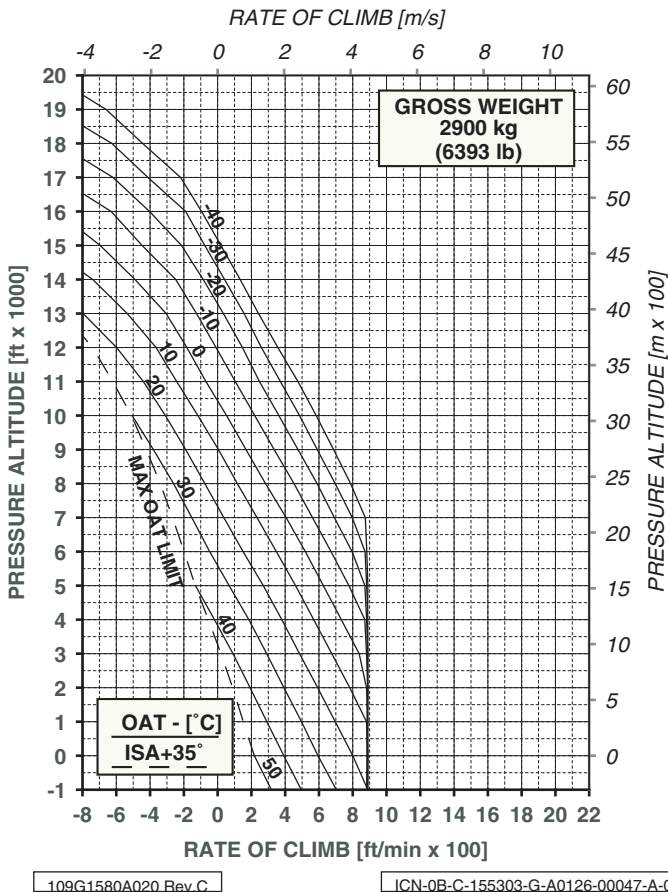


Figure 4-75 Rate of Climb at Maximum Continuous Power - OEI
- Gross Weight 2900 kg - EAPS ON

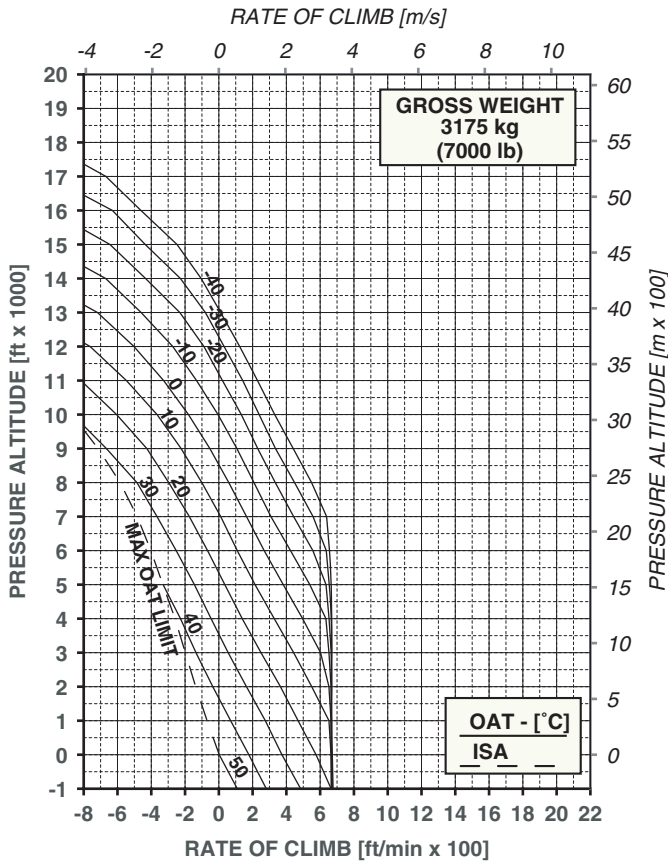
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A



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ICN-0B-C-155303-G-A0126-00048-A-02-1

**Figure 4-76 Rate of Climb at Maximum Continuous Power - OEI
- Gross Weight 3175 kg - EAPS ON**

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

CATEGORY A OPERATIONS

This Supplement should be attached to the AW109SP RFM (Section 5) for Category A Operations (CAT A) and Category A Training Procedures.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE C: 26 APRIL 2011
REVISION 7: 11 JUNE 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
1	Revised Title page, A-1, B-1, pages 8 thru 10 of 182, 17 thru 32 of 182, 60, 84, 116, 138 and 139 of 182.	EASA Approval N° 10029205 dated 11 March 2010
–	Issue C	EASA Approval N° 10034713 dated 26 April 2011
1	Revised pages Title page, A-1, B-1, 185 and 191 thru 192 of 222.	EASA Approval N° 10036514 dated 16 September 2011
2	Revised pages Title page, A-1, B-1 and 20 of 222.	EASA Approval N° 10038645 dated 5 March 2012
3	Revised Title page, A-1, B-1, pages 58, 61, 82, 85, 109, 110, 115, 121, 123, 142, 144, 146, 152, 154, 169, 171, 173, 179 and 181 of 222.	EASA Approval N° 10039837, REV. 1 dated 6 June 2012
4	Revised pages Title page, A-1, B-1 and 20 of 222.	EASA Approval N° 10042393 dated 3 December 2012
5	Revised pages Title page, A-1, B-1, B-2, ii, 1, 6 thru 8, 11, 12, 14, 15, 99, 100, 103, 126, 137, 157, 158, 161, 183, 185 thru 204, 207 thru 211 and 213 thru 221 of 222. Added pages 184A thru 184J.	EASA Approval N° 10058049 dated 10 May 2016
6	Revised pages Title page, A-1, B-1, B-2, 13, 23 thru 48, 53 thru 56, 77 thru 80, 103 thru 106, 137 thru 140, 161 thru 167, 192 thru 204 and 213 thru 221 of 222.	EASA Approval N° 10062498 dated 4 July 2017

REVISION No.	SUBJECT	APPROVAL
7	Revised page 20 of 222.	EASA Approval N°10087294 dated 11 June 2025
	Revised pages 49 thru 72 and 117 of 222.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1, B-1, B-2, 101 and 135 of 222.	Manufacturer's Data

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INTRODUCTION

GENERAL

This Supplement defines the procedures and performance for Category A Operations. The Supplement is divided into six separate parts as follows:

- **Part A** **Clear Area Procedures**
- **Part B** **Short Field Procedures**
- **Part C** **Ground Level and Elevated Heliport/Helideck Back-Up Procedures**
- **Part D** **Elevated Heliport/Helideck Vertical Procedures**
- **Part E** **Ground Level Heliport Vertical Procedures**
- **Part F** **Narrow Elevated Heliport/Helideck Procedures**
- **Part G** **Category A Training Procedures**

Each Part has the complete set of sections specific to the particular procedure, i.e. Section 1 - Limitations, Section 2 - Normal Procedures, Section 3 - Emergency and Malfunction Procedures and Section 4 - Performance Data.

Part G contains the Category A Training procedures and associated weight limitations for training manoeuvres using the engine training mode.

Instructions and procedures in blue are applicable only if kit P/N 109-B811-02 (fixed landing gear) is not installed.

This Supplement also includes the data for Category A Operations with AW109SP helicopter equipped with EAPS P/N 109-0811-55.

ABBREVIATIONS

— ALS	Above Landing Surface
— ATS	Above Take-Off Surface
— BL	Balked Landing
— CTO	Continued Take-Off
— GS	Ground Speed
— LDP	Landing Decision Point
— MPOG	Minimum Pitch On Ground
— RTO	Rejected Take-Off
— TDP	Take-Off Decision Point
— TDP _E	Extended Take-Off Decision Point
— TDP _{MIN}	Minimum Take-Off Decision Point
— V ₁	Speed at TDP or at LDP
— V _{BLSS}	Balked Landing Safety Speed
— V _{TOSS}	Take-Off Safety Speed
— V _Y	Best Rate of Climb Speed
— WAT	Weight-Altitude-Temperature

DEFINITIONS

1. CAT A Take-Off
 - Operation of the helicopter taking into account a single engine failure at any time after the start of the Take-Off transition, to ensure the helicopter has the capability:
 - at or prior to the Take-Off Decision Point (TDP), to return and safely land back on the Take-Off area;
 - at or after the Take-Off Decision Point (TDP), climb away from the point of engine failure and continue forward flight with one engine inoperative (OEI).
2. CAT A landing
 - Operation of the helicopter taking into account a single engine failure at any time during the approach to landing, to ensure the helicopter has the capability:
 - at or after the Landing Decision Point (LDP), to make a safe approach and landing on the intended landing area;
 - at or prior to the Landing Decision Point (LDP), climb away from the point of engine failure and continue flight with one engine inoperative (OEI).
3. Take-Off Decision Point (TDP) — The first point in the Take-Off path from which a CTO capability is assured and the last point from which a RTO is assured, within the rejected Take-Off distance.

4. Landing Decision Point (LDP) — The last point in the approach landing path from which it is possible either to land on a pre-determined area or accomplish a Balked Landing.
5. Continued Take-Off distance — The Continued Take-Off (CTO) distance is the horizontal distance from the start of the Take-off procedure to a point at least 35 ft ATS where V_{TOSS} and a positive rate of climb (ROC) are attained following an engine failure at or after TDP. For an elevated heliport/helideck the Continued Take-Off distance is the horizontal distance along the Take-Off path from the start of the Take-Off to the point at which the rotorcraft attains and maintains a speed of at least V_{TOSS} and establishes a positive rate of climb.
6. Rejected Take-Off distance — The horizontal distance from the start of the take-off procedure to a point where the helicopter lands and stops safely following an engine failure at or prior to TDP.
7. Take-Off path — The path from the point of commencement of the take-off procedure to the point at which the helicopter is 1000 ft ATS. This is composed of three segments; CTO distance, PATH 1 and PATH 2.

- 8. PATH 1 — The segment between the end of the CTO distance or BL distance to a height of 200 ft ATS or ALS during an OEI 2.5 min power climb at V_{TOSS} or V_{BLSS} and for a minimum ROC of 100 ft/min.
- 9. PATH 2 — The segment between 200 ft ATS or ALS and 1000 ft ATS or ALS during an OEI MCP power climb at V_Y and for a minimum ROC of 150 ft/min.
- 10. Take-Off/Landing Safety Speed — The airspeed (V_{TOSS} / V_{BLSS}) at which the scheduled climb gradient OEI can be achieved.
- 11. Landing distance — The horizontal distance required to land in an OEI condition and come to a complete stop from a point 50 ft ALS.
- 12. Balked landing distance — The horizontal distance from the LDP to the point at least 35 ft ALS where V_{BLSS} and a positive rate of climb (ROC) are attained following an engine failure before LDP.
- 13. Back-Up distance — The horizontal distance from the start of the Take-Off to the TDP during a Back-Up Take-Off procedure.
- 14. Elevated Heliport — A heliport which is at least 10 ft (3 m) above the surrounding surface.
- 15. Helideck — A Heliport located on a floating or fixed offshore structure.
- 16. Heliport — A defined area of land or structure intended to be used for the arrival and departure of helicopters.

17. **NARROW Heliport/Helideck** — an heliport or an helideck smaller than 15 m x 15 m to a minimum of 15 m lenght x 9 m width.

COMMON DATA

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SECTION 1 - LIMITATIONS

The following limitations are applicable for all CAT A Take-Off and Landing procedures.

For Limitations of each specific profile refer to [Part A](#) to [F](#) and for Training procedures to [Part G](#).

AIRCRAFT CONFIGURATION

Category A Operations shall be carried out provided that the following system is installed and operative:

— Engine fire extinguisher, P/N 109-0811-39.

TYPE OF OPERATION

CAT A operations are approved under Day/Night VFR, and Day/Night IFR.

CAT A Take-Off and Landing must be carried out in VMC.

IFR flight may be initiated at the end of PATH 1 (minimum height 200 ft ATS) or at a height where the airspeed is greater than V_{MINI} (55 KIAS).

IFR flight must end not below 200 ft ALS or at a height where the airspeed is not below V_{MINI} (55 KIAS).

CREW LIMITATIONS

CAT A Take-Off and Landing must be carried out from the right hand seat.

HEADWIND GROSS WEIGHT BENEFIT

The Gross Weight Benefit, for Headwind Component, incorporated into the WAT Charts, (except for Clear Area in Part A) presented in this supplement, has already been factored by 50%. No further weight correction is necessary.

AIRSPEED LIMITATIONS

Take-Off Safety Speed (V_{TOSS})..... 35 KIAS

Balked Landing Safety Speed (V_{BLSS}) 35 KIAS

Best Rate of Climb Speed (V_Y):

- Up to 10000 ft Hp 80 KIAS
- Above 10000 ft Hp decrease 80 KIAS by 2 kts each 1000 ft

WIND LIMITATIONS

Take-Off with a tail wind is prohibited.

The maximum crosswind is 20 kts.

With a Gross Weight Benefit from a headwind, the maximum crosswind component must not exceed 10 kts.

For Crosswind and Headwind component computation refer to the wind component chart, Section 4, [Figure 4-1](#).

ALTITUDE LIMITATIONS

CAT A TAKE-OFF AND LANDING ENVELOPE

Procedures described in [Parts A, B, C, D, E](#) and [G](#) [Figure 1-1](#)

Procedure described in [Part F](#) 3000 ft Hp or Hd

DOORS OPENED OR REMOVED

Cat A procedures with any door (Pilot / Copilot / Cabin) open or removed are prohibited.

POWER PLANT LIMITATIONS

POWER ASSURANCE CHECK

Category A operations are prohibited if the engines do not meet the power check requirements. Refer to **ENGINE POWER CHECKS** procedure in Section 4 of the basic RFM.

FUEL SYSTEM LIMITATIONS

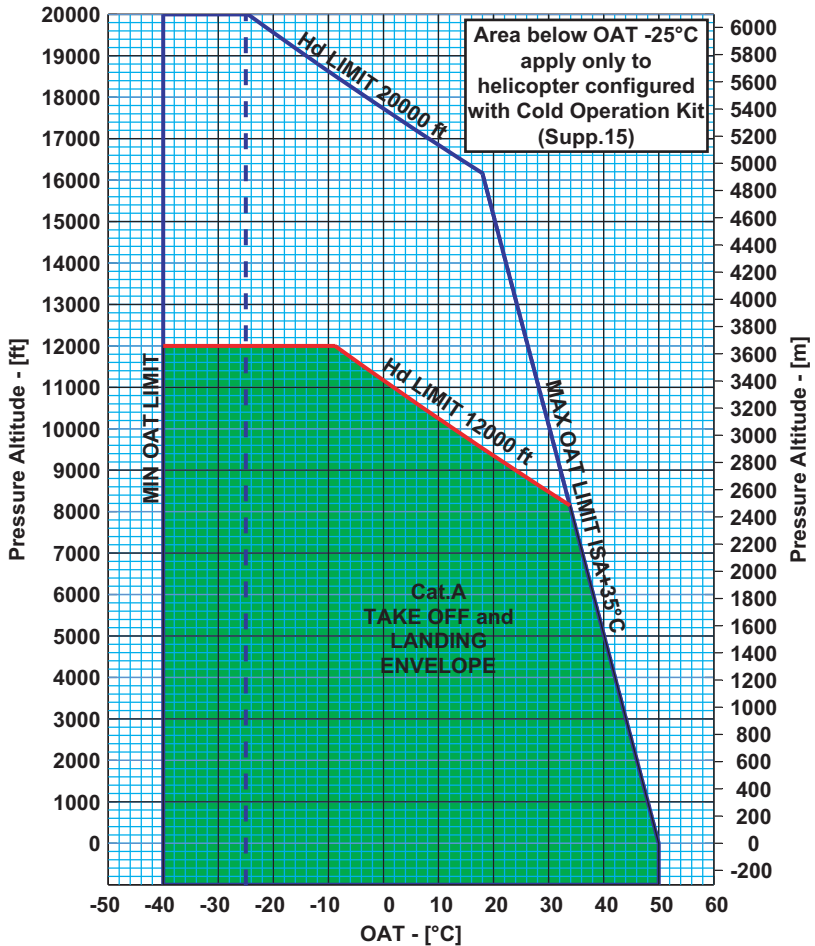
EMERGENCY FUELS

Category A operations are prohibited if Aviation Gasoline is used.

MISCELLANEOUS LIMITATIONS

Category A operations with the torque limiter function disabled is prohibited.

Cat.A TAKE OFF and LANDING OAT ENVELOPE EXTENDED



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Figure 1-1 CAT A Take-Off and Landing Envelope

SECTION 2 - NORMAL PROCEDURES

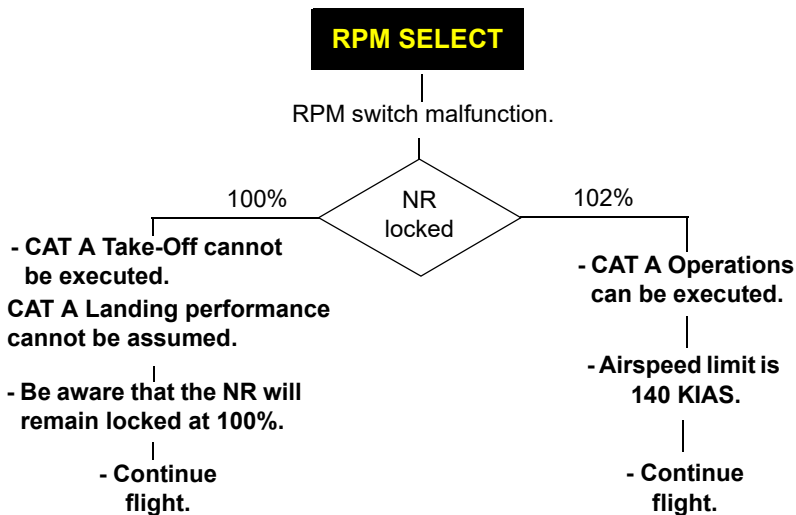
For Normal Procedures of each specific profile refer to [Part A](#) to [F](#) and for Training procedures refer to [Part G](#).

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

For Emergency and Malfunction Procedures of each specific profile refer to [Part A](#) to [F](#) and for Training procedures refer to [Part G](#).

ENGINE MALFUNCTIONS

ROTOR SPEED SELECTOR MALFUNCTION



SECTION 4 - PERFORMANCE DATA

For Performance of each specific profile refer to [Part A](#) to [F](#) and for Training procedures refer to [Part G](#).

SNOW COVERED SURFACES

Category A operations on snow covered surfaces have not been demonstrated.

WIND EFFECT

For crosswind and headwind computation refer to the wind component chart ([Figure 4-1](#)).

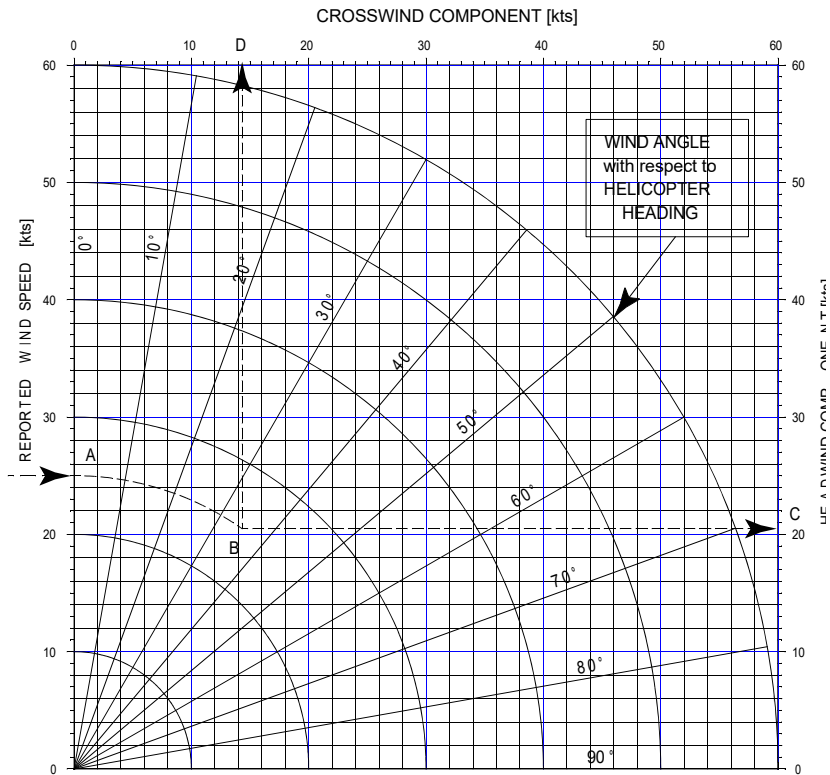
Example:

Reported wind speed (Point A) 25 kts

Reported wind direction (Point B) 35 degrees

- Enter [Figure 4-1](#) on the reported wind speed axis at 25 kts (Point A) and follow curved line to relative wind angle, 35 degrees (Point B).
- From Point B, proceed horizontally to the right, to obtain headwind component, 20 kts (Point C).
- From Point B, proceed vertically up, to obtain crosswind component, 14 kts (Point D).

WIND COMPONENT CHART



109G1580A001 issue B

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Figure 4-1 Wind Component Chart

PERFORMANCE CORRECTION AFTER KIT INSTALLATION

Table 4-1 shows the drag factor of optional equipments and landing gear configuration to be considered in the performance calculation. Optional equipments not listed in Table 4-1 have no effect on climb performance and consequently do not modify either the WAT limitations or the Take-off Flight Path 2 climb gradients.

The drag factor of Table 4-1 shall be used to evaluate the climb gradient reduction to be applied to the mean height gained in 100 ft (30 m) of horizontal distance obtained from the Take-off Flight Path 2 charts when the relevant optional equipments are installed and/or when the landing gear configuration is fixed or extended.

When the net climb gradient calculated is less than the minimum climb gradient required by the certification requirements (2.2 ft / 100 ft), a reduction of aircraft gross weight is necessary.

After the installation of any relevant optional equipment proceed as follows:

- Read from the WAT chart applicable to the selected takeoff procedure the maximum gross weight (GW) for the flight condition (Hp / OAT) foreseen.
- Determine from the relevant Take-off Flight Path 2 chart(s) the climb gradient relative to the GW / Hp / OAT combination (G).
- Read from Table 4-1 the drag factor of each optional equipment installed and sum them.
- Enter in Figure 4-2 (Optional Kit Effect - Chart 1) to determine the path 2 climb gradient reduction (GR) due to the total drag factor (sum of all drag factors previously determined).
- Compute the net climb gradient by subtracting the climb gradient reduction (GR) from the climb gradient of the helicopter without any optional equipment (G).
- Compare the net climb gradient ($G_{\text{net}} = G - \text{GR}$) with the minimum climb gradient (2.2 ft / 100 ft).
- If $G_{\text{net}} \geq 2.2$ no weight reduction is necessary.
 G_{net} is the climb gradient related to such gross weight / Hp / OAT combination.

- If $G_{\text{net}} < 2.2$ determine the climb gradient to be recovered to achieve the minimum performance by subtracting the net climb gradient from the minimum climb gradient ($G_{\text{rec}} = 2.2 - G_{\text{net}}$). Enter in [Figure 4-3](#) (Optional Kit Effect - Chart 2) to determine the weight reduction to be applied (GW_R) and add 50 kg when the landing gear is extended or fixed.
- Compute the reduced maximum gross weight as $GW - GW_R$.
2.2 ft is the climb gradient related to the such $GW / Hp / OAT$ combination.

Example 1

Determine the maximum GW at which the clear area Cat.A procedure can be performed if the following environmental conditions apply: 4000 ft Hp and 20 °C OAT.

The helicopter configuration includes Bleed Air Heater, Wire Strike Protection System, Snow Skis (with L/G extended) and External Hoist.

Solution:

Enter WAT chart for Clear Area Take-off and Landing Procedure ([Figure 1A-1](#)). A maximum GW of 3175 kg at 4000 ft Hp / 20 °C OAT is obtained.

Read from [Figure 4-19](#) the Take-off Flight Path 2 gradient at 3175 kg/ 4000 ft Hp / 20°C OAT:

Take-off Flight Path 2 gradient	4.2

Read [Table 4-1](#) to determine the drag factor associated to the individual optional equipment:

Bleed Air Heater.....	no effect
Wire Strike Protection System	no effect
Snow Skis	0.1 m ²
L/G extended	0.45 m ²
External Hoist.....	0.3 m ²

Total drag factor	0.85 m ²

Read from [Figure 4-2](#) (Optional Kit Effect - Chart 1) the climb gradient reduction related to the 3175 kg GW due to the total drag factor previously calculated:

Climb gradient reduction 1.8

The net climb gradient is: $G_{\text{net}} = 4.2 - 1.8 = 2.4$

The net climb gradient (2.4) is greater than the minimum gradient (2.2). Therefore no weight reduction is necessary.

Example 2

Determine the maximum GW at which the clear area Cat.A procedure can be performed if the following environmental conditions apply: 3800 ft Hp and 40 °C OAT.

The helicopter configuration includes Wire Strike Protection System, External Hoist and Slump Protection Pads (with L/G extended).

Solution:

Enter WAT chart for Clear Area Take-off and Landing Procedure ([Figure 1A-1](#)). A maximum GW of 2900 kg at 3800 ft Hp / 40 °C OAT is obtained.

Read from [Figure 4-18](#) the Take-Off Flight Path 2 gradient at 2900 kg/ 3800 ft Hp / 40°C OAT:

Take-off Flight Path 2 gradient 2.4

Read [Table 4-1](#) to determine the drag factor associated to the individual optional equipment:

Wire Strike Protection System	no effect
Slump Protection pads.....	0.1 m ²
LG extended	0.45 m ²
External Hoist	0.3 m ²
Total drag factor	0.85 m ²

Read from [Figure 4-2](#) (Optional Kit Effect - Chart 1) the climb gradient reduction related to the 2900 kg GW due to the total drag factor previously calculated:

Climb gradient reduction 1.95

The net climb gradient is: $G_{\text{net}} = 2.4 - 1.95 = 0.45$

The net climb gradient (0.45) is less than the minimum gradient (2.2). Therefore a weight reduction is necessary.

Determine the climb gradient to be recovered to achieve the minimum performance:

$$G_{\text{rec}} = G_{\text{min}} - G_{\text{net}} = 2.2 - 0.45 = 1.75$$

Read from [Figure 4-3](#) (Optional Kit Effect - Chart 2) the applicable weight reduction (150 kg), and add the 50 kg penalty for L/G extended. The reduced maximum GW is:

$$\text{GW} = 2900 - 200 = 2700 \text{ kg}$$

With this reduced GW the minimum gradient of 2.2 is guaranteed.

Drag factor of optional equipments to be used for Cat.A

Equipment	P/N	Drag Factor (m²)
External hoist	109-B810-16	0.30
Cargo hook	109-0810-31	0.10
Cargo hook with videocamera	109G2592A01	0.10
Snow Skis	109-0811-99 109G3271F01	0.10
Slump protection pads	109-0811-73 109G3272F01	0.10
Fixed wheeled L/G	109-B811-02	0.45
L/G extended	-	0.45
SX-16 Searchlight	109-B810-80 109-0814-75 109G3340F02	0.45
SX-16 Searchlight	109G3340F11	0.25

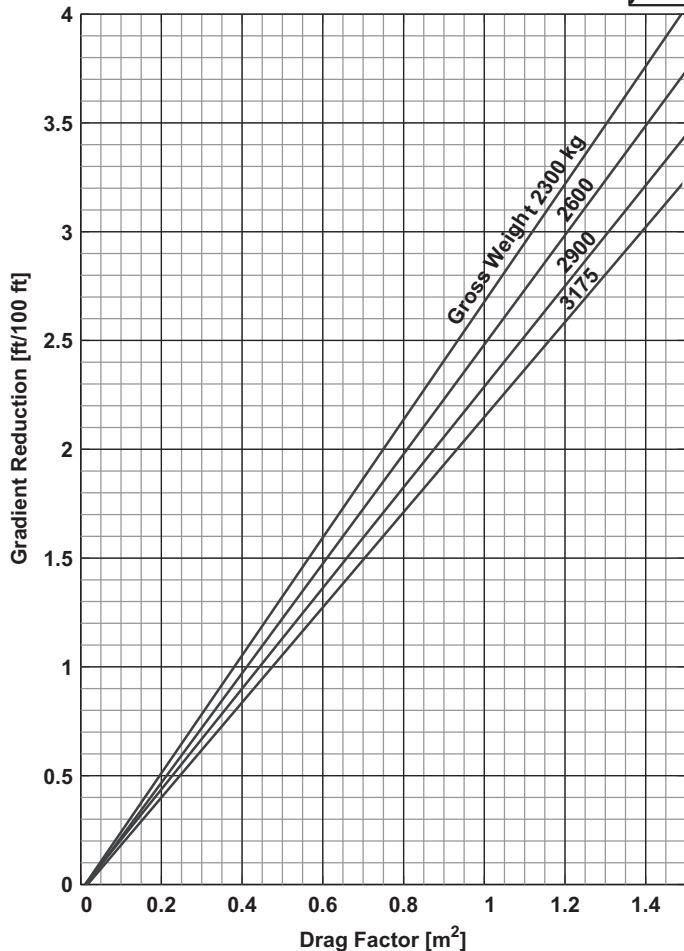
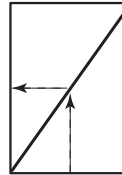
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Table 4-1 Optional Equipment Drag Factor

OPTIONAL KIT EFFECT

Chart 1



109G1580A022 issue C

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Figure 4-2 Optional Kit Effect - Chart 1

OPTIONAL KIT EFFECT

Chart 2

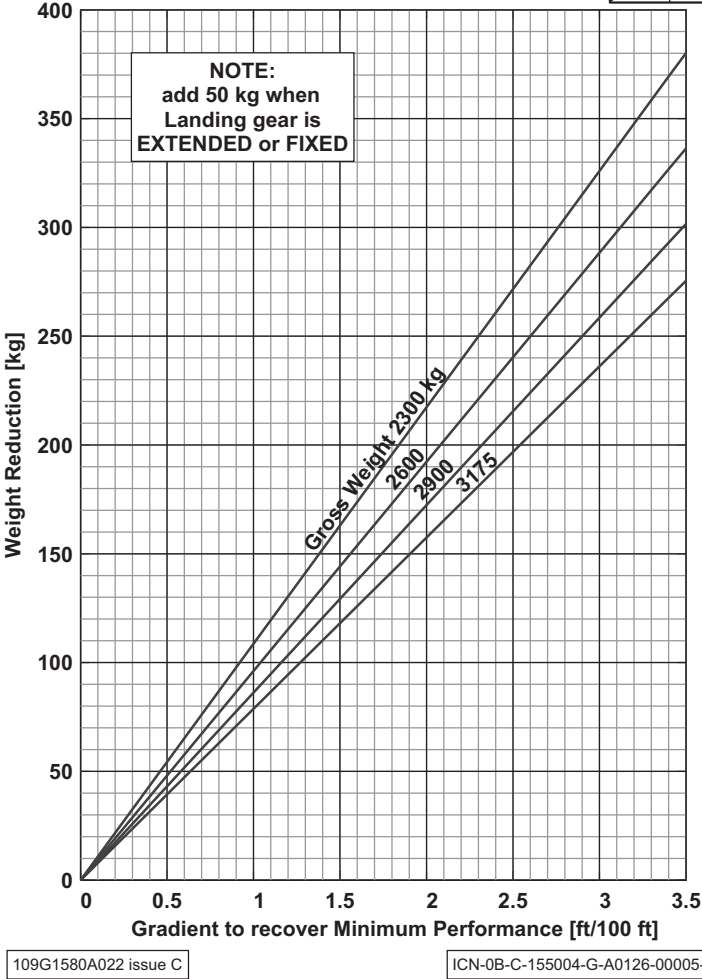
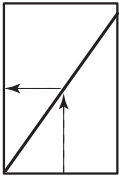


Figure 4-3 Optional Kit Effect - Chart 2

TAKE-OFF FLIGHT PATH 1

Note

In Path 1 performance charts, headwind is not factored. Unless otherwise authorized by operating regulations, the pilot is not authorized to credit more than 50% of the resulting favorable headwind component.

MEAN HEIGHT GAINED IN 100 FT (30 M) HORIZONTAL DISTANCE

The mean height gained in 100 ft (30 m) of horizontal distance travelled during a climb at V_{TOSS} or V_{BLSS} (35 KIAS) and OEI 2.5 min power is shown in [Figure 4-4](#) to [Figure 4-7](#) and in [Figure 4-8](#) to [Figure 4-15](#) (with EAPS OFF or ON) for various altitudes, temperatures, weights and headwind components.

The charts apply:

- For [Parts A, B, D, E](#) from the end of the CTO or BL distance to 200 ft ATS or ALS.
- For [Part C](#) from the end of the CTO to $TDP_E + 120$ ft ATS or from the end of the BL distance to 200 ft ALS.

CAUTION

The curves below OAT -25°C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

TAKE-OFF FLIGHT PATH 2

Note

In Path 2 performance charts, headwind is not factored. Unless otherwise authorized by operating regulations, the pilot is not authorized to credit more than 50% of the resulting favorable headwind component.

MEAN HEIGHT GAINED IN 100 FT (30 M) HORIZONTAL DISTANCE

The mean height gained in 100 ft (30 m) of horizontal distance travelled during a climb at V_Y and MCP OEI is shown in [Figure 4-16](#) to [Figure 4-19](#) and in [Figure 4-20](#) to [Figure 4-27](#) (with EAPS OFF and ON) for various altitudes, temperatures, weights and headwind components.

The charts apply:

- For [Parts A, B, D, E](#) from 200 ft ATS/ALS to 1000 ft ATS/ALS.
- For [Part C](#) from $TDP_E + 120$ ft ATS or 200 ft ALS to 1000 ft ATS/ALS.

Note

Gradients shown in Path 2 charts allow climb turns with angle of bank up to 10 degrees (approximately 3 deg/sec rate of turn).

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

**TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI**

ROTOR SPEED: 102 %

Vtoss: 35 KIAS

ELECTRICAL LOAD: 200 A

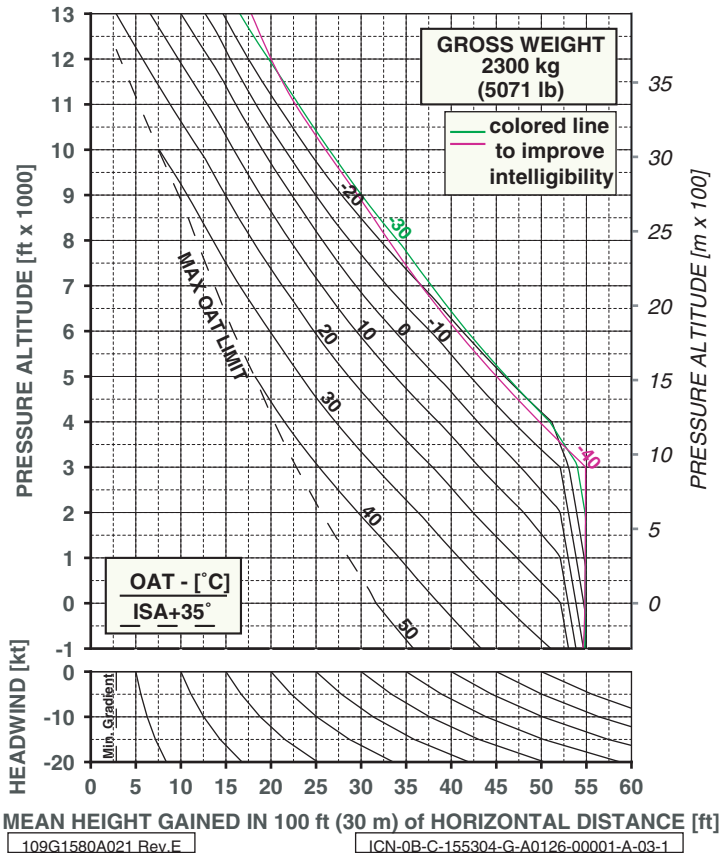


**Figure 4-4 Take-Off Flight Path 1 - OEI 2.5 Min Power
- Gross Weight 2300 kg**

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

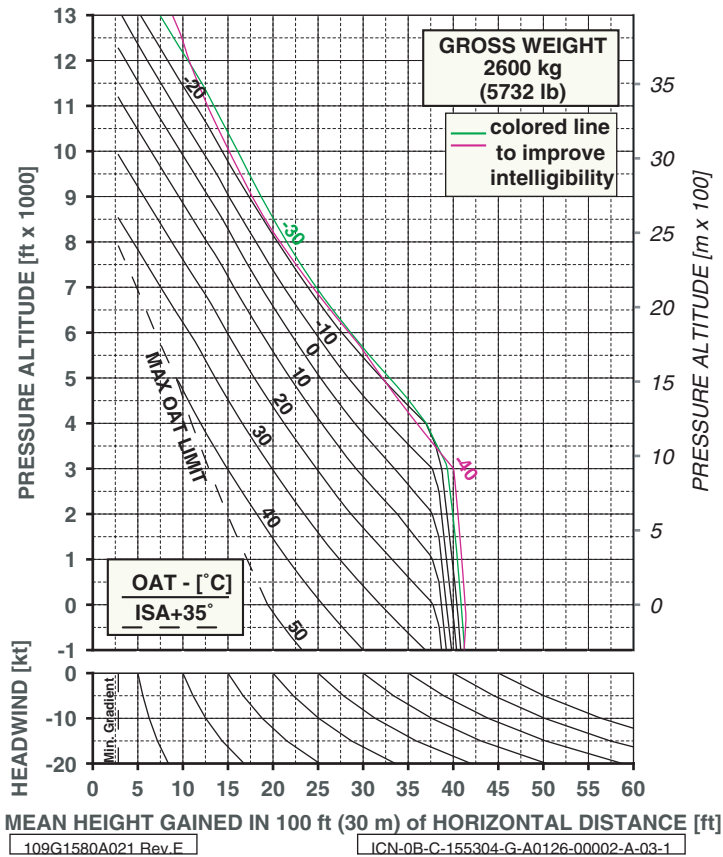


Figure 4-5 Take-Off Flight Path 1 - OEI 2.5 Min Power
- Gross Weight 2600 kg

**TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI**

ROTOR SPEED: 102 %
V_{toss}: 35 KIAS
ELECTRICAL LOAD: 200 A

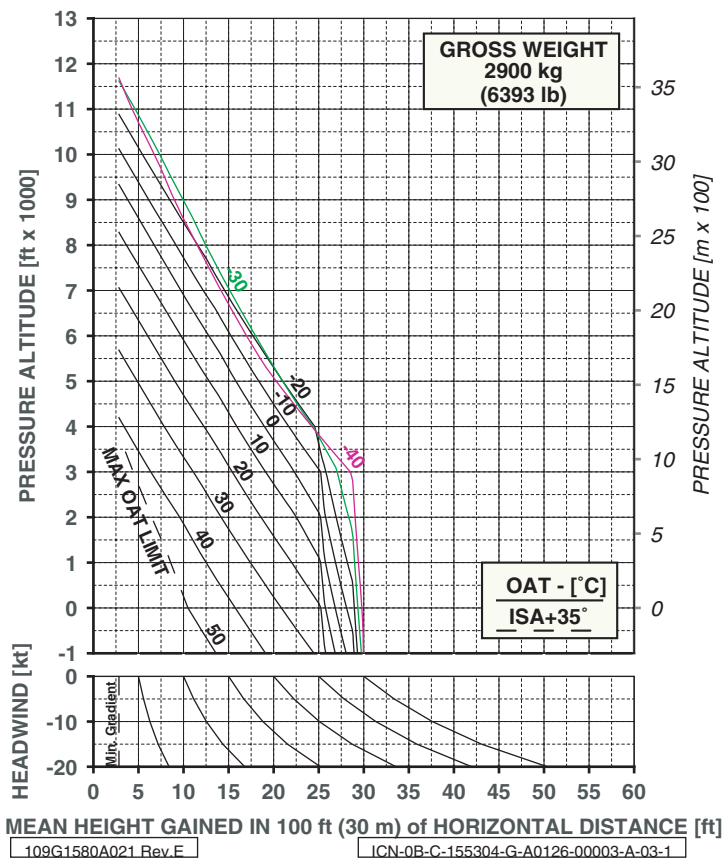


**Figure 4-6 Take-Off Flight Path 1 - OEI 2.5 Min Power
- Gross Weight 2900 kg**

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

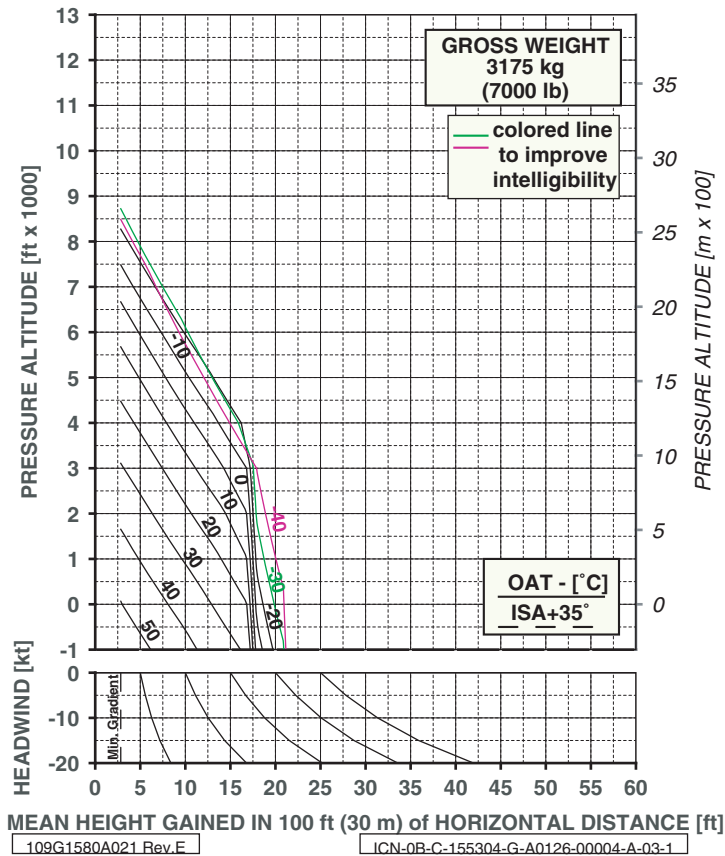


Figure 4-7 Take-Off Flight Path 1 - OEI 2.5 Min Power
- Gross Weight 3175 kg

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI

ROTOR SPEED: 102 %
V_{loss}: 35 KIAS
ELECTRICAL LOAD: 200 A

EAPS: OFF

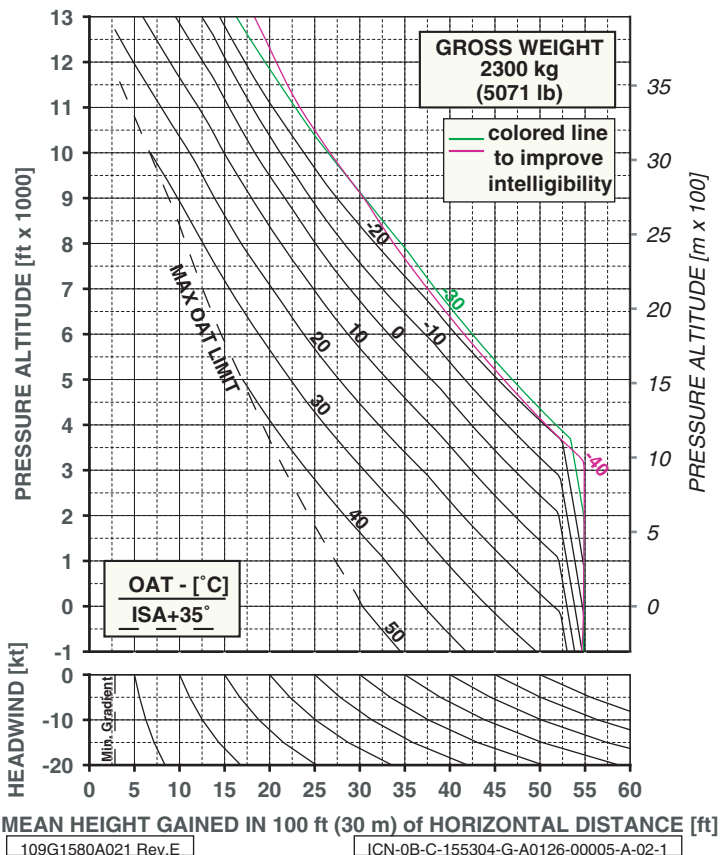


Figure 4-8 Take-Off Flight Path 1 - OEI 2.5 Min Power
Gross Weight 2300 kg - EAPS OFF

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

EAPS: OFF

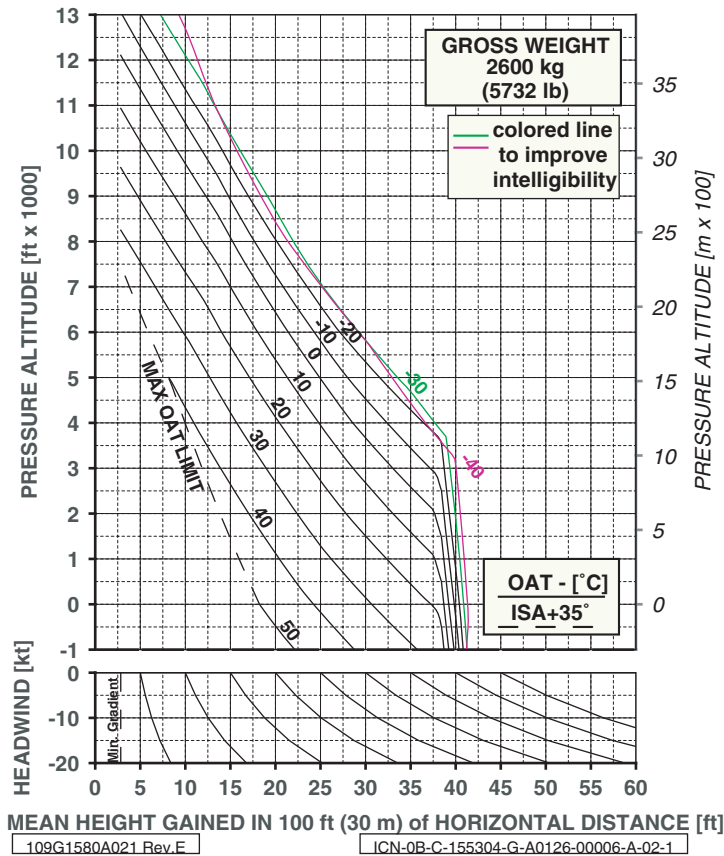


Figure 4-9 Take-Off Flight Path 1 - OEI 2.5 Min Power
Gross Weight 2600 kg - EAPS OFF

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

EAPS: OFF

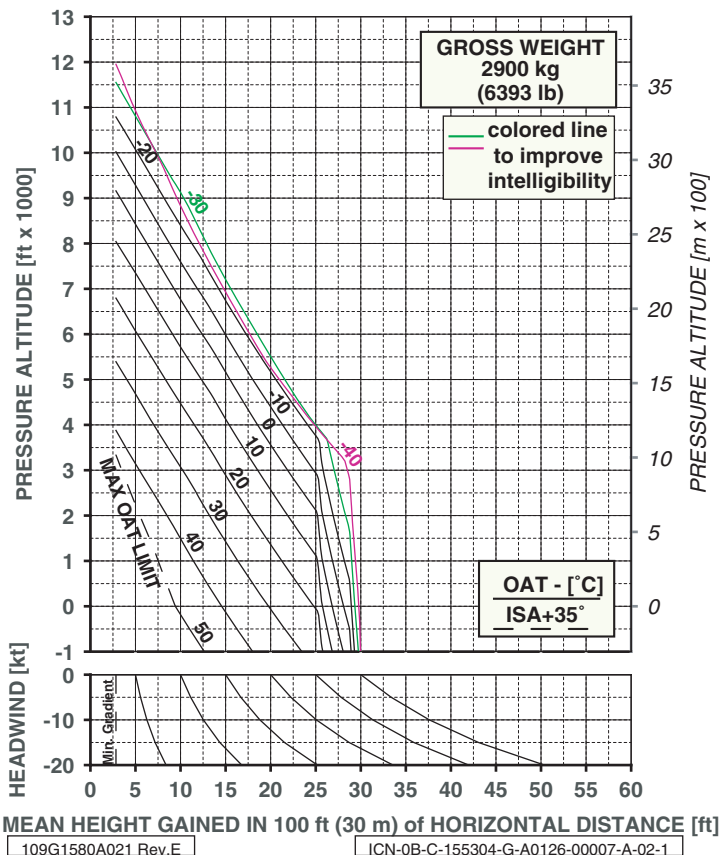
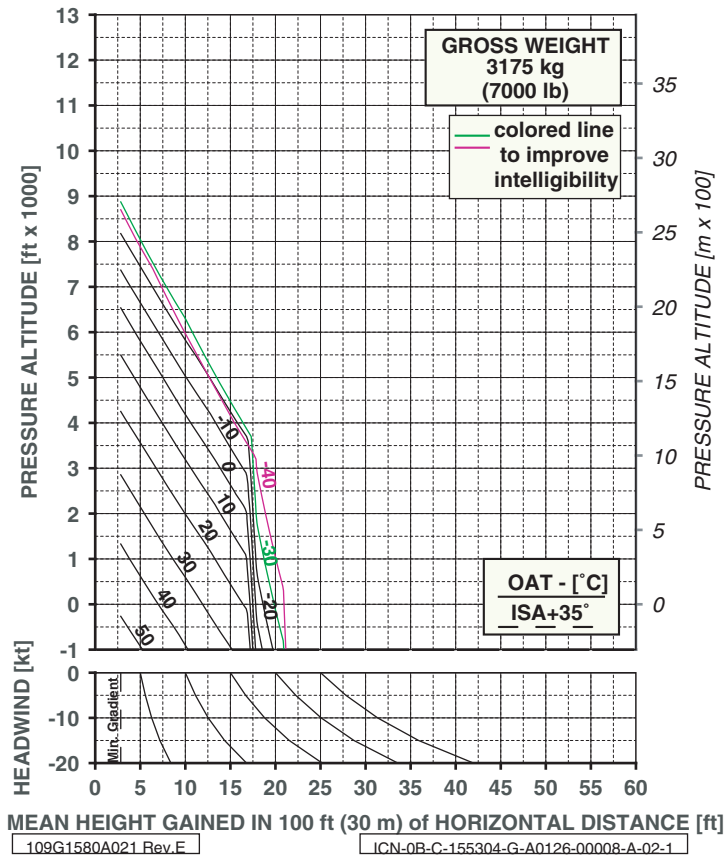


Figure 4-10 Take-Off Flight Path 1 - OEI 2.5 Min Power
Gross Weight 2900 kg - EAPS OFF

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

EAPS: OFF



TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI

ROTOR SPEED: 102 %

EAPS: ON

Vtoss: 35 KIAS

ELECTRICAL LOAD: 200 A

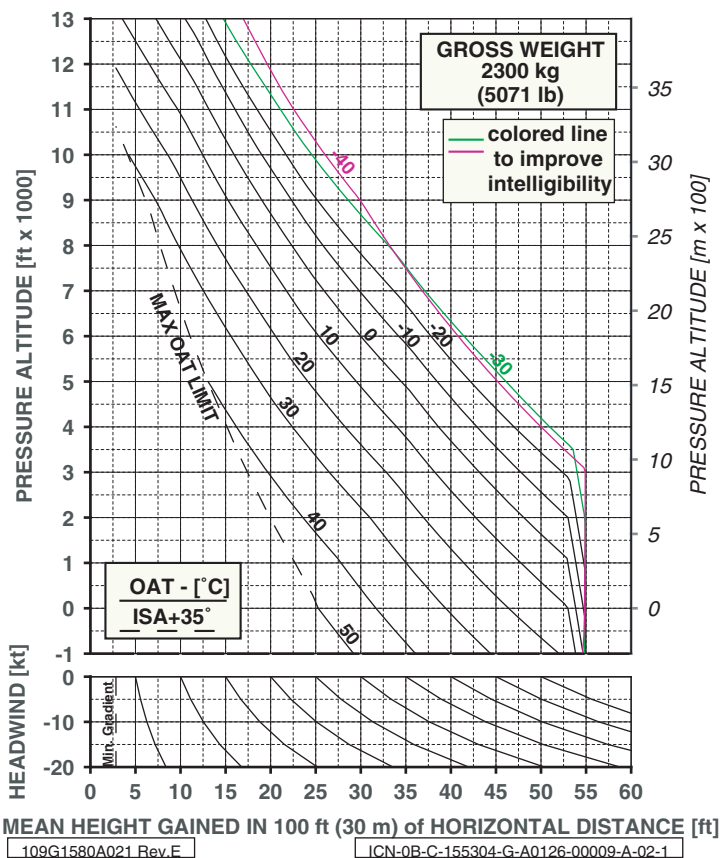


Figure 4-12 Take-Off Flight Path 1 - OEI 2.5 Min Power
Gross Weight 2300 kg - EAPS ON

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

EAPS: ON

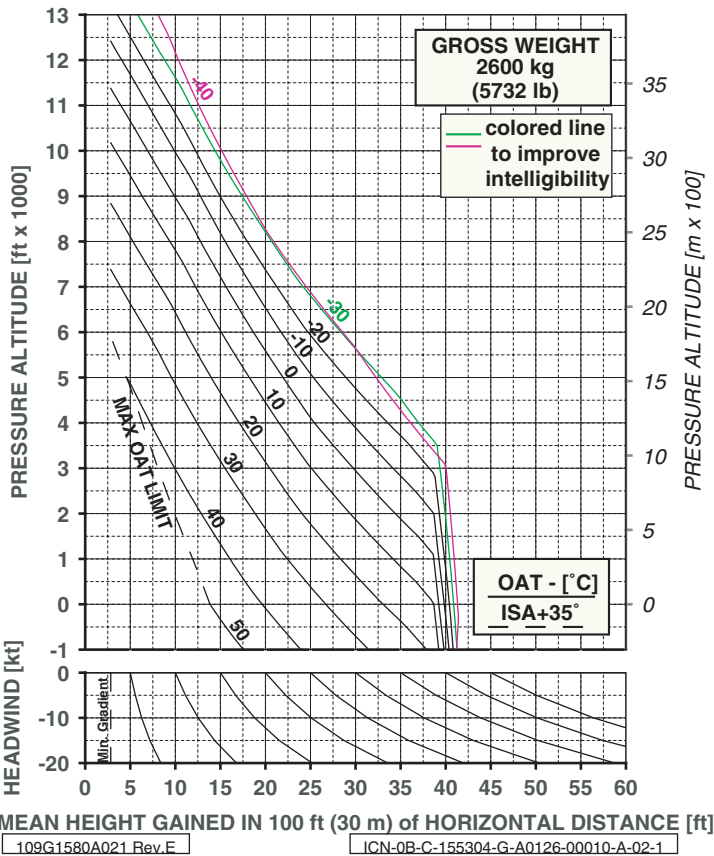


Figure 4-13 Take-Off Flight Path 1 - OEI 2.5 Min Power
Gross Weight 2600 kg - EAPS ON

**TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI**

ROTOR SPEED: 102 %

EAPS: ON

Vtoss: 35 KIAS

ELECTRICAL LOAD: 200 A

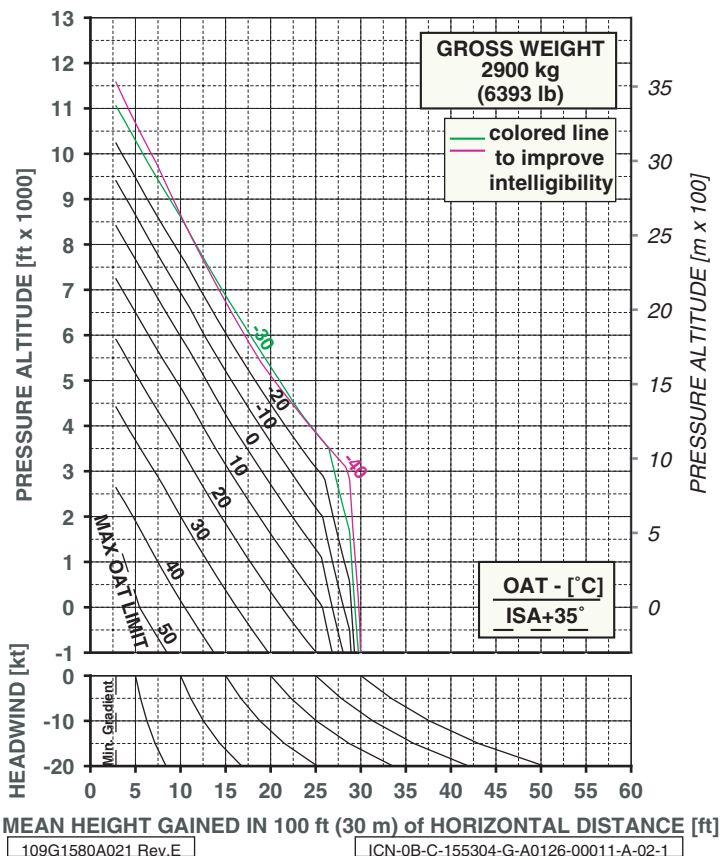


**Figure 4-14 Take-Off Flight Path 1 - OEI 2.5 Min Power
Gross Weight 2900 kg - EAPS ON**

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

EAPS: ON

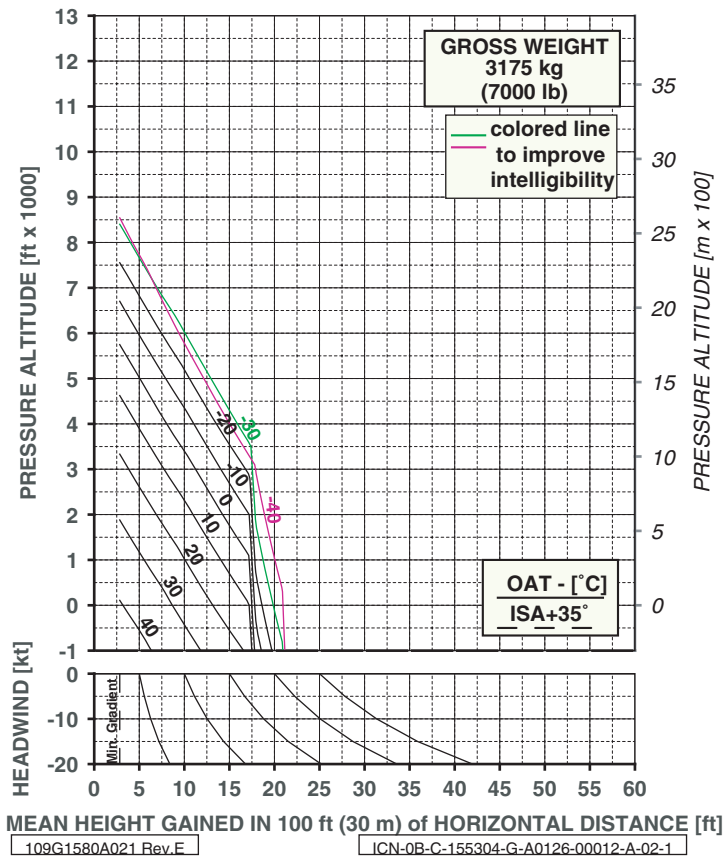


Figure 4-15 Take-Off Flight Path 1 - OEI 2.5 Min Power
Gross Weight 3175 kg - EAPS ON

**TAKE OFF FLIGHT PATH 2
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

V_y: 80KIAS, DECREASE 2 kt EACH 1000 ft ABOVE 10000 ft

ELECTRICAL LOAD: 200 A

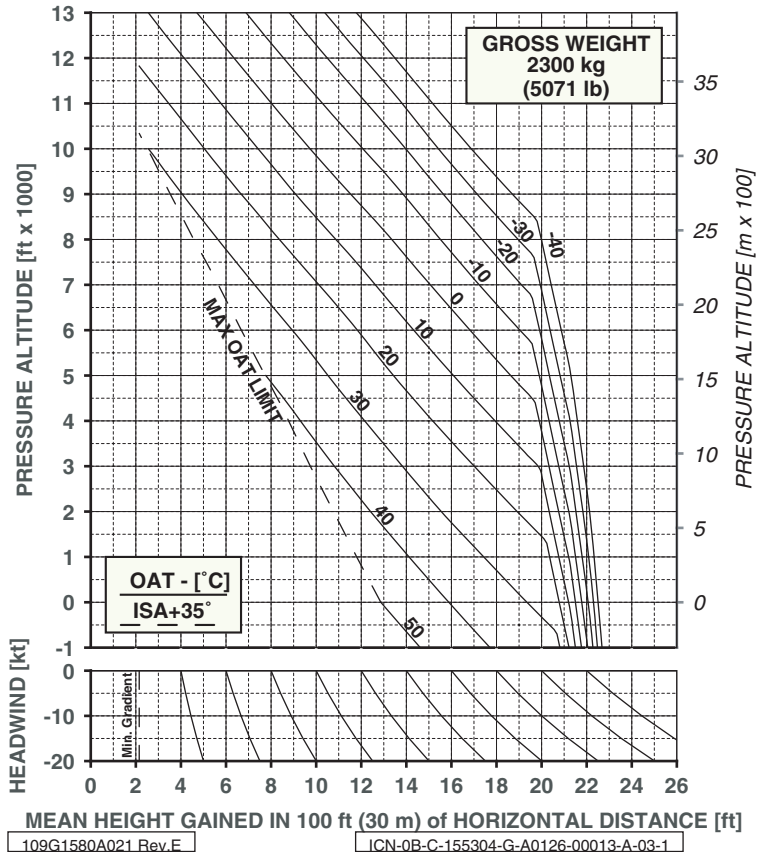


**Figure 4-16 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 2300 kg**

TAKE OFF FLIGHT PATH 2
MAXIMUM CONTINUOUS POWER OEI

ROTOR SPEED: 100 %
Vy: 80KIAS, DECREASE 2 kt EACH 1000 ft ABOVE 10000 ft
ELECTRICAL LOAD: 200 A

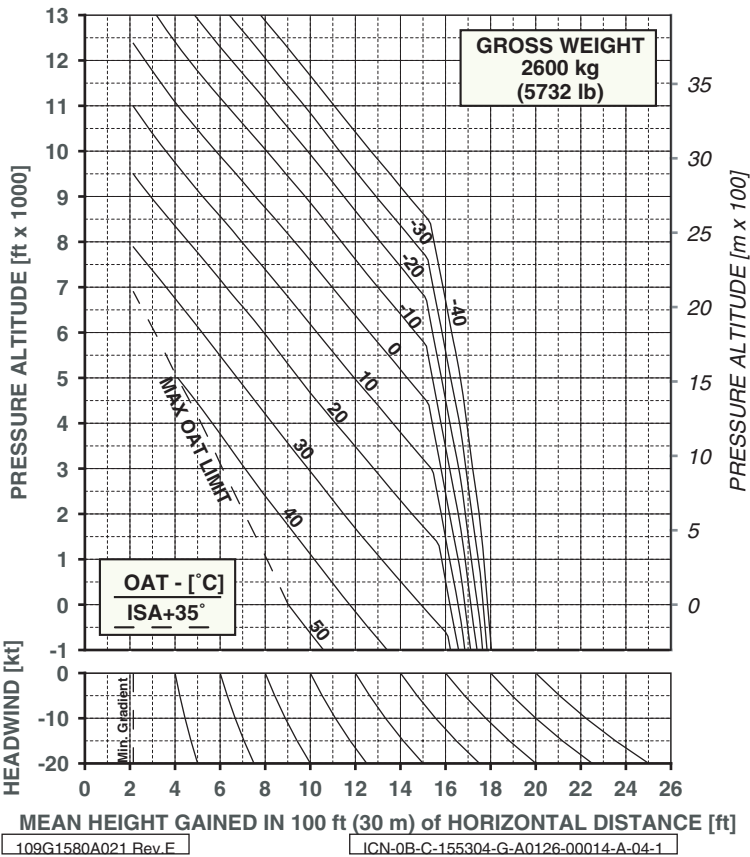


Figure 4-17 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 2600 kg

**TAKE OFF FLIGHT PATH 2
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

V_y: 80KIAS, DECREASE 2 kt EACH 1000 ft ABOVE 10000 ft

ELECTRICAL LOAD: 200 A

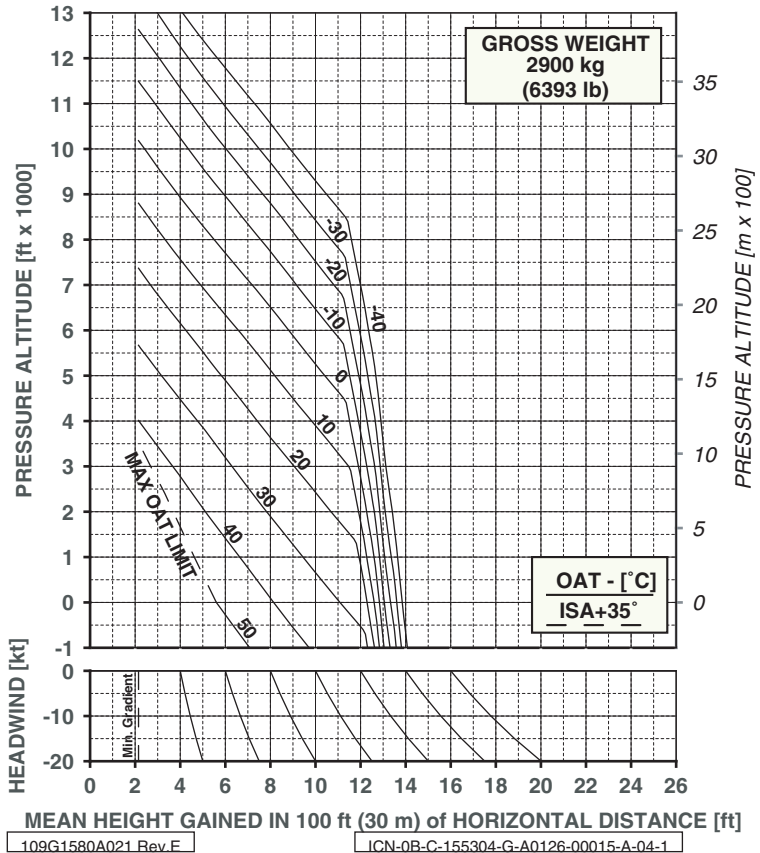


**Figure 4-18 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 2900 kg**

TAKE OFF FLIGHT PATH 2
MAXIMUM CONTINUOUS POWER OEI

ROTOR SPEED: 100 %
Vy: 80KIAS, DECREASE 2 kt EACH 1000 ft ABOVE 10000 ft
ELECTRICAL LOAD: 200 A

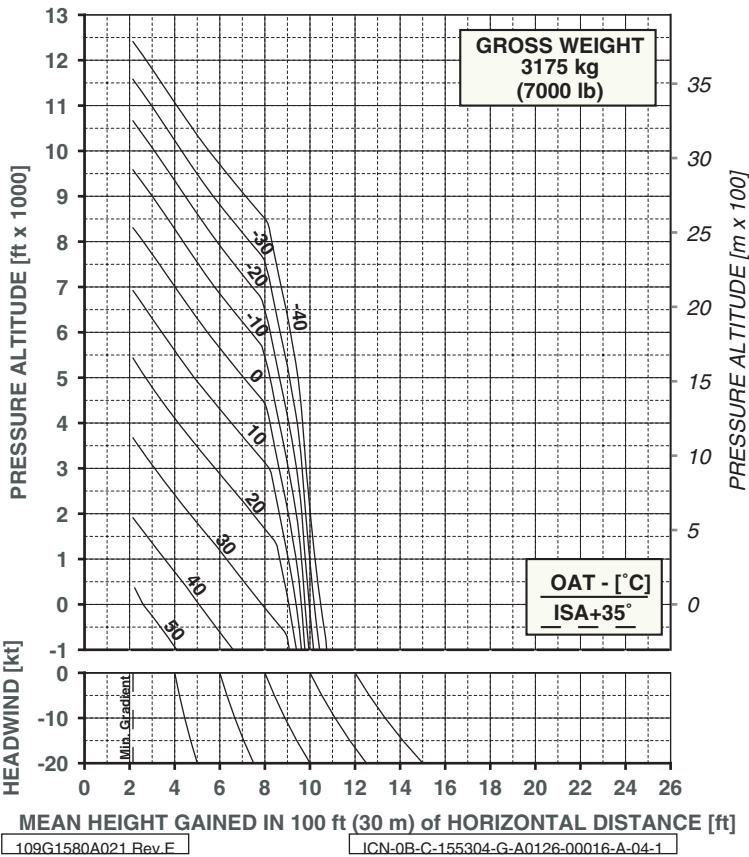


Figure 4-19 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 3175 kg

**TAKE OFF FLIGHT PATH 2
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100.0 %

EAPS: OFF

V_y: 80KIAS, DECREASE 2 kt EACH 1000 ft ABOVE 10000 ft

ELECTRICAL LOAD: 200 A

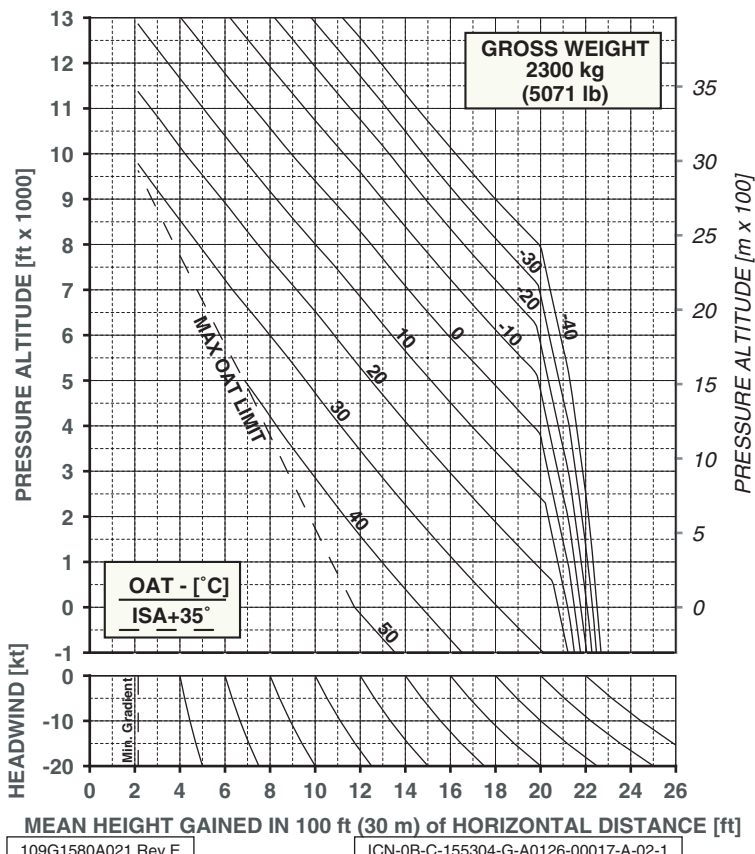


**Figure 4-20 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 2300 kg - EAPS OFF**

TAKE OFF FLIGHT PATH 2
MAXIMUM CONTINUOUS POWER OEI

ROTOR SPEED: 100 %
Vy: 80KIAS, DECREASE 2 kt EACH 1000 ft ABOVE 10000 ft
ELECTRICAL LOAD: 200 A
EAPS: OFF

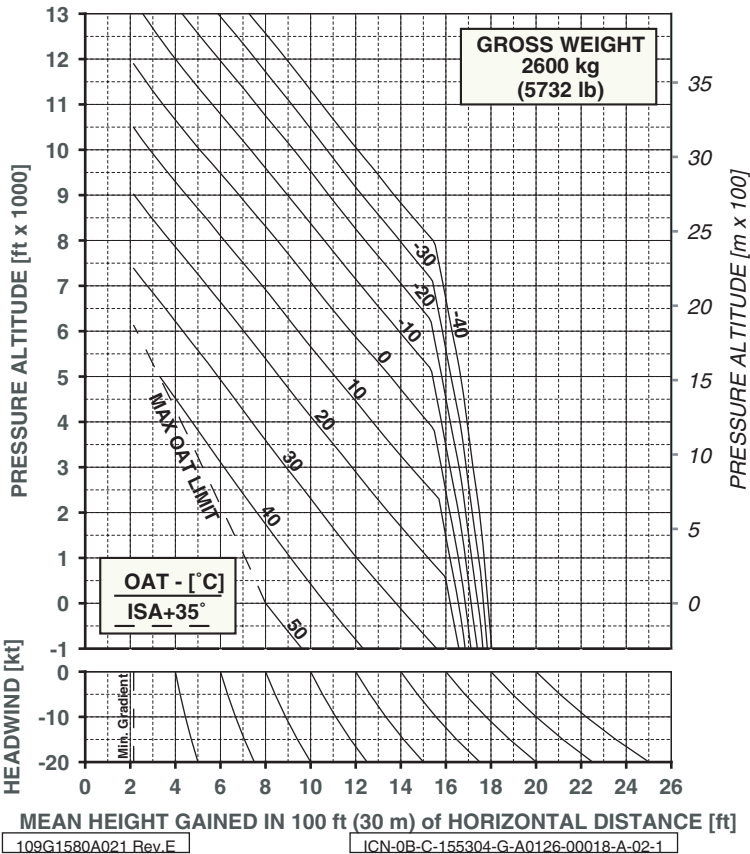


Figure 4-21 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 2600 kg - EAPS OFF

**TAKE OFF FLIGHT PATH 2
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

EAPS: OFF

V_y: 80KIAS, DECREASE 2 kt EACH 1000 ft ABOVE 10000 ft

ELECTRICAL LOAD: 200 A

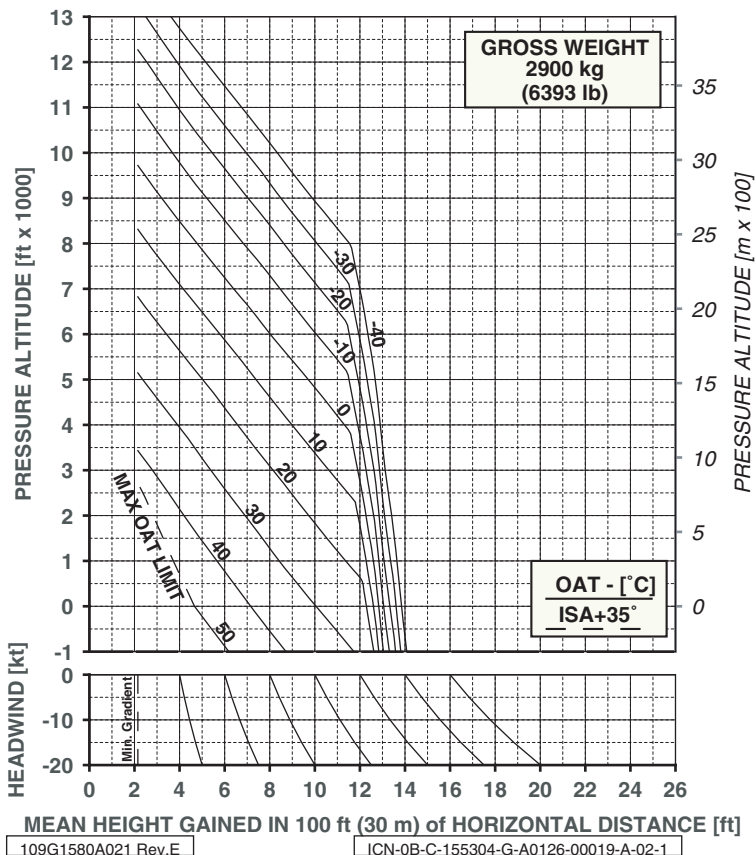


**Figure 4-22 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 2900 kg - EAPS OFF**

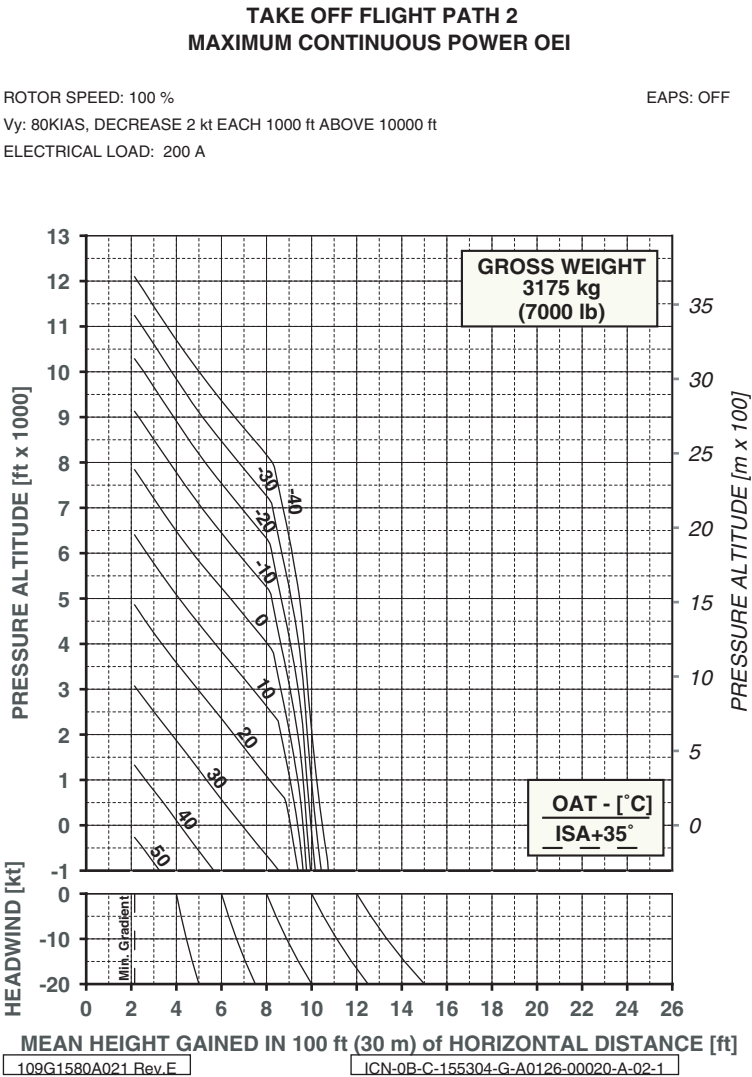


**Figure 4-23 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 3175 kg - EAPS OFF**

**TAKE OFF FLIGHT PATH 2
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

EAPS: ON

V_y: 80 KIAS, DECREASE 2 kt EACH 1000 ft ABOVE 10000 ft

ELECTRICAL LOAD: 200 A

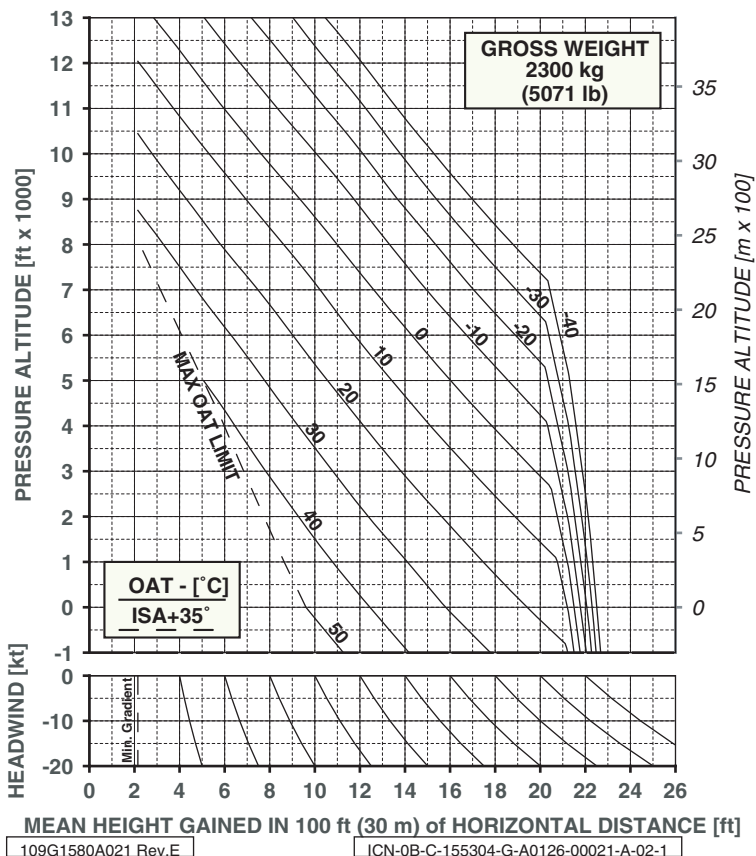


**Figure 4-24 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 2300 kg - EAPS ON**

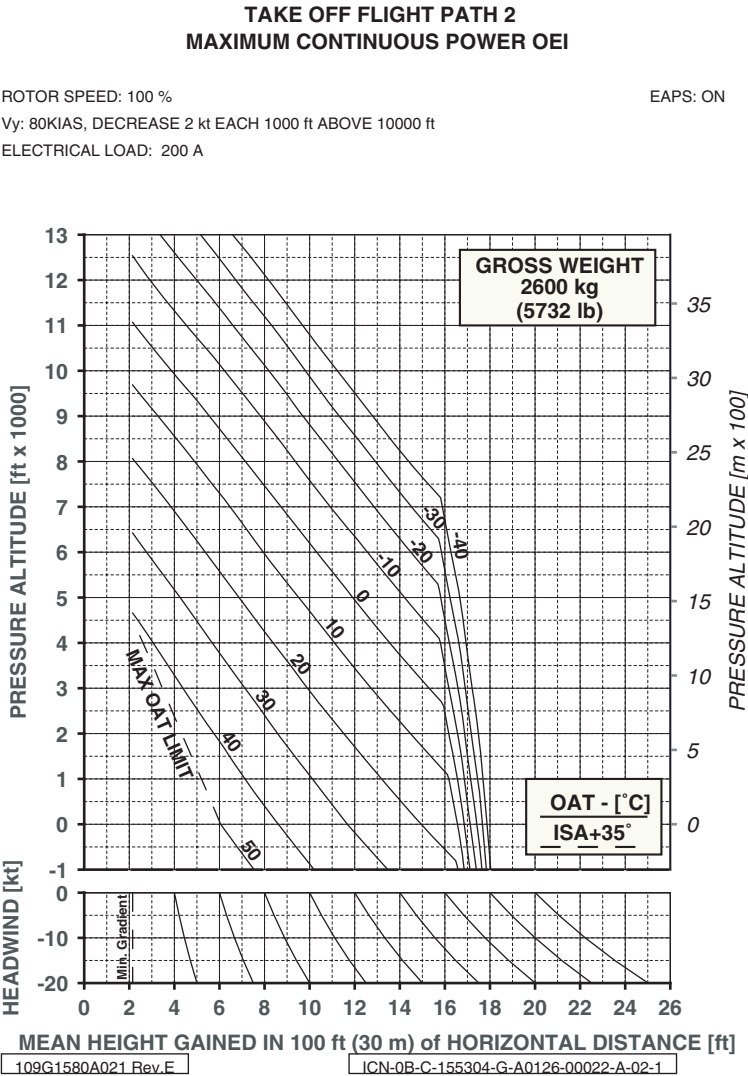


Figure 4-25 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 2600 kg - EAPS ON

**TAKE OFF FLIGHT PATH 2
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

EAPS: ON

V_y: 80KIAS, DECREASE 2 kt EACH 1000 ft ABOVE 10000 ft

ELECTRICAL LOAD: 200 A

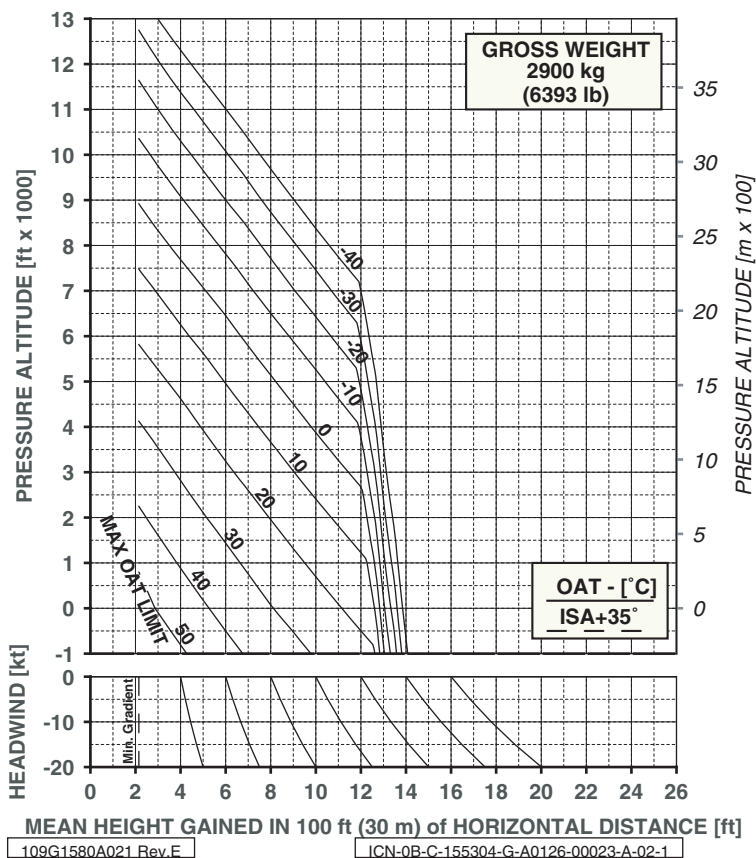


**Figure 4-26 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 2900 kg - EAPS ON**

TAKE OFF FLIGHT PATH 2
MAXIMUM CONTINUOUS POWER OEI

ROTOR SPEED: 100 %
EAPS: ON
Vy: 80KIAS, DECREASE 2 kt EACH 1000 ft ABOVE 10000 ft
ELECTRICAL LOAD: 200 A

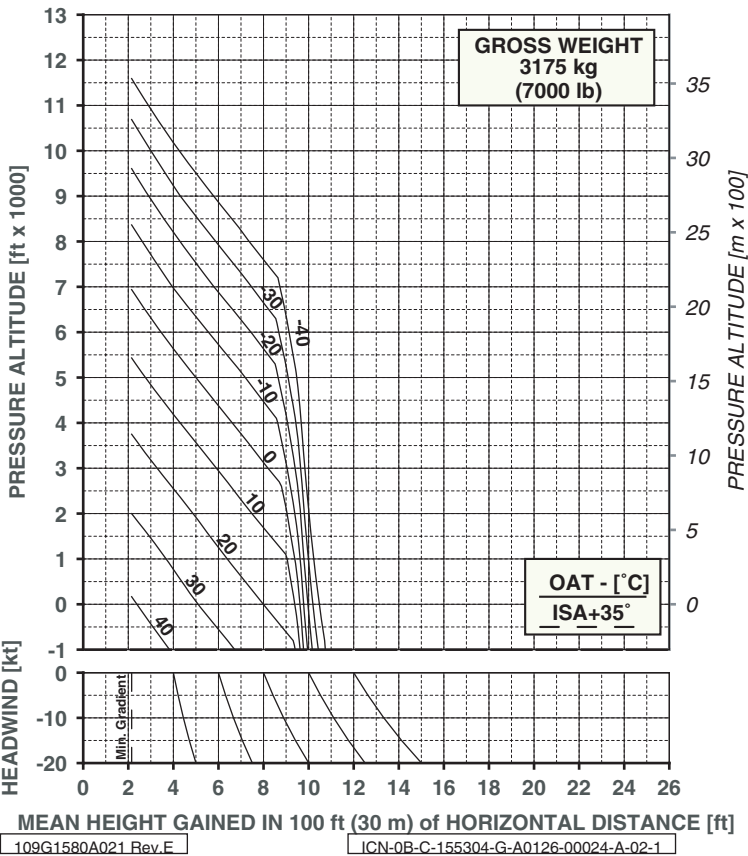


Figure 4-27 Take-Off Flight Path 2 - OEI Max Continuous Power
- Gross Weight 3175 kg - EAPS ON

PART A

CLEAR AREA PROCEDURES

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PART A

CLEAR AREA PROCEDURES

SECTION 1A - LIMITATIONS

WEIGHT LIMITATIONS

The maximum Gross Weight for Take Off and Landing CAT A Operations, Clear Area, is provided in the following figures:

Weight Limitation, Take-Off and Landing [Figure 1A-1](#)

Weight Limitation, Take-Off and Landing - EAPS OFF [Figure 1A-2](#)

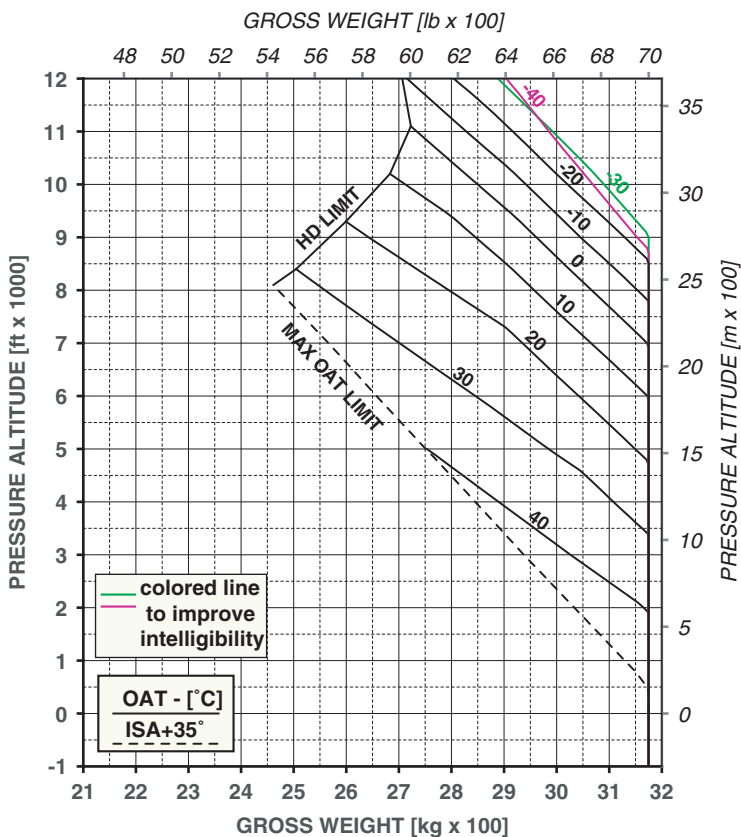
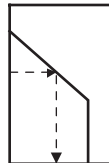
Weight Limitation, Take-Off and Landing - EAPS ON [Figure 1A-3](#)

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

WEIGHT - ALTITUDE - TEMPERATURE
CLEAR AREA

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A



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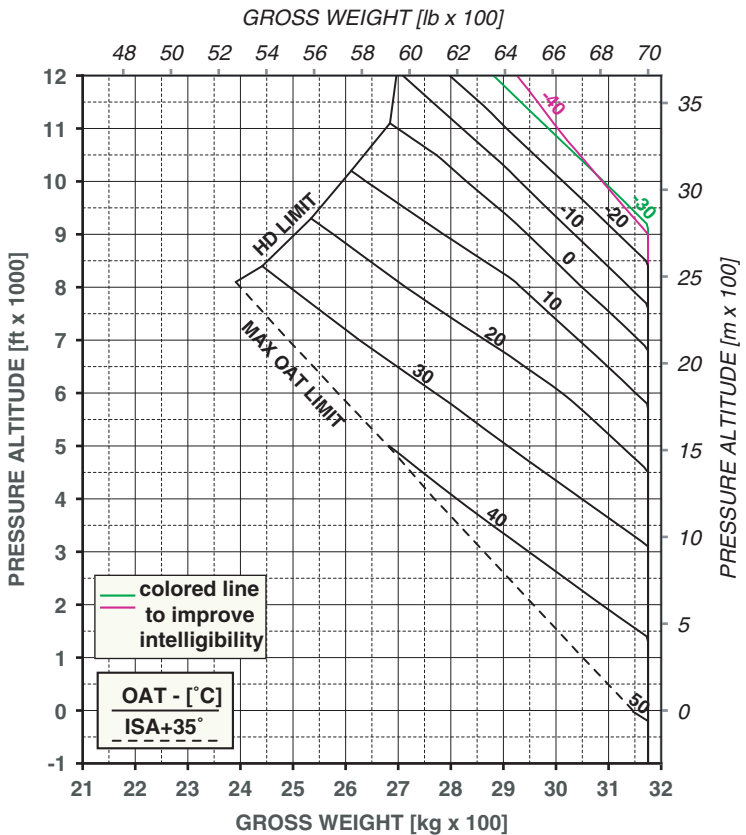
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Figure 1A-1 Clear Area Take-Off and Landing Procedure -
WAT

WEIGHT - ALTITUDE - TEMPERATURE
CLEAR AREA

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: OFF



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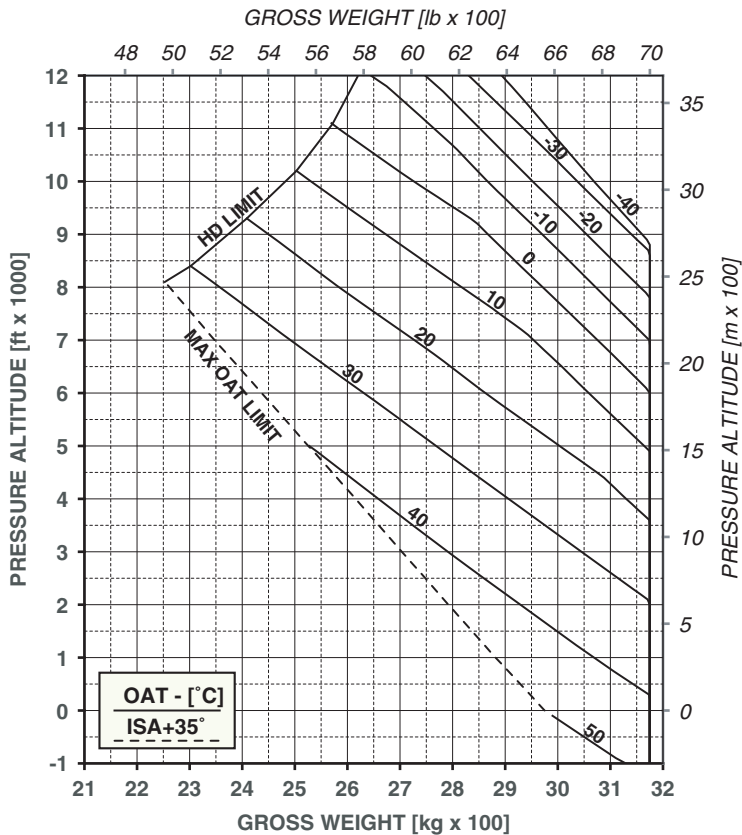
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Figure 1A-2 Clear Area Take-Off and Landing Procedure -
WAT - EAPS OFF

WEIGHT - ALTITUDE - TEMPERATURE
CLEAR AREA

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: ON



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Figure 1A-3 Clear Area Take-Off and Landing Procedure -
WAT - EAPS ON

SECTION 2A - NORMAL PROCEDURES

TAKE-OFF

TAKE-OFF DECISION POINT (TDP)

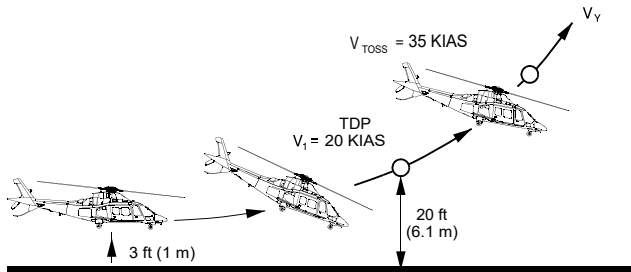
Height.....20 ft (6.1 m) AGL

Airspeed (V_1) 20 KIAS

Note

The heights shown in flight path profiles refer to radio altimeter.

CLEAR AREA TAKE-OFF PROCEDURE



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Figure 2A-1 Take-Off Profile (Clear Area)

CAUTION

The engines are degraded in performance with EAPS OFF or ON (if installed).

1. Collective	— MPOG.
2. TQ LIM pushbutton	— Verify FADEC limiter function enabled or push. Check LIMITER ON advisory message displayed.
3. Nose wheel lock	— ON.
4. Parking brake	— OFF. Check PARK BRK ON message not displayed.
5. Warning and Caution messages	— Check none.
6. NR switch	— AUTO.
7. Radio altimeter	— Check between 0 ft and 5 ft.
8. External lights	— As required.
9. Take-Off area	— Check clear.
10. Collective	— Increase to hover at approximately 3 ft (1 m) ATS. Note TRQ.
11. N2/NR	— Check stabilized at 102%.
12. Altimeter	— Note pressure altitude.
13. ADIs	— Select HRZ SYNC in PFD MENU. Press HS ON to indicate zero (0 deg) pitch.

14. Collective/cyclic — Apply as necessary to increase TRQ on each engine by $15\% \pm 5\%$ above that required to hover and set approximately 15 deg nose down attitude indicated. Maintain nose down for about 2 second then reduce nose down attitude to approximately 10 deg indicated.
15. Take-Off Decision Point (TDP) — At 20 KIAS / 20 ft (TDP) continue acceleration to V_{TOSS} (35 KIAS).
16. Acceleration/Climb — Adjust cyclic and collective to continue climb up to 200 ft ATS and accelerate to V_y .
17. Landing gear lever — UP (not below 200 ft).
MAIN UTIL CHRGR caution message is displayed during landing gear retraction, then clears when landing gear is locked.
Confirm landing gear is up and locked (3 green lights and red light extinguished).
18. N2/NR — Confirm N2/NR stabilizes at 100%.
19. Climb — Continue climb at V_y up to 1000 ft ATS.
20. At 1000 ft ATS — Adjust collective and cyclic for cruise altitude and air-speed as required.
21. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

APPROACH AND LANDING

LANDING DECISION POINT (LDP)

Height.....80 ft (24.4 m) ALS

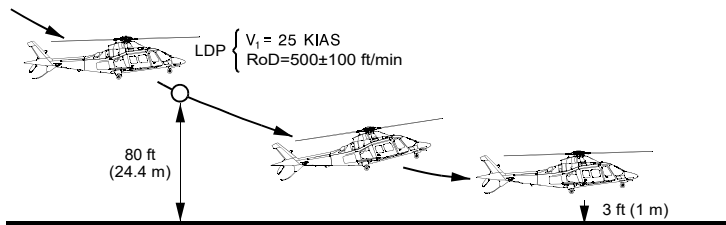
Airspeed (V_1).....25 KIAS

Rate of Descent 500 ± 100 ft/min

Note

The heights shown in flight path profiles refer to radio altimeter.

CLEAR AREA APPROACH AND LANDING PROCEDURE



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Figure 2A-2 Landing Profile (Clear Area)

CAUTION

The engines are degraded in performance with EAPS OFF or ON (if installed).

1. Altimeter — Set QNH (Landing surface elevation should be known).
2. ADIs — Cross-check.
3. NR Switch — Check set to AUTO.
4. Landing gear lever — DOWN.
MAIN UTIL CHRГ caution message is displayed during landing gear extension, then clears when landing gear is locked.
Confirm landing gear is down and locked (3 green lights illuminated, red light extinguished).
5. TQ LIM pushbutton — Verify FADEC limiter function enabled or push. Check LIMITER ON advisory message displayed.
6. N2/NR — Below 75 KIAS, confirm N2/NR stabilizes at 102%.
7. Nose wheel lock — ON.
8. Parking brake — OFF.
Check PARK BRK ON message not displayed.
9. External lights — As required.

EAPS (if installed):

10. EAPS 1 and EAPS 2 switches — As required.

11. Approach & Landing	— Initiate the approach to pass through the LDP at 80 ft (24.4 m) above the landing site at 25 KIAS with a rate of descent no higher than 500 ± 100 ft/min. From the LDP reduce air-speed and decrease the rate of descent to achieve a hover at approximately 3 ft (1 m) ALS. Descend vertically to land.
12. Wheel Brakes	— Apply as required.
13. Parking Brake	— As required.
14. LDG LT and SCHLT (If used)	— Respectively OFF and STOW.

SECTION 3A - EMERGENCY AND MALFUNCTION PROCEDURES

GENERAL

The procedures detailed in this section only consider the failure of one engine in the Take-Off/Landing path and assume the pilot gives first priority to helicopter control to achieve a safe flight path.

For all Take-Off procedures the following shall be observed:

1. Engine failure prior to TDP — Recognition of engine failure prior to the TDP dictates that the Take-Off has to be rejected.
2. Engine failure at or after TDP — Recognition of the failure at or after the TDP dictates that the Take-Off has to be continued.

For all Landing procedures the following shall be observed:

1. Engine failure prior to LDP — If an engine failure is recognised prior to the LDP, the pilot may elect either to conduct a Balked Landing or to continue the Landing OEI.
2. Engine failure at or after LDP — Recognition of the engine failure at or after the LDP dictates that the Landing has to be continued.

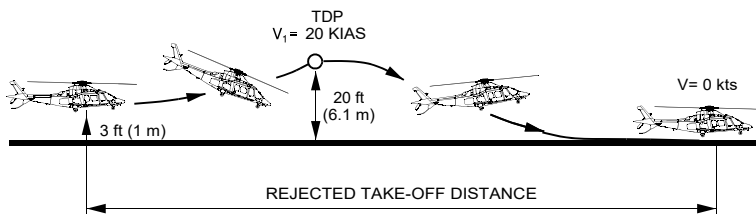
Procedures dealing with subsequent Failure/Malfunctions, other than engine failure, must be initiated only after the helicopter control and a safe flight/ground condition have been obtained. The procedures for the emergency/malfunction can be followed according to the appropriate instructions detailed in Section 3 of the basic Rotorcraft Flight Manual.

EMERGENCY PROCEDURES FOR SINGLE ENGINE FAILURE DURING TAKE-OFF

SINGLE ENGINE FAILURE RECOGNIZED IN HOVER (3 FT ATS)

1. Collective — Adjust as required to land and cushion touchdown.
2. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
3. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
4. Parking brake — As required.
5. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED PRIOR TO TDP (REJECTED TAKE-OFF)



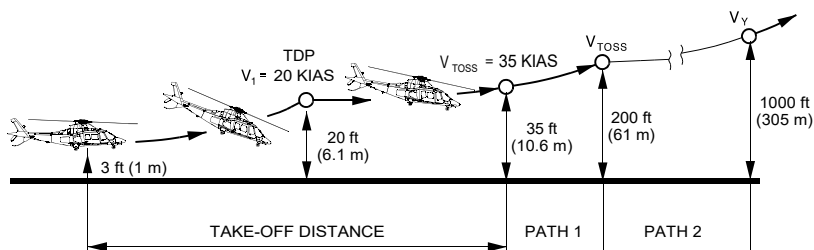
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Figure 3A-1 Rejected Take-Off (Clear Area)

1. Collective — Adjust to maintain NR within 98% and 100%.
2. Cyclic — Set a nose up attitude to a maximum of 25 deg indicated to reduce airspeed at constant height.
3. Cyclic/collective — Level pitch attitude and as the helicopter starts to sink, gradually increase collective to cushion the touchdown.

Maintain landing attitude before touchdown to avoid touching the tail first.
4. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
5. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
6. Parking brake — As required.
7. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED AT OR AFTER TDP (CONTINUED TAKE-OFF)



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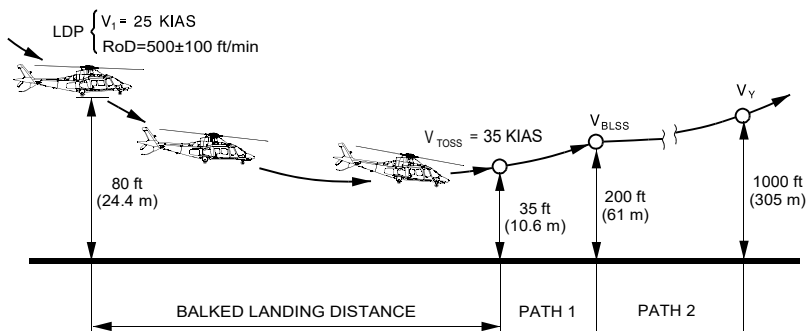
Figure 3A-2 Continued Take-Off OEI (Clear Area)

1. Collective — Adjust as necessary to droop NR not below 90%.
2. Airspeed — Increase to V_{TOSS} using up to OEI 2.5 min power and continue climb.
3. Climb — When the helicopter achieves V_{TOSS} (35 KIAS) and a positive rate of climb, reduce pitch attitude, lower collective to recover NR and continue climb with OEI 2.5 min power to 200 ft ATS and level attitude.
4. At 200 ft ATS — Accelerate to V_y .
5. Landing gear lever — UP (not below 200 ft).

6. N2/NR — Confirm N2/NR stabilizes at 100%.
7. Climb — Climb to 1000 ft ATS reducing power to continuous OEI when convenient, in any case before expiry of the 2.5 minute rating time.
8. At 1000 ft ATS — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
9. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

EMERGENCY PROCEDURES FOR SINGLE ENGINE FAILURE DURING LANDING

SINGLE ENGINE FAILURE RECOGNIZED PRIOR TO LDP (BALKED LANDING)



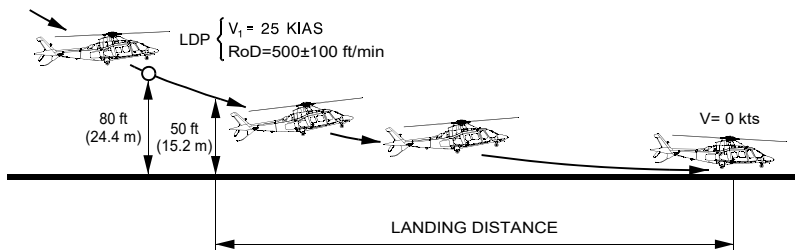
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Figure 3A-3 Balked Landing (Clear Area)

1. Collective/Cyclic
 - Reach V_{BLSS} (35 KIAS) by pushing over 15 deg attitude change and by setting collective to obtain up to OEI 2.5 min power and to droop NR not below 90%.
2. Acceleration/Climb
 - As the speed approaches V_{BLSS} (35 KIAS) reduce nose down attitude. Recover rotor speed and climb at V_{BLSS} (35 KIAS) using OEI 2.5 min power to 200 ft (61 m) ALS.

3. At 200 ft ALS — Accelerate to V_y .
4. Landing gear lever — UP (not below 200 ft).
5. N2/NR — Confirm N2/NR stabilizes at 100%.
6. Climb — Climb to 1000 ft ATS reducing power to continuous OEI when convenient, in any case before expiry of the 2.5 minute rating time.
7. At 1000 ft ALS — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
8. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED AT OR AFTER LDP (OEI LANDING)



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Figure 3A-4 OEI Landing (Clear Area)

1. Collective — Gradually increase to reduce rate of descent maintaining NR between 98% and 100%.
2. Airspeed — Reduce by setting approximately 20 deg nose up attitude change when approaching 15 ft ALS.
3. Collective/cyclic — Level pitch attitude and as the helicopter starts to sink, gradually increase collective to cushion the touchdown.

Maintain landing attitude before touchdown to avoid touching the tail first.

4. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
5. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
6. Parking brake — As required.
7. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SECTION 4A - PERFORMANCE DATA

RUNWAY LENGTH

The minimum demonstrated runway length for Take-Off and Landing is 250 m (820 ft).

TAKE-OFF AND LANDING DISTANCES

Continued Take-Off (CTO) Distance	250 m (820 ft)
Rejected Take-Off (RTO) Distance	250 m (820 ft)
One Engine Inoperative (OEI) Landing Distance	150 m (500 ft)
Balked Landing Distance	250 m (820 ft)

TAKE-OFF FLIGHT PATH 1

Refer to [Section 4 - Performance Data](#) in Common Data.

The charts apply from the end of both the Continued Take-Off distance and the Balked Landing distance to a height of 200 ft ATS/ALS.

TAKE-OFF FLIGHT PATH 2

Refer to [Section 4 - Performance Data](#) in Common Data.

The charts apply from 200 ft to 1000 ft ATS/ALS.

CLIMB PERFORMANCE

SINGLE ENGINE RATE OF CLIMB AT V_Y

The ROC at V_Y and MCP OEI, is unchanged from the basic Rotorcraft Flight Manual or the applicable supplement if the EAPS is installed.

PART B

SHORT FIELD PROCEDURES

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PART B

SHORT FIELD PROCEDURES

SECTION 1B - LIMITATIONS

WEIGHT LIMITATIONS

The maximum Gross Weight for Take Off and Landing CAT A Operation, Short Field, is provided in the following figures:

Weight Limitations, Take-Off and Landing [Figure 1 B-1](#)

Weight Limitations, Take-Off and Landing - EAPS OFF [Figure 1 B-2](#)

Weight Limitations, Take-Off and Landing - EAPS ON [Figure 1 B-3](#)

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

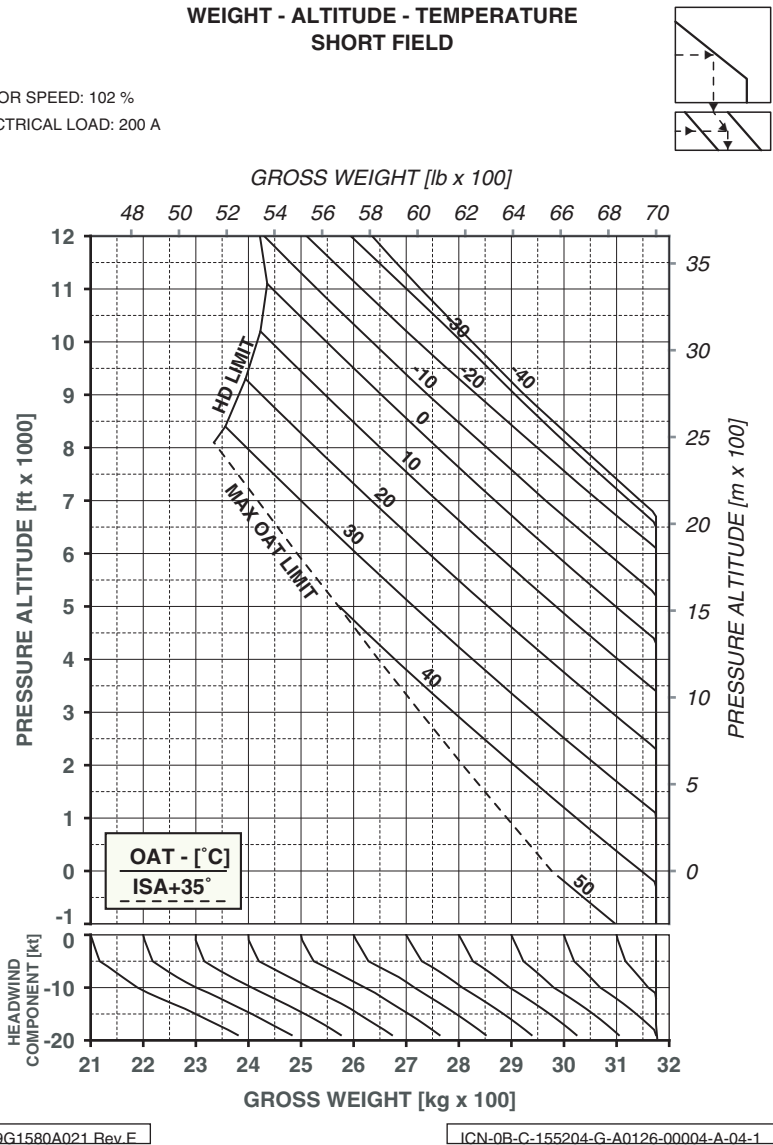
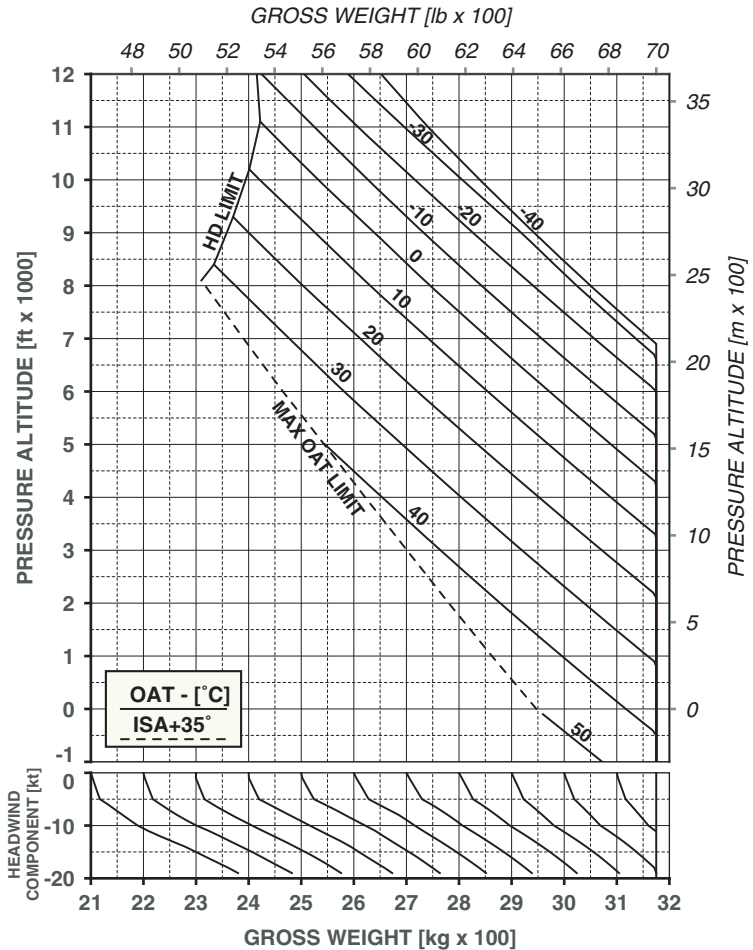


Figure 1 B-1 Short Field Take-Off and Landing Procedure -
WAT

WEIGHT - ALTITUDE - TEMPERATURE
SHORT FIELD

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

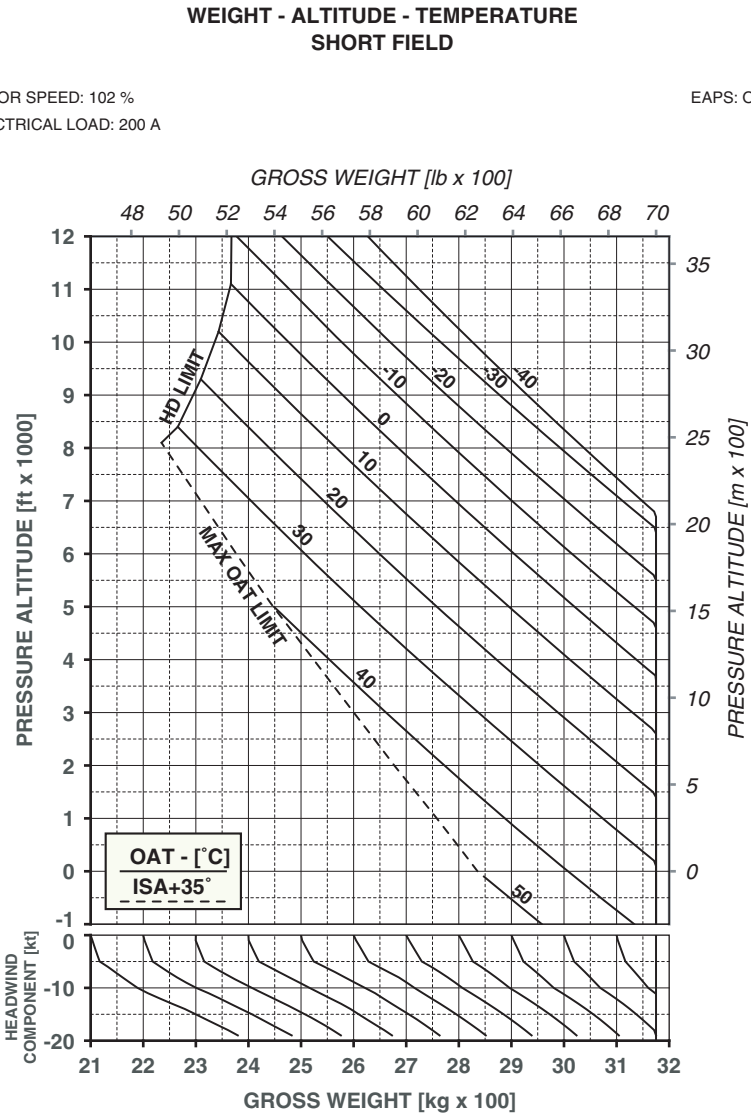
EAPS: OFF



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Figure 1 B-2 Short Field Take-Off and Landing Procedure -
WAT - EAPS OFF



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**Figure 1 B-3 Short Field Take-Off and Landing Procedure -
WAT - EAPS ON**

SECTION 2B - NORMAL PROCEDURES

TAKE-OFF

TAKE-OFF DECISION POINT (TDP)

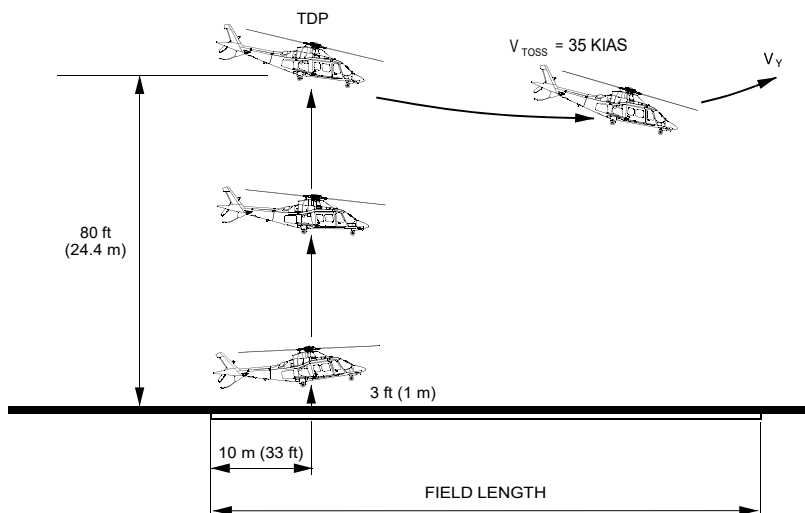
Height..... 80 ft (24.4 m) ATS

Airspeed (V_1) 0 kts

Note

The heights shown in flight path profiles refer to radio altimeter.

SHORT FIELD TAKE-OFF PROCEDURE



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Figure 2B-1 Take-Off Profile (Short Field)

CAUTION

The engines are degraded in performance with EAPS OFF or ON (if installed).

1. Collective — MPOG.
2. TQ LIM pushbutton — Verify FADEC limiter function enabled or push. Check LIM-ITER ON advisory message displayed.
3. Nose wheel lock — ON.
4. Parking brake — OFF.
Check PARK BRK ON message not displayed.
5. Warning and Caution messages — Check none.
6. NR switch — AUTO.
7. Radio altimeter — Check between 0 ft and 5 ft.
8. External lights — As required.
9. Take-Off area — Check clear.
10. Collective — Increase to hover at approximately 3 ft (1 m) ATS.
11. N2/NR — Check stabilized at 102%.
12. Altimeter — Note pressure altitude.
13. ADIs — Select HRZ SYNC in PFD MENU.
Press HS ON to indicate zero (0 deg) pitch.

14. Collective/cyclic — Apply as necessary to climb vertically with a rate of climb of 500 ± 100 ft/min.
15. Take-Off Decision Point (TDP) — At TDP 80 ft (24.4 m) ATS select up to Take-Off power and rotate through 10 deg indicated nose down attitude simultaneously.
16. Acceleration/Climb — When the helicopter achieves V_{TOSS} (35 KIAS) reduce nose down attitude and continue the acceleration maintaining collective position until V_y .
17. Landing gear lever — UP (not below 200 ft).
MAIN UTIL CHRGR caution message is displayed during landing gear retraction, then clears when landing gear is locked.
Confirm landing gear is up and locked (3 green lights and red light extinguished).
18. N2/NR — Confirm N2/NR stabilizes at 100%.
19. Climb — Continue climb at V_y up to 1000 ft ATS.
20. At 1000 ft ATS — Adjust collective and cyclic for cruise altitude and air-speed as required.
21. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

APPROACH AND LANDING

LANDING DECISION POINT (LDP)

Height.....80 ft (24.4 m) ALS
Airspeed (V_1).....25 KIAS
Rate of Descent 500 $\pm$ 100 ft/min

Note

The heights shown in flight path profiles refer to radio altimeter.

SHORT FIELD APPROACH AND LANDING PROCEDURE

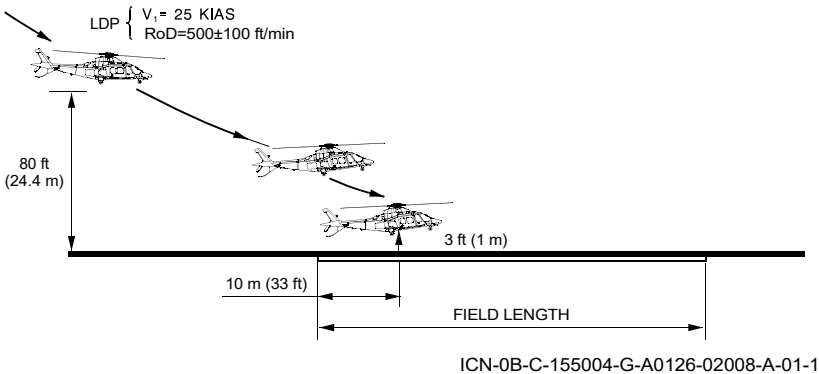


Figure 2B-2 Landing Profile (Short Field)

CAUTION

The engines are degraded in performance with EAPS OFF or ON (if installed).

1. Altimeter	— Set QNH (Landing surface elevation should be known).
2. ADIs	— Cross-check.
3. NR Switch	— Check set to AUTO
4. Landing gear lever	— DOWN. MAIN UTIL CHRГ caution message is displayed during landing gear extension, then clears when landing gear is locked. Confirm landing gear is down and locked (3 green lights illuminated, red light extinguished).
5. TQ LIM pushbutton	— Verify FADEC limiter function enabled or push. Check LIMITER ON advisory message displayed.
6. N2/NR	— Below 75 KIAS confirm N2/NR stabilizes at 102%.
7. Nose wheel lock	— ON.
8. Parking brake	— OFF. Check PARK BRK ON message not displayed.
9. External lights	— As required.

EAPS (if installed):

- 10. EAPS 1 and EAPS 2 switches — As required.
- 11. Approach & Landing — Initiate the approach to pass through the LDP at 80 ft (24.4 m) above the landing site at 25 KIAS with a rate of descent no higher than 500 ± 100 ft/min.

From the LDP reduce airspeed and decrease the rate of descent to achieve a hover at approximately 3 ft (1 m) ALS.

Descend vertically to land.
- 12. Wheel Brakes — Apply as required.
- 13. Parking Brake — As required.
- 14. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SECTION 3B - EMERGENCY AND MALFUNCTION PROCEDURES

GENERAL

The procedures detailed in this section only consider the failure of one engine in the Take-Off/Landing path and assume the pilot gives first priority to helicopter control to achieve a safe flight path.

For all Take-Off procedures the following shall be observed:

1. Engine failure prior to TDP — Recognition of engine failure prior to the TDP dictates that the Take-Off has to be rejected.
2. Engine failure at or after TDP — Recognition of the failure at or after the TDP dictates that the Take-Off has to be continued.

For all Landing procedures the following shall be observed:

1. Engine failure prior to LDP — If an engine failure is recognised prior to the LDP, the pilot may elect either to conduct a Balked Landing or to continue the Landing OEI.
2. Engine failure at or after LDP — Recognition of the engine failure at or after the LDP dictates that the Landing has to be continued.

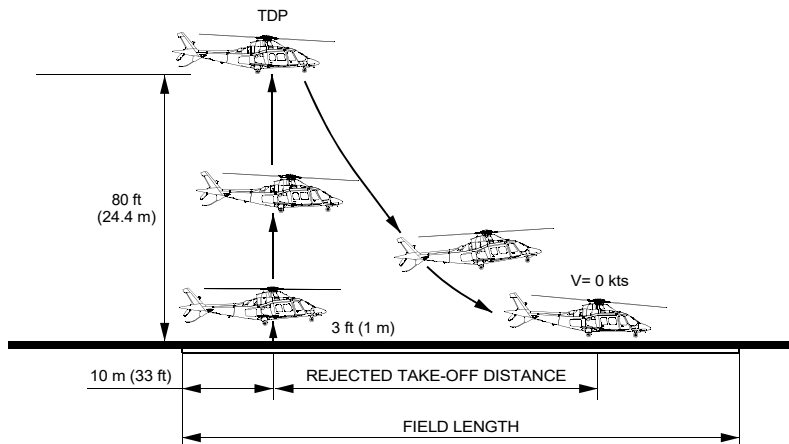
Procedures dealing with subsequent Failure/Malfunctions, other than engine failure, must be initiated only after the helicopter control and a safe flight/ground condition have been obtained. The procedures for the emergency/malfunction can be followed according to the appropriate instructions detailed in Section 3 of the basic Rotorcraft Flight Manual.

EMERGENCY PROCEDURES FOR SINGLE ENGINE FAILURE DURING TAKE-OFF

SINGLE ENGINE FAILURE RECOGNIZED IN HOVER (3 FT ATS)

— 1. Collective	— Adjust as required to land and cushion touchdown.
— 2. Landing	— After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
— 3. Engine	— On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure.
— 4. Parking brake	— As required.
— 5. LDG LT and SCHLT (If used)	— Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED PRIOR TO TDP (REJECTED TAKE-OFF)



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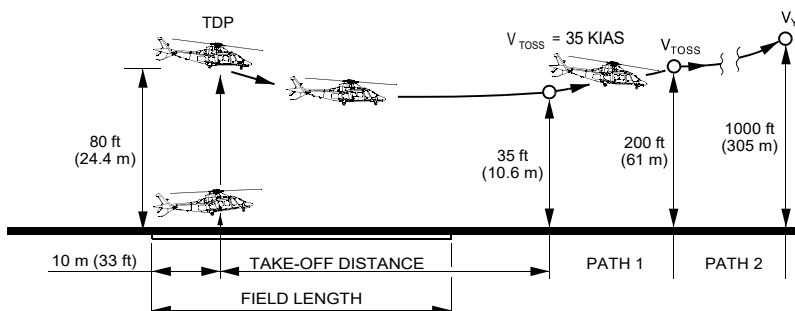
Figure 3B-1 Rejected Take-Off OEI (Short Field)

1. Collective — Adjust to maintain NR around 100%.
2. Rejected Take-Off manoeuvre — If the failure occurs below 50 ft (15.2 m) ATS, slightly push over the cyclic to bring the helicopter back to the ground.

If the failure occurs at or above 50 ft (15.2 m) ATS rotate nose down to a maximum of 20 deg indicated to obtain forward speed and commence the descent to the field.

3. Touchdown
 - Continue deceleration to a running touchdown or hover. Use collective to cushion touchdown.
 - Maintain landing attitude before touchdown to avoid touching the tail first.
4. Landing
 - After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
5. Engine
 - On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
6. Parking brake
 - As required.
7. LDG LT and SCHLT (If used)
 - Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED AT OR AFTER TDP (CONTINUED TAKE-OFF)



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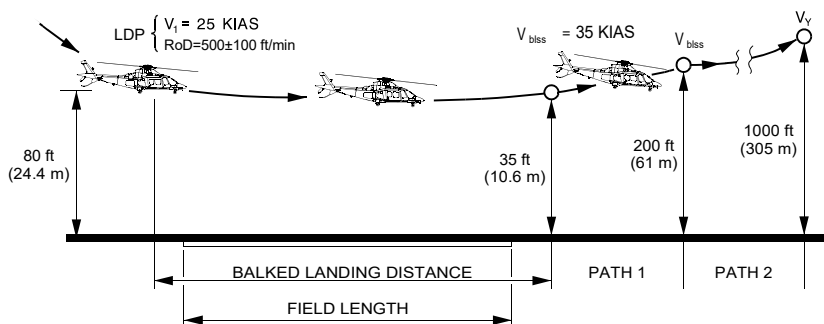
Figure 3B-2 Continued Take-Off OEI (Short Field)

1. Collective/Cyclic
 - Rotate nose down to a maximum of 25 deg indicated to obtain forward speed. Set OEI 2.5 min power and accelerate adjusting collective to droop NR not below 90%.
2. Acceleration/Climb
 - Adjust pitch attitude and continue acceleration to V_{TOSS} (35 KIAS).
3. Climb
 - When the helicopter achieves V_{TOSS} (35 KIAS) and a positive rate of climb, lower collective to recover NR, continue climb with OEI 2.5 min power to 200 ft ATS and level helicopter.
4. At 200 ft ATS
 - Accelerate to V_y .
5. Landing gear lever
 - UP (not below 200 ft).

6. N2/NR — Confirm N2/NR stabilizes at 100%.
7. Climb — Climb to 1000 ft ATS reducing power to continuous OEI when convenient, in any case before expiry of the 2.5 minute rating time.
8. At 1000 ft ATS — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
9. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

EMERGENCY PROCEDURES FOR SINGLE ENGINE FAILURE DURING LANDING

SINGLE ENGINE FAILURE RECOGNIZED PRIOR TO LDP (BALKED LANDING)

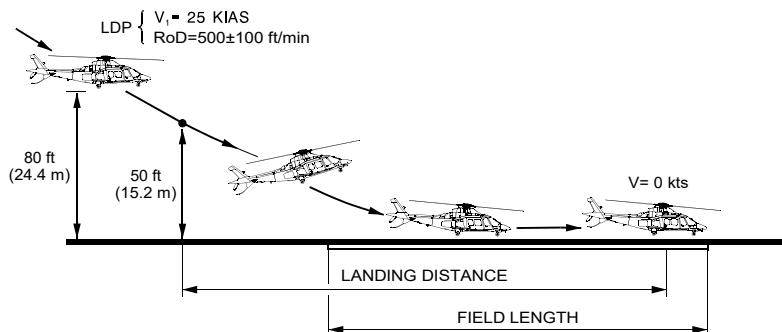


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Figure 3B-3 Balked Landing OEI (Short Field)

1. Balked Landing manoeuvre — Initiate an acceleration, using collective to droop NR to not lower than 90%, and set OEI 2.5 min power.
2. Acceleration/Climb — Adjust pitch attitude and continue acceleration to V_{BLSS} (35 KIAS).
3. Climb — When the helicopter achieves V_{BLSS} (35 KIAS) and a positive rate of climb, lower collective to recover NR, continue climb with OEI 2.5 min power to 200 ft ALS and level attitude.
4. At 200 ft ALS — Accelerate to V_y .
5. Landing gear lever — UP (not below 200 ft).
6. N2/NR — Confirm N2/NR stabilizes at 100%.
7. Climb — Climb to 1000 ft ATS reducing power to continuous OEI when convenient, in any case before expiry of the 2.5 minute rating time.
8. At 1000 ft ALS — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
9. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED AT OR AFTER LDP (OEI LANDING)



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Figure 3B-4 OEI Landing (Short Field)

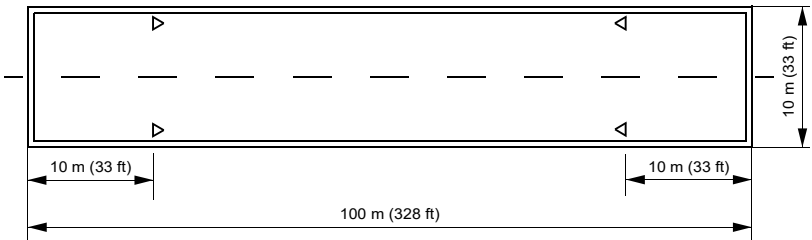
1. Collective — Adjust to maintain NR within 98% and 100%.
2. OEI Landing Manoeuvre — If the failure occurs at or above 50 ft ALS push over 15 deg attitude change to increase forward speed and approach the landing site.
If the failure occurs below 50 ft ALS push over slightly to bring the helicopter to the ground.
Perform a flare and level the helicopter before touchdown to avoid touching the tail first.

3. Touchdown — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
4. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
5. Parking brake — As required.
6. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SECTION 4B - PERFORMANCE DATA

RUNWAY SIZE

The minimum demonstrated runway size for Take-Off and Landing is 100 m (328 ft) long and 10 m (33 ft) wide.



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Figure 4B-1 Minimum Runway Size and Example of Markings

TAKE-OFF AND LANDING DISTANCES

Continued Take-Off (CTO) Distance	160 m (525 ft)
Rejected Take-Off (RTO) Distance	80 m (262 ft)
One Engine Inoperative (OEI) Landing Distance	80 m (262 ft)
Balked Landing Distance	190 m (623 ft)

TAKE-OFF FLIGHT PATH 1

Refer to [Section 4 - Performance Data](#) in Common Data.

The charts apply from the end of the Continued Take-Off distance or of the Balked Landing distance to a height of 200 ft ATS/ALS.

TAKE-OFF FLIGHT PATH 2

Refer to [Section 4 - Performance Data](#) in Common Data.

The charts apply from 200 ft to 1000 ft ATS/ALS.

CLIMB PERFORMANCE

SINGLE ENGINE RATE OF CLIMB AT V_Y

The ROC at V_Y and MCP OEI, is unchanged from the basic Rotorcraft Flight Manual or the applicable supplement if the EAPS is installed.

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PART C

GROUND LEVEL AND ELEVATED HELIPORT/HELIDECK BACK-UP PROCEDURES

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PART C

GROUND LEVEL AND ELEVATED HELIPORT/ HELIDECK BACK-UP PROCEDURES

SECTION 1C - LIMITATIONS

WEIGHT LIMITATIONS

The maximum Gross Weight for Take Off and Landing CAT A operations, Ground Level and Elevated Heliport/Helideck Back-Up Procedures, is provided in the following figures:

Weight Limitation, Take-Off and Landing..... [Figure 1C-2](#)

Weight Limitation, Take-Off and Landing - EAPS OFF [Figure 1C-2](#)

Weight Limitation, Take-Off and Landing - EAPS ON..... [Figure 1C-3](#)

For Take Off and Landing procedures on Narrow Elevated Heliport/Helideck refer to [Part F](#).

GROUND SPEED LIMITATIONS

Maximum Touchdown Speed with Parking brake ON 5 kts

TAKE OFF AND LANDING LIMITATIONS FOR OPERATIONS ON NARROW HELIPORT/HELIDECK

All Take-offs and landings shall be carried out along the longer axis of the heliport/helideck.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

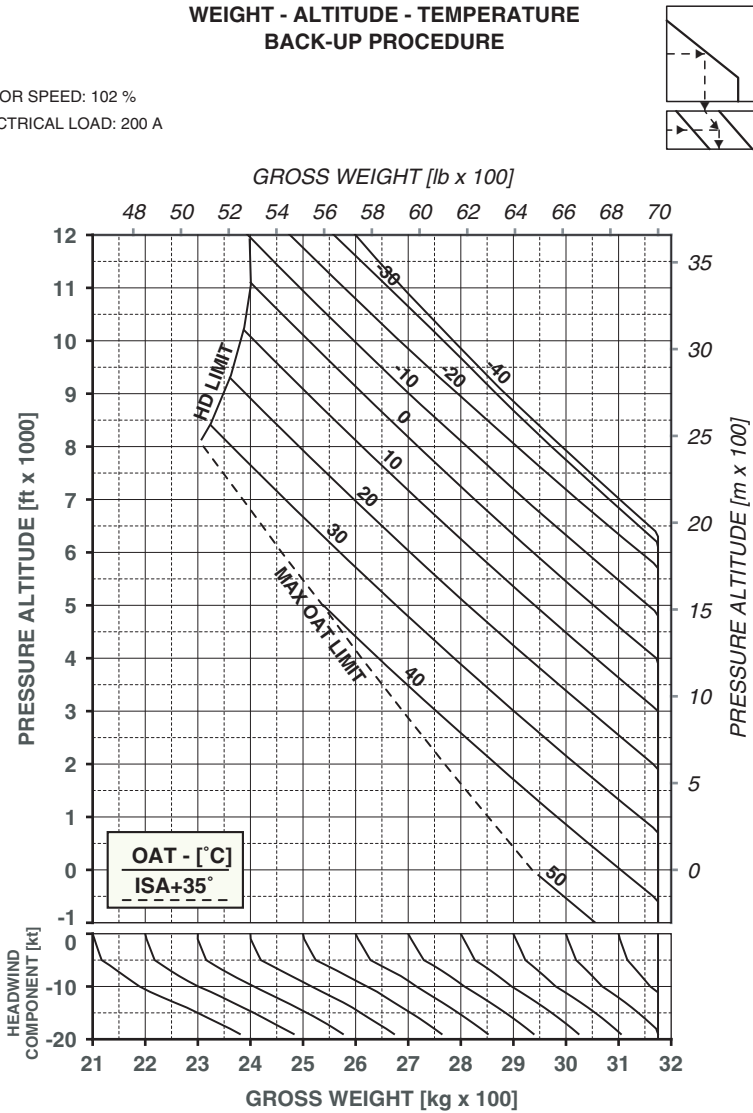
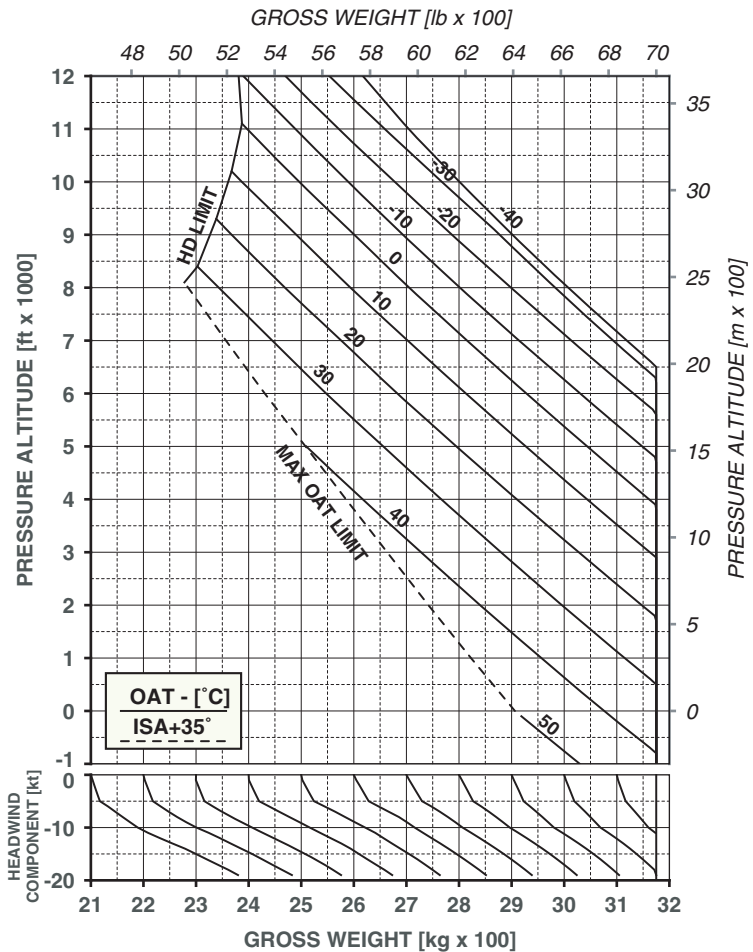


**Figure 1C-1 Ground Level and Elevated Heliport/Helideck
Back-Up Take-Off and Landing Procedure - WAT**

**WEIGHT - ALTITUDE - TEMPERATURE
BACK-UP PROCEDURE**

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: OFF



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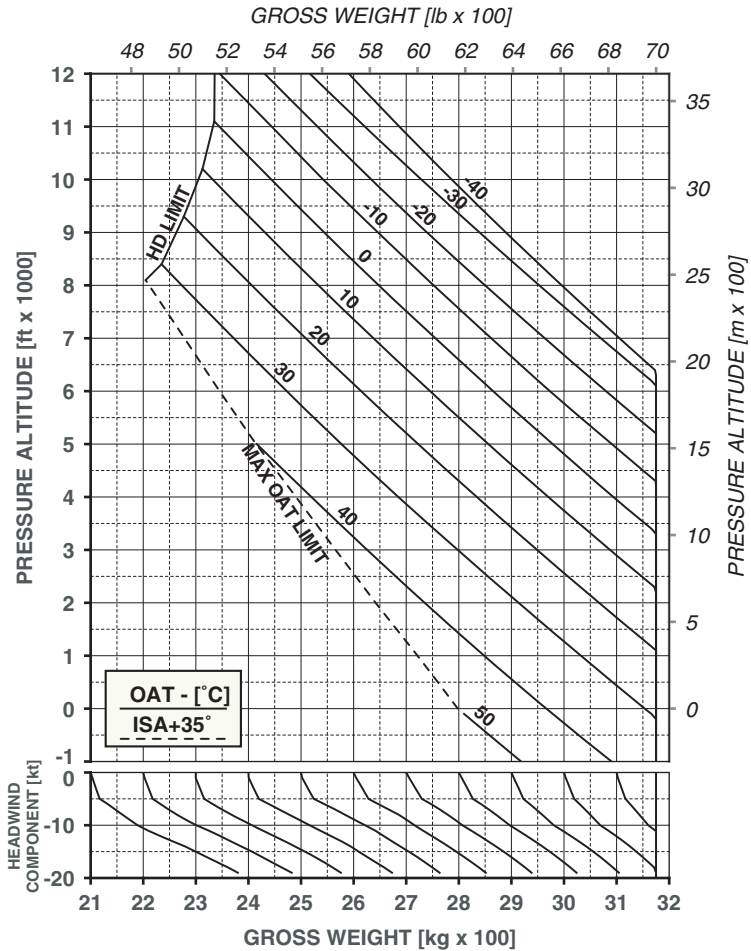
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**Figure 1C-2 Ground Level and Elevated Heliport/Helideck
Back-Up Take-Off and Landing Procedure - WAT - EAPS OFF**

WEIGHT - ALTITUDE - TEMPERATURE
BACK-UP PROCEDURE

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: ON



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Figure 1C-3 Ground Level and Elevated Heliport/Helideck
Back-Up Take-Off and Landing Procedure - WAT - EAPS ON

SECTION 2C - NORMAL PROCEDURES

TAKE-OFF

TAKE-OFF DECISION POINT (TDP)

Extended TDP (TDP_E) height 80 ft to 500 ft ATS
..... (24.4 m to 152.4 m ATS)

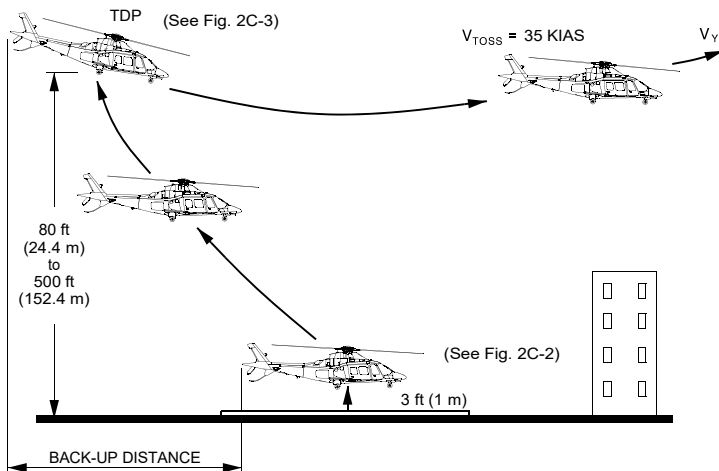
CONTINUED TAKE-OFF HEIGHTS

Minimum height during CTO TDP_E - 65 ft ATS
Height at end of CTO distance [Table 4C-1](#) to [4C-3](#)

Note

The heights shown in flight path profiles
refer to radio altimeter.
For Elevated Heliport/Helideck refer to baro-
metric altimeter.

BACK-UP TAKE-OFF PROCEDURE FOR GROUND LEVEL AND ELEVATED HELIPORT/HELIDECK



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**Figure 2C-1 Take-Off Profile (Back-Up)
(Ground Level, Elevated Heliport/Helideck)**

CAUTION

The engines are degraded in performance with EAPS OFF or ON (if installed).

1. Collective	— MPOG.
2. TQ LIM pushbutton	— Verify FADEC limiter function enabled or push. Check LIMITER ON advisory message displayed.
3. Nose wheel lock	— ON.

4. Parking brake	— ON. Check PARK BRK ON message displayed.
5. Warning and Caution messages	— Check none.
6. NR switch	— AUTO.
7. Radio altimeter	— Check between 0 ft and 5 ft.
8. External lights	— As required.
9. Take-Off area	— Check clear.
10. Collective	— Increase to hover at approximately 3 ft (1 m) ATS. (See Figure 2C-2).
11. N2/NR	— Check stabilized at 102%
12. Altimeter	— Note pressure altitude.
13. ADIs	— Select HRZ SYNC in PFD MENU. Press HS ON to indicate zero (0 deg) pitch.
14. Collective/cyclic	— Apply as necessary to climb vertically with a rate of climb of 500 ± 100 ft/min and simultaneously initiate a slow backward flight maintaining visual reference with the far right hand corner of the heliport. Use 5-10 degrees left yaw, if required, to maintain the visual reference.

15. Extended TDP (TDP_E) — At required TDP_E height select up to take-off power and simultaneously rotate nose down 15 deg indicated. (See [Figure 2C-3](#))
16. Acceleration/Climb — When the helicopter achieves V_{TOSS} (35 KIAS) reduce nose down attitude and, maintaining collective position, continue the acceleration until V_y .
17. Landing gear lever — UP at $TDP_E + 120$ ft ATS (but not below 200 ft).
MAIN UTIL CHRGR caution message is displayed during landing gear retraction, then clears when landing gear is locked.
Confirm landing gear is up and locked (3 green lights and red light extinguished).
18. N2/NR — Confirm N2/NR stabilizes at 100%.
19. Climb — Continue climb at V_y up to 1000 ft ATS.
20. At 1000 ft ATS — Adjust collective and cyclic for cruise altitude and air-speed as required.
21. Parking brake — OFF.
Check PARK BRK ON message not displayed.
22. LDG LT and SCHLT (If used) — Respectively OFF and STOW.



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Figure 2C-2 Heliport Back-Up Take-Off - View at 3 ft ATS



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Figure 2C-3 Heliport Back-Up Take-Off - View at 80 ft ATS

APPROACH AND LANDING

LANDING DECISION POINT (LDP)

LDP height 80 ft (24.4 m) ALS

Airspeed 20 KIAS

Rate of Descent 200 ± 50 ft/min

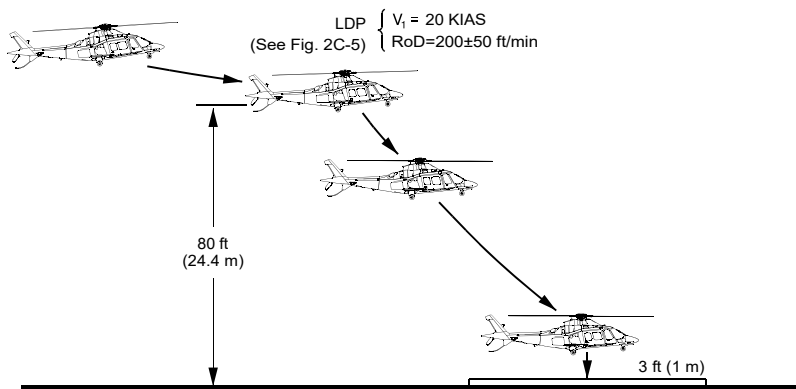
Note

No variable LDP has been defined as the
Balked Landing distance always ends
before or over the heliport.

Note

The heights shown in flight path profiles
refer to radio altimeter.
For Elevated Heliport/Helideck, refer to
Barometric altimeter.

GROUND LEVEL AND ELEVATED HELIPORT/HELIDECK APPROACH AND LANDING PROCEDURE



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Figure 2C-4 Normal Landing Profile

CAUTION

The engines are degraded in performance
with EAPS OFF or ON (if installed).

1. Altimeter	— Set QNH (Landing surface elevation should be known).
2. ADIs	— Cross-check.
3. NR Switch	— Check set to AUTO

4. Landing gear lever — DOWN.
MAIN UTIL CHRГ caution message is displayed during landing gear extension, then clears when landing gear is locked.
Confirm landing gear is down and locked (3 green lights illuminated, red light extinguished).
5. TQ LIM pushbutton — Verify FADEC limiter function enabled or push. Check LIMITER ON advisory message displayed.
6. N2/NR — Below 75 KIAS confirm N2/NR stabilizes at 102%.
7. Nose wheel lock — ON.
8. Parking brake — ON.
Check PARK BRK ON message displayed.
9. External lights — As required.
- EAPS (if installed):
10. EAPS 1 and EAPS 2 switches — As required.
11. Approach path — Initiate the approach to pass through the LDP above the landing site with an airspeed of 20 KIAS (maintaining a positive forward speed) and with a rate of descent not higher than 200 ± 50 ft/min. Keep the far right hand corner of the helipad in sight during the landing (See Figure 2C-5).

- 12. Landing — From LDP, gradually decelerate and decrease the rate of descent to achieve a hover at approximately 3 ft (1 m) ALS. Descend vertically to land.
- 13. Parking Brake — As required.
- 14. LDG LT and SCHLT (If used) — Respectively OFF and STOW.



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Figure 2C-5 Heliport Approach and Landing - View at 80 ft ALS

SECTION 3C - EMERGENCY AND MALFUNCTION PROCEDURES

GENERAL

The procedures detailed in this section only consider the failure of one engine in the Take-Off/Landing path and assume the pilot gives first priority to helicopter control to achieve a safe flight path.

For all Take-Off procedures the following shall be observed:

1. Engine failure prior to TDP — Recognition of engine failure prior to the TDP dictates that the Take-Off has to be rejected.
2. Engine failure at or after TDP — Recognition of the failure at or after the TDP dictates that the Take-Off has to be continued.

For all Landing procedures the following shall be observed:

1. Engine failure prior to LDP — If an engine failure is recognised prior to the LDP, the pilot may elect either to conduct a Balked Landing or to continue the Landing OEI.
2. Engine failure at or after LDP — Recognition of the engine failure at or after the LDP dictates that the Landing has to be continued.

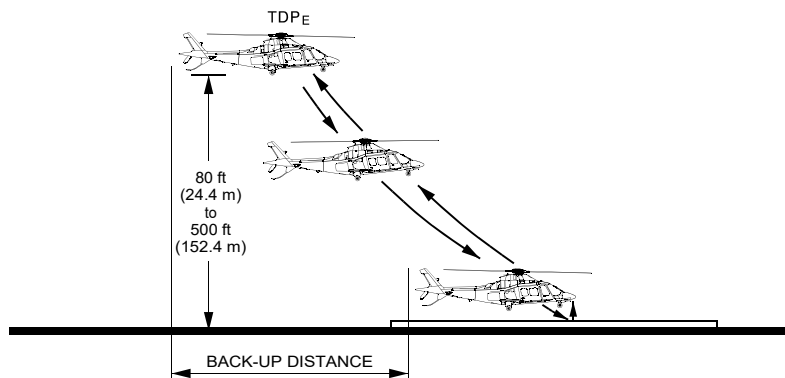
Procedures dealing with subsequent Failure/Malfunctions, other than engine failure, must be initiated only after the helicopter control and a safe flight/ground condition have been obtained. The procedures for the emergency/malfunction can be followed according to the appropriate instructions detailed in Section 3 of the basic Rotorcraft Flight Manual.

EMERGENCY PROCEDURE FOR SINGLE ENGINE FAILURE DURING TAKE-OFF

SINGLE ENGINE FAILURE RECOGNIZED IN HOVER (3 FT ATS)

1. Collective — Adjust as required to land and cushion touchdown.
2. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
3. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
4. Parking brake — As required.
5. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED IN CLIMB, PRIOR TO TDP (REJECTED TAKE-OFF)



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**Figure 3C-1 Rejected Take-Off
(Ground Level, Elevated Heliport/Helideck)**

1. Collective — As necessary to maintain NR and OEI limits.
2. Rejected Take-off manoeuvre — If the failure occurs below 50 ft (15.2 m) ATS, slightly push over the cyclic to bring the helicopter back to the ground. Carry out the manoeuvre maintaining the far right hand corner of the helipad in sight.

If the failure occurs at or above 50 ft (15.2 m) ATS, rotate nose down to a maximum of 15 deg indicated to obtain forward speed, and bring the helicopter back to the ground. Carry out the manoeuvre maintaining the far right hand corner of the helipad in sight.

Perform flare and level helicopter to establish the minimum ground speed.
3. Collective — As necessary to cushion landing.

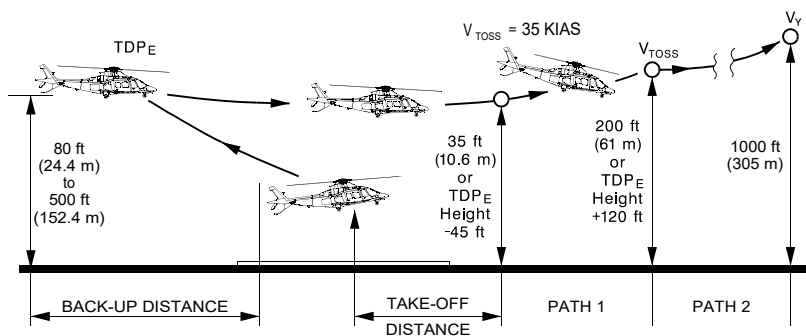
Note

Attention should be paid to avoid touching the tail first.

4. Landing — After touchdown, centralize the cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.

5. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
6. Parking brake — As required.
7. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED AT OR AFTER TDP (CONTINUED TAKE-OFF)



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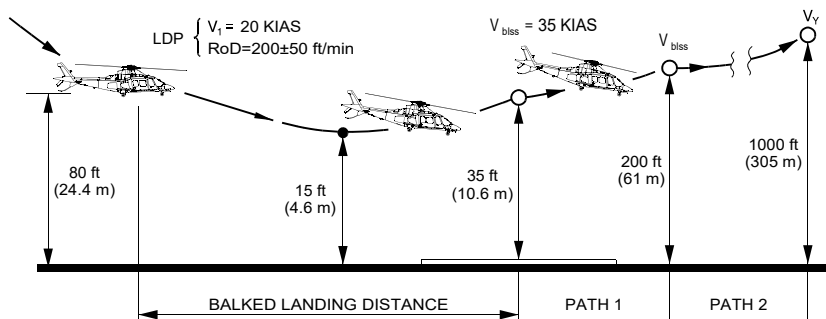
**Figure 3C-2 Continued Take-Off OEI
(Ground Level, Elevated Heliport/Helideck)**

1. Collective/Cyclic control
 - Set nose down attitude of approximately 25 deg indicated to achieve V_{TOSS} (35 KIAS) by using up to the OEI 2.5 min power. Adjust collective to droop NR not below 90%.

 - As the speed approaches V_{TOSS} (35 KIAS) and a positive rate of climb, reduce nose down attitude. Recover rotor speed and climb at V_{TOSS} (35 KIAS) using OEI 2.5 min power up to 200 ft (61 m) ATS (or $TDP_E + 120$ ft ATS).
2. At 200 ft ATS (or $TDP_E + 120$ ft ATS)
 - Accelerate to V_y .
3. Landing gear lever
 - UP at $TDP_E + 120$ ft ATS but not below 200 ft.
4. N2/NR
 - Confirm N2/NR stabilizes at 100%.
5. Climb
 - Climb to 1000 ft ATS reducing power to continuous OEI when convenient, in any case before expiry of the 2.5 minute rating time.
6. At 1000 ft ATS
 - On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
7. Parking brake
 - OFF.
Check PARK BRK ON message not displayed.
8. LDG LT and SCHLT (If used)
 - Respectively OFF and STOW.

EMERGENCY PROCEDURE FOR SINGLE ENGINE FAILURE DURING LANDING

SINGLE ENGINE FAILURE DURING LANDING PRIOR TO LDP (BALKED LANDING)



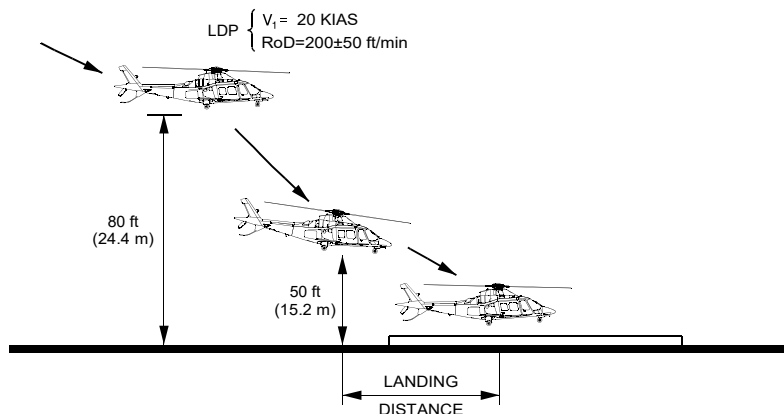
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Figure 3C-3 Balked Landing
(Ground Level, Elevated Heliport/Helideck)

1. Collective/Cyclic Control
 - Apply collective to set OEI 2.5 min power to droop NR to not lower than 90% and adopt a 10 deg nose down attitude change to initiate an acceleration to V_{BLSS} (35 KIAS).
2. Climb
 - When the helicopter achieves V_{BLSS} (35 KIAS) and a positive rate of climb, reduce nose down attitude and lower collective to recover rotor speed.
 - Continue climb to 200 ft ALS with OEI 2.5 min power.

3. At 200 ft ALS	— Accelerate to V_y .
4. Landing gear lever	— UP (not below 200 ft).
5. N2/NR	— Confirm N2/NR stabilizes at 100%.
6. Climb	— Climb to 1000 ft ATS reducing power to continuous OEI when convenient, in any case before expiry of the 2.5 minute rating time.
7. At 1000 ft ALS	— On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure.
8. Parking brake	— OFF. Check PARK BRK ON message not displayed.
9. LDG LT and SCHLT (If used)	— Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED AT OR AFTER LDP (OEI LANDING)



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**Figure 3C-4 OEI Landing
(Ground Level, Elevated Heliport/Helideck)**

1. Collective — As necessary to maintain NR.
2. OEI landing manoeuvre — If the failure occurs at or above 50 ft (15.2 m) ALS, adopt a 15 deg nose down attitude change to obtain forward speed, and approach the landing site.

If the failure occurs below 50 ft (15.2 m) ALS, slightly push over the cyclic to bring the helicopter back to the ground.

Maintain visual contact with the far right hand corner of the landing site at all times.

Perform flare and level helicopter to establish the minimum ground speed.

3. Touchdown — After touchdown, centralize the cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
4. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
5. Parking brake — As required.
6. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SECTION 4C - PERFORMANCE DATA

GROUND LEVEL HELIPORT/HELIDECK SIZE

Minimum demonstrated heliport/helideck sizes: 15 m x 15 m
(50 ft x 50 ft)

: ...15 m lenght x 9 m width
(50 ft lenght x 30 ft width)

ELEVATED HELIPORT/HELIDECK SIZE

Minimum demonstrated heliport/helideck size 15 m x 15 m
(50 ft x 50 ft)

TAKE-OFF AND LANDING DISTANCES

Continued Take-Off (CTO) Distance See [Table 4C-1](#) ([4C-2](#))

One Engine Inoperative (OEI) Landing Distance 100 m (328 ft)

Balked Landing Distance 160 m (525 ft)

BACKUP PROCEDURE HEIGHT and DISTANCE (Distance in Metric Unit)

TDP height ATS (ft)	Backup distance (m)	Min height ATS (ft)	Height ATS at the end of C.T.O. (ft)	C.T.O. distance (m)
80	-40	15	35	100
100	-50	35	55	90
120	-60	55	75	80
140	-70	75	95	70
160	-80	95	115	60
180	-90	115	135	50
200	-100	135	155	40
220	-110	155	175	30
240	-120	175	195	20
260	-130	195	215	10
280	-140	215	235	0
300	-150	235	255	-10
320	-160	255	275	-20
340	-170	275	295	-30
360	-180	295	315	-40
380	-190	315	335	-50
400	-200	335	355	-60
420	-210	355	375	-70
440	-220	375	395	-80
460	-230	395	415	-90
480	-240	415	435	-100
500	-250	435	455	-110

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**Table 4C-1 Heliport/Helideck Back-Up Take-Off Procedure -
Typical Heights and Distances (Distances in Metric Units)**

BACKUP PROCEDURE HEIGHT and DISTANCE (Distance in Imperial Unit)

TDP height ATS (ft)	Backup distance (ft)	Min height ATS (ft)	Height ATS at the end of C.T.O. (ft)	C.T.O. distance (ft)
80	-131	15	35	328
100	-164	35	55	295
120	-197	55	75	262
140	-230	75	95	230
160	-262	95	115	197
180	-279	105	125	180
200	-328	135	155	131
220	-361	155	175	98
240	-394	175	195	66
260	-427	195	215	33
280	-459	215	235	0
300	-492	235	255	-33
320	-525	255	275	-66
340	-558	275	295	-98
360	-591	295	315	-131
380	-623	315	335	-180
400	-656	335	355	-197
420	-689	355	375	-230
440	-722	375	395	-262
460	-755	395	415	-295
480	-787	415	435	-328
500	-820	435	455	-361

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**Table 4C-2 Heliport/Helideck Back-Up Take-Off Procedure -
Typical Heights and Distances (Distances in Imperial Units)**

TAKE-OFF FLIGHT PATH 1

Refer to [Section 4 - Performance Data](#) in Common Data.

The charts apply from the end of the CTO distance to a height of $TDP_E + 120$ ft ATS or from the end of BL distance to a height of 200 ft ALS.

TAKE-OFF FLIGHT PATH 2

Refer to [Section 4 - Performance Data](#) in Common Data.

These charts apply from $TDP_E + 120$ ft ATS to 1000 ft ATS for Take-Off or from 200 ft ALS to 1000 ft ALS for landing.

CLIMB PERFORMANCE

SINGLE ENGINE RATE OF CLIMB AT V_Y

The ROC at V_Y and MCP OEI, is unchanged from the basic Rotorcraft Flight Manual or the applicable supplement if the EAPS is installed.

TDP_E FOR OBSTACLE CLEARANCE

The [Figures 4C-1](#) and [4C-2](#) demonstrate the process necessary to calculate the TDP_E for an obstacle in the Take-Off Profile and to ensure that obstacles in the Back-Up profile do not endanger the helicopter if a RTO is required.

D_{CTO} = Continued Take-Off Distance (m)

D_O = Distance from Take-Off position to Obstacle (m)

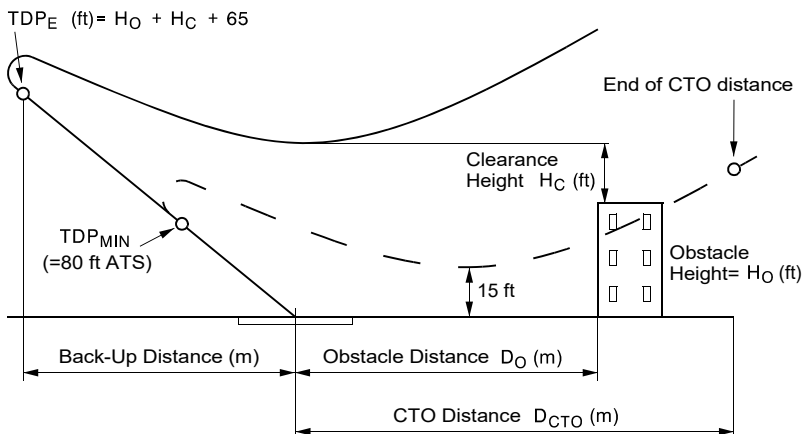
H_{BO} = Height of Obstacle in Back-Up Profile (ft)

H_O = Height of Obstacle (ft)

H_C = Required clearance height above Obstacle (ft)

TDP_{MIN} = 80 ft ATS

TDP_E FOR OBSTACLE INSIDE THE CTO DISTANCE



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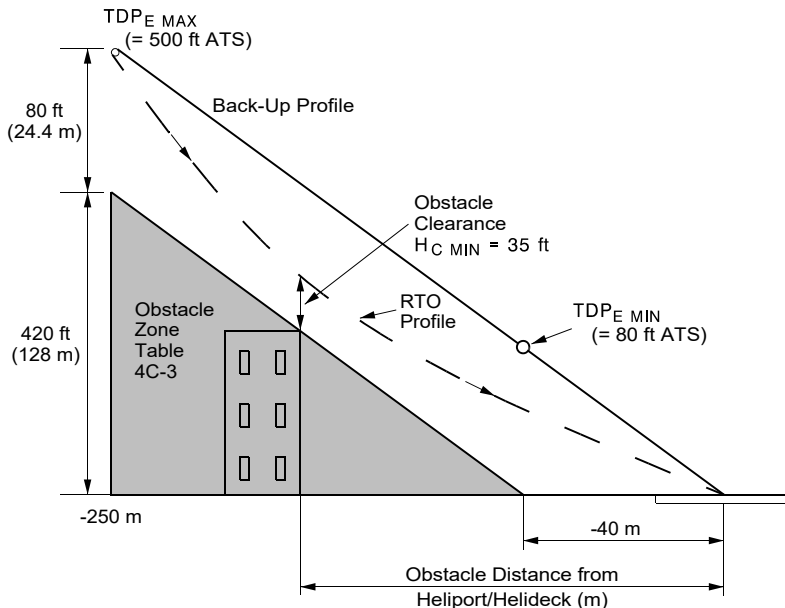
**Figure 4C-1 Obstacle in Take-Off Profile
(Ground Level, Elevated Heliport/Helideck)**

A Back-Up Take-Off procedure with the TDP_{MIN} of 80 ft ATS would guarantee a minimum height of 15 ft ATS.

The TDP_E required to clear an obstacle positioned inside the CTO distance by the required H_C is:

$$TDP_E (ft) = H_O + H_C + 65$$

TDP_E FOR OBSTACLE UNDER BACK-UP PROFILE



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**Figure 4C-2 Obstacle under Back-Up Profile
(Ground Level, Elevated Heliport/Helideck)**

If there are obstacles under the Take-Off Back-Up profile then the obstacle height and position, with respect to the Heliport/Helideck, must be within the Obstacle Zone as defined by that which gives a minimum obstacle clearance height of 35 ft. If Operating Rules define specific obstacle clearance this must be taken into consideration when defining the TDP_E.

OBSTACLE DISTANCE IN BACKUP PROFILE

Obstacle Height ATS (ft)	Obstacle Height ATS (m)	Minimum obstacle Distance from Heliport (ft)	Minimum obstacle Distance from Heliport (m)
0	0	-131	-40
20	6.1	-164	-50
40	12.2	-197	-60
60	18.3	-230	-70
80	24.4	-246	-80
100	30.5	-262	-90
120	36.6	-328	-100
140	42.7	-361	-110
160	48.8	-394	-120
180□	54.9	-427	-130
200□	61.0	-459	-140
220□	67.1	-492	-150
240□	73.2	-525	-160
260□	79.3	-558	-170
280□	85.3	-591	-180
300□	91.4	-623	-190
320□	97.5	-656	-200
340□	103.6	-689	-210
360□	109.7	-722	-220
380□	115.8	-755	-230
400□	121.9	-787	-240
420□	128.0	-820	-250

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Table 4C-3 Minimum Distance for Obstacle in Back-Up Profile

PART D

**ELEVATED HELIPORT/HELIDECK VERTICAL
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PART D
**ELEVATED HELIPORT/HELIDECK VERTICAL
PROCEDURE**

SECTION 1D - LIMITATIONS

WEIGHT LIMITATIONS

The maximum Gross Weight for Take Off and Landing CAT A operations, Elevated Heliport/Helideck Vertical Procedure, is provided in the following figures:

Weight Limitation, Take-Off and Landing [Figure 1D-1](#)

Weight Limitation, Take-Off and Landing - EAPS OFF [Figure 1D-2](#)

Weight Limitation, Take-Off and Landing - EAPS ON [Figure 1D-3](#)

For Take Off and Landing procedures on Narrow Elevated Heliport/Helideck refer to [Part F](#).

ELEVATED HELIPORT/HELIDECK LIMITATIONS

Minimum heliport/helideck elevation above
the surrounding surface 15 ft

GROUND SPEED LIMITATIONS

Maximum Touchdown Speed with Parking brake ON 5 kts



The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

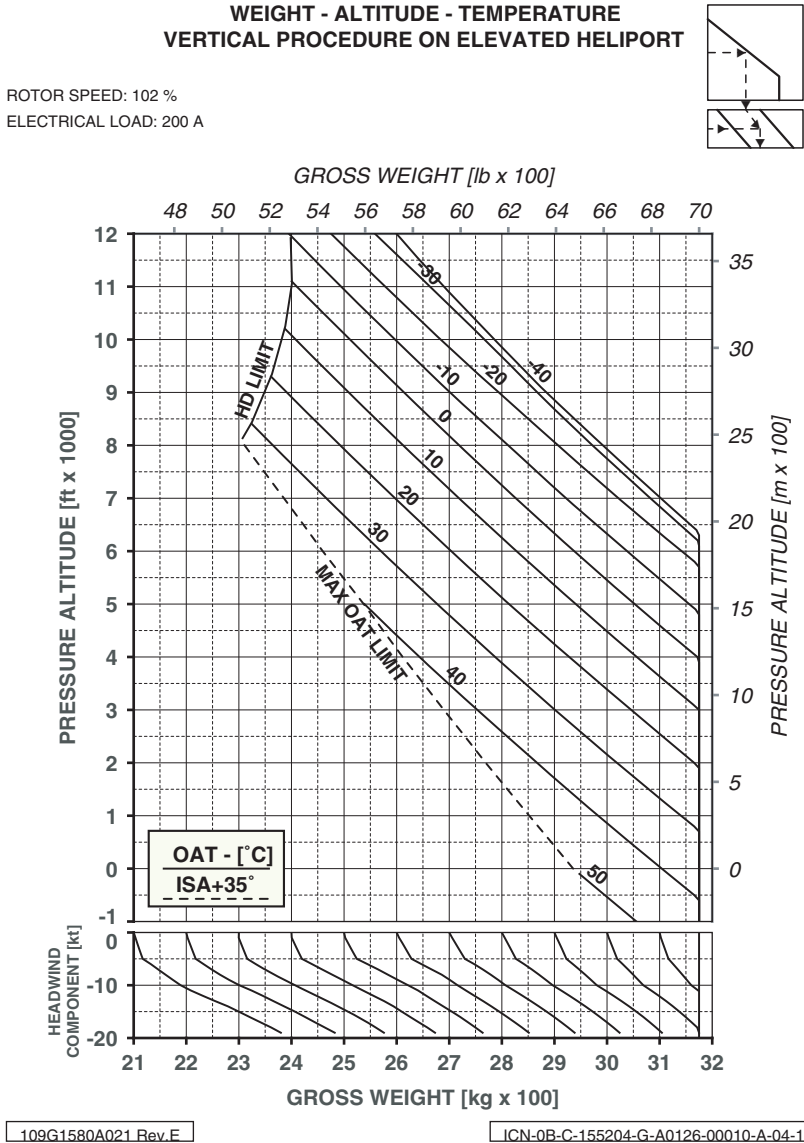
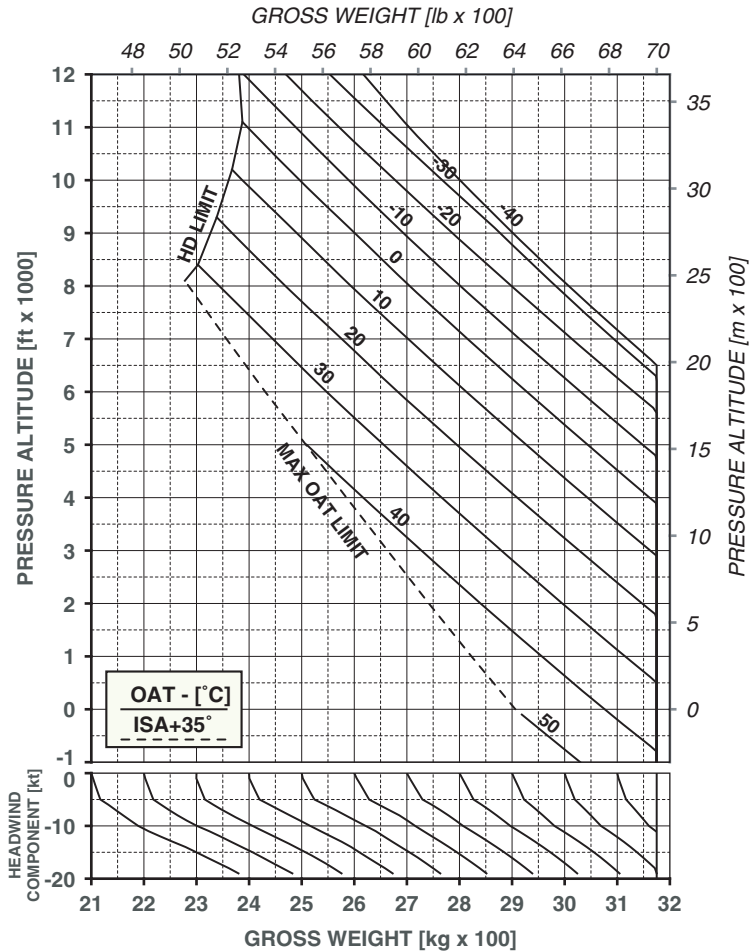


Figure 1D-1 Elevated Heliport/Helideck Vertical Take-Off and Landing Procedure - WAT

**WEIGHT - ALTITUDE - TEMPERATURE
VERTICAL PROCEDURE ON ELEVATED HELIPORT**

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: OFF



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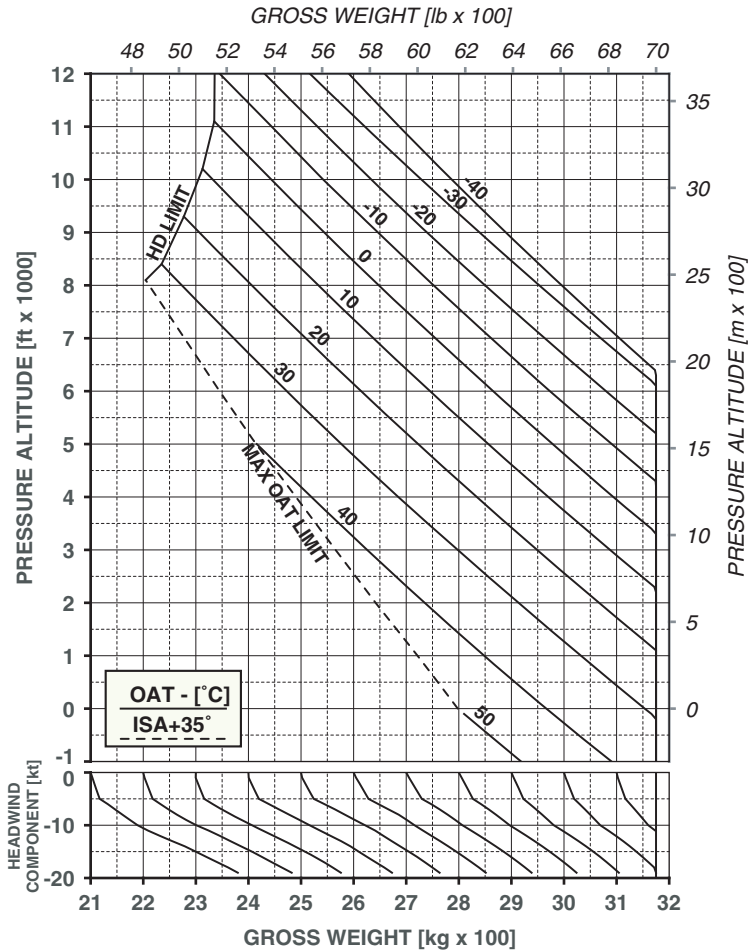
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Figure 1D-2 Elevated Heliport/Helideck Vertical Take-Off and Landing Procedure - WAT - EAPS OFF

WEIGHT - ALTITUDE - TEMPERATURE
VERTICAL PROCEDURE ON ELEVATED HELIPORT

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: ON



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Figure 1D-3 Elevated Heliport/Helideck Vertical Take-Off and Landing Procedure - WAT - EAPS ON

SECTION 2D - NORMAL PROCEDURES

TAKE-OFF

TAKE-OFF DECISION POINT (TDP)

Height..... 35 ft (10.6 m) ATS

CONTINUED TAKE-OFF (CTO)

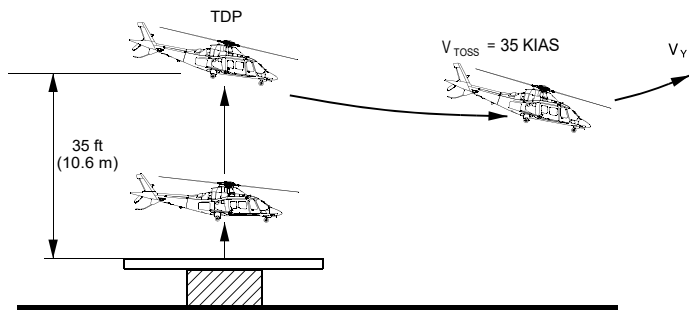
Minimum height during CTO 0 ft ATS

Note

The heights shown in flight path profiles refer to radio altimeter.

For Elevated Heliport/Helideck, refer to Barometric altimeter.

VERTICAL TAKE-OFF FROM ELEVATED HELIPORT/HELIDECK



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**Figure 2D-1 Vertical Take-Off Profile
(Elevated Heliport/Helideck)**



The engines are degraded in performance with EAPS OFF or ON (if installed).

Note

Take-Off shall be performed not farther than 7.5 m (25 ft) from heliport/helideck edge to assure 15 ft (4.5 m) safety clearance from this in case of engine failure.

1. Collective	— MPOG.
2. TQ LIM pushbutton	— Verify FADEC limiter function enabled or push. Check LIM-ITER ON advisory message displayed.
3. Nose wheel lock	— ON.
4. Parking brake	— ON. Check PARK BRK ON message displayed.
5. Warning and Caution messages	— Check none.
6. NR switch	— AUTO.
7. Radio altimeter	— Check between 0 ft and 5 ft.
8. External lights	— As required.
9. Take-Off area	— Check clear.
10. Collective	— Increase to hover at approximately 3 ft (1 m) ATS.
11. N2/NR	— Check stabilized at 102%.
12. Altimeter	— Note pressure altitude.

13. ADIs — Select HRZ SYNC in PFD MENU.
Press HS ON to indicate zero (0 deg) pitch.
14. Collective/cyclic — Apply as necessary to increase TRQ on each engine by $20 \pm 5\%$ above that required to hover.
15. Take-Off Decision Point (TDP) — At TDP 35 ft (10.6 m) ATS select up to Take-Off power and simultaneously rotate through 10 deg nose down attitude.
16. Acceleration/Climb — When the helicopter achieves V_{TOSS} (35 KIAS) reduce nose down attitude and, maintaining collective position, continue the acceleration until V_y .
17. Landing gear lever — UP (not below 200 ft).
MAIN UTIL CHRGR caution message is displayed during landing gear retraction, then clears when landing gear is locked.
Confirm landing gear is up and locked (3 green lights and red light extinguished).
18. N2/NR — Confirm N2/NR stabilizes at 100%.
19. Climb — Continue climb at V_y up to 1000 ft ATS.
20. At 1000 ft ATS — Adjust collective and cyclic for cruise altitude and air-speed as required.

21. Parking brake — OFF.
Check PARK BRK ON message not displayed.
22. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

APPROACH AND LANDING

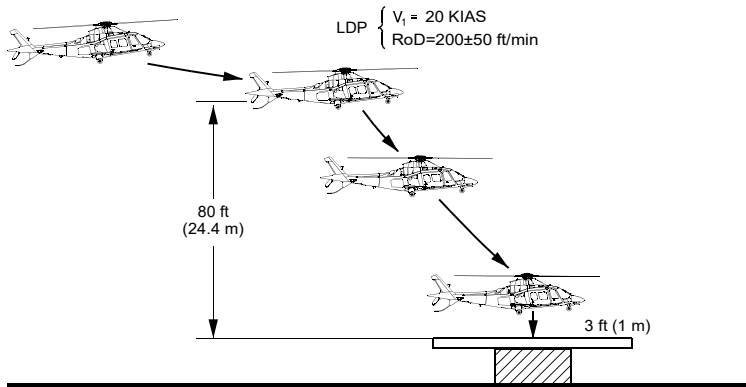
LANDING DECISION POINT (LDP)

LDP height 80 ft (24.4 m) ALS
Airspeed 20 KIAS
Rate of Descent 200 ± 50 ft/min

Note

The heights shown in flight path profiles refer to radio altimeter.
For Elevated Heliport/Helideck, refer to Barometric altimeter.

ELEVATED HELIPORT/HELIDECK APPROACH AND LANDING PROCEDURE



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**Figure 2D-2 Normal Landing Profile
(Elevated Heliport/Helideck)**

CAUTION

The engines are degraded in performance with EAPS OFF or ON (if installed).

1. Altimeter	— Set QNH (Landing surface elevation should be known).
2. ADIs	— Cross-check.
3. NR Switch	— Check set to AUTO
4. Landing gear lever	— DOWN. MAIN UTIL CHRG caution message is displayed during landing gear extension, then clears when landing gear is locked. Confirm landing gear is down and locked (3 green lights illuminated, red light extinguished).
5. TQ LIM pushbutton	— Verify FADEC limiter function enabled or push. Check LIMITER ON advisory message displayed.
6. N2/NR	— Below 75 KIAS confirm N2/NR stabilizes at 102%.
7. Nose wheel lock	— ON.
8. Parking brake	— ON. Check PARK BRK ON message displayed.
9. External lights	— As required.

EAPS (if installed):

- 10. EAPS 1 and EAPS 2 switches — As required.
- 11. Approach path — Initiate the approach to pass through the LDP above the landing site with an airspeed of 20 KIAS (maintaining a positive forward speed) and with a rate of descent not higher than 200 ± 50 ft/min. Keep the far right hand corner of the helipad in sight during the landing.
- 12. Landing — From LDP, gradually decelerate and decrease the rate of descent to achieve a hover at approximately 3 ft (1 m) ALS. Descend vertically to land.
- 13. Parking Brake — As required.
- 14. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SECTION 3D - EMERGENCY AND MALFUNCTION PROCEDURES

GENERAL

The procedures detailed in this section only consider the failure of one engine in the Take-Off/Landing path and assume the pilot gives first priority to helicopter control to achieve a safe flight path.

For all Take-Off procedures the following shall be observed:

1. Engine failure prior to TDP — Recognition of engine failure prior to the TDP dictates that the Take-Off has to be rejected.
2. Engine failure at or after TDP — Recognition of the failure at or after the TDP dictates that the Take-Off has to be continued.

For all Landing procedures the following shall be observed:

1. Engine failure prior to LDP — If an engine failure is recognised prior to the LDP, the pilot may elect either to conduct a Balked Landing or to continue the Landing OEI.
2. Engine failure at or after LDP — Recognition of the engine failure at or after the LDP dictates that the Landing has to be continued.

Procedures dealing with subsequent Failure/Malfunctions, other than engine failure, must be initiated only after the helicopter control and a safe flight/ground condition have been obtained. The procedures for the emergency/malfunction can be followed according to the appropriate instructions detailed in Section 3 of the basic Rotorcraft Flight Manual.

EMERGENCY PROCEDURES FOR SINGLE ENGINE FAILURE DURING TAKE-OFF

SINGLE ENGINE FAILURE RECOGNIZED IN HOVER (3 FT ATS)

1. Collective — Adjust as required to land and cushion touchdown.
2. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
3. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
4. Parking brake — As required.
5. LDG LT and SCHLT (if used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED IN CLIMB, PRIOR TO TDP (REJECTED TAKE-OFF)

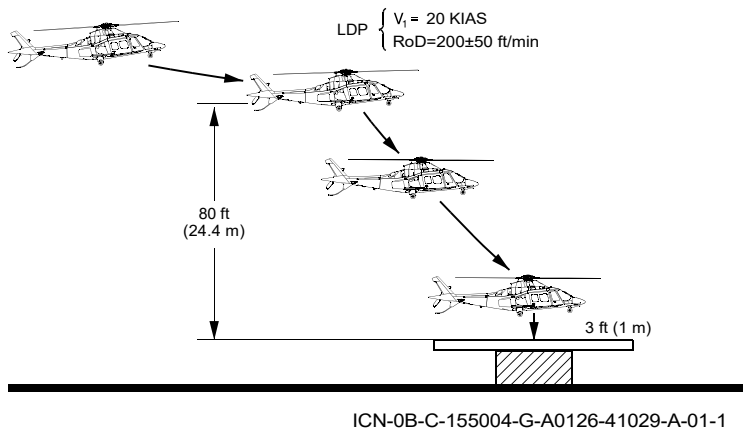
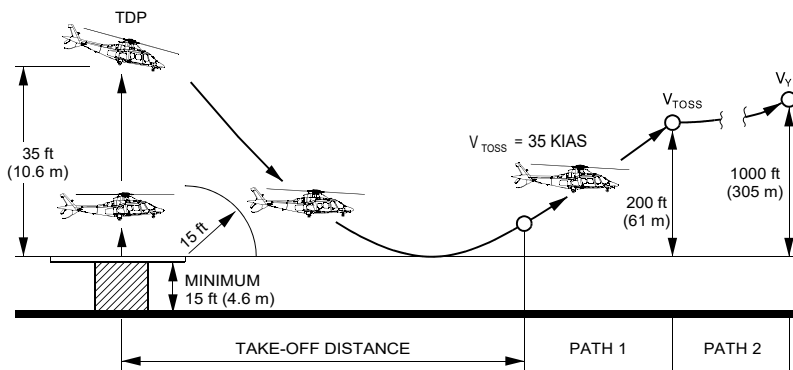


**Figure 3D-1 Rejected Vertical Take-Off
(Elevated Heliport/Helideck)**

1. Rejected Take-off manoeuvre — Adjust collective to maintain the rotor speed between 98% and 100% NR and descend vertically.
Adjust pitch and roll attitude as required to maintain descent over the heliport.
2. Touchdown — At approximately 5 - 10 ft ATS, increase collective to cushion landing.
3. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
4. Parking brake — As required.
5. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED AT OR AFTER TDP (CONTINUED TAKE-OFF)



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**Figure 3D-2 Continued Vertical Take-Off OEI
(Elevated Heliport/Helideck)**

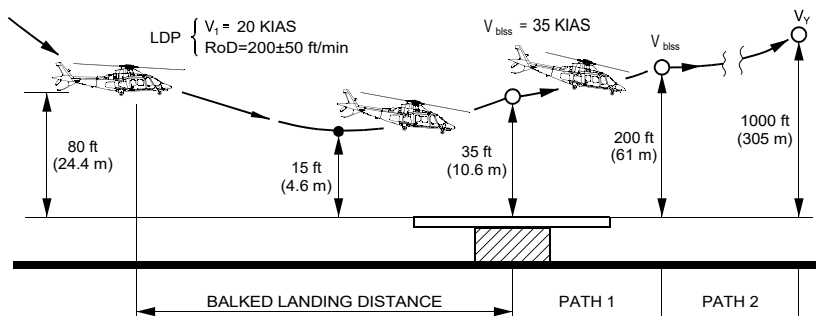
Note

During the continued Take-Off manoeuvre this procedure ensures that the helicopter will have adequate height not to drop below the Take-Off surface and will clear the heliport/helideck by not less than 15 ft (4.6 m) provided that the Take-Off is performed not farther than 7.5 m (25 ft) from the heliport/helideck forward edge.

1. Collective/Cyclic control — Rotate nose down to a maximum of 25 deg indicated to obtain forward speed. Maintain collective to droop NR to 92% - 90%.
2. Acceleration/climb — Adjust pitch attitude to stop the descent and continue the acceleration up to V_{TOSS} (35 KIAS).
3. Climb — As the speed approaches V_{TOSS} (35 KIAS) and a positive rate of climb, reduce nose down attitude and lower collective to recover NR. Climb at V_{TOSS} using OEI 2.5 min power up to 200 ft (61 m) ATS.
4. 200 ft ATS — Accelerate to V_Y .
5. Landing gear lever — UP (not below 200 ft).
6. N2/NR — Confirm N2/NR stabilizes at 100%.
7. Climb — Climb to 1000 ft ATS reducing power to continuous OEI when convenient, in any case before expiry of the 2.5 minute rating time.
8. At 1000 ft ATS — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
9. Parking brake — OFF.
Confirm PARK BRK ON message not displayed.
10. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

EMERGENCY PROCEDURE FOR SINGLE ENGINE FAILURE DURING LANDING

SINGLE ENGINE FAILURE DURING LANDING PRIOR TO LDP (BALKED LANDING)



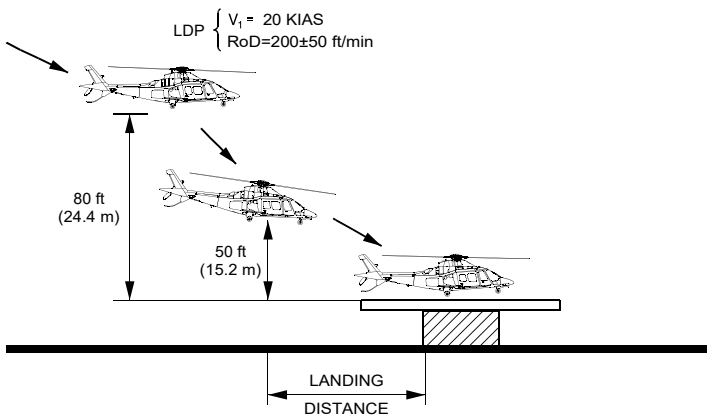
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**Figure 3D-3 Balked Landing
(Elevated Heliport/Helideck)**

1. Collective/cyclic
 - Apply collective to set OEI 2.5 min power and to droop NR not lower than 90%, adopt a 10 deg nose down attitude change to initiate an acceleration to V_{BLSS} (35 KIAS).
2. Climb
 - When the helicopter achieves V_{BLSS} (35 KIAS) and a positive rate of climb. Reduce nose down attitude and lower collective to recover rotor speed. Continue climb to 200 ft ALS with OEI 2.5 min power.
3. At 200 ft ALS
 - Accelerate to V_y .

4. Landing gear lever — UP (not below 200 ft).
5. N2/NR — Confirm N2/NR stabilizes at 100%.
6. Climb — Climb to 1000 ft ATS reducing power to continuous OEI when convenient, in any case before expiry of the 2.5 minute rating time.
7. At 1000 ft ALS — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
8. Parking brake — OFF.
Check PARK BRK ON message not displayed.
9. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED AT OR AFTER LDP (OEI LANDING)



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**Figure 3D-4 OEI Landing
(Elevated Heliport/Helideck)**

1. Collective — As necessary to maintain NR.
2. OEI landing manoeuvre — If the failure occurs at or above 50 ft (15.2 m) ALS, adopt a 15 deg nose down attitude change to obtain forward speed, and approach the landing site.

If the failure occurs below 50 ft (15.2 m) ALS, slightly push over the cyclic to bring the helicopter back to the ground.

Maintain visual contact with the right hand corner of the landing site at all times.

Perform flare and level helicopter to establish the minimum ground speed.
3. Touchdown — After touchdown, centralize the cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
4. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
5. Parking brake — As required.
6. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SECTION 4D - PERFORMANCE DATA

ELEVATED HELIPORT/HELIDECK SIZE

Minimum demonstrated heliport/helideck size 15 m x 15 m
(50 ft x 50 ft)

TAKE-OFF AND LANDING DISTANCES

Continued Take-Off (CTO) Distance 160 m (525 ft)
One Engine Inoperative (OEI) Landing Distance 100 m (328 ft)
Balked Landing Distance 160 m (525 ft)

TAKE-OFF FLIGHT PATH 1 AND PATH 2

Refer to [Section 4 - Performance Data](#) in Common Data.

CLIMB PERFORMANCE

SINGLE ENGINE RATE OF CLIMB AT V_Y

The ROC at V_Y and MCP OEI, is unchanged from the basic Rotorcraft Flight Manual or the applicable supplement if the EAPS is installed.

PART E

GROUND LEVEL HELIPORT VERTICAL PROCEDURE

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PART E

GROUND LEVEL HELIPORT VERTICAL PROCEDURE

SECTION 1E - LIMITATIONS

WEIGHT LIMITATIONS

The maximum Gross Weight for Take Off and Landing CAT A operations, Ground Level Heliport Vertical Procedure, is provided in the following figures:

Weight Limitation, Take-Off	Figure 1E-1
Weight Limitation, Take-Off - EAPS OFF	Figure 1E-2
Weight Limitation, Take-Off - EAPS ON	Figure 1E-3
Weight Limitation, Landing.....	Figure 1E-5
Weight Limitation, Landing - EAPS OFF	Figure 1E-5
Weight Limitation, Landing - EAPS ON.....	Figure 1E-6

GROUND SPEED LIMITATIONS

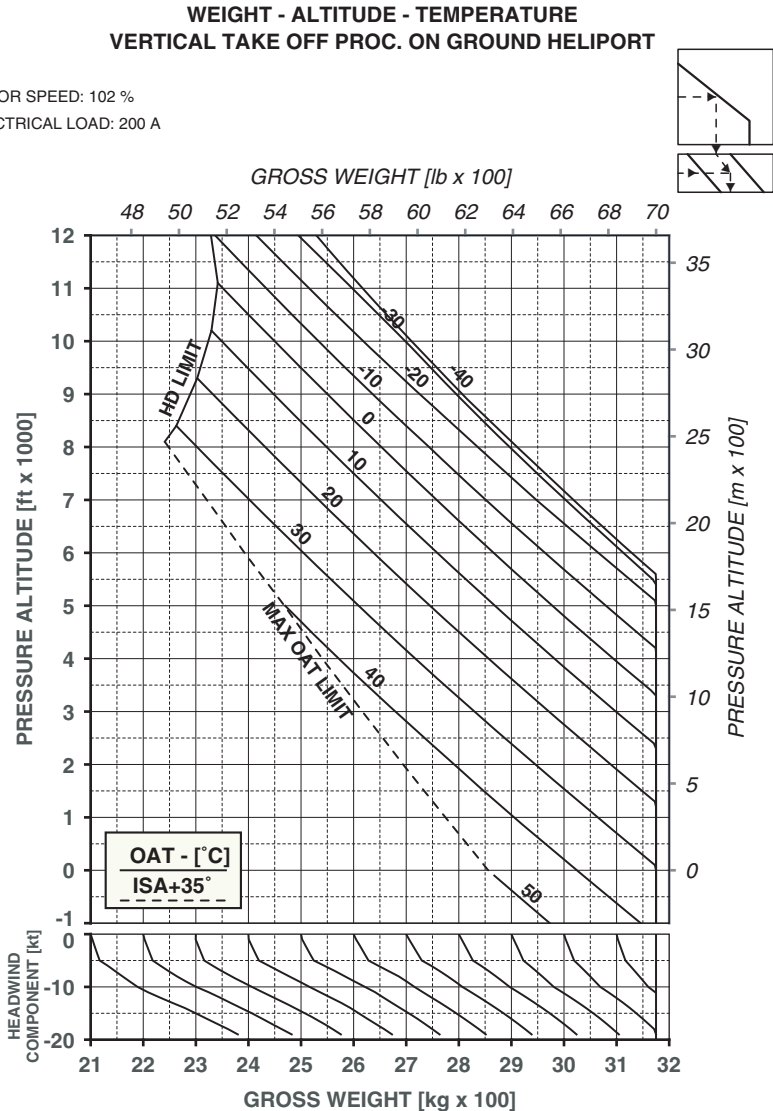
Maximum Touchdown Speed with Parking brake ON 5 kts

TAKE OFF AND LANDING LIMITATIONS FOR OPERATIONS ON NARROW HELIPORT/HELIDECK

All Take-offs and landings shall be carried out along the longer axis of the heliport/helideck.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).



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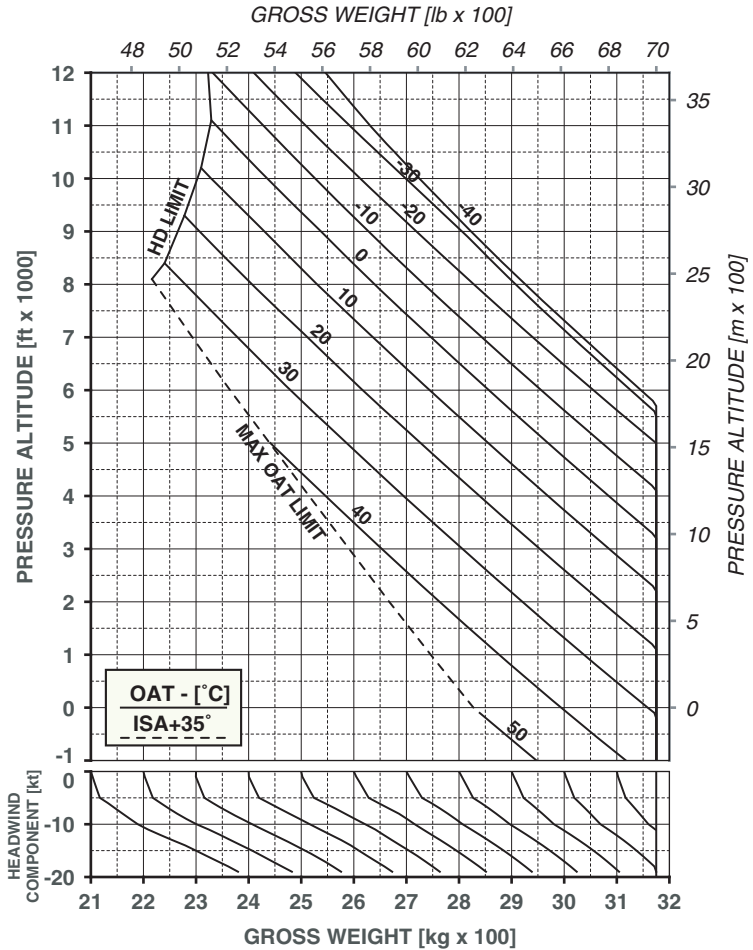
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Figure 1E-1 Ground Level Heliport Vertical Take-Off Procedure
- WAT

**WEIGHT - ALTITUDE - TEMPERATURE
VERTICAL TAKE OFF PROC. ON GROUND HELIPORT**

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: OFF



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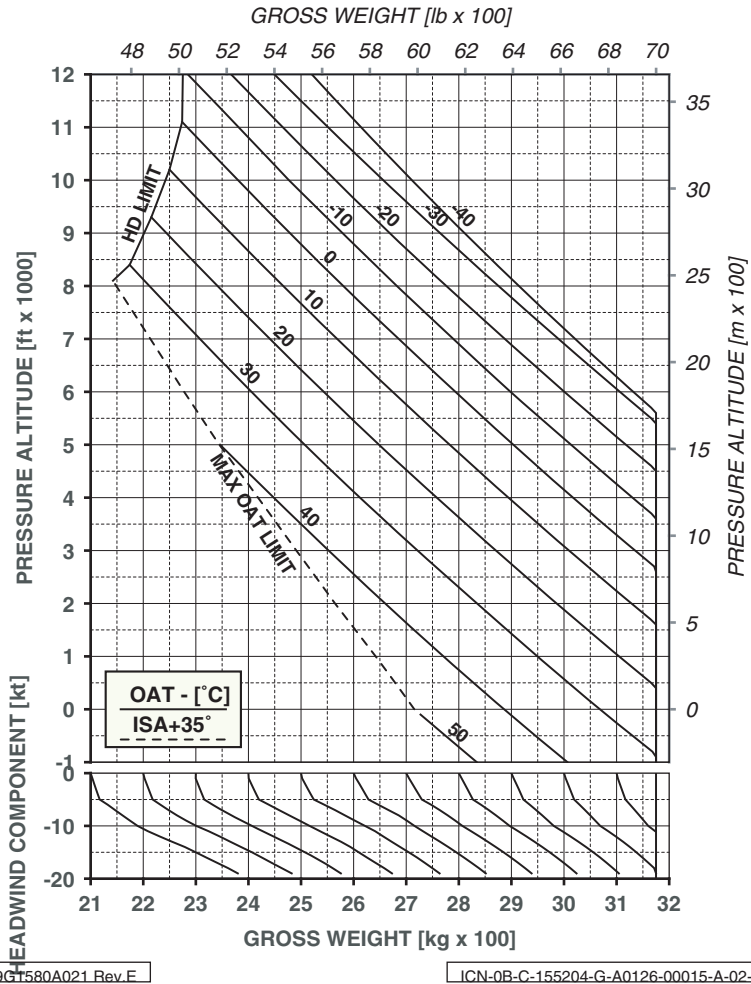
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**Figure 1E-2 Ground Level Heliport Vertical Take-Off Procedure
- WAT - EAPS OFF**

WEIGHT - ALTITUDE - TEMPERATURE
VERTICAL TAKE OFF PROC. ON GROUND HELIPORT

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: ON



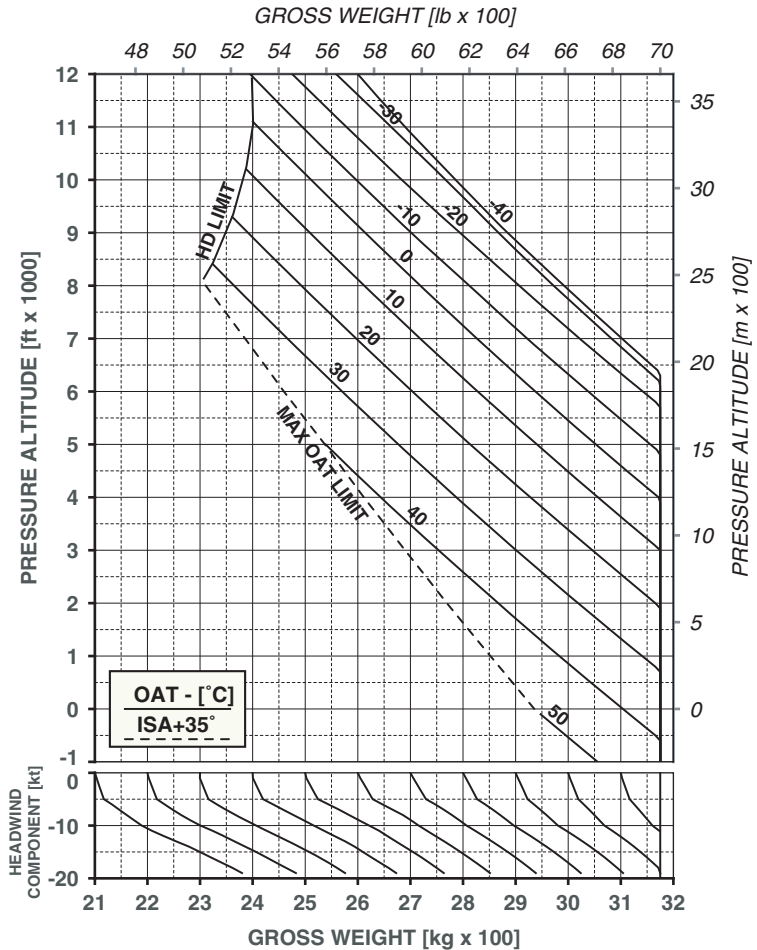
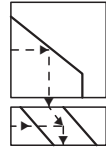
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Figure 1E-3 Ground Level Heliport Vertical Take-Off Procedure
- WAT - EAPS ON

**WEIGHT - ALTITUDE - TEMPERATURE
LANDING PROCEDURE ON GROUND HELIPORT**

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A



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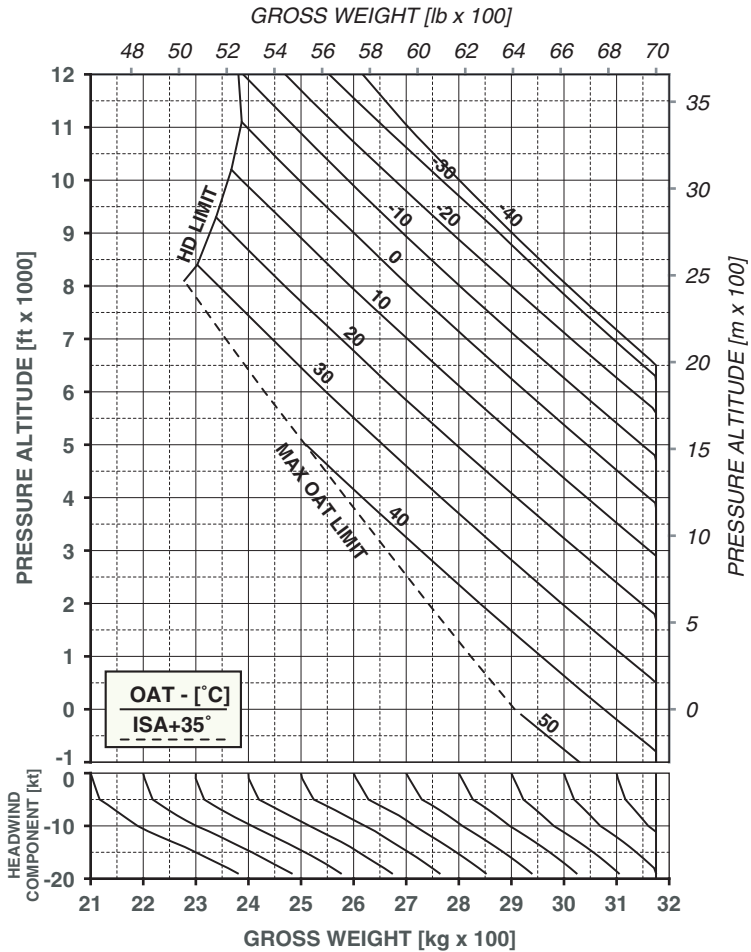
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**Figure 1E-4 Ground Level Heliport Landing Procedure
- WAT**

WEIGHT - ALTITUDE - TEMPERATURE
LANDING PROCEDURE ON GROUND HELIPORT

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: OFF



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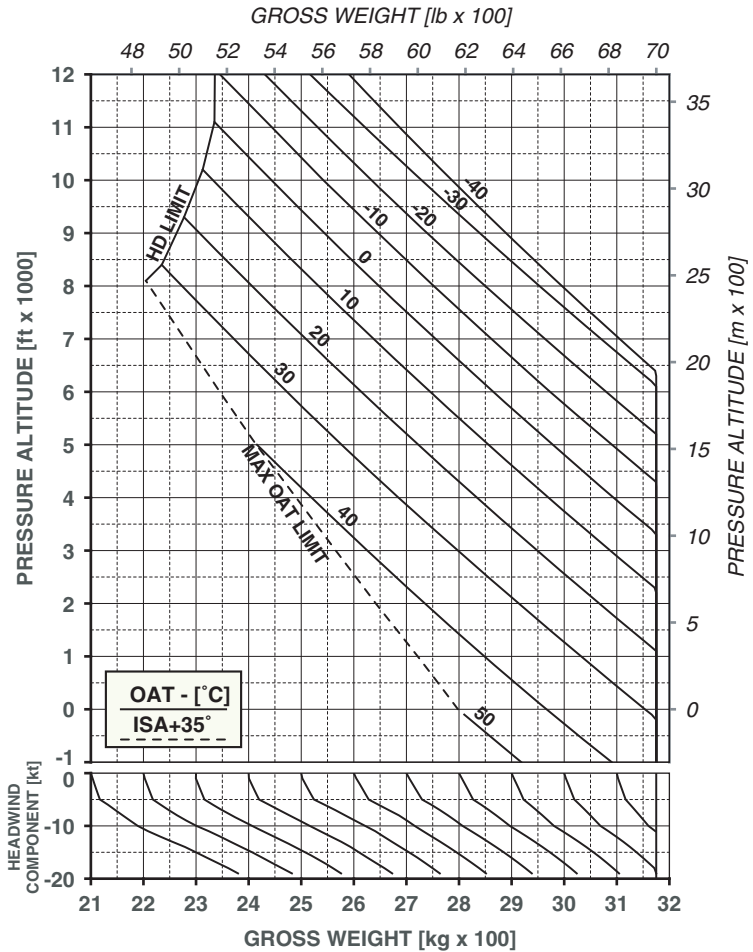
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Figure 1E-5 Ground Level Heliport Landing Procedure
- WAT - EAPS OFF

**WEIGHT - ALTITUDE - TEMPERATURE
LANDING PROCEDURE ON GROUND HELIPORT**

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: ON



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**Figure 1E-6 Ground Level Heliport Landing Procedure
- WAT - EAPS ON**

SECTION 2E - NORMAL PROCEDURES

TAKE-OFF

TAKE-OFF DECISION POINT (TDP)

Extended TDP (TDP_E) height..... 35 ft to 70 ft ATS
..... (10.6 m to 21.3 m ATS)

CONTINUED TAKE-OFF

Minimum height during CTO TDP_E - 20 ft ATS

Note

The heights shown in flight path profiles refer to radio altimeter.

VERTICAL TAKE-OFF FROM GROUND LEVEL HELIPORT/HELIDECK

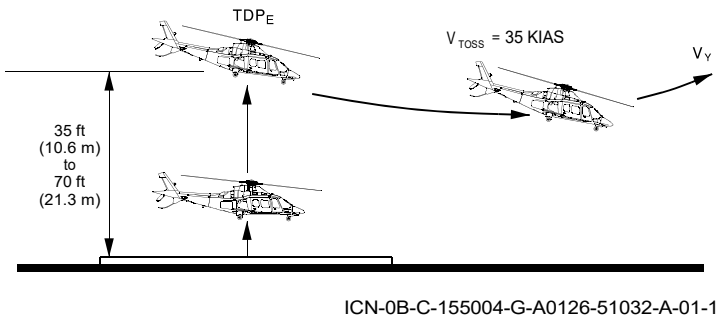


Figure 2E-1 Vertical Take-Off Profile
(Ground Level Heliport/Helideck)

CAUTION

The engines are degraded in performance with EAPS OFF or ON (if installed).

1. Collective	— MPOG.
2. TQ LIM pushbutton	— Verify FADEC limiter function enabled or push. Check LIMITER ON advisory message displayed.
3. Nose wheel lock	— ON.
4. Parking brake	— ON. Check PARK BRK ON message displayed.
5. Warning and Caution messages	— Check none.
6. NR switch	— AUTO.
7. Radio altimeter	— Check between 0 ft and 5 ft.
8. External lights	— As required.
9. Take-Off area	— Check clear.
10. Collective	— Increase to hover at approximately 3 ft (1 m) ATS.
11. N2/NR	— Check stabilized at 102%.
12. Altimeter	— Note pressure altitude.

- 13. ADIs
 - Select HRZ SYNC in PFD MENU.
Press HS ON to indicate zero (0 deg) pitch.
- 14. Collective/cyclic
 - Apply as necessary to increase TRQ on each engine by $20 \pm 5\%$ above that required to hover.
- 15. Extended TDP (TDP_E)
 - At required TDP_E height, select up to Take-Off power and rotate through 10 deg indicated nose down attitude simultaneously.
- 16. Acceleration/Climb
 - When the helicopter achieves V_{TOSS} (35 KIAS) reduce nose down attitude and, maintaining collective position, continue the acceleration until V_y .
- 17. Landing gear lever
 - UP (not below 200 ft).
MAIN UTIL CHRGR caution message is displayed during landing gear retraction, then clears when landing gear is locked.
Confirm landing gear is up and locked (3 green lights and red light extinguished).
- 18. N2/NR
 - Confirm N2/NR stabilizes at 100%.
- 19. Climb
 - Continue climb at V_y up to 1000 ft ATS.

- 20. At 1000 ft ATS — Adjust collective and cyclic for cruise altitude and airspeed as required.
- 21. Parking brake — OFF.
Check PARK BRK ON message not displayed.
- 22. LDG LT and SCHLT (if used) — Respectively OFF and STOW.

APPROACH AND LANDING

LANDING DECISION POINT (LDP)

LDP height 80 ft (24.4 m) ALS

Airspeed 20 KIAS

Rate of Descent 200 ± 50 ft/min

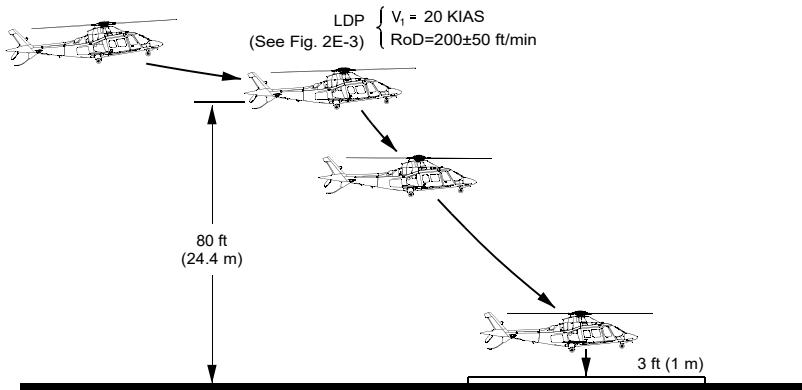
Note

No variable LDP has been defined as the
Balked Landing distance always ends
before or over the heliport.

Note

The heights shown in flight path profiles
refer to radio altimeter.

GROUND LEVEL HELIPORT/HELIDECK APPROACH AND
LANDING PROCEDURE



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Figure 2E-2 Normal Landing Profile
(Ground Level Heliport/Helideck)

CAUTION

The engines are degraded in performance with EAPS OFF or ON (if installed).

1. Altimeter	— Set QNH (Landing surface elevation should be known).
2. ADIs	— Cross-check.
3. NR Switch	— Check set to AUTO
4. Landing gear lever	— DOWN. MAIN UTIL CHRGR caution message is displayed during landing gear extension, then clears when landing gear is locked. Confirm landing gear is down and locked (3 green lights illuminated, red light extinguished).
5. TQ LIM pushbutton	— Verify FADEC limiter function enabled or push. Check LIMITER ON advisory message displayed.
6. N2/NR	— Below 75 KIAS confirm N2/NR stabilizes at 102%.
7. Nose wheel lock	— ON.
8. Parking brake	— ON. Check PARK BRK ON message displayed.
9. External lights	— As required.

EAPS (if installed):

- 10. EAPS 1 and EAPS 2 switches — As required.
- 11. Approach path — Initiate the approach to pass through the LDP above the landing site with an airspeed of 20 KIAS (maintaining a positive forward speed) and with a rate of descent not higher than 200 ± 50 ft/min. Keep the far right hand corner of the helipad in sight during the landing.
- 12. Landing — From LDP, gradually decelerate and decrease the rate of descent to achieve a hover at approximately 3 ft (1 m) ALS. Descend vertically to land.
- 13. Parking Brake — As required.
- 14. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SECTION 3E - EMERGENCY AND MALFUNCTION PROCEDURES

GENERAL

The procedures detailed in this section only consider the failure of one engine in the Take-Off/Landing path and assume the pilot gives first priority to helicopter control to achieve a safe flight path.

For all Take-Off procedures the following shall be observed:

1. Engine failure prior to TDP — Recognition of engine failure prior to the TDP dictates that the Take-Off has to be rejected.
2. Engine failure at or after TDP — Recognition of the failure at or after the TDP dictates that the Take-Off has to be continued.

For all Landing procedures the following shall be observed:

1. Engine failure prior to LDP — If an engine failure is recognised prior to the LDP, the pilot may elect either to conduct a Balked Landing or to continue the Landing OEI.
2. Engine failure at or after LDP — Recognition of the engine failure at or after the LDP dictates that the Landing has to be continued.

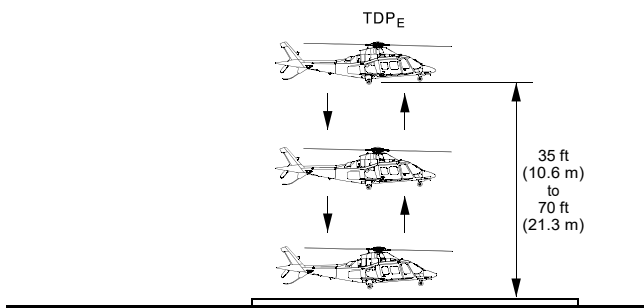
Procedures dealing with subsequent Failure/Malfunctions, other than engine failure, must be initiated only after the helicopter control and a safe flight/ground condition have been obtained. The procedures for the emergency/malfunction can be followed according to the appropriate instructions detailed in Section 3 of the basic Rotorcraft Flight Manual.

EMERGENCY PROCEDURES FOR SINGLE ENGINE FAILURE DURING TAKE-OFF

SINGLE ENGINE FAILURE RECOGNIZED IN HOVER (3 FT ATS)

1. Collective — Adjust as required to land and cushion touchdown.
2. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
3. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
4. Parking brake — As required.
5. LDG LT and SCHLT (if used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED IN CLIMB PRIOR TO TDP (REJECTED TAKE-OFF)

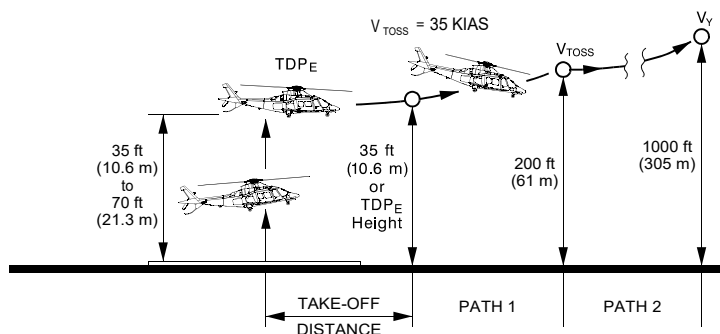


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**Figure 3E-1 Rejected Vertical Take-Off
(Ground Level Heliport/Helideck)**

1. Rejected Take-off manoeuvre — Adjust collective to maintain the rotor speed between 98% and 100% NR and descend vertically.
Adjust pitch and roll attitude as required to maintain descent over the heliport.
2. Touchdown — At approximately 5 - 10 ft ATS, increase collective to cushion landing.
3. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
4. Parking brake — As required.
5. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED AT OR AFTER TDP (CONTINUED TAKE-OFF)



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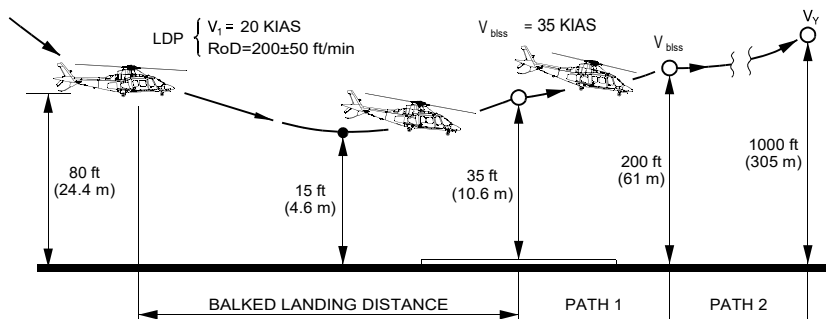
**Figure 3E-2 Continued Vertical Take-Off OEI
(Ground Level Heliport/Helideck)**

1. Collective/Cyclic control
 - Maintain collective to droop NR. Around 98% NR rotate nose down approximately 25 deg indicated. Accelerate to V_{TOSS} (35 KIAS) using OEI 2.5 min power and adjust collective to maintain rotor droop within 92% - 90% NR.
2. Acceleration/climb
 - Adjust pitch attitude to stop descent and continue the acceleration up to V_{TOSS} (35 KIAS).
3. Climb
 - As the speed approaches V_{TOSS} (35 KIAS) and a positive rate of climb, reduce nose down attitude and lower collective to recover NR. Climb at V_{TOSS} (35 KIAS) using OEI 2.5 min power up to 200 ft (61 m) ATS.

4. 200 ft ATS	— Accelerate to V_y .
5. Landing gear lever	— UP (not below 200 ft).
6. N2/NR	— Confirm N2/NR stabilizes at 100%.
7. Climb	— Climb to 1000 ft ATS reducing power to continuous OEI when convenient, in any case before expiry of the 2.5 minute rating time.
8. At 1000 ft ATS	— On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure.
9. Parking brake	— OFF. Confirm PARK BRK ON message not displayed.
10. LDG LT and SCHLT (If used)	— Respectively OFF and STOW.

EMERGENCY PROCEDURE FOR SINGLE ENGINE FAILURE DURING LANDING

SINGLE ENGINE FAILURE DURING LANDING PRIOR TO LDP (BALKED LANDING)



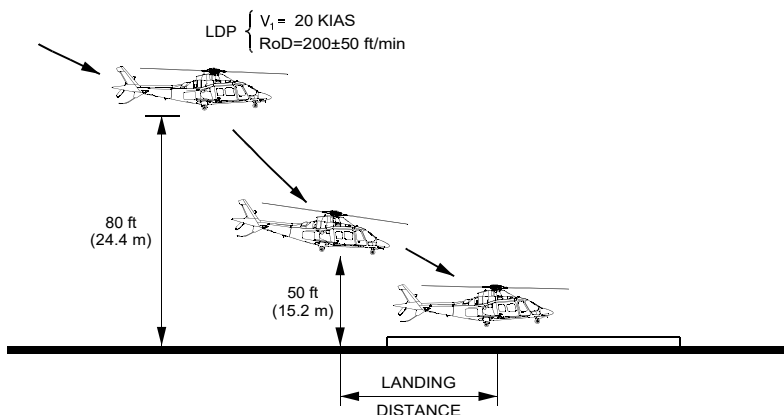
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**Figure 3E-3 Balked Landing
(Ground Level Heliport/Helideck)**

1. Collective/cyclic
 - Apply collective to set OEI 2.5 min power and to droop NR not lower than 90%, adopt a 10 deg nose down attitude change to initiate an acceleration to V_{BLSS} (35 KIAS).
2. Climb
 - When the helicopter achieves V_{BLSS} (35 KIAS) and a positive rate of climb, reduce nose down attitude and lower collective to recover rotor speed. Continue climb to 200 ft ALS with OEI 2.5 min power.
3. At 200 ft ALS
 - Accelerate to V_Y .

4. Landing gear lever — UP (not below 200 ft).
5. N2/NR — Confirm N2/NR stabilizes at 100%.
6. Climb — Climb to 1000 ft ATS reducing power to continuous OEI when convenient, in any case before expiry of the 2.5 minute rating time.
7. At 1000 ft ALS — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
8. Parking brake — OFF.
Check PARK BRK ON message not displayed.
9. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SINGLE ENGINE FAILURE RECOGNIZED AT OR AFTER LDP (OEI LANDING)



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**Figure 3E-4 OEI Landing
(Ground Level Heliport/Helideck)**

1. Collective — As necessary to maintain NR.
2. OEI landing manoeuvre — If the failure occurs at or above 50 ft (15.2 m) ALS, adopt a 15 deg nose down attitude change to obtain forward speed, and approach the landing site.

If the failure occurs below 50 ft (15.2 m) ALS, slightly push over the cyclic to bring the helicopter back to the ground.

Maintain visual contact with the right hand corner of the landing site at all times.

Perform flare and level helicopter to establish the minimum ground speed.
3. Touchdown — After touchdown, centralize the cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes as required.
4. Engine — On affected engine, carry out **ENGINE SHUTDOWN IN AN EMERGENCY** procedure.
5. Parking brake — As required.
6. LDG LT and SCHLT (If used) — Respectively OFF and STOW.

SECTION 4E - PERFORMANCE DATA

GROUND LEVEL HELIPORT/HELIDECK SIZE

Minimum demonstrated heliport/helideck sizes: 15 m x 15 m
(50 ft x 50 ft)

: ... 15 m length x 9 m width
(50 ft length x 30 ft width)

TAKE-OFF AND LANDING DISTANCES

Continued Take-Off (CTO) Distance 160 m (525 ft)

One Engine Inoperative (OEI) Landing Distance 100 m (328 ft)

Balked Landing Distance 160 m (525 ft)

TAKE-OFF FLIGHT PATH 1 AND FLIGHT PATH 2

Refer to [Section 4 - Performance Data](#) in Common Data.

CLIMB PERFORMANCE

SINGLE ENGINE RATE OF CLIMB AT V_Y

The ROC at V_Y and MCP OEI, is unchanged from the basic Rotorcraft Flight Manual or the applicable supplement if the EAPS is installed.

TDP_E FOR OBSTACLE CLEARANCE

[Figure 4E-1](#) demonstrates the process necessary to calculate the TDP_E for an obstacle in the Take-Off Profile inside the CTO distance.

D_{CTO} = Continued Take-Off Distance (m)

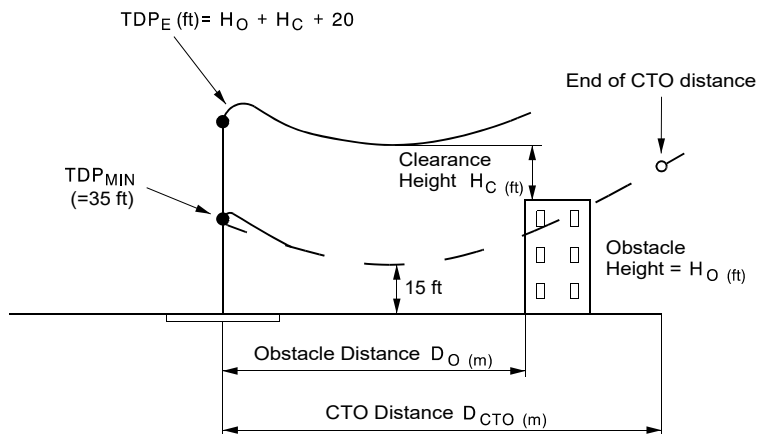
D_O = Distance from Take-Off position to Obstacle (m)

H_O = Height of Obstacle (ft)

H_C = Required clearance height above Obstacle (ft)

TDP_{MIN} = 35 ft ATS

TDP_E FOR OBSTACLE INSIDE THE CTO DISTANCE



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**Figure 4E-1 Obstacle in Vertical Take-Off Profile
(Ground Level Heliport/Helideck)**

A Vertical Take-Off procedure with the TDP_{MIN} of 35 ft ATS would guarantee a minimum height of 15 ft ATS.

The TDP_E required to clear an obstacle positioned inside the CTO distance by the required H_C is:

$$\text{TDP}_E \text{ (ft)} = H_O + H_C + 20 \quad (\text{Maximum TDP}_E = 70 \text{ ft ATS})$$

PART F

NARROW ELEVATED HELIPORT/HELIDECK PROCEDURES

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PART F

NARROW ELEVATED HELIPORT/HELIDECK PROCEDURES

GENERAL

This part is applicable only to elevated heliport/helideck smaller than 15 m x 15 m to a minimum of 15 m length x 9 m width.

The profiles that are allowed to be executed on "narrow elevated heliport/helideck" are only those presented in [Part C](#) and [Part D](#) of this supplement.

SECTION 1F - LIMITATIONS

In this section are presented the additional limitations applicable to the profile presented in [Part C](#) and [Part D](#) of this supplement in case of operations on "narrow elevated heliport/helideck".

WEIGHT LIMITATIONS

The maximum Gross weight for Take Off and Landing CAT A operations on narrow elevated heliport/helideck is provided in the following figures:

- Weight limitation, Take-Off and Landing..... [Figure 1F-1](#)
- Weight limitation, Take-Off and Landing - EAPS OFF..... [Figure 1F-2](#)
- Weight limitation, Take-Off and Landing - EAPS ON [Figure 1F-3](#)

TAKE OFF AND LANDING LIMITATIONS

All Take-offs and landings shall be carried out along the longer axis of the heliport/helideck.

WEIGHT-ALTITUDE-TEMPERATURE Cat.A BACKUP & VERTICAL PROCEDURES on NARROW Elevated Heliport/Helideck

ROTOR SPEED 102%
ELECTRICAL LOAD: 200 A

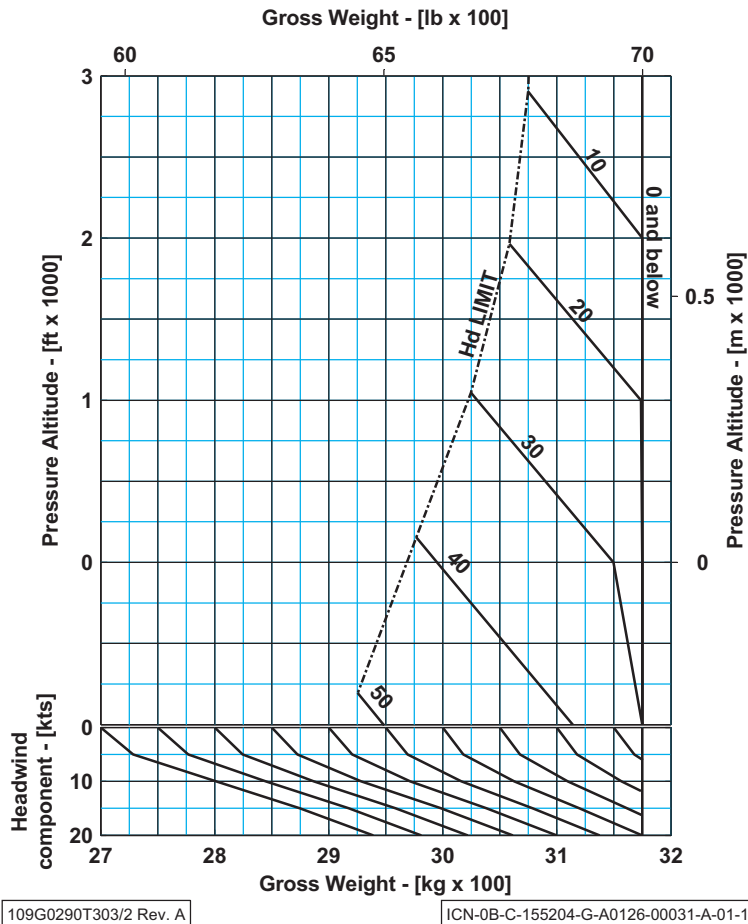


Figure 1F-1 Weight limitation, Take-Off and Landing

WEIGHT-ALTITUDE-TEMPERATURE
Cat.A BACKUP & VERTICAL PROCEDURES on
NARROW Elevated Heliport/Helideck

ROTOR SPEED 102%
ELECTRICAL LOAD: 200 A
EAPS OFF

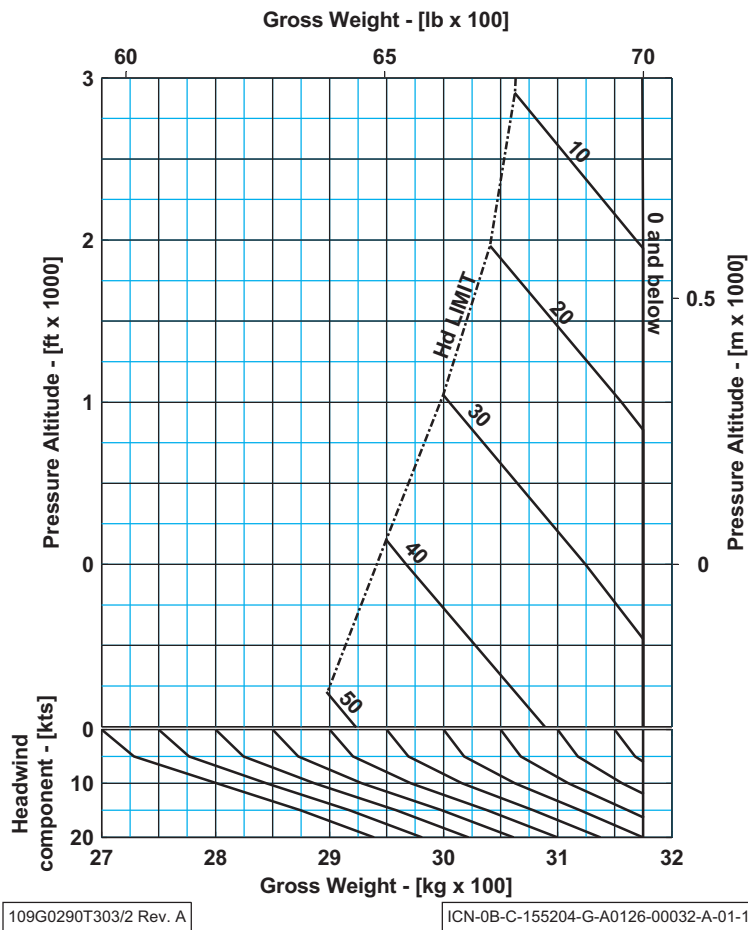


Figure 1F-2 Weight limitation, Take-Off and Landing
- EAPS OFF

WEIGHT-ALTITUDE-TEMPERATURE Cat.A BACKUP & VERTICAL PROCEDURES on NARROW Elevated Heliport/Helideck

ROTOR SPEED 102%
ELECTRICAL LOAD: 200 A
EAPS ON

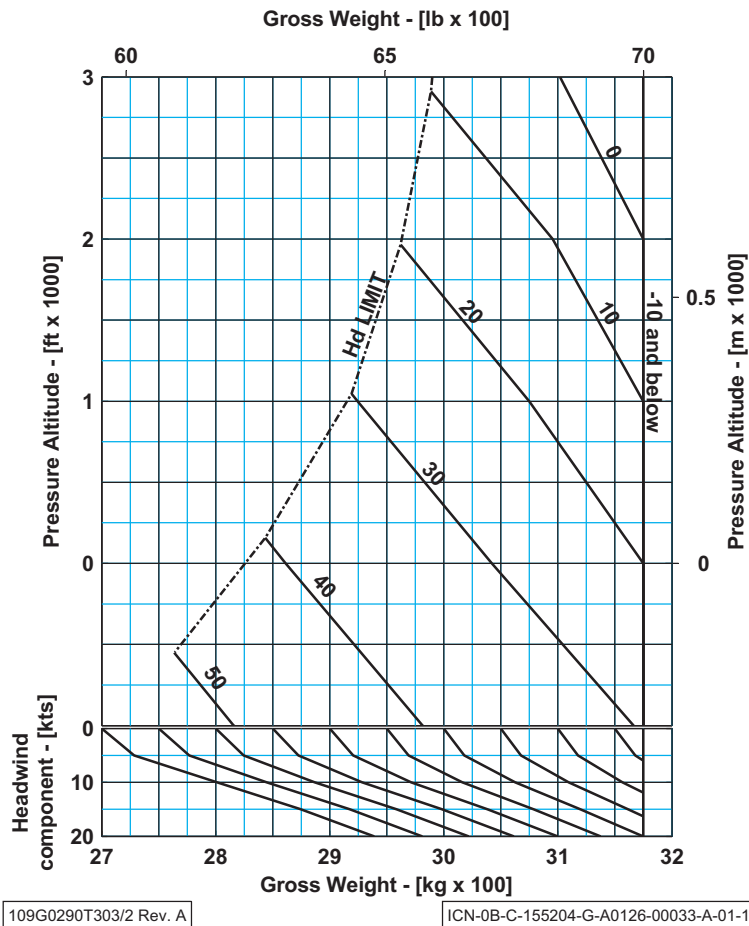


**Figure 1F-3 Weight limitation, Take-Off and Landing
- EAPS ON**

SECTION 2F - NORMAL PROCEDURES

Normal procedures must be carried out by following the same profiles presented in [Part C](#) and [Part D](#) of this supplement.

SECTION 3F - EMERGENCY AND MALFUNCTION PROCEDURES

Emergency and Malfunction procedures must be carried out by following the same profiles presented in [Part C](#) and [Part D](#) of this supplement.

SECTION 4F - PERFORMANCE DATA

Performance information are those presented in [Part C](#) and [Part D](#) of this supplement.

NARROW ELEVATED HELIPORT/HELIDECK SIZE

Minimum demonstrated heliport/helideck size.....15 m lenght x 9 m width
(50 ft lenght x 30 ft width)

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PART G

CATEGORY A TRAINING PROCEDURES

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Figure 4G-1	Take-Off Flight Path 1 - OEI 2.5 Min Power - Gross Weight: 2100 kg (TRAINING).....	214 of 222
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PART G

CATEGORY A TRAINING PROCEDURES

GENERAL

The Category A Training Procedures are supplied to allow Category A Emergency Procedures to be carried out at low Take-Off gross weight and at reduced 'OEI power' in order to conserve engine and transmission life.

To achieve this an engine training mode is incorporated in the engine ECU which simulates an engine failure and the corresponding single engine response and rotor speed characteristics to an engine failure.

Note

To allow the trainee pilot to gain confidence, it is suggested that before the maximum Training Weight is flown, a weight margin is flown during the CAT A technique familiarization/build-up flights (eg. a weight reduction).

A weight margin on the maximum Training Weight is also useful to assess the helicopter performance at lower than maximum CAT A weight.

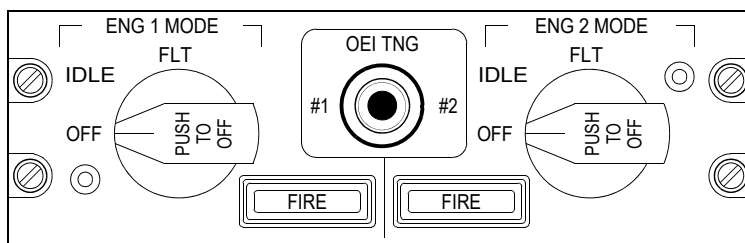
TRAINING MODE DESCRIPTION

The TRAINING mode can be selected through the specific switch OEI TNG on the engine control panel. ([Figure G-1](#))

This is a magnetically latched three position switch and TRAINING mode engagement is only possible if TQ LIM is ON (LIMITER ON advisory message displayed).

In a normal flight condition, the switch must be set to neutral, central position. When the pilot sets the switch to #1 (#2) position, the engine 1(2) is set to TRAINING mode while engine 2(1), governed at $N_2 = 90\%$, is disconnected from the drive system thus allowing “safe” OEI operations. The TRAINING mode is automatically reset by the ECU in case a critical event should occur (see [Section 3G](#)).

The pilot may elect to disengage the TRAINING mode by centering the OEI TNG switch or by pressing the TQ LIM pushbutton on the pilot's collective. Normally, each time the TQ LIM pushbutton is pressed, the torque limiter will change its status (ON/OFF). But if the TRAINING mode is engaged, the single operation of TQ LIM pushbutton will only disengage the TRAINING mode and the torque limiter status will remain on (LIMITER ON advisory message still displayed).



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Figure G-1 OEI TNG Switch on Engine Control Panel

SECTION 1G - LIMITATIONS

AIRCRAFT CONFIGURATION

In addition to the helicopter configuration, for Category A operations, the helicopter must be equipped with both controls P/N 109-0810-01-125.

TYPE OF OPERATIONS

During Category A Training operations, the Enviromental Control System or the Bleed Air Heater must be off.

TRAINING OPERATIONS ON NARROW ELEVATED HELIPORT/HELIDECK

TRAINING operations on Narrow Elevated Heliport/Helideck ([Part F](#)) are prohibited.

FLIGHT CREW

One instructor pilot and one trainee pilot.

WEIGHT LIMITATIONS

The maxium Gross Weight for CAT A opertions, Training, is provided in the following figures:

Clear Area Take-Off and Landing Procedure
- WAT (Training)..... [Figure 1G-1](#)

Clear Area Take-Off and Landing Procedure
- WAT - EAPS OFF (Training)..... [Figure 1G-2](#)

Short Field Take-Off and Landing Procedure
- WAT (Training)..... [Figure 1G-3](#)

Short Field Take-Off and Landing Procedure
- WAT - EAPS OFF (Training)..... [Figure 1G-4](#)

Ground Level and Elevated Heliport/Helideck Back-Up
Take-Off and Landing Procedure - WAT (Training)..... [Figure 1G-5](#)

Ground Level and Elevated Heliport/Helideck Back-Up
Take-Off and Landing Procedure - WAT - EAPS OFF (Training)[Figure 1G-6](#)

Elevated Heliport/Helideck Vertical Take-Off and
Landing Procedure - WAT (Training)..... [Figure 1G-7](#)

Elevated Heliport/Helideck Vertical Take-Off and
Landing Procedure - WAT - EAPS OFF (Training)..... [Figure 1G-8](#)

Ground Level Heliport Vertical Take-Off
Procedure - WAT (Training)..... [Figure 1G-9](#)

Ground Level Heliport Vertical Take-Off
Procedure - WAT - EAPS OFF (Training)..... [Figure 1G-10](#)

Ground Level Heliport Landing Procedure
- WAT (Training) [Figure 1G-11](#)

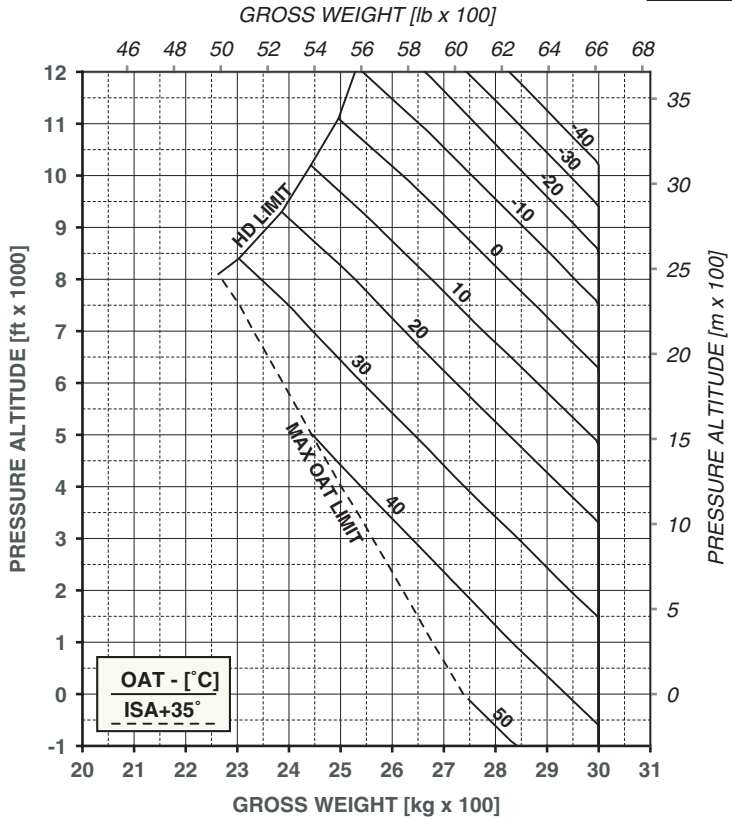
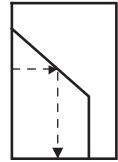
Ground Level Heliport Landing Procedure
- WAT - EAPS OFF (Training)..... [Figure 1G-12](#)



The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

WEIGHT - ALTITUDE - TEMPERATURE
CLEAR AREA
TRAINING

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A



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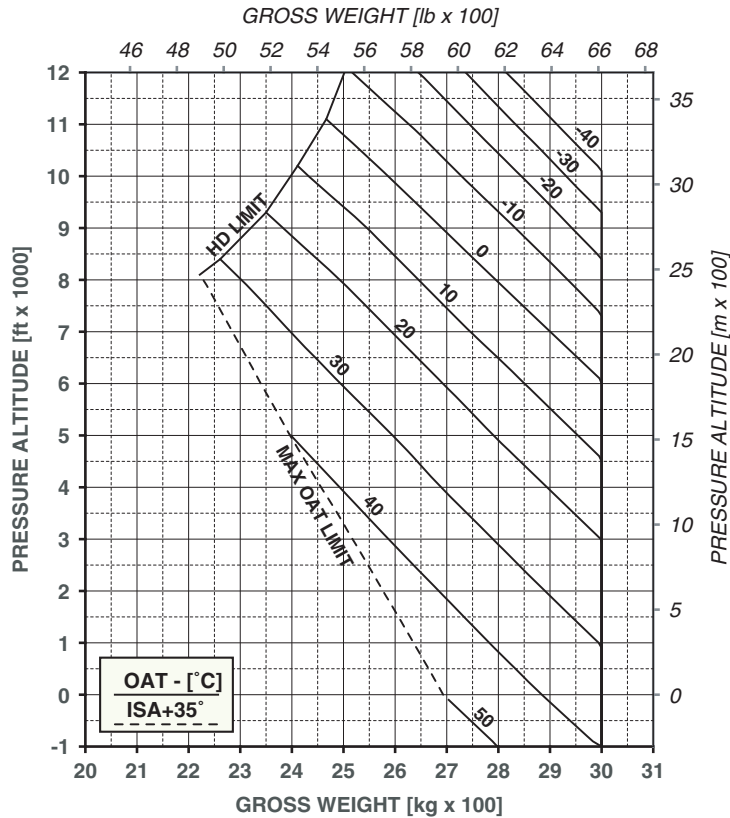
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Figure 1G-1 Clear Area Take-Off and Landing Procedure
- WAT (Training)

WEIGHT - ALTITUDE - TEMPERATURE
CLEAR AREA
TRAINING

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: OFF



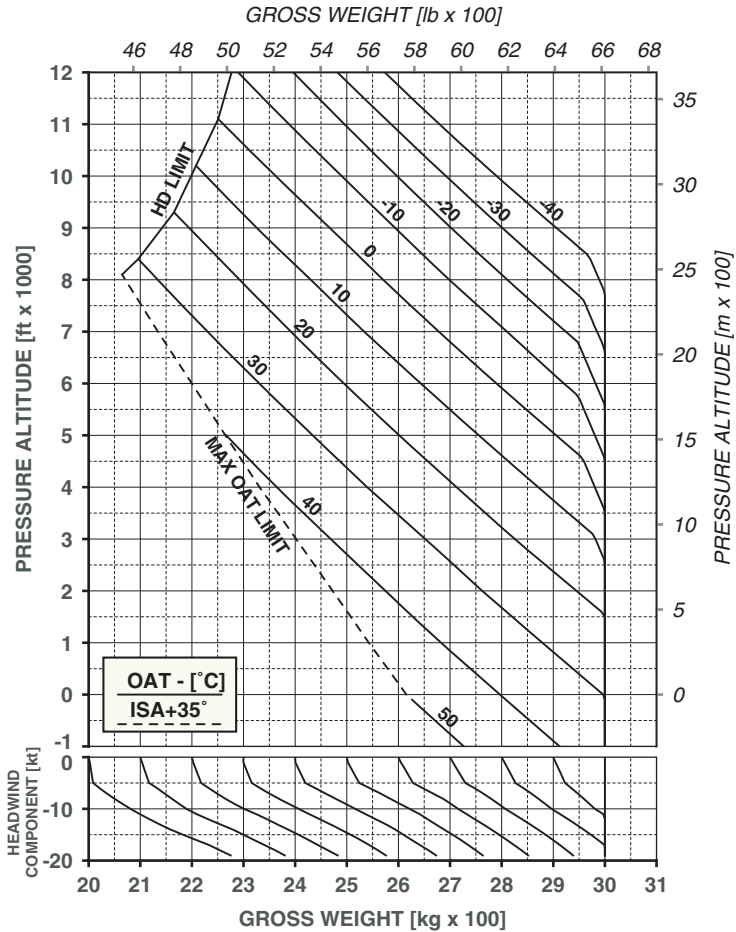
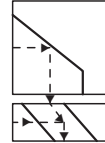
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Figure 1G-2 Clear Area Take-Off and Landing Procedure
- WAT - EAPS OFF (Training)

WEIGHT - ALTITUDE - TEMPERATURE
SHORT FIELD
TRAINING

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A



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Figure 1G-3 Short Field Take-Off and Landing Procedure
- WAT (Training)

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

The chart is divided into two main sections. The top section plots Pressure Altitude (ft x 1000 and m x 100) against Gross Weight (lb x 100 and kg x 100). It features a series of diagonal lines representing different Outside Air Temperature (OAT) values: -40, -30, -20, -10, 0, 10, 20, 30, 40, and 50 °C. A dashed line indicates the Maximum Operating Altitude (MAX OAT LIMIT). The bottom section plots Headwind Component (kt) against Gross Weight (kg x 100), showing the relationship between headwind and weight for various OAT values.

Top Section: Pressure Altitude vs. Gross Weight

Gross Weight [kg x 100]	Pressure Altitude [m x 100] (OAT = 0°C)	Pressure Altitude [m x 100] (OAT = 20°C)	Pressure Altitude [m x 100] (OAT = 40°C)
20	25	20	15
25	30	25	20
30	35	30	25
35	40	35	30
40	45	40	35
45	50	45	40
50	55	50	45
55	60	55	50
60	65	60	55
65	70	65	60
70	75	70	65

Bottom Section: Headwind Component vs. Gross Weight

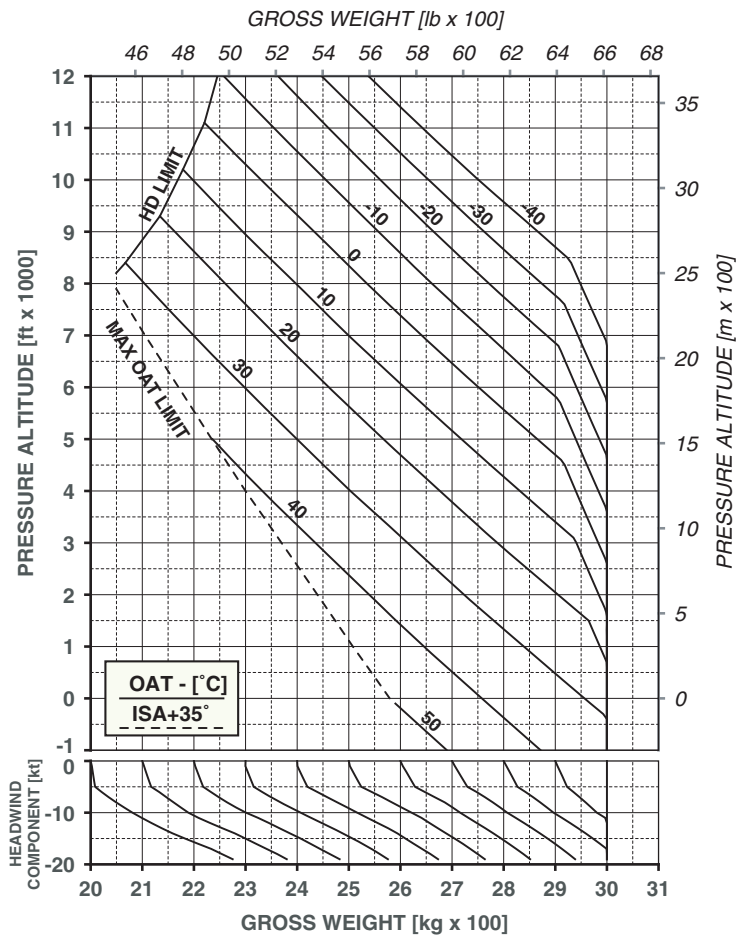
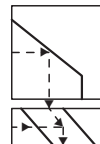
Gross Weight [kg x 100]	Headwind Component [kt] (OAT = 0°C)	Headwind Component [kt] (OAT = 20°C)	Headwind Component [kt] (OAT = 40°C)
20	0	0	0
25	-5	-5	-5
30	-10	-10	-10
35	-15	-15	-15
40	-20	-20	-20
45	-25	-25	-25
50	-30	-30	-30
55	-35	-35	-35
60	-40	-40	-40
65	-45	-45	-45
70	-50	-50	-50

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**Figure 1G-4 Short Field Take-Off and Landing Procedure
- WAT - EAPS OFF (Training)**

**WEIGHT - ALTITUDE - TEMPERATURE
BACK-UP PROCEDURE
TRAINING**

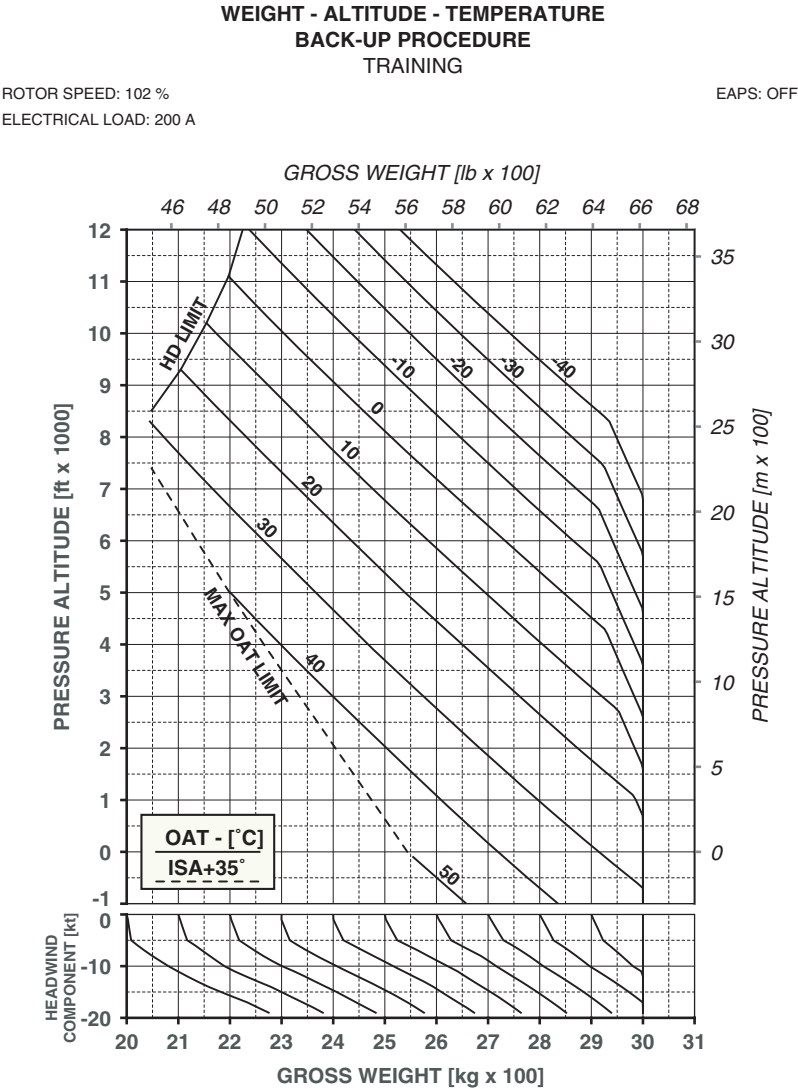
ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A



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Figure 1G-5 Ground Level and Elevated Heliport/Helideck Back-Up Take-Off and Landing Procedure - WAT (Training)



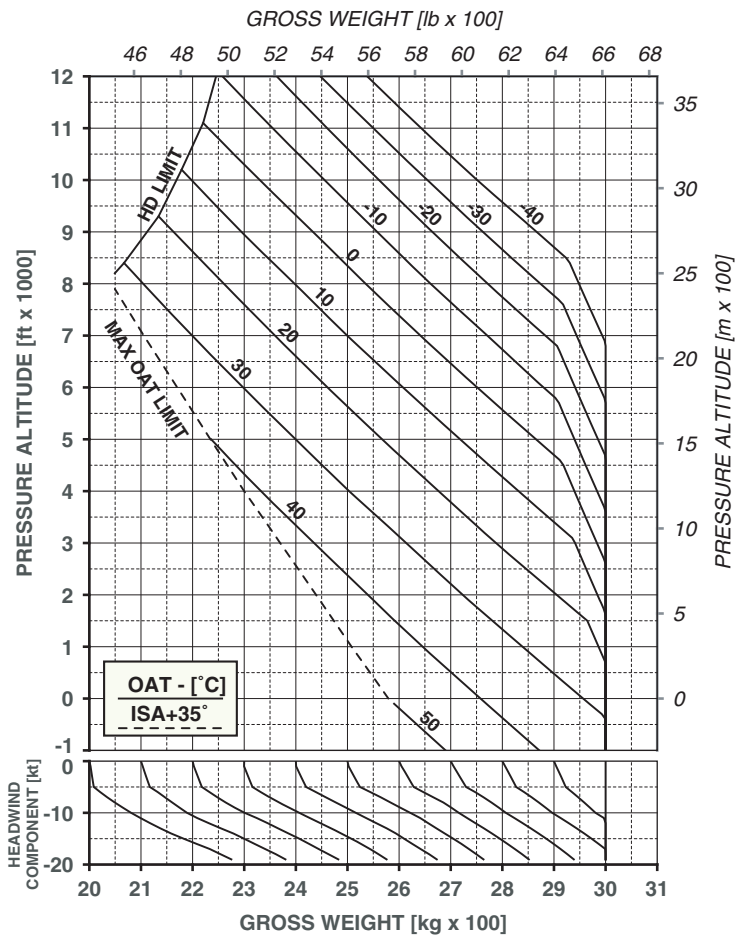
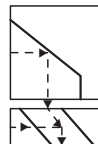
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Figure 1G-6 Ground Level and Elevated Heliport/Helideck Back-Up Take-Off and Landing Procedure - WAT - EAPS OFF (Training)

WEIGHT - ALTITUDE - TEMPERATURE
VERTICAL PROCEDURE ON ELEVATED HELIPORT
TRAINING

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A



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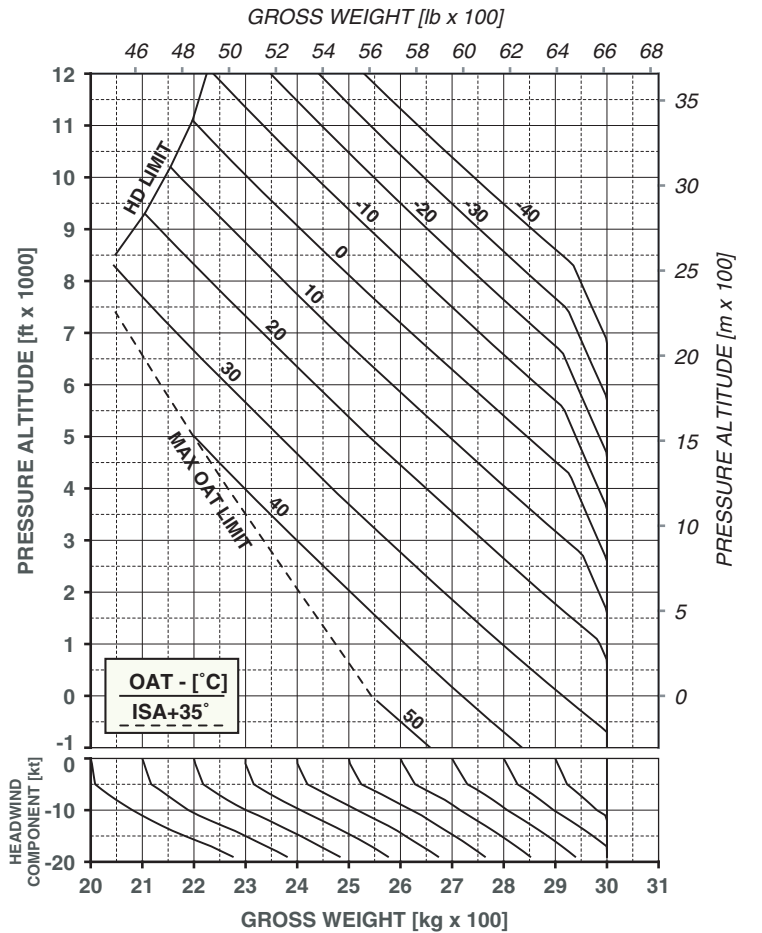
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Figure 1G-7 Elevated Heliport/Helideck Vertical Take-Off and Landing Procedure - WAT (Training)

WEIGHT - ALTITUDE - TEMPERATURE
VERTICAL PROCEDURE ON ELEVATED HELIPORT
TRAINING

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A

EAPS: OFF



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Figure 1G-8 Elevated Heliport/Helideck Vertical Take-Off and Landing Procedure - WAT - EAPS OFF (Training)

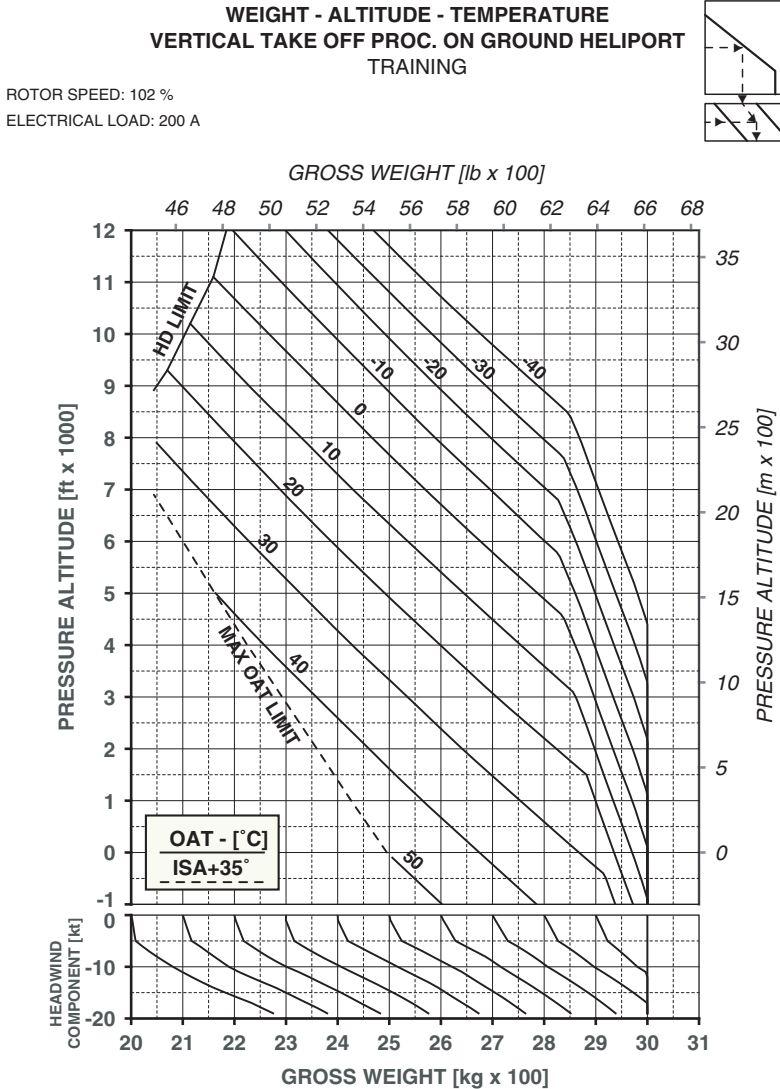


**Figure 1G-9 Ground Level Heliport Vertical Take-Off Procedure
- WAT (Training)**

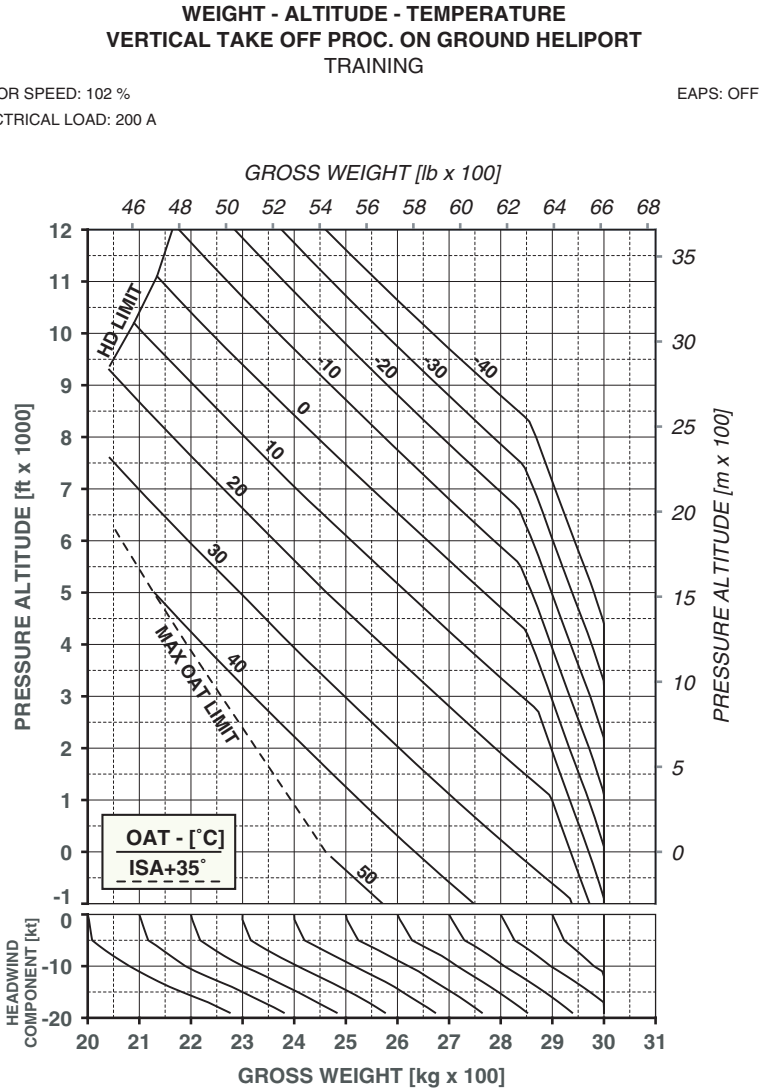
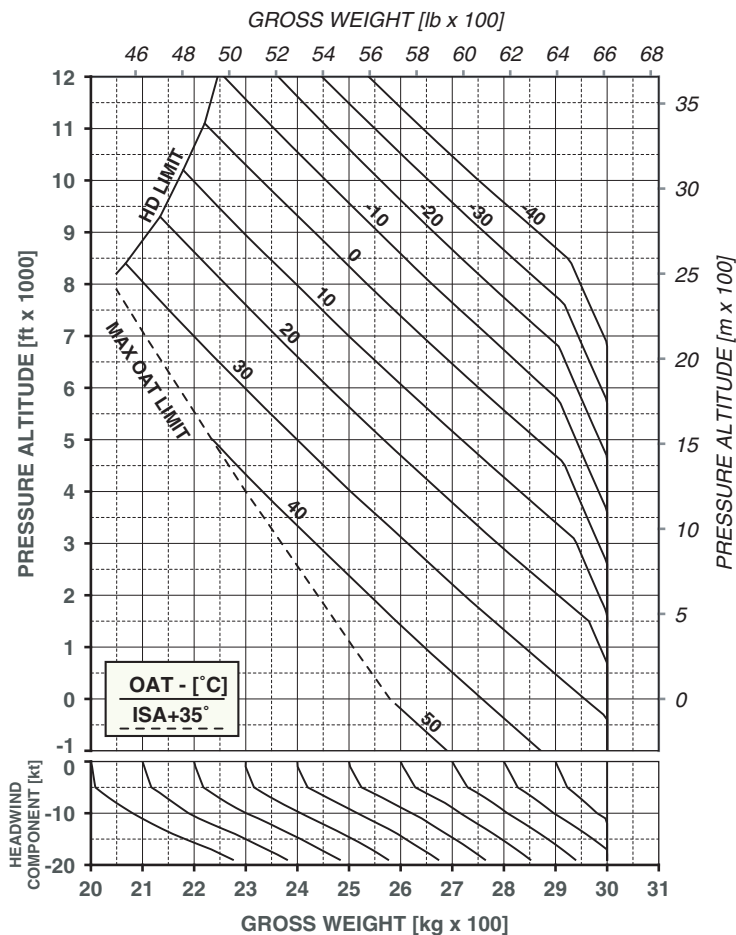
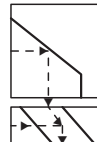


**Figure 1G-10 Ground Level Heliport Vertical Take-Off
Procedure - WAT - EAPS OFF (Training)**

**WEIGHT - ALTITUDE - TEMPERATURE
LANDING PROCEDURE ON GROUND HELIPORT
TRAINING**

ROTOR SPEED: 102 %
ELECTRICAL LOAD: 200 A



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**Figure 1G-11 Ground Level Heliport Landing
Procedure - WAT (Training)**

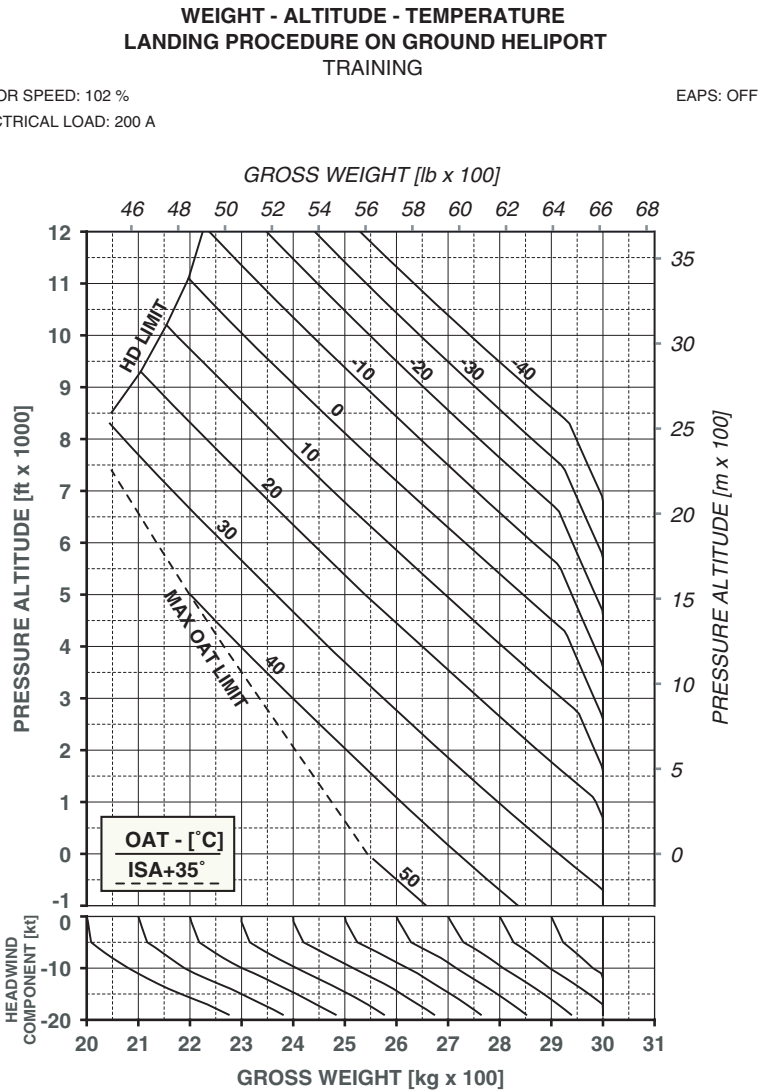


**Figure 1G-12 Ground Level Heliport Landing
Procedure - WAT - EAPS OFF (Training)**

POWER PLANT LIMITATIONS

GAS GENERATOR SPEED (N1)

Training (OEI)

Continuous Operation	: 50% to 97.2%
2.5 minutes range	: 97.3% to 99.8%
Maximum	: 99.8%

TURBINE OUTLET TEMPERATURE (TOT)

Training (OEI)

Maximum continuous	: 850 °C
2.5 minutes range	: 851 °C to 900 °C
Maximum	: 900 °C

TRANSMISSION LIMITATIONS

TORQUE (TRQ)

Training (OEI)

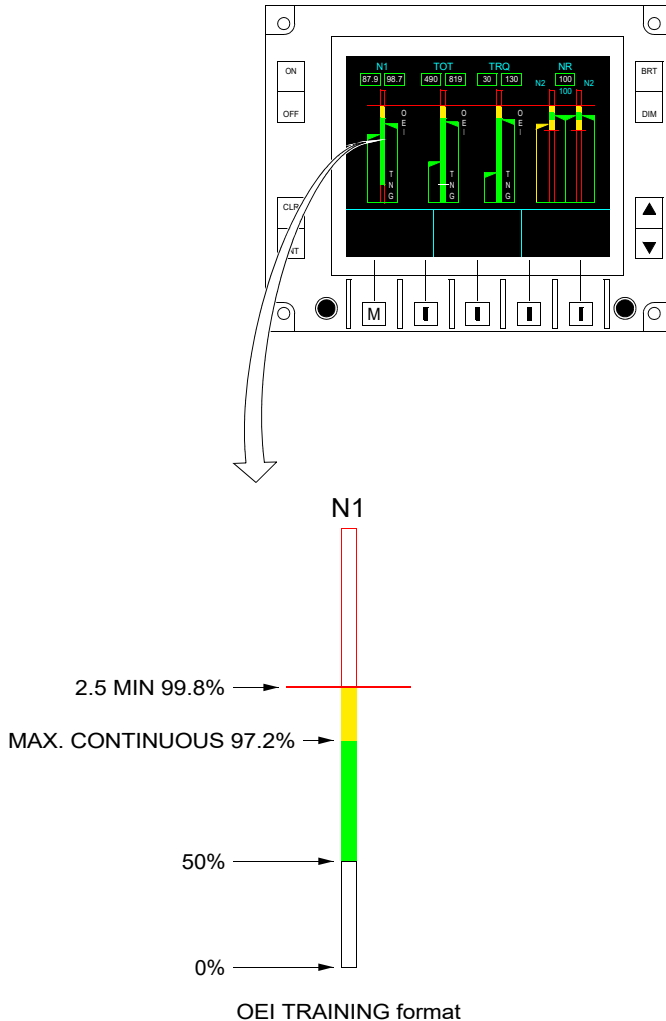
Maximum continuous	: 107%
2.5 minutes range	: 108% to 133%
Maximum	: 133%

Note

A torque overshoot of up to 144% is allowed for the first 6 seconds following the initial torque exceedence after TRAINING mode selection.

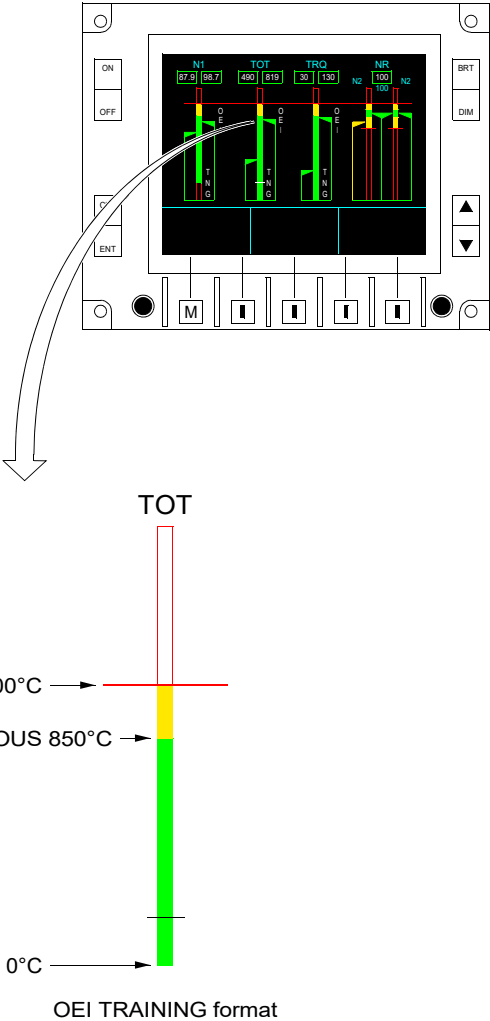
This overshoot does not affect the transmission OEI 2.5 min range. (see Section 1, LIMITATIONS, of the basic Rotorcraft Flight Manual).

INSTRUMENT MARKINGS



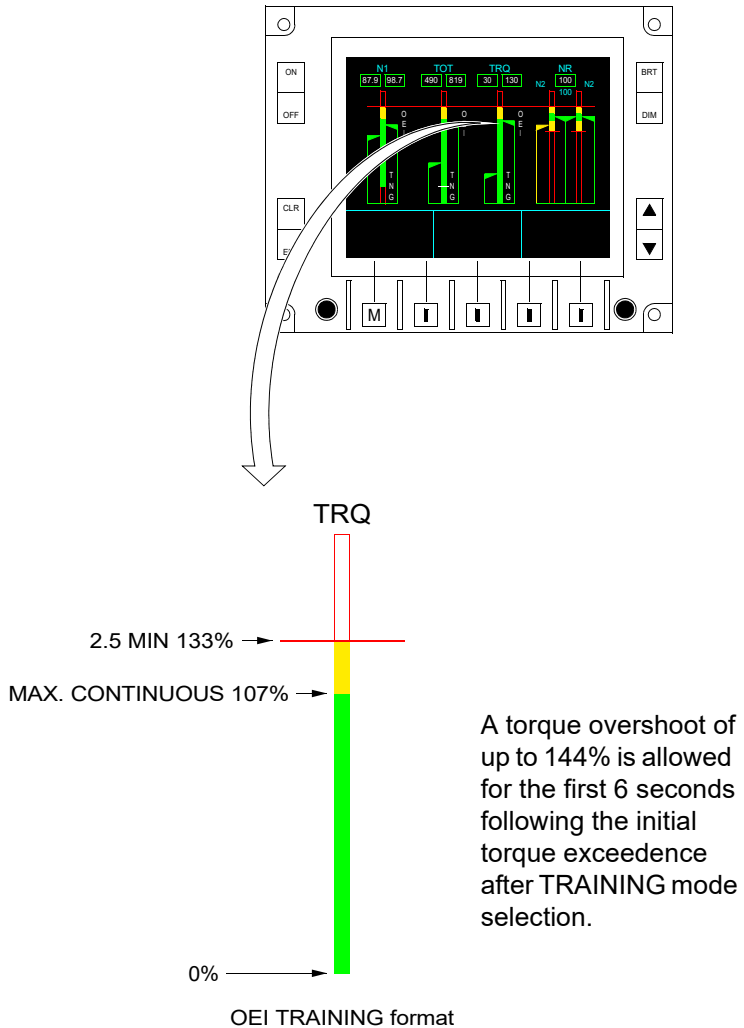
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Figure 1G-13 EDU 1 - Gas Generator Speed (OEI)



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Figure 1G-14 EDU 1 - Turbine Outlet Temperature (OEI)



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Figure 1G-15 EDU 1 - Torque (OEI)

SECTION 2G - NORMAL PROCEDURES

TRAINING PROCEDURES

Training activities must be carried out by strictly following the same profiles presented in [Part A](#) to [Part E](#) of this supplement.

Training procedures can be considered completed at the end of flight path 1.

Engine failure may be simulated by setting the OEI TNG switch to #1 (#2). In this way the engine #1 (#2) will set to TRAINING mode (see Section 1 for the specific limitations) and at the same time the engine #2 (#1) will be slowed down to 90% N2.

Note

Selection of TRAINING mode is enabled only with LIMITER ON. It is recommended that the LD-SH switch is set to TORQUE before using TRAINING mode.

Note

Flight below 90% NR is prohibited. The ECU will automatically abort the TRAINING mode if the NR falls below 87%.

Note

After every 5 simulated engine failures use the other engine in order to preserve the life of both engines equally.

To exit the TRAINING mode set the OEI TNG switch to the central position or press TQ LIM pushbutton on pilot's collective.

SECTION 3G - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY DURING TRAINING

At any time during the drill the training mode can be aborted automatically by the ECU or manually by the pilots.

The ECU automatically aborts or does not permit the TRAINING mode selection should any of the following events occur:

- The rotor speed (NR) drops below 87%;
- A critical failure to either engine;
- An engine flameout or reduction at IDLE setting;
- An ECU failure or any discrete non-critical fault,
- A reversion to MANUAL mode;
- The loss of ARINC cross-talk between the two ECUs;
- Any engine mode switch not in a flight position;
- TQ LIM pushbutton operated.

Note

When the TRAINING mode is aborted, the OEI TNG switch automatically trips to the central position.

Both the instructor and the trainee pilot can, at any time, abort the TRAINING mode by setting the OEI TNG to the central position or by operating the TQ LIM pushbutton (pilot's collective only).

In TRAINING mode the engine limit governing is set not to overcome the following limits:

Torque OEI	133%
TOT	900 °C
N1.....	99.8%

Once the TRAINING mode is aborted, both engines resume running matched at the pilot requested power and the EDU1 automatically reverts to CRUISE AEO mode.

SECTION 4G - PERFORMANCE DATA

The distance information in [Part A](#) to [Part E](#) of this supplement is also valid for training.

TAKE-OFF FLIGHT PATH 1

MEAN HEIGHT GAINED IN 100 FT (30 M) HORIZONTAL DISTANCE

The mean height gained in 100 ft (30 m) of horizontal distance travelled during an OEI climb at V_{TOSS} or V_{BLSS} and 2.5 min power OEI is shown in [Figure 4G-1](#) to [Figure 4G-4](#) and [Figure 4G-5](#) to [Figure 4G-8](#) (with EAPS OFF) for various altitudes, temperatures, weights and headwind components.

Note

Headwind component should be obtained from the Wind Component Chart in Section 4 of this Supplement.

For the applicability of each single chart refer to the respective Part in this Supplement.

CAUTION

The curves below OAT -25°C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI
TRAINING

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

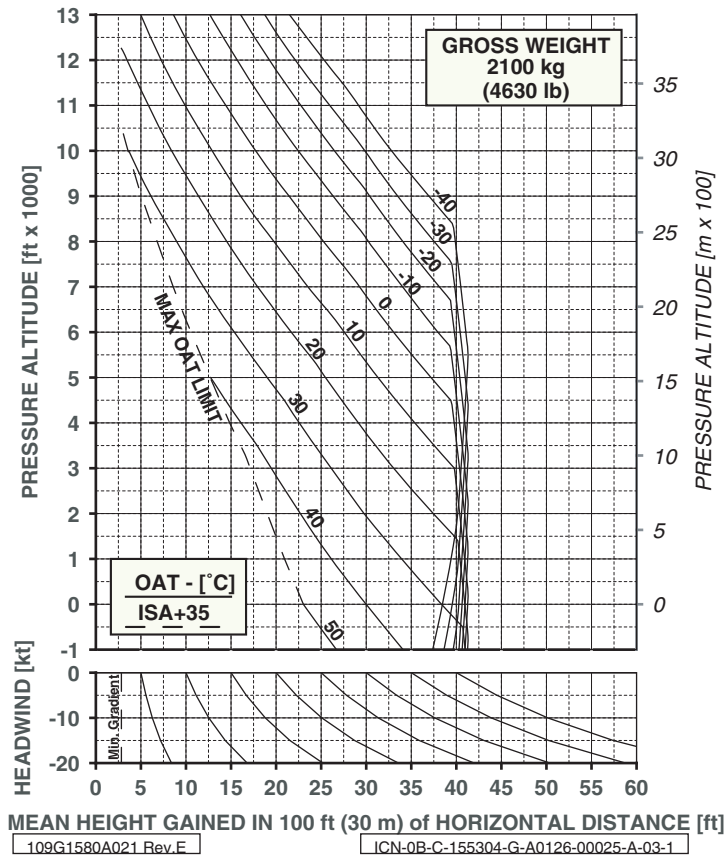


Figure 4G-1 Take-Off Flight Path 1 - OEI 2.5 Min Power -
Gross Weight: 2100 kg (TRAINING)

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI
TRAINING

ROTOR SPEED: 102 %

V_{toss}: 35 KIAS

ELECTRICAL LOAD: 200 A

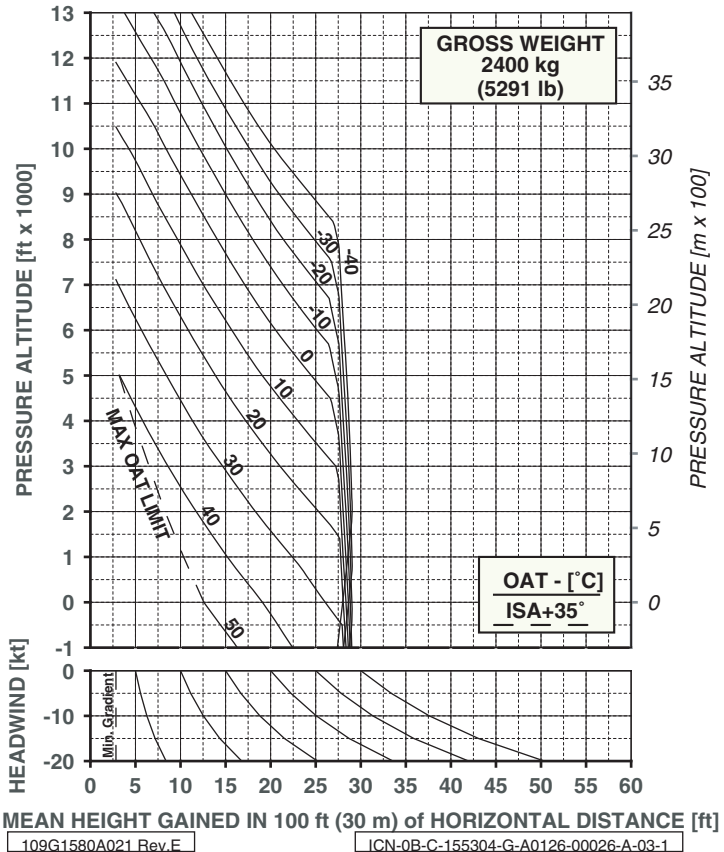


Figure 4G-2 Take-Off Flight Path 1 - OEI 2.5 Min Power -
Gross Weight: 2400 kg (TRAINING)

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI
TRAINING

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

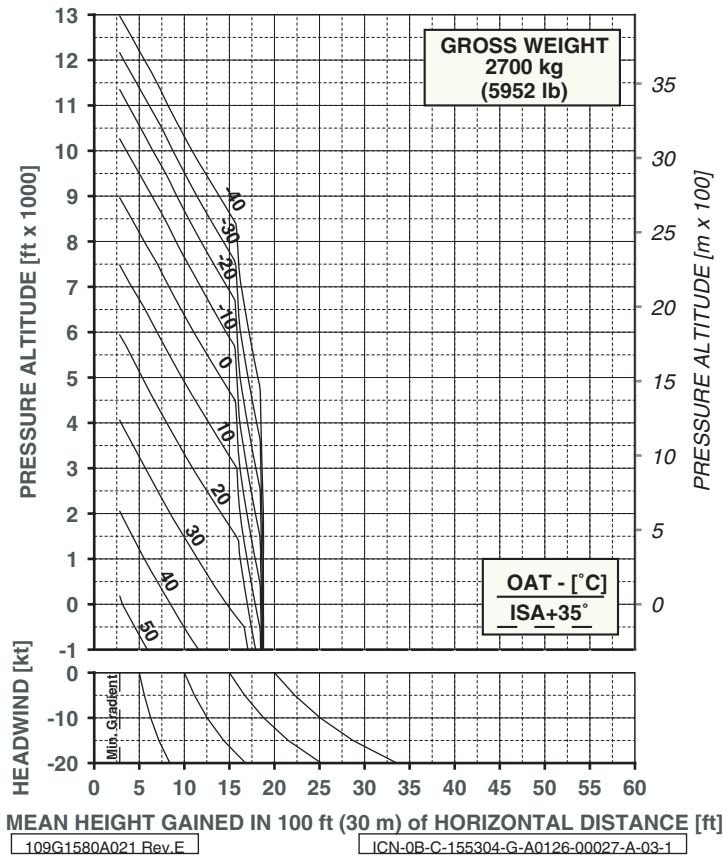


Figure 4G-3 Take-Off Flight Path 1 - OEI 2.5 Min Power -
Gross Weight: 2700 kg (TRAINING)

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI
TRAINING

ROTOR SPEED: 102 %

Vtoss: 35 KIAS

ELECTRICAL LOAD: 200 A

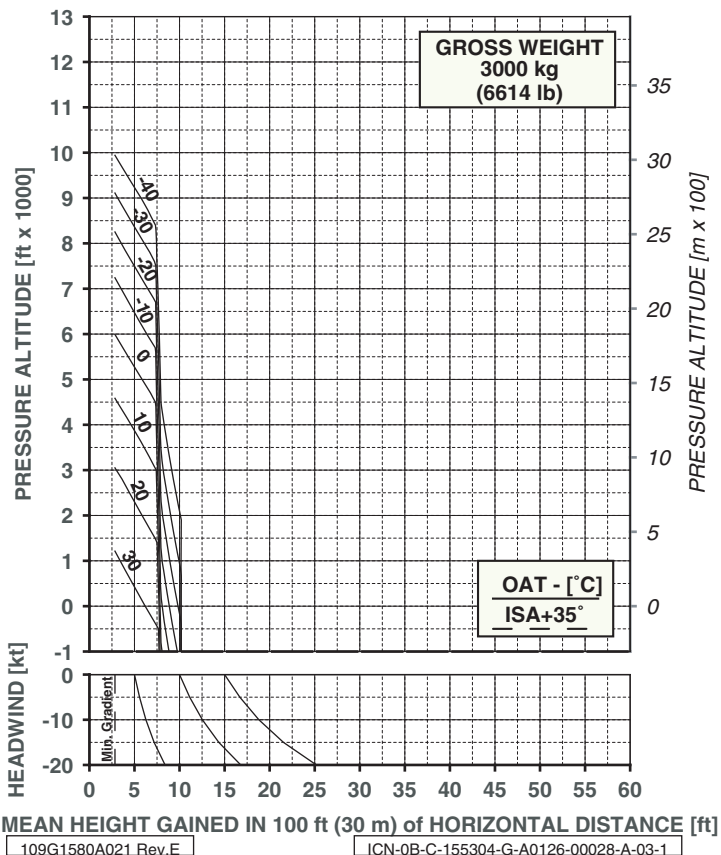


Figure 4G-4 Take-Off Flight Path 1 - OEI 2.5 Min Power - Gross Weight: 3000 kg (TRAINING)

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI
TRAINING

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

EAPS: OFF

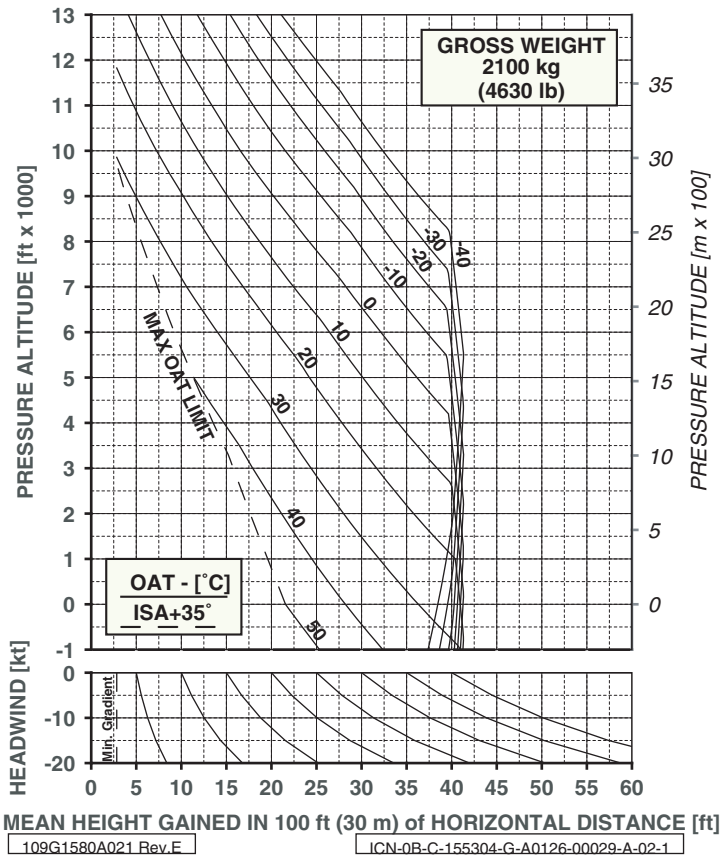


Figure 4G-5 Take-Off Flight Path 1 - OEI 2.5 Min Power -
Gross Weight: 2100 kg - EAPS OFF (TRAINING)

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI
TRAINING

ROTOR SPEED: 102 %

EAPS: OFF

V_{loss}: 35 KIAS

ELECTRICAL LOAD: 200 A

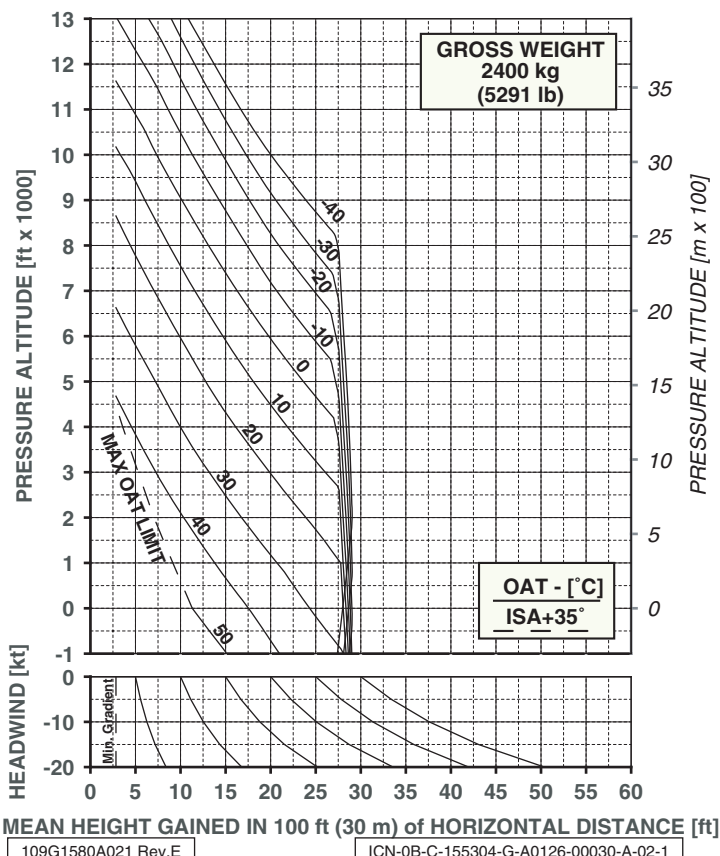


Figure 4G-6 Take-Off Flight Path 1 - OEI 2.5 Min Power -
Gross Weight: 2400 kg - EAPS OFF (TRAINING)

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI
TRAINING

ROTOR SPEED: 102 %
Vtoss: 35 KIAS
ELECTRICAL LOAD: 200 A

EAPS: OFF

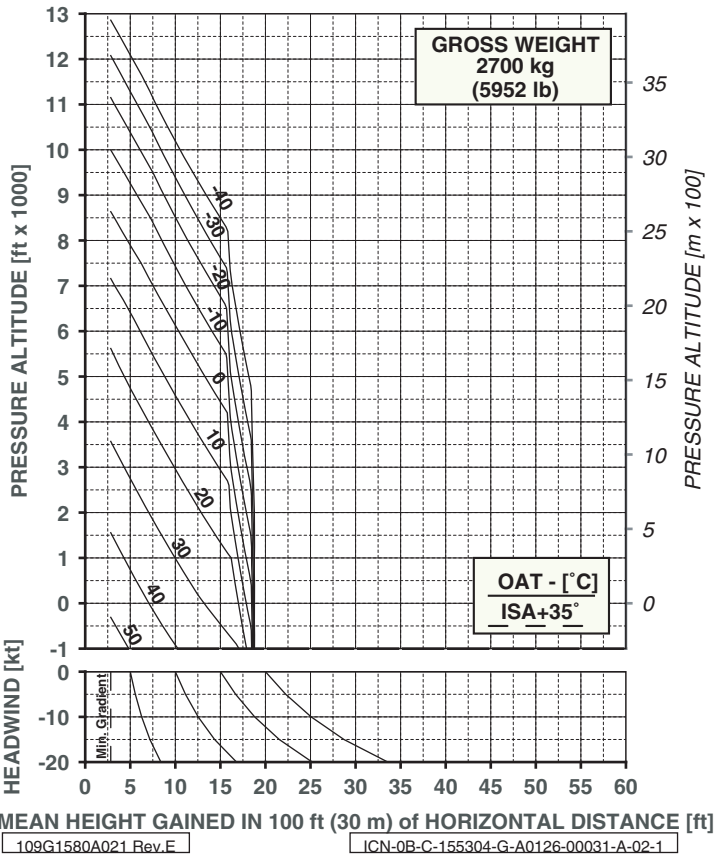


Figure 4G-7 Take-Off Flight Path 1 - OEI 2.5 Min Power -
Gross Weight: 2700 kg - EAPS OFF (TRAINING)

TAKE OFF FLIGHT PATH 1
2.5 MINUTE POWER OEI
TRAINING

ROTOR SPEED: 102 %

EAPS: OFF

V_{toss}: 35 KIAS

ELECTRICAL LOAD: 200 A

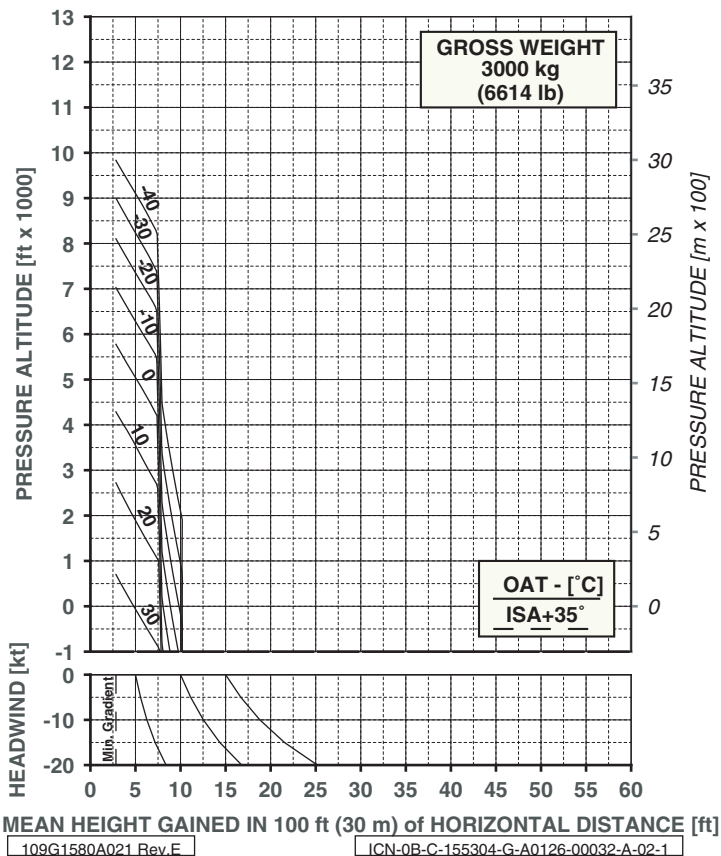


Figure 4G-8 Take-Off Flight Path 1 - OEI 2.5 Min Power -
Gross Weight: 3000 kg - EAPS OFF (TRAINING)

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EXTERNAL HOIST

P/N 109-B810-16

This Supplement shall be attached to the AW109SP RFM (Section 5) when the External Hoist is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 11 DECEMBER 2009
REVISION 5: 11 JUNE 2025

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
1	Revised pages Title page, A-1, B-1, i thru iv, 1 thru 34 of 34.	EASA Approval N° 10034908 dated 11 May 2011
2	Revised pages Title page, A-1, B-1, 1, 2, 4, 11 and 14 of 34.	Approved with NDC 109G9700-001 dated 24 December 2015 under the authority of DOA ref EASA.21J.005
3	Revised pages Title page, A-1, B-1, i, ii, 9, 10 and 31 of 34.	EASA Approval N° 10062498 dated 4 July 2017
4	Revised pages Title page, A-1, B-1, i, iv, 9 and 10 of 34. Added pages 10A and 10B of 34.	EASA Approval N° 10073314 dated 25 May 2020
5	Revised page 3 of 34.	Approved with NDC-109G2310-048 dated 11 June 2025 under the authority of DOA ref EASA.21J.005
	Revised page 28 of 34.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1, B-1 and i.	Manufacturer's Data

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LIST OF EFFECTIVE PAGES

NOTE: Revised text is indicated by a black vertical line in the outer margin of the page and the approval revision number is printed in the lower margin

Page	Revision N°	Page	Revision N°
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GENERAL

The Goodrich External Hoist, P/N 109-B810-16, enables lowering and raising of Non Human External Cargo (NHEC) or Human External Cargo (HEC) in areas where a landing cannot be accomplished. The Goodrich External Hoist consists of a hoist unit installed onto a mounting frame on the right side of the cabin. The hoist unit has a single or dual pendant configuration.

SINGLE PENDANT CONFIGURATION

The installation consists of:

- an electrical hoist motor and winch assembly,
- a mounting frame,
- a footstep mounted on the right side of the helicopter,
- a HOIST control panel that allows the pilot to power ON/OFF the hoist and provides a cable cut squib test (cartridge).
- a remote pendant that allows the hoist operator to operate the hoist,
- cable payout displays for the pilot and the hoist operator,
- a radio-ICS system to allow communication among crew members and the Human External Cargo (HEC),
- a hoist operator safety harness,
- a electrical cable cut facility,
- a manual cable cutter.

The hoist contains 290 ft (88.4 m) of cable, of which a length of 280 ft (85 m) is usable and may lower/lift a maximum load of 600 lb (272kg). The cable payout is shown on the 3 digit display on the pendant. A display format xxx means the cable payout is in feet while yy.y means the cable payout is in meters.

Cable raising and lowering can be controlled by the hoist operator through the pendant thumbwheel which provides variable cable speed commands. The pilot can also control the operation at a fixed cable speed through the hoist control on the pilot's collective lever.

The cable speed for hoisting is 150 fpm (45 m/min) with maximum load, which increases to 245 fpm (74.4 m/min) with a load of 250 lb (113kg). The hoist lowering speed maximum is 245 fpm (74.4m/min).

The hoist is provided with a cable foul protection system which automatically stops the motor if the cable is not properly reeled-in on the drum and a HOIST CABL LKD caution message illuminates on EDU1.

An electrical cable cut system is available to the Pilot via a guarded switch on the pilots collective grip. A HOIST CUT ARMD caution message illuminates on EDU 1 when the guard is lifted.

In the event of a failure of the electrical cable cut system, a set of cable cutters is provided in the cabin to enable the hoist operator to manually cut the cable.

The hoist operator pendant (see [Figure 0-1](#)) contains the thumb-wheel for raising or lowering the hoist, a cable payout digital display, a guarded cable CUT switch and a searchlight lamp directional control switch.

DUAL PENDANT CONFIGURATION

Unlike the single pendant configuration, in the dual pendant configuration a hoist operator control panel (see [Figure 0-1](#)) that is interconnected to the control pendant assembly and rescue hoist, is installed. This panel replaces the hoist control panel in the interseat console (present only in the "single pendant configuration").

The operator panel provides a cable cut squib test (cartridge), a search light lamp ON and OFF, a headset connector, a light brightness switch and a NVG or normal light switch.

The hoist main power ON/OFF switch is in the cockpit overhead panel.

The supplementary pendant is an optional equipment that may be installed in the cabin for Hoist Operator training purposes. The supplementary hoist pendant, when installed, can be used to override the normal pendant thumb wheel control of the hoist. This is achieved by moving the thumb wheel on the supplementary pendant.

The thumb wheel control remains with the supplementary pendant as long as it is kept in position. The thumb wheel control returns automatically to the normal hoist pendant when the supplementary one is released.

All other functions on the normal pendant remain unaffected and the pilot override of the cabin hoist control remains unaffected.

The supplementary pendant is intended for use by trained crew members in the cabin.

RADIO ICS SYSTEM (HEC)

POLYCON COMMUNICATION SYSTEM COMPONENTS

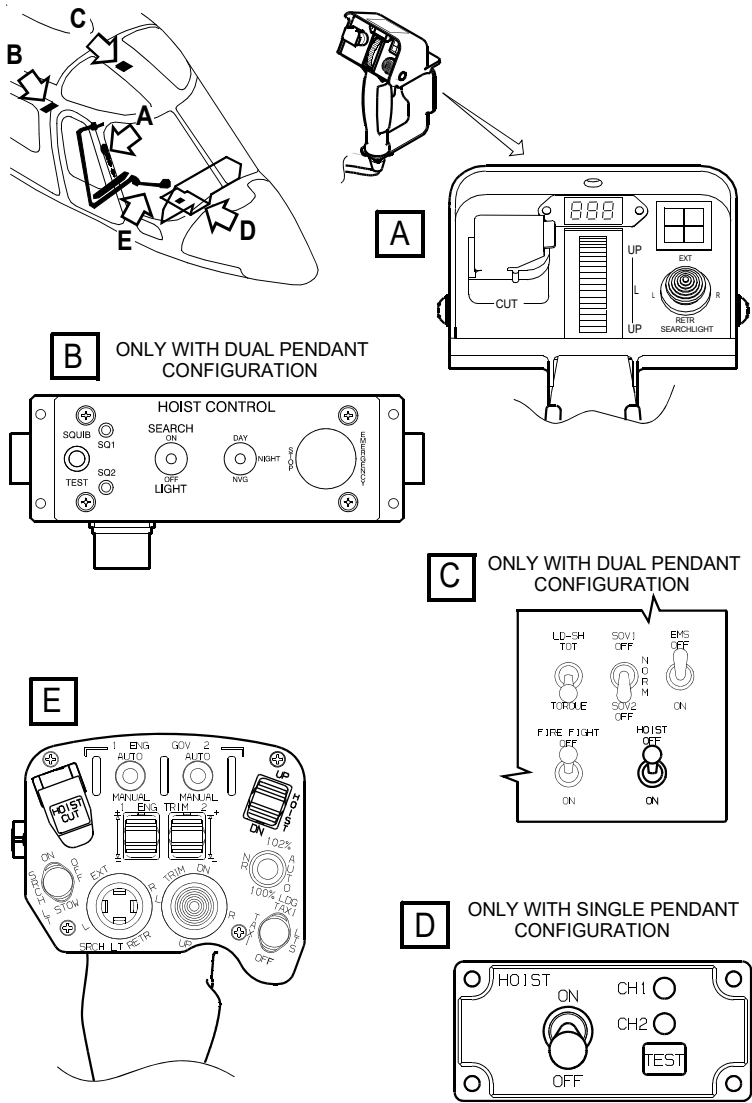
Communication Processing Unit.....P/N 004-RLI-00U
Portable Transceiver P/N MP 20-00U

POLYCON NG SYSTEM COMPONENTS

Cabin Control Panel..... P/N 109G2310I02
Portable Transceiver MP50..... P/N AXS-HH-DLH20
Base Station BST50 P/N 109G2310I02

This or an equivalent approved radio-ICS system is required for HEC operations.

The system is linked to the aircraft ICS and provides a wireless communication link between the HEC portable transceiver and the crew.



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Figure 0-1 Hoist Operator Controls

SECTION 1 - LIMITATIONS

GENERAL

The external hoist system meets the certification requirements applicable to HEC.

The external hoist system certification approval (NHEC or HEC) does not constitute operational approval; operational approval for external load operations must be authorized by the Local Aviation Authority.

TYPE OF OPERATION

The Hoist installation is approved for:

- Lifting external loads which are jettisonable and which are lifted free of land or water,
- Lowering/raising NHEC or HEC in areas where landing cannot be carried out,
- VFR, Day and Night with ground visual contact,
- With the right passenger sliding door removed or locked open.

Operation of the external hoist equipment with HEC requires to use of a Personnel Carrying Device System (PCDS).

The Personnel Carrying Device System (PCDS) P/N 109-0705V05 is approved.

The use of another PCDS must be approved.

For HEC operations an approved radio-ICS system must be installed and operated in accordance with the National Operating Regulations.

Flight with a load attached to the hoist must be limited to reach a place suitable for load recovery.

Normal helicopter operation is approved with the hoist fitted provided that the hoist is not used and the hoist electrical system is deactivated.

FLIGHT CREW LIMITATIONS

Minimum flight crew, for external hoist operation, consist of one pilot and one hoist operator.

The weight of the hoist operator is limited to 120 kg (265 lbs) that is the maximum certified load of the Safety Harness P/N A114A01 (the limit of 120 kg is still applicable with an alternative approved safety harness).

The hoist operator must be restrained by a safety harness and wear protective gloves to guide the cable during all phases of hoist operations.

The hoist operator shall be familiar with hoist operating procedures and limitations.

The hoist operator shall have a manual cable cutter readily available during all phases of hoist operations.

WEIGHT AND CENTER OF GRAVITY LIMITATIONS

For longitudinal and lateral center of gravity limits with a load attached to the hoist refer to [Figures 1-1](#) and [1-2](#).

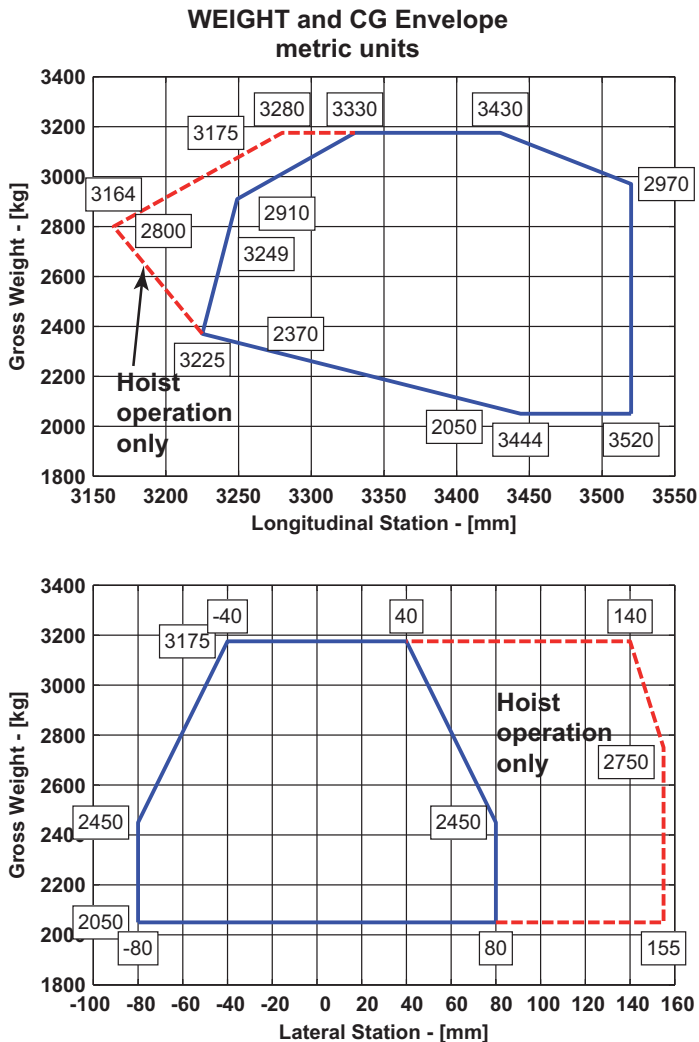
WEIGHT LIMITATIONS

If the operating rules require One Engine Inoperative (OEI) hover performance capability then, the maximum weight is defined using the Hover OGE, 2.5 Minute OEI chart for the appropriate system/helicopter configurations:

- Clean Intake ECS / HEATER OFF
See Basic RFM[Figure 4-12](#)
- EAPS Intake EAPS OFF
See RFM OES Supplement 3 [Figure 4-20](#)
- EAPS Intake EAPS ON
See RFM OES Supplement 3 [Figure 4-21](#)

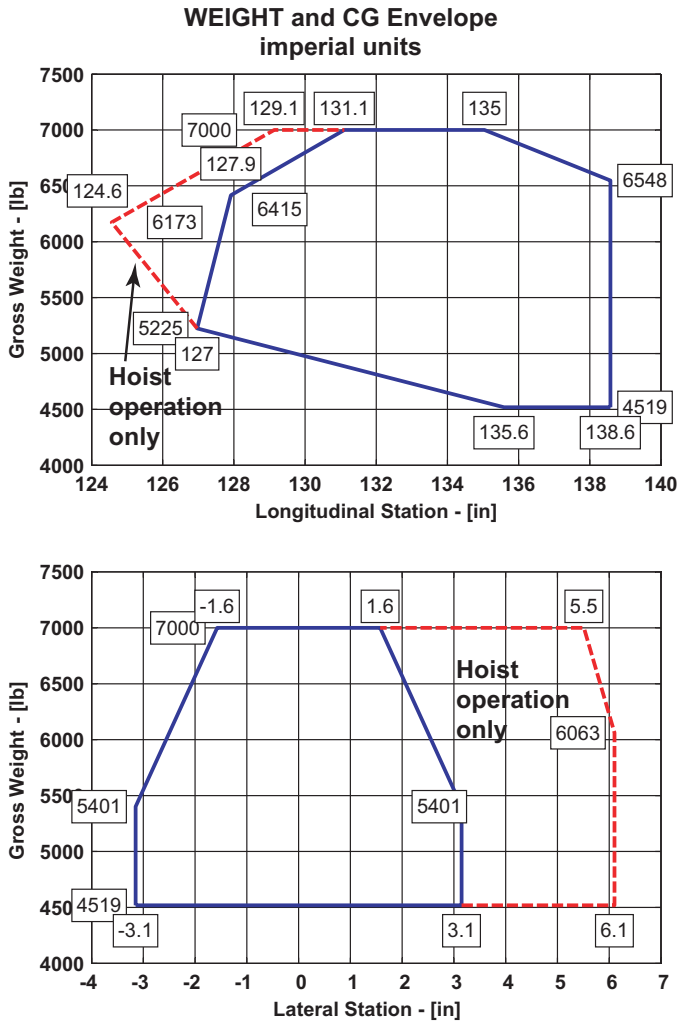
Note

Weights defined in the above charts guarantee no height loss in case of an engine failure.



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Figure 1-1 Weight, Longitudinal and Lateral CG Envelope
(metric units)



ISSUE B

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**Figure 1-2 Weight, Longitudinal and Lateral CG Envelope
(imperial units)**

AIR SPEED LIMITATIONS

MAXIMUM SPEED WITH EXTERNAL HOISTED LOAD

Maximum forward speed (within ± 10 deg azimuth) 50 KIAS
Maximum ground speed (from 10 to 350 deg azimuth) 20 Kts

WEIGHT / ALTITUDE LIMITATIONS

Maximum altitude for external hoist operations 16000 ft Hd
For the weights allowing 20 Kts controllability refer to [Figure 4-1](#) and [Figure 4-2](#).

AMBIENT AIR TEMPERATURE LIMITATIONS

External Hoist operations at OAT below -25°C are prohibited.

LOAD LOWERING AND RAISING

The hoist operation (cable and load raising and lowering) is permitted with the helicopter in hover or in forward flight up to 30 KIAS within ± 300 ft/min vertical speed.

MISCELLANEOUS LIMITATIONS

HOIST LIMITATIONS

Maximum hoist load OAT above 0°C 249 kg (550 lb)
Maximum hoist load OAT at or below 0°C 227 kg (500 lb)
Maximum load on hoist 2 persons plus equipment
Maximum permissible bank angle with extended cable 20°

WARNING

Exceeding 15° of lateral pendulum angle/
helicopter vertical axis can lead to clutch
slippage.

CAUTION

Overload clutch is unlikely to function in
case of overload.

Maximum usable cable length.....85 m (280 ft)
Hoist cable must not be deployed beyond 85 m (280 ft) cable payout
or activation of the SLOW message on the Hoist Operator pendant,
whichever comes first.

PERSONNEL CARRYING DEVICE SYSTEM (PCDS) LIMITATIONS

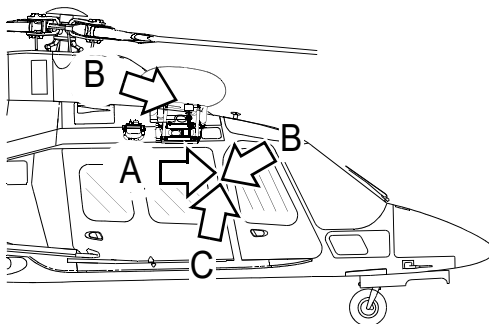
Replace the PCDS after major shock even if no visible damage are noted.
The PCDS must only be used by trained crewmembers.

AUTOMATIC FLIGHT CONTROL SYSTEM LIMITATIONS

During hoist operations the pilot must either:

- fly manually
- or
- fly attentive when HOV and/or RHT modes are engaged.

PLACARDS



A

CAUTION

THE HOIST OPERATOR
MUST BE RESTAINED
BY A SAFETY HARNESS
DURING ALL PHASES
OF HOIST OPERATION
AND SHALL WEAR
PROTECTIVE GLOVES
TO GUIDE THE CABLE
AT ANY TIME DURING
HOIST OPERATION.

IN CLEAR VIEW OF
HOIST OPERATOR

B

OAT ABOVE 0°C
-MAXIMUM HOIST LOAD 550 lb (249 kg)
OAT AT OR BELOW 0°C
-MAXIMUM HOIST LOAD 500 lb (227 kg)
MAX LOAD 2 PERSONS + EQUIPMENT

IN CLEAR VIEW OF
HOIST OPERATOR

C

OPERATION WITH EXTENDED CABLE AND LOAD ON THE HOOK

- MAXIMUM PERMISSIBLE BANK ANGLE IN TURN IS 20°
- WARNING: EXCEEDING 15° OF LATERAL PENDULUM ANGLE /HELICOPTER VERTICAL AXIS CAN LEAD TO CLUTCH SLIPPAGE

CAUTION: OVERLOAD CLUTCH IS UNLIKELY TO FUNCTION IN CASE OF OVERLOAD

IN CLEAR VIEW OF
HOIST OPERATOR

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Figure 1-3 Internal Placards

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SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°2 (Fuselage - RH side)

1. ➡ Hoist : Condition and secure. Check for oil leaks and wiring connections secure.
2. ➡ Hoist cowling : Condition and secure.
3. ➡ Hoist mounting : Condition and secure.
4. ➡ Hook : Condition and secure. Check for freedom of rotation on cable.
5. ➡ Step : Condition and secure.

Area N°7 (Helicopter interior)

Cabin interior

1. ➡ Hoist operator safety harness and PCDS : Condition and stowed.
2. ➡ Hoist operator gloves : Condition and stowed.
3. ➡ Manual cable cutter : Condition and stowed.
4. ➡ Radio-ICS portable transceiver and interface box (for HEC operations) : Condition and secure. Verify set to the same frequency.
5. ➡ Hoist pendant : Condition and stowed.

Only with dual pendant configuration:

6. ➡ Hoist operator control panel : Condition. Verify EMERGENCY STOP pushbutton fully extracted.
7. ➡ SEARCH LIGHT switch : Verify in OFF position.
8. ➡ DAY/NIGHT/NVG switch : Verify in DAY position.

Cockpit interior

1. ➡ HOIST switch : OFF.

Overhead Panel:

2. ➡ HOIST PWR, HOIST CONTR, HOIST CABLE CUT 1 & 2 circuit breakers : All engaged.

Pilot's collective:

3. ➡ HOIST CUT switch : Guarded.

Hoist operator pendant:

4. ➡ HOIST CUT switch : Guarded and lockwired

Note

If external power is not available, carry out the following checks after engine start, during **SYSTEM CHECKS**.

Note

Assistance is required from ground personnel for the following checks.

For the following checks connect the external d.c. supply:

5. ➡ HOIST switch : ON.
Confirm HOIST ON advisory message illuminates (EDU 2).

WARNING

If HOIST CUT ARM illuminated the hoist must not be used. Do not raise the HOIST CUT or CUT guards as hoist cable may be cut.

6. ➡ Hoist cable payout displays : Confirm zero.
(on both the instrument panel and the pendant)

7. ➡ Pendant : Confirm SLOW message illuminated.

WARNING

Protective gloves should always be worn whenever handling the hoist cable to prevent injury from possible broken cable strands.

CAUTION

Care should be taken to prevent cable damage caused by kinking when lowering the cable onto the ground. Whenever possible the cable should be laid onto a clean surface.

8. ➡ Hoist reel-out operation : Check by reeling-out approximately 3 m (10 ft) of cable.
9. ➡ Cable terminal : Condition and secure. Check cable for abrasion, kinking and corrosion.
10. ➡ Hook assembly : Condition, security, freedom of rotation.

Note

➡ When reeling-in the cable with no load attached, apply tension with a gloved hand to ensure smooth and even wrapping.

11. ➡ Hoist reel-in operation : Check hoist automatically stops when cable is fully reeled in.
12. ➡ HOIST switch : OFF.
Confirm HOIST ON advisory message clears (EDU 2).

Disconnect the external d.c. supply.

ENGINE PRE-START CHECKS

INITIAL CHECKS

1. HOIST switch : OFF.

Pilot's collective:

1. HOIST CUT switch : Guarded.

SYSTEM CHECKS

MISCELLANEOUS

1. HOIST switch : ON.
Confirm HOIST ON advisory message illuminates (EDU 2).
Confirm HOIST CUT ARMD and HOIST CABL LKD caution messages are not illuminated (EDU 1).

WARNING

If HOIST CUT ARMD caution message is illuminated do not carry out the following procedure as the hoist cable may be cut.

Only with single pendant configuration:

- 2 A. Hoist squib TEST pushbutton : Push. Confirm the 2 lights illuminate on hoist control panel.

Only with dual pendant configuration:

- 2 B. Hoist SQUIB TEST pushbutton : Push. Confirm the 2 lights illuminate on hoist operator control panel.
3. Pendant : Confirm zero cable payout indicator and SLOW message illuminated.

4. HOIST CUT switch (on pilot's collective) : Open guard.
Confirm HOIST CUT ARMD caution message illuminates (EDU 1).
Close guard.
Confirm HOIST CUT ARMD caution message clears (EDU 1).
5. HOIST control switch (on pilot's collective) : Set to DN position.
Confirm cable reels out.
6. Hoist cable payout display (on both the instrument panel and the pendant) : Confirm counting.

Note

When reeling-in the cable with no load attached, apply tension with a gloved hand to ensure smooth and even wrapping.

7. HOIST control switch (on pilot's collective) : Set to UP position.
Confirm cable reels in.
8. Hoist cable payout display (on both the instrument panel and the pendant) : Confirm counting.
9. HOIST thumbwheel (on pendant) : Set to DN position.
Confirm cable reels out.
10. HOIST thumbwheel (on pendant) : Set to UP position.
Confirm cable reels in.
11. Pilot override function : Set pendant thumbwheel to DN position.
Confirm cable reels out.
Set HOIST control switch on pilot's collective to UP position.
Confirm the pilot's command overrides the pendant's command and the cable reels in.

CAUTION

Stow hoist cable by reeling in fully to compress hook bumper. Failure to follow this procedure will damage the cable.

12. HOIST thumbwheel : OFF.
(on pendant)
13. HOIST switch : OFF.
Confirm HOIST ON advisory
message clears (EDU 2).

IN FLIGHT

HOIST OPERATING PROCEDURE

1. HOIST switch : ON.

Confirm HOIST ON advisory message illuminates (EDU 2).

WARNING

The hoist operator must be secured by the safety harness during hoist operations.

CAUTION

Avoid operating with crosswind or tail wind whenever possible.

Confirm positive audio communication is achieved among all crew-members using the onboard ICS and portable transceiver

2. Right passenger sliding door : Open and locked.
(if installed)

Hoist operation (cable reeling out and load lowering) may be carried out in the hover or forward flight up to 30 KIAS and within ± 300 ft/min vertical speed.

CAUTION

The hoist operator must always maintain a gloved hand on the cable to confirm correct functioning when reeling in and reeling out

CAUTION

Hoist cable must not be deployed beyond 85m (280ft) cable payout or activation of the SLOW message on the HO pendant, whichever comes first.

3. HOIST control switch (on pilot's collective) : DN.
or
HOIST thumbwheel (on pendant)
4. Reeling speed (hoist operator only) : As required by means of the pendant thumbwheel.

WARNING

Static electricity must be dissipated by suitable means before ground personnel touch the hook or cable.

CAUTION

Do not allow the cable to drag on the ground or any other surface which could contaminate or damage the cable.

Note

As hook nears the down or up limits hoist speed slows automatically and amber SLOW light illuminates on Hoist Operator pendant.

Once the cable is ready to be reeled in:.

1. HOIST control switch : UP
(on pilot's collective)
or
HOIST thumbwheel (on
pendant)
2. Reeling speed : As required by means of the
(hoist operator only) pendant thumbwheel.

CAUTION

Stow hoist cable by reeling in fully to compress hook bumper. Failure to follow this procedure will damage the cable.

Hoist operation (cable reeling in and load raising) may be carried out in the hover or forward flight up to 30 KIAS and within ± 300 ft/min vertical speed.

CAUTION

With a load attached to the hook airspeed is limited by controllability and load stability. Caution should be exercised when carrying an external load as the handling characteristics and load stability may be affected by the size, weight and shape of the load, as well as by the distance between the load and the helicopter.

If helicopter position is not suitable to complete load recovery onboard, make transition to forward flight, into wind if possible, allowing adequate load clearance over obstacles.

1. Airspeed : As required to maintain adequate controllability. Do not exceed airspeed limitations as per [Figure 4-1](#) .

Once a suitable place has been reached, establish hover and recover load onboard or lay it on the ground.

When hoisting operation is complete:

1. Right passenger sliding door (if installed) : Closed and locked.
2. HOIST switch : OFF.
Confirm HOIST ON advisory message clears (EDU 2).
3. Hoist light switch (on pendant) : OFF.

Note

Any shock loading to the cable must be noted by the operator. If a shock loading has occurred the cable must be replaced prior to further hoist operations taking place.

PCDS HOISTING

Before and after each use it is necessary to check the conditions of PCDS.

LITTER HOISTING

When emergency transportation with the litter is essential, every effort should be made to land the helicopter for litter loading. Litter hoisting may be hazardous and should be accomplished only when a landing is not feasible. In addition to all other procedures contained herein, the following shall apply to litter hoisting operations.

WARNING

Raising and lowering an empty litter in the open position is prohibited. An empty litter in the open position which is suspended from the hoist can rotate uncontrollably and could strike the fuselage.

CAUTION

A loaded litter can rotate about the cable during hoisting. The hoist operator may have to hold the sling straps to stop the rotation as the litter approaches the landing gear. Forward airspeed will assist in stabilizing the litter and stop rotation.

Prior to being raised or lowered, an empty litter must be closed and secured with straps. The empty litter should be suspended in a near vertical position and sling straps should be drawn tight.

Note

If the litter is suspended too low from the hook, it may be difficult to load onboard, even with the cable fully reeled in.

Litter sling straps should be adjusted so that the litter is 610 to 710 mm (24 to 28 inches) below the hoist hook.

ADVISORY CAPTION DEFINITIONS

CAS Caption (Green)

HOIST ON

System State

Electrical power is applied to the hoist.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES

ENGINE FAILURE IN HOVER WITH LOAD ON HOIST

See Basic RFM Section 3 for aircraft procedures.

Procedure when OEI Hover performance capability is not required

1. Collective pitch — Maintain collective pitch setting or lower to maintain rotor speed.
2. Hoist Load — Raise load and recover into cabin or Emergency Jettison depending on operational conditions and type of load or transition forward (maximum 30 KIAS if raising load).

Procedure when OEI Hover performance capability is required

Note

Weights defined in weight limitation charts guarantee no height loss in case of an engine failure.

1. Collective pitch — Maintain or adjust to maintain altitude AGL. Hover OEI is assured with 2.5 min rating.
2. Hoist Load — Raise load and recover into cabin, depending on operational conditions, or transition forward (do not exceed 2.5 min rating. Maximum airspeed 30 KIAS if raising load).

Note

Time required to raise load from fully extended approximately 2 minutes.

HOIST LOAD JETTISON

In the event of an emergency condition that requires the cable to be cut, open the HOIST CUT guard on the pilot's collective or CUT guard on hoist operators pendant and push the button to cut the cable.

MALFUNCTION PROCEDURES

TABLE OF CAUTION MESSAGES

CAS Caption	Page	Malfunction/System State
HOIST CUT ARMD	24 of 34	Hoist cable cut system armed.
HOIST CABL LKD	25 of 34	Hoist cable fouled.

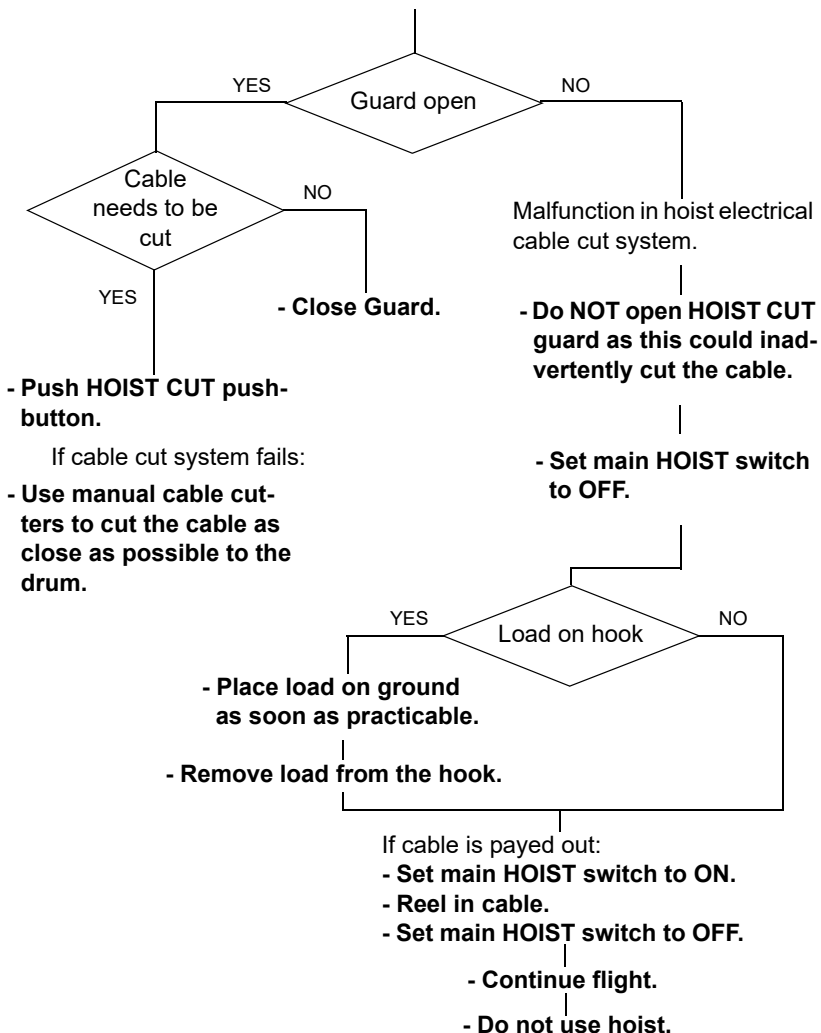
EXTERNAL HOIST CABLE CUT ARMED

HOIST CUT ARMED

Hoist electrical cable cut system armed due to the HOIST CUT guard (on pilot collective or hoist operator pendant) being open.

or

Malfunction detected in hoist electrical cable cut system.



EXTERNAL HOIST CABLE FOULED

HOIST CABL LKD

Hoist cable fouled.

HOIST control switch (on pilot's collective) and HOIST thumb-wheel (on pendant) are automatically rendered inoperative.

CAUTION

Do not attempt to free the cable.

- Land as soon as possible.

HOIST OVER-TEMPERATURE

(On pendant)

A hoist over temperature is indicated by an amber TEMP light on the HO control pendant. In the event of a motor hoist over temperature, complete the hoist cycle. Wait for system to cool down (indication on hoist operator control pendant extinguishes) before resuming operation



CAUTION

Prolonged operation of hoist with amber TEMP indication on hoist pendant display will result in hoist failure.

Note

When the hoist TEMP light is on, the hoist is automatically slowed in operation.

ELECTRICAL SYSTEM FAILURES

DOUBLE DC GENERATOR FAILURE

In the case of a double DC generator failure during hoist operations, further to the emergency procedure described in Section 3 of the basic RFM, the pilot is only allowed to complete the recovery cycle.

A rectangular box with a thick orange border and a black inner border. Inside the box, the word "CAUTION" is written in bold, black, uppercase letters.

CAUTION

One hoist recovery cycle reduces the flight time on battery power to 20 minutes.

GENERAL ELECTRICAL POWER FAILURE

In all general electrical failures, the emergency procedures described in Section 3 of the basic RFM are to be applied. Furthermore, the hoist recovery cycle should be completed.

SECTION 4 - PERFORMANCE DATA

Note

For combination with other optional equipment refer to chapter “[PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#)”.

HOVER CEILING OEI

For Hover Ceiling One Engine Inoperative (OEI) charts refer to basic RFM, Section 4.

OPERATIONS VS ALLOWABLE WIND

([Figures 4-1](#) thru [4-2](#))

Note

Before using Chart A and/or Chart B of this paragraph, the appropriate helicopter maximum gross weight for Hover (IGE/OGE) must be determined using the pertinent Hover performance charts.

The “Wind/Ground Speed Azimuth Envelope for hoist operations” charts define, at each altitude/OAT combination, the maximum gross weight and maximum allowable wind or ground speed of 20 kts in all azimuths between 10 and 350 deg for which satisfactory stability and control has been demonstrated.

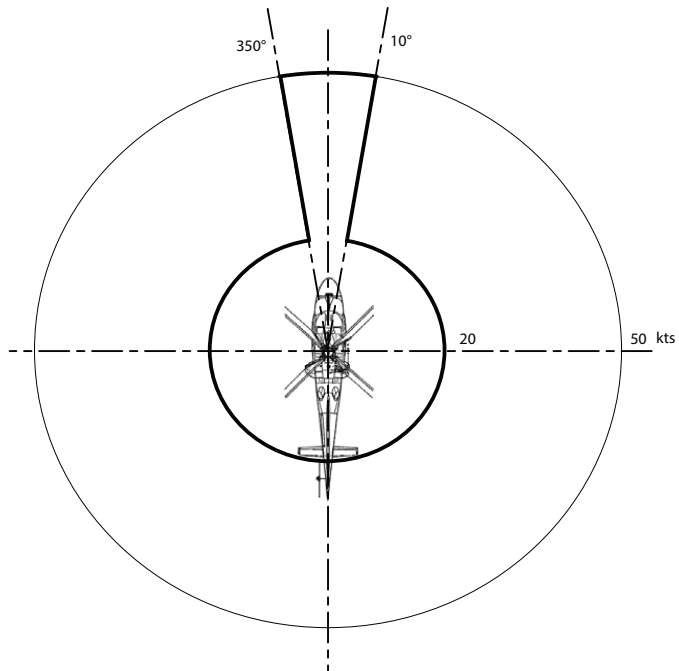
[Figure 4-1](#) (Chart A) is valid up to density altitude of 7000 ft Hd at the maximum Gross Weight of 3175 kg.

[Figure 4-2](#) (Chart B) is valid above 7000 ft Hd. In order to maintain the maximum allowable wind or ground speed of 20 kts in all azimuths between 10 and 350 degrees, for which satisfactory stability and control has been demonstrated, the Gross Weight must be reduced.

RATE OF CLIMB

With the External Hoist installed, the reduction in the Rate of Climb performance from the Clean aircraft configuration or ECS/Heater On charts is given in [PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#) in the Introduction.

LOW SPEED CONTROLLABILITY CHART A



Applicable up to 7000 ft Hd at Maximum Gross Weight

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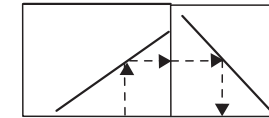
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**Figure 4-1 Wind/Ground Speed Azimuth Envelope for hoist
operations - Chart A**

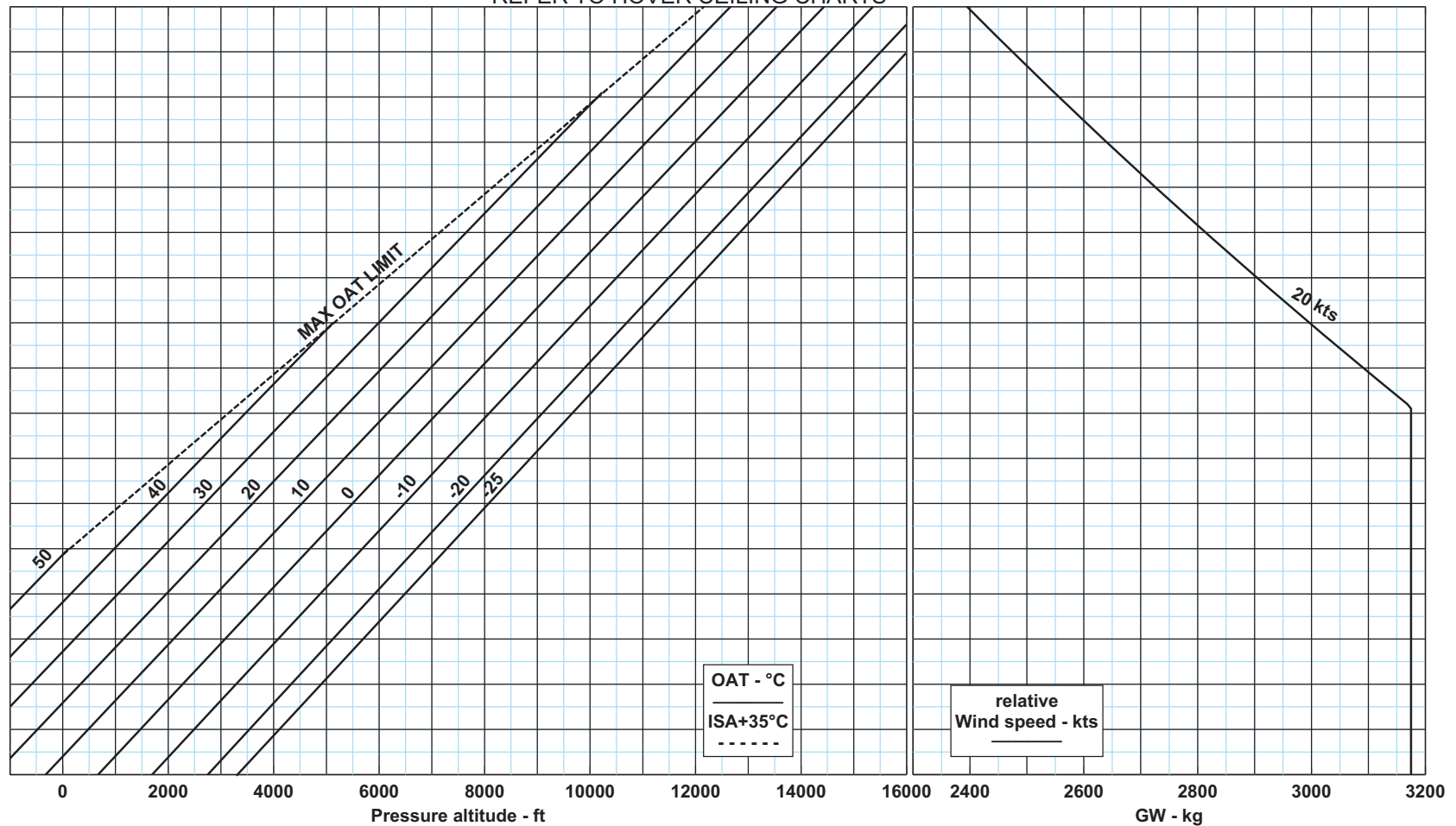
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**WEIGHT-ALTITUDE-TEMPERATURE
FOR LOW SPEED CONTROLLABILITY
CHART B**

NOTE: ALLOWABLE GROSS WEIGHTS OBTAINED FROM THIS CHART
MAY EXCEED CONTINUOUS HOVER CAPABILITY
UNDER CERTAIN AMBIENT CONDITIONS.
REFER TO HOVER CEILING CHARTS



ROTOR 102%



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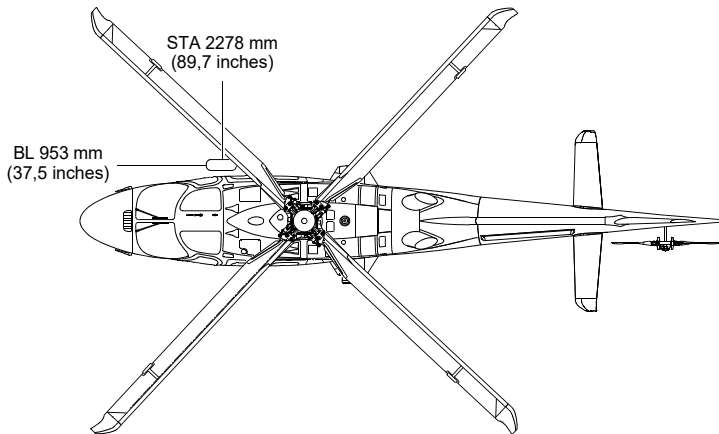
Figure 4-2 Wind/Ground Speed Azimuth Envelope for hoist operations - Chart B

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SECTION 6 - WEIGHT AND BALANCE

DATUM LINE LOCATIONS

Figure 6-1 presents the position of the hoist hook load bearing pivot point to aid in weight and balance computations.



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Figure 6-1 Hoist Station and Butt Line

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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CARGO HOOK P/N 109-0810-31

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Cargo Hook is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE C: 26 APRIL 2011
REVISION 2: 27 MAY 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
–	Issue C	EASA Approval N° 10034713 dated 26 April 2011
1	Revised pages Title page, A-1, B-1, 14 thru 27, 29 and 31 thru 49 of 50.	EASA Approval N° 10062498 dated 4 July 2017
2	Revised page 31 of 50.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1, B-1, iii, and iv.	Manufacturer's Data

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LIST OF EFFECTIVE PAGES

NOTE: Revised text is indicated by a black vertical line in the outer margin of the page and the approval revision number is printed in the lower margin

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B-2	0
i and ii	0
iii and iv	2
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GENERAL

The Cargo Hook, P/N 109-0810-31, consists of a support frame, a hook, a rearview mirror, P/N 109-0858-68 mounted under the belly of the helicopter, an electrical and manual (emergency) release system, and a load-on-hook measuring system with cockpit digital readout.

A spring system is attached to the cargo hook which provides the stowing mechanism when the hook is not in use.

Note

A swiveling link is not supplied with the cargo hook installation, however, it is recommended to use one between the load and the cargo hook.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

Cargo hook operation is approved for VFR conditions with visual contact with the ground.

Operations with a load attached to the cargo hook are authorized for 'Class B' rotorcraft-load combinations only.

Note

Class B rotorcraft-load combination means one in which the external load is jettisonable and is lifted free of land and water during rotorcraft operation.

CAUTION

The use of the cabin searchlight with cargo hook rearview mirror installed is permitted only with the lamp in stowed position.

Note

When cargo hook is in use, flight operations are only permitted with the landing gear down.

MINIMUM FLIGHT CREW

When operating with a load attached to the cargo hook only the personnel involved in the mission are allowed on board.

WEIGHT AND CENTER OF GRAVITY LIMITATIONS

Maximum gross weight with load
attached to the cargo hook..... 3200 kg (7055 lb)
Cargo hook maximum allowable load 1150 kg (2535 lb)

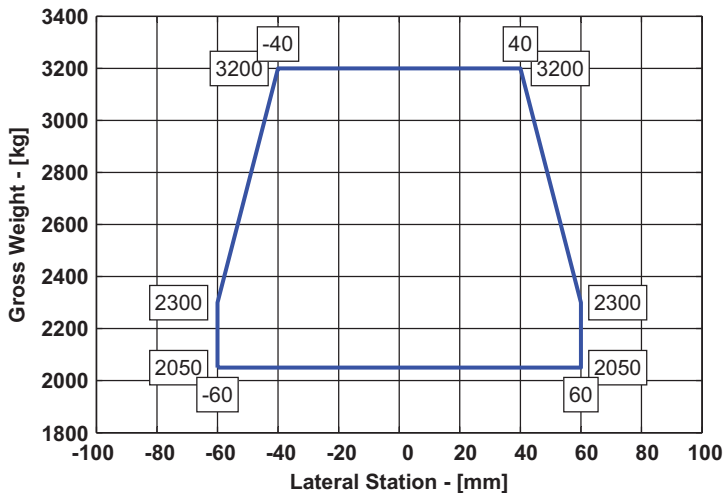
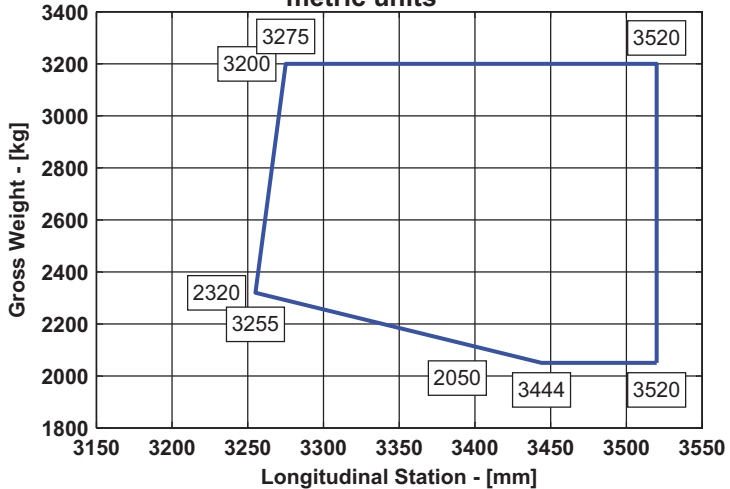
WARNING

Flight with an unballasted sling attached to the cargo hook is prohibited unless approved operational limits and procedures provided by the operator allow for such an operation.

Refer to [Figures 1-1](#) and [1-2](#) for longitudinal and lateral center of gravity limits when flying with a load attached to the cargo hook.

WEIGHT and CG Envelope CARGO HOOK OPERATION

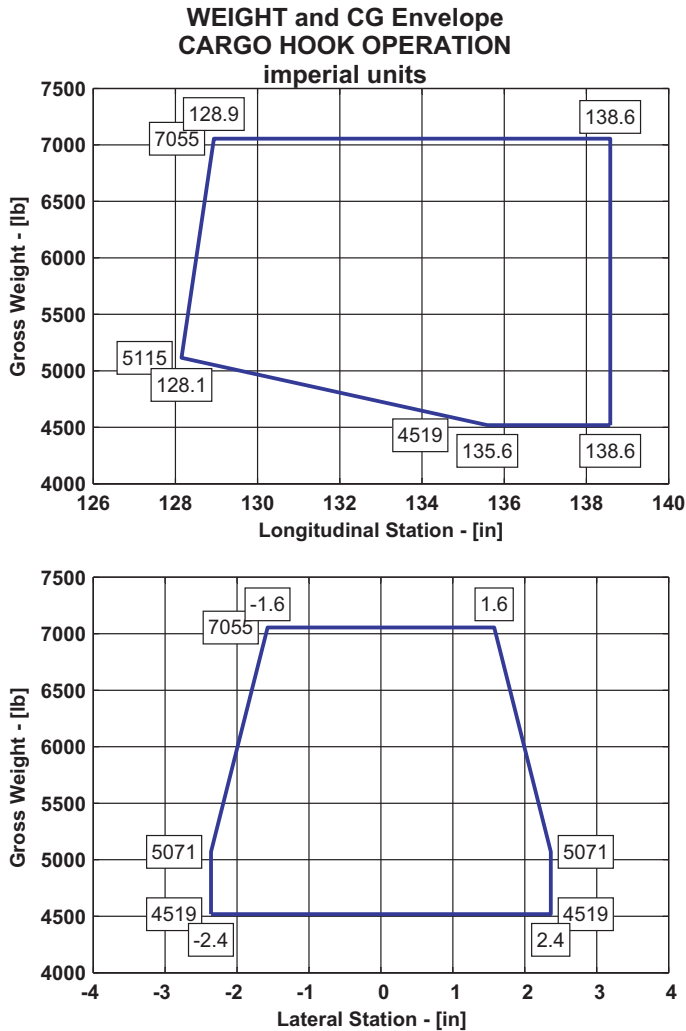
metric units



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Figure 1-1 Weight, Longitudinal and Lateral CG Envelope
(metric units)



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**Figure 1-2 Weight, Longitudinal and Lateral CG Envelope
(imperial units)**

AIRSPEED LIMITATIONS

V_{NE} with a load attached to the cargo hook:

From -1000 to 5000 ft Hp 100 KIAS

Above 5000 ft Hp Decrease by 2 KIAS
for every 1000 ft Hp

Note

The airspeed with external cargo is limited by controllability and load stability. Caution should be exercised when carrying external loads as helicopter handling characteristics and load stability may be affected by the size, weight and shape of the load, as well as by the distance between the load and the helicopter.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°2 (Fuselage - RH side)

1. Cargo hook rearview mirror : Condition, cleanliness and secure.
2. Cargo hook : Condition and secure.

Area N°7 (Cockpit Interior)

1. CARGO HOOK PRIM and SEC circuit breaker : Engaged.
2. ➡ CARGO REL PRIM push-buttons (on pilot and co-pilot cyclic grips) : Guarded.

For the following checks connect the d.c. supply:

Note

The following checks may require a large electrical consumption. Beware of possible battery charge depletion if not using external power.

Note

Ground personnel should assist the pilot during the cargo hook checks.

3. ➡ EDU 1 : Confirm C HOOK ARMED caution message is not illuminated.
4. ➡ CARGO REL PRIM pushbutton(on pilot and co-pilot cyclic grips) : Open guard to arm the release system.

5. ➡ EDU 1 : Confirm C HOOK ARMED caution message illuminates.
6. ➡ CARGO REL PRIM push-button (on pilot cyclic) : Push.
Confirm hook opens (see note below).
Confirm C HOOK OPEN caution message illuminates.
Release the pushbutton and confirm that the hook returns to the closed position.
Confirm C HOOK OPEN caution message clears.
7. ➡ CARGO REL PRIM push-button (on pilot cyclic) : Lower guard to disarm the release system.
8. ➡ EDU 1 : Confirm C HOOK ARMD caution message clears.

Repeat cargo hook checks using the CARGO REL PRIM pushbutton on the co-pilot cyclic:

9. ➡ EMER CARGO RELEASE PULL handle : Pull handle and confirm hook opens (see note below).
Confirm C HOOK OPEN caution message illuminates.
Release the handle and confirm that the hook returns to the closed position.
Confirm C HOOK OPEN caution message clears.

Note

A spring holds the cargo hook in the closed position even when the locking device is released. A force of approximately 5 kg must be applied to the hook to overcome the spring force and open the hook.

Disconnect the d.c. supply.

ENGINE PRE-START CHECKS

INITIAL CHECKS

Cyclic Sticks:

1. CARGO REL PRIM pushbut- : Guarded.
tons

SYSTEM CHECKS

MISCELLANEOUS

1. Hook load indicator : Set to zero.

Note

Adjust the hook load indicator to show zero after a 5 min warm up with no load on the hook.

TAKE-OFF

EXTERNAL LOAD ATTACHMENT

WARNING

Helicopter static electricity should be discharged, by a suitable means, before ground personnel touch any part of the helicopter. If contact has been lost after initial grounding of the static electricity it should be re-grounded and, if possible, contact maintained until load hook-up is complete.

Stabilize in a hover at sufficient height to allow ground personnel to discharge the static electricity and attach the load to the hook.

Note

Attachment of the load to the hook can be observed by means of the rearview mirror.

After load attachment slowly climb vertically to take up the slack in the load.

As the weight of the load is taken up by the hook read the hook load indicator to confirm that the weight of the load does not increase the helicopter gross weight beyond the allowable limits and that the maximum hook load is not exceeded.

Hover to check for satisfactory controllability and power within limits.

Note the radalt height and set the radalt low height bug accordingly.

IN FLIGHT

Enter into slow forward flight.

Check the controllability of the helicopter with the load attached, and ensure that no uncontrollable or hazardous flight conditions exist.

Allow adequate clearance of the load over obstacles.

Increase forward airspeed and select an operational airspeed at which no excessive oscillation is encountered.

APPROACH AND LANDING

EXTERNAL LOAD RELEASE

1. CARGO REL PRIM pushbutton : Open guard to arm the release
(on pilot flying cyclic) system.
2. EDU 1 : Confirm C HOOK ARMD caution message illuminates.

Approach the load drop-off area with care and at a slow speed.

Stabilize in the hover over the release point, then slowly descend until the load has settled on the ground.

3. CARGO REL PRIM pushbutton : Push.
(on pilot flying cyclic) Confirm C HOOK OPEN caution message illuminates.
4. Rearview mirror : Confirm load has released.

Note

The load will release when its weight overcomes the spring force in the hook. If the load has not released, the pilot should climb slowly until there is additional force on the hook, but without lifting the load off the ground, if possible. Then operate the CARGO REL PRIM pushbutton again to release the load.

Note

In the event of electrical failure, pull the EMER CARGO RELEASE PULL handle to release the load.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES

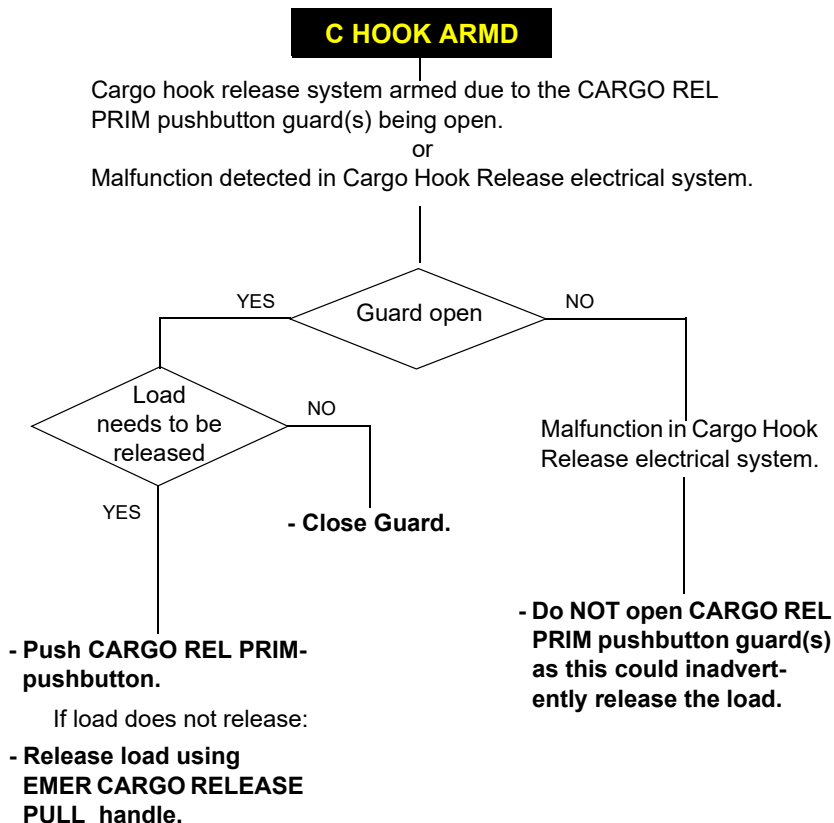
In the event of an emergency that requires the external load to be released, open the CARGO REL PRIM (located on pilot cyclic stick) guard and push the button to release the load. If the load does not release, pull the EMER CARGO RELEASE PULL handle (located left of pilot seat).

MALFUNCTION PROCEDURES

TABLE OF CAUTION MESSAGES

CAS Caption	Page	Malfunction/System State
C HOOK ARMD	12 of 50	Cargo hook release system armed.
C HOOK OPEN	13 of 50	Cargo hook in open position.

CARGO HOOK ARMED



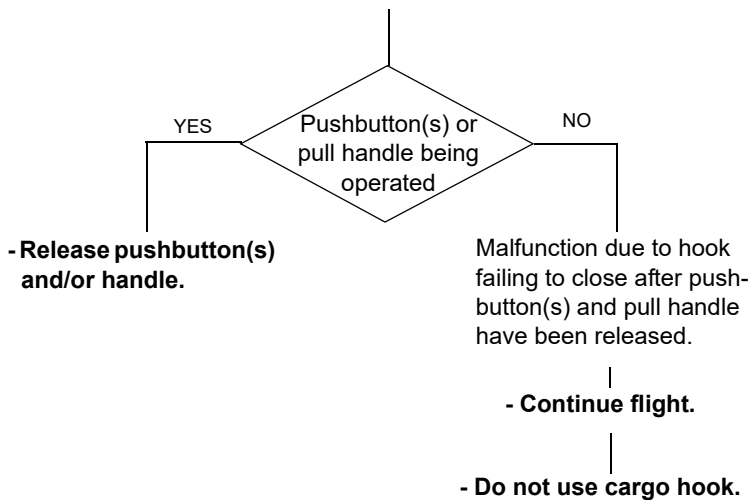
CARGO HOOK OPEN

C HOOK OPEN

Cargo hook in open position due to the CARGO REL PRIM pushbutton(s) or EMER CARGO RELEASE PULL handle being operated.

or

HOOK OPEN caution remains after CARGO REL PRIM pushbutton(s) and EMER CARGO RELEASE PULL handle have been released.



SECTION 4 - PERFORMANCE DATA

Note

For combination with other optional equipment refer to chapter “[PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#)”.

GENERAL

Forward flight and climb performance will be degraded due to the load aerodynamic drag. The level of degradation will depend on load size and shape.

There are no significant load effects on hover performance.

HOVERING CEILING

([Figures 4-1](#) thru [4-12](#))

The Hover Ceiling charts define the maximum weights at which an OGE hover (60 ft AGL) is possible for different combinations of Pressure Altitude and OAT with main rotor speed (NR) at 102% and zero wind conditions.

For hover in sidewind condition, refer to OPERATION VS ALLOWABLE WIND procedure in this section or of the applicable Optional Equipment

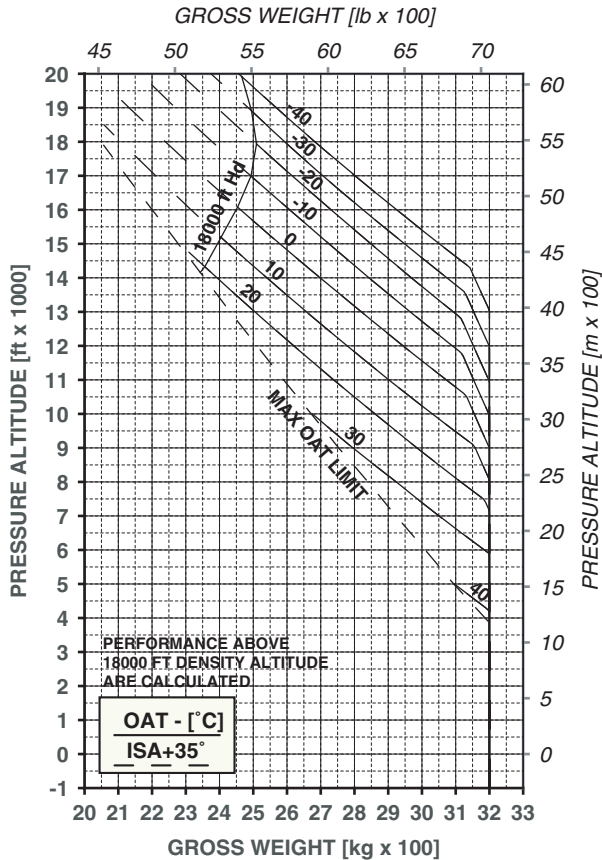
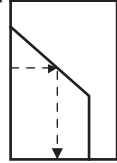
Information is presented for All Engines Operating (AEO) at Take-Off Power (TOP) with Heater / ECS and EAPS OFF and ON and Maximum Continuous Power (MCP) with Heater / ECS and EAPS OFF and ON.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

HOVER CEILING OUT OF GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
ELECTRICAL LOAD: 200 A TOTAL



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Figure 4-1 Hover Ceiling OGE - Take-Off Power -
Heater / ECS OFF

HOVER CEILING OUT OF GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

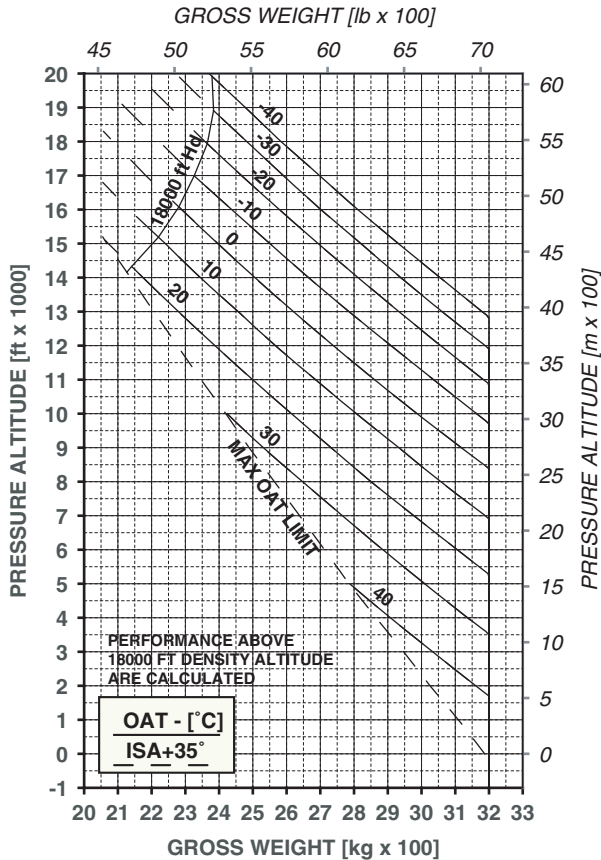
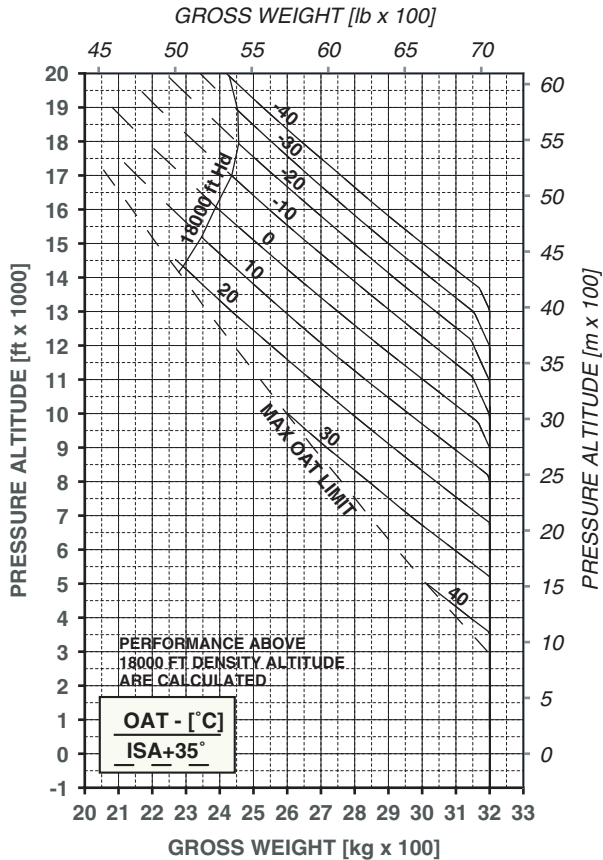


Figure 4-2 Hover Ceiling OGE - Take-Off Power -
Heater / ECS ON

HOVER CEILING OUT OF GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF
ELECTRICAL LOAD: 200 A TOTAL



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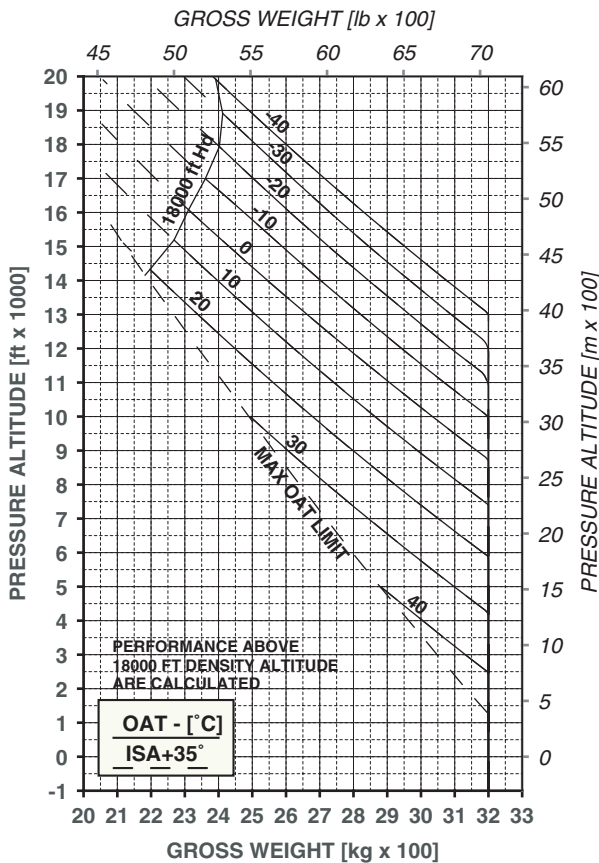
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Figure 4-3 Hover Ceiling OGE - Take-Off Power -
EAPS OFF

HOVER CEILING OUT OF GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: ON
ELECTRICAL LOAD: 200 A TOTAL



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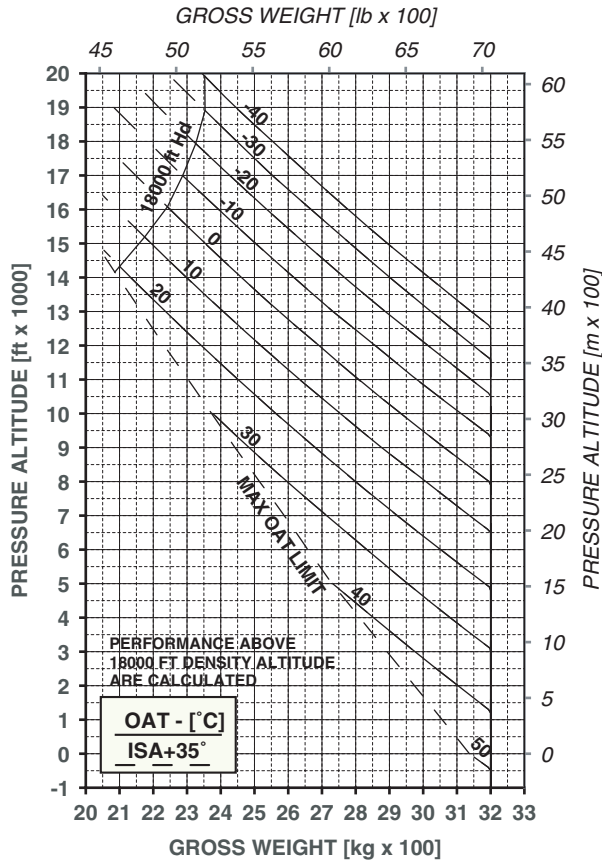
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Figure 4-4 Hover Ceiling OGE - Take-Off Power -
EAPS ON

HOVER CEILING OUT OF GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF
ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-5 Hover Ceiling OGE - Take-Off Power -
EAPS OFF - Heater / ECS ON**

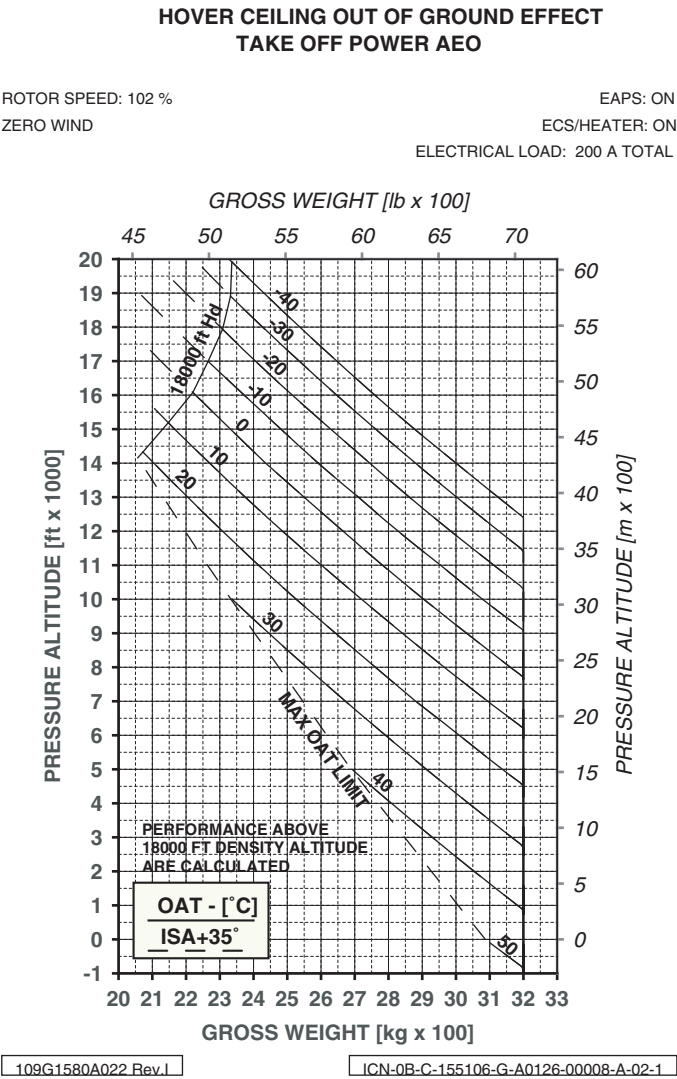
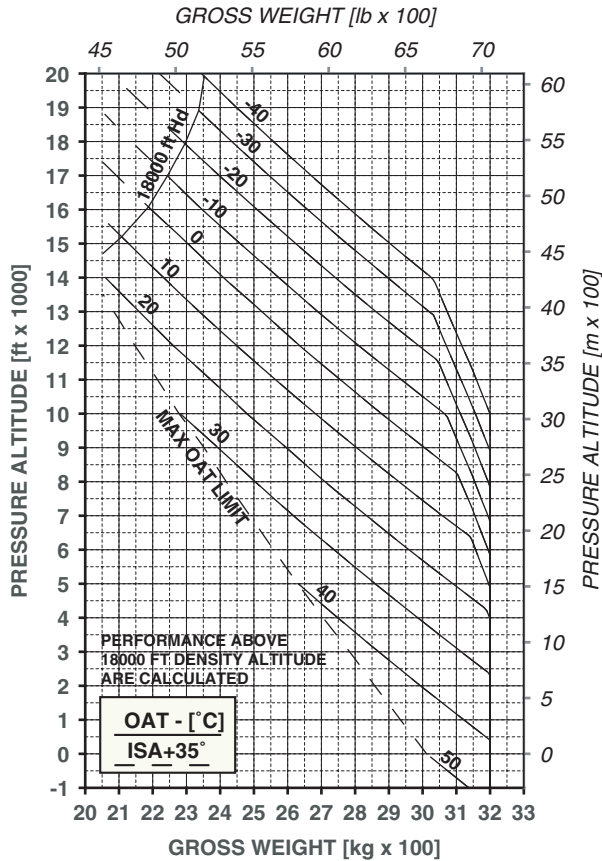


**Figure 4-6 Hover Ceiling OGE - Take-Off Power -
EAPS ON - Heater / ECS ON**

HOVER CEILING OUT OF GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ELECTRICAL LOAD: 200 A TOTAL



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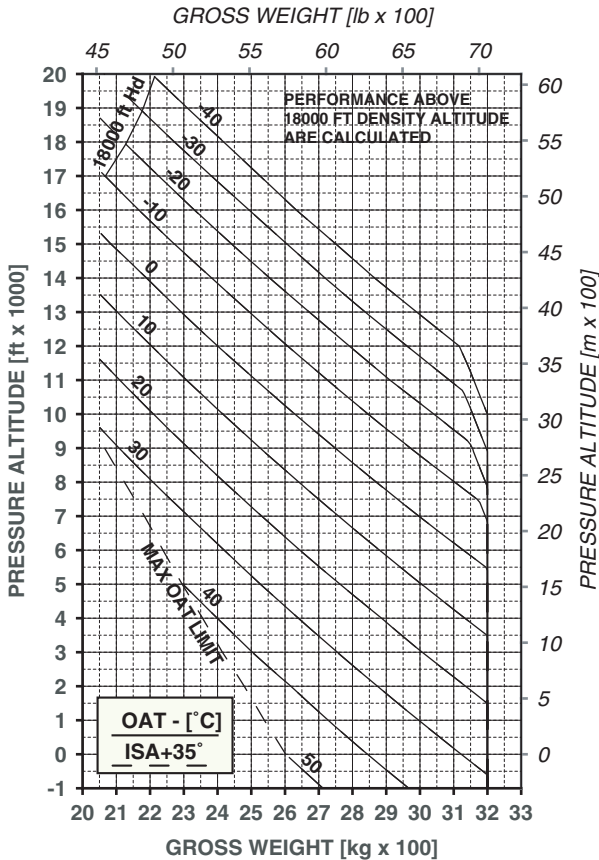
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**Figure 4-7 Hover Ceiling OGE - Maximum Continuous Power -
Heater / ECS OFF**

HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL



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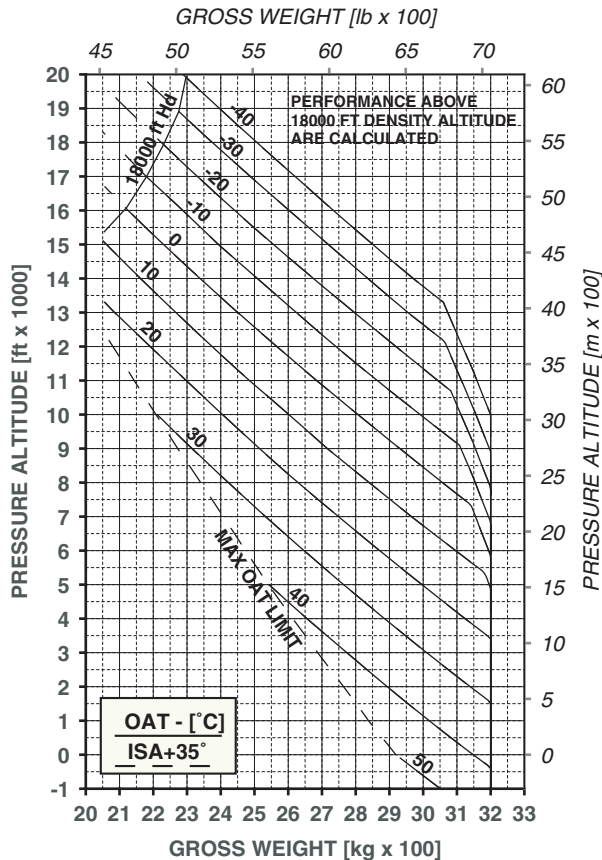
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Figure 4-8 Hover Ceiling OGE - Maximum Continuous Power -
Heater / ECS ON

HOVER CEILING OUT OF GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF
ELECTRICAL LOAD: 200 A TOTAL



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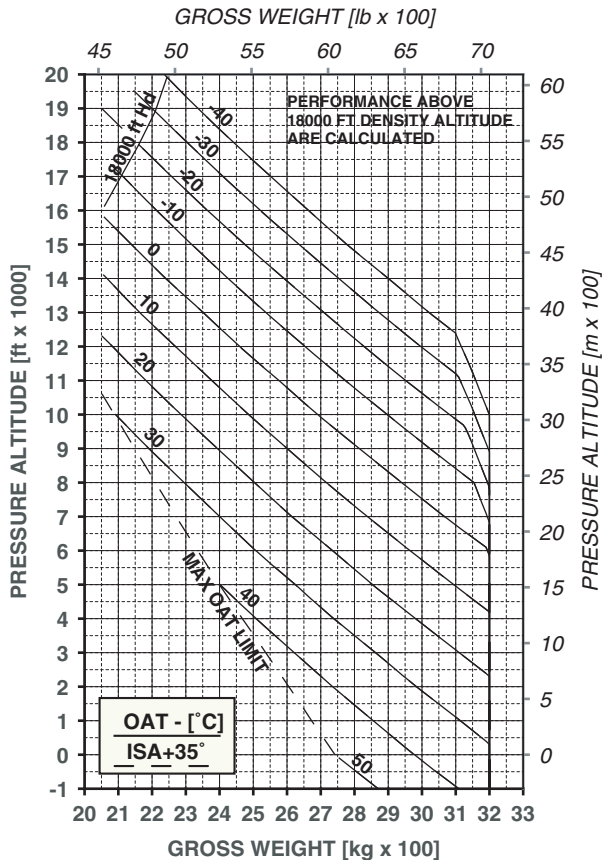
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Figure 4-9 Hover Ceiling OGE - Maximum Continuous Power - EAPS OFF

HOVER CEILING OUT OF GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: ON
ELECTRICAL LOAD: 200 A TOTAL



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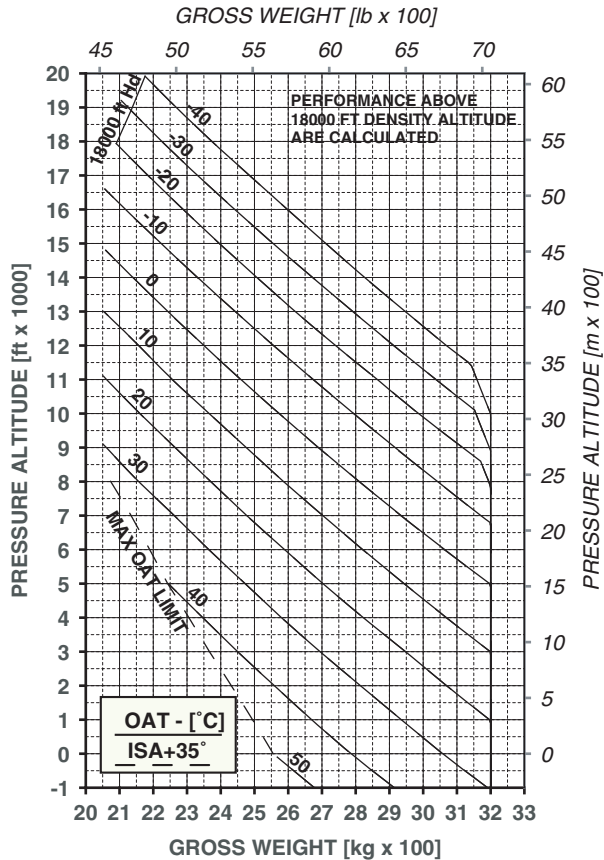
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Figure 4-10 Hover Ceiling OGE - Maximum Continuous Power -
EAPS ON

HOVER CEILING OUT OF GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF
ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL



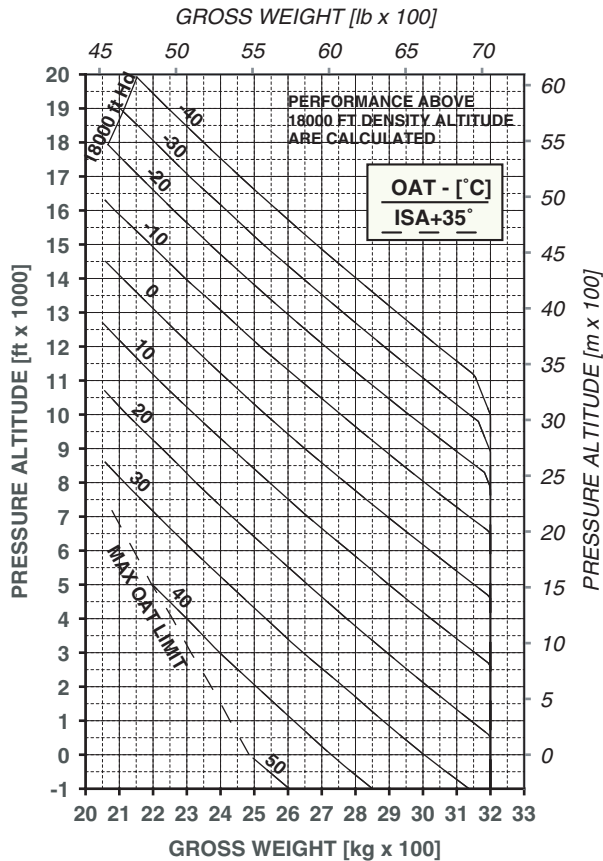
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**Figure 4-11 Hover Ceiling OGE - Maximum Continuous Power -
EAPS OFF - Heater / ECS ON**

HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
EAPS: ON
ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL



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Figure 4-12 Hover Ceiling OGE - Maximum Continuous Power -
EAPS ON - Heater / ECS ON

OPERATIONS VS ALLOWABLE WIND

([Figures 4-13](#) and [4-14](#))

Note

Before using Chart A and/or Chart B of this paragraph, the appropriate helicopter maximum gross weight for Hover (IGE/OGE) must be determined using the pertinent Hover performance charts.

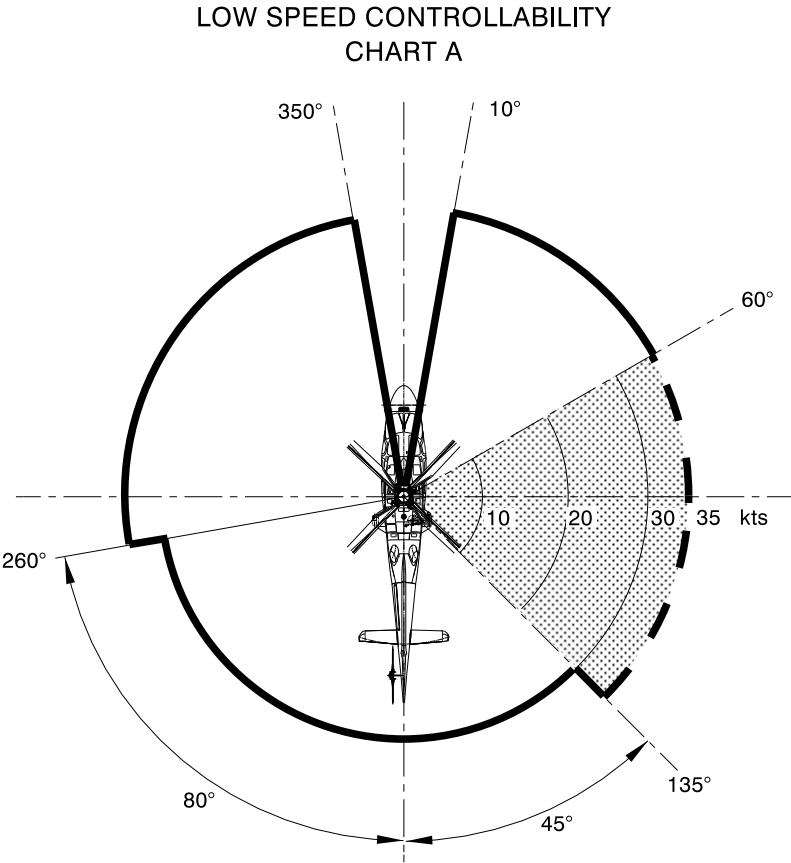
The “Wind Ground Speed Azimuth Envelope” charts define, at each altitude/OAT combination, the maximum weight and maximum allowable wind for which a satisfactory stability and control has been demonstrated.

[Figures 4-13](#) (Chart A) is valid up to a density altitude of 10000 ft Hd. Maximum relative wind speed in the shaded area of Chart A (from 60 to 135 degrees of azimuth) is determined by Area 2 of Chart B.

Above 10000 ft Hd, maximum relative wind speed in all azimuths between 10 and 350 degrees is determined by Area 1 of Chart B.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).



109G1580A002 Rev.A

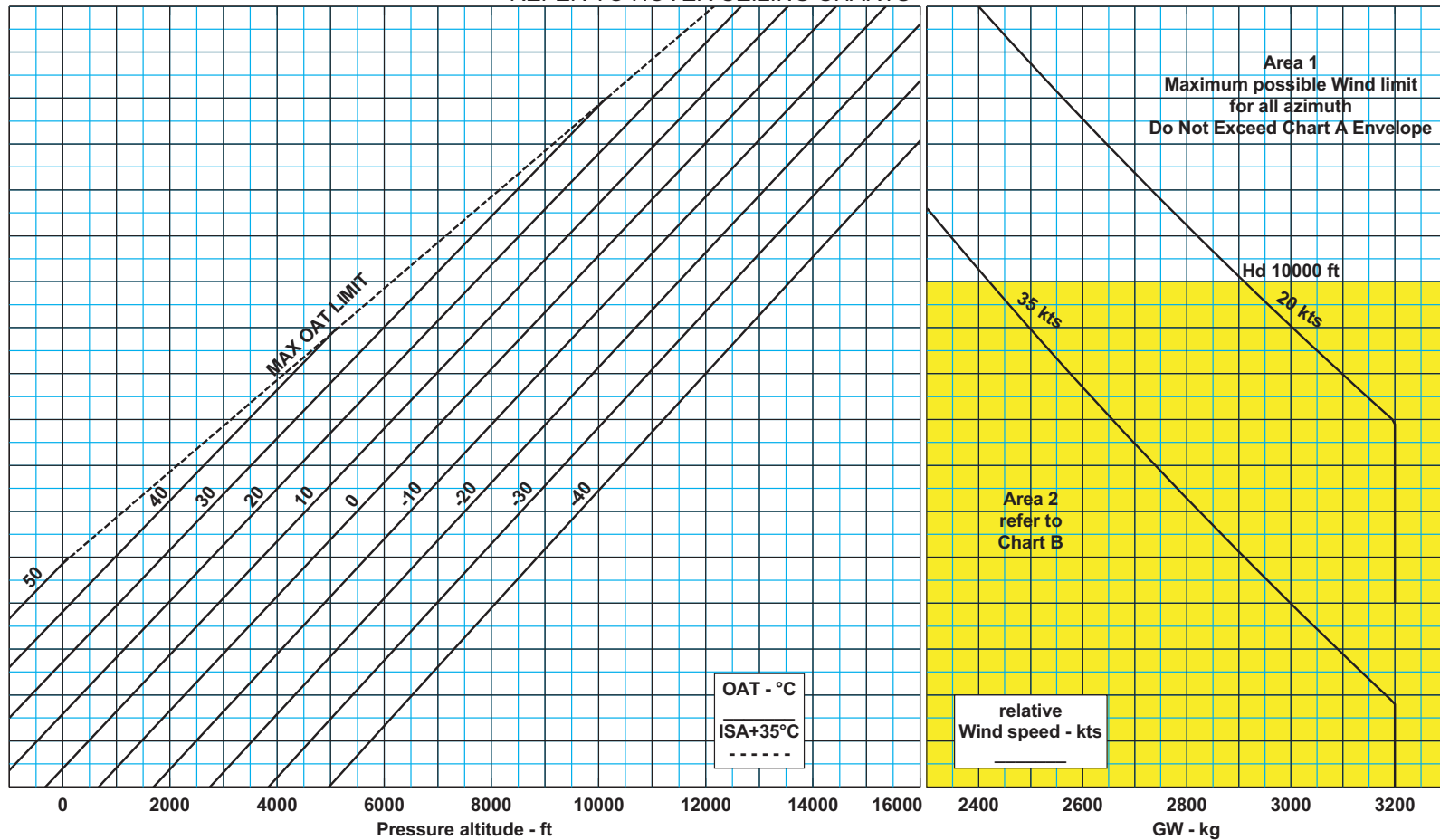
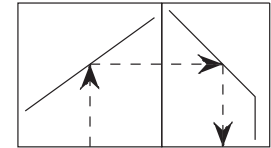
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Figure 4-13 Wind/Ground Speed Azimuth Envelope (Chart A)
for cargo hook operations

**WEIGHT-ALTITUDE-TEMPERATURE
FOR LOW SPEED CONTROLLABILITY
CHART B**

NOTE: ALLOWABLE GROSS WEIGHTS OBTAINED FROM THIS CHART
MAY EXCEED CONTINUOUS HOVER CAPABILITY
UNDER CERTAIN AMBIENT CONDITIONS.
REFER TO HOVER CEILING CHARTS

ROTOR 102%



109G1580A022 rev.L

ICN-0B-C-155000-G-A0126-00212-A-02-1

Figure 4-14 Wind/Ground Speed Azimuth Envelope - Chart B for cargo hook operations

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RATE OF CLIMB

(Figure 4-15 thru 4-32)

The following charts show the Climb Performance at the Maximum Gross Weight of 3200 Kg without the effect of aerodynamic drag due to load size and shape.

The Rate of Climb (ROC) is presented both for the All Engine Operating and for One Engine Inoperative (OEI) conditions.

The AEO charts are calculated, with Landing Gear Down alias Fixed Wheeled Landing Gear, at Take Off Power (TOP) rating and at Maximum Continuous Power (MCP) rating with Heater / ECS OFF and ON and EAPS OFF and ON.

The OEI charts are calculated, with Landing Gear Down alias Fixed Wheeled Landing Gear, at 2.5 min power OEI rating and at Maximum Continuous Power (MCP) OEI rating with EAPS OFF and ON.

Note

In OEI condition the Heater / ECS is automatically switched OFF.

For Gross Weights up to 3175 kg use the Rate of Climb performance at Section 4 of basic RFM or those presented in the Heater or ECS Supplements only after having applied the corrections for the presence of Cargo Hook and of Fixed Wheeled Landing Gear coming from the paragraph **PERFORMANCE CORRECTION AFTER KIT INSTALLATION** in the Introduction.

The speed datum for all ROC graphs is V_y , which is 80 KIAS up to 10000 ft and then decreases by 2 knots every 1000 ft to become 60 KIAS at 20000 ft.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit (Supplement 15).

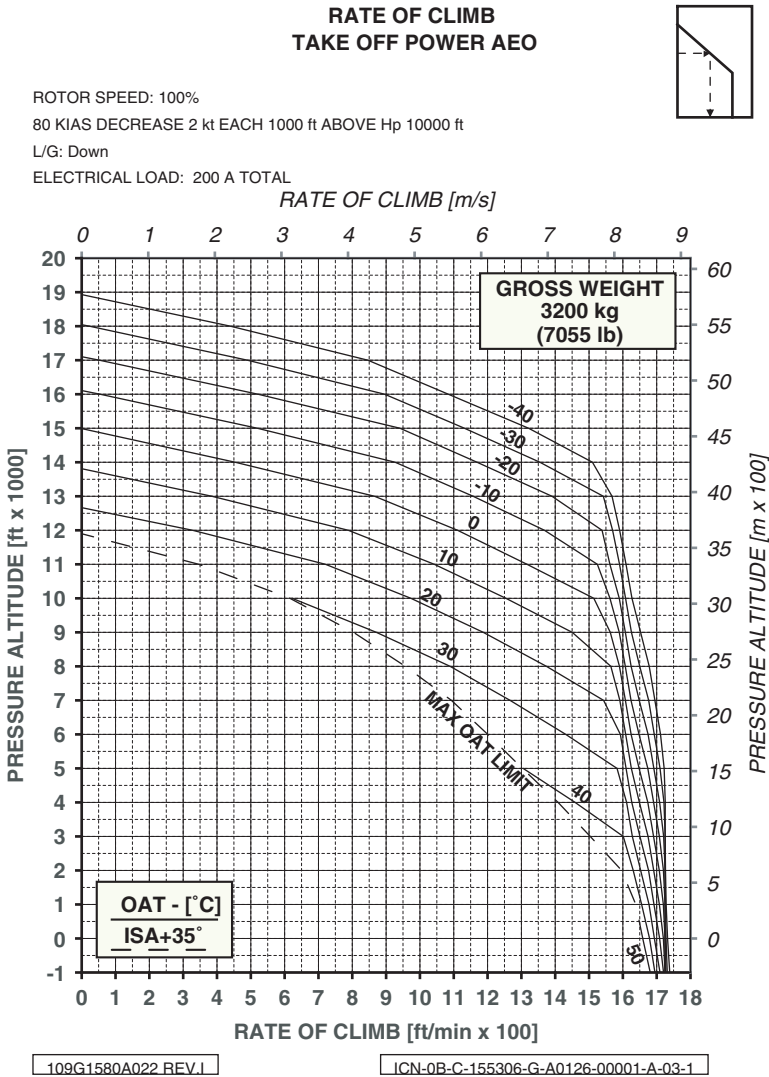


Figure 4-15 Rate of Climb at Take-Off Power - Heater / ECS OFF
- Gross Weight 3200 kg.

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

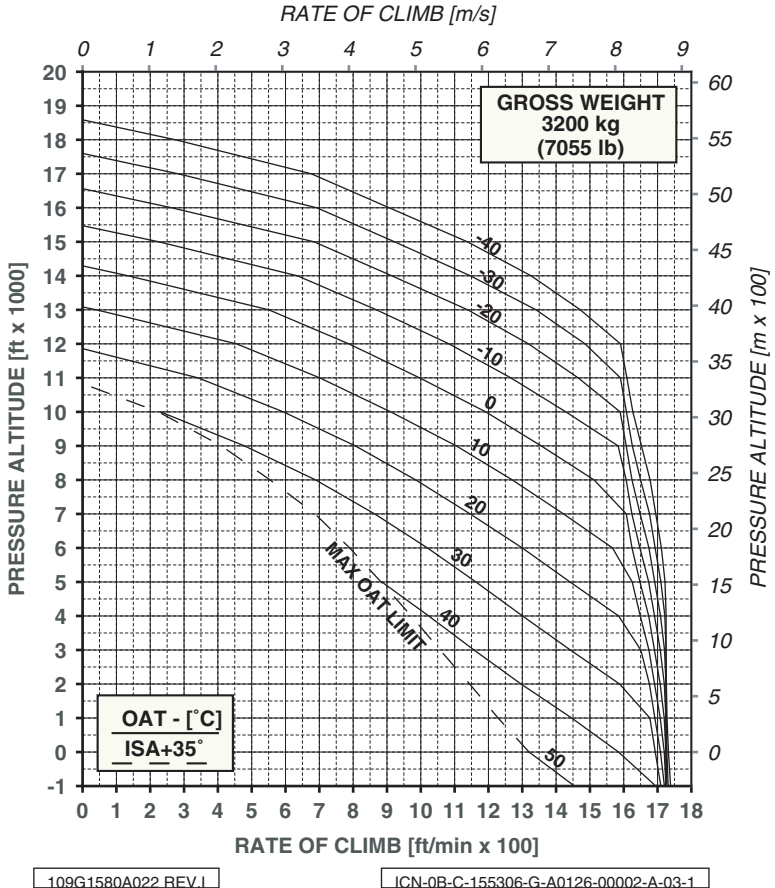


**Figure 4-16 Rate of Climb at Take-Off Power - Heater / ECS ON
- Gross Weight 3200 kg**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100%

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A TOTAL

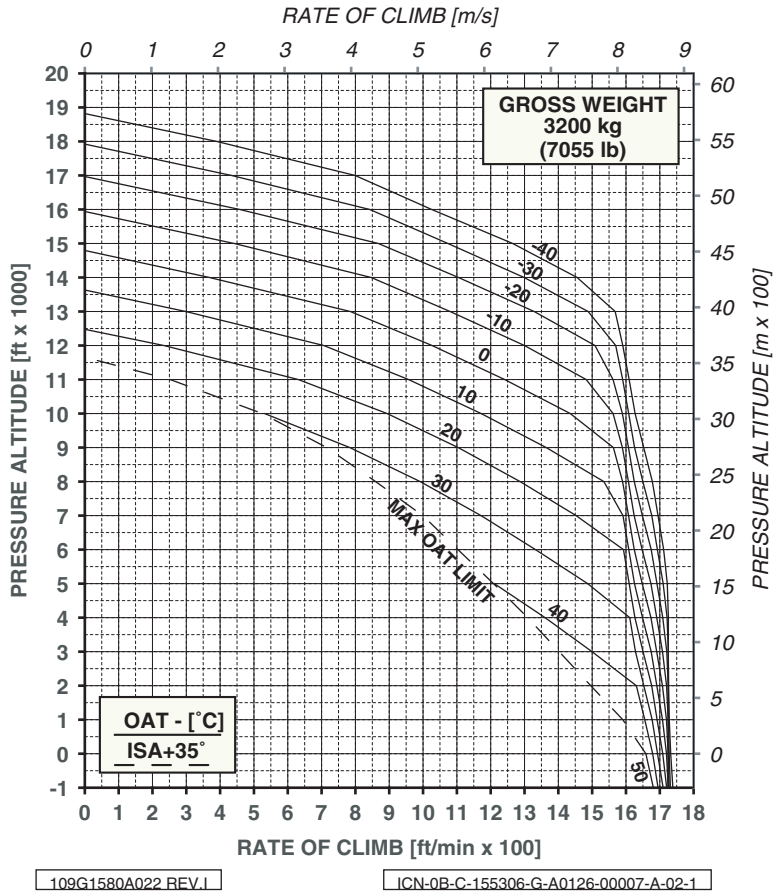


Figure 4-17 Rate of Climb at Take-Off Power - EAPS OFF
- Gross Weight 3200 kg

**RATE OF CLIMB
TAKE OFF POWER AEO**

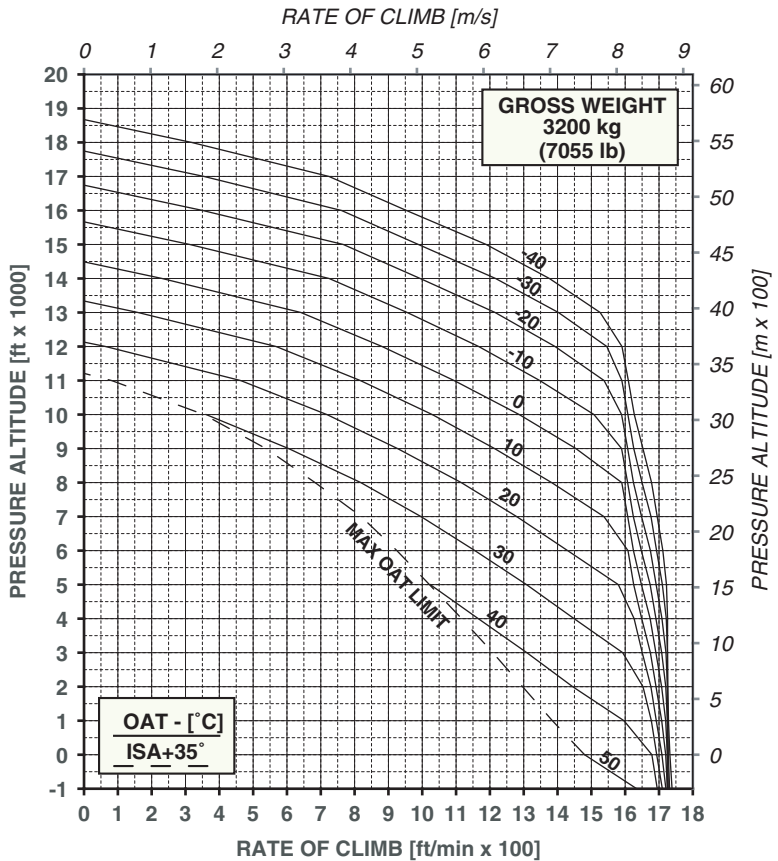
ROTOR SPEED: 100%

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-18 Rate of Climb at Take-Off Power - EAPS ON
- Gross Weight 3200 kg**

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down

EAPS: OFF
ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

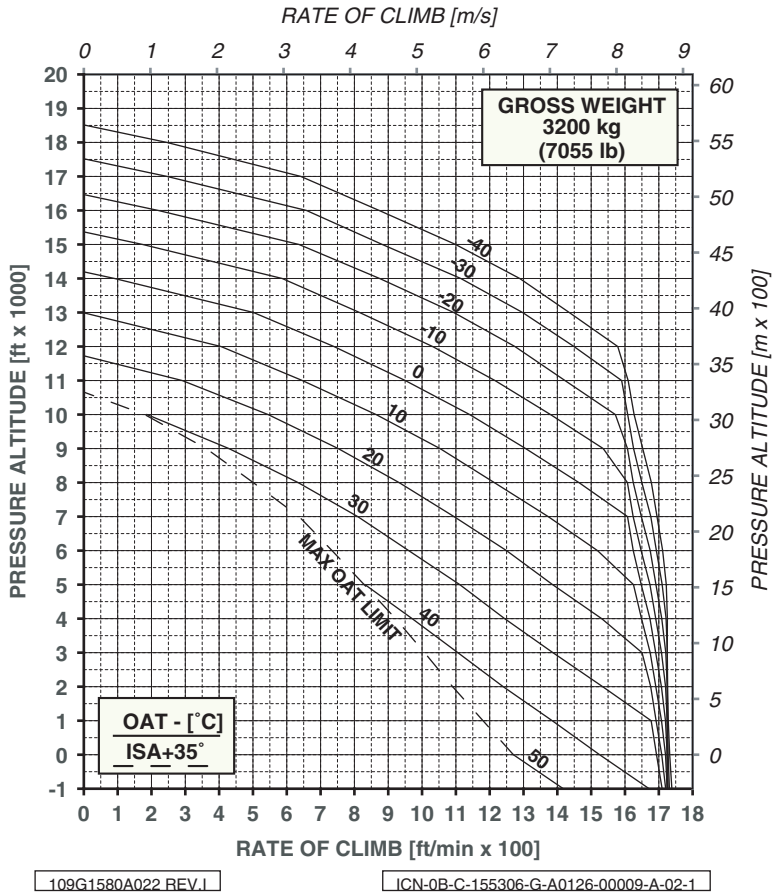


**Figure 4-19 Rate of Climb at Take-Off Power - EAPS OFF -
Heater / ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

EAPS: ON

ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

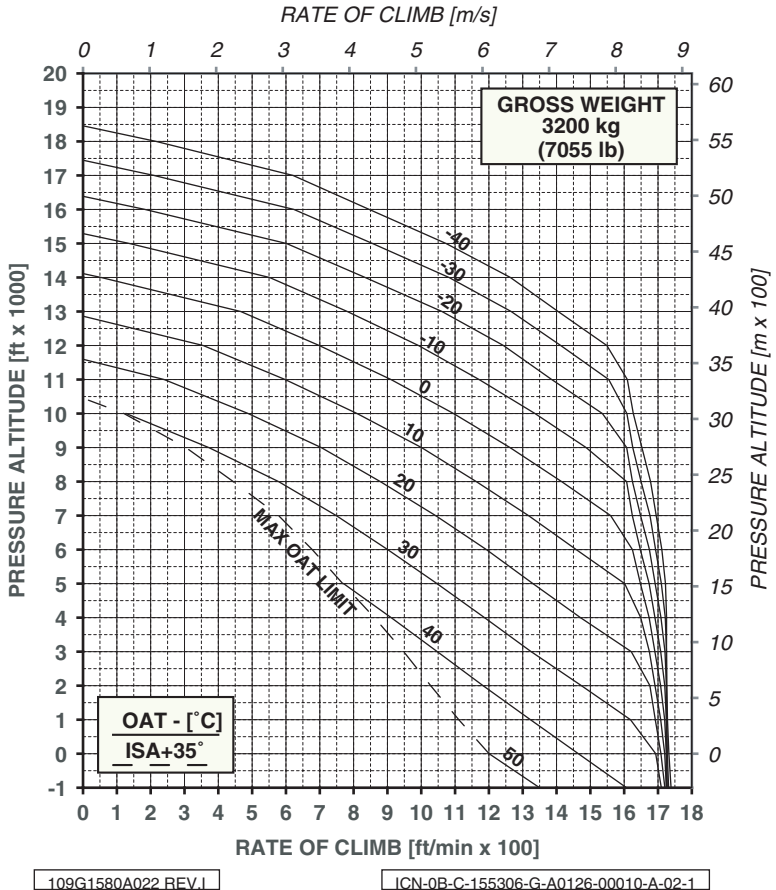


**Figure 4-20 Rate of Climb at Take-Off Power - EAPS ON -
Heater / ECS ON - Gross Weight 3200 kg**

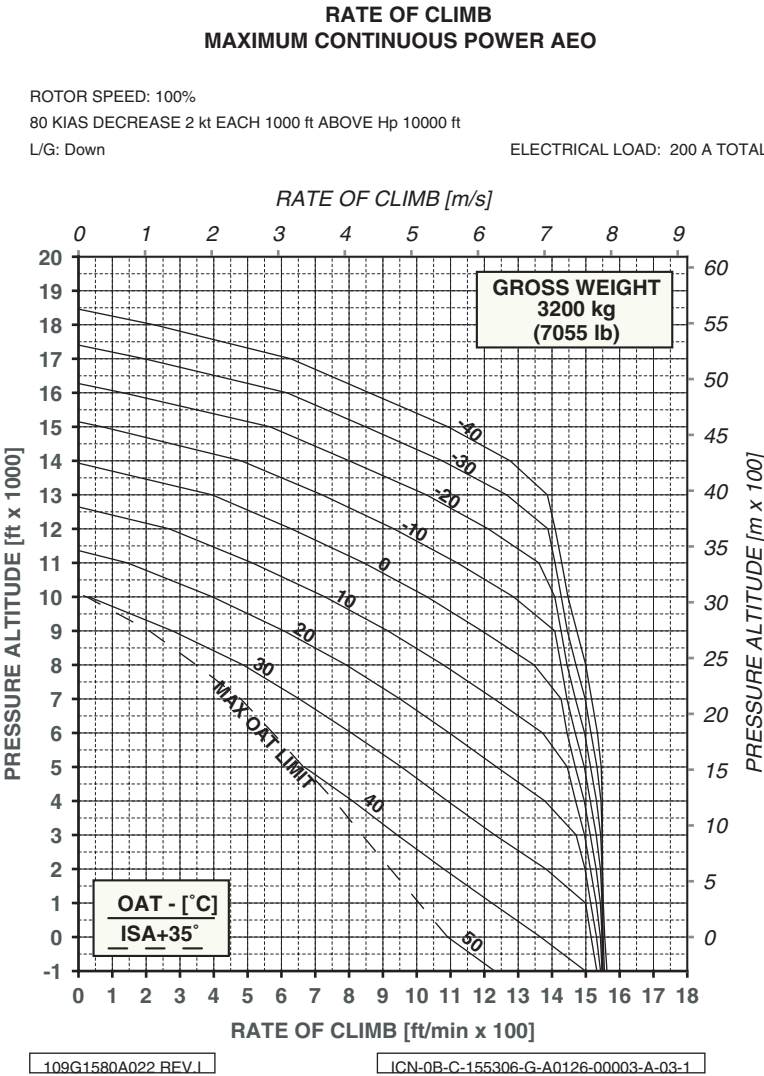


**Figure 4-21 Rate of Climb at Maximum Continuous Power -
Heater / ECS OFF - Gross Weight 3200 kg.**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

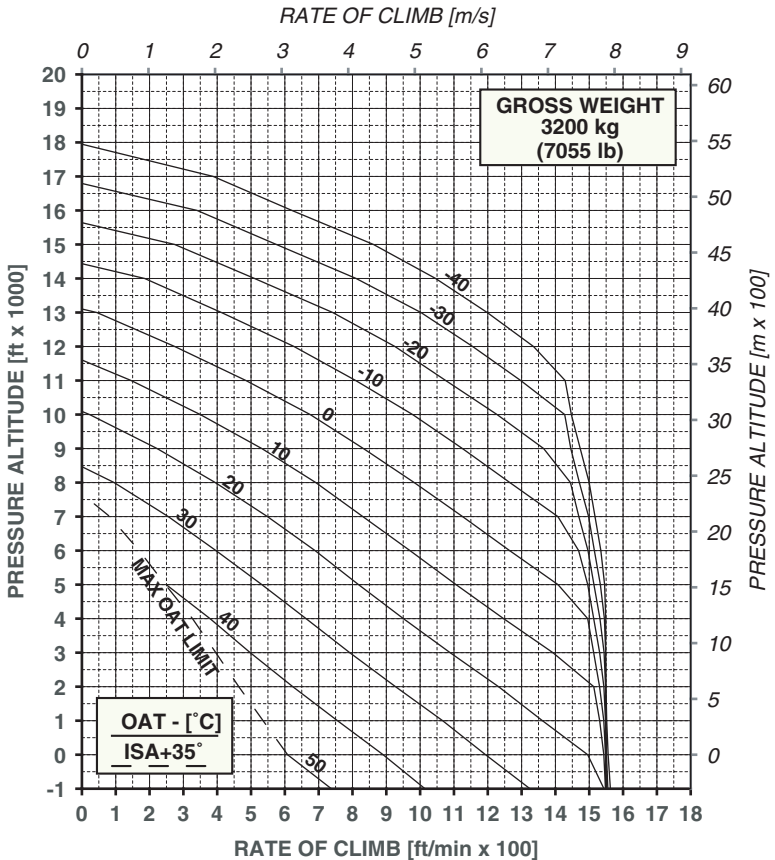


**Figure 4-22 Rate of Climb at Maximum Continuous Power -
Heater / ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
MINIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100% EAPS: OFF
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down ELECTRICAL LOAD: 200 A TOTAL

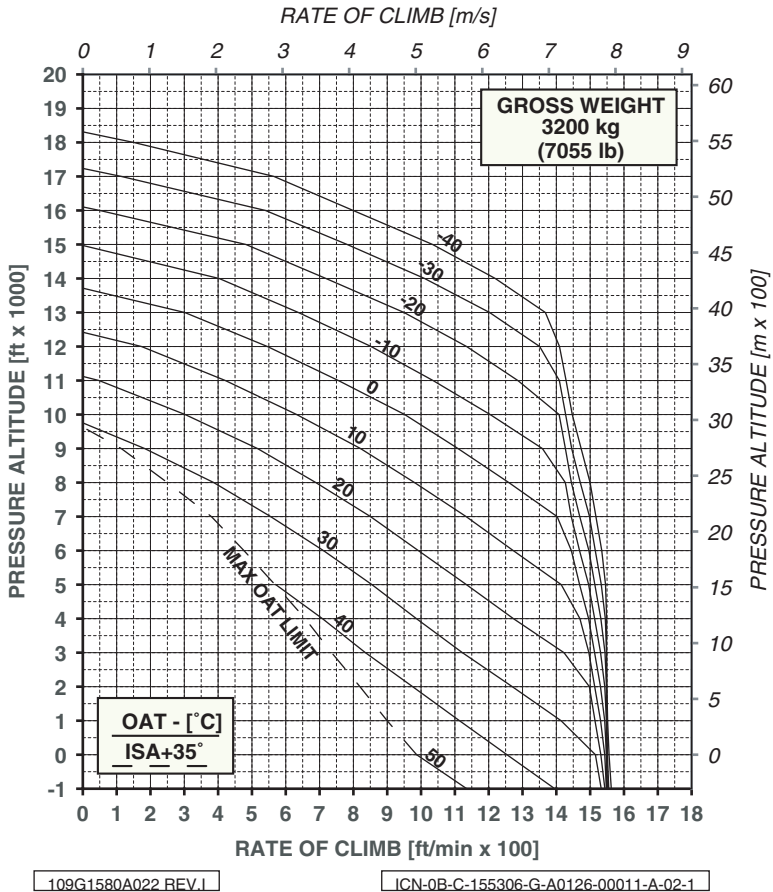


**Figure 4-23 Rate of Climb at Maximum Continuous Power -
EAPS OFF - Gross Weight 3200 kg**

**RATE OF CLIMB
MINIMUM CONTINUOUS POWER AEO**

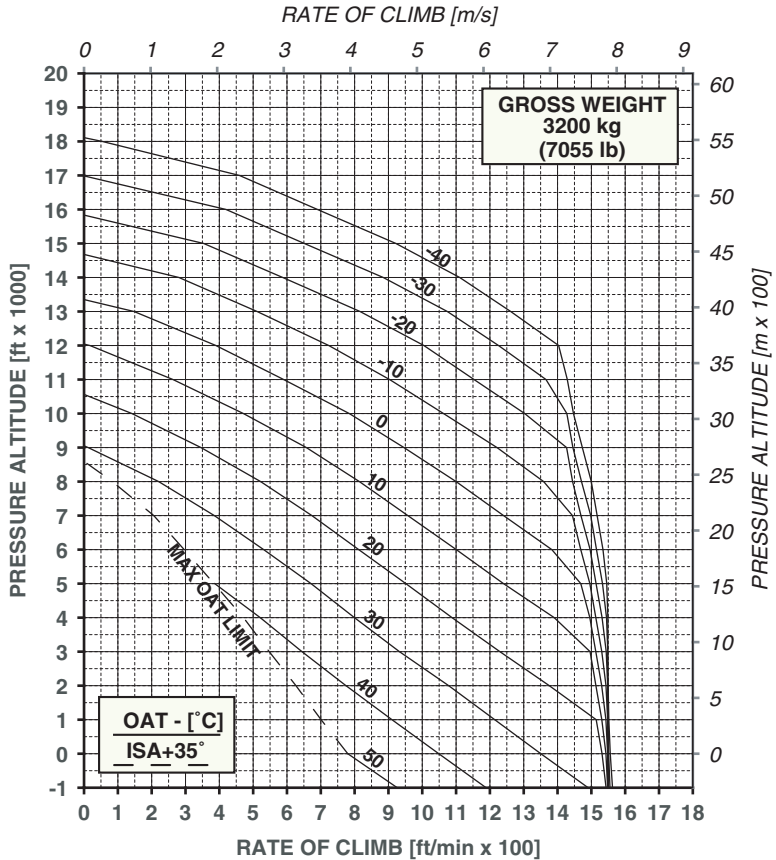
ROTOR SPEED: 100%

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-24 Rate of Climb at Maximum Continuous Power -
EAPS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
MINIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down

EAPS: OFF
ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

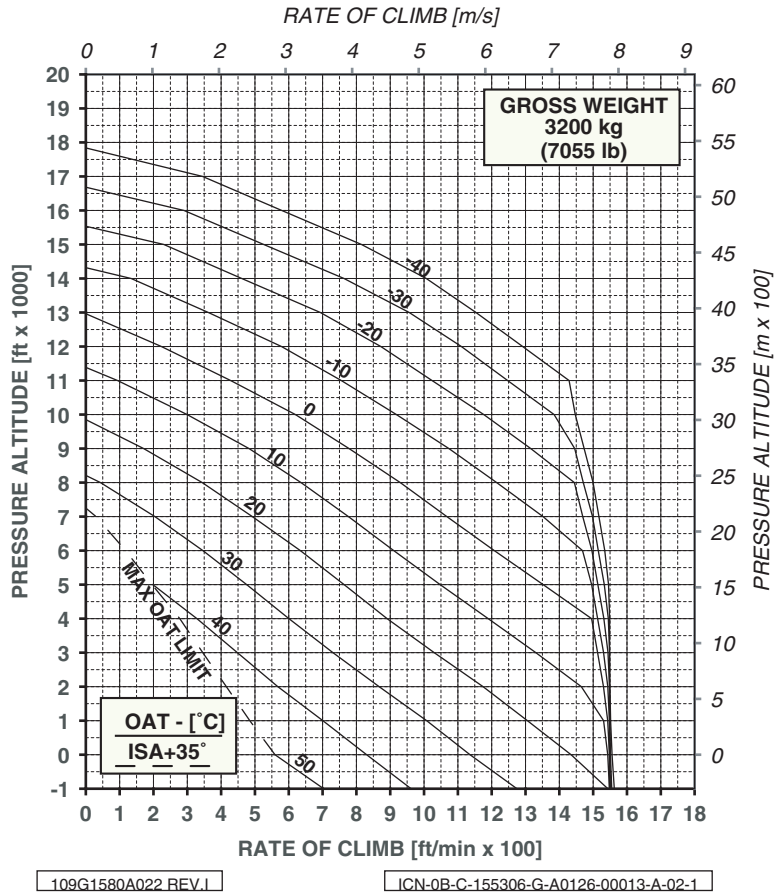


**Figure 4-25 Rate of Climb at Maximum Continuous Power -
EAPS OFF - Heater / ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
MINIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE H_p 10000 ft

L/G: Down

EAPS: ON

ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

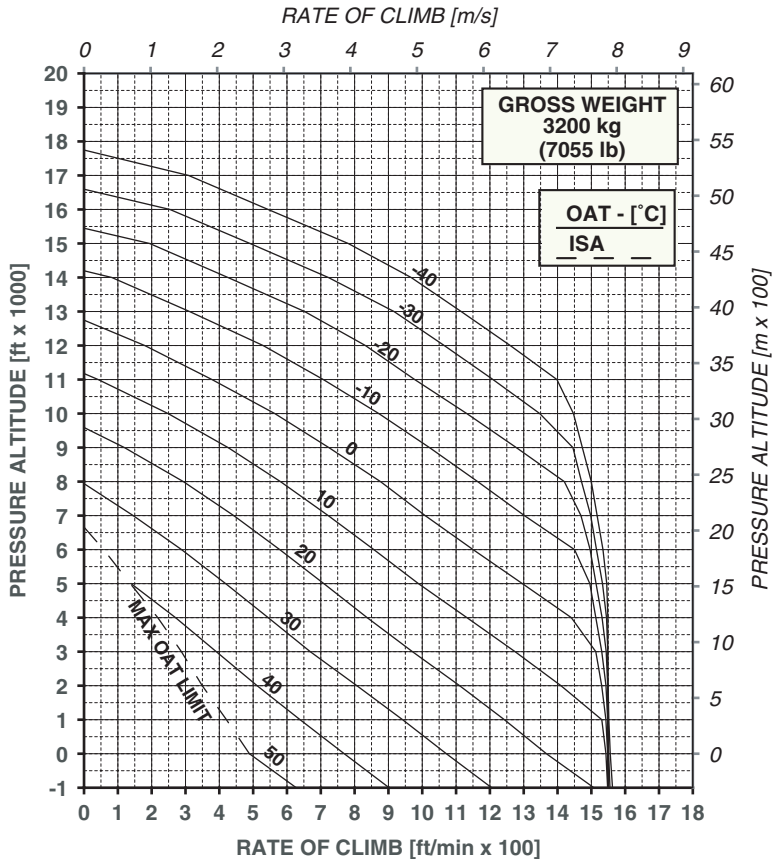


**Figure 4-26 Rate of Climb at Maximum Continuous Power -
EAPS ON - Heater / ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down
ELECTRICAL LOAD: 200 A

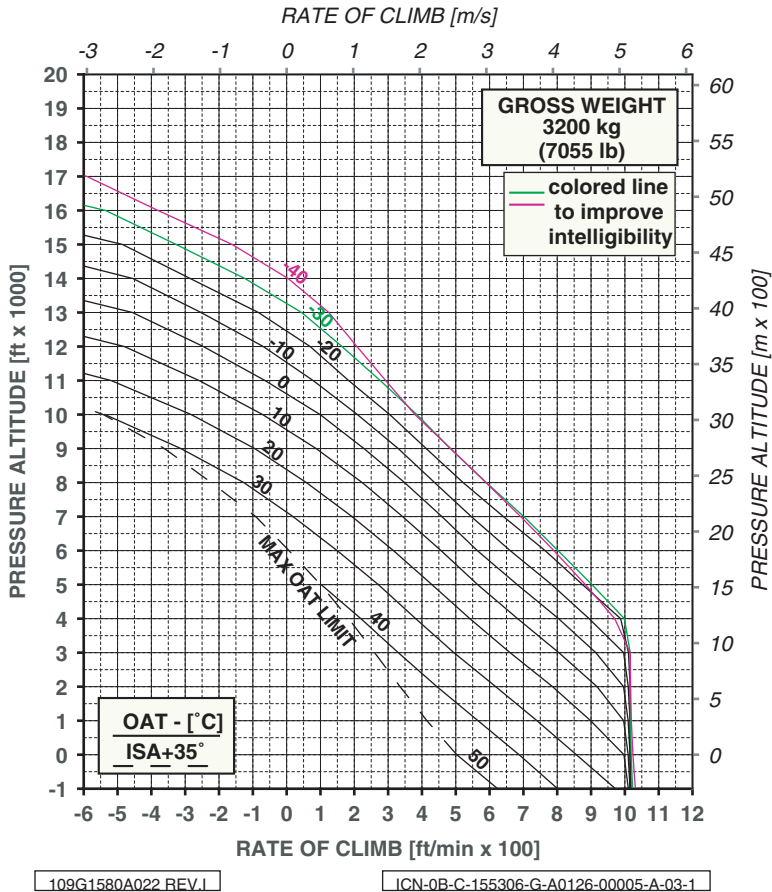


**Figure 4-27 Rate of Climb at 2.5 min Power - OEI
- Gross Weight 3200 kg**

**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A

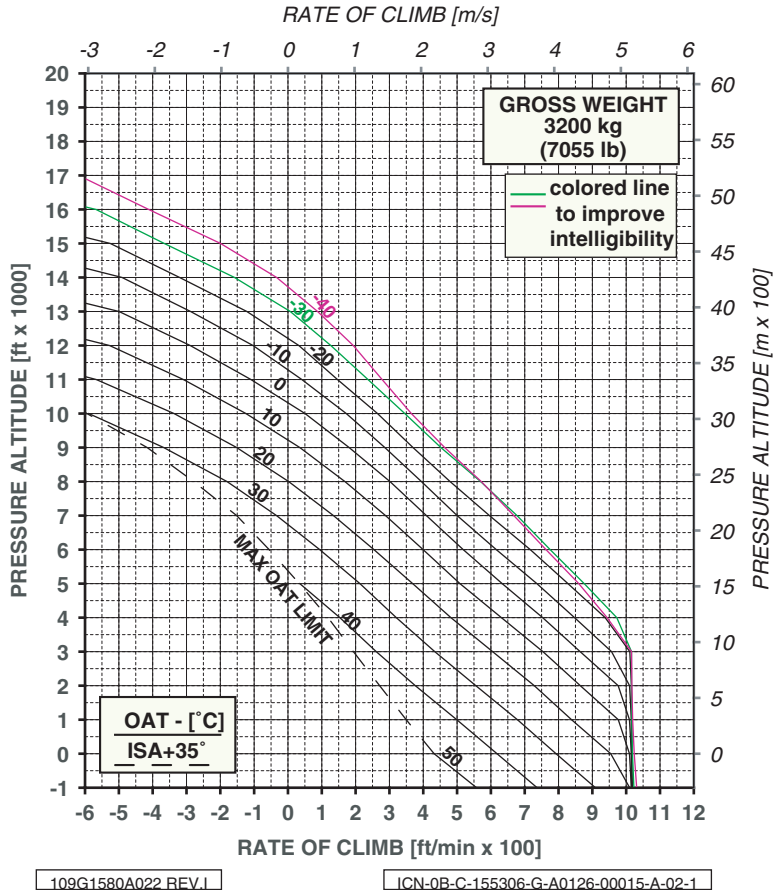


**Figure 4-28 Rate of Climb at 2.5 min Power - OEI -
EAPS OFF - Gross Weight 3200 kg**

RATE OF CLIMB
2.5 MINUTE POWER OEI

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down

EAPS: ON
ELECTRICAL LOAD: 200 A

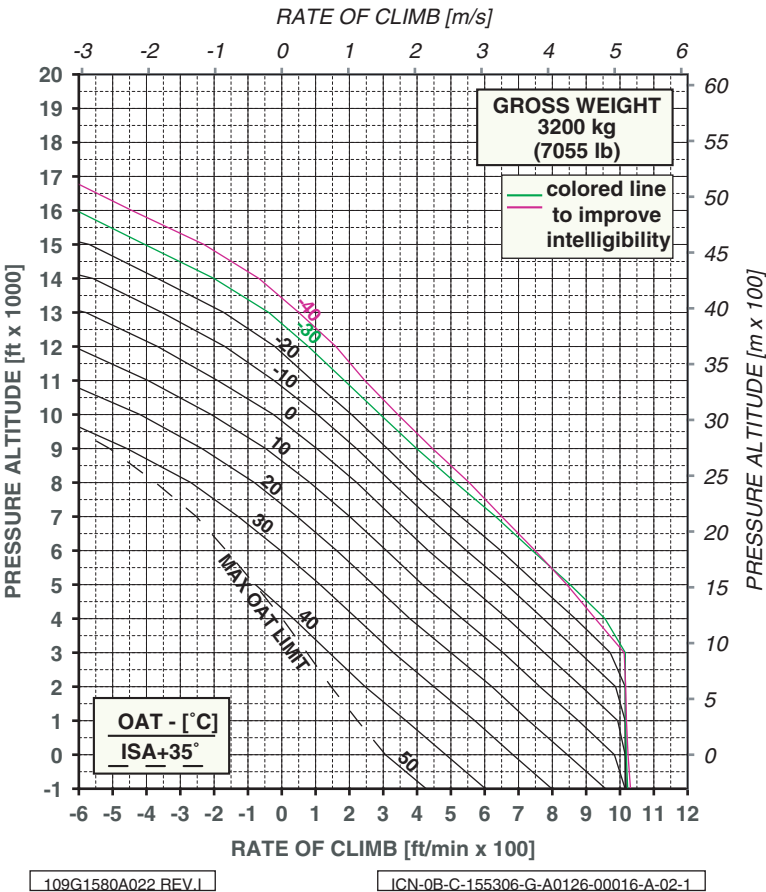


Figure 4-29 Rate of Climb at 2.5 min Power - OEI -
EAPS ON - Gross Weight 3200 kg

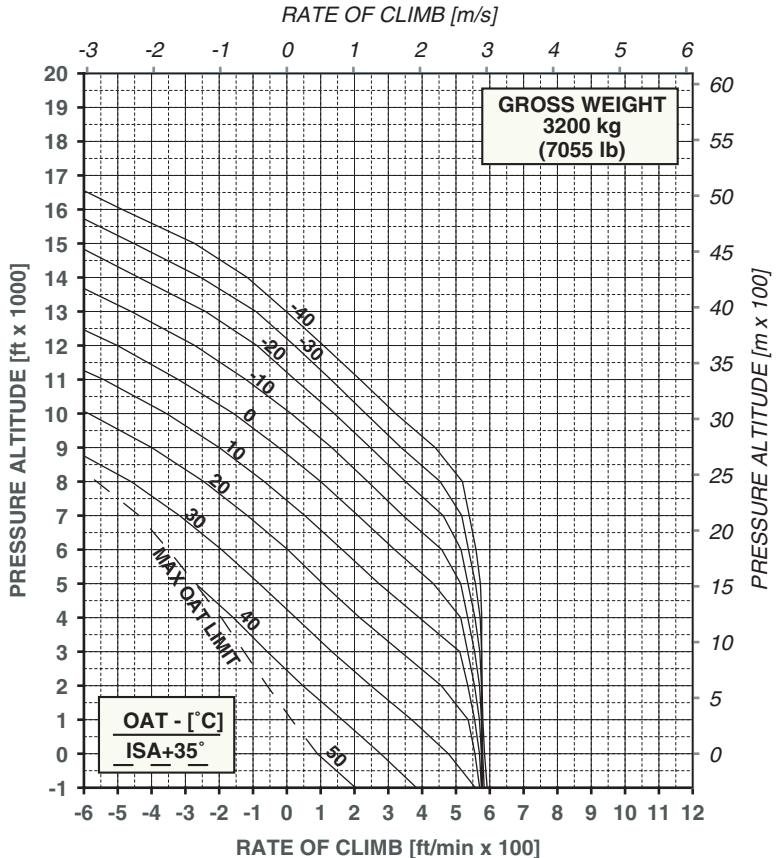
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A



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**Figure 4-30 Rate of Climb at Maximum Continuous Power - OEI
- Gross Weight 3200 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down

EAPS: OFF
ELECTRICAL LOAD: 200 A

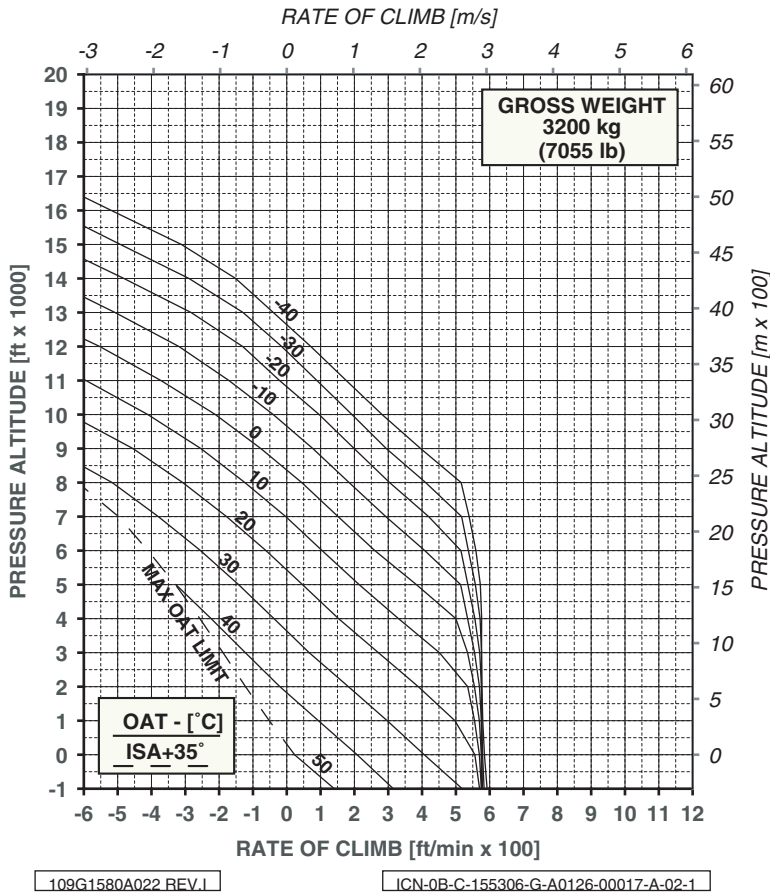


**Figure 4-31 Rate of Climb at Maximum Continuous Power - OEI
- EAPS OFF - Gross Weight 3200 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

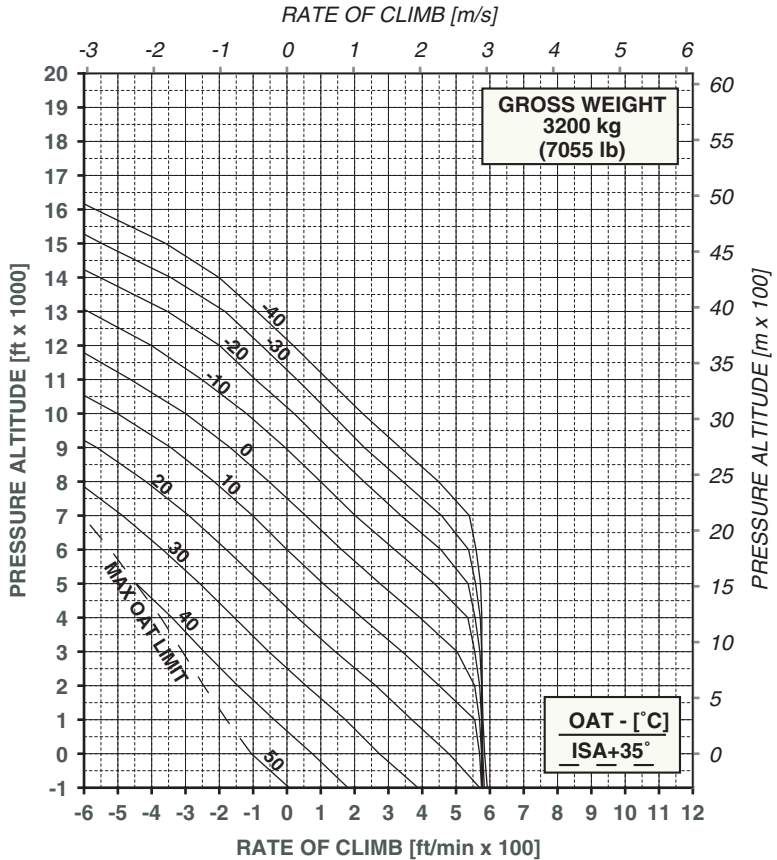
ROTOR SPEED: 100 %

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A



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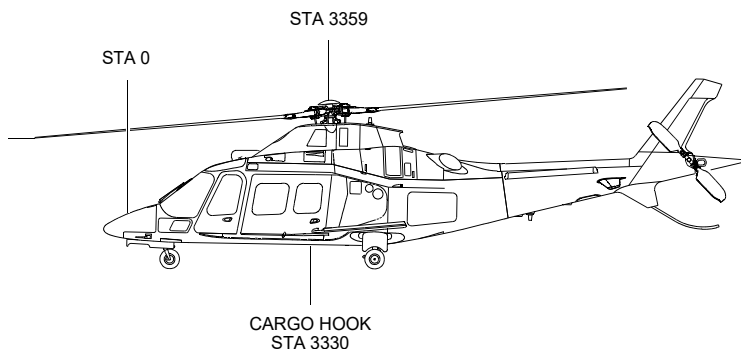
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**Figure 4-32 Rate of Climb at Maximum Continuous Power - OEI
- EAPS ON - Gross Weight 3200 kg**

SECTION 6 - WEIGHT AND BALANCE

DATUM LINE LOCATIONS

Figure 6-1 presents the cargo hook station data to aid in weight and balance computation.



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Figure 6-1 Cargo Hook Station Diagram

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

SAFETY CARGO HOOK P/N 109-0811-75

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Safety Cargo Hook is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE B: 11 DECEMBER 2009
REVISION 2: 27 MAY 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244 10028246, 10028248 dated 11 December 2009
1	Revised pages Title page, A-1, B-1, 1, 3, 5 and 6 of 10.	EASA Approval N° 10035101 dated 25 May 2011
2	Revised page 7 of 10.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1 and B-1.	Manufacturer's Data

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LIST OF EFFECTIVE PAGES

NOTE: Revised text is indicated by a black vertical line in the outer margin of the page and the approval revision number is printed in the lower margin.

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Figure 6-1 Safety Cargo Hook Station Diagram..... 10 of 10

Note

The Safety Cargo Hook, P/N 109-0811-75, can only be fitted if the (primary) cargo hook, P/N 109-0810-31 or P/N 109G2592A01, is already fitted to the helicopter. Hence, this supplement must be read in conjunction with Cargo Hook [Supplement 6](#).

GENERAL

The Safety Cargo Hook, P/N 109-0811-75, consists of a support frame, a hook and an electrical and manual (emergency) release system.

When both hooks are fitted, the safety cargo hook acts as a safety-of-flight back-up for the primary cargo hook.

When the Safety Cargo Hook, P/N 109-0811-75, is used, a suspension cable, P/N 109-0811-86, is fitted between the primary cargo hook, P/N 109-0810-31 or P/N 109G2592A01 and a junction ring, P/N 109-0811-86. The load is attached to the junction ring. Then a secondary suspension cable, P/N 109-0811-86, is fitted to connect the safety cargo hook, P/N 109-0811-75, to the junction ring P/N 109-0811-86.

Note

A swiveling link is not supplied with the safety cargo hook installation, however, it is recommended to use one between the suspension cable and the load.

SECTION 1 - LIMITATIONS

GENERAL

The helicopter may be operated with safety cargo hook fitted without carrying external load. In this case there are no additional limitations of operations from the basic RFM. The limitations herein refer specifically to operations with external loads.

TYPE OF OPERATION

Operations with a load attached to the cargo hooks are authorized for 'Class B' rotorcraft-load combinations only.

Note

Class B rotorcraft-load combination means one in which the external load is jettisonable and is lifted free of land and water during rotorcraft operation.

Operations, with individual loads attached separately to the two hooks, are prohibited.

The applicable national regulations must be complied with. All cargo must be secured to the primary cargo hook. The function of the Safety Cargo Hook is to serve as a safety-of-flight back-up in the event of failure of the Primary Cargo Hook.

WEIGHT AND CENTER OF GRAVITY LIMITATIONS

Cargo hook maximum allowable load 500 kg (1102.5 lb)

CAUTION

When the Safety Cargo Hook is used as a safety-of-flight back-up for the primary cargo hook the maximum loading limit for the primary cargo hook must not exceed 500 kg (1102.5 lb).

When flying with an external load attached to the safety cargo hook, for weight and CG limitations refer to [Figure 1-1](#) and [Figure 1-2](#) of Supplement 6 (P/N 109-0810-31) or [Supplement 30](#) (P/N 109G2592A01) of the primary cargo hook.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°2 (Fuselage - RH side)

1. Safety Cargo Hook : Condition and secure.
2. Suspension safety cables : Condition and secure.

Area N°7 (Cockpit Interior)

1. CARGO HOOK SEC circuit breaker : Engaged.

For the following checks connect the d.c. supply:

Note

The following checks may require a large electrical consumption. Beware of possible battery charge depletion if not using external power.

Note

Ground personnel should assist the pilot during the cargo hook checks.

2. ➡ EDU 1 : Confirm S HOOK ARMD caution message is not illuminated.
3. ➡ CARGO REL SEC pushbutton (on pilot cyclic) : Open guard to arm the release system.
4. ➡ EDU 1 : Confirm S HOOK ARMD caution message illuminates.

5. ➡ CARGO REL SEC : Push.
pushbutton Confirm safety hook open (see
(on pilot cyclic) note below).
Confirm S HOOK OPEN caution
message illuminates.
Release the pushbutton and
confirm that safety hook return
to the closed position.
Confirm S HOOK OPEN caution
message clears.
6. ➡ CARGO REL SEC : Lower guard to disarm the
pushbutton release system.
(on pilot's cyclic)
7. ➡ EDU 1 : Confirm S HOOK ARMED cau-
tion message clears.

Repeat cargo hook checks using the CARGO REL pushbutton on the co-pilot cyclic:

8. ➡ EMER CARGO : Pull each handle and confirm
RELEASE PULL primary each hook opens (see note
and secondary handles below).
Confirm S HOOK OPEN caution
message illuminates.
Release each handle and con-
firm that each hook returns to
the closed position.
Confirm S HOOK OPEN caution
message clears.

Note

A spring holds each of the cargo hooks in the closed position even when the locking devices are released. A force of approximately 5 kg must be applied to each hook to overcome the spring force and open the hook.

Disconnect the d.c. supply.

TAKE-OFF

EXTERNAL LOAD ATTACHMENT

CAUTION

The suspension cable, P/N 109-0811-86, must be fitted between the primary cargo hook, P/N 109-0810-31 or P/N 109G2592A01, and the junction ring P/N 109-0811-86. The load must be attached to the junction ring. The secondary suspension cable, P/N 109-0811-86, must be used to connect the safety cargo hook, P/N 109-0811-75, to the junction ring, P/N 109-0811-86.

EXTERNAL LOAD RELEASE

Note

The load will release when its weight overcomes the spring force in each hook. If the load has not released, the pilot should climb slowly until there is additional force on each hook, but without lifting the load off the ground, if possible. Then operate the CARGO REL SEC and PRIM pushbuttons again to release the load.

Note

In the event of electrical failure, pull the EMER CARGO RELEASE PULL secondary and primary handles to release the load.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES

In the event of an emergency that requires the external load to be released, open the CARGO REL SEC and PRIM guards and push the buttons to release the load. If the load does not release, pull the EMER CARGO RELEASE PULL secondary and primary handles.

MALFUNCTION PROCEDURES

TABLE OF CAUTION MESSAGES

CAS Caption	Page	Malfunction/System State
S HOOK ARMED	8 of 10	Safety cargo hook release system armed.
S HOOK OPEN	9 of 10	Safety cargo hook in open position. ■

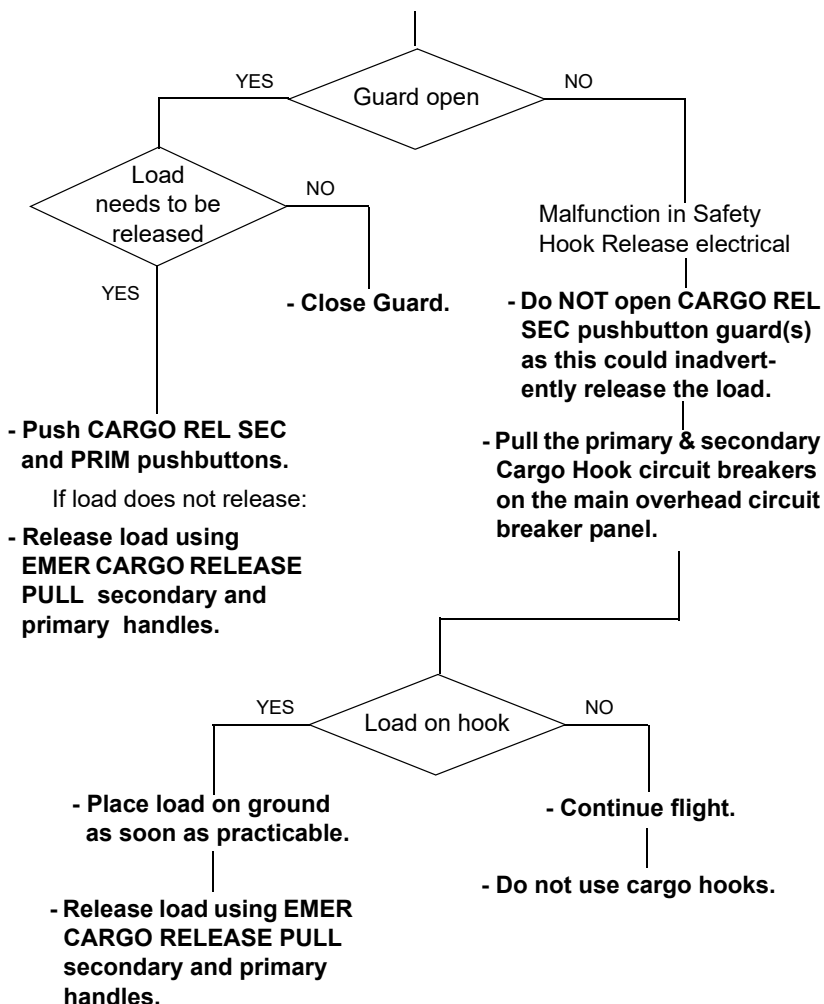
SAFETY CARGO HOOK ARMED

S HOOK ARMD

Safety hook release system armed due to the CARGO REL
SEC pushbutton guard(s) being open.

or

Malfunction detected in Safety Hook Release electrical system.



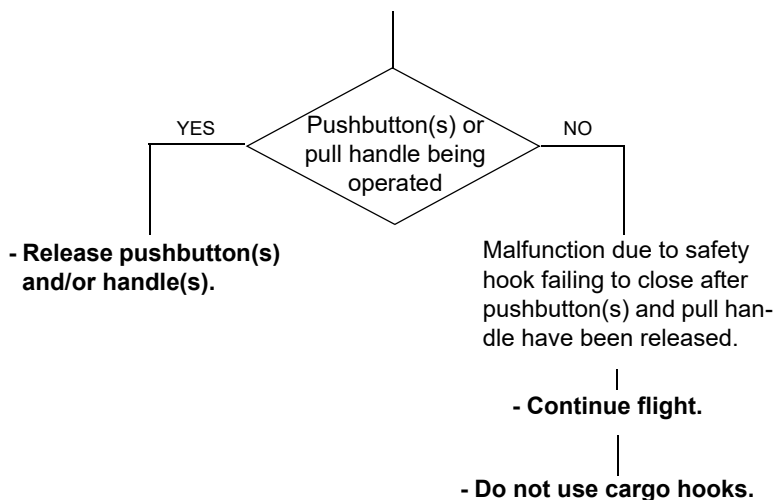
SAFETY CARGO HOOK OPEN

S HOOK OPEN

Safety hook in open position due to the CARGO REL SEC pushbutton(s) or EMER CARGO RELEASE PULL secondary handle being operated.

or

S HOOK OPEN caution remains after CARGO REL SEC pushbutton(s) and EMER CARGO RELEASE PULL secondary handle have been released.



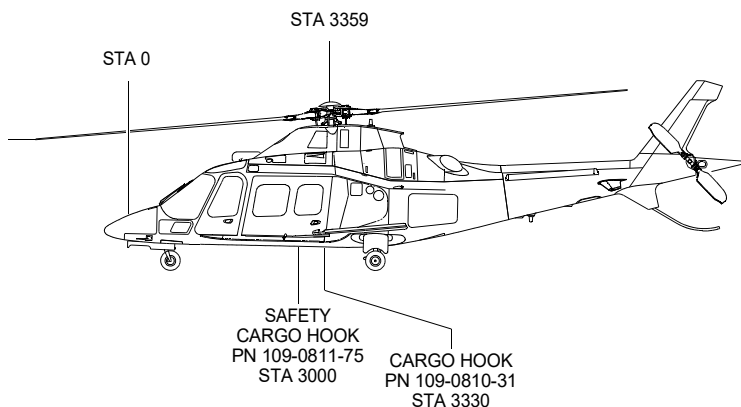
SECTION 4 - PERFORMANCE DATA

Refer to [Section 4](#) of Supplement 6, Cargo Hook.

SECTION 6 - WEIGHT AND BALANCE

DATUM LINE LOCATIONS

Figure 6-1 presents the safety cargo hook station data to aid in weight and balance computation.



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Figure 6-1 Safety Cargo Hook Station Diagram

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

**SNOW SKIS
P/N 109-0811-99
P/N 109G3271F01**

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Snow Skis are installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE C: 12 JULY 2011
REVISION 2: 27 MAY 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
1	Revised pages Title page, A-1, B-1 and 1 of 6.	EASA Approval N° 10033532 dated 1 February 2011
–	Issue C	EASA Approval N° 10035685 dated 12 July 2011
1	Revised pages Title page, A-1, B-1 and 3 of 8.	EASA Approval N° 10062498 dated 4 July 2017
2	Revised page 7 of 8.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1 and B-1.	Manufacturer's Data

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GENERAL

The Snow Skis installation, P/N 109-0811-99 or P/N 109G3271F01, consists of three skis fixed to the axles of the landing gear wheels.

Each ski is held in position by two bungee cords which allow the ski to tilt during landing to adapt to the ground surface.

The installation also includes a locking device to prevent operation of the landing gear control lever and a guard located over the nose wheel centering lock lever to prevent inadvertent operation.

SECTION 1 - LIMITATIONS

TYPES OF OPERATION

Flight operations with the snow skis installed can only be performed with the landing gear extended.

AIRSPEED LIMITATIONS

Basic Aircraft

Maximum Airspeed 140 KIAS

V_{NE} (OEI/Power-OFF) No change

Fixed Wheeled Landing Gear installed (P/N 109-B811-02)

When Fixed Landing Gear kit is installed:

V_{NE} (Power-ON) See [Figure 1-1](#)

V_{NE} (OEI/Power-OFF): V_{NE} (Power-ON) - 27 KIAS

V_{NEI} (maximum IFR airspeed) V_{NE} (Power-ON) - 7 KIAS

Maximum airspeed with single AP operational:

normal flight V_{NE} (Power-ON) - 27 KIAS

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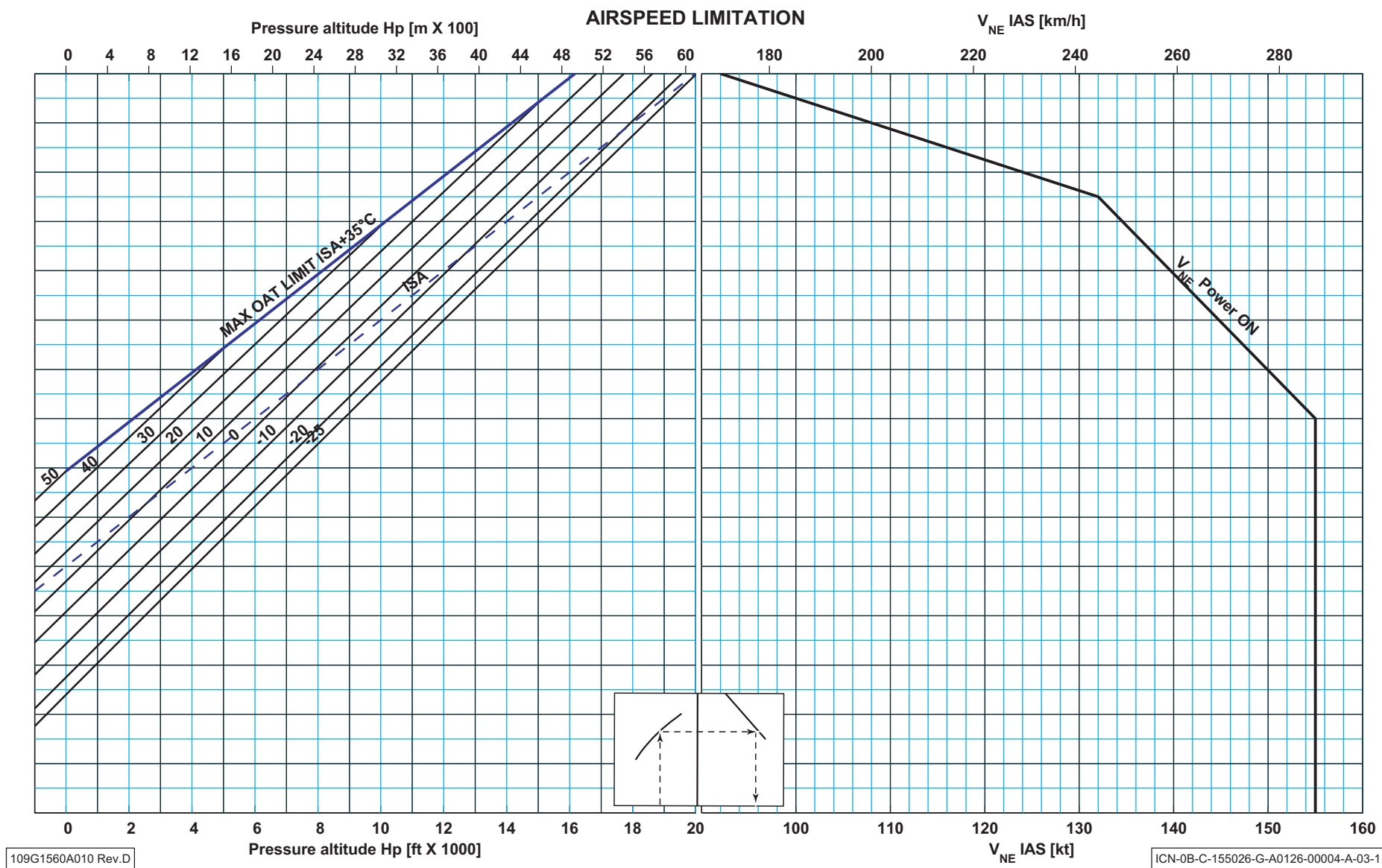


Figure 1-1 Airspeed Limitation V_{NE} (Power-ON)

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SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Snow Skis General

During Snow Skis checks, special attention shall be paid to any permanent deformation to the cable supports on the skis, especially to any sheet metal layer separation in the cable attachment area.

Remove any accumulated snow or ice from skis and check that the skis are not frozen and stuck to the ground.

Area N°1 (Helicopter nose)

1. Snow ski, steel cords, : Condition and secure.
bungee cords and relative
supports

Area N°2 (Fuselage - RH side)

1. Snow ski, steel cords, : Condition and secure.
bungee cords and relative
supports

Area N°6 (Fuselage - LH side)

1. Snow ski, steel cords, : Condition and secured.
bungee cords and relative
supports

Area N°7 (Cockpit Interior)

1. LDG GEAR panel : Confirm locking devices in place
and secure.

OPERATION ON SNOW / ICE COVERED SURFACES

On snow / ice covered surfaces, caution must be used when starting the engines due to the possibility of undemanded yaw rotation. This effect may occur until the tail rotor reaches its effective RPM.

Caution must be used when taxiing on soft or uneven snow.

Forward touchdown speed must be adapted (reduced) according to the condition of the snow and ground.



CAUTION

The conditions of snow and ground may alter significantly the helicopter handling at landing. For this reason, the forward speed at touchdown must be limited as much as possible.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

If any malfunction of the snow skis occurs in flight, reduce speed and land as soon as practicable.

HYDRAULIC SYSTEM

NORMAL UTILITY HYDRAULIC PRESSURE LOW



CAUTION

In spite of landing gear being locked in extended position, set landing gear lever to DOWN EMERG, according to the procedure in Section 3 of the basic Rotorcraft Flight Manual, in order to operate the PARK AND EMER BRAKE.

SECTION 4 - PERFORMANCE DATA

Note

For combination with other optional equipment refer to chapter “[PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#)”.

RATE OF CLIMB

With the Snow Skis installed, the reduction in the Rate of Climb performance from the Clean aircraft configuration or ECS/Heater On charts is given in [PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#) in the Introduction.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

SLUMP PROTECTION PADS

P/N 109-0811-73

P/N 109G3272F01

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Slump Protection Pads are installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE C: 12 JULY 2011
REVISION 2: 27 MAY 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028244 dated 11 December 2009
1	Revised pages Title page, A-1, B-1 and 1 of 6.	EASA Approval N° 10033527 dated 1 February 2011
–	Issue C	EASA Approval N° 10035685 dated 12 July 2011
1	Revised pages Title page, A-1, B-1 and 3 of 8.	EASA Approval N° 10062498 dated 4 July 2017
2	Revised page 6 of 8.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1 and B-1.	Manufacturer's Data

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GENERAL

The Slump Protection Pads installation, P/N 109-0811-73 or P/N 109G3272F01, consists of three pads fixed to the axles of the landing gear wheels.

Each pad is held in position by two steel cords, one forward and one rearward, and two additional bungee cords which allow the pads to tilt during landing to adapt to the ground surface.

The installation also includes a locking device to prevent operation of the landing gear control lever and a guard located over the nose wheel centering lock lever to prevent inadvertent operation.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

Flight operations with the Slump Protection Pads installed can only be performed with the landing gear extended.

AIRSPEED LIMITATIONS

Basic Aircraft

Maximum Airspeed 140 KIAS

V_{NE} (OEI/Power-OFF) No change

Fixed Wheeled Landing Gear installed (P/N 109-B811-02)

When Fixed Landing Gear kit is installed:

V_{NE} (Power-ON) See [Figure 1-1](#)

V_{NE} (OEI/Power-OFF): V_{NE} (Power-ON) - 27 KIAS

V_{NEI} (maximum IFR airspeed) V_{NE} (Power-ON) - 7 KIAS

Maximum airspeed with single AP operational:

normal flight V_{NE} (Power-ON) - 27 KIAS

GROUND SPEED LIMITATIONS

ON MUDDY OR SOFT SURFACES

Taxiing is prohibited.

Emergency landing should not be carried out with forward touchdown speed.

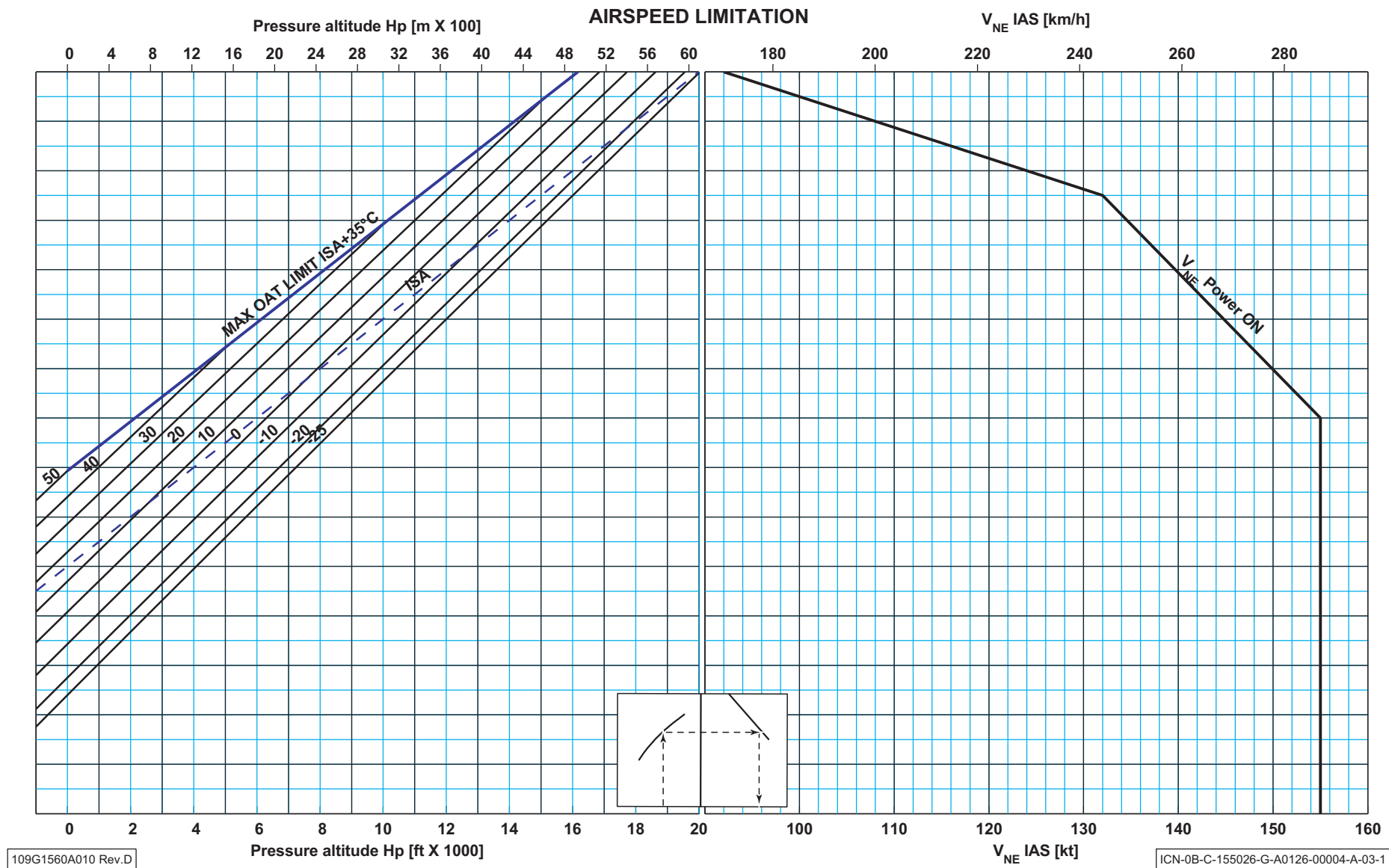


Figure 1-1 Airspeed Limitation V_{NE} (Power-ON)

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SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Slump Protection Pads General

During Slump Protection Pads checks, special attention shall be paid to any permanent deformation to the cable supports (sheet metal parts) on the pad, especially to any sheet metal layer separation in the cable attachment area.

Area N°1 (Helicopter Nose)

1. Pads, steel cords, bungee cords and supports : Condition and secure.

Area N°2 (Fuselage - RH side)

1. Pads, steel cords, bungee cords and supports : Condition and secure.

Area N°6 (Fuselage - LH side)

1. Pads, steel cords, bungee cords and supports : Condition and secure.

Area N°7 (Cockpit interior)

1. LDG GEAR panel : Confirm locking devices in place and secure.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

If any malfunction of the pads should occur in flight, reduce speed and land as soon as practicable.

HYDRAULIC SYSTEM

NORMAL UTILITY HYDRAULIC PRESSURE LOW

CAUTION

In spite of landing gear being locked in extended position, set landing gear lever to DOWN EMERG, according to the procedure in Section 3 of the basic Rotorcraft Flight Manual, in order to operate the PARK AND EMER BRAKE.

SECTION 4 - PERFORMANCE DATA

Note

For combination with other optional equipment refer to chapter "[PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#)".

RATE OF CLIMB

With the Slump Protection Pads installed, the reduction in the Rate of Climb performance from the Clean aircraft configuration or ECS/ Heater On charts is given in [PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#) in the Introduction.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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CUSTOMISATION FOR REGA

P/N 109-B810-12-103

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Customisation for REGA is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE A: 25 MAY 2011
REVISION 2: 11 MAY 2025

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10035101 dated 25 May 2011
1	Revised pages Title page, A-1, B-1, 16 thru 28 of 30.	EASA Approval N° 10062498 dated 4 July 2017
2	Revised pages Title page, A-1 and B-1.	Manufacturer's Data

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GENERAL

This Supplement consists of a new customisation kit P/N 109-B810-12-103 for the AW109SP with the following installations:

- Night Vision Imaging System (NVIS);
- Bleed Air Heater Variant (P/N 109G2106P01).

NIGHT VISION IMAGING SYSTEM (NVIS)

The NVIS compatible lights consist of internal and external lighting installations to make the aircraft compatible for the use with NVG systems.

The aircraft configuration involving internal/external emitting/reflecting equipment approved for use with NVG is described in the Report 109G3360A001 AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK. Any internal/external emitting/reflecting equipment not defined in the above AW report invalidates NVIS approval.

INTERNAL LIGHTING

The NVIS compatible cockpit installation consists of compatible controller panels and lighting. See Document 109G3360A001 AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK.

The cockpit lights are controlled by the standard dimmers on overhead panel. The displays brightness is adjustable by appropriated control fitted on any display bezel. The MODE DAY/NIGHT/NVG switch is used to select the brightness of the displays and lighted indications. When selected to DAY, full brightness is available, via the standard dimmers, for the displays, instruments and lighted indications. When selected to NIGHT, displays and lighted indications are dimmed at prefixed level however, full display brightness is available by the appropriated controls. When NVG is selected the displays maximum brightness is limited to a prefixed level, and lighted indication are further dimmed. However, display brightness can still be adjusted by the appropriate controls. The master warning/caution lights are reduced to the fixed NIGHT operation brightness level, also with the switch in NVG mode.

The cockpit utility lights are NVG compatible.

Additionally a cockpit cabin dividing NVG curtain (P/N 109-B811-30) is installed to prevent inadvertent entry of non NVG compatible light from the cabin. An equivalent curtain, which prevents light leakage from the cabin to the cockpit, approved by the competent authority, may be installed.

EXTERNAL LIGHTING

The NVIS compatible external lighting consists of:

- An anti-collision light which is NVIS friendly normal light.
- Position lights which are NVIS friendly normal light.

External lights are controlled by dedicated switches on overhead panel.

In DAY/NIGHT or NVG MODE the anticollision (A-COLL) and position (POS) lights, when switched ON, operate with visible light but are NVIS compatible.

BLEED AIR HEATER VARIANT

The Bleed Air Heater Variant, P/N 109G2106P01, consists of two bleed-air shut-off valves, one mixing valve with solenoid control valve, one outside air intake, a temperature sensor control for pilot and passenger area air outlets, ducting and tubing, a master switch and four control switches to operate shut-off valves and solenoid control valve. Bleed air and outside air are fed into the mixing valve where a temperature sensor determines the mixing ratio to produce the required temperature. The temperature is regulated by a manual control knob and cable connected to a variable remote sensor in the mixing valve.

The system is provided with an overtemperature switch.

The airflow can be directed, as required by the ALL/UPR/DEMIST switch as follows:

- ALL Upper and lower duct;
- UPR Pilots and cabin upper zone duct;
- DEMIST Pilots upper duct only.

SECTION 1 - LIMITATIONS

NVIS

Any change to the aircraft configuration involving light emitting or reflective equipment not included in document 109G3360A001 AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK makes the aircraft not NVG compatible and invalidates NVIS approval.

TYPE OF OPERATION

The Operator must receive NVG operations approval by the Competent Authority in accordance with the applicable National Operating Regulations.

AIRCRAFT CONFIGURATION

In addition to the basic aircraft configuration, the following equipments must be installed:

- Cockpit doors sliding windows P/N 109-0824-15;
- Cabin doors sliding windows P/N 109-0824-17.

MINIMUM FLIGHT CREW

The minimum flight crew consists of one pilot equipped with NVG's:

- an additional, trained, NVIS crew member is required during take-off and landing, on unimproved areas such as open fields, to assist in obstacle identification and clearance.
- no additional, trained, NVIS crew member is required during take-off and landing, on improved areas such as airfields or heliports night approved and when the aircraft is above 300 ft AGL and in cruise.

All crew members must be familiar with NVG operating procedures.

MISCELLANEOUS LIMITATIONS

NVIS OPERATION

The following required equipment must be in proper working order for NVG operations:

- Aviator's Night Vision Goggles Models as specified in document 109G3360A001 AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK.
- Helmet with NVG mount suitable for NVG Model being used.
- Cockpit/Cabin dividing curtain as specified in document 109G3360A001 AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK or functionally equivalent and approved by the competent authority.

External mirrors must be tilted down or covered or removed.

BLEED AIR HEATER OPERATION

The bleed air heater shall be switched OFF during the following flight conditions:

- single engine operations;
- outside air temperatures above 21°C

When the heater is OFF the ventilation fan must be ON.

When the heater is OFF and passenger(s) are in the cabin, the cabin doors sliding window(s) must be open:

- below 60 KIAS, if NVG curtain is not installed;
- always, if NVG curtain is installed.

PLACARDS

NVIS



NVIS APPROVED

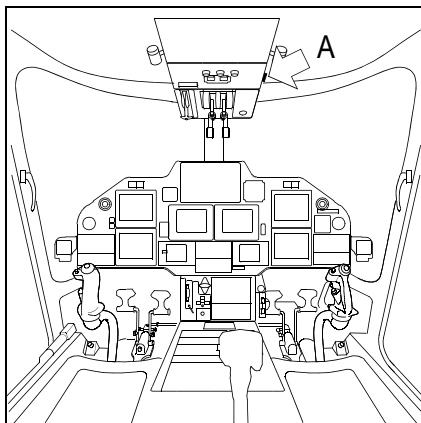
Installed on the instrument panel when the aircraft configuration complies with document 109G3360A001



NVIS NOT APPROVED

Installed on the instrument panel when the configuration of NVG compatible aircraft has been modified with components not defined in document 109G3360A001

BLEED AIR HEATER



A

DO NOT OPERATE HEATER
ABOVE 21°C OAT

ICN-0B-C-155002-G-A126-01501-A-01-1

Figure 1-1 Internal Placard

SECTION 2 - NORMAL PROCEDURES

PRE FLIGHT CHECKS

NVIS

Area N°2 (Fuselage - RH Side)

1. Windshield and roof transparent panels — Condition, cleanliness, free of scratches.

Area N°6 (Fuselage - LH Side)

1. Windshield and roof transparent panels — Condition, cleanliness, free of scratches.

Area N°7 (Helicopter Interior)

1. Lower and lateral transparent panels — Condition, cleanliness, free of scratches and no signs of brake fluid.
2. NVIS internal and external lighting switches — Select as required
3. Cockpit/Cabin dividing curtain — Present, condition, correctly installed when required.
4. NVGs and NVG helmet mounts — Present, condition.

ENGINE PRE-START CHECKS

BLEED AIR HEATER

Initial Checks

Overhead Panel:

1. HEATER switch : OFF.
2. MIX switch : OFF.
3. SHUT-OFF #1 and #2 switches : OFF.
4. Sliding Windows (of cabin door) : Open at least one sliding window.

SYSTEM CHECKS

NVIS

1. NVGs — Adjust as required, check primary and spare battery power indicator not illuminated.
2. NVIS internal lighting — Select MODE to NVG.
Check for compatibility and leakage.
Adjust dimmers as required.
3. NVIS external lighting — Select as required, check for compatibility.
4. NVIS lighting — Select MODE switch as required.

BLEED AIR HEATER

1. NR / N2 : Check stabilized 100%.
2. TEMP CONT knob : Set to MIN.
3. HEATER switch : ON.
4. ALL/UPR/DEMIST switch : ALL.
5. TEMP CONT knob : Set to MAX.
Confirm no airflow from the outlets.
6. MIX switch : ON.
Confirm no airflow from the outlets.
7. SHUT-OFF #1 switch : ON.
Confirm warm airflow from outlets, then set to OFF.
8. SHUT-OFF #2 switch : ON.
Confirm warm airflow from outlets.
9. SHUT-OFF #1 switch : ON.
10. TEMP CONT knob : Set to MIN.
Confirm airflow decreases or stops, then set to MAX.
11. MIX switch : OFF.
Confirm airflow stops, then set to ON.
12. HEATER switch : OFF.
Confirm airflow stops.
13. TEMP CONT knob : Set to MIN.
14. MIX switch : OFF.
15. SHUT-OFF #1 and #2 switches : OFF.

TAKE-OFF

BLEED AIR HEATER

If bleed air heater operation is required:

1. TEMP CONT knob : Set to MIN.
2. SHUT-OFF #1 and #2 : ON.
switches
3. MIX switch : ON.
4. HEATER switch : ON.
5. ALL/UPR/DEMIST switch : As required.
6. TEMP CONT knob : As required.

Note

Prior to selecting MODE switch to NVG advise cabin occupants that NVG operations are being selected.

IN FLIGHT

NVIS

1. MODE switch — Select NVG as required.
2. NVIS lighting internal — Adjust as required.
3. NVIS external lighting — Select as required.

Note

Transition from NVG operations to non NVG operations (and vice versa) should be carried out during a non critical phase.

Note

Prior to selecting MODE switch to NIGHT advise cabin occupants that non NVG operations are being selected.

BLEED AIR HEATER

If bleed air heater operation is required:

1. TEMP CONT knob : Set to MIN.
2. SHUT-OFF #1 and #2 switches : ON.
3. MIX switch : ON.
4. HEATER switch : ON.
5. ALL/UPR/DEMIST switch : As required.
6. TEMP CONT knob : As required.

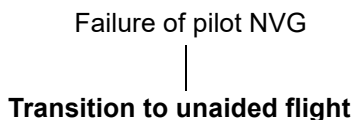
SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

NVIS

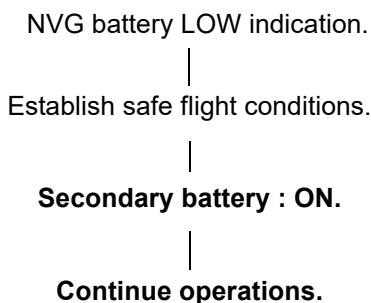
If aircraft emergencies or malfunctions occur during NVG operations the pilot must first maintain control of the aircraft and then initiate the RFM procedure for the emergency or malfunction. The pilot's decision to continue NVG operations should be based on the emergency or malfunction situation.

NVIS / NVG SYSTEMS MALFUNCTIONS

NVG Malfunction



NVG Battery Low Indication



Note

Be prepared to revert to unaided flight if battery problems persist.

NVIS Lighting Malfunction

Discontinue NVG use if the malfunction degrades the NVIS compatibility.

Inadvertent Entry in IMC

If inadvertent entry in IMC is encountered the pilot should:

Flip-up the goggles.

Level wings on attitude indicator.

Adjust airspeed to V_y .

Maneuver to recover VMC condition.

BLEED AIR HEATER

ENGINE RESTART IN FLIGHT

Note

In OEI condition, the bleed valves of both engines are automatically closed.

Before attempting a restart

1. HEATER switch: — OFF.

ENGINE SHUTDOWN IN AN EMERGENCY

Note

In case of engine failure, the bleed valves of both engines are automatically closed.

1. HEATER switch: — OFF as soon as practicable.

FIRE

Note

In case of engine fire, the bleed valves of both engines are automatically closed.

Engine Fire on Ground

1. HEATER switch: — OFF as soon as practicable.

Engine Fire in Flight

1. HEATER switch: — OFF as soon as practicable.

Smoke in Cabin, Toxic Fumes, etc

1. HEATER switch : OFF.
2. MIX switch : OFF.
3. SHUT-OFF #1 and #2 switches : OFF.
4. Sliding Windows (of cabin door) : Open sliding windows.

STATIC PORT OBSTRUCTION

When the alternate static source is used:

1. HEATER switch : OFF.
2. MIX switch : OFF.
3. SHUT-OFF #1 and #2 switches : OFF.

BLEED AIR HEATER MALFUNCTION

If a malfunction in the bleed air heater controls occurs, deactivate the system as follows:

1. HEATER switch : OFF.
2. MIX switch : OFF.
3. SHUT-OFF #1 and #2 switches : OFF.

Continue flight.

VENTILATION FAN MALFUNCTION

In case of ventilation fan malfunction and heater OFF, open the cockpit door sliding window(s) and, if there are passenger(s) open the cabin door sliding window(s).

SECTION 4 - PERFORMANCE DATA

Note

For combination with other optional equip-
ment refer to chapter “[PERFORMANCE
CORRECTION AFTER KIT INSTALLA-
TION](#)”.

BLEED AIR HEATER

The maximum power available with the Heater system operating is less than that available with the helicopter in basic configuration. This power loss is caused by the compressor bleed-air used for the Heater.

Performance charts with the Heater ON are provided for All Engine Operating (AEO) condition.

During One Engine Inoperative (OEI) operations, the compressor bleed-air valves are automatically closed. Therefore, performance in OEI conditions is the same as that shown in the Basic Rotorcraft Flight Manual.

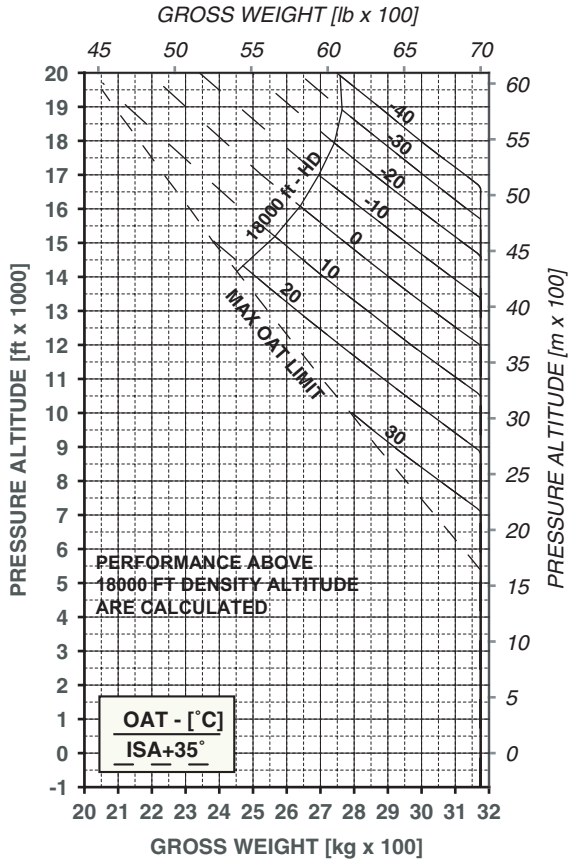
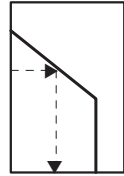
Hover Ceiling..... [Figures 4-1 thru 4-4](#)
Rate of Climb [Figures 4-5 thru 4-12](#)



The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

HOVER CEILING IN GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT
ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL



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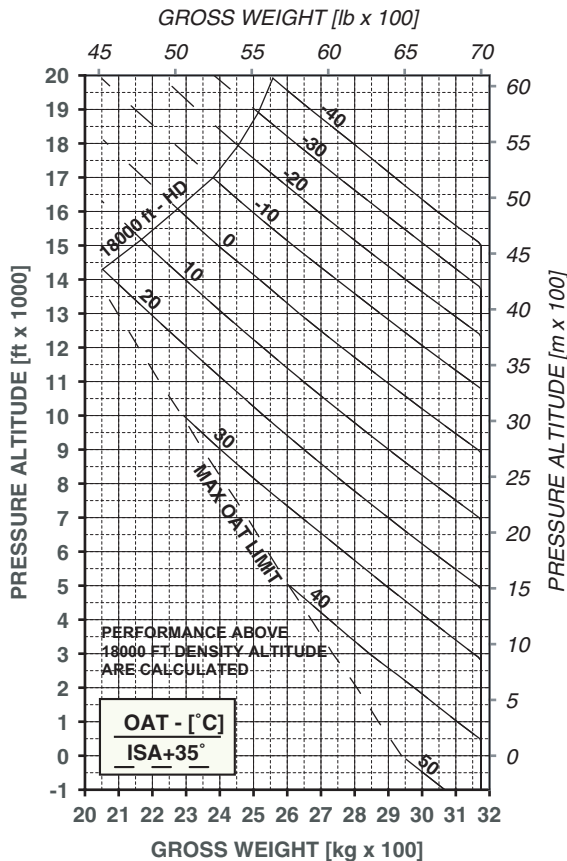
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Figure 4-1 Hover Ceiling IGE - Take-Off Power AEO
- Heater ON

HOVER CEILING IN GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL



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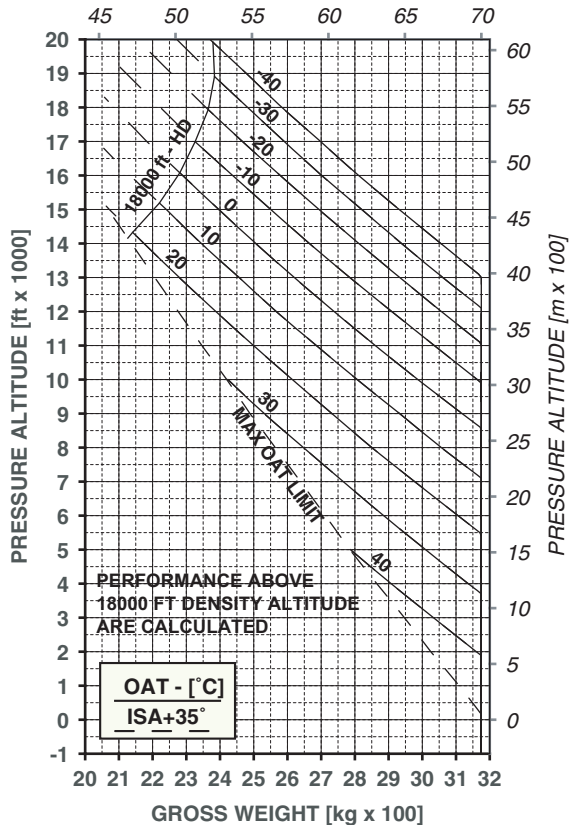
Figure 4-2 Hover Ceiling IGE - Maximum Continuous Power

HOVER CEILING OUT OF GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVERING OPERATION MAY RESULT IN VIOLATION OF H-V
GROSS WEIGHT [lb x 100]



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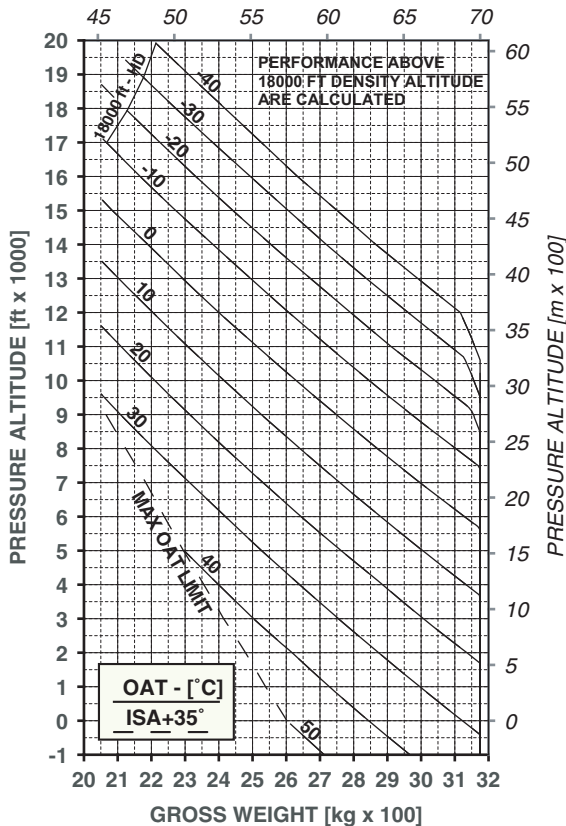
Figure 4-3 Hover Ceiling OGE - Take-Off Power AEO
- Heater ON

HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVERING OPERATION MAY RESULT IN VIOLATION OF H-V
GROSS WEIGHT [lb x 100]



109G1580A019 Rev.C

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Figure 4-4 Hover Ceiling OGE - Maximum Continuous Power
AEO - Heater ON

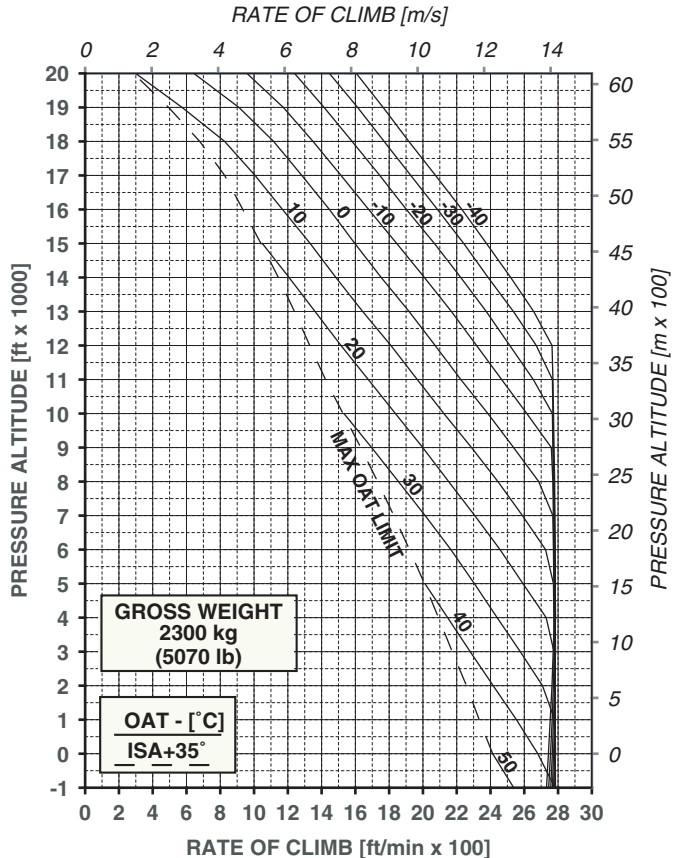
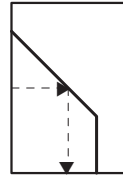
**RATE OF CLIMB
TAKE OFF POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



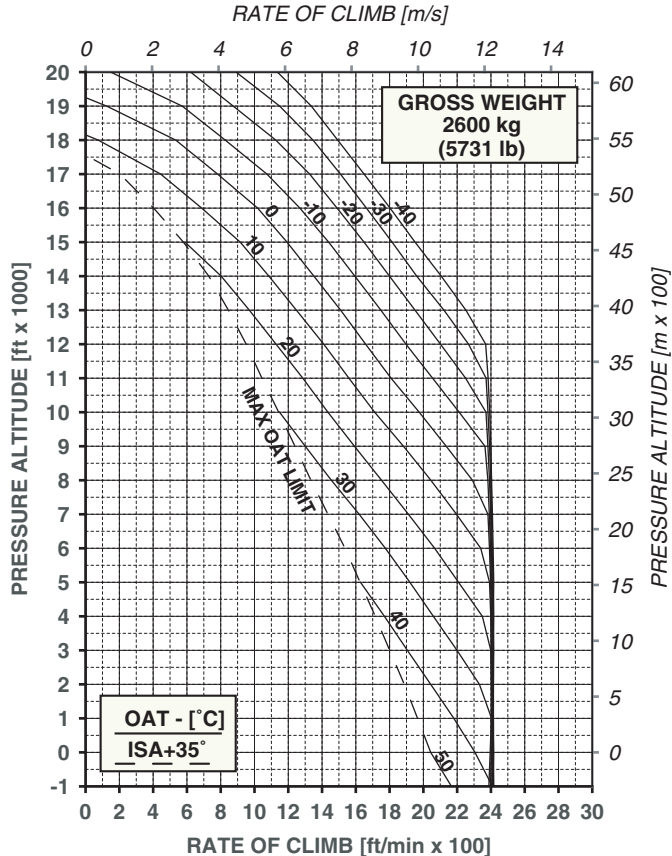
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**Figure 4-5 Rate of Climb - Take-Off Power AEO - Heater ON -
Gross Weight 2300 kg**

RATE OF CLIMB
TAKE OFF POWER AEO

ECS/HEATER: ON
ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL



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Figure 4-6 Rate of Climb - Take-Off Power AEO - Heater ON -
Gross Weight 2600 kg

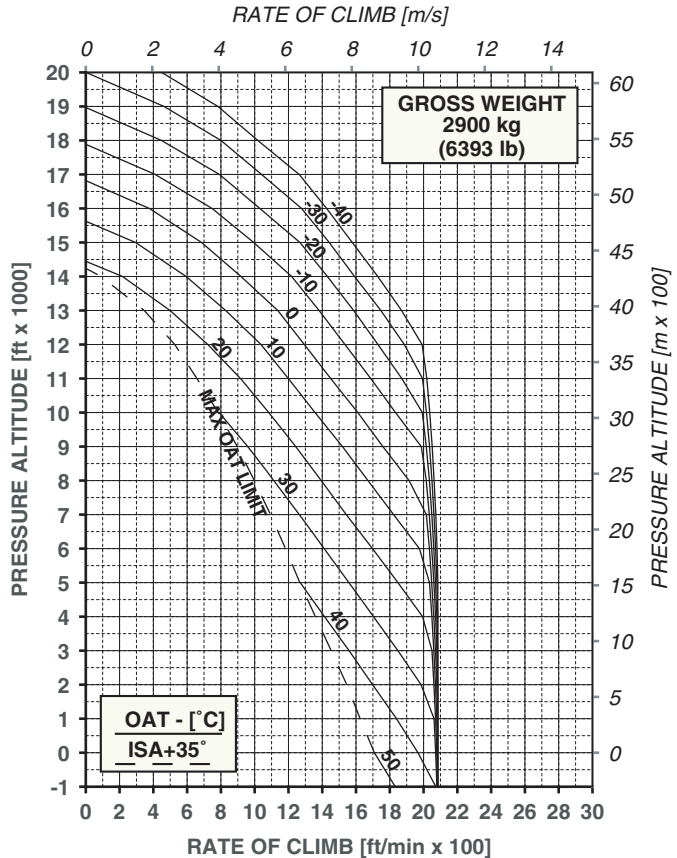
**RATE OF CLIMB
TAKE OFF POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



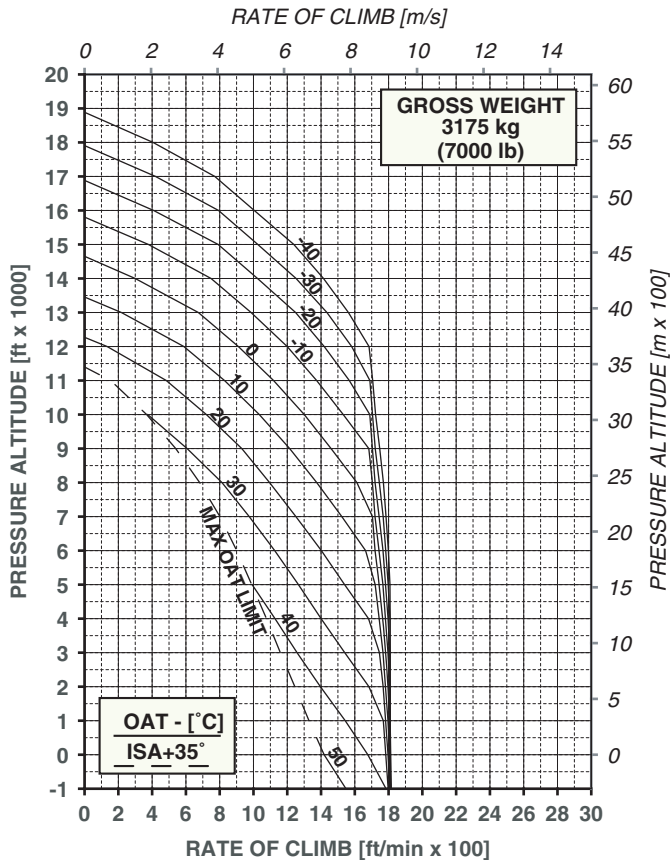
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**Figure 4-7 Rate of Climb - Take-Off Power AEO - Heater ON -
Gross Weight 2900 kg**

**RATE OF CLIMB
TAKE OFF POWER AEO**

ECS/HEATER: ON
ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-8 Rate of Climb - Take-Off Power AEO - Heater ON -
Gross Weight 3175 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

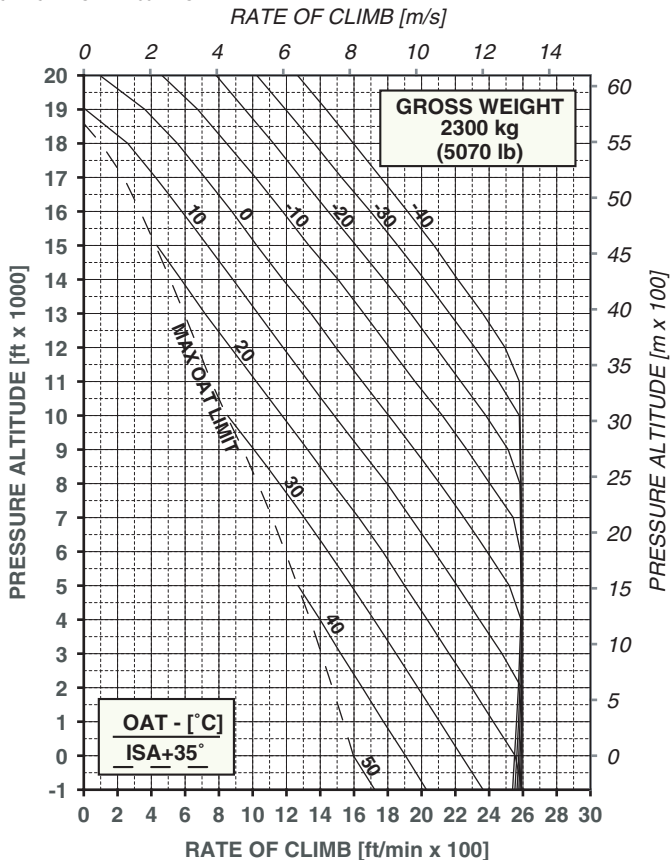
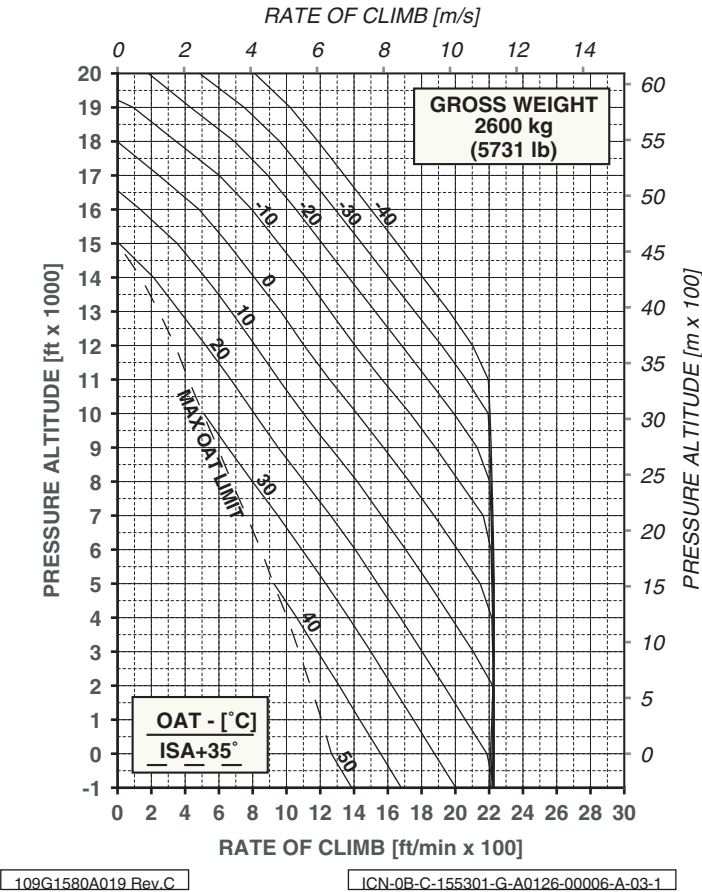


**Figure 4-9 Rate of Climb - Maximum Continuous Power AEO -
Heater ON - Gross Weight 2300 kg.**

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ECS/HEATER: ON
ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL



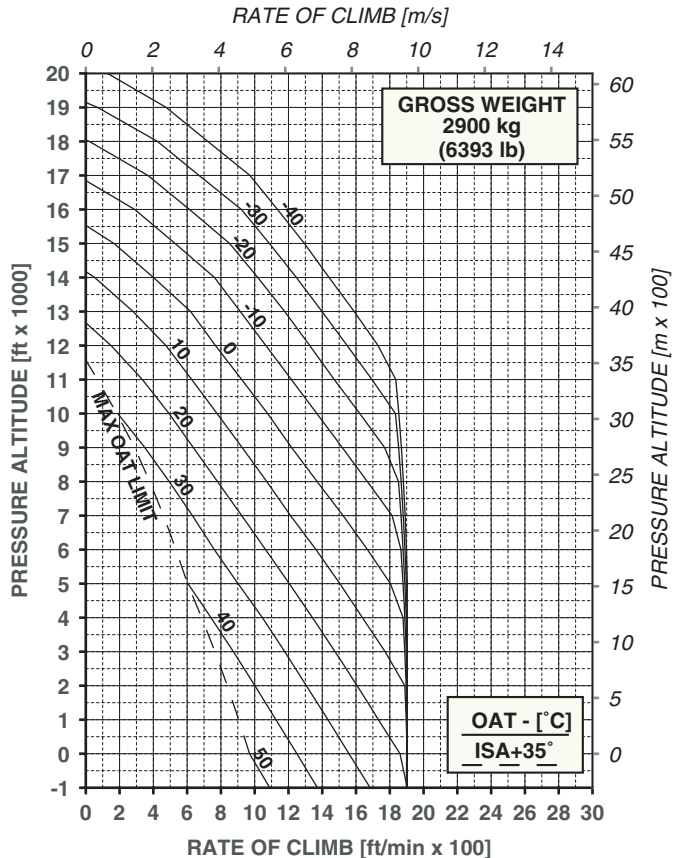
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ECS/HEATER: ON

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-11 Rate of Climb - Maximum Continuous Power AEO -
Heater ON - Gross Weight 2900 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ECS/HEATER: ON
ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL

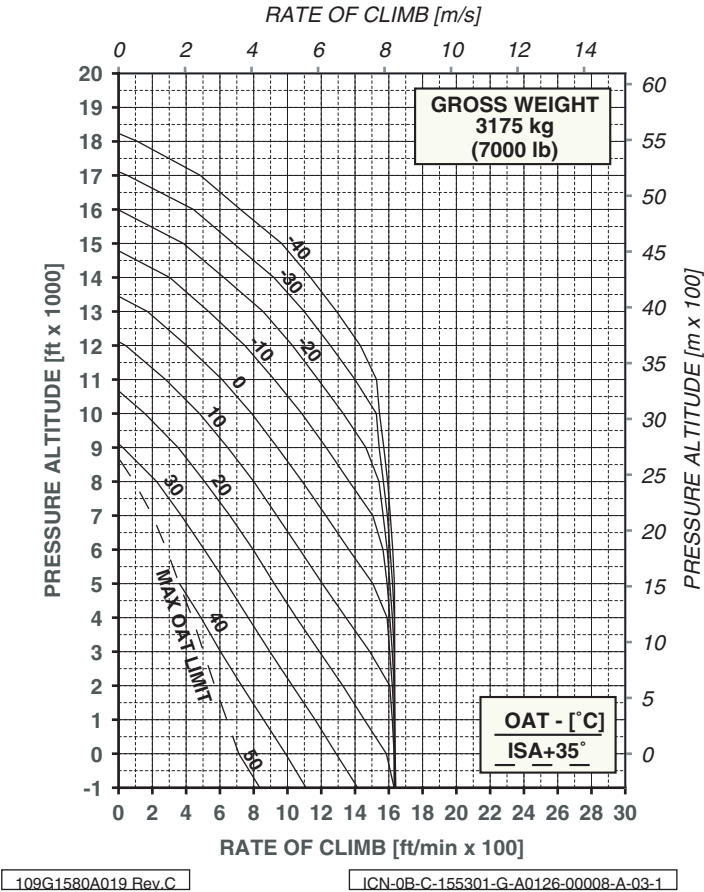


**Figure 4-12 Rate of Climb - Maximum Continuous Power AEO -
Heater ON - Gross Weight 3175 kg**

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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SX-16 SEARCHLIGHT

P/N 109-B810-80

This Supplement shall be attached to the AW109SP RFM (Section 5) when the SX-16 searchlight is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE A: 25 MAY 2011
REVISION 1: 27 MAY 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10035101 dated 25 May 2011
1	Revised page 8 of 10.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1 and B-1.	Manufacturer's Data

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GENERAL

The SX-16 Searchlight installation, P/N 109-B810-80, is a high intensity external light source installed on a gimbal support on the right hand side of the helicopter nose.

The SX-16 searchlight is used to provide further external lighting for reconnaissance operations during night time.

The installation consists of the searchlight, gimbal support, necessary hardware and cabling.

The light can be directed, as required, by operating a switch on the the collective grip. The searchlight illuminates with a white light. The size of the beam is controlled by pressing the SRCH LT toggle switch on collective grip.

To turn the light off, the SX-16 switch must be in the OFF position.

SECTION 1 - LIMITATIONS

AIRCRAFT CONFIGURATION

In addition to the basic aircraft configuration, the following equipment must be installed:

— Customisation for REGA P/N 109-B810-12-103.

AIRSPEED LIMITATIONS

Maximum airspeed with SX-16 stowed or in fixed position 140 KIAS

Maximum airspeed for moving SX-16 searchlight..... 110 KIAS

ALTITUDE LIMITATIONS

Maximum altitude for operation
with SX-16 searchlight 15000 ft Hp (4572 m)

Maximum altitude with
SX-16 searchlight non operative No change

MISCELLANEOUS LIMITATIONS

SEARCHLIGHT USE

The SX-16 searchlight must be switched OFF:

- below 50 ft (15 m) AGL
- in cloud or fog conditions.

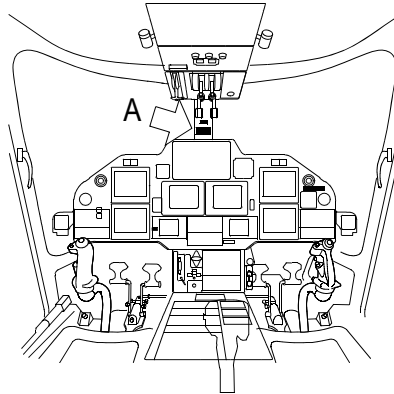
CAUTION

The SX-16 searchlight must not be used as a landing light.

CAUTION

Do not hold the SX-16 switch in the START position for more than 5 seconds to avoid damage to the SX-16 searchlight. Only 3 start attempts can be performed.

PLACARDS



A

SX-16 SEARCHLIGHT	
CAUTION	
DO NOT USE BELOW 50 FT AGL OR FOG CONDITION. MONITOR LOADMETER WHEN IN USE.	
MAXIMUM AIRSPEED	
IN FIXED POSITION	140 KIAS
▪ MOVING	110 KIAS

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Figure 1-1 SX-16 Searchlight Placard

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°1 (Helicopter Nose)

1. SX-16 searchlight : Security and wiring properly connected.
Check lens for cleanliness.

Area N°7 (Cabin interior)

SX-16 SEARCHLIGHT check:

2. SUN CONTR circuit breaker : Check In.
3. SX-16 switch : Set to OFF.
(on pedestal control panel)

ENGINE PRE-START CHECK

1. LTS SEL switch : Set to SX-16
(on pedestal control panel)
2. SX-16 switch : Set to ON.
(on pedestal control panel)
3. SRCH LT toggle switch : Move control and verify correct
(on collective grip) movement of searchlight.
4. SX-16 switch : Set to OFF.
(on pedestal control panel)
5. LTS SEL switch : Set to SRCH
(on pedestal control panel)

IN FLIGHT

Note

At airspeed above 110 KIAS the EFIS Caution ALT MISCOMPARE may be displayed. Refer to ALT MISCOMPARE procedure in Section 3.

SX-16 SEARCHLIGHT OPERATING PROCEDURE

CAUTION

Avoid to direct the beam towards other aircraft or vehicles to prevent temporary blinding effect.

1. LTS SEL switch (on pedestal control panel)	: As required.
2. SX-16 switch (on pedestal control panel)	: Set to ON. Only the fan on the posterior end of the searchlight will start. The light is still off.
3. SX-16 switch (on pedestal control panel)	: Hold in START position until the ignition of the gas in the lamp has occurred, but NOT for longer than 5 seconds.

CAUTION

Holding the switch in the START position, after ignition of the gas in the lamp, may damage the SX-16.

Note

Only 3 START attempts can be performed.
If the SX-16 searchlight does not light up
after the third trial (maximum of 5 seconds
for each attempt), turn the SX-16 switch to
OFF.

4. SRCH LT toggle switch (on collective grip)	: As necessary to orient light as desired.
5. SRCH LT toggle switch (on collective grip)	: Push to focus light beam as desired.

When SX-16 searchlight operations is completed:

6. SRCH LT toggle switch (on collective grip)	: Move searchlight to stowed position (elevation fully up and azimuth 0 deg).
7. SX-16 switch (on pedestal control panel)	: Set to OFF.

APPROACH AND LANDING

1. LTS SEL switch (on pedestal control panel)	Set to SRCH

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

ELECTRICAL SYSTEM

DOUBLE DC GENERATOR FAILURE

1. SX-16 switch : Set to OFF.
(on pedestal control panel)

FAILURE OF A DC GENERATOR

1. SX-16 switch : Set to OFF.
(on pedestal control panel)

SECTION 4 - PERFORMANCE DATA

RATE OF CLIMB

With the SX-16 Searchlight installed, the reduction in the Rate of Climb performance from the Clean aircraft configuration or Heater On charts is given in [PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#) in the Introduction.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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SX-16 SEARCHLIGHT

P/N 109-0814-75

This Supplement shall be attached to the AW109SP RFM (Section 5) when the SX-16 searchlight is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE A: 5 MARCH 2012
REVISION 2: 27 MAY 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
—	Issue A	EASA Approval N° 10038645 dated 5 March 2012
1	Revised pages Title page, A-1, B-1 and 6 of 12.	EASA Approval N° 10062498 dated 4 July 2017
2	Revised page 10 of 12.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1, B-1 and iii.	Manufacturer's Data

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GENERAL

The SX-16 searchlight P/N 109-0814-75, is a high intensity external light source and is installed on a gimbal support mounted below the rear fuselage of the helicopter.

The SX-16 searchlight is used to provide further external lighting for reconnaissance operations during night time.

The installation consists of the searchlight, gimbal support, a pendant control box and necessary hardware and cabling.

The light can be directed, as required, by operating a switch on the pendant control box. The searchlight illuminates with a white light. The size of the beam is controlled by the FOCUS switch on the pendant.

To turn the light off, the OFF/ON/START switch must be in the OFF position.

The SX-16 PRESS TO STOW pushbutton light when illuminates, on the instrument panel, indicates that the OFF/ON/START switch is in the ON position or that the SX-16 has been moved downward.

The SX-16 PRESS TO STOW pushbutton enables the pilot to shut-off the SX-16 searchlight (if ON) and move it to its stowed position.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

The use of the SX-16 searchlight in IFR condition is prohibited.

MINIMUM FLIGHT CREW

The minimum flight crew, for SX-16 searchlight operations, consists of one pilot and one SX-16 operator in the left crew seat.
Remove the cyclic and collective co-pilot controls if the operator is not a pilot.

AIRSPEED LIMITATIONS

Maximum airspeed with SX-16 in fixed position..... 140 KIAS
Maximum airspeed for moving SX-16 searchlight..... 110 KIAS

ALTITUDE LIMITATIONS

Maximum altitude for operation
with SX-16 searchlight 15000 ft (4572 m)
Maximum altitude with
SX-16 searchlight not operative 20000 ft (6096 m)

MISCELLANEOUS LIMITATIONS

SEARCHLIGHT USE LIMITATIONS

The pilot flying must not operate the SX-16 pendant control box.

Use of the SX-16 searchlight is permitted only during night operation with the pendant control box in its fixed position on the interseat console.

Operation of the SX-16 searchlight is restricted to trained crew members only.

The SX-16 searchlight must be switched OFF:

- below 50 ft (15 m) AGL
- in cloud or fog conditions.

The SX-16 searchlight must not be used as a landing light.

Before landing the SX-16 searchlight must be in the stowed position.

Do not hold the OFF/ON/START switch in the START position for more than 5 seconds to avoid damage to the SX-16.

BAGGAGE COMPARTMENT LIMITATIONS

When the SX-16 searchlight is installed, loading in the zones 4 and 5 of the baggage compartment is prohibited.

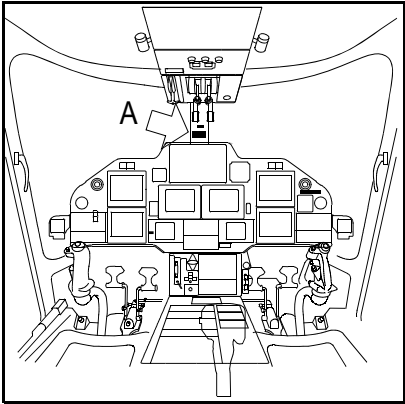
Note

Refer to Section 6 - Weight and Balance, for load distribution.

CATEGORY A TRAINING

The Category A Training with SX-16 installed is prohibited.

PLACARDS



A

SX-16 SEARCHLIGHT

CAUTION

DO NOT USE
BELOW 50 FT AGL
OR FOG CONDITION.
MONITOR LOADMETER
WHEN IN USE.

MAXIMUM AIRSPEED

■ STOWED OR
IN FIXED
POSITION

140 KIAS

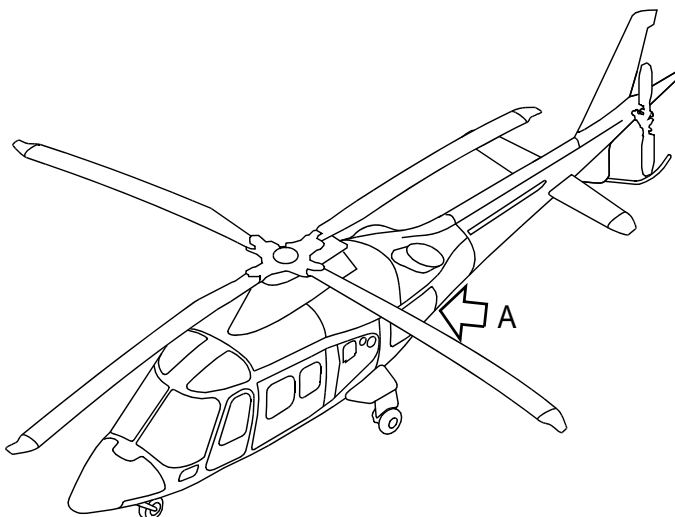
■ MOVING

110 KIAS

STOW BEFORE LANDING.

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Figure 1-1 SX-16 Cockpit Placard



A BAGGAGE COMPARTMENT

MAXIMUM ALLOWABLE BAGGAGE LOAD KG (LB)					
ZONE	1	2	3	4	5
WITHOUT SX-16	120 (264)	110 (242)	102 (224)	93 (205)	84 (185)
WITH SX-16	120 (264)	110 (242)	102 (224)	0	0
MAXIMUM TOTAL LOAD 120 KG (264 LB) MAX UNIT FLOOR LOADING 500 KG/M ² (102 LB/SQ.FT.) ALL CARGO MUST BE SECURED MAX LOAD PER TIE DOWN RING 91 KG (200 LB)					

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Figure 1-2 Baggage Compartment Placard

SECTION 2 - NORMAL PROCEDURES

EXTERNAL PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°2 (Fuselage - RH side)

SX-16 searchlight : Secured and wiring properly connected.
Check conditions and lens for cleanliness.

Area N°7 (Cabin interior)

SX-16 SEARCHLIGHT check:

BAT switch : Set to ON.

GEN BUS 1 switch : Set to ON.

SUN CONTR circuit breaker : Check In.

WARNING

Do not set OFF/ON/START switch to START.

OFF/ON/START switch : Set to ON.
(on pendant control box) Verify that the SX-16 PRESS TO STOW light is illuminated.

OFF/ON/START switch : Set to OFF.
(on pendant control box) Verify that the SX-16 PRESS TO STOW light is extinguished.

OFF/ON/START switch : Set to ON.
(on pendant control box)

- UP/LEFT/DOWN/RT switch : Move control and verify correct
(on pendant control box) movement of searchlight.
Leaves SX-16 searchlight in
fully down and central position.
Verify that the SX-16 PRESS
TO STOW light is illuminated.
- OFF/ON/START switch : Set to OFF.
(on pendant control box) Verify that the SX-16 PRESS
TO STOW light is illuminated.
- SX-16 PRESS TO STOW pushbutton : Press.
(on the instrument panel) Verify that the SX-16 returns in
stowed position, and that the
SX-16 PRESS TO STOW light
is extinguished.

Note

When the SX-16 PRESS TO STOW push-button is pushed, if the ON/OFF/START switch is in ON position, after 5 seconds, the SX-16 PRESS TO STOW light illuminates.

- BAT switch : Set to OFF.

BEFORE TAKEOFF CHECKS

- SX-16 PRESS TO STOW pushbutton : Verify that the SX-16 PRESS
(on the instrument panel) TO STOW light is extinguished.

IN FLIGHT

SX-16 SEARCHLIGHT OPERATING PROCEDURE

(Above 50 ft AGL)

CAUTION

Avoid to direct the beam towards other aircraft or vehicles to prevent temporary blinding effect.

CAUTION

The SX-16 must not be directed in areas where the operator can not observe the searchlight beam.

OFF/ON/START switch
(on pendant control box)

: Set to ON.

Only the fan on the aft end of the searchlight will start. The light is still off.

OFF/ON/START switch
(on pendant control box)

: Hold in START position until the ignition of the gas in the lamp has occurred, but NOT for longer than 5 seconds.

CAUTION

Holding the switch in the START position, after ignition of the gas in the lamp, may damage the SX-16.

Note

Only 3 START attempts can be performed.
If the SX-16 searchlight does not light up
after the third trial (maximum of 5 seconds
for each attempt), turn the OFF/ON/START
switch to OFF.

UP/LEFT/DOWN/RT switch (on pendant control box)	: As necessary to oriented light as desired.
FOCUS pushbutton (on pendant control box)	: As necessary to focus light beam as desired.

When SX-16 searchlight operations is completed:

OFF/ON/START switch (on pendant control box)	: Set to OFF.

APPROACH AND LANDING

(Below 110 KIAS and above 50 ft AGL)

SX-16 PRESS TO STOW pushbutton (on the instrument panel)	: Press (if the SX-16 PRESS TO STOW light is illuminated). Verify that the SX-16 PRESS TO STOW light is extinguished.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES

For any emergency condition carry out the following procedure:

SX-16 PRESS TO STOW pushbutton : Press (if the SX-16 PRESS TO
(on the instrument panel) STOW light is illuminated).
Verify that the SX-16 PRESS
TO STOW light is extinguished.

OFF/ON/START switch : Set to OFF.
(on pendant control box) Verify that the SX-16 PRESS
TO STOW light is extinguished.

MALFUNCTION PROCEDURES

ELECTRICAL SYSTEM

DC Generator or Generator Bus failures

SX-16 PRESS TO STOW pushbutton : Press (if the SX-16 PRESS TO
(on the instrument panel) STOW light is illuminated).
Verify that the SX-16 PRESS
TO STOW light is extinguished.

OFF/ON/START switch : Set to OFF.
(on pendant control box) Verify that the SX-16 PRESS
TO STOW light is extinguished.

SECTION 4 - PERFORMANCE DATA

RATE OF CLIMB

With the SX-16 Searchlight installed, the reduction in the Rate of Climb performance from the Clean aircraft configuration or for combination with other optional equipment refer to chapter [PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#) in the Introduction.

SECTION 6 - WEIGHT AND BALANCE

ALLOWABLE BAGGAGE LOAD

The baggage compartment is divided in three zone. In [Figure 6-1](#), the maximum baggage load for each zone is presented.

The maximum allowable baggage load is 120 kg.

The following table defines the longitudinal baggage moments for each zone.

The maximum allowable longitudinal baggage moments is 585600 kg mm.

The total baggage longitudinal moment shall be less than 585600 kg mm.

Baggage load (kg)	ZONE 1 STA 4880 mm	ZONE 2 STA 5240 mm	ZONE 3 STA 5560 mm
	Baggage moment (kg mm)		
10	48800	52400	55600
20	97600	104800	111200
30	146400	157200	166800
40	195200	209600	222400
50	244000	262000	278000
60	292800	314400	333600
70	341600	366800	389200
75	366000	393000	417000
80	390400	419200	444800
85	414800	445400	472600
90	439200	471600	500400
95	463600	497800	528200
100	488000	524000	556000
102	497760	534480	567120
105	512400	550200	
110	536800	576400	
120	585600		

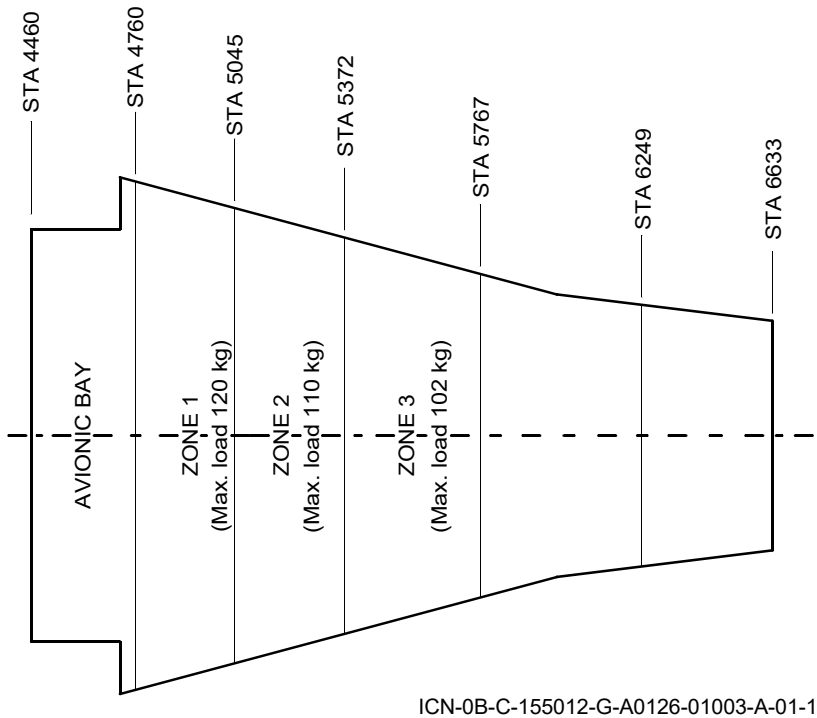


Figure 6-1 Baggage Loading Zones

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

EXTERNAL LOUDSPEAKERS

P/N 109G2300F02-101/107

This Supplement shall be attached to the AW109SP RFM (Section 5) when the External Loudspeakers are installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE A: 19 DECEMBER 2011
REVISION 1: 27 MAY 2025**

LIST OF REVISIONS

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–	Issue A	EASA Approval N° 10037736 dated 19 December 2011
1	Revised page 1 of 6.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1 and B-1.	Manufacturer's Data

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GENERAL

The external loudspeakers, P/N 109G2300F02-101/-107, allow the crew to communicate to ground personnel while remaining in flight.

The system consists of two external loudspeakers, a control panel and an amplifier.

The external loudspeakers are mounted in a fixed position underneath the fuselage at the baggage compartment station.

The control panel, on the central console, permits to operate the system by means of three switches, identified POWER ON, EXT / INT and WAIL / OFF / YELP for the siren mode, and a VOL control knob for the volume (operative only for PA function).

The EXT/INT switch allow to utilize the system to communicate with passengers on board through internal loudspeakers.

Note

The switch identified PA / RADIO is active only in PA (Public Address) position.

When the system is operating, the POWER ON light on the control panel is illuminated.

SECTION 1 - LIMITATIONS

EXTERNAL LOUDSPEAKERS LIMITATIONS

The use of external loudspeakers by the pilot flying is prohibited.

SECTION 2 - NORMAL PROCEDURES

EXTERNAL PREFLIGHT CHECKS

PILOT'S PREFLIGHT CHECK

Area N°2 (Fuselage - RH side)

External loudspeaker : Check condition and secured.
Check wiring connections for condition and security.

Area N°6 (Fuselage - LH side)

External loudspeaker : Check condition and secured.
Check wiring connections for condition and security.

PA PWR circuit breaker : Check in.
(in baggage compartment).

Area N°7 (Cockpit interior)

SPKR AMPL circuit breaker : Check in.
POWER switch : Confirm to OFF.

BEFORE TAKE-OFF CHECKS

PUBLIC ADDRESS (PA) OPERATION

Loudspeakers Control Panel :

WAIL / OFF / YELP switch : Check OFF.

POWER switch : ON.

Check POWER ON indicator
light illuminated.

PA / RADIO switch : Check PA.

EXT / INT switch : Check INT.

POWER switch : OFF.

IN FLIGHT

Note

During external loudspeakers operations, all helicopter doors and windows should be closed to avoid feedback to the microphone.

Note

At maximum volume, the loudspeakers can only be ON for maximum period of 15 seconds followed at least by a 15 seconds OFF interval.

PUBLIC ADDRESS (PA) OPERATION

ICS control panel : Select to PA.

Loudspeakers Control Panel :

POWER switch : ON.

PA / RADIO switch : Check PA.

EXT / INT switch : As required.

PTT trigger switch : Push at the second detent.
(on cyclic stick)

Note

Any message spoken to the headset microphone will be spread through the loudspeakers.

VOL knob : As required.

When PA system operation is no longer required:

POWER switch : OFF.

SIREN OPERATION

Loudspeakers Control Panel :

POWER switch : ON.
PA / RADIO switch : Check in PA.
EXT / INT switch : Set to EXT.
WAIL / OFF / YELP switch : Set to WAIL or YELP, as required.

When system operation is no longer required:

WAIL / OFF / YELP switch : Set to OFF.
POWER switch : OFF.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

SX-16 SEARCHLIGHT

P/N 109G3340F02

This Supplement shall be attached to the AW109SP RFM (Section 5) when the SX-16 searchlight is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE A: 3 DECEMBER 2012
REVISION 2: 27 MAY 2025

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10042393 dated 3 December 2012
1	Revised pages Title page, A-1, B-1, i thru iv and 1 thru 12 of 12.	Approved with NDC-109G3340-012 dated 2 August 2017 under the authority of DOA ref EASA.21J.005
2	Revised page 11 of 12.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1 and B-1.	Manufacturer's Data

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GENERAL

The SX-16 searchlight, P/N 109G3340F02, is a high intensity external light source and is installed on a gimbal support mounted on the right hand side of the helicopter nose.

The SX-16 searchlight is used to provide further external lighting during night time.

The installation consists of the searchlight, gimbal support, a pendant control box and necessary hardware and cabling.

The light can be directed, as required, by operating a switch on the pendant control box. The searchlight illuminates with a white light.

The size of the beam is controlled by the FOCUS switch on the pendant.

The pendant control box, installed on its support on the interseat console, has the controls to switch on or off and move the SX-16 searchlight.

Two different control boxes are foreseen:

Control Box A

For Kit P/N 109G3340F02-201, which presents the following switches:

- ON/OFF/START switch;
- FOCUS switch;
- DOWN-UP-LEFT-RIGHT slew switch.

Control Box B

For Kit P/N 109G3340F02-101, which presents the following switches:

- POWER pushbutton;
- LAMP pushbutton;
- SLAVE pushbutton;
- PRESET pushbutton;
- FOCUS pushbutton;
- DOWN-UP-LEFT-RIGHT slew switch.

Note

The SLAVE function is utilized only in configurations which foresee the enslavement of the searchlight to other systems (cameras, FLIR , etc.).

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

The use of the SX-16 searchlight in IFR condition is prohibited.

MINIMUM FLIGHT CREW

The minimum flight crew, for SX-16 searchlight operations, consists of one pilot and one SX-16 operator in the left crew seat.
Remove the co-pilot controls if the operator is not a pilot.

AIRSPEED LIMITATIONS

Maximum airspeed with SX-16 in fixed position..... 140 KIAS
Maximum airspeed for moving SX-16 searchlight..... 110 KIAS

ALTITUDE LIMITATIONS

Maximum altitude for operation
with SX-16 searchlight 15000 ft (4572 m)
Maximum altitude with
SX-16 searchlight not operative 20000 ft (6096 m)

MISCELLANEOUS LIMITATIONS

SX-16 SEARCHLIGHT USE LIMITATIONS

The pilot flying must not operate the SX-16 pendant control box.

Use of the SX-16 searchlight is permitted only during night operation with the pendant control box in its fixed position on the interseat console.

Operation of the SX-16 searchlight is restricted to trained crew members only.

The SX-16 searchlight must be switched OFF:

- below 50 ft (15 m) AGL
- in cloud or fog conditions.

The SX-16 searchlight must not be used as a landing light.

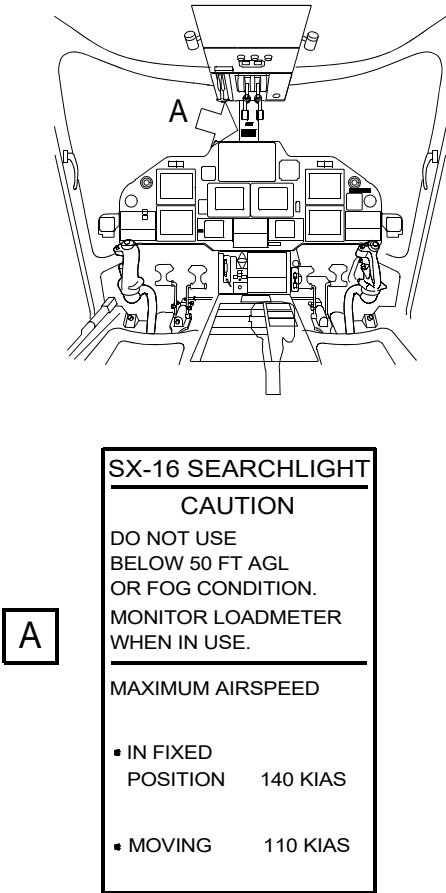
For Control Box A installation:

Do not hold the OFF/ON/START switch in START position for more than 5 seconds to avoid damage to the SX-16.

For Control Box B installation:

Do not hold the "LAMP" pushbutton for more than 5 seconds to avoid damage to the SX-16.

PLACARDS



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Figure 1-1 Cockpit Placard

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°1 (Helicopter nose)

1. SX-16 searchlight : Secured and wiring properly connected.
Check conditions and lens for cleanliness.

Area N°7 (Helicopter interior)

Cockpit interior

1. BAT switch : Set to ON.
2. GEN BUS 1 switch : Set to ON.
3. SUN CONTR circuit breaker : Check in.
4. Pendant control box : Check present, condition, stowed and secured.

For Control Box A installation:

WARNING

Do not set OFF/ON/START switch to START.

5. OFF/ON/START switch : Set to ON.
(on pendant control box)
6. UP/LEFT/DOWN/RT switch : Move control and verify correct
(on pendant control box) movement of searchlight.
7. OFF/ON/START switch : Set to OFF.
(on pendant control box)
8. BAT switch : Set to OFF.

■ For Control Box B installation:

- 5. POWER pushbutton : Press.
(on pendant control box) Verify ON light is illuminated,

WARNING

■ Do not press LAMP pushbutton.

- 6. UP/LEFT/DOWN/RT switch : Move control and verify correct
(on pendant control box) movement of searchlight.
- 7. POWER pushbutton : Press.
(on pendant control box) Verify ON light is extinguished.
- 8. BAT switch : Set to OFF.

IN FLIGHT

Note

The magnetic compasses are unreliable when operating the SX-16 searchlight.

Note

At airspeed above 110 KIAS the EFIS Caution ALT MISCOMPARE may be displayed. Refer to ALT MISCOMPARE procedure in Section 3.

SX-16 SEARCHLIGHT OPERATING PROCEDURE (Above 50 ft AGL)

CAUTION

Avoid to direct the beam towards other aircraft or vehicles to prevent temporary blinding effect.

CAUTION

The SX-16 must not be directed in areas where the operator can not observe the searchlight beam.

For Control Box A installation:

1. OFF/ON/START switch (on pendant control box) : Set to ON.
Only the fan on the aft end of the searchlight will start. The light is still off.
2. OFF/ON/START switch (on pendant control box) : Hold in START position until the ignition of the gas in the lamp has occurred, but NOT for longer than 5 seconds.

CAUTION

Holding the switch in the START position, after ignition of the gas in the lamp, may damage the SX-16.

Note

Only 3 START attempts can be performed. If the SX-16 searchlight does not light up after the third trial (maximum of 5 seconds for each attempt), turn the OFF/ON/START switch to OFF.

3. UP/LEFT/DOWN/RT switch (on pendant control box) : As necessary to oriented light as desired.
4. FOCUS pushbutton (on pendant control box) : As necessary to focus light beam as desired.

When SX-16 searchlight operations are completed:

5. OFF/ON/START switch : Set to OFF.
(on pendant control box)

For Control Box B installation:

1. POWER pushbutton : Press.
(on pendant control box) Only the fan on the aft end of the searchlight will start. The light is still off.
2. LAMP pushbutton : Press and hold until the ignition
(on pendant control box) of the gas in the lamp has occurred, but NOT for longer than 5 seconds.

CAUTION

Holding the LAMP pushbutton, after ignition of the gas in the lamp, may damage the SX-16.

Note

Only 3 START attempts can be performed. If the SX-16 searchlight does not light up after the third trial (maximum of 5 seconds for each attempt), press POWER pushbutton and verify related ON light is extinguished.

3. UP/LEFT/DOWN/RT switch : As necessary to oriented light
(on pendant control box) as desired.
4. FOCUS pushbutton : As necessary to focus light
(on pendant control box) beam as desired.

When SX-16 searchlight operations are completed:

5. PRESET pushbutton (on pendant control box)	: Press. Verify the SX-16 in stow position.
6. POWER pushbutton (on pendant control box)	: Press. Verify ON light is extinguished.

APPROACH AND LANDING

(Below 110 KIAS and above 50 ft AGL)

1. SX-16 searchlight	: Confirm OFF and stowed.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES

For any emergency condition carry out the following procedure:

■ For Control Box A installation:

1. OFF/ON/START switch : Set to OFF.
(on pendant control box)

■ For Control Box B installation:

1. POWER pushbutton : Press.
(on pendant control box) Verify ON light is extinguished.

MALFUNCTION PROCEDURES

ELECTRICAL SYSTEM

DC Generator/s or Generator Bus Failures

■ For Control Box A installation:

1. OFF/ON/START switch : Set to OFF.
(on pendant control box)

■ For Control Box B installation:

1. POWER pushbutton : Press.
(on pendant control box) Verify ON light is extinguished.

SECTION 4 - PERFORMANCE DATA

RATE OF CLIMB

With the SX-16 Searchlight installed, the reduction in the Rate of Climb performance from the Clean aircraft configuration or for combination with other optional equipment refer to chapter [PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#) in the Introduction.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

COLD OPERATIONS KIT P/N 109G2500F01

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Cold Operations Kit is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE A: 4 JULY 2017
REVISION 1: 21 JUNE 2024**

LIST OF REVISIONS

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1	Revised page 1 of 12.	Approved with NDC-109G2620-006 dated 21 June 2024 under the authority of DOA ref EASA.21J.005
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GENERAL

This Supplement deals with Limitations and Performance to operate the helicopter in the outside air temperature envelope down to -40 °C.

The Cold Operations kit P/N 109G2500F01 consists of:

- EFIS software P/N 25-EFIS70F-SW-0003 or later;
- V_{NE} Placard P/N 109-0740L18-123 (Retractable Landing Gear configuration) or P/N 109-0740L18-125 (Fixed Landing Gear configuration);
- Passenger Door Assy LH/RH 109-0363-73-201/-202 (window seal installation modified);
- Main Landing Gear struts P/N 109G3210V01-105/-106 (with increased Nitrogen pressure);
- Box Landing Gear structural variant P/N 109G5306P93-101 (i.e. bolts, nuts, rivets, etc.);
- Hydraulic Main Landing Gear Actuator P/N 109G3230V01-101.

SECTION 1 - LIMITATIONS

AIRCRAFT CONFIGURATION

The AW109SP is approved for low temperature operations (down to -40 °C range) provided that the Cold Operations kit P/N 109G2500F01 is installed and that one of the following equipments is installed and operative:

- Bleed Air Heater P/N 109-B810-49-101/201/251;
- Environmental Control System P/N 109-0813-50-215;
- Environmental Control System P/N 109-B811-53-101.
- Portable Fire Extinguisher P/Ns 109-0810-11-213/-215 or P/N 109G2620F03-101 or P/N 109G2620F04-201.

The following supplements are not compatible with Cold Operation kit (P/N 109G2500F01) only if sliding window is installed on passenger door:

- [Supplement 32](#) for:
 - the internal arrangements with at least one FWD Facing central seat;
 - the internal arrangements P/N 109-B811-20-107/-117/-125 only if AFT sliding window is installed on passenger door.
- [Supplement 33](#).

AIRSPEED LIMITATIONS

V_{NE} (Power-ON)..... See [Figure 1-1](#)

V_{NE} (Power-ON) with Fixed Wheeled Landing

Gear Kit P/N 109-B811-02 installed See [Figure 1-2](#)

V_{NE} (Power-ON) with Snow Skis Kit P/N 109-0811-99

or P/N109G3271F01 and Fixed Wheeled Landing

Gear Kit P/N 109-B811-02 installed See [Figure 1-2](#)

V_{NE} (Power-ON) with Slump Protection Pads Kit P/N 109-0811-73

or P/N109G3272F01 and Fixed Wheeled Landing

Gear Kit P/N 109-B811-02 installed See [Figure 1-2](#)

ALTITUDE LIMITATIONS

Maximum altitude for take-off and landing see [Figure 1-3](#)

Minimum and maximum operating altitudes..... see [Figure 1-3](#)

CAT A maximum altitude for take-off and landing see [Figure 1-4](#)

AMBIENT AIR TEMPERATURE LIMITATIONS

Minimum ambient air temperature-40 °C (-40 °F)
(Refer to [Figure 1-1](#))

Helicopter engine OFF exposure to OAT below -25 °C (13 °F) is limited to 2 hours.

FUEL SYSTEM LIMITATIONS

FUEL TEMPERATURE LIMITATIONS

The [Table 1-1](#) presents a list of fuel temperature limitations for use with the Pratt & Whitney PW207C engines, when Cold Operations kit P/N 109G2500F01 is installed.

Table 1-1 Fuel Temperature Limitations

Fuel Type	Temperature Limitations
JP-4	-54 °C
JET A, A-1	-29 °C
JP-5, JP-8	-27 °C
R.T.	-34 °C
TS-1	-48 °C

MISCELLANEOUS LIMITATIONS

EXTERNAL HOIST OPERATION LIMITATIONS

External hoist operations at OAT below -25 °C are prohibited.

DIRECTION FINDER OPERATION LIMITATIONS

Minimum ambient air temperature (OAT) for operation.....-25 °C

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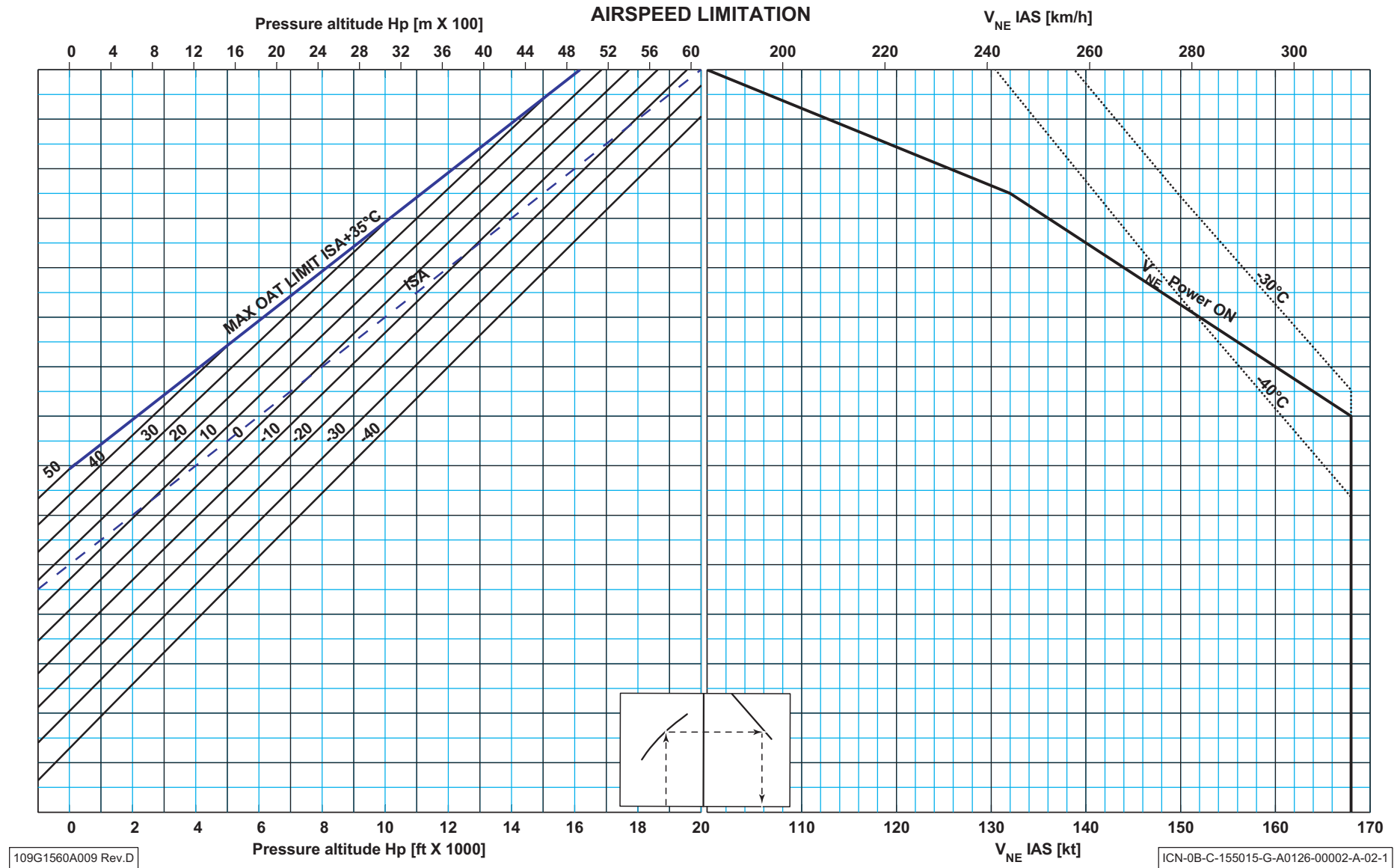


Figure 1-1 Airspeed Limitation V_{NE} (Power-ON)

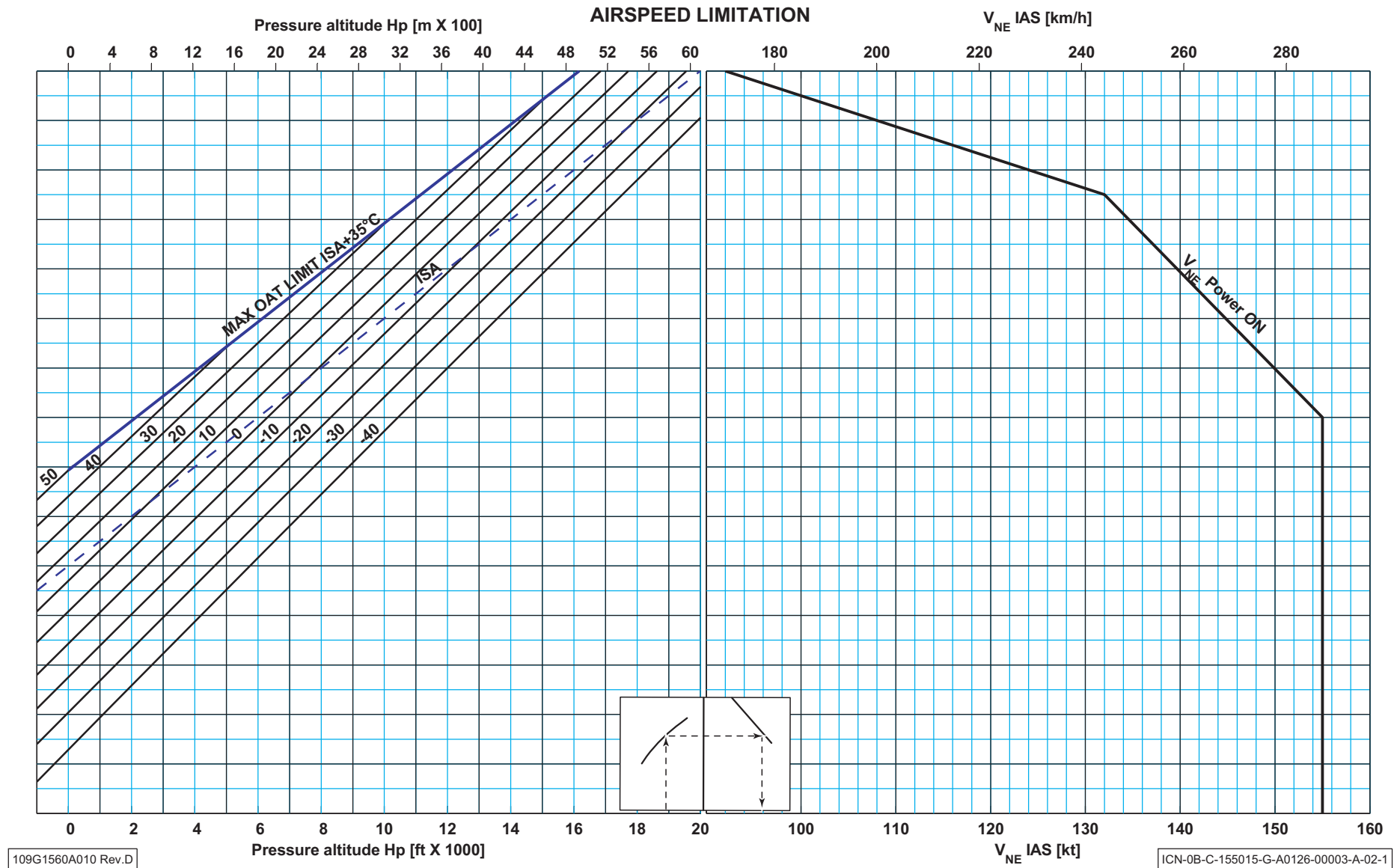
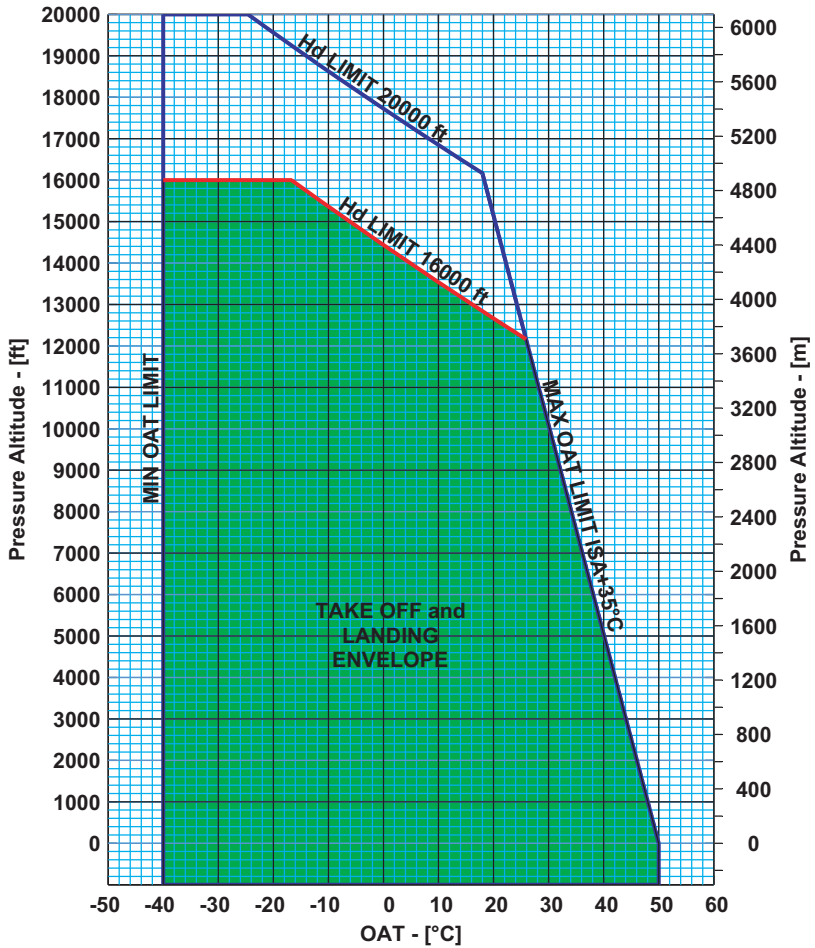


Figure 1-2 Airspeed Limitation V_{NE} (Power-ON) with Fixed Wheeled Landing Gear

Flight and Take-off / Landing Envelope

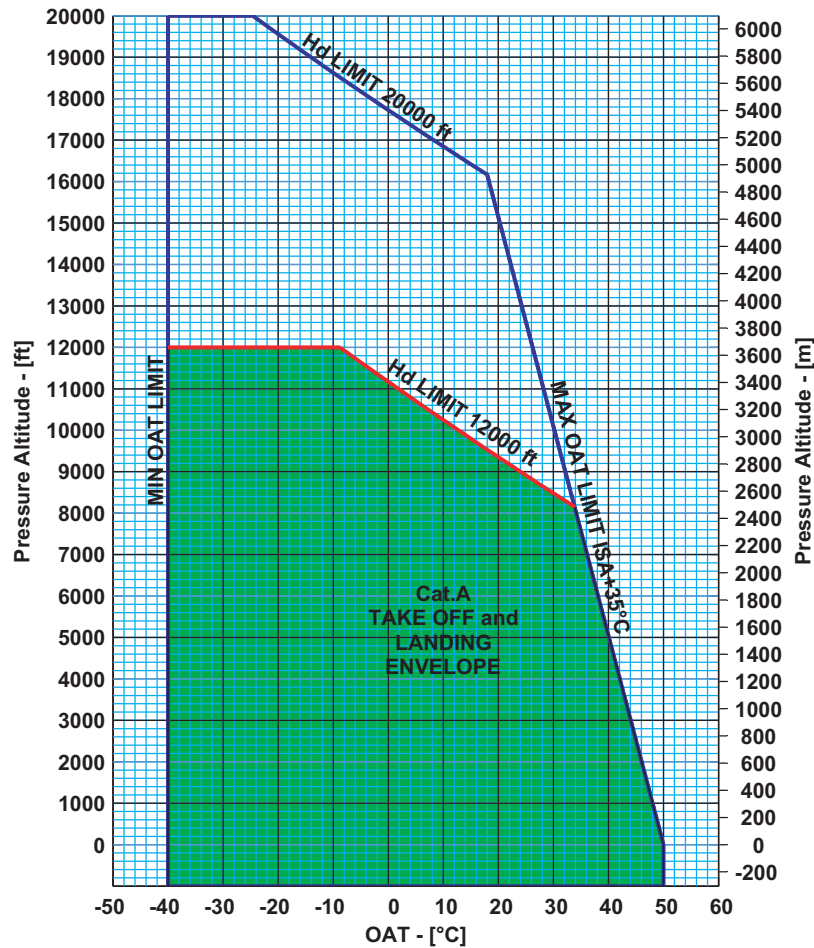


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Figure 1-3 Pressure Altitude / OAT Envelope

Cat.A TAKE OFF and LANDING
ENVELOPE

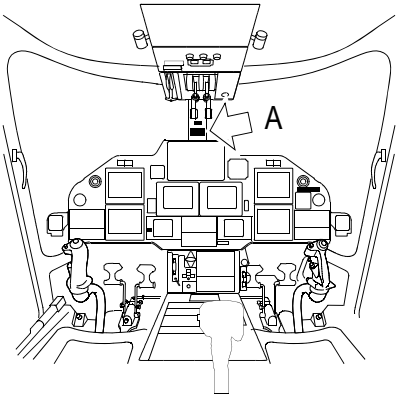


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Figure 1-4 CAT A Pressure Altitude / OAT Envelope

PLACARDS

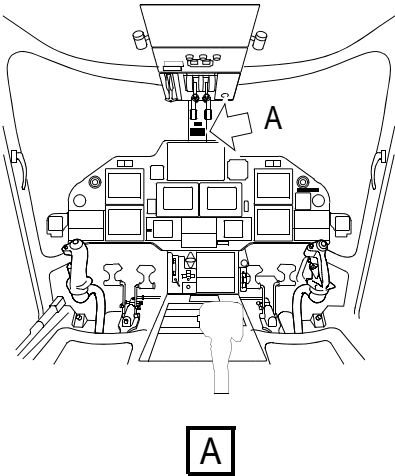


A

AIRSPEED LIMITATIONS V_{NE} - KIAS										
$OAT^{\circ}C$ Hp-ft	-40	-30	-20	-10	0	10	20	30	40	50
-1000	168	168	168	168	168	168	168	168	168	168
0	168	168	168	168	168	168	168	168	168	168
2000	168	168	168	168	168	168	168	168	168	-
4000	168	168	168	168	168	168	168	166	161	-
6000	168	168	168	168	168	165	160	156	-	-
8000	166	168	168	164	160	155	151	146	-	-
10000	160	165	159	154	150	145	141	137	-	-
12000	154	155	149	145	140	135	131	-	-	-
14000	148	145	140	135	129	122	115	-	-	-
16000	140	135	128	121	113	107	-	-	-	-
18000	128	120	112	105	-	-	-	-	-	-
20000	112	104	-	-	-	-	-	-	-	-
V_{NEI} :						REDUCE V_{NE} BY 20 KIAS				
AUTOROTATION OR OEI:						REDUCE V_{NE} BY 40 KIAS				
MAX FWD TOUCHDOWN SPEED: 40 Kts						V_{LO} AND V_{LE} : 140 KIAS				

ICN-0B-C-151000-G-A0126-01024-A-01-1

Figure 1-5 Airspeed (V_{NE}) Placard



AIRSPEED LIMITATIONS V_{NE} - KIAS										
OAT°C Hp-ft	-40	-30	-20	-10	0	10	20	30	40	50
-1000	155	155	155	155	155	155	155	155	155	155
0	155	155	155	155	155	155	155	155	155	155
2000	155	155	155	155	155	155	155	155	155	-
4000	155	155	155	155	155	155	155	153	151	-
6000	155	155	155	155	155	153	150	147	-	-
8000	155	155	155	155	150	147	144	141	-	-
10000	155	153	150	146	143	140	138	135	-	-
12000	150	146	143	140	137	134	130	-	-	-
14000	143	140	137	134	128	120	112	-	-	-
16000	137	134	127	118	109	101	-	-	-	-
18000	127	117	108	99	-	-	-	-	-	-
20000	108	98	-	-	-	-	-	-	-	-
AUTOROTATION OR OEI:						REDUCE V_{NE} BY 27 KIAS				
V_{NEI} :						REDUCE V_{NE} BY 7 KIAS				
MAX FWD TOUCHDOWN SPEED:										40 Kts

ICN-0B-C-151000-G-A0126-01025-A-01-1

Figure 1-6 Airspeed (V_{NE}) Placard with Fixed Wheeled
Landing Gear

SECTION 2 - NORMAL PROCEDURES

ENGINE PRE-START CHECK

ELECTRICAL POWER-UP

Note

Confirm that EFIS software
P/N 25-EFIS70F-SW-0003 or later
is installed on PFDs and MFDs.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

GENERAL

The performance data for AW109SP helicopter, for the Temperature Envelope Extension from -25 °C to -40°C, are contained in the performance charts in Section 4 of the basic RFM and in Section 4 of the specific optional equipments, if installed.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

WIRE STRIKE PROTECTION SYSTEM P/N 109-B810-78

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Wire Strike Protection System is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 11 DECEMBER 2009

LIST OF REVISIONS

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–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009

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GENERAL

Note

The functional performance of the wire strike protection system has not been demonstrated.

The wire strike protection system P/N 109-B810-78 is designed to provide a measure of protection for the helicopter in the event of inadvertent flight into horizontally strung mechanical, electrical and communication wires and cables.

The wire strike protection system consists of a roof mounted wedge-type cutter, a bottom fuselage mounted cutter, a nose access door reinforcement, a window strut bumper and windshield mounted deflector to facilitate wire sliding.

Note

The lower cutter can be locked in two positions; in forward tilted position for flight and in backward tilted position for nose access door opening or for helicopter towing. The red-banded safety pin must be used to keep the lower cutter deflector in backward tilted position.

SECTION 1 - LIMITATIONS

No change.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°1 (Helicopter Nose)

Note

Before opening the access door of the nose compartment it is necessary: to remove the quick lock release pin from the lower cutter and tilt the deflector in backward position; to lock the lower cutter deflector in backward tilted position by means of the red banded safety pin; to remove the quick lock release pin which connects the nose access door reinforcement to the window strut bumper; to unlock the upper nose door fasteners and door latches.

1. Lower Cutter : Condition and locked in forward position.

CAUTION

Damage may result from landing gear retraction if the lower cutter is not locked in forward position.

2. Nose access door reinforcement : Condition and connected to the window strut bumper.

Area N°2 (Fuselage - RH side)

1. Wiper deflectors and window strut bumper : Condition and secured.
2. Upper cutter : Condition and secured.

Area N°6 (Fuselage - LH side)

1. Upper cutter : Condition and secured.
2. Wiper deflectors and window strut bumper : Condition and secured.

TAKE-OFF



Excessive nose down attitude during transition to forward flight may cause the lower cutter deflector to hit the ground.

APPROACH AND LANDING



It is recommended to land on even surfaces when the wire strike protection system is installed.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

GENERAL

In the event of a wire strike, land as soon as possible and perform engine shutdown.
Before next flight the aircraft must be inspected for damage.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

SECTION 8 - HANDLING, SERVICING AND MAINTENANCE

TOWING

Before connecting the towing bar to the nose wheel, remove the quick lock release pin from the lower cutter deflector and tilt the deflector backward.

Lock the deflector in backward position by means of the red-banded safety pin.

When towing operation is completed and after towing bar removal, tilt the deflector in forward position and lock it by means of the quick lock release pin.

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CABIN SEARCHLIGHT

P/N 109-B810-40

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Cabin Searchlight is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 11 DECEMBER 2009

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–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009

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GENERAL

The Cabin Searchlight installation P/N 109-B810-40 consists of a swinging light installed under the central section of the helicopter fuselage. The light can be extended, stowed or swung as required by operating a switch on a dedicated control panel located on the interseat console or by operating a switch on the hoist operator pendant.

SECTION 1 - LIMITATIONS

AIRSPEED LIMITATIONS

Maximum speed for searchlight extension,
orientation and retraction 135 KIAS

SEARCHLIGHT OPERATION

The use of the cabin searchlight when any external rearview mirror is installed is permitted only with the lamp in stowed position.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°6 (Fuselage - LH side)

1. Searchlight :Condition and cleanliness.

ENGINE PRE-START CHECK

1. 2ND SRCH-PWR / CNTR :ON.
circuit breaker

IN FLIGHT

SEARCHLIGHT OPERATING PROCEDURE

Note

The searchlight, consisting of a swinging light installed under the central section of the helicopter fuselage, can be extended, stowed or swung as required by operating a switch on dedicated control panel located on the interseat console or by operating a switch on the hoist operator pendant.

Note

When operating Searchlight, magnetic compass indication is not reliable.

Extension

1. SEARCH LIGHT switch ON
(on HOIST CONTROL panel)
2. ON / OFF / STOW switch ON
(on CABIN SRCH LT panel)

Note

With the switch in OFF position the light remains extinguished in the position where it has been left.

3. Four-way switch :Set as necessary.
(on CABIN SRCH LT panel or
on hoist control pendant)

Note

Moving switch to L or R position the search-light rotates left or right. It is possible to adjust the light in an intermediate position, from stowed to extended, by temporarily moving the switch to EXT or RETR position.

Retraction

1. ON / OFF / STOW switch STOW then OFF.
(on CABIN SRCH LT panel)
2. SEARCH LIGHT switch OFF
(on HOIST CONTROL panel)

Note

In STOW position the light is extinguished.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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COPILOT EXTERNAL MIRROR

P/N 109-B810-52

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Copilot External mirror is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

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GENERAL

The copilot external mirror, P/N 109-B810-52, is mounted on the left hand side of the helicopter nose. It can be used by the copilot to observe attachment of loads to the cargo hook and to check safe load release.

SECTION 1 - LIMITATIONS



The use of the cabin searchlight with copilot external mirror installed is permitted only with the lamp in stowed position.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°6 (Fuselage - LH side)

1. Copilot external mirror :Condition, cleanliness and secure.

CARGO HOOK OPERATING PROCEDURE

CARGO ATTACHMENT

Note

Attachment of the cargo sling to the hook can be observed by the copilot by means of the copilot external mirror.

CARGO RELEASE

Note

Safe load release can be observed by the copilot by means of the copilot external mirror.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

ADDITIONAL EXTERNAL MIRRORS

P/N 109-B810-68

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Additional External Mirrors are installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE A: 25 MAY 2011

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10035101 dated 25 May 2011

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GENERAL

The Additional external mirrors installation P/N 109-B810-68 consists of two mirrors installed on supports fitted on the right and left hands side of the helicopter nose. The right hand one can be adjusted as required by operating a switch on pilot cyclic grip and heated by operating a switch on dedicated control panel located on the interseat console.

SECTION 1 - LIMITATIONS



The use of the cabin searchlight with additional external mirrors installed is permitted only with the lamp in stowed position.

AIRCRAFT CONFIGURATION

In addition to the basic aircraft configuration, the following equipment must be installed:

- Customisation for REGA P/N 109-B810-12-103.

AIRSPEED LIMITATIONS

Maximum airspeed..... 155 KIAS

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°2 (Fuselage - RH side)

1. External Mirror : Condition, cleanliness and secure.
Check wiring properly connected

Area N°6 (Fuselage - LH side)

2. External Mirror : Condition, cleanliness and secure.

Area N°7 (Helicopter interior)

3. MIRROR circuit breaker : Check in.

ENGINE PRE-START CHECK

1. BAT switch : ON.
2. MIRROR switch : Set to ON
(on pedestal control panel)
3. MIRROR toggle switch : Move control and verify correct
(on pilot cyclic grip) movement of mirror
4. MIRROR switch : Set to OFF
(on pedestal control panel)
5. BAT switch : OFF.

IN FLIGHT

EXTERNAL MIRRORS OPERATING PROCEDURE

Note

When using the Landing Light, reflections of the light into the cabin can cause reduced periferal vision during landing in areas that are scarsly illuminated.

Note

The mirror movement control is active with the switch on pedestal control panel in either ON or HEATER positions.

1. MIRROR switch : Set to ON
(on pedestal control panel)
2. MIRROR toggle switch : Move control as necessary to
(on pilot cyclic grip) orient mirror as desired.

In case of mist / ice on the mirror:

3. MIRROR switch : Set to HEATER
(on pedestal control panel)

After the mist / ice dissolved:

4. MIRROR switch : Set to ON
(on pedestal control panel)

When operations with External Mirror is completed:

5. MIRROR switch : Set to OFF
(on pedestal control panel)

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

ELECTRICAL POWER FAILURE

FAILURE OF A GENERATOR

1. MIRROR switch : OFF
(on pedestal control panel)

FAILURE OF GENERATOR 1 OR 2 AND GENERATOR BUS #1 OR #2

1. MIRROR switch : OFF
(on pedestal control panel)

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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DIGITAL MAP GENERATOR

P/N 109-B810-13

P/N 109G4630F04

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Digital Map Generator (Euronav 5 or Euronav 7) is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

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REVISION 1: 31 JANUARY 2020**

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1	Revised pages Title page, A-1, B-1, 1 and 2 of 4	Approved with NDC-109G4630-002 dated 31 January 2020 under the authority of DOA ref EASA.21J.005

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GENERAL

The Digital Map Generator (DMG) P/N 109-B810-13 (EuroNav 5) or P/N 109G4630F04 (EuroNav 7) is a GPS driven detailed mapping system. The digital moving map images and the navigation data aids are displayed on the dedicated LCD. The crew can control the type and scale of the moving map by means of the DMG control panel.

The DMG P/N 109-B810-13 and DMG P/N 109G4630F04 consist of:

- Map Generator Unit;
- Mounting Tray;
- Control Panel;
- Flash Disk.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

The Digital Map must not be used for navigation.

CAUTION

The DMG display is intended to serve as an awareness tool only. The display and data-base may not provide the accuracy and fidelity on which to base routine navigation decisions and plan routes.

SECTION 2 - NORMAL PROCEDURES

SYSTEM CHECKS

DIGITAL MAP GENERATOR SYSTEM CHECK

1. DMG LCD : Press PWR key to initialise LCD monitor.
Verify moving map displayed.
Verify helicopter icon appears on the map of the correct geographic region.

IN FLIGHT

1. DMG : As desired.

SHUTDOWN

1. DMG control panel (on interseat console)
For EuroNav 5 (P/N 109-B810-13)
: Press MEN (menu) key.
With scrolling keys, select SHUTDOWN (displayed on LCD).
Select YES.
For EuroNav7 (P/N 109G4630F04)
: Press FNC key.
With control knob, select SHUTDOWN (displayed on LCD).
Select YES.
2. DMG LCD : Press PWR key to shutdown the LCD monitor.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

AVIDYNE TAS 620 / 620A

P/N 109-B810-19

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Avidyne TAS 620 or TAS 620A is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 11 DECEMBER 2009
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–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
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GENERAL

The Avidyne TAS 620/620A, P/N 109-B810-19, is an onboard Traffic Advisory System (TAS) which monitors a radius around the helicopter by interrogating any intruding aircraft transponder, determining if a potential conflict with other aircraft exists.

This is done by computing the relative range, altitude, bearing and closure rate of other transponder-equipped aircraft with respect to the helicopter.

TAS 620/620A system warns the flight crew with an aural and visual Traffic Advisory whenever the system detects another transponder equipped aircraft and predicts the intruder to be a threat.

The TAS 620/620A is operative as soon as the helicopter is electrically powered.

The TAS 620/620A consists of:

- a TAS 620/620A processor, located in the rear avionics bay,
- a single blade antenna, and
- a dual blade antenna.

The TAS 620/620A communicates via RS-232 link with the EFIS system. The output color image is shown on the PFD and MFD. On the MFD, a dedicated page, called TRAFFIC page, is accessible by the crew to have a more complete awareness of the traffic going on all around the helicopter.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

The TAS 620/620A is approved for VFR and IFR operation as an aid to visually acquiring traffic.

TAS SYSTEM LIMITATIONS

The pilot must manoeuvre the helicopter based only on ATC guidance or positive visual acquisition of the conflicting traffic.

SECTION 2 - NORMAL PROCEDURES

Note

For full information on the use of the Avidyne TAS 620/620A system refer to Avidyne TAS 600 Series Traffic Advisory System Pilot's Operating Handbook, 32-2352 latest revision.

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°2 (Fuselage - RH side)

➔ TAS 620/620A Upper antenna : Condition.

➔ TAS 620/620A Lower antenna : Condition.

Area N°7 (Helicopter interior)

Cockpit interior

TAS breaker : Check in.

SYSTEM CHECKS

TAS 620/620A SYSTEM CHECK

1. MFD : Verify that in the upper right corner of the display, the white TRAFFIC legend is not crossed out.

Verify that one of the following white legends is displayed:
TRF AUTO
TRF ABV
TRF BLW
TRF NORM
TRF ALL.
2. MFD : Perform the TAS620/620A self-test by following these steps:
 - Press MENU.
 - Enter FUNCTION page.
 - Enter TRAFFIC page.
 - Press MENU again.
 - Enter FORMAT page.
 - Enter TCAD TEST page.While the internal test is running, the display is blanked out and the white TRAFFIC legend is crossed out in red.
Verify that once the test is over, the initial TAS page reappears.
3. TAS display : As required.
4. TAS switch : As required.
(on AURAL WARN of
Miscellaneous control panel)

IN FLIGHT

CAUTION

Do not attempt manoeuvres based only on traffic information shown by TAS. Information on the display is provided as an aid in visually acquiring traffic, it is not a replacement for ATC instructions and See & Avoid techniques.

TAS MESSAGES ON EFIS

TAS SYSTEM INHIBITED

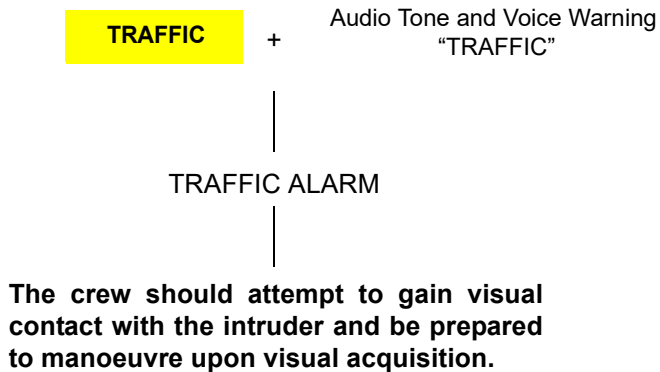
TAS INHBT

+

Chime

The TAS audio has been inhibited.

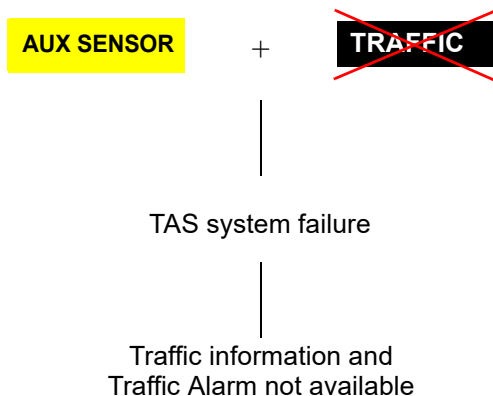
TRAFFIC DETECTED



SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

SYSTEM FAILURES

TAS SYSTEM FAILURE



SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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SATCOM AIRCELL

P/N 109-B811-25-109

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Satcom Aircell is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 19 OCTOBER 2010
REVISION 1: 30 JUNE 2011

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue B	EASA Approval N° 10032088, REV. 1 dated 19 October 2010
1	Revised pages Title page, A-1, B-1 and 1 of 6.	EASA Approval N° 10035465, REV. 1 dated 30 June 2011

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GENERAL

The Satcom Aircell P/N 109-B811-25-109, is a satellite telephone system offering the possibility of worldwide telephone communications through the 66-satellite IRIDIUM network.

The Satcom Aircell system consists of an Iridium transceiver unit, an antenna and a control panel at pilot's disposal.

The control panel allows the system interface with the helicopter inter-comm system (ICS) to allow hands free operation in pilot cabin.

SECTION 1 - LIMITATIONS

SATCOM AIRCELL

The use of the Satcom Aircell telephone is prohibited for the pilot flying, both in transmission and receiving modes while the aircraft is airborne.

It is responsibility of the operator to obtain the operational approval of the Satcom Aircell telephone from the Competent Authority.

PLACARD

IT IS PROHIBITED FOR THE PILOT FLYING TO USE THE TELEPHONE WHILE AIRBORN

Near pilot audio panel

SECTION 2 - NORMAL PROCEDURES

EXTERNAL PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°4 (Fins, tail gearbox and skid)

Antenna : Check condition.

Area N°6 (Fuselage - LH side)

PHONE CONTR and PHONE : In.
PWR circuit breakers
(baggage compartment)

BEFORE TAKE-OFF CHECKS

Pilot flying ICS selector : Press SAT control knob to
mute satcom communica-
tions.

IN FLIGHT

SATCOM OPERATION

(not be used by the pilot flying)

To make a telephone call:

ICS selector	: Set to SAT.
Satcom control panel	: Dial the number and press HOOK pushbutton to make the telephone call.
PTT trigger switch (on cyclic stick or pedal)	: Press to 2 nd detent to communicate.
Satcom control panel	: Press HOOK pushbutton to close telephone call.
ICS selector	: Set as desired.

To answer a telephone call:

Note

Incoming telephone calls are announced by an audio tone and by the CALL flashing light on the instrument panel.

ICS selector	: Set to SAT.
Satcom control panel	: Press HOOK pushbutton.
PTT trigger switch (on cyclic stick or pedal)	: Press to 2 nd detent to communicate.
Satcom control panel	: Press HOOK pushbutton to close telephone call.
ICS selector	: Set as desired.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

SATCOM AIRCELL WITH HANDSET P/N 109-B811-25

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Satcom Aircell with Handset is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE B: 30 JUNE 2011
REVISION 1: 27 MAY 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue B	EASA Approval N° 10035465, REV. 1 dated 30 June 2011
1	Revised page 2 of 8.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1 and B-1.	Manufacturer's Data

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GENERAL

The Satcom Aircell with Handset P/N 109-B811-25, is a satellite telephone system offering the possibility of worldwide telephone communications through the 66-satellite IRIDIUM network.

The Satcom Aircell system consists of an Iridium transceiver unit, an antenna, a control panel located on the interseat console and a PES/SATCOM control panel located on the instrument panel.

In the passenger cabin are installed a cordless handset and a CALL flashing light.

The telephone system is also interfaced with the helicopter intercomm system (ICS) to allow hands free operation in pilot cabin.

The PES/SATCOM control panel, located on the instrument panel, permit to the pilot the control of the Satcom Aircell system.

When the ENABLE pushbutton is ON, the Satcom is available in ICS. The OVERRIDE pushbutton allows to the pilot to acquire the ICS priority. When the OVERRIDE pushbutton is ON, all the passengers are connected only in ICS system.

The system is powered by the NON ESSENTIAL BUS via a dedicated (In Flight Entertainment) IFE switch located in the overhead console. The system is available only if the helicopter is powered by external power or by both generators.

Note

When the helicopter is airborne and there are no passengers in the cabin, the telephone system is not available in the cockpit.

SECTION 1 - LIMITATIONS

SATCOM AIRCELL

The use of the Satcom Aircell telephone is prohibited for the pilot flying, both in transmission and receiving modes while the aircraft is airborne.

It is responsibility of the operator to obtain the operational approval of the Satcom Aircell telephone from the Competent Authority.

PLACARD

**IT IS PROHIBITED FOR THE PILOT FLYING
TO USE THE TELEPHONE WHILE AIRBORNE**

Near pilot audio panel

SECTION 2 - NORMAL PROCEDURES

EXTERNAL PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°4 (Fins, tail gearbox and skid)

Antenna : Check condition.

Area N°6 (Fuselage - LH side)

PHONE CONTR and PHONE : In.
PWR circuit breakers
(baggage compartment)

Area N°7 (Cabin Interior)

Telephone handset : Stowed and locked in place.

SYSTEM CHECKS

IFE switch : Set to ON.
(on overhead console)

PES/SATCOM control panel : Press ENABLE pushbutton.
ON green light illuminates.

BEFORE TAKE-OFF CHECKS

Pilot flying ICS selector : Press SAT control knob to
mute satcom communications.

IN FLIGHT

PES/SATCOM control panel	: Check OVERRIDE pushbutton ON green light extinguished.
PES/SATCOM control panel	: Check ENABLE pushbutton ON green light illuminated.

Note

The Satcom in pilot cabin is connected only when the function “ALL” on the VIP PSU is active.

SATCOM OPERATION

(not be used by the pilot flying)

To make a telephone call:

VIP PSU	: Press ALL pushbutton. ON green light illuminates.
ICS selector	: Set to SAT and adjust volume.
Satcom control panel	: Dial the number and press HOOK pushbutton to make the telephone call.
PTT trigger switch (on cyclic stick or pedal)	: Press to 2 nd detent to enable- ICS communication Check TX light illuminates on the ICS control panel.
Satcom control panel	: Press HOOK pushbutton to close telephone call.
PTT trigger switch (on cyclic stick or pedal)	: Press to 2 nd detent to close ICS communication Check TX light extinguishes on the ICS control panel.
ICS selector	: Set as desired.

To answer a telephone call:

Note

Incoming telephone calls are announced by an audio tone (audible only if Satcom receiver is enabled on the ICS control panel) and by the CALL flashing light on the PES/SATCOM control panel.

ICS selector	: Set to SAT and adjust volume.
Satcom control panel	: Press HOOK pushbutton.
PTT trigger switch (on cyclic stick or pedal)	: Press to 2 nd detent to enable-ICS communication Check TX light illuminates on the ICS control panel.
Satcom control panel	: Press HOOK pushbutton to close telephone call.
PTT trigger switch (on cyclic stick or pedal)	: Press to 2 nd detent to close ICS communication Check TX light extinguishes on the ICS control panel.
ICS selector	: Set as desired.

BEFORE SHUTDOWN

PES/SATCOM control panel	: Press ENABLE pushbutton. ON green light extinguishes.
IFE switch (on overhead console)	: Set to OFF.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

In any emergency conditions:

PES/SATCOM control panel : Press OVERRIDE pushbutton.
ON green light illuminates.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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ENVIRONMENTAL CONTROL SYSTEM P/N 109-B811-53

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Environmental Control System (ECS) is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE A: 16 SEPTEMBER 2011
REVISION 2: 4 JULY 2017**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10036514 dated 16 September 2011
1	Revised pages Title page, A-1, B-1, 3 and 4 of 44.	EASA Approval N° 10039837, REV. 1 dated 6 June 2012
2	Revised pages Title page, A-1, B-1, 9 thru 43 of 44.	EASA Approval N° 10062498 dated 4 July 2017

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GENERAL

The Environmental Control System P/N 109-B811-53 consists of two bleed-air shut-off valves, one pressure and regulating shut-off valve, one pre-cooler, pressure and temperature switches, air conditioning unit, outside air intake and exhaust duct, pilot and passenger area air outlets, connecting ducts and tubing, a circuit switch and two control switches to operate the shut-off valves.

The system is provided with overtemperature switches and pressure switch.

The system has two operating modes: an AUTO mode and a MANUAL mode.

The ECS is operated (AUTO or MAN modes) selecting the ECS ON/OFF breaker switch and at least one of the two Shut Off Valves (SOV) switches to ON.

The AUTO mode is selected positioning the switch AUTO/MAN in AUTO.

The temperature of the mixed airflow is controlled by the Duct Temperature Sensor. The desired temperature is selected by the crew by a control knob (TEMP CONT) located on the ECS Control Panel.

The MANUAL mode is selected positioning the switch AUTO/MAN in MAN. In MAN mode the delivered temperature is controlled by the toggle switch WARM/COLD located in the ECS Control Panel.

SECTION 1 - LIMITATIONS

ECS OPERATION

The use of ECS during One Engine Inoperative (OEI) is prohibited.

SECTION 2 - NORMAL PROCEDURES

ENGINE PRE-START CHECK

1. ECS switch : OFF.
2. SHUT-OFF #1 switch : OFF.
3. SHUT-OFF #2 switch : OFF.
4. AUTO / MAN selector switch : AUTO.

SYSTEM CHECKS

ENVIRONMENTAL CONTROL SYSTEM OPERATIONAL CHECK

The operational check may be accomplished at this time or at any time that environmental control system is desired.

1. NR / N2 : Check stabilized 100%.
2. ECS switch : ON.
Check on EDU 2, advisory ECS ON is displayed and confirm no airflow from the outlets.
3. AUTO / MAN selector switch : Check AUTO.
4. SHUT-OFF #1 switch : ON.
Confirm airflow from outlets.
5. SHUT-OFF # 1 switch : OFF.
6. SHUT-OFF #2 switch : ON.
Confirm airflow from outlets.
7. SHUT-OFF #1 switch : ON.
8. TEMP CONT knob : Set to MIN.
Confirm cool airflow from outlets.

Note

Condensation may be visible from the outlets when the humidity is high

- 9. Engine temperatures (TOT) : Check within limits.
- 10. AUTO / MAN selector switch : MAN.
- 11. EDU 2 : Check ECS MANUAL advisory. ■
- 12. WARM / COLD toggle switch : Keep pressed for 6 seconds on WARM position and verify warm airflow from the outlets. ■
- 13. WARM / COLD toggle switch : Keep pressed for 6 seconds on COLD position and verify cold airflow from the outlets. ■
- 14. AUTO / MAN selector switch : AUTO. ■
- 15. TEMP CONT knob : Set to MAX (by turning clockwise) and observe that the temperature of the airflow from the outlets increases. ■
- 16. ECS switch : OFF. ■
Confirm airflow shuts-off.
- 17. SHUT-OFF #1 and #2 switches : OFF. ■

Note

To increase ECS cooling performance close vents and select airflow only on upper outlets.

TAKE-OFF

If ECS operation is desired:

- 1. SHUT-OFF #1 and #2 : ON.
switches
- 2. AUTO / MAN selector switch : AUTO.
- 3. ECS switch : ON.
- 4. TEMP CONT knob : As desired.

IN FLIGHT

If ECS operation is desired:

- 1. SHUT-OFF #1 and #2 : ON.
switches
- 2. AUTO / MAN selector switch : AUTO.
- 3. ECS switch : ON.
- 4. TEMP CONT knob : As desired.

ADVISORY CAPTION DEFINITIONS

CAS Caption (Green)	System State
ECS ON	Environmental Control System (ECS) switched in AUTO mode.
ECS MANUAL	Environmental Control System (ECS) switched in MAN mode.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

ENGINE FAILURES

Note

In case of engine failure and in OEI condition, the bleed valves of both engines are automatically closed.

FAILURE OF ONE ENGINE

1. ECS switch : OFF as soon as practicable.
2. SHUT-OFF #1 and #2 switches : OFF as soon as practicable.

FAILURE OF TWO ENGINES

1. ECS switch : OFF as soon as practicable.
2. SHUT-OFF #1 and #2 switches : OFF as soon as practicable.

ENGINE RESTART IN FLIGHT

Before attempting a restart:

1. ECS switch : Check OFF.
2. SHUT-OFF #1 and #2 switches : Check OFF.

FIRE

Note

In case of engine fire, the bleed valves of both engines are automatically closed.

ENGINE FIRE IN FLIGHT

1. ECS switch : OFF as soon as practicable.
2. SHUT-OFF #1 and #2 : OFF as soon as practicable.
switches

SMOKE IN CABIN, TOXIC FUMES, ETC

1. ECS switch : OFF.
2. SHUT-OFF #1 and #2 : OFF.
switches

STATIC PORT OBSTRUCTION

When the alternate static source is used:

1. ECS switch : OFF.
2. SHUT-OFF #1 and #2 : OFF.
switches

ENVIRONMENTAL CONTROL SYSTEM MALFUNCTION

If a malfunction in the ECS controls occurs, deactivate the system as follows:

1. ECS switch : OFF.
2. SHUT-OFF #1 and #2 switches : OFF.

Proceed with flight, correct problem before next flight.

ECS DEGRADED

ECS DEGRADED

Caution message displayed.

The AUTOMATIC mode of the ECS is inoperative.

AUTO / MAN selector switch:	MAN.
WARM / COLD toggle switch:	Set as desired.

Continue flight.

ECS FAIL

ECS FAIL

Caution message displayed.

The ECS is inoperative.

ECS switch : OFF.
SHUT-OFF #1 and #2 switches: OFF.

Continue flight

SECTION 4 - PERFORMANCE DATA

GENERAL

This section provides the performance data for AW109SP helicopters equipped with ECS in the following configurations:

- Basic helicopters
- Helicopters equipped with Engine Air Particle Separator (EAPS).
- Helicopters equipped with Cargo Hook.

Note

For combination with other optional equipment refer to chapter [“PERFORMANCE CORRECTION AFTER KIT INSTALLATION”](#).

The maximum power available with the ECS operating is less than that available with the helicopter in basic configuration.

This power loss is caused by the compressor bleed-air used for the ECS.

Performance charts with the ECS switched ON and EAPS ON / OFF are provided for all engines operative (AEO) condition.

During One Engine Operating (OEI) operations, the compressor bleed-air valves are automatically closed. Therefore, performance in OEI conditions is the same as that shown in the Basic Rotorcraft Flight Manual and/or in the applicable Supplements.

Performance with the ECS switched OFF is the same as that shown in the basic Rotorcraft Flight Manual and/or in the applicable Supplements.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

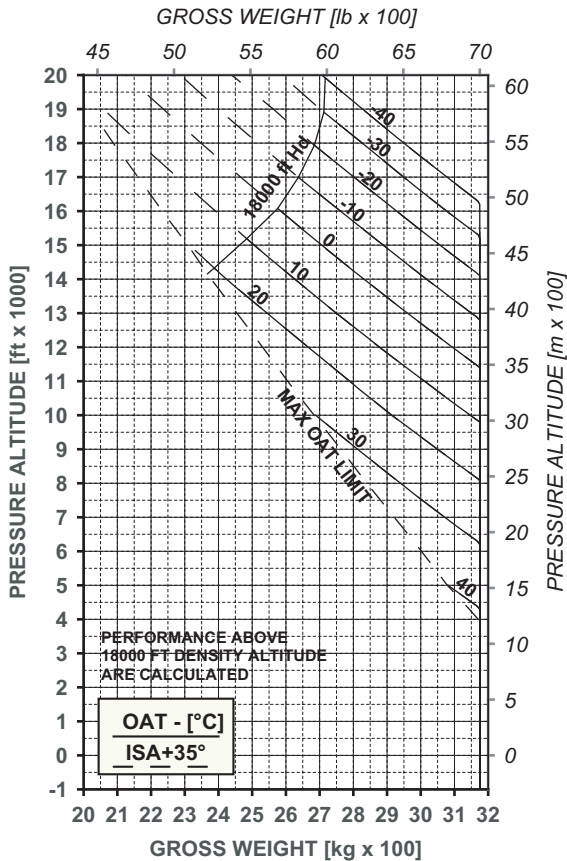
HOVER CEILING IN GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT



ECS: ON

ELECTRICAL LOAD: 200 A TOTAL



109G1580A023 Rev.C

ICN-0B-C-155124-G-A0126-00001-A-03-1

Figure 4-1 Hover Ceiling IGE - Take-Off Power AEO
- ECS ON

HOVER CEILING IN GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

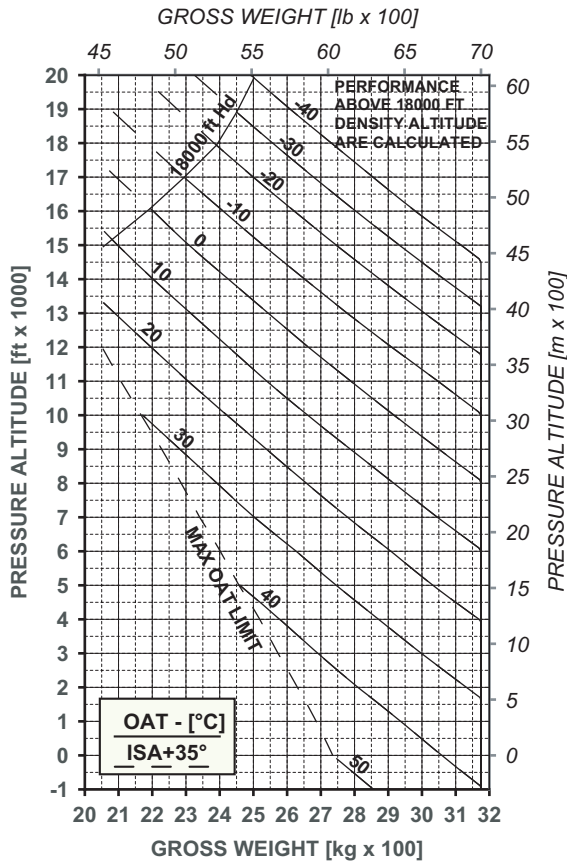
ROTOR SPEED: 102 %

ZERO WIND

WHEEL HEIGHT: 3 FT

ECS: ON

ELECTRICAL LOAD: 200 A TOTAL



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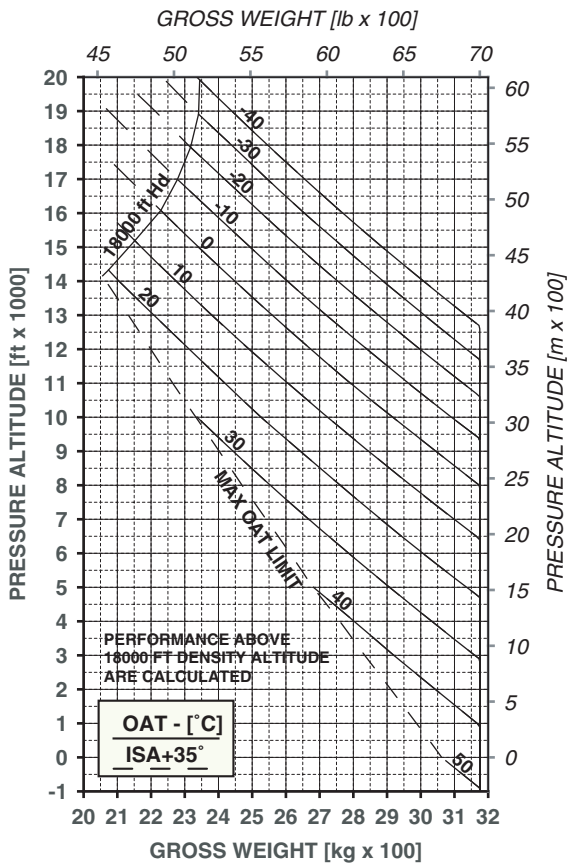
ICN-0B-C-155124-G-A0126-00002-A-03-1

Figure 4-2 Hover Ceiling IGE - Maximum Continuous Power
AEO - ECS ON

HOVER CEILING OUT OF GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ECS: ON
ELECTRICAL LOAD: 200 A TOTAL



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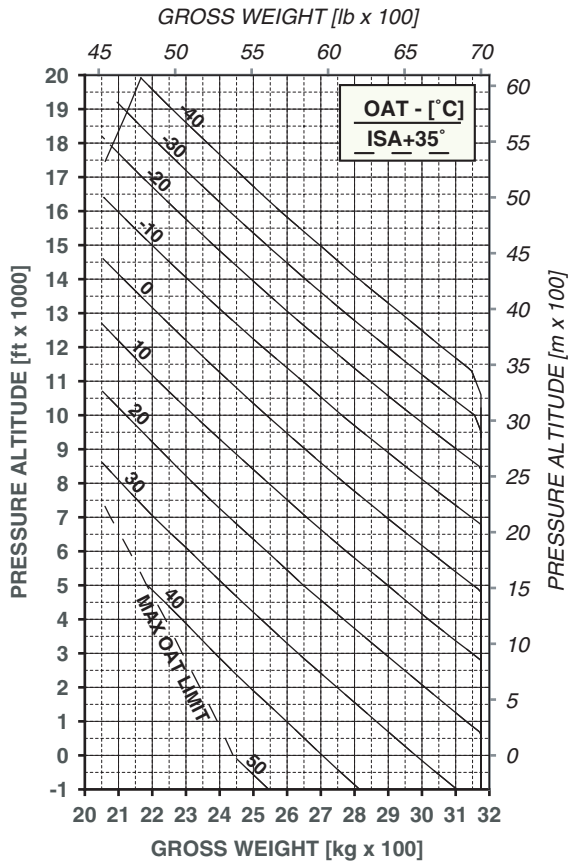
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Figure 4-3 Hover Ceiling OGE - Take-Off Power AEO
- ECS ON

**HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 102 %
ZERO WIND

ECS: ON
ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-4 Hover Ceiling OGE - Maximum Continuous Power
AEO - ECS ON**

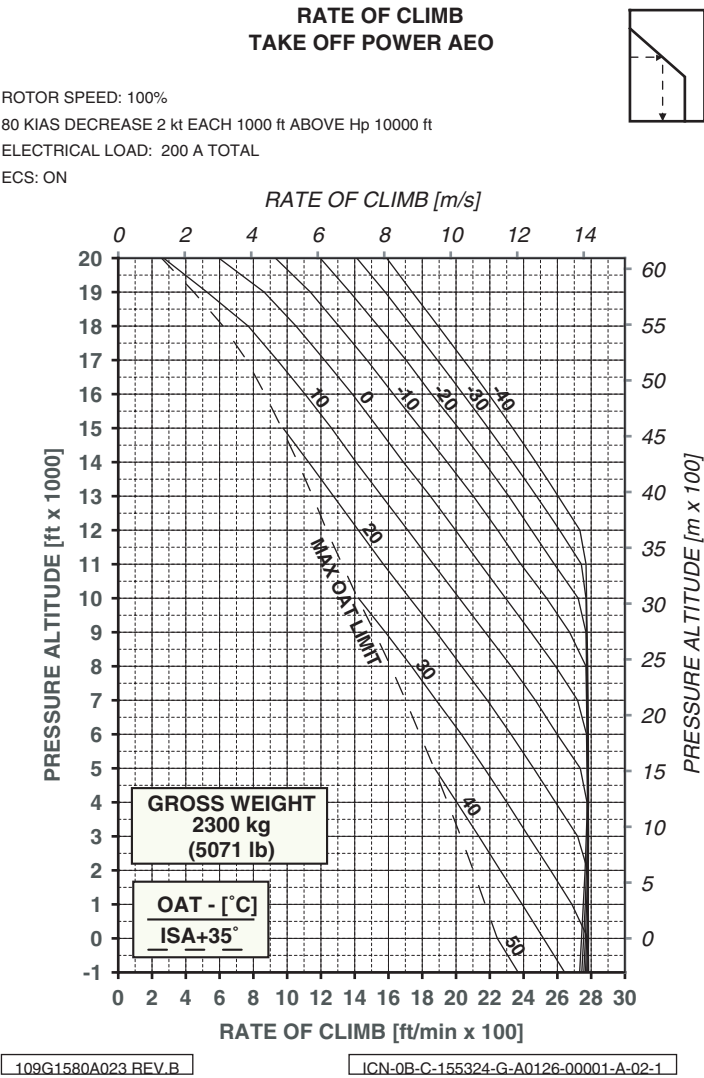


Figure 4-5 Rate of Climb - Take-Off Power AEO - ECS ON - Gross Weight 2300 kg

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

ECS: ON

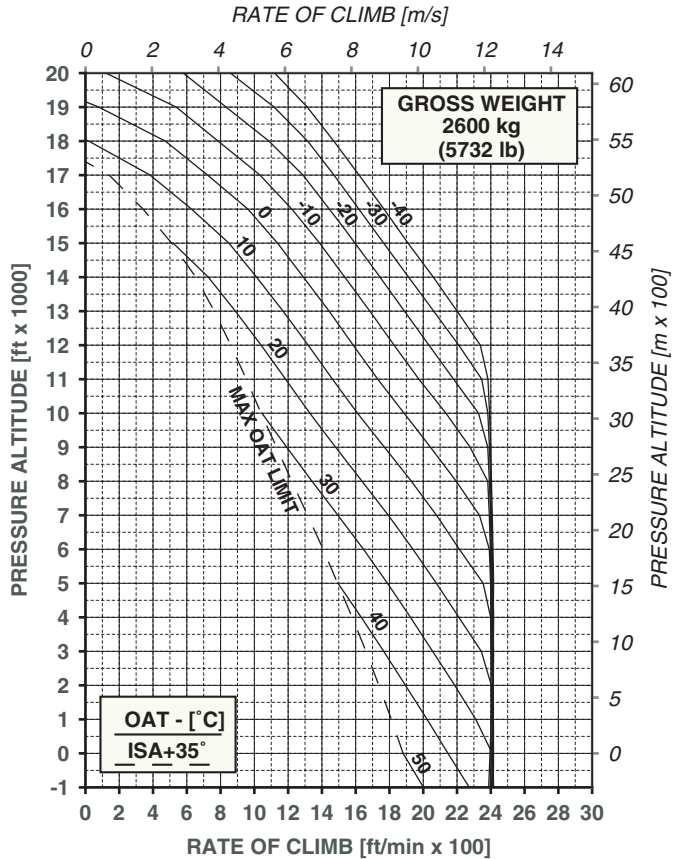
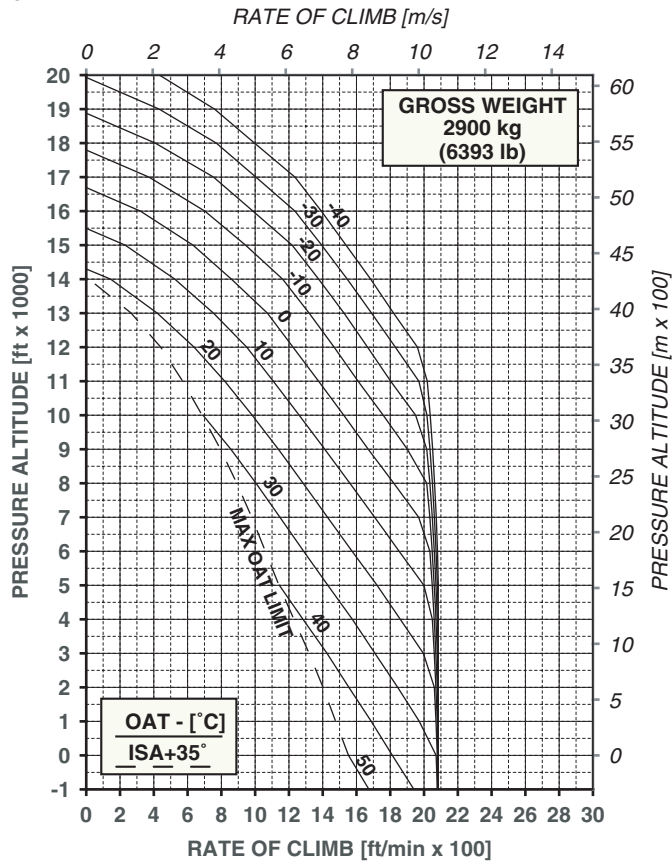


**Figure 4-6 Rate of Climb - Take-Off Power AEO - ECS ON -
Gross Weight 2600 kg**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
ECS: ON



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ICN-0B-C-155324-G-A0126-00003-A-02-1

Figure 4-7 Rate of Climb - Take-Off Power AEO - ECS ON -
Gross Weight 2900 kg

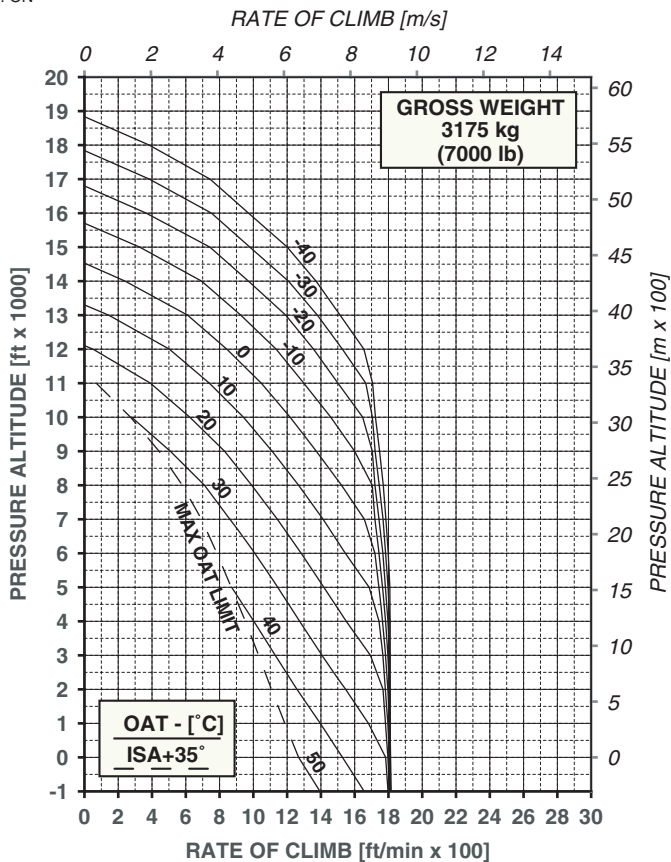
**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

ECS: ON



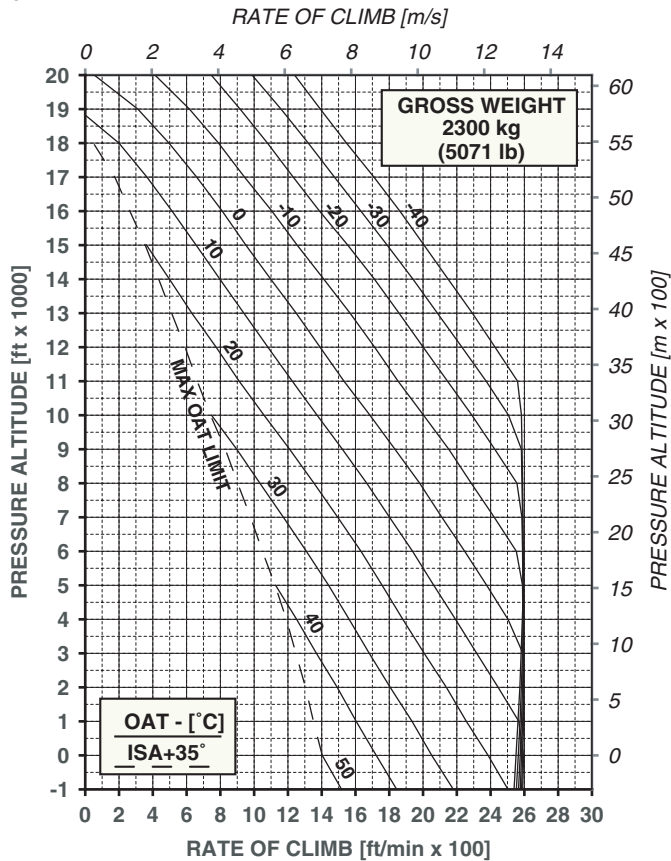
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Figure 4-8 Rate of Climb - Take-Off Power AEO - ECS ON - Gross Weight 3175 kg

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
ECS: ON



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Figure 4-9 Rate of Climb - Maximum Continuous Power AEO -
ECS ON - Gross Weight 2300 kg.

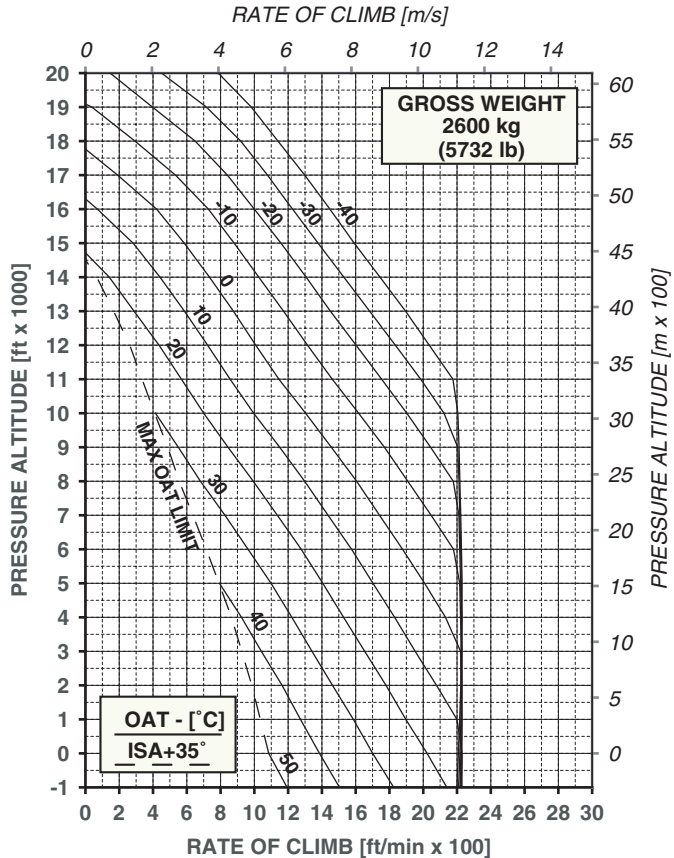
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

ECS: ON



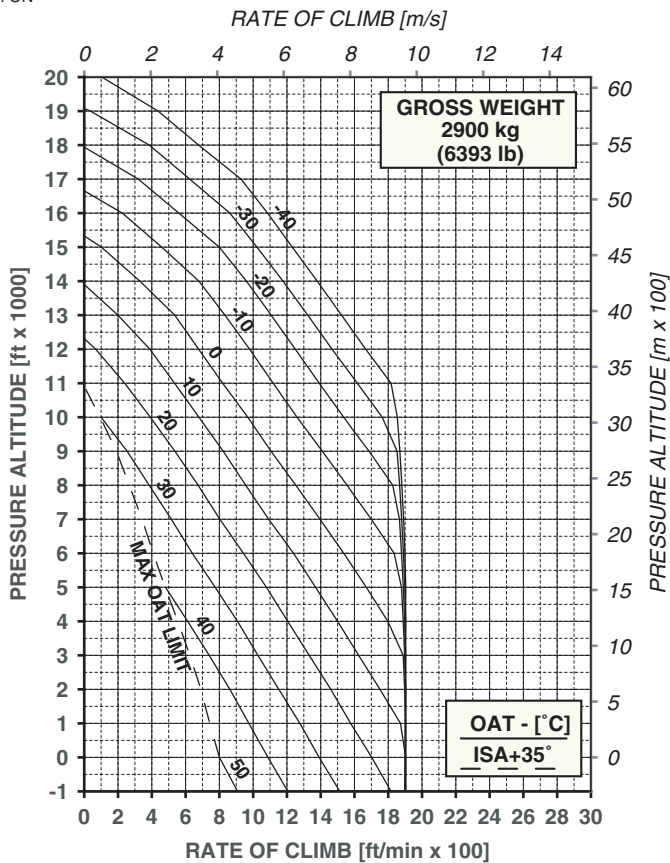
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**Figure 4-10 Rate of Climb - Maximum Continuous Power AEO -
ECS ON - Gross Weight 2600 kg**

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
ECS: ON



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Figure 4-11 Rate of Climb - Maximum Continuous Power AEO -
ECS ON - Gross Weight 2900 kg

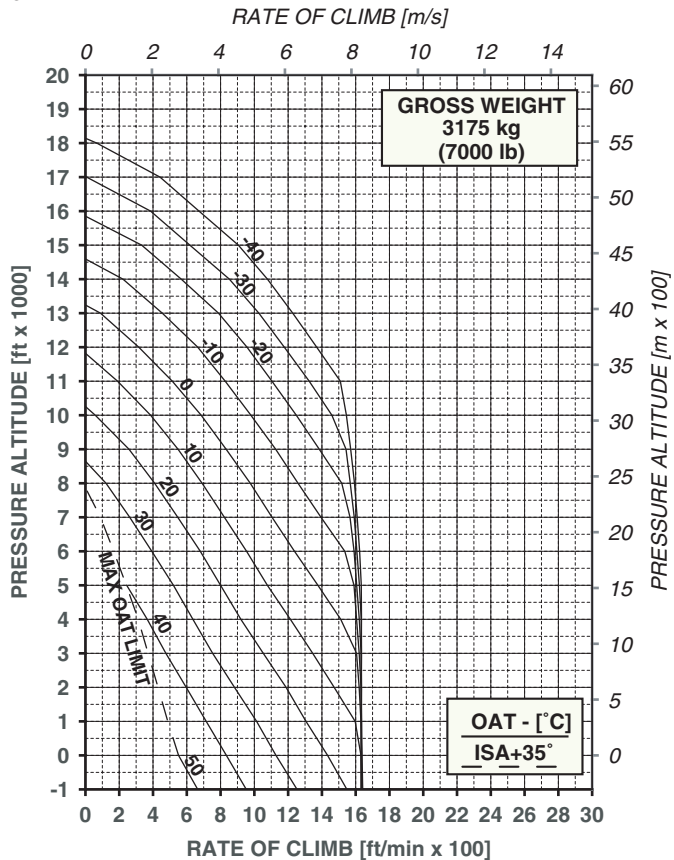
**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

ECS: ON



109G1580A023 REV.B

ICN-0B-C-155324-G-A0126-00008-A-02-1

**Figure 4-12 Rate of Climb - Maximum Continuous Power AEO -
ECS ON - Gross Weight 3175 kg**

ENGINE AIR PARTICLE SEPARATOR (WITH ECS)

HOVER CEILING

([Figures 4-13 to 4-16](#))

The Hover Ceiling charts define the maximum weights at which an IGE hover (at 3 ft wheel height) or OGE hover (60 ft AGL) is possible for varying combinations of Pressure Altitude and OAT with main rotor speed (NR) at 102% and zero wind conditions.

Information is presented for All Engines Operating (AEO) at Take-Off Power (TOP) and Maximum Continuous Power (MCP) with EAPS OFF / ON, and the ECS in ON condition.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

RATE OF CLIMB

([Figures 4-17 to 4-24](#))

The effect of the ECS on rate of Climb (ROC) with the EAPS installed is given for the All Engines Operating (AEO) case.

For the AEO case, rate of climb is given with the engines operating at the Take-Off Power (TOP) rating limit and at the Maximum Continuous Power (MCP) rating limits, with EAPS OFF / ON, and the ECS in ON condition.

Each graph presents the information for a specific Gross Weight. On each graph, additional information is provided relative to the applicable engine power rating. Care should be taken to ensure that the correct graph is utilized in obtaining Rate of Climb data.

CAUTION

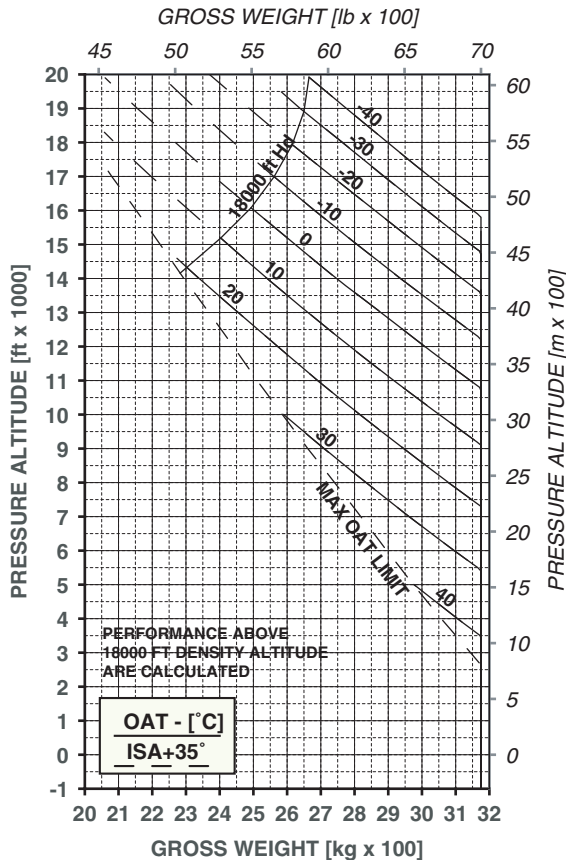
The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

HOVER CEILING IN GROUND EFFECT
TAKE OFF POWER AEO



ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

EAPS: OFF/ON
ECS: ON
ELECTRICAL LOAD: 200 A TOTAL



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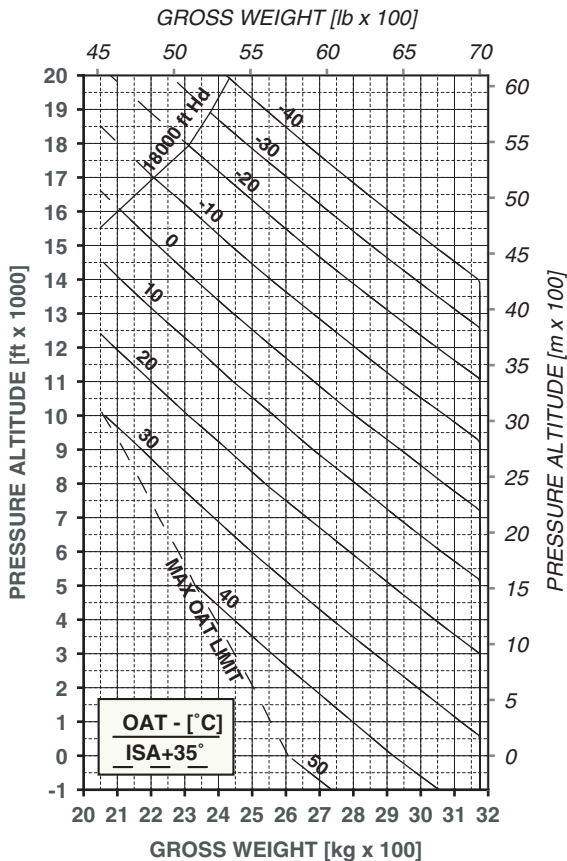
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Figure 4-13 Hover Ceiling IGE - Take-Off Power AEO
EAPS OFF / ON - ECS ON

HOVER CEILING IN GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
WHEEL HEIGHT: 3 FT

EAPS: OFF/ON
ECS: ON
ELECTRICAL LOAD: 200 A TOTAL



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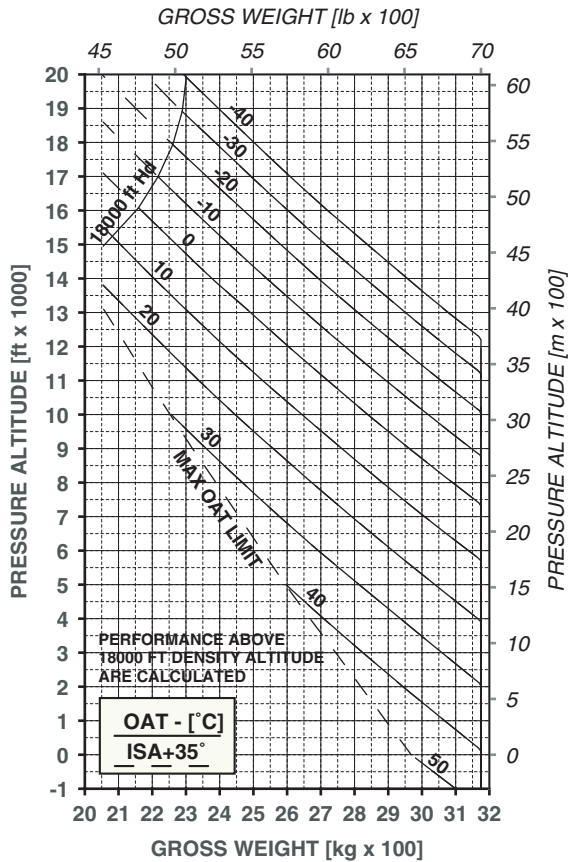
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Figure 4-14 Hover Ceiling IGE - Maximum Continuous Power AEO
EAPS OFF / ON - ECS ON

HOVER CEILING OUT OF GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF/ON
ECS: ON
ELECTRICAL LOAD: 200 A TOTAL



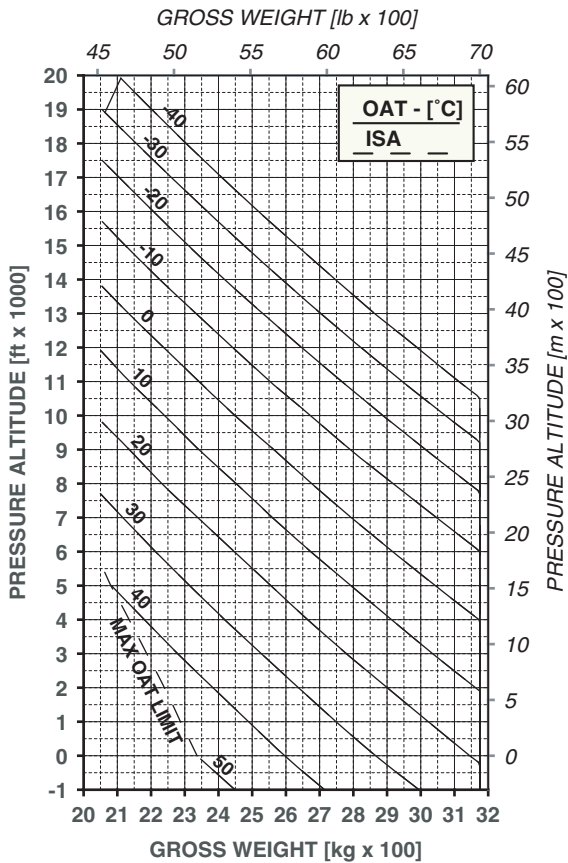
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**Figure 4-15 Hover Ceiling OGE - Take-Off Power AEO
EAPS OFF / ON - ECS ON**

HOVER CEILING OUT OF GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
EAPS: OFF/ON
ECS: ON
ELECTRICAL LOAD: 200 A TOTAL



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Figure 4-16 Hover Ceiling OGE - Maximum Continuous Power AEO
EAPS OFF / ON - ECS ON

**RATE OF CLIMB
TAKE OFF POWER AEO**



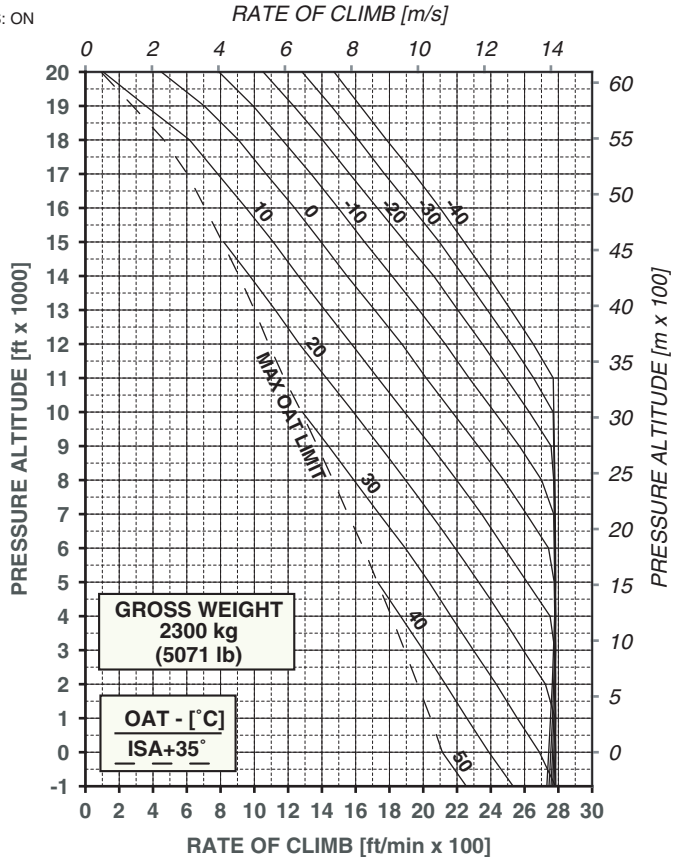
ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF/ON

ECS: ON



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**Figure 4-17 Rate of Climb - Take-Off Power AEO
- EAPS OFF / ON - ECS ON - Gross Weight 2300 kg**

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
EAPS: OFF/ON
ECS: ON

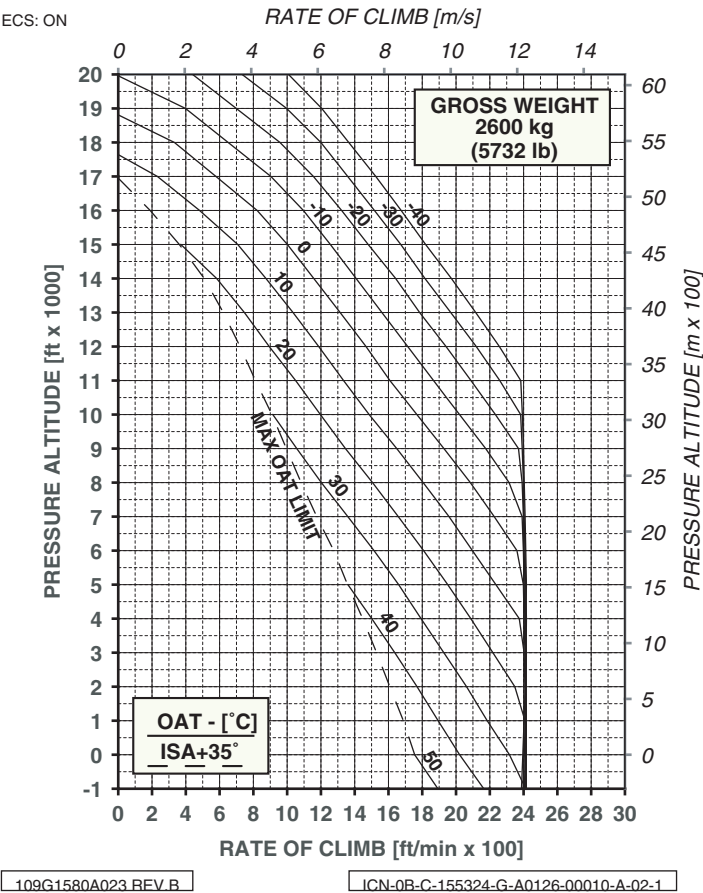


**Figure 4-18 Rate of Climb - Take-Off Power AEO
- EAPS OFF / ON - ECS ON - Gross Weight 2600 kg**

RATE OF CLIMB TAKE OFF POWER AEO

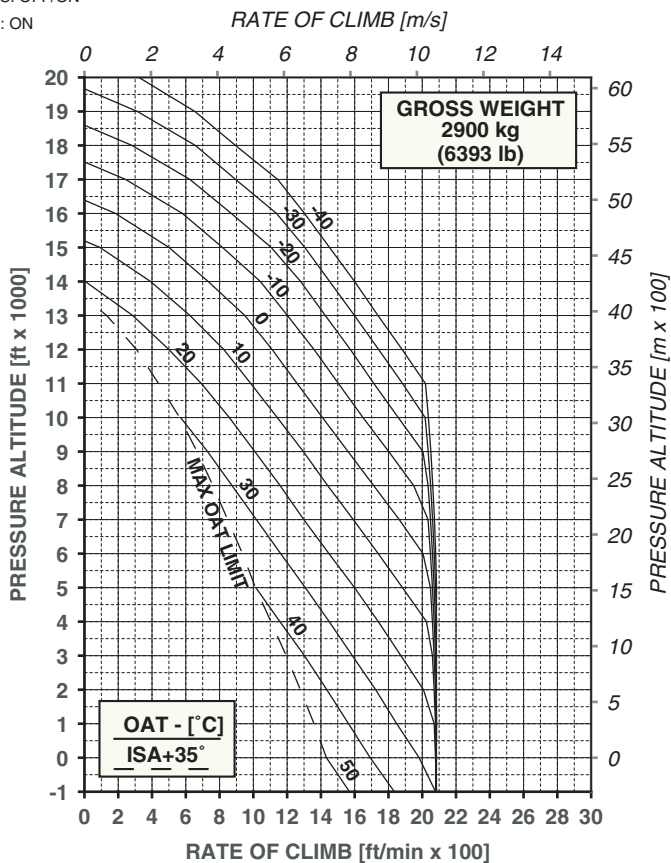
ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF/ON

ECS: ON



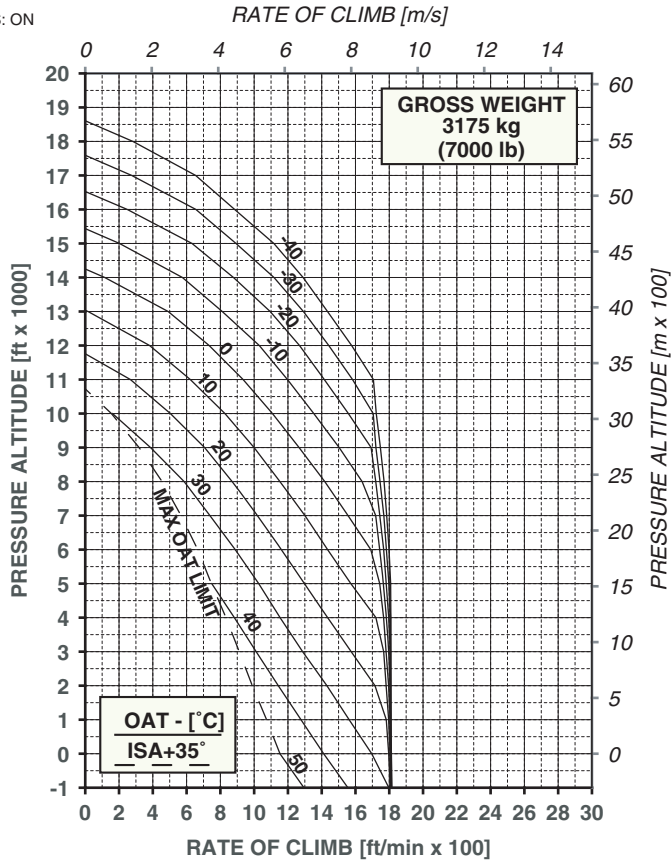
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Figure 4-19 Rate of Climb - Take-Off Power AEO
- EAPS OFF / ON - ECS ON - Gross Weight 2900 kg

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
EAPS: OFF/ON
ECS: ON



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ICN-0B-C-155324-G-A0126-00012-A-02-1

Figure 4-20 Rate of Climb - Take-Off Power AEO
- EAPS OFF / ON - ECS ON - Gross Weight 3175 kg

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

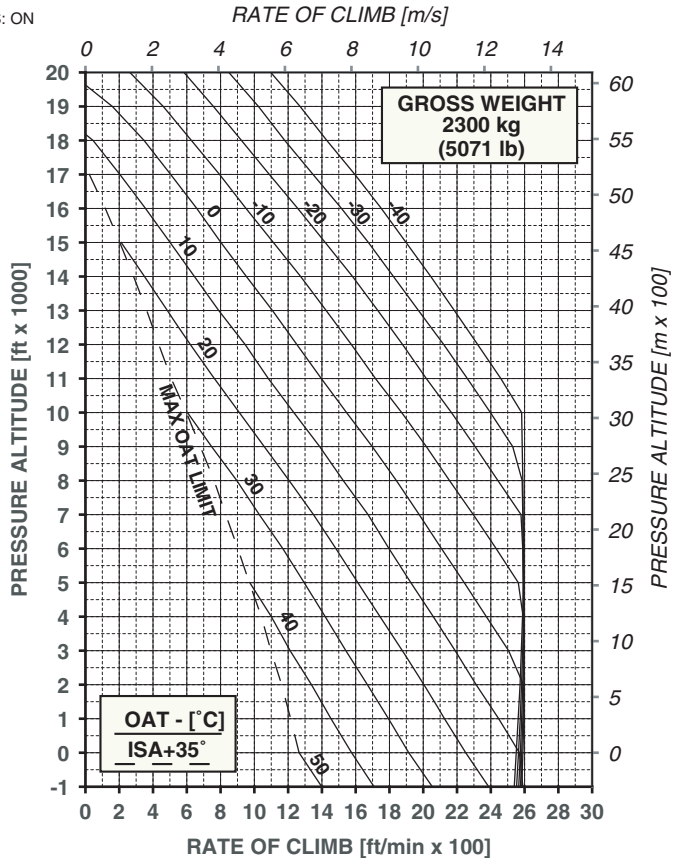
ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF/ON

ECS: ON



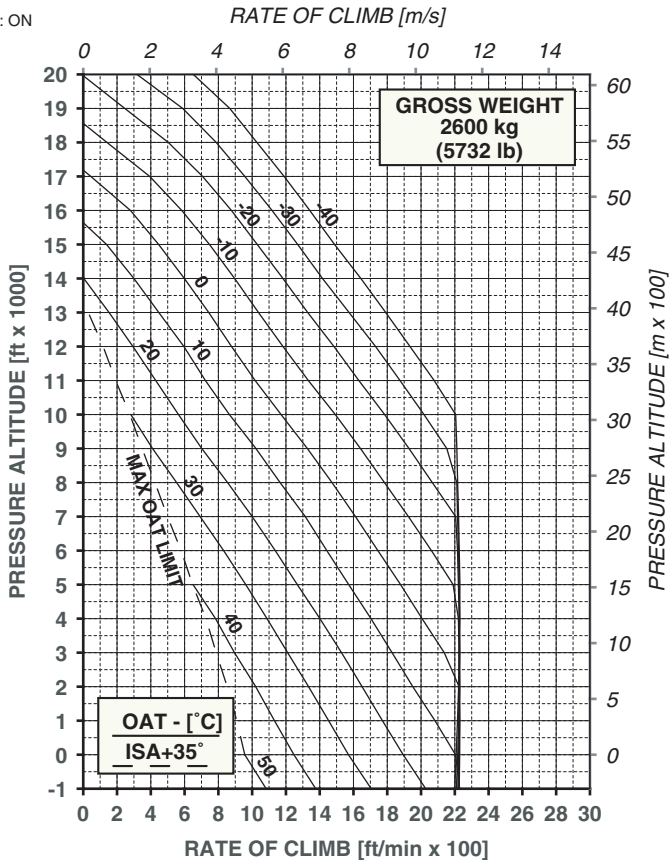
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**Figure 4-21 Rate of Climb - Maximum Continuous Power AEO
- EAPS OFF / ON - ECS ON - Gross Weight 2300 kg**

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
EAPS: OFF/ON
ECS: ON



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Figure 4-22 Rate of Climb - Maximum Continuous Power AEO
- EAPS OFF / ON - ECS ON - Gross Weight 2600 kg

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ELECTRICAL LOAD: 200 A TOTAL

EAPS: OFF/ON

ECS: ON

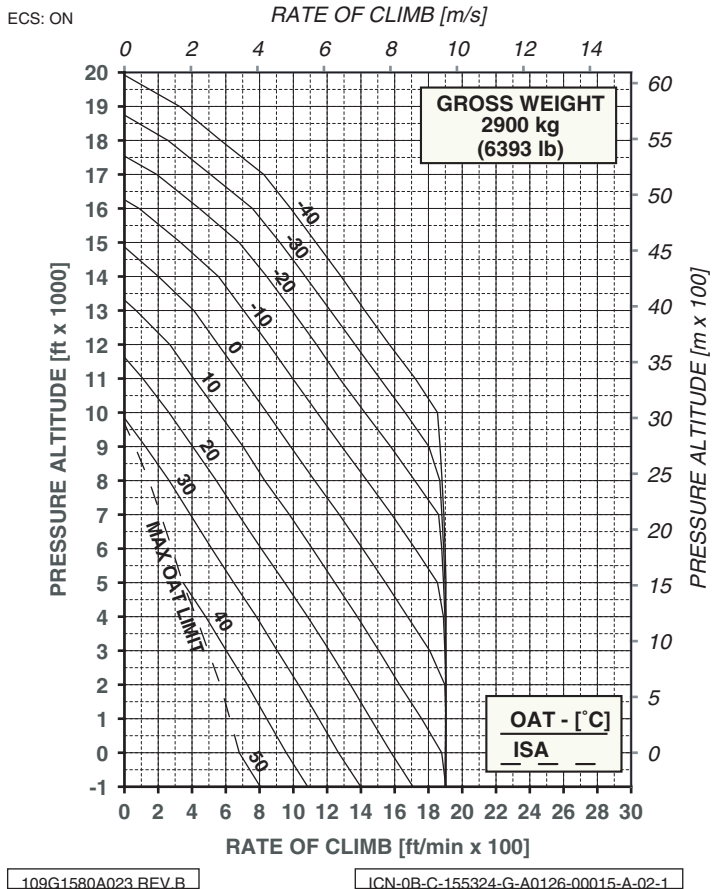
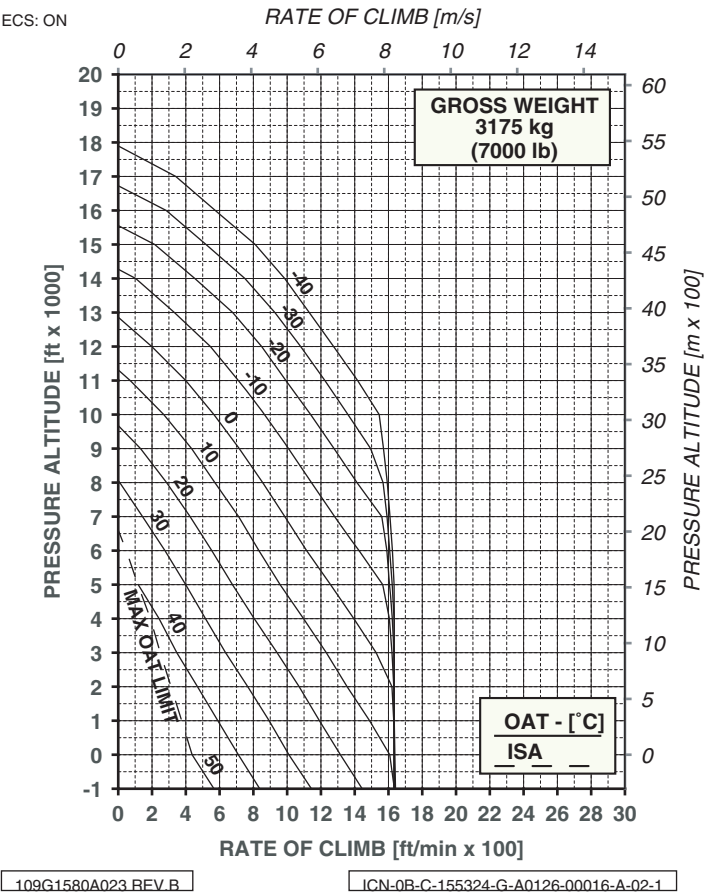


**Figure 4-23 Rate of Climb - Maximum Continuous Power AEO
- EAPS OFF / ON - ECS ON - Gross Weight 2900 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
ELECTRICAL LOAD: 200 A TOTAL
EAPS: OFF/ON
ECS: ON



CARGO HOOK OPERATIONS (WITH ECS)

HOVER CEILING

(Figures 4-25 to 4-28)

The Hover Ceiling charts define the maximum weights at which an OGE hover (60 ft AGL) is possible for varying combinations of Pressure Altitude and OAT with main rotor speed (NR) at 102% and zero wind conditions.

Information is presented for All Engines Operating (AEO) at Take-Off Power (TOP) and Maximum Continuous Power (MCP) with EAPS OFF / ON, and the ECS in ON condition.

CAUTION

The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit (Supplement 15).

RATE OF CLIMB

(Figures 4-29 to 4-32)

The climb performance shown are based on flight test results at the Maximum Gross Weight of 3200 kg. The effect of the ECS on rate of Climb (ROC) up to 3200 kg and with the EAPS installed is given for the All Engines Operating (AEO) case.

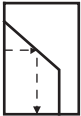
For the AEO case, rate of climb is given with the engines operating at the Take-Off Power (TOP) rating limit and at the Maximum Continuous Power (MCP) rating limits, with EAPS OFF / ON, and the ECS in ON condition.

Each graph presents the information for a specific Gross Weight. On each graph, additional information is provided relative to the applicable engine power rating. Care should be taken to ensure that the correct graph is utilized in obtaining Rate of Climb data.

CAUTION

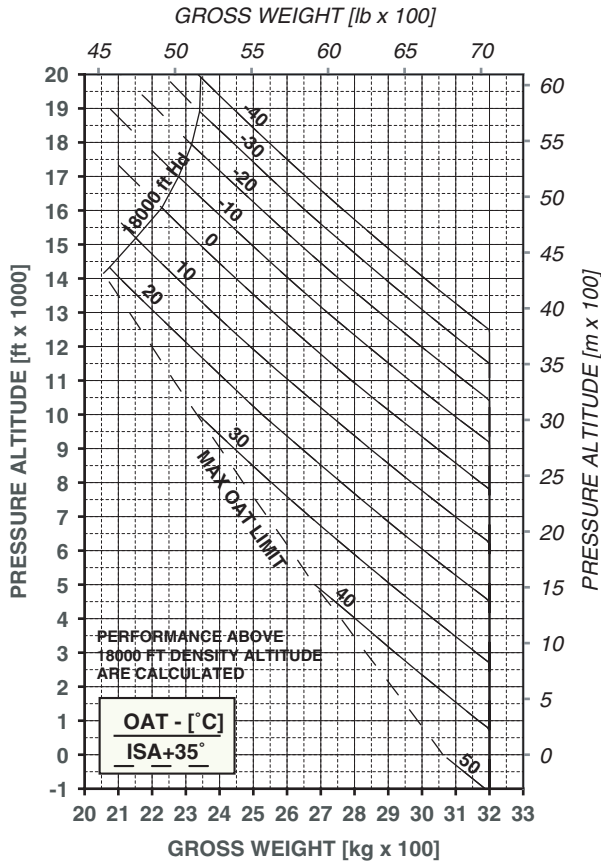
The curves below OAT -25 °C apply only to the helicopter configured with Cold Operation Kit (Supplement 15).

HOVER CEILING OUT OF GROUND EFFECT
TAKE OFF POWER AEO



ROTOR SPEED: 102 %
ZERO WIND

ECS: ON
ELECTRICAL LOAD: 200 A TOTAL



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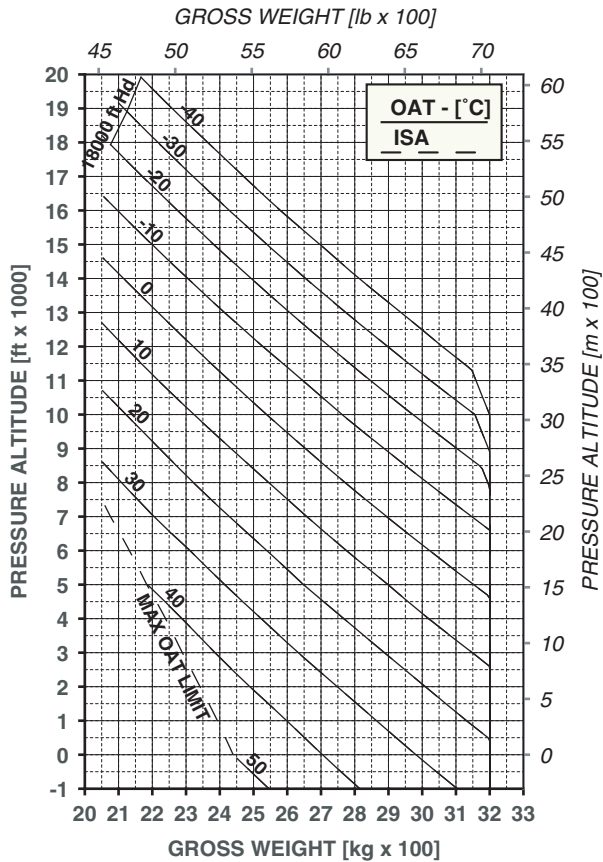
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Figure 4-25 Hover Ceiling OGE - Take-Off Power AEO
- ECS ON - Gross Weight 3200 kg

**HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 102 %
ZERO WIND

ECS: ON
ELECTRICAL LOAD: 200 A TOTAL



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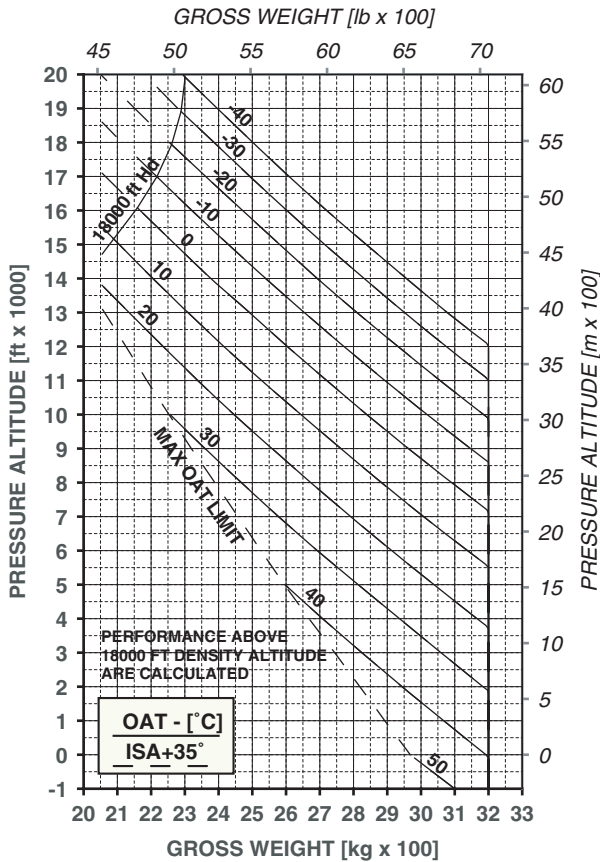
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**Figure 4-26 Hover Ceiling OGE - Maximum Continuous Power AEO
- ECS ON - Gross Weight 3200 kg**

HOVER CEILING OUT OF GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF/ON
ECS: ON
ELECTRICAL LOAD: 200 A TOTAL



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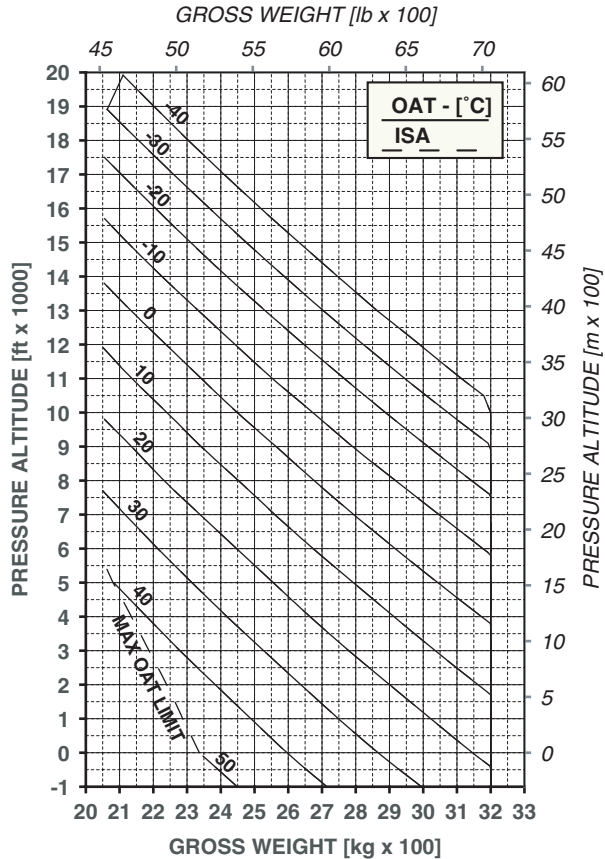
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Figure 4-27 Hover Ceiling OGE - Take-Off Power AEO
EAPS OFF / ON - ECS ON - Gross Weight 3200 kg

**HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF/ON
ECS: ON
ELECTRICAL LOAD: 200 A TOTAL

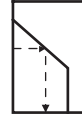


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**Figure 4-28 Hover Ceiling OGE - Maximum Continuous Power AEO
EAPS OFF / ON - ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
TAKE OFF POWER AEO**



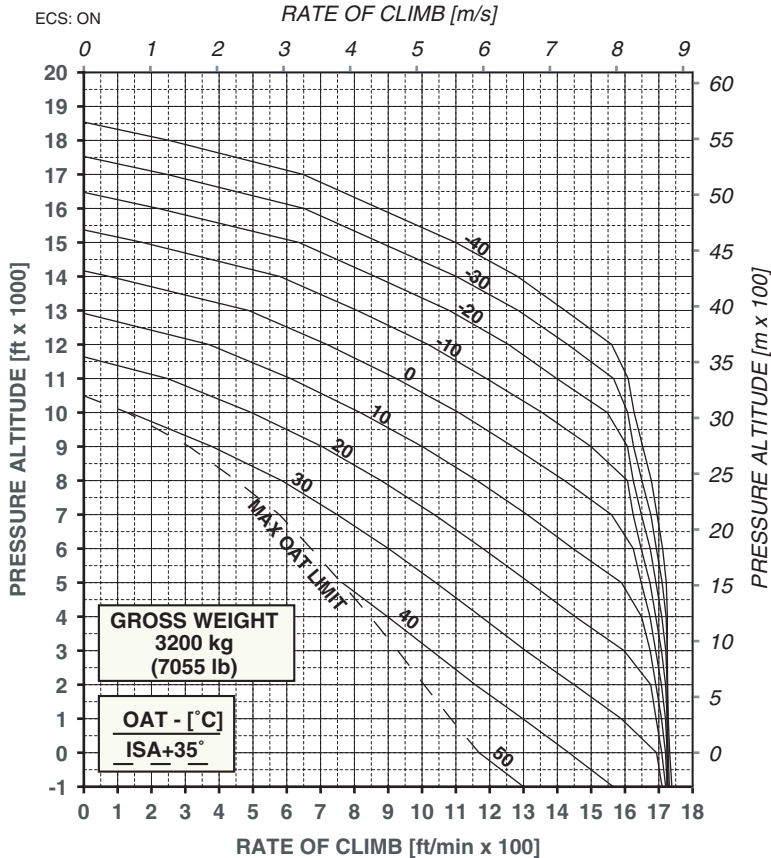
ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: down

ELECTRICAL LOAD: 200 A TOTAL

ECS: ON



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**Figure 4-29 Rate of Climb - Take-Off Power AEO
- ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: down

ECS: ON

ELECTRICAL LOAD: 200 A TOTAL

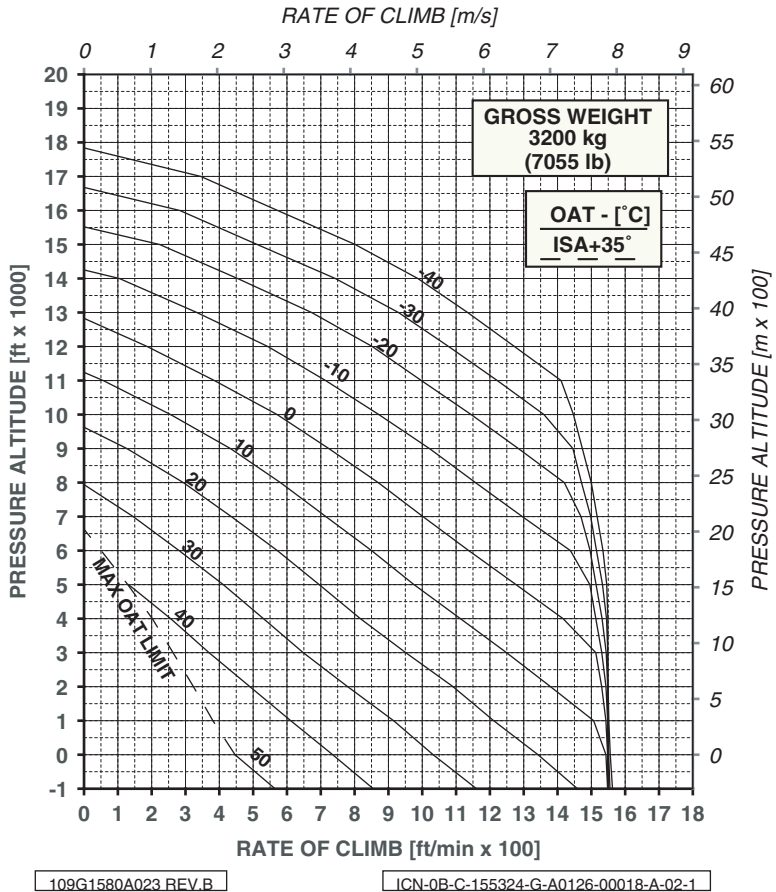


**Figure 4-30 Rate of Climb - Maximum Continuous Power AEO
- ECS ON - Gross Weight 3200 kg**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: down

EAPS: OFF/ON
ECS: ON
ELECTRICAL LOAD: 200 A TOTAL

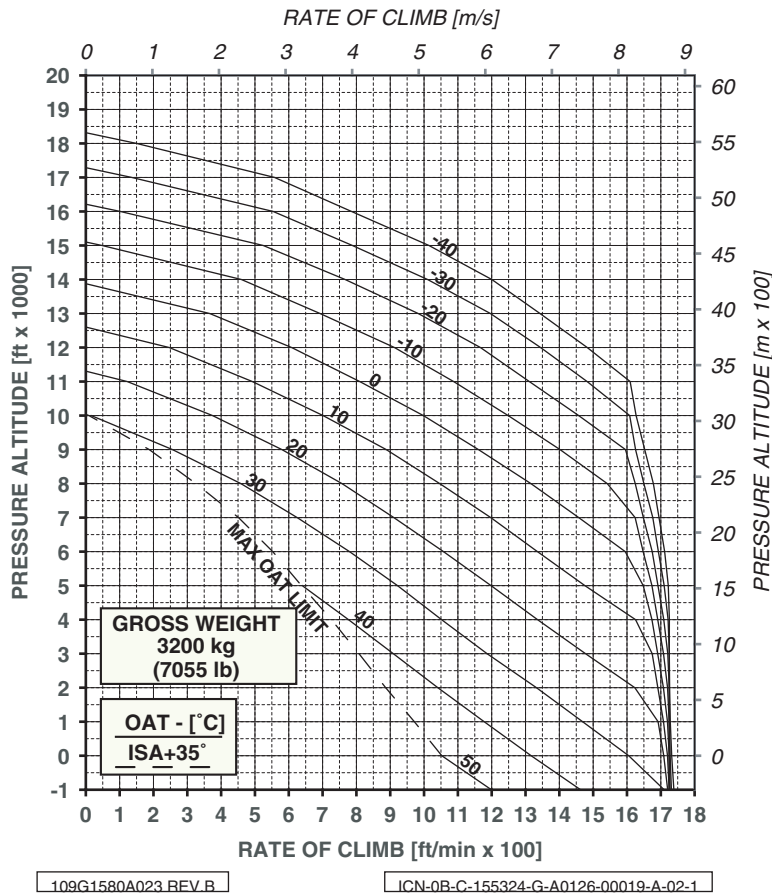


Figure 4-31 Rate of Climb - Take-Off Power AEO
EAPS OFF / ON - ECS ON - Gross Weight 3200 kg

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100 %

EAPS: OFF/ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

ECS: ON

L/G: down

ELECTRICAL LOAD: 200 A TOTAL

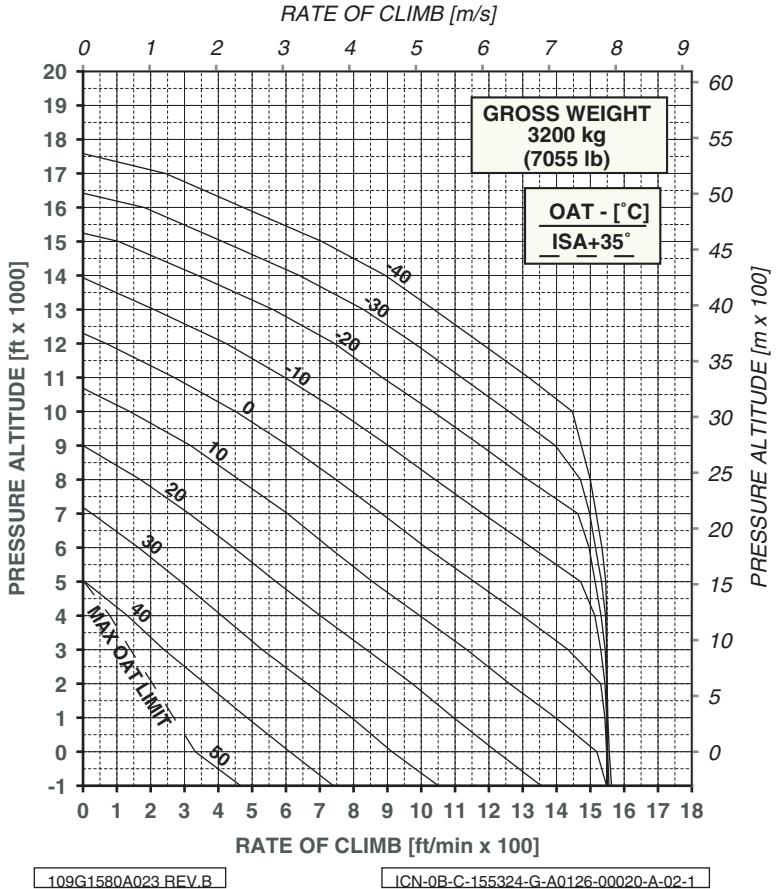


**Figure 4-32 Rate of Climb - Maximum Continuous Power AEO
EAPS OFF / ON - ECS ON - Gross Weight 3200 kg**

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

SUPPLEMENTARY FUEL TANKS

P/N 109-0813-32

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Supplementary Fuel Tanks are installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 11 DECEMBER 2009

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009

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LIST OF EFFECTIVE PAGES

NOTE: Revised text is indicated by a black vertical line in the outer margin of the page and the approval revision number is printed in the lower margin

Page	Revision N°
Title page	0
A-1 and A-2	0
B-1 and B-2	0
i and ii	0
PART I - EASA APPROVED	
1 and 2 of 10	0
PART II - MANUFACTURER'S DATA	
3 thru 10 of 10	0

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GENERAL

The Auxiliary Fuel Tanks installation P/N 109-0813-32 provides an additional 230 liters capacity. It consists of two tank cells (RH cell of 94 liters and LH cell of 136 liters) installed behind the three aft passenger seats. However the installation can be arranged as follows:

- both LH and RH tank cells installed;
- only RH tank cell installed.

The fuel transfer from the auxiliary fuel tank cells to the main fuel cell is by gravity. The two tank cells are separated by panels; each cell is provided with a fuel level probe.

SECTION 1 - LIMITATIONS

No change.

SECTION 2 - NORMAL PROCEDURES

No change.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

WEIGHTS, ARMS AND MOMENTS

LONGITUDINAL MOMENTS

USABLE FUEL - MAIN TANKS PLUS SUPPLEMENTARY TANKS			
WEIGHT (kg)	CAPACITY (l) (0,8 kg/l)	STA (mm)	MOMENT (kg mm)
20	25	3761	75220
40	50	3765	150600
60	75	3771	226260
80	100	3779	302320
100	125	3732	373200
120	150	3663	439560
140	175	3613	505820
160	200	3578	572480
180	225	3561	640980
200	250	3599	719800
220	275	3638	800360
240	300	3671	881040
260	325	3699	961740
280	350	3724	1042720
300	375	3745	1123500
320	400	3764	1204480
340	425	3781	1285540

(Continued)

USABLE FUEL - MAIN TANKS PLUS SUPPLEMENTARY TANKS			
WEIGHT (kg)	CAPACITY (l) (0,8 kg/l)	STA (mm)	MOMENT (kg mm)
360	450	3796	1366560
380	475	3810	1447800
400	500	3823	1529200
420	525	3834	1610280
440	550	3844	1691360
460	575	3854	1772840
480	600	3863	1854240
500	625	3872	1936000
520	650	3880	2017600
540	675	3887	2098980
560	700	3894	2180640
580	725	3901	2262580
600	750	3907	2344200
620	775	3913	2426060
633.6	792	3917	2481811

USABLE FUEL - MAIN FUEL TANKS PLUS RH SUPPLEMENTARY TANK ONLY			
WEIGHT (kg)	CAPACITY (l) (0,8 kg/l)	STA (mm)	MOMENT (kg mm)
20	25	3761	75220
40	50	3765	150600
60	75	3771	226260
80	100	3779	302320
100	125	3732	373200
120	150	3663	439560
140	175	3613	505820
160	200	3578	572480
180	225	3561	640980
200	250	3599	719800
220	275	3645	801900
240	300	3685	884400
260	325	3719	966940
280	350	3748	1049440
300	375	3774	1132200
320	400	3796	1214720
340	425	3816	1297440
360	450	3834	1380240
380	475	3850	1463000

(Continued)

USABLE FUEL - MAIN FUEL TANKS PLUS RH SUPPLEMENTARY TANK ONLY			
WEIGHT (kg)	CAPACITY (l) (0,8 kg/l)	STA (mm)	MOMENT (kg mm)
400	500	3865	1546000
420	525	3878	1628760
440	550	3890	1711600
460	575	3902	1794920
480	600	3912	1877760
500	625	3922	1961000
520	650	3931	2044120
524.8	656	3933	2064038

LATERAL MOMENTS

USABLE FUEL - MAIN FUEL TANKS PLUS RH AUXILIARY TANK ONLY			
WEIGHT (kg)	CAPACITY (l) (0,8 kg/l)	BL (mm)	MOMENT (kg mm)
20	25	0	0
40	50	0	0
60	75	0	0
80	100	0	0
100	125	0	0
120	150	0	0
140	175	0	0
160	200	0	0
180	225	0	0
200	250	0	0
220	275	10	2200
240	300	18	4320
260	325	24	6240
280	350	30	8400
300	375	35	10500
320	400	39	12480
340	425	42	14280
360	450	45	16200
380	475	48	18240

(Continued)

USABLE FUEL - MAIN FUEL TANKS PLUS RH AUXILIARY TANK ONLY			
WEIGHT (kg)	CAPACITY (l) (0,8 kg/l)	BL (mm)	MOMENT (kg mm)
400	500	50	20000
420	525	53	22260
440	550	54	23760
460	575	56	25760
480	600	57	27360
500	625	58	29000
520	650	59	30680
524.8	656	60	31488

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

**SECTION 8 - HANDLING, SERVICING AND
MAINTENANCE**

SERVICING

AUXILIARY FUEL TANKS

	RH fuel cell	LH fuel cell
Capacity	94 liters	136 liters
Usable	94 liters	136 liters

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FIXED WHEELED LANDING GEAR

P/N 109-B811-02

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Fixed Wheeled Landing Gear is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE C: 6 JUNE 2012
REVISION 1: 4 JULY 2017**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
–	Issue C	EASA Approval N° 10039836, REV. 1 dated 6 June 2012
1	Revised pages Title page, A-1, B-1, 3 and 12 thru 14 of 16.	EASA Approval N° 10062498 dated 4 July 2017

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GENERAL

The Fixed Landing Gear P/N 109-B811-02 is a fixed tricycle landing gear provided with fairings and covers easily removable for inspections.

The main wheels are fitted with hydraulic brakes and the nose gear is equipped with a hydraulically operated centering lock.

The utility hydraulic system supplies fluid under pressure to operate the brakes for normal use, for parking and to actuate the nose gear centering lock.

SECTION 1 - LIMITATIONS

AIRSPPEED LIMITATIONS

V_{NE} (Power-ON) See [Figure 1-1](#)

V_{NE} (OEI/Power-OFF): V_{NE} (Power-ON) - 27 KIAS

V_{NEI} (maximum IFR airspeed) V_{NE} (Power-ON) - 7 KIAS

Maximum airspeed with single AP operational:

— normal flight V_{NE} (Power-ON) - 27 KIAS

AUTOMATIC FLIGHT CONTROL SYSTEM LIMITATIONS

DUAL AP OPERATION

Flight at airspeed above V_{NE} (Power-ON) - 7 KIAS..... Fly manually

HYDRAULIC SYSTEM LIMITATIONS

EMERGENCY UTILITY SYSTEM - FLUID PRESSURE

Not applicable.

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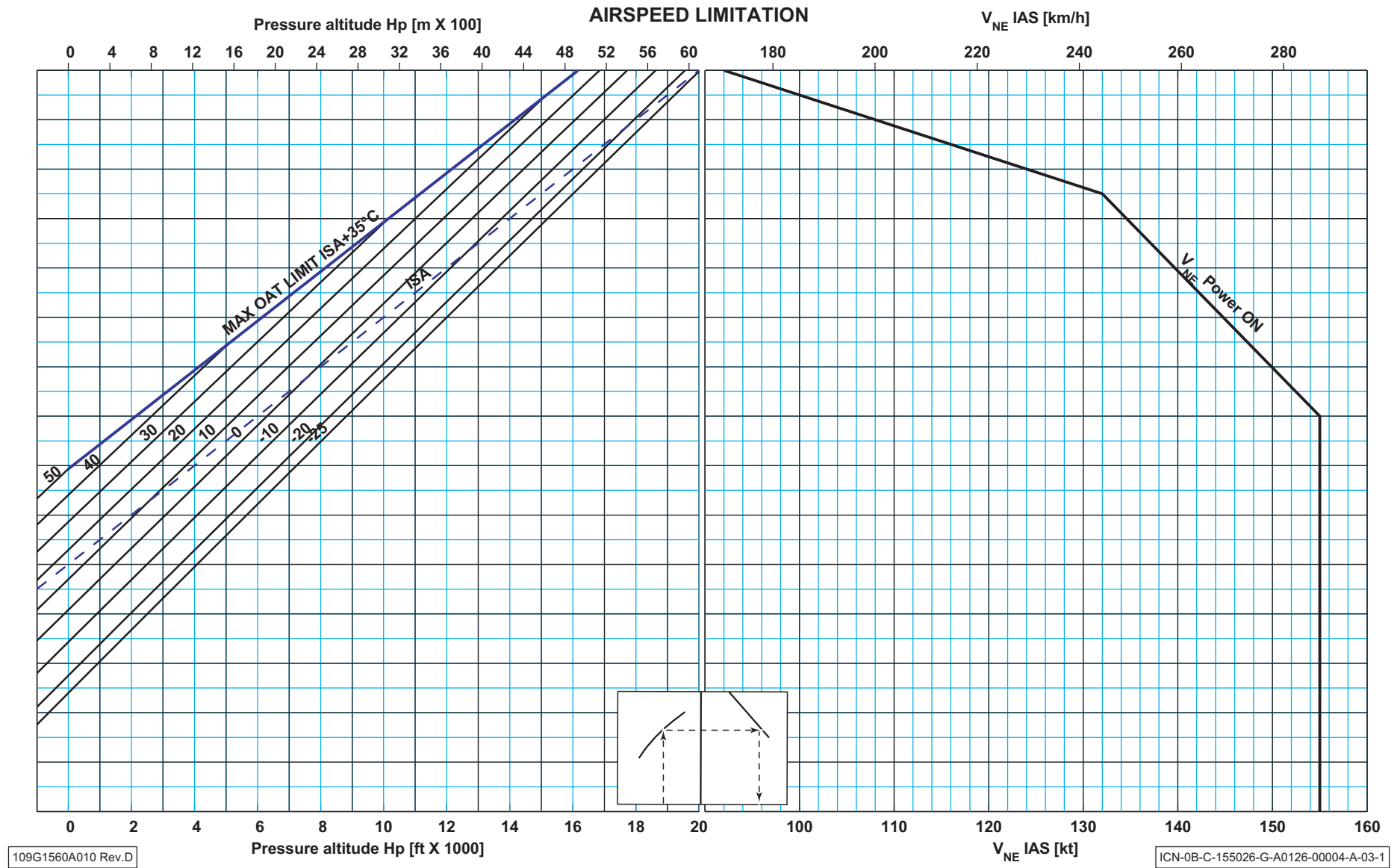
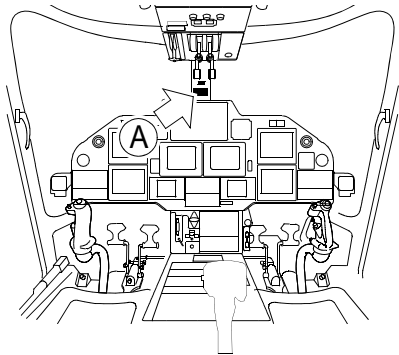


Figure 1-1 Airspeed Limitation V_{NE} (Power-ON)

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PLACARDS



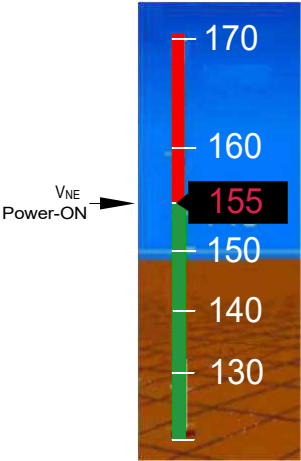
A

AIRSPEED LIMITATIONS V _{ne} - KIAS									
OAT°C Hp-ft	-25	-20	-10	0	10	20	30	40	50
-1000	155	155	155	155	155	155	155	155	155
0	155	155	155	155	155	155	155	155	155
2000	155	155	155	155	155	155	155	155	-
4000	155	155	155	155	155	155	153	151	-
6000	155	155	155	155	153	150	147	-	-
8000	155	155	153	150	147	144	141	-	-
10000	150	150	146	143	140	138	135	-	-
12000	145	143	140	137	134	130	-	-	-
14000	138	137	134	128	120	112	-	-	-
16000	132	127	118	109	101	-	-	-	-
18000	113	108	99	-	-	-	-	-	-
20000	93	-	-	-	-	-	-	-	-
V _{nei} :					REDUCE V _{ne} BY 7 KIAS				
AUTOROTATION OR OEI:					REDUCE V _{ne} BY 27 KIAS				
MAX FWD TOUCHDOWN SPEED:					40 Kts				

ICN-0B-C-155026-G-A0126-01001-A-01-1

Figure 1-2 Airspeed (V_{NE}) Placard

INSTRUMENT MARKINGS



VNE POWER-ON

ICN-0B-C-159400-G-A0126-00055-A-02-1

Figure 1-3 EFIS - Indicated Airspeed (IAS)

SECTION 2 - NORMAL PROCEDURES

No change.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES

AWG TEST PROCEDURE

The AWG test function can be initiated by holding the AWG switch in the TEST position. The aural message "TEST OK" will be generated to indicate a successful test. Maintaining the TEST position for more than 6 seconds, will generate the entire voice warning sequence in the following priority:

- Tone 1 "ROTOR LOW"
- Tone 2 "ENGINE ONE OUT"
- Tone 2 "ENGINE TWO OUT"
- Tone 3 "FIRE ENGINE ONE FIRE"
- Tone 3 "FIRE ENGINE TWO FIRE"
- Tone 4 "WARNING"
- Tone 4 "ROTOR HIGH"
- Tone 4 "AUTOPILOT"
- Tone 4 "ENGINE IDLE"
- Tone 5 "OVERTORQUE"
- Tone 5 "AIRSPEED"
- Tone 6 "DECISION HEIGHT"
- Tone 7 "TWO HUNDRED FEET"
- Tone 7 "ALTITUDE"
- Tone 8 Tone (for autopilot)

MALFUNCTION PROCEDURES

DRIVE SYSTEM

ROTOR BRAKE SOLENOID VALVE OPEN

ROTOR BRK PRES

Rotor brake hydraulic solenoid valve open in flight, rotor brake system ready to be operated

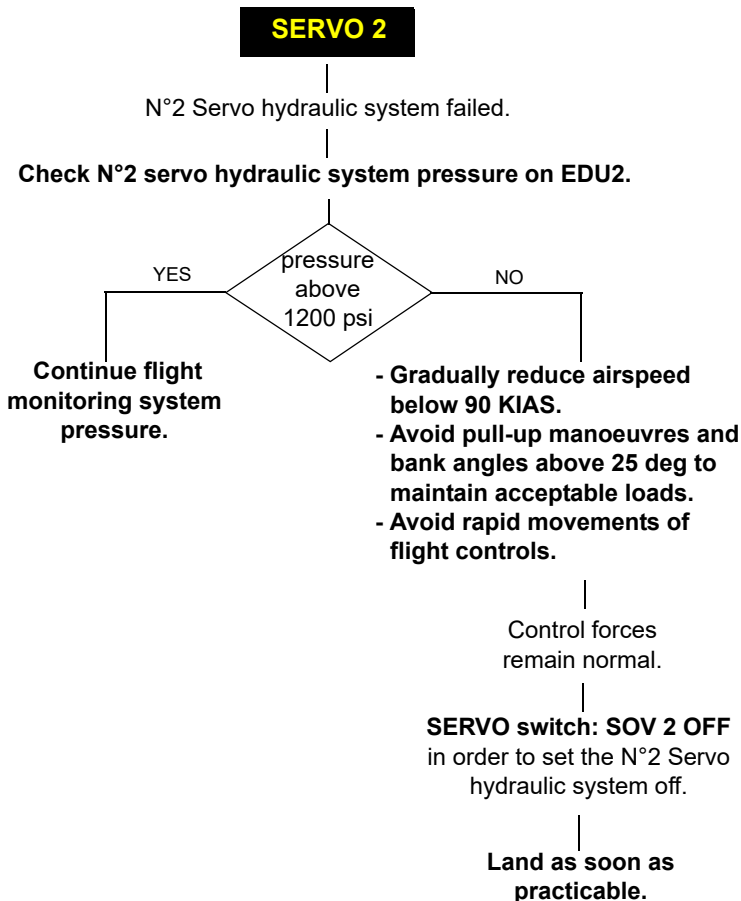
Continue flight

Do not operate rotor brake lever until aircraft on ground .

**Maintenance action
required before next flight**

HYDRAULIC SYSTEM

SERVO HYDRAULIC SYSTEM N°2 MALFUNCTION



Note

In the event of pressure loss in N°2 main hydraulic system, sufficient pressure remains in the utility accumulator to operate the emergency and parking brake and the rotor brake. The emergency and parking brake handle does not provide differential braking.

NORMAL UTILITY HYDRAULIC PRESSURE LOW

MAIN UTIL PRES

Failure of the normal utility hydraulic system.
The pressure in the system is below minimum pressure of 500 psi.

- Select **AUXILIARY** mode on EDU2.
- Confirm low pressure on normal utility system.

WARNING

Parking brake and rotor brake are inoperative.

EMERGENCY UTILITY HYDRAULIC PRESSURE LOW

Not applicable.

NORMAL UTILITY HYDRAULIC SYSTEM CHARGING

Not applicable.

EMERGENCY UTILITY HYDRAULIC SYSTEM CHARGING

Not applicable.

SECTION 4 - PERFORMANCE DATA

AIRSPPEED CALIBRATION CURVE

(Figures 4-1 to 4-3)

Calibration curves are presented for the pilot's and co-pilot's Air Data System. The Indicated Airspeed shown on the cockpit instruments is produced by pressure readings at the aircraft pitot and static ports and, in general, these pressure readings contain errors which must be corrected in order to obtain Calibrated Airspeed (that airspeed which would be shown on the cockpit instruments if there were no errors). Calibrated airspeed must be used in order to calculate correct values of the True Airspeed.

The magnitude of the error depends on the Indicated Airspeed. Enter the appropriate Airspeed Calibration Curve graph (Figures 4-1 to Figure 4-3) with the desired value of Indicated Airspeed, and proceed vertically until intercepting the curve. Proceed to the left to read the corresponding value of Calibrated Airspeed. Use this value to calculate the corresponding True Airspeed, as required.

Example:

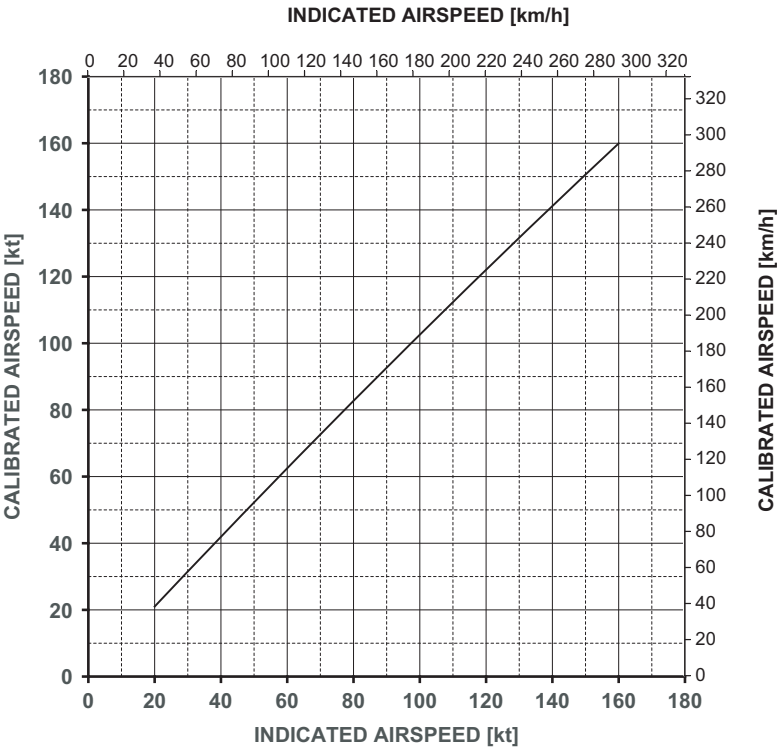
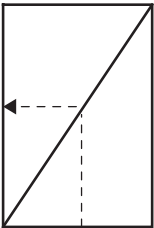
On the pilot's Air Data System Indication, determine the Calibrated Airspeed corresponding to an Indicated Airspeed of 140 knots.

Solution:

Use Figure 4-1.

Enter the graph at an Indicated Airspeed of 140 knots and proceed vertically until intersecting the curve. Proceed left and read the corresponding Calibrated Airspeed of 141 knots.

AIRSPPEED CALIBRATION CURVE
PILOT INDICATOR

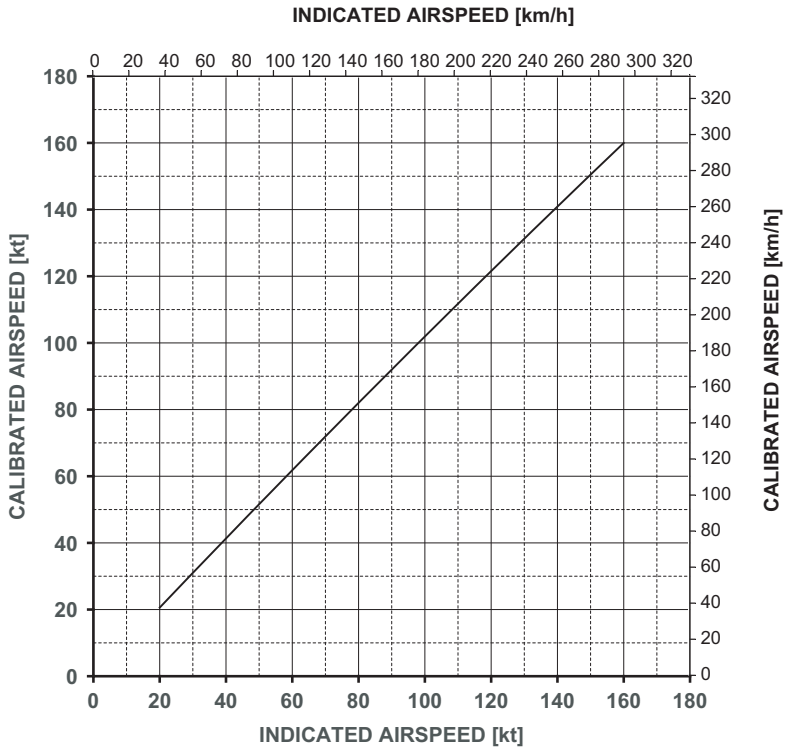


109G1560A010 Rev.D

ICN-0B-C-155026-G-A0126-00001-A-03-1

Figure 4-1 Airspeed Calibration Curve - Pilot

AIRSPED CALIBRATION CURVE
CO-PILOT INDICATOR

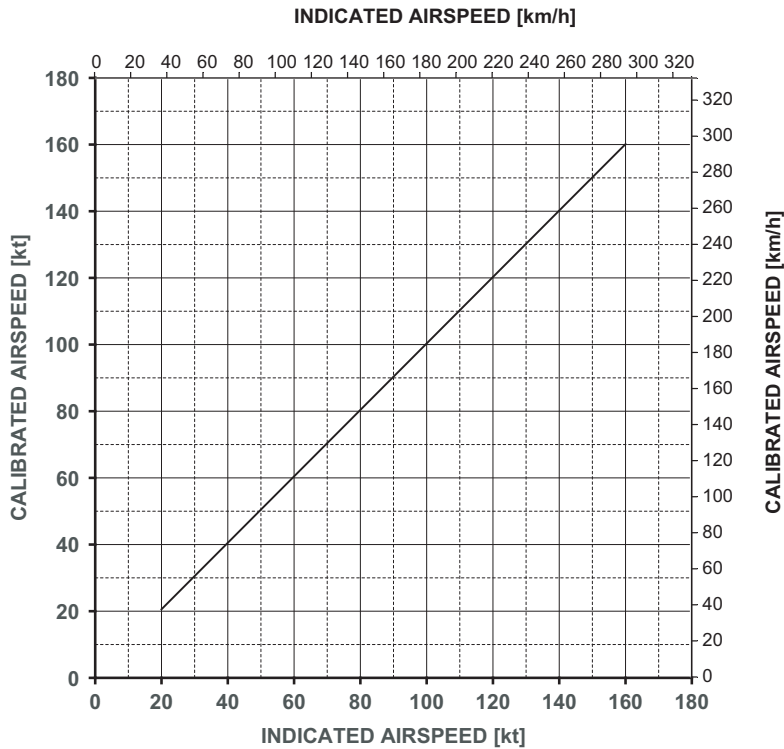


109G1560A010 Rev.D

ICN-0B-C-155026-G-A0126-00002-A-03-1

Figure 4-2 Airspeed Calibration Curve - Co-Pilot

AIRSPPEED CALIBRATION CURVE
ESIS INDICATOR



109G1560A010 Rev.D

ICN-0B-C-155026-G-A0126-00003-A-04-1

Figure 4-3 Airspeed Calibration Curve - ESIS

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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EVS-1000/1500/2300 VIDEOCAMERA

P/N 109-B810-20

This Supplement shall be attached to the AW109SP RFM (Section 5) when the EVS-1000/1500/2300 Videocamera is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE C: 20 APRIL 2018
REVISION 1: 11 JUNE 2025

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
1	Revised pages Title page, A-1, B-1, i and 1 thru 6 of 6.	EASA Approval N° 10030995 dated 21 July 2010
2	Revised pages Title page, A-1, B-1 and 2 of 6.	Approved with NDC 109G9700-001 dated 24 December 2015 under the authority of DOA ref EASA.21J.005
–	Issue C	Approved with NDC 109G9700-002 dated 20 April 2018 under the authority of DOA ref EASA.21J.005
1	Revised pages Title page, A-1, B-1, i.	Manufacturer's Data

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GENERAL

The MAX VIZ EVS-1000/1500/2300 videocamera, P/N 109-B810-20, is an Enhanced Video System (EVS) designed to provide the flight crew with enhanced visual awareness of terrain and potential obstacles in the aircraft's forward field of view.

The EVS-1000/1500/2300 is operative as soon as the helicopter is electrically powered.

The EVS-1000/1500/2300 is used as a supplemental display to enhance the view of the outside world. It uses a high-performance long-wave (8-14 micron) infrared (IR) sensor to provide an additional visual perspective. The EVS-1000/1500/2300 is particularly effective at night, in smoke, haze, and in smog. It is also effective in many conditions of rain, snow, and fog.

The EVS improves the pilot's ability to see:

- ground vehicles and other ground-based equipment/obstacles
- aircraft on taxi-ways and runways
- other traffic during takeoff, approach, and landing
- the runway and terrain features during climb, descent, and low altitude maneuvering.

The output monochrome image is shown on an 8.4" LCD display (Cockpit Central Monitor). Whenever the helicopter is on ground (WOW), the bottom third of the display is blacked out.

The EVS-1000/1500/2300 videocamera carries out an automatic recalibration of the IR sensor every 4 minutes (NUC function). This recalibration is noted by a 1 second blanking of the screen.

On the EVS-1500/2300 is possible to inhibit the NUC (Non-Uniformity Correction) function by setting the NUC switch to OFF.

The EVS-1500/2300 has ZOOM and NUC functions controlled by two switches on the EVS control panel.

The IR sensor has automatically temperature controlled heaters.

During in-flight use, the sensor uses heaters to keep ice from building up over the lens.

The EVS consists of:

- an IR sensor, located under the helicopter nose;
- a power supply, located in the pilot's cabin (EVS 1000/1500 only) ;
- an EVS control panel, located in the pilot's cabin (EVS-1500/2300 only).

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

EVS-1000/1500/2300 LIMITATIONS

The EVS-1000/1500/2300 IR sensor image must not be used for take-off, landing or navigation.



The EVS-1000/1500/2300 is intended to serve as an obstacle awareness tool only. The display may not provide the accuracy and fidelity on which to base take-off, landing and navigation decisions.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°1 (Helicopter Nose)

1. EVS-1000/1500/2300 IR sensor : Condition and cleanliness.

Area N°7 (Helicopter interior)

Cockpit interior

1. EVS breaker : Check in.

SYSTEM CHECKS

EVS-1000/1500/2300 SYSTEM CHECK

1. Cockpit central monitor : Press PWR key to initialise monitor.
2. Cockpit central monitor : Press VID SEL pushbutton. Verify that the EVS image appears on the display.
3. NUC switch (EVS-1500/2300 only) : Check ON

IN FLIGHT

1. Cockpit central monitor : As desired.
2. EVS control panel (EVS-1500/2300 only) : As desired.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

**FDR / CVR
P/N 109-B810-94**

This Supplement shall be attached to the AW109SP RFM (Section 5) when the FDR / CVR is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE A: 1 AUGUST 2011

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10035972 dated 1 August 2011

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GENERAL

The Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) P/N 109-B810-94 is a system installed for to record many helicopter parameters and audio signals in a solid state, non-volatile memory.

The primary components of the FDR/CVR system are:

- DAFR Unit;
- Control Panel;
- Area microphone;
- Impact Switch.

The DAFR (Data Acquisition Flight Recorder), is a crash protected airborne recorder. The DAFR is mounted direct to the airframe. Anti-vibration mounting is not required.

The DAFR consists of a solid state crash survivable memory module and an electronic interface.

The solid state memory module is protected for crash survivability.

An Underwater Locator Beacon (ULB) is fitted to the Crash Survivable Memory Module as an aid to location in the event of an accident over water.

The DAFR is painted International Orange as an aid to its location.

No external controls are provided on the DAFR as operation is automatic upon the application of power.

The unit provides comprehensive Built-In Test (BIT) functions. The FDR and Audio recording functions are separately monitored.

Failures in the FDR function imply the "FDR FAIL" Caution message on EDU.

Failures in the Audio recorder function imply the "CVR FAIL" Caution message on EDU.

SECTION 1 - LIMITATIONS

No change.

SECTION 2 - NORMAL PROCEDURES

SYSTEM CHECKS

MISCELLANEOUS

EDU 1 : Confirm FDR FAIL and CVR FAIL
cautions are not displayed.

SECTION 3 - EMERGENCY AND MALFUNCTION
PROCEDURES

IDS CAUTION SYSTEM

TABLE OF IDS CAUTION SYSTEM

Table 3-1 Table of IDS Caution Messages

CAS Caption	Page	Malfunction/System State
FDR FAIL	Page 3 of 4	Flight Data Recorder failure.
CVR FAIL	Page 3 of 4	Cockpit Voice Recorder failure.

MISCELLANEOUS

FLIGHT DATA RECORDER FAILURE

FDR FAIL

Failure in the Flight Data Recorder
FDR function unavailable.

Continue flight.

COCKPIT VOICE RECORDER FAILURE

CVR FAIL

Failure in the Cockpit Voice Recorder
CVR function unavailable.

Continue flight.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

AUXILIARY VIDEOCAMERA P/N 109G9770F02

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Auxiliary Videocamera is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE A: 25 MAY 2011
REVISION 1: 11 JUNE 2025**

LIST OF REVISIONS

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–	Issue A	EASA Approval N° 10035101 dated 25 May 2011
1	Revised pages Title page, A-1, B-1 and i.	Manufacturer's Data

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GENERAL

The Auxiliary Videocamera P/N 109G9770F02, is designed to provide to the flight crew visibility of the cargo hook payload during cargo hook operations.

The video signal is displayed on the 8.4" cockpit central monitor P/N 109-B810-11.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

AUXILIARY VIDEOCAMERA LIMITATIONS

The Auxiliary Videocamera image must not be used for take-off, landing or navigation.

The use of the Auxiliary video camera is permitted only during VFR operation with visual contact of the ground.



The video image may distract the pilot during flight operation.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°2 (Fuselage - RH side)

1. Auxiliary Videocamera : Condition and cleanliness.

Area N°7 (Helicopter interior)

Cockpit interior

1. CARGO HOOK CAMERA : Check in.
circuit breaker
2. HOOK CAM switch : Confirm to OFF.

SYSTEM CHECKS

AUXILIARY VIDEOCAMERA SYSTEM CHECK

1. MSTR AVNX switch : Set to NORM.
2. Cockpit central monitor : Press PWR key to initialise monitor.
3. Cockpit central monitor : Press VID SEL pushbutton to select VIDEO 3 input.
4. HOOK CAM switch : Set to ON.
Verify that the Videocamera image appears on the display.

IN FLIGHT

1. Cockpit central monitor : As desired.

SHUTDOWN

1. HOOK CAM switch : Set to OFF.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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CARGO HOOK WITH VIDEOCAMERA P/N 109G2592A01

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Cargo Hook with Videocamera is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE A: 25 MAY 2011
REVISION 2: 27 MAY 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10035101 dated 25 May 2011
1	Revised pages Title page, A-1, B-1, 14 thru 27, 29 and 31 thru 49 of 50.	EASA Approval N° 10062498 dated 4 July 2017
2	Revised page 31 of 50.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1, B-1 and iii thru vi.	Manufacturer's Data

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GENERAL

The Cargo Hook with Videocamera, P/N 109G2592A01, consists of a support frame, a hook mounted under the belly of the helicopter, a cargo hook camera kit P/N 109G9770F01 connected to the cockpit central monitor P/N 109-B810-11-101, an electrical and manual (emergency) release system, and a load-on-hook measuring system with cockpit digital readout.

A spring system is attached to the cargo hook which provides the stowing mechanism when the hook is not in use.

Note

A swiveling link is not supplied with the cargo hook installation, however, it is recommended to use one between the load and the cargo hook.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

Cargo hook operation is approved for VFR conditions with visual contact with the ground.

Operations with a load attached to the cargo hook are authorized for 'Class B' rotorcraft-load combinations only.

Note

Class B rotorcraft-load combination means one in which the external load is jettisonable and is lifted free of land and water during rotorcraft operation.

Note

When cargo hook is in use, flight operations are only permitted with the landing gear down.

MINIMUM FLIGHT CREW

When operating with a load attached to the cargo hook only the personnel involved in the mission are allowed on board.

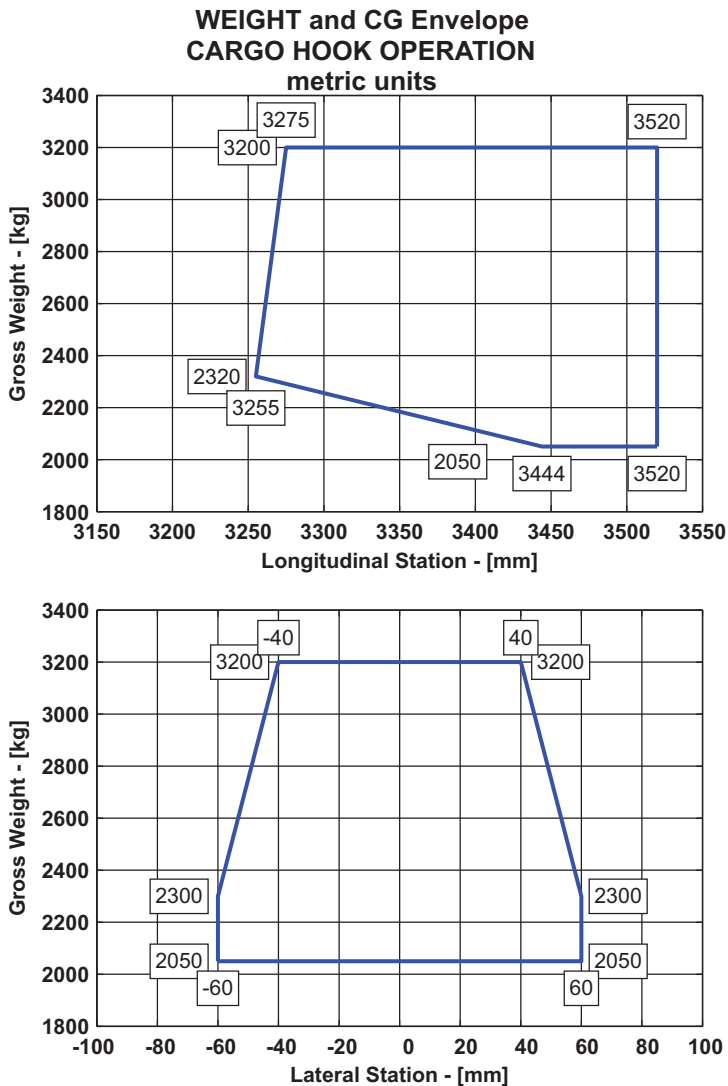
WEIGHT AND CENTER OF GRAVITY LIMITATIONS

Maximum gross weight with load
attached to the cargo hook..... 3200 kg (7055 lb)
Cargo hook maximum allowable load 1150 kg (2535 lb)



Flight with an unballasted sling attached to the cargo hook is prohibited unless approved operational limits and procedures provided by the operator allow for such an operation.

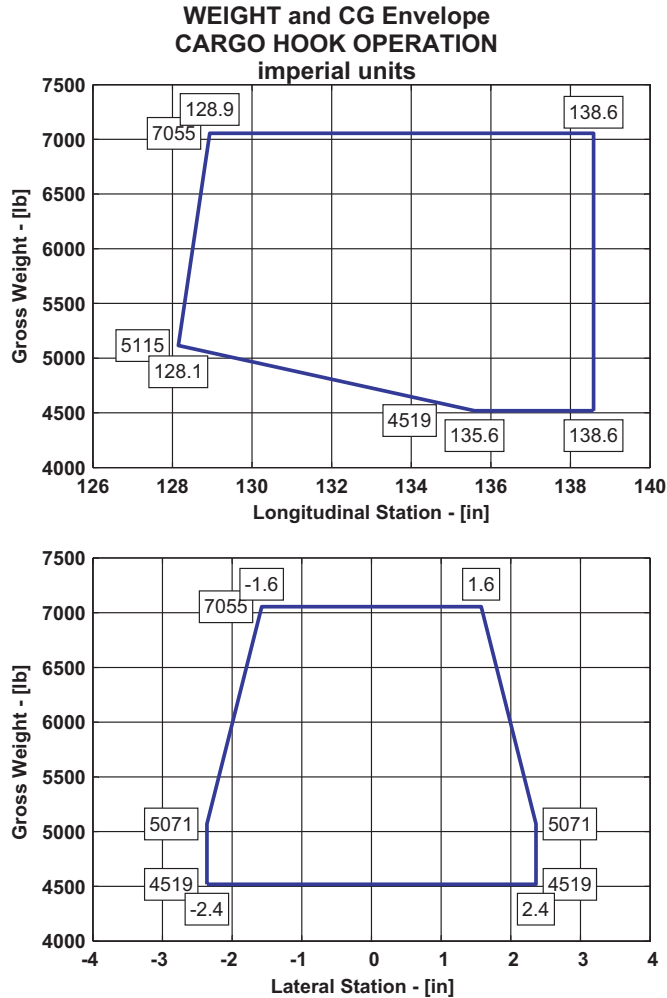
Refer to [Figures 1-1](#) and [1-2](#) for longitudinal and lateral center of gravity limits when flying with a load attached to the cargo hook.



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**Figure 1-1 Weight, Longitudinal and Lateral CG Envelope
(metric units)**



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**Figure 1-2 Weight, Longitudinal and Lateral CG Envelope
(imperial units)**

AIRSPEED LIMITATIONS

V_{NE} with a load attached to the cargo hook:

From -1000 to 5000 ft Hp 100 KIAS

Above 5000 ft Hp Decrease by 2 KIAS
for every 1000 ft Hp

Note

The airspeed with external cargo is limited by controllability and load stability. Caution should be exercised when carrying external loads as helicopter handling characteristics and load stability may be affected by the size, weight and shape of the load, as well as by the distance between the load and the helicopter.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°2 (Fuselage - RH side)

1. Cargo hook camera : Condition, cleanliness and secure.
2. Cargo hook : Condition and secure.

Area N°7 (Cockpit Interior)

1. CARGO HOOK PRIM and SEC circuit breaker : Check in.
2. CARGO HOOK CAMERA circuit breaker : Check in.
3. ➡ CARGO REL PRIM push-buttons (on pilot and co-pilot cyclic grips) : Guarded.

For the following checks connect the d.c. supply:

Note

The following checks may require a large electrical consumption. Beware of possible battery charge depletion if not using external power.

Note

Ground personnel should assist the pilot during the cargo hook checks.

4. ➡ EDU 1 : Confirm C HOOK ARMED caution message is not illuminated.
5. ➡ CARGO REL PRIM pushbutton(on pilot and co-pilot cyclic grips) : Open guard to arm the release system.

6. ➡ EDU 1 : Confirm C HOOK ARMED caution message illuminates.
7. ➡ CARGO REL PRIM push-button (on pilot cyclic) : Push.
Confirm hook opens (see note below).
Confirm C HOOK OPEN caution message illuminates.
Release the pushbutton and confirm that the hook returns to the closed position.
Confirm C HOOK OPEN caution message clears.
8. ➡ CARGO REL PRIM push-button (on pilot cyclic) : Lower guard to disarm the release system.
9. ➡ EDU 1 : Confirm C HOOK ARMD caution message clears.

Repeat cargo hook checks using the CARGO REL PRIM pushbutton on the co-pilot cyclic:

10. ➡ EMER CARGO RELEASE PULL handle : Pull handle and confirm hook opens (see note below).
Confirm C HOOK OPEN caution message illuminates.
Release the handle and confirm that the hook returns to the closed position.
Confirm C HOOK OPEN caution message clears.

Note

A spring holds the cargo hook in the closed position even when the locking device is released. A force of approximately 5 kg must be applied to the hook to overcome the spring force and open the hook.

Disconnect the d.c. supply.

ENGINE PRE-START CHECKS

INITIAL CHECKS

1. CARGO REL PRIM pushbut- : Guarded.
tons (on cyclic stick)
2. HOOK CAM switch : Confirm to OFF.

SYSTEM CHECKS

MISCELLANEOUS

1. Hook load indicator : Set to zero.

Note

Adjust the hook load indicator to show zero after a 5 min warm up with no load on the hook.

2. MSTR AVNX switch : Set to NORM.
3. Cockpit central monitor : Press PWR key to initialise monitor.
4. Cockpit central monitor : Press VID SEL pushbutton to select VIDEO 2 input.
5. HOOK CAM switch : Set to ON.
Verify that the Videocamera image appears on the display.

TAKE-OFF

EXTERNAL LOAD ATTACHMENT

WARNING

Helicopter static electricity should be discharged, by a suitable means, before ground personnel touch any part of the helicopter. If contact has been lost after initial grounding of the static electricity it should be re-grounded and, if possible, contact maintained until load hook-up is complete.

Stabilize in a hover at sufficient height to allow ground personnel to discharge the static electricity and attach the load to the hook.

Note

Attachment of the load to the hook can be observed by means of the cargo hook camera image on cockpit central monitor.

After load attachment slowly climb vertically to take up the slack in the load.

As the weight of the load is taken up by the hook read the hook load indicator to confirm that the weight of the load does not increase the helicopter gross weight beyond the allowable limits and that the maximum hook load is not exceeded.

Hover to check for satisfactory controllability and power within limits.

Note the radalt height and set the radalt low height bug accordingly.

IN FLIGHT

Enter into slow forward flight.

Check the controllability of the helicopter with the load attached, and ensure that no uncontrollable or hazardous flight conditions exist.

Allow adequate clearance of the load over obstacles.

Increase forward airspeed and select an operational airspeed at which no excessive oscillation is encountered.

APPROACH AND LANDING

EXTERNAL LOAD RELEASE

1. CARGO REL PRIM pushbutton : Open guard to arm the release system.
(on pilot flying cyclic)
2. EDU 1 : Confirm C HOOK ARMD caution message illuminates.

Approach the load drop-off area with care and at a slow speed.

Stabilize in the hover over the release point, then slowly descend until the load has settled on the ground.

3. CARGO REL PRIM pushbutton : Push.
(on pilot flying cyclic) Confirm C HOOK OPEN caution message illuminates.
4. Cargo hook camera image : Confirm load has released.
(on cockpit central monitor)

Note

The load will release when its weight overcomes the spring force in the hook. If the load has not released, the pilot should climb slowly until there is additional force on the hook, but without lifting the load off the ground, if possible. Then operate the CARGO REL PRIM pushbutton again to release the load.

Note

In the event of electrical failure, pull the EMER CARGO RELEASE PULL handle to release the load.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES

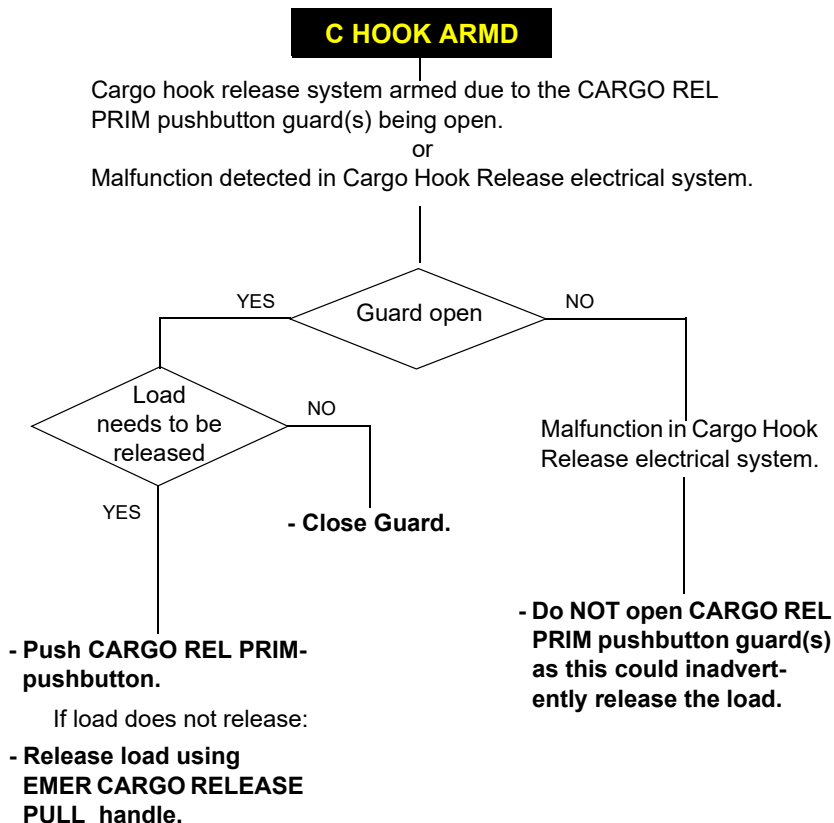
In the event of an emergency that requires the external load to be released, open the CARGO REL PRIM (located on pilot cyclic stick) guard and push the button to release the load. If the load does not release, pull the EMER CARGO RELEASE PULL handle (located left of pilot seat).

MALFUNCTION PROCEDURES

TABLE OF CAUTION MESSAGES

CAS Caption	Page	Malfunction/System State
C HOOK ARMD	12 of 50	Cargo hook release system armed.
C HOOK OPEN	13 of 50	Cargo hook in open position.

CARGO HOOK ARMED



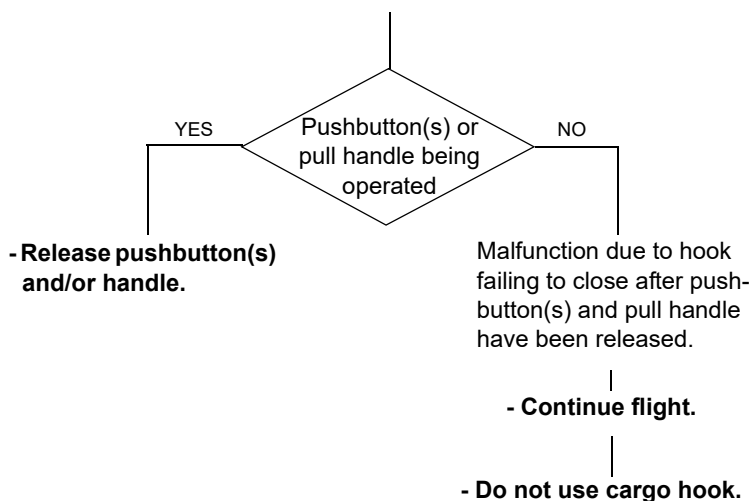
CARGO HOOK OPEN

C HOOK OPEN

Cargo hook in open position due to the CARGO REL PRIM pushbutton(s) or EMER CARGO RELEASE PULL handle being operated.

or

HOOK OPEN caution remains after CARGO REL PRIM pushbutton(s) and EMER CARGO RELEASE PULL handle have been released.



SECTION 4 - PERFORMANCE DATA

Note

For combination with other optional equipment refer to chapter “[PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#)”.

GENERAL

Forward flight and climb performance will be degraded due to the load aerodynamic drag. The level of degradation will depend on load size and shape.

There are no significant load effects on hover performance.

HOVERING CEILING

([Figures 4-1](#) thru [4-12](#))

The Hover Ceiling charts define the maximum weights at which an OGE hover (60 ft AGL) is possible for different combinations of Pressure Altitude and OAT with main rotor speed (NR) at 102% and zero wind conditions.

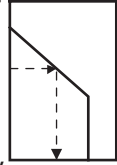
For hover in sidewind condition, refer to OPERATION VS ALLOWABLE WIND procedure in this section or of the applicable Optional Equipment

Information is presented for All Engines Operating (AEO) at Take-Off Power (TOP) with Heater / ECS and EAPS OFF and ON and Maximum Continuous Power (MCP) with Heater / ECS and EAPS OFF and ON.

CAUTION

The curves below OAT -25°C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

HOVER CEILING OUT OF GROUND EFFECT TAKE OFF POWER AEO

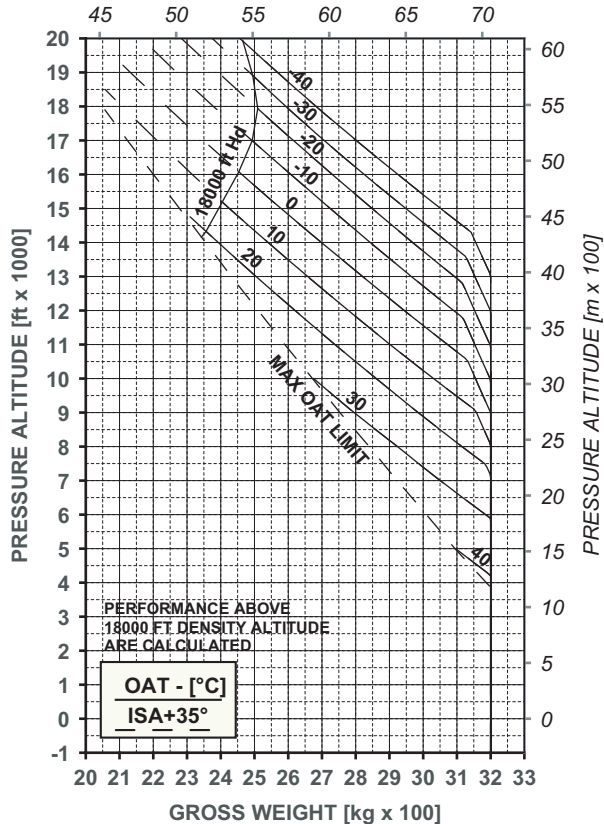


ROTOR SPEED: 102 %

ZERO WIND

ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V
GROSS WEIGHT [lb x 100]



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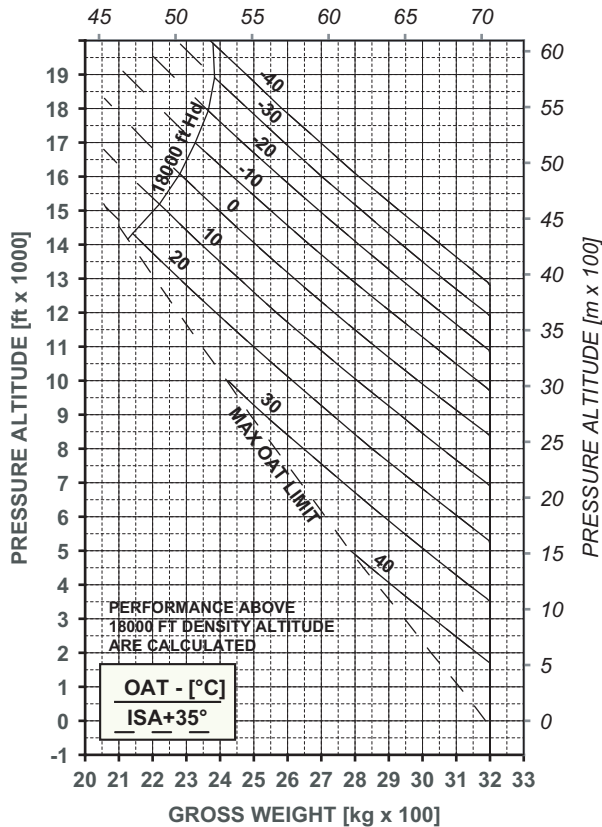
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Figure 4-1 Hover Ceiling OGE - Take-Off Power -
Heater / ECS OFF

ROTOR SPEED: 102 %
ZERO WIND

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V
GROSS WEIGHT [lb x 100]



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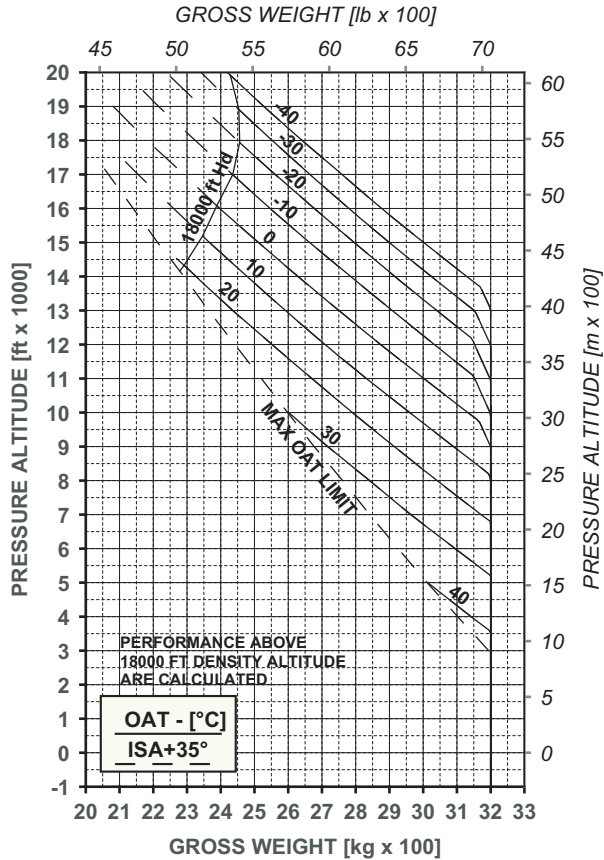
Figure 4-2 Hover Ceiling OGE - Take-Off Power -
Heater / ECS ON

HOVER CEILING OUT OF GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V



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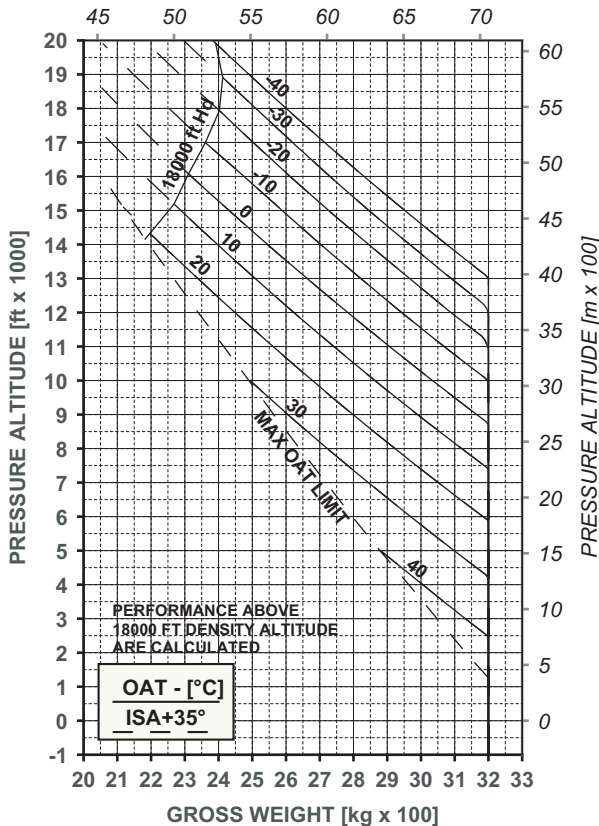
Figure 4-3 Hover Ceiling OGE - Take-Off Power -
EAPS OFF

HOVER CEILING OUT OF GROUND EFFECT
TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: ON
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V
GROSS WEIGHT [lb x 100]



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Figure 4-4 Hover Ceiling OGE - Take-Off Power -
EAPS ON

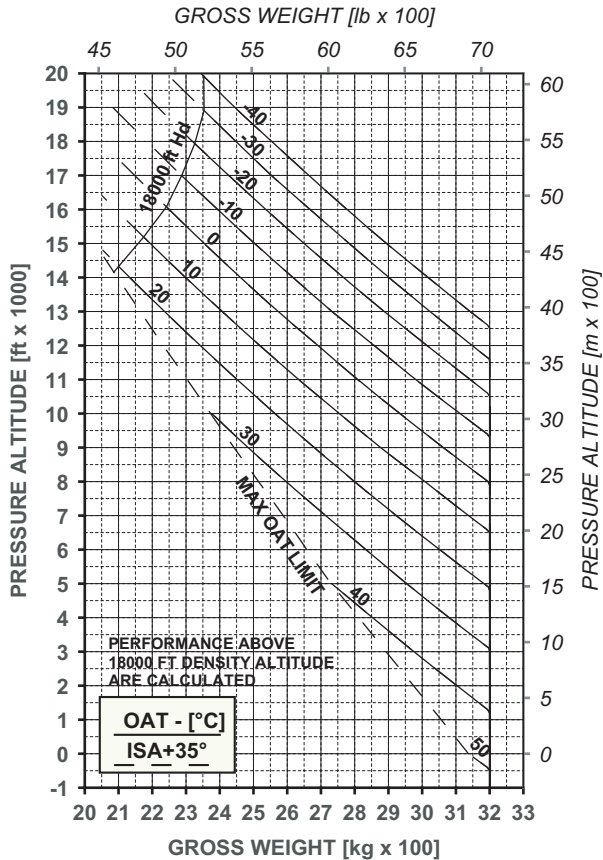
HOVER CEILING OUT OF GROUND EFFECT TAKE OFF POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF
ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V



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Figure 4-5 Hover Ceiling OGE - Take-Off Power -
EAPS OFF - Heater / ECS ON

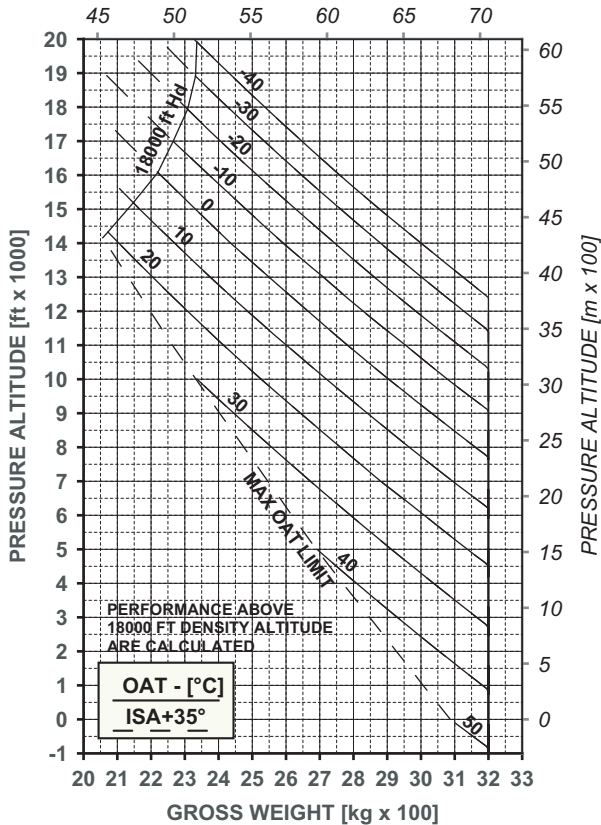
ROTOR SPEED: 102 %
ZERO WIND

EAPS: ON
ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V

GROSS WEIGHT [lb x 100]



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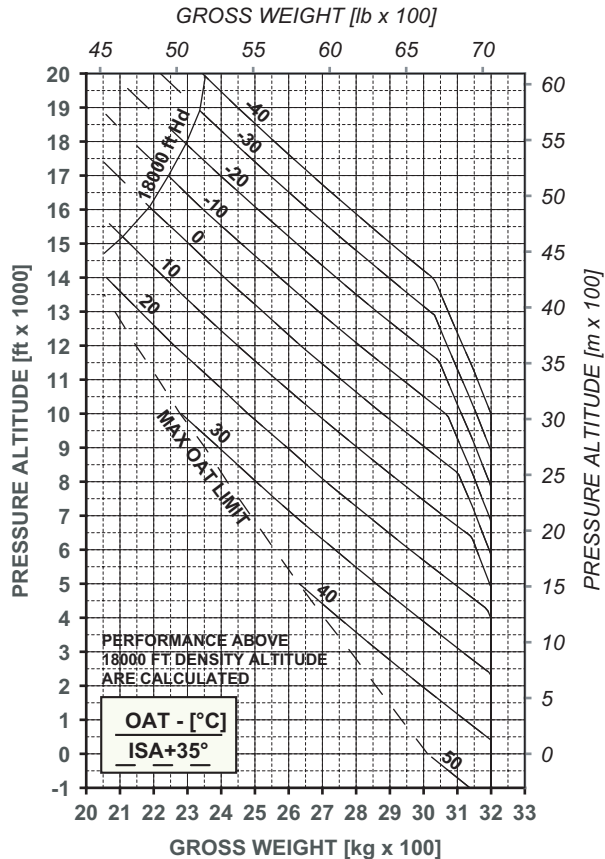
Figure 4-6 Hover Ceiling OGE - Take-Off Power -
EAPS ON - Heater / ECS ON

HOVER CEILING OUT OF GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V



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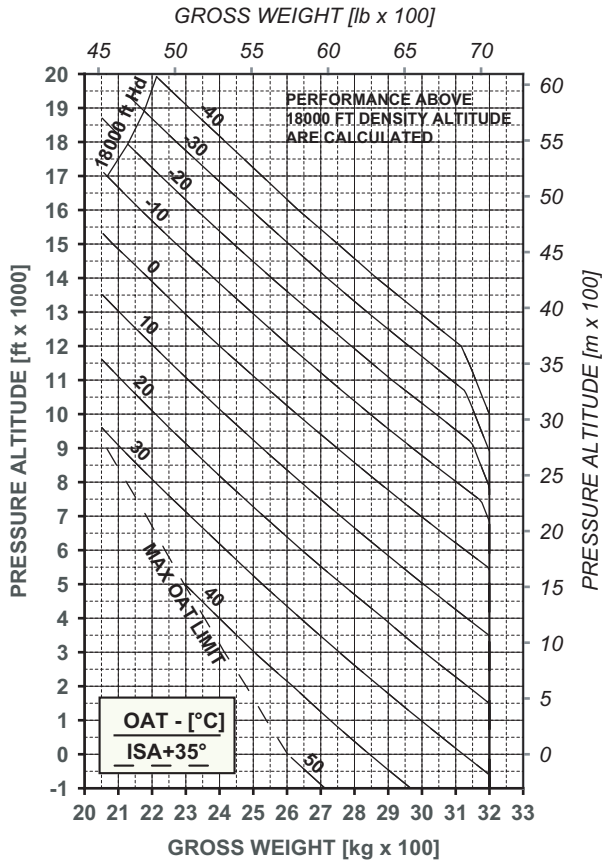
Figure 4-7 Hover Ceiling OGE - Maximum Continuous Power -
Heater / ECS OFF

HOVER CEILING OUT OF GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V



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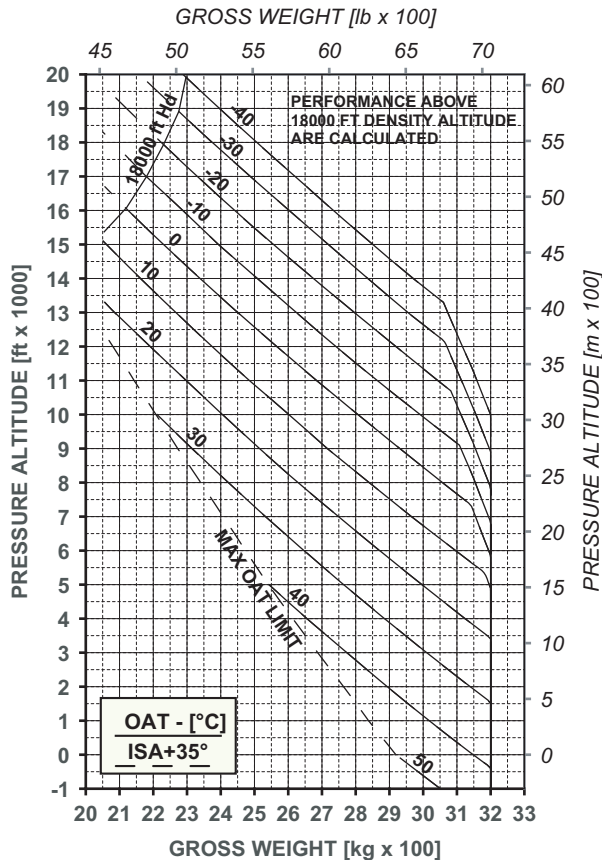
Figure 4-8 Hover Ceiling OGE - Maximum Continuous Power -
Heater / ECS ON

HOVER CEILING OUT OF GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V



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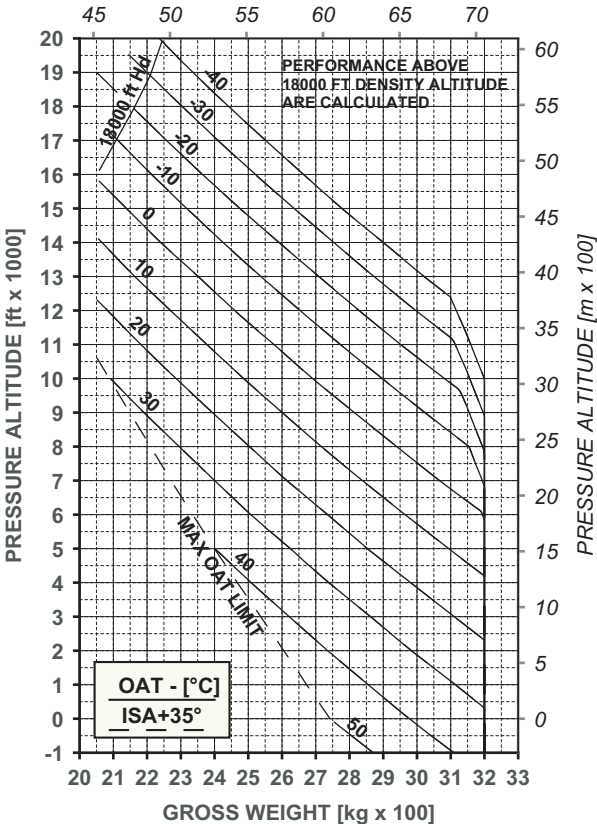
Figure 4-9 Hover Ceiling OGE - Maximum Continuous Power - EAPS OFF

HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND

EAPS: ON
ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V
GROSS WEIGHT [lb x 100]



109G1580A022 Rev.J

ICN-0B-C-155106-G-A0126-00010-A-03-1

Figure 4-10 Hover Ceiling OGE - Maximum Continuous Power -
EAPS ON

HOVER CEILING OUT OF GROUND EFFECT MAXIMUM CONTINUOUS POWER AEO

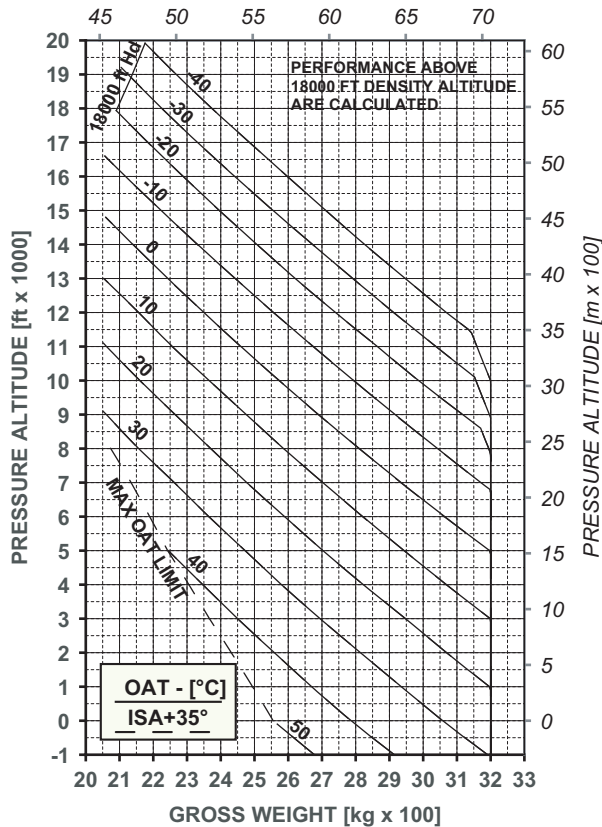
ROTOR SPEED: 102 %
ZERO WIND

EAPS: OFF
ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V

GROSS WEIGHT [lb x 100]



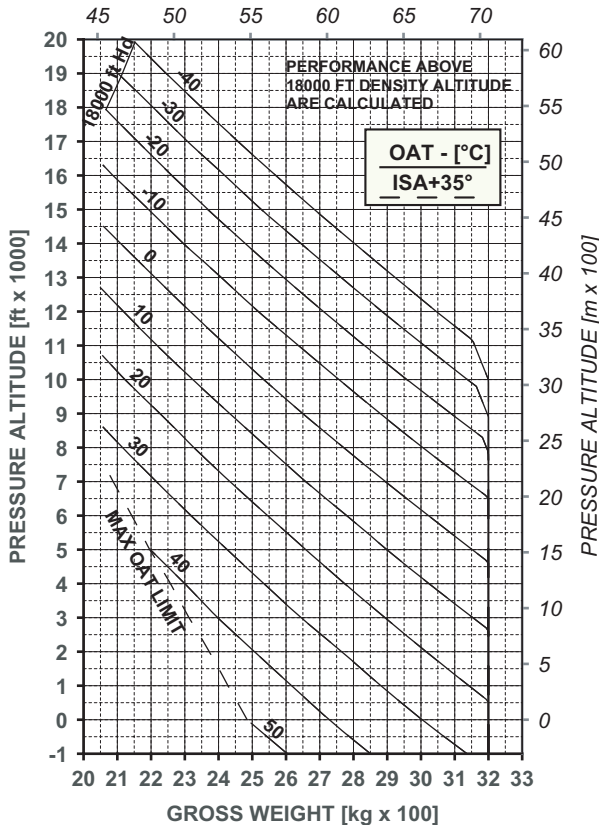
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Figure 4-11 Hover Ceiling OGE - Maximum Continuous Power -
EAPS OFF - Heater / ECS ON

HOVER CEILING OUT OF GROUND EFFECT
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: 102 %
ZERO WIND
EAPS: ON
ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL
CAUTION: OGE HOVER OPERATION MAY RESULT IN VIOLATION OF H-V
GROSS WEIGHT [lb x 100]



109G1580A022 Rev.J

ICN-0B-C-155106-G-A0126-00012-A-03-1

Figure 4-12 Hover Ceiling OGE - Maximum Continuous Power -
EAPS ON - Heater / ECS ON

OPERATIONS VS ALLOWABLE WIND

(Figure 4-13 and 4-14)

Note

Before using Chart A and/or Chart B of this paragraph, the appropriate helicopter maximum gross weight for Hover (IGE/OGE) must be determined using the pertinent Hover performance charts.

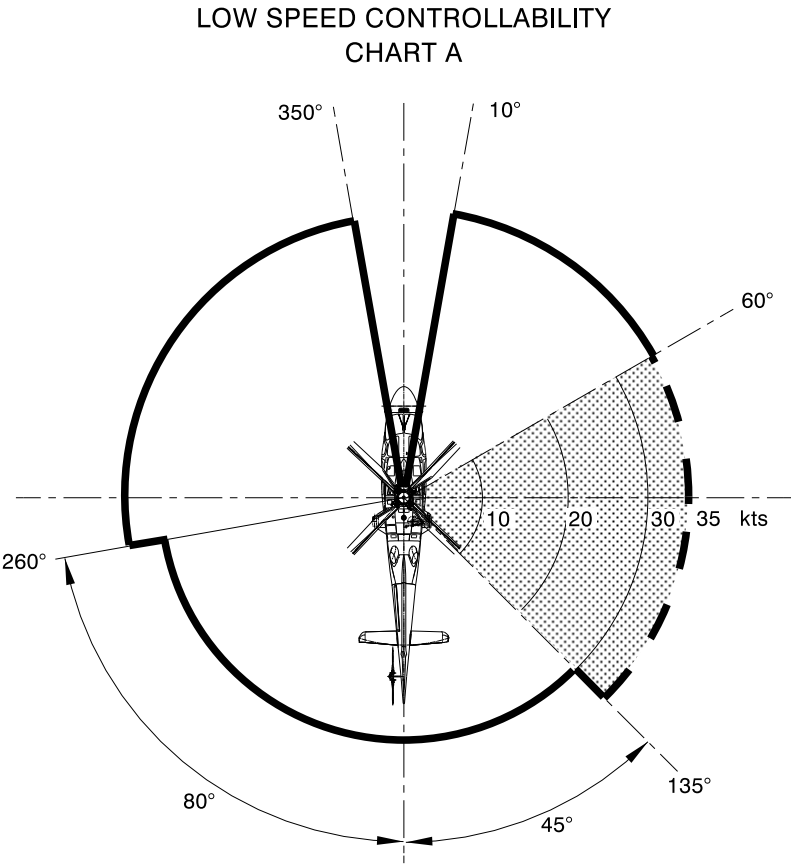
The “Wind Ground Speed Azimuth Envelope” charts define, at each altitude/OAT combination, the maximum weight and maximum allowable wind for which a satisfactory stability and control has been demonstrated.

Figure 4-13 (Chart A) is valid up to a density altitude of 10000 ft Hd. Maximum relative wind speed in the shaded area of Chart A (from 60 to 135 degrees of azimuth) is determined by Area 2 of Chart B.

Above 10000 ft Hd, maximum relative wind speed in all azimuths between 10 and 350 degrees is determined by Area 1 of Chart B.

CAUTION

The curves below OAT -25°C apply only to the helicopter configured with Cold Operation Kit (Supplement 15).



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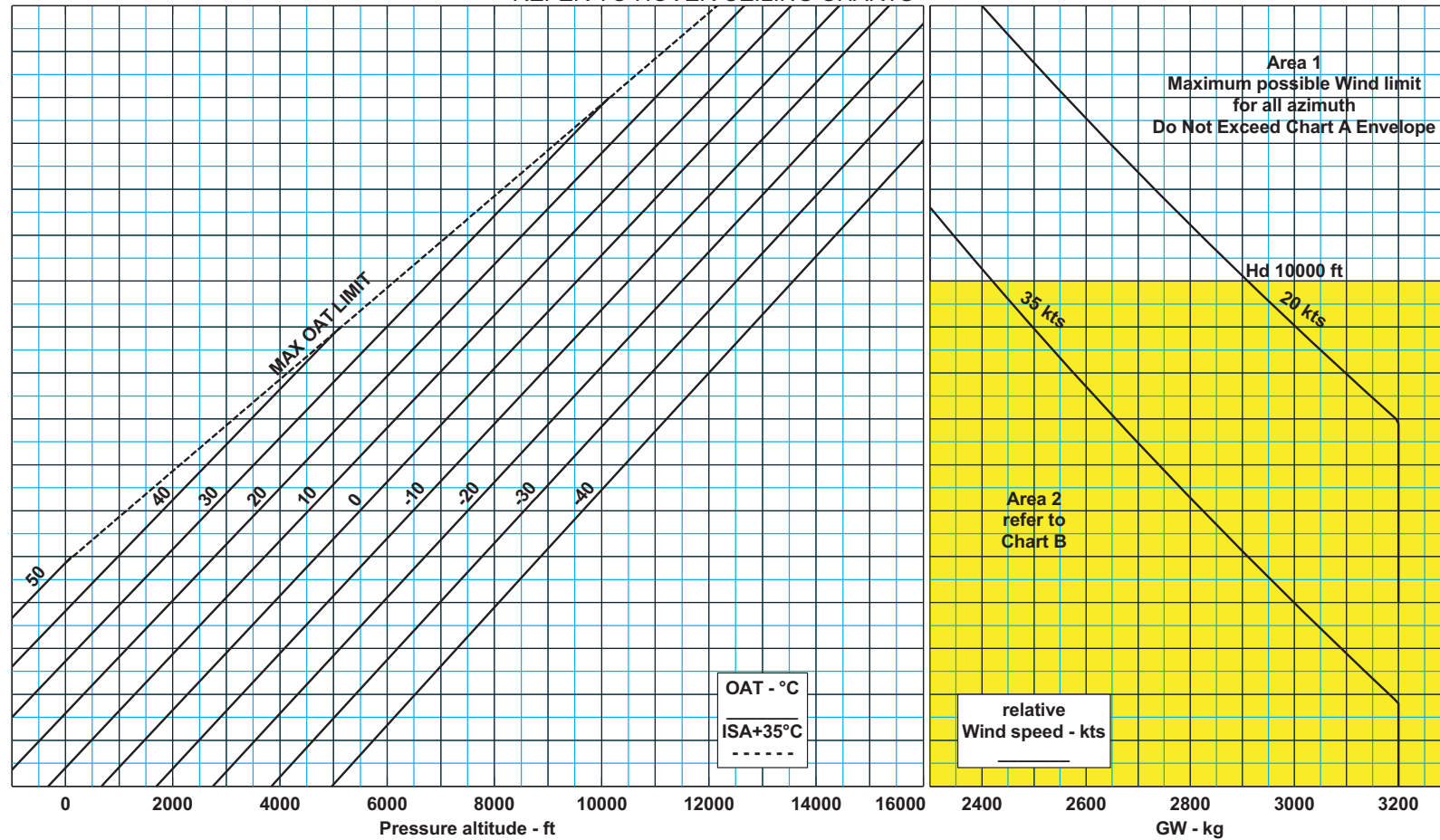
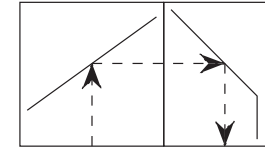
ICN-0B-C-155006-G-A0126-01001-A-01-1

Figure 4-13 Wind/Ground Speed Azimuth Envelope (Chart A)
for cargo hook operations

**WEIGHT-ALTITUDE-TEMPERATURE
FOR LOW SPEED CONTROLLABILITY
CHART B**

NOTE: ALLOWABLE GROSS WEIGHTS OBTAINED FROM THIS CHART
MAY EXCEED CONTINUOUS HOVER CAPABILITY
UNDER CERTAIN AMBIENT CONDITIONS.
REFER TO HOVER CEILING CHARTS

ROTOR 102%



109G1580A022 rev.L

ICN-0B-C-155000-G-A0126-00212-A-02-1

Figure 4-14 Wind/Ground Speed Azimuth Envelope - Chart B for cargo hook operations

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RATE OF CLIMB

([Figures 4-15](#) thru [4-32](#))

The following charts show the Climb Performance at the Maximum Gross Weight of 3200 Kg without the effect of aerodynamic drag due to load size and shape.

The Rate of Climb (ROC) is presented both for the All Engine Operating and for One Engine Inoperative (OEI) conditions.

The AEO charts are calculated, with Landing Gear Down alias Fixed Wheeled Landing Gear, at Take Off Power (TOP) rating and at Maximum Continuous Power (MCP) rating with Heater / ECS OFF and ON and EAPS OFF and ON.

The OEI charts are calculated, with Landing Gear Down alias Fixed Wheeled Landing Gear, at 2.5 min power OEI rating and at Maximum Continuous Power (MCP) OEI rating with EAPS OFF and ON.

Note

In OEI condition the Heater / ECS is automatically switched OFF.

For Gross Weights up to 3175 kg use the Rate of Climb performance at Section 4 of basic RFM or those presented in the Heater or ECS Supplements only after having applied the corrections for the presence of Cargo Hook and of Fixed Wheeled Landing Gear coming from the paragraph [PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#) in the Introduction.

The speed datum for all ROC graphs is V_y , which is 80 KIAS up to 10000 ft and then decreases by 2 knots every 1000 ft to become 60 KIAS at 20000 ft.

CAUTION

The curves below OAT -25°C apply only to the helicopter configured with Cold Operation Kit ([Supplement 15](#)).

**RATE OF CLIMB
TAKE OFF POWER AEO**



ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A TOTAL

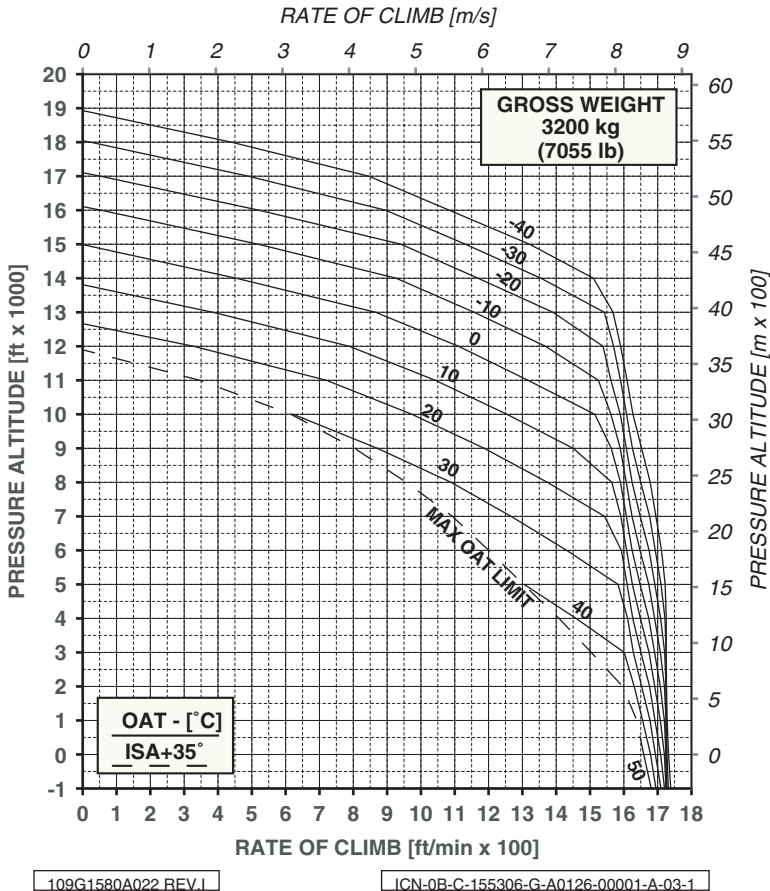


**Figure 4-15 Rate of Climb at Take-Off Power - Heater / ECS OFF
- Gross Weight 3200 kg.**

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

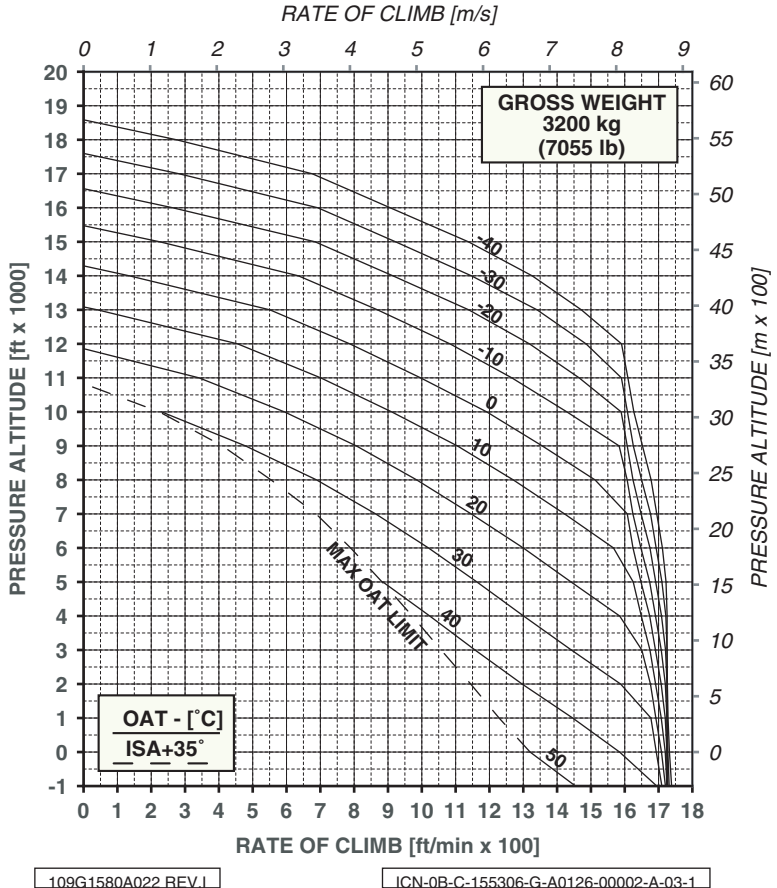


**Figure 4-16 Rate of Climb at Take-Off Power - Heater / ECS ON
- Gross Weight 3200 kg**

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: 100% EAPS: OFF
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down ELECTRICAL LOAD: 200 A TOTAL

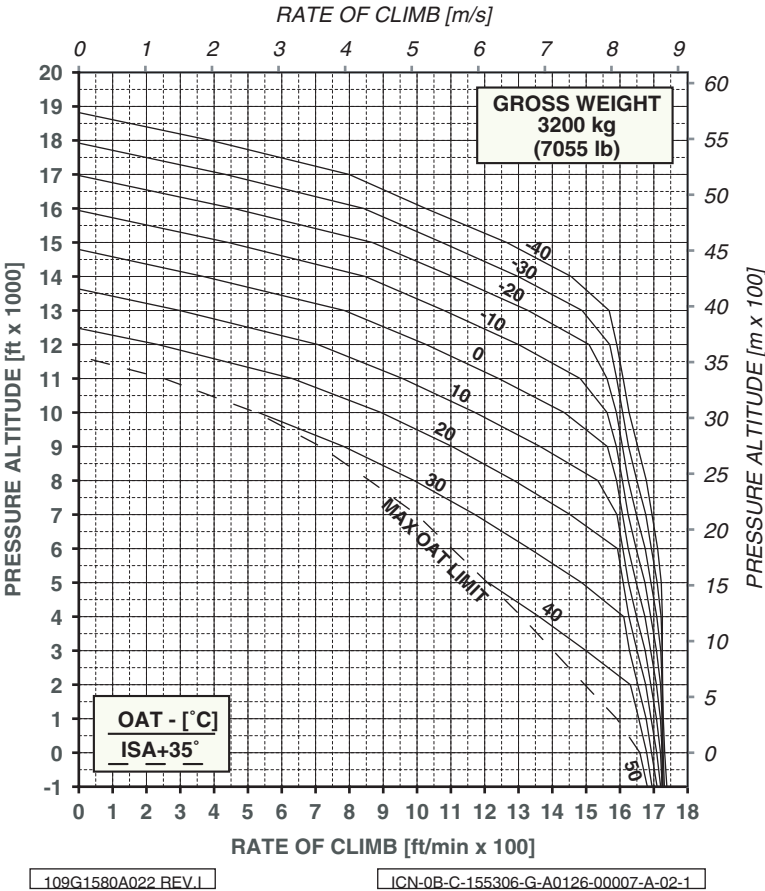


Figure 4-17 Rate of Climb at Take-Off Power - EAPS OFF
- Gross Weight 3200 kg

**RATE OF CLIMB
TAKE OFF POWER AEO**

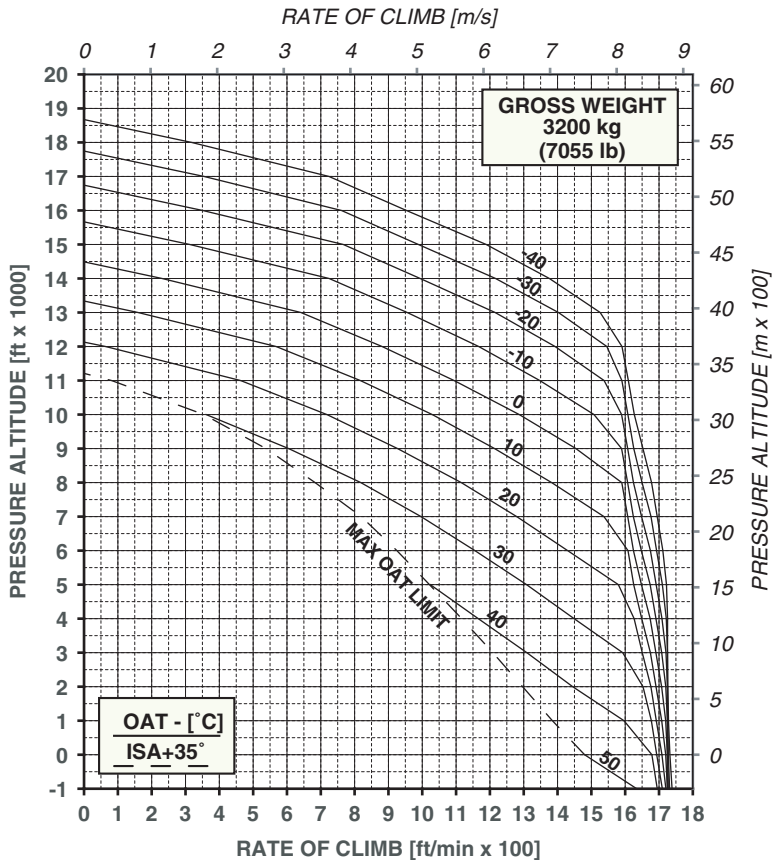
ROTOR SPEED: 100%

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-18 Rate of Climb at Take-Off Power - EAPS ON
- Gross Weight 3200 kg**

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down

EAPS: OFF
ECS/HEATER: ON
ELECTRICAL LOAD: 200 A TOTAL

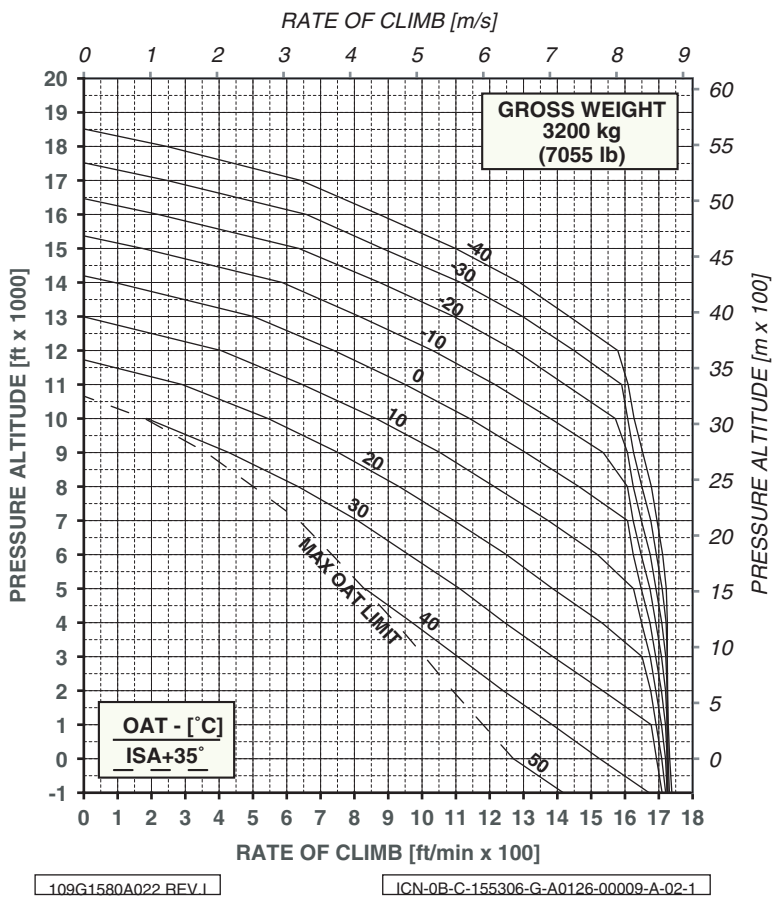


**Figure 4-19 Rate of Climb at Take-Off Power - EAPS OFF -
Heater / ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
TAKE OFF POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

EAPS: ON

ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

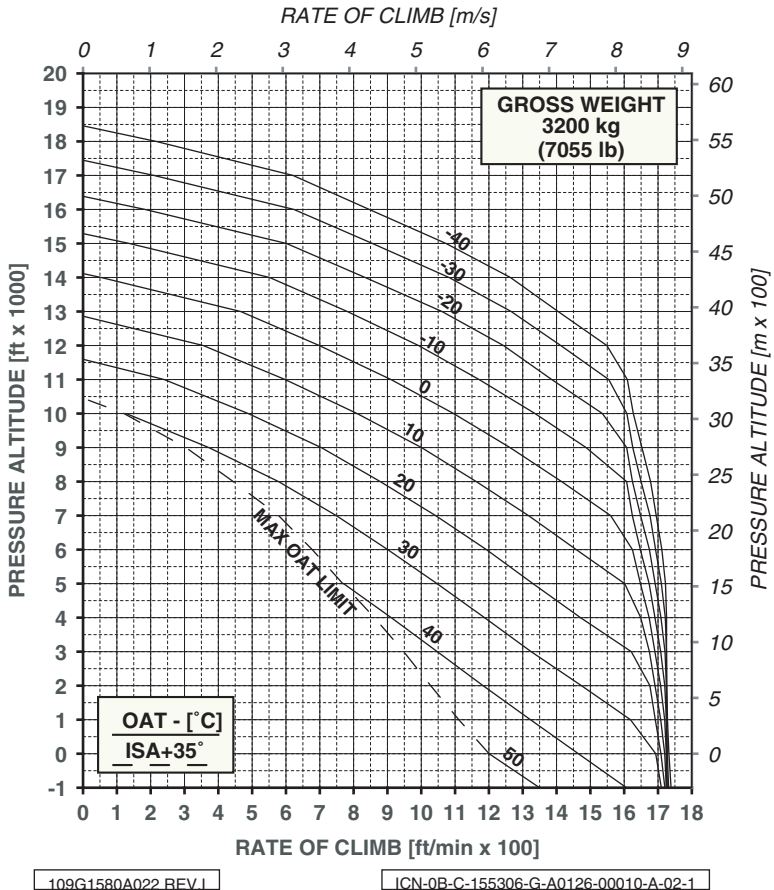


**Figure 4-20 Rate of Climb at Take-Off Power - EAPS ON -
Heater / ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down
ELECTRICAL LOAD: 200 A TOTAL

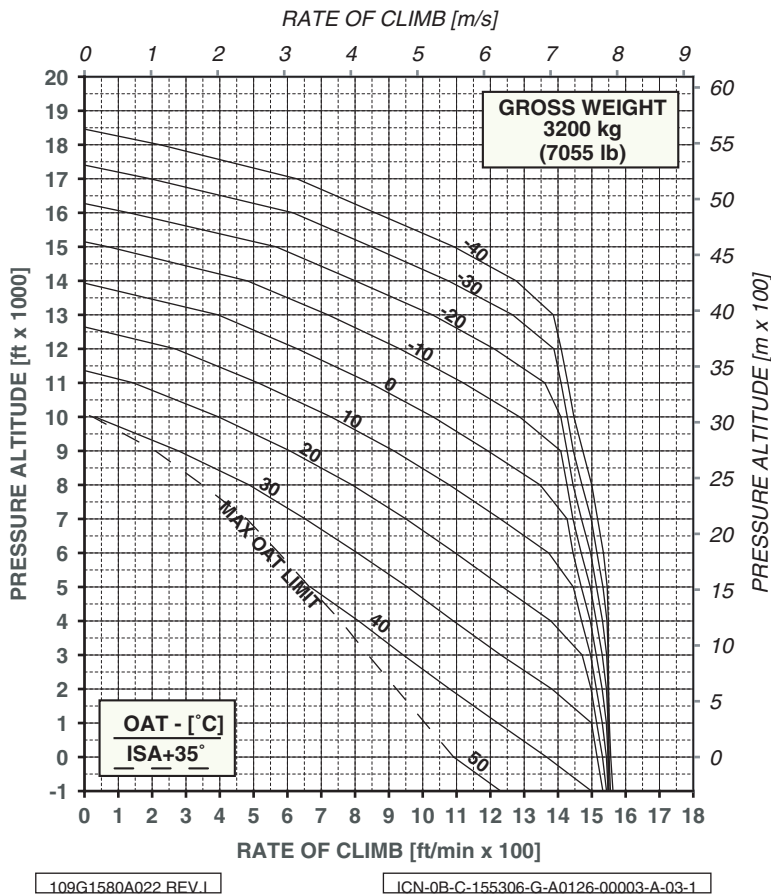


**Figure 4-21 Rate of Climb at Maximum Continuous Power -
Heater / ECS OFF - Gross Weight 3200 kg.**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO**

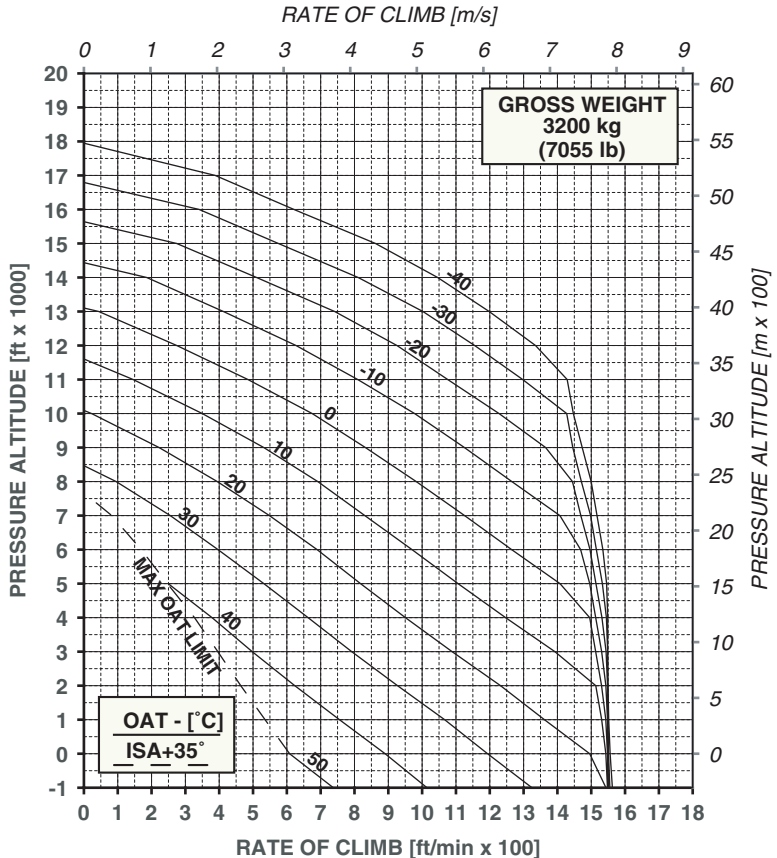
ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-22 Rate of Climb at Maximum Continuous Power -
Heater / ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
MINIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A TOTAL

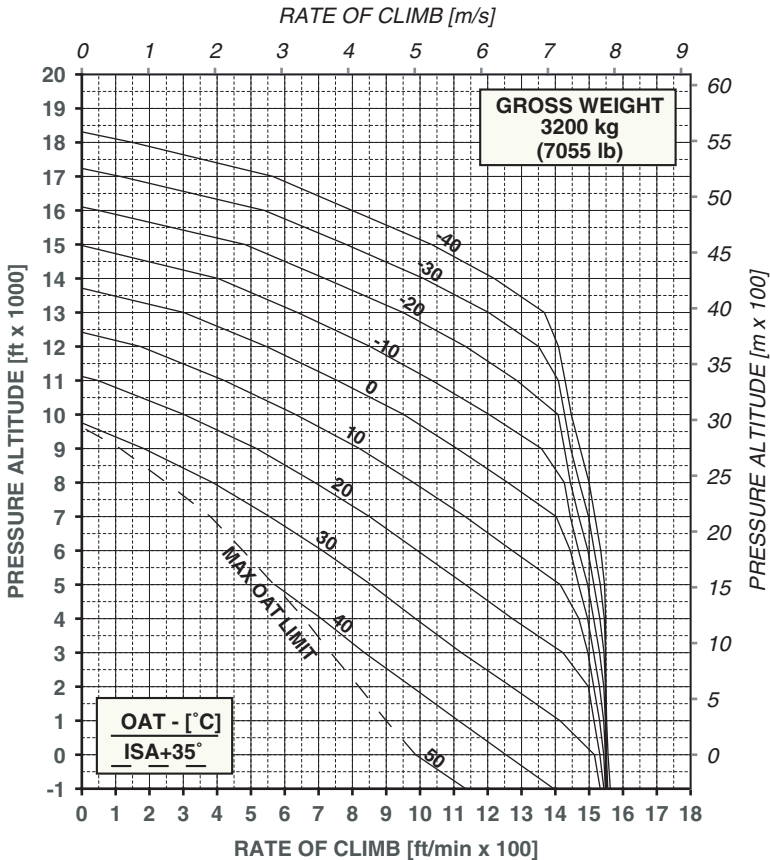


**Figure 4-23 Rate of Climb at Maximum Continuous Power -
EAPS OFF - Gross Weight 3200 kg**

**RATE OF CLIMB
MINIMUM CONTINUOUS POWER AEO**

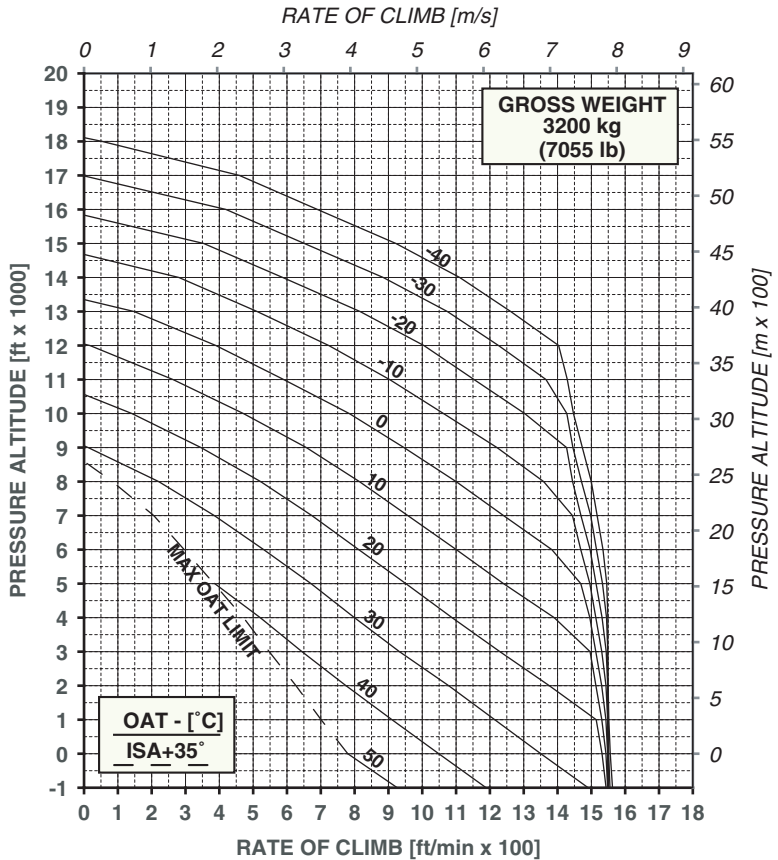
ROTOR SPEED: 100%

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A TOTAL



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**Figure 4-24 Rate of Climb at Maximum Continuous Power -
EAPS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
MINIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

EAPS: OFF

ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

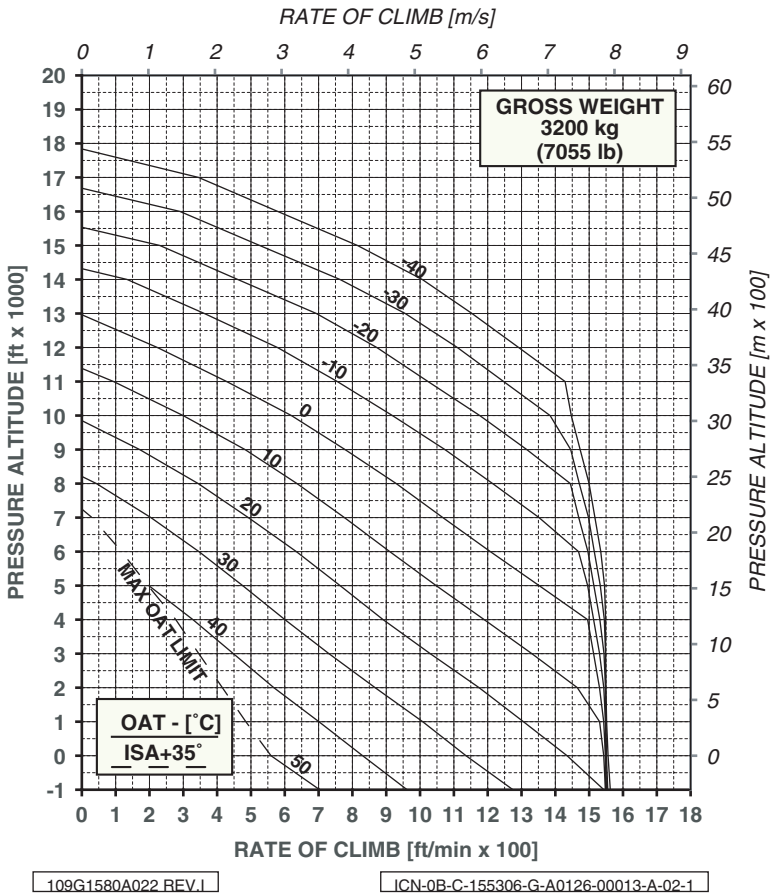


**Figure 4-25 Rate of Climb at Maximum Continuous Power -
EAPS OFF - Heater / ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
MINIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: 100%

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

EAPS: ON

ECS/HEATER: ON

ELECTRICAL LOAD: 200 A TOTAL

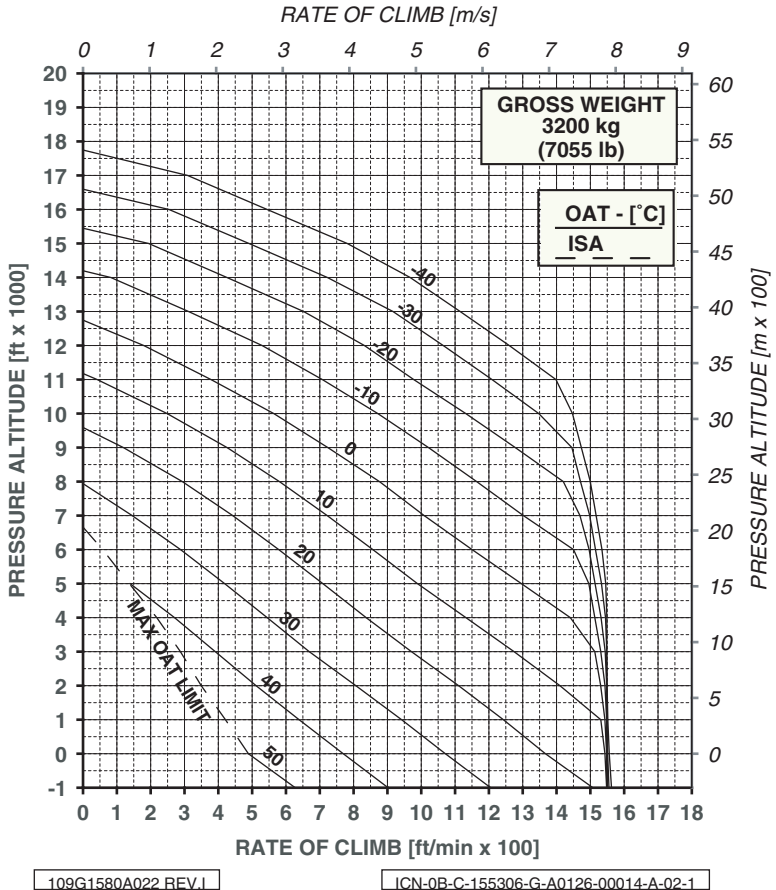


**Figure 4-26 Rate of Climb at Maximum Continuous Power -
EAPS ON - Heater / ECS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down
ELECTRICAL LOAD: 200 A

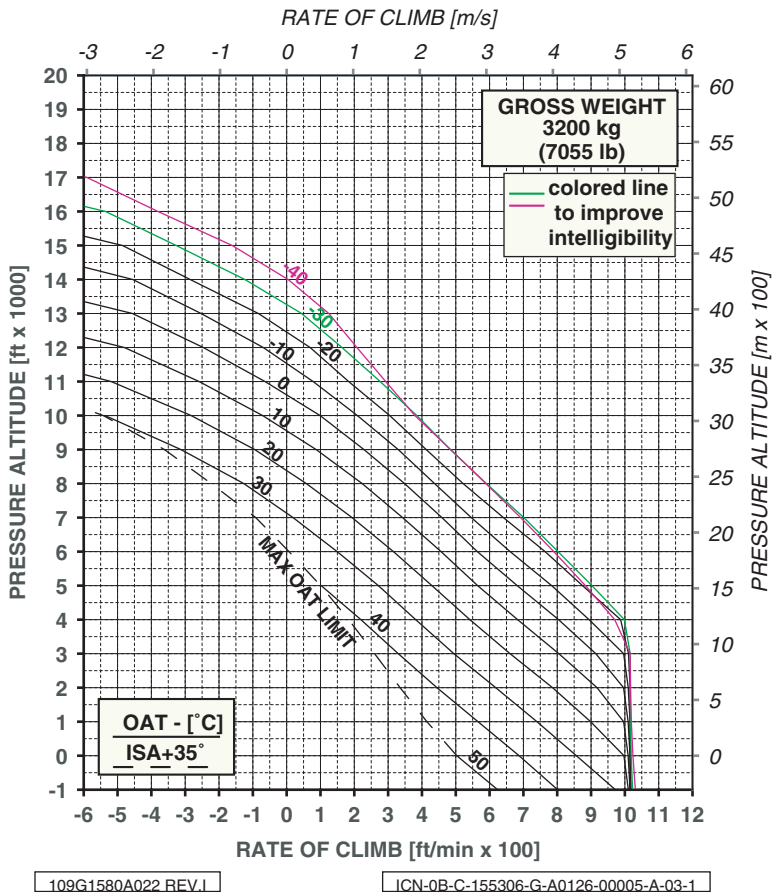


**Figure 4-27 Rate of Climb at 2.5 min Power - OEI
- Gross Weight 3200 kg**

**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %

EAPS: OFF

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A

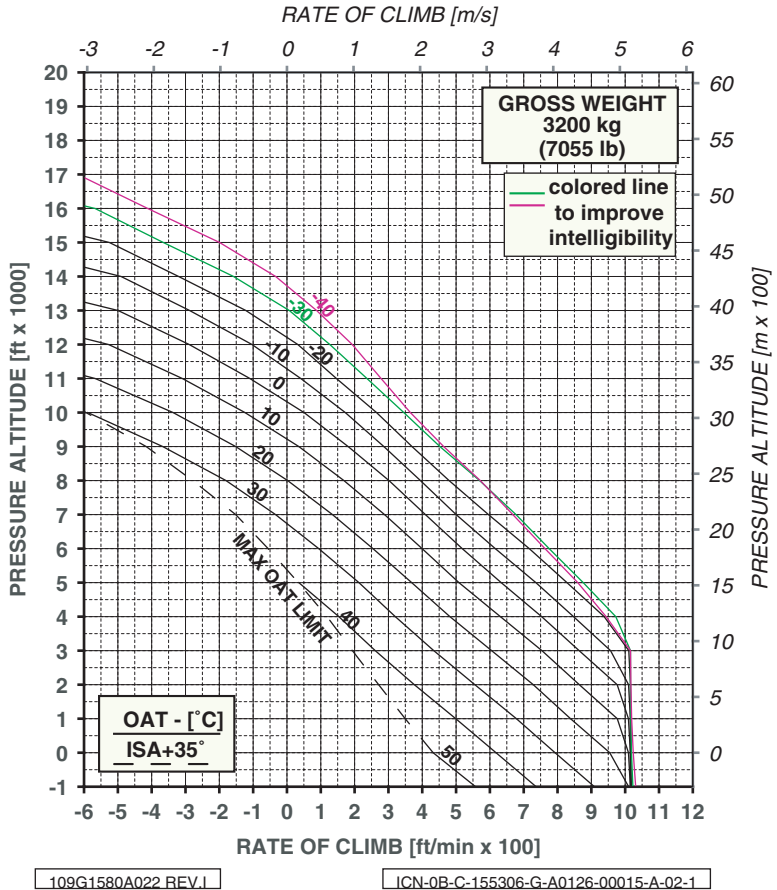


**Figure 4-28 Rate of Climb at 2.5 min Power - OEI -
EAPS OFF - Gross Weight 3200 kg**

**RATE OF CLIMB
2.5 MINUTE POWER OEI**

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down

EAPS: ON
ELECTRICAL LOAD: 200 A

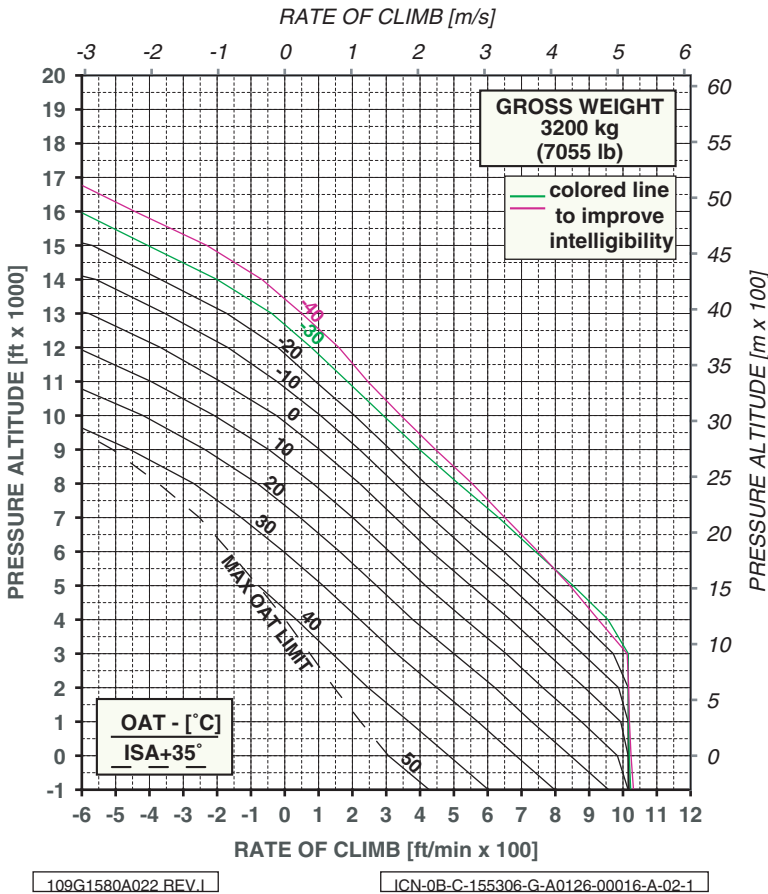


**Figure 4-29 Rate of Climb at 2.5 min Power - OEI -
EAPS ON - Gross Weight 3200 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A

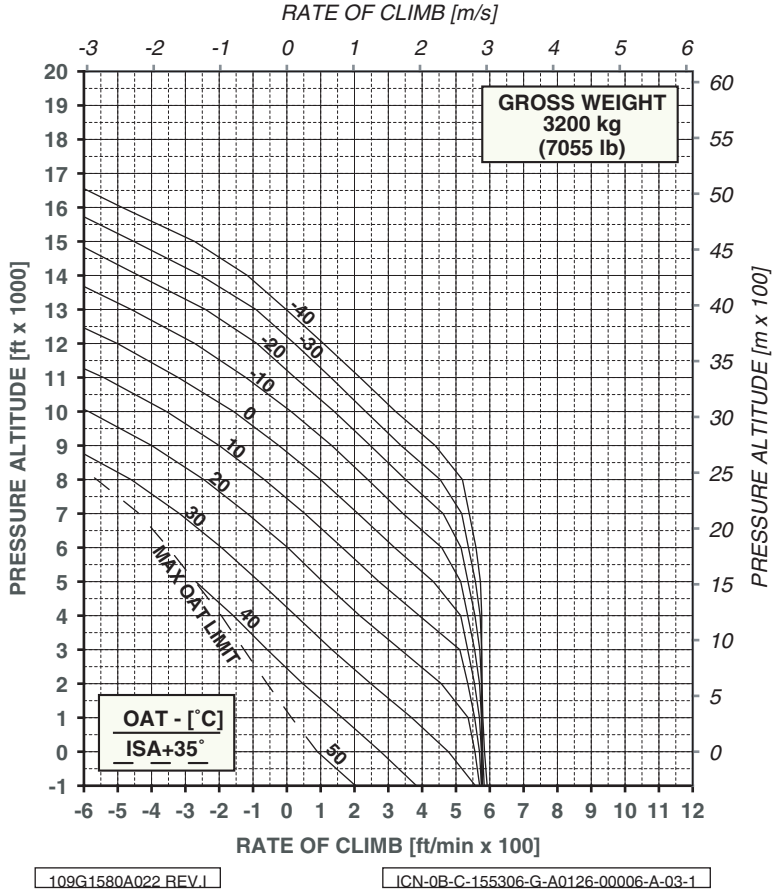


**Figure 4-30 Rate of Climb at Maximum Continuous Power - OEI
- Gross Weight 3200 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

ROTOR SPEED: 100 %
80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft
L/G: Down

EAPS: OFF
ELECTRICAL LOAD: 200 A

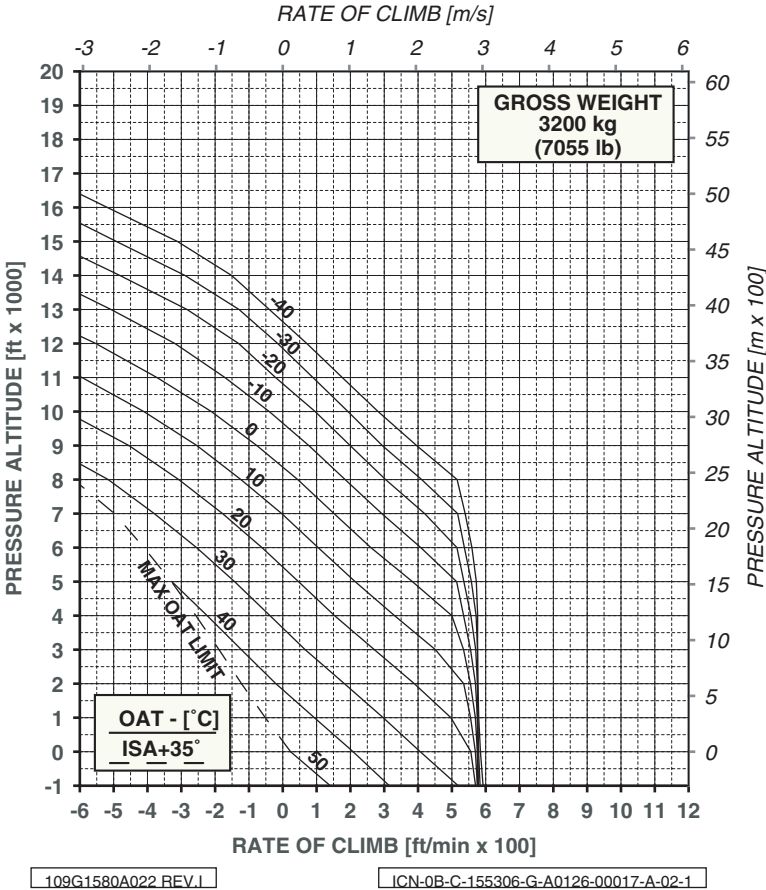


**Figure 4-31 Rate of Climb at Maximum Continuous Power - OEI
- EAPS OFF - Gross Weight 3200 kg**

**RATE OF CLIMB
MAXIMUM CONTINUOUS POWER OEI**

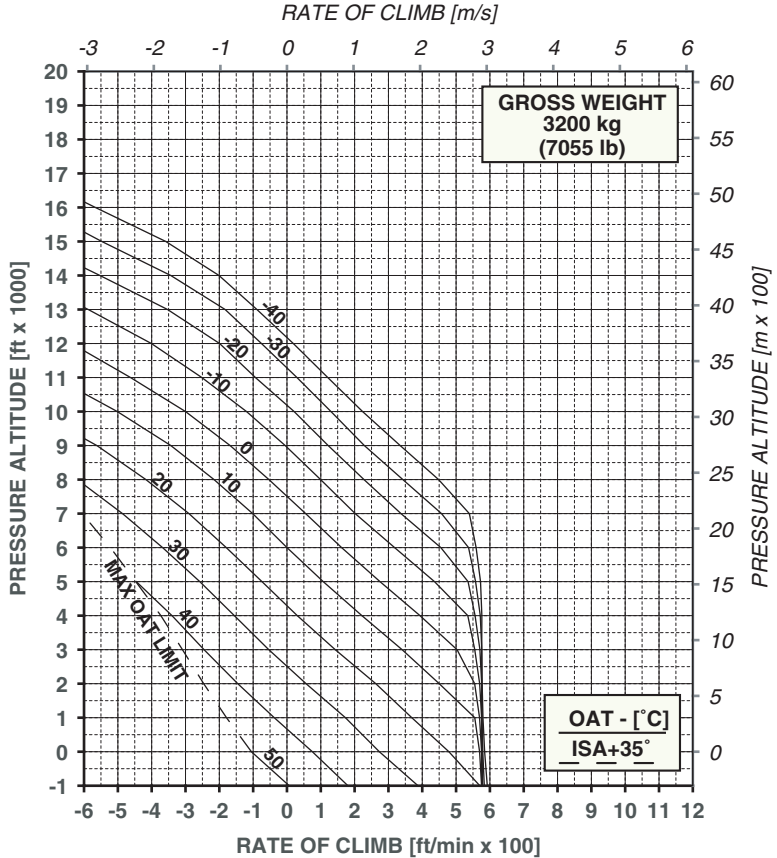
ROTOR SPEED: 100 %

EAPS: ON

80 KIAS DECREASE 2 kt EACH 1000 ft ABOVE Hp 10000 ft

L/G: Down

ELECTRICAL LOAD: 200 A



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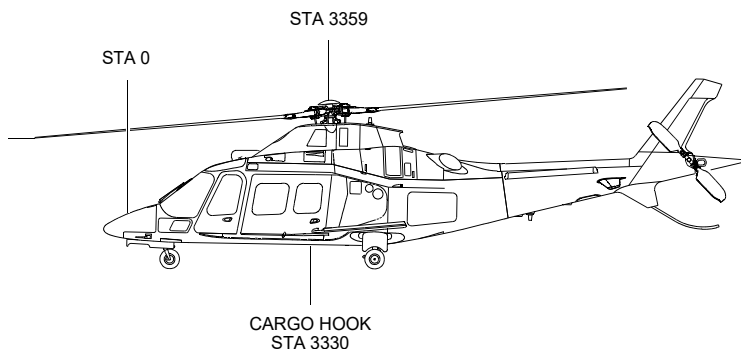
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**Figure 4-32 Rate of Climb at Maximum Continuous Power - OEI
- EAPS ON - Gross Weight 3200 kg**

SECTION 6 - WEIGHT AND BALANCE

DATUM LINE LOCATIONS

Figure 6-1 presents the cargo hook station data to aid in weight and balance computation.



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Figure 6-1 Cargo Hook Station Diagram

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

GREEN AIRCRAFT CONFIGURATION P/N 109-B811-18

This Supplement shall be attached to the AW109SP RFM (Section 5) when the helicopter is in Green Aircraft configuration.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 27 SEPTEMBER 2010

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue B	EASA Approval N° 10031962 dated 27 September 2010

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LIST OF EFFECTIVE PAGES

NOTE: Revised text is indicated by a black vertical line in the outer margin of the page and the approval revision number is printed in the lower margin

Page	Revision N°
Title page	0
A-1 and A-2	0
B-1 and B-2	0
i and ii	0
PART I - EASA APPROVED	
1 thru 3 of 4	0
PART II - MANUFACTURER'S DATA	
4 of 4	0

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GENERAL

The Green Aircraft configuration, P/N 109-B811-18, consists of an helicopter without the interior arrangement (seats, soundproofing, upholster and baggage compartment covers).

The only seat installed, with its relative safety belts, is the right pilot seat to allow for helicopter delivery.

The helicopter may not be painted.

SECTION 1 - LIMITATIONS

NUMBER OF SEATS

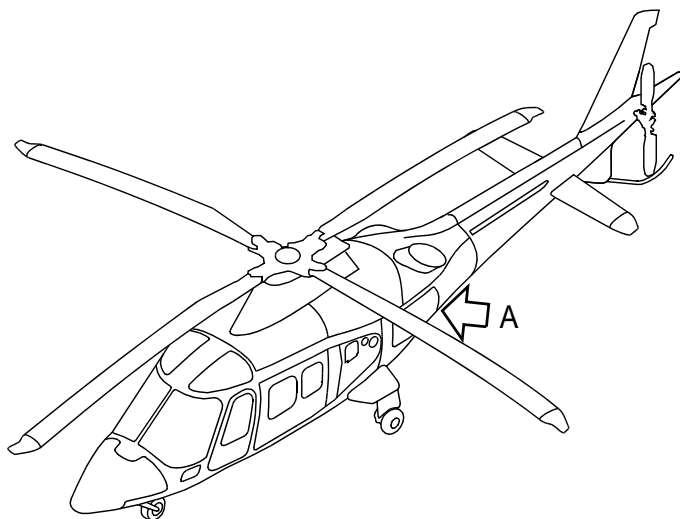
One, (pilot).

MISCELLANEOUS LIMITATIONS

BAGGAGE COMPARTMENT LIMITATIONS

No baggage is permitted.

PLACARD



BAGGAGE COMPARTMENT

NO LOAD IS ALLOWED IN THE BAGGAGE COMPARTMENT

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Figure 1-1 Placards in Baggage Compartment

SECTION 2 - NORMAL PROCEDURES

No change.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

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INTERNAL ARRANGEMENT

P/N 109-B811-20

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Internal Arrangement is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE D: 11 OCTOBER 2012

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue B	EASA Approvals N° 10030997, 10030998 dated 21 July 2010
1	Revised pages Title page, A-1, B-1, i, 1 and 4 of 6.	EASA Approval N° 10036512 dated 16 September 2011
–	Issue C	EASA Approvals N° 10038958, 10038959 dated 27 March 2012
1	Revised pages Title page, A-1, B-1, ii, 1, 3, 6 and 7 of 8.	EASA Approval N° 10039872 dated 30 May 2012
2	Revised pages Title page, A-1, B-1, ii, 1 and 3 of 8.	EASA Approval N° 10040823 dated 27 July 2012
3	Revised pages Title page, A-1, B-1, i, ii, 1, 3, 5 and 7 of 8.	EASA Approval N° 10041181 dated 28 August 2012
–	Issue D	EASA Approval N° 10041709, REV. 1 dated 11 October 2012

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LIST OF EFFECTIVE PAGES

NOTE: Revised text is indicated by a black vertical line in the outer margin of the page and the approval revision number is printed in the lower margin

Page	Revision N°
Title page	0
A-1 and A-2	0
B-1 and B-2	0
i and ii	0
PART I - EASA APPROVED	
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Figure 6-3 Helicopter Station Diagram - Four Passengers Configuration (P/N 109-B811-20-107/-109/-111/-113)	5 of 10
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Figure 6-5 Helicopter Station Diagram - Three Passengers Configuration (P/N 109-B811-20-133).....	7 of 10

GENERAL

The Internal Arrangement, P/N 109-B811-20-101 and subs, provides to passengers the possibility to be seated in the passenger cabin.

Different internal configurations can be realized, for this reason the number of passengers in the cabin changes in accordance with the related internal configuration, as detailed in Section 1, Limitations of this Supplement.

SECTION 1 - LIMITATIONS

NUMBER OF SEATS

The maximum number of seats, including the pilot and copilot seats are:

- Eight (P/N 109-B811-20-101/-115, see [Figure 6-1](#));
- Seven (P/N 109-B811-20-103/-105, see [Figure 6-2](#));
- Six (P/N 109-B811-20-107/-109/-111/-113, see [Figure 6-3](#));
- Seven (P/N 109-B811-20-117/-119/-121/-123/-125/-127/-129/-131, see [Figure 6-4](#));
- Five (P/N 109-B811-20-133, see [Figure 6-5](#)).

HOIST OPERATIONS

Hoist operations are prohibited when the first row right seat is in forward facing position.

SECTION 2 - NORMAL PROCEDURES

No change.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

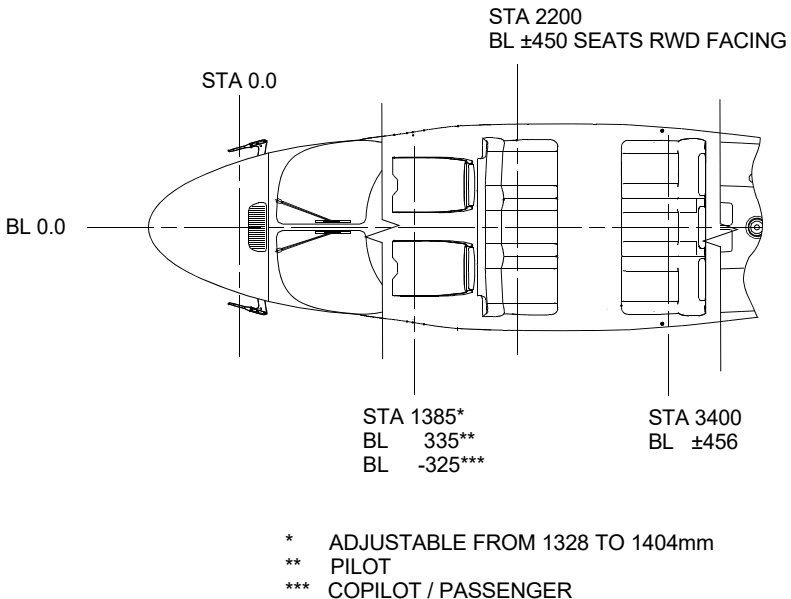
SECTION 6 - WEIGHT AND BALANCE

DATUM LINE LOCATIONS

Figures 6-1, 6-2, 6-3, 6-4 and 6-5 presents fuselage station (STA) and Butt Line (BL) data to aid in weight and balance computations.

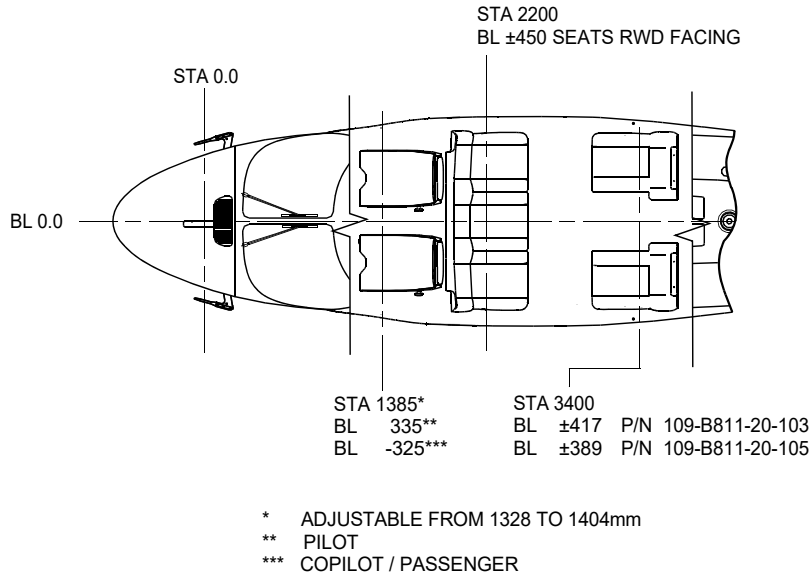
For moment calculation of the Passengers Configurations P/N 109-B811-20-101/-103/-105/-115/-133 refer to Section 6 of the basic RFM, "LONGITUDINAL MOMENTS" paragraph.

For moment calculation of the Passengers Configurations P/N 109-B811-20-107/-109/-111/-113/-117/-119/-121/-123/-125/-127/-129/-131 refer to "LONGITUDINAL MOMENTS" paragraph of this supplement.



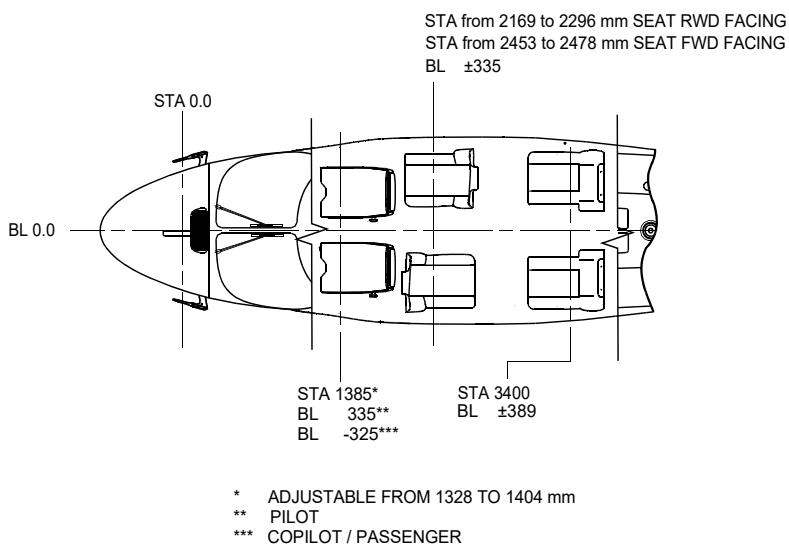
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Figure 6-1 Helicopter Station Diagram - Six Passengers Configuration (P/N 109-B811-20-101/-115)



ICN-0B-C-155032-G-A0126-00003-A-01-1

Figure 6-2 Helicopter Station Diagram - Five Passengers
Configuration (P/N 109-B811-20-103/-105)



ICN-0B-C-155032-G-A0126-00004-A-03-1

Four Passengers with central seats arranged:

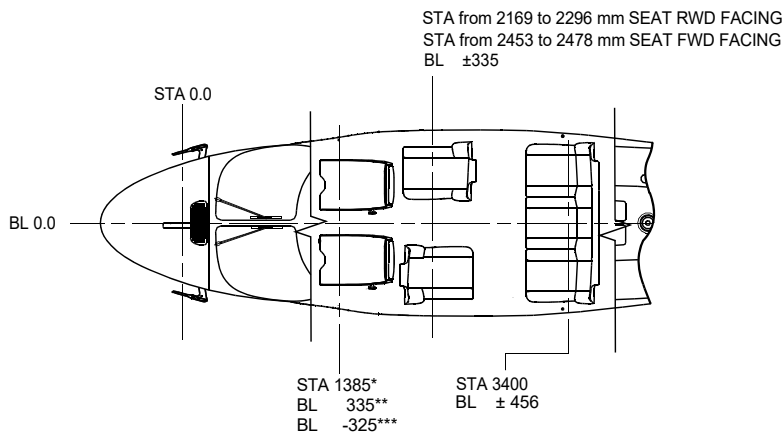
P/N 109-B811-20-107 2 SEATS RWD FACING

-109 2 SEATS FWD FACING

-111 LH SEAT RWD FACING and RH SEAT FWD FACING

-113 RH SEAT RWD FACING and LH SEAT FWD FACING

**Figure 6-3 Helicopter Station Diagram - Four Passengers
Configuration (P/N 109-B811-20-107/-109/-111/-113)**



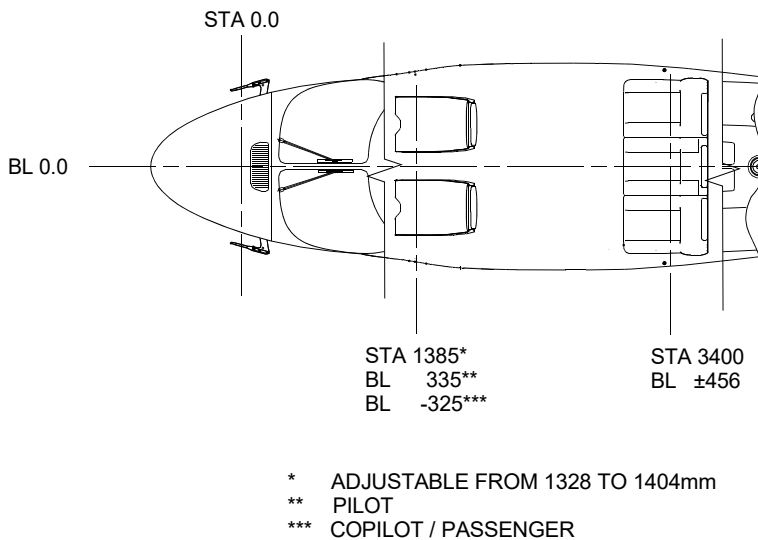
- * ADJUSTABLE FROM 1328 TO 1404 mm
- ** PILOT
- *** COPILOT / PASSENGER

ICN-0B-C-155032-G-A0126-00005-A-03-1

Five Passengers with central seats arranged:

- P/N 109-B811-20-117/-125 2 SEATS RWD FACING
- 119/-127 2 SEATS FWD FACING
- 121/-129 LH SEAT RWD FACING and RH SEAT FWD FACING
- 123/-131 RH SEAT RWD FACING and LH SEAT FWD FACING

**Figure 6-4 Helicopter Station Diagram - Five Passengers
Configuration (P/N 109-B811-20-117/-119/-121/-123/-125/-127/-129/-131)**



ICN-0B-C-155032-G-A0126-00006-A-01-1

**Figure 6-5 Helicopter Station Diagram - Three Passengers
Configuration (P/N 109-B811-20-133)**

WEIGHTS, ARMS AND MOMENTS

LONGITUDINAL MOMENTS

(P/N 109-B811-20-107/-109/-111/-113/-117/-119/-121/-123/-125/-127/-129/-131)

PASSENGERS			
Weight (kg)	Passengers central seats		Passengers 2 or 3 aft seats
	RWD facing (STA 2169 mm)(*) Moment (kg mm)	FWD facing (STA 2478 mm) (**) Moment (kg mm)	(STA 3400 mm) Moment (kg mm)
60	130140	148680	204000
65	140985	161070	221000
70	151830	173460	238000
75	162675	185850	255000
80	173520	198240	272000
85	184365	210630	289000
90	195210	223020	306000
95	206055	235410	323000
100	216900	247800	340000
110	238590	272580	374000
120	260280	297360	408000
130	281970	322140	442000
140	303660	346920	476000
150	325350	371700	510000
160	347040	396480	544000
170	368730	421260	578000
180	390420	446040	612000
190	412110	470820	646000
200	433800	495600	680000
220			748000
240			816000
260			884000
280			952000
300			1020000
320			1088000
(*) Adjustable from 2169 to 2296 mm			
(**) Adjustable from 2453 to 2478 mm			

SECTION 7 - SYSTEM DESCRIPTION

No change.

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INTERNAL ARRANGEMENT FORWARD FACING CENTRAL SEAT P/N 109-B811-27

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Internal Arrangement, Forward Facing Central Seat is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE B: 11 DECEMBER 2009
REVISION 1: 26 JULY 2010**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval with Type Certificate Data Sheet (TDCS) R.005 dated 25 May 2009
–	Issue B	EASA Approvals N° 10028242, 10028244, 10028246, 10028248 dated 11 December 2009
1	Revised pages Title page, A-1, B-1, i, ii, 1 and 2 of 6.	Approved under the Authority of DOA N° EASA 21J.005
	Revised pages 3 and 4 of 6. Added pages 5 and 6 of 6.	Manufacturer's Data

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LIST OF EFFECTIVE PAGES

NOTE: Revised text is indicated by a black vertical line in the outer margin of the page and the approval revision number is printed in the lower margin

Page	Revision N°
Title page	1
A-1	1
A-2	0
B-1	1
B-2	0
i and ii	1

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GENERAL

The Internal Arrangement, Forward Facing Central Seat, P/N 109-0811-27, provides to all passengers the possibility to be seated looking forward, in the same direction of forward flight.

The configuration is realized by the introduction of a row of central seats which replace the standard seats arrangement which normally look afterward, in the direction opposite to forward flight.

The passengers cabin is composed by one forward facing central seat (three places) and one forward facing rear seat (three places). To allow passengers occupying either central or rear seats open the cabin door, passengers doors are fitted with two handles.

SECTION 1 - LIMITATIONS

HOIST OPERATION

Hoist operations with the forward facing central seat installed are prohibited.

SECTION 2 - NORMAL PROCEDURES

No change.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

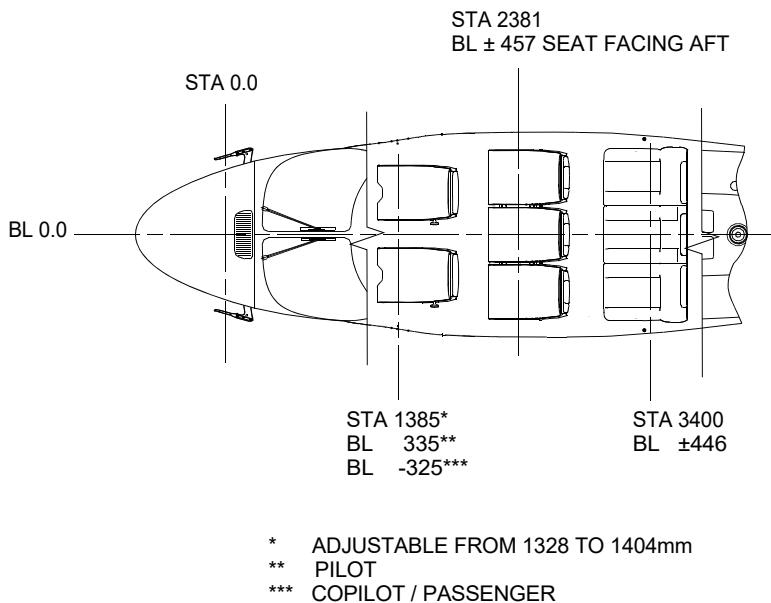
SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

DATUM LINE LOCATIONS

Figure 6-1 presents fuselage station (STA) and buttock line (BL) data to aid in weight and balance computations.



ICN-0B-C-155033-G-A126-00001-A-02-1

Figure 6-1 Helicopter Station Diagram

WEIGHTS, ARMS AND MOMENTS

LONGITUDINAL MOMENTS

PASSENGERS		
Weight (kg)	Passengers 3 places central seat FWD facing	Passengers 3 places aft seat
	(STA 2381 mm) Moment (kg mm)	(STA 3400 mm) Moment (kg mm)
60	142860	204000
65	154765	221000
70	166670	238000
75	178575	255000
80	190480	272000
85	202385	289000
90	214290	306000
95	226195	323000
100	238100	340000
120	285720	408000
140	333340	476000
160	380960	544000
180	428580	612000
200	476200	680000
220	523820	748000
240	571440	816000
260	619060	884000
280	666680	952000
300	714300	1020000
320	761920	1088000

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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FMS APPROACH OPERATIONS

This Supplement shall be attached to the AW109SP RFM (Section 5) for FMS approaches operations.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE C: 19 SEPTEMBER 2019

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10038391 dated 13 February 2012
1	Revised pages Title page, A-1, B-1 and 1 thru 3 of 16.	EASA Approval N° 10043469 dated 31 January 2013
–	Issue B	EASA Approval N° 10049181 dated 19 May 2014
1	Revised pages Title page, A-1, B-1 and 4 of 16.	EASA Approval N° 10049478, REV. 1 dated 17 June 2014
–	Issue C	EASA Approval N° 10071011 dated 19 September 2019

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LIST OF EFFECTIVE PAGES

NOTE: Revised text is indicated by a black vertical line in the outer margin of the page and the approval revision number is printed in the lower margin.

Page	Revision N°
Title page	0
A-1 and A-2	0
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GENERAL

This Supplement deals with the use of FMS to perform approach operations with vertical guidance using the FMS Navigation Data Base.

The FMS and PinS Approach lines of minima include LNAV, LNAV/VNAV, LP, LPV, RNP AR 0.3 minima / Missed Approach 1.0. and NPA. FMS approach with vertical guidance down to LNAV/VNAV minima is hereafter called LNAV/VNAV approach.

About the Vertical navigation in approach, the EFIS 8.0H provides a default VNAV guidance classified as Advisory Vertical guidance. If the current GPS vertical solution or GPS/SBAS vertical solution is below the approach's required Alert Limit for the final part of approach the VNAV guidance based on GPS Altitude guidance is used (the "VNVx-G" annunciation is displayed aside of Vertical Deviation scale at PFD) otherwise the Baro-VNAV (the "VNVx-B" annunciation is displayed aside of Vertical Deviation scale at PFD) in approach, as used in Initial/Intermediate segments of approach.

During FMS approaches using LNAV minima (NPA (VOR, VOR/DME, NDB), Circling and RNP APCH with LNAV minima) and LP minima the VNVx-G Advisory Vertical guidance is only an aid to help pilots for final descent to comply with altitude restrictions, therefore the flight crew should use the primary barometric altimeter as the primary reference to ensure compliance with all altitude restrictions associated with the flying IAP during the final part of descent. Only VNVx-G vertical guidance for RNP APCH approach with LNAV/VNAV or LPV minima are approved for operational credit. The vertical path is contained in the specification of the instrument procedure within the navigation database.

FMS approaches conducted down to LP, LPV, make use of SBAS. They are approaches with geometrically based vertical guidance characterized by a Final Approach Segment (FAS) geometrically specified by a Final Approach Segment Data Block (FAS DB) stored in the on-board navigation database.

At the Final Approach Fix (FAF), the final approach segment is flown using the FAS DB and the SBAS based lateral and vertical guidance down to the Decision Altitude (DA).

The EFIS/FMS installation complies with RTCA DO-229D for navigation using GPS and GPS/SBAS (within the coverage of a satellite-based augmentation system complying with ICAO Annex 10) for enroute, terminal area, non-precision approach, and approach procedures with vertical guidance operations.

It is assumed that FMS approach procedures are designed according to international standards (e.g., PANS-OPS).

However, the AW109SP has been demonstrated to be capable of performing any FMS approach procedure that meets the following design criteria when flying with AFCS coupled:

- Minimum RF turn radius: 0.2 Nm
- Maximum intercept angle for the turn to final: 60 deg
- Minimum radius for missed approach: 0.2 Nm

Navigation information is referenced to the WGS 84 reference system and should only be used where the Aeronautical Information Publication (including electronic data and aeronautical charts) conform to WGS 84 or equivalent.

ABBREVIATIONS

— AR	: Authorization Required
— A-RNP	: Advanced - Required Navigation Performance
— DA(H)	: Decision Altitude (Height)
— FAF	: Final Approach Fix
— FAS	: Final Approach Segment
— FPAP	: Flight Path Alignment Point
— FTP	: Fictitious Threshold Point
— GNSS	: Global Navigation Satellite System
— GPA	: Glide Path Angle
— GPS	: Global Positioning System
— IAP	: Instrument Approach Procedure
— IF	: Intermediate Fix
— LNAV	: Lateral NAVigation
— LPV	: Localizer Performance with Vertical guidance
— MAP	: Missed Approach Point
— MDA	: Minimum Descent Altitude
— MSA	: Minimum Sector Altitude
— RF	: Radius to Fix
— RNAV	: aRea NAVigation
— RNP	: Required Navigation Performance
— RNP AR	: Required Navigation Performance Authorization Required
— ROD	: Rate Of Descent
— SBAS	: Satellite-Based Augmentation System
— VNAV	: Vertical Navigation

DEFINITIONS

1. GO AROUND — It is the automatic procedure following the activation of GA pushbutton (see Normal Procedures Section in this Supplement).
2. PUBLISHED MISSED APPROACH PROCEDURE — It is the missed approach procedure depicted in the approach plate chart and loaded in the FMS navigation database.

SECTION 1 - LIMITATIONS

AIRCRAFT CONFIGURATION

For aircraft minimum configuration requirements refer to basic helicopter RFM, Section 1, Flight Management System Limitation.

TYPE OF OPERATIONS

FMS approach operations are approved under Day/Night single pilot IFR.

SPEED AND GLIDE PATH ANGLE LIMITATIONS

Maximum airspeed for RNP AR APCH 0.3

minima/MA 1.0 115 KIAS

Minimum selectable airspeed for

FMS approach procedures 45 KIAS

Steepest FMS glide path angle 9 deg.

Maximum Ground Speed according to the following table:

Table 1-1 Maximum Ground Speed vs Glide Path Angle

GLIDE PATH ANGLE (deg)	MAX GROUND SPEED (kts)
3	140
4	130
5	110
6	100
7,5	80
9	65

DA(H) LIMITATIONS

LPV minima not less than 200 ft AGL
FMS minima (LPV excluded) not less than 250 ft AGL

BARO VNAV LIMITATIONS

Baro VNAV operations must follow the temperature limitations published for each approach procedure.

FLIGHT MANAGEMENT SYSTEM LIMITATIONS

FMS approaches are prohibited unless the FMS database is verified by the pilot or crew to be current.

During RNP/RNAV(GNSS) approaches (prior to FAF) the pilot must verify in the lower left corner of the PFD display which approach mode (LNAV, LNAV/VNAV, LP, LPV, RNP X.X) is active. This to properly select the applicable minima.

AUTOMATIC FLIGHT CONTROL SYSTEM LIMITATIONS

Minimum AFCS configuration for
FMS approaches 2 AP in ATT mode

Flying FMS approaches with AFCS approach modes un-coupled is prohibited.

The final approach segment (from FAF to MAP) must be flown with approach modes (NLOC & NGS) engaged.

For airspeed below 55 KIAS the AFCS IAS mode must be coupled.

SECTION 2 - NORMAL PROCEDURES

FMS APPROACHES

There are five types of RNP/RNAV(GNSS) approaches with approved or advisory vertical guidance provided by the FMS of the AW109SP.

LNAV/VNAV approach: LNAV/VNAV is annunciated as the flight mode "LNV/VNV APPR" in the lower left corner of the PFD. This approach includes both lateral and vertical guidance. Lateral guidance is provided by the GPS, vertical guidance can be either provided by GPS (visualizing VNV1(2)-G below the Vertical Deviation Indicator) or by Baro-Altimeter (visualizing VNV1(2)-B below the Vertical Deviation Indicator).

LNAV approach and other Non-Precision Approach (NPA): LNAV or NPA (VOR, VOR-DME and NDB) are annunciated as the flight mode "LNAV APPR" in the lower left corner of the PFD. This approach includes lateral guidance provided by the GPS.

Advisory vertical guidance is provided by the GPS (visualizing VNV1(2)-G below the Vertical Deviation Indicator). This is intended as an aid to the pilot in flying with a constant rate of descent to the MDA/MDH.

LPV approach: LPV (Localizer Performance with Vertical guidance) is annunciated as the flight mode "LPV APPR" in the lower left corner of the PFD. This approach includes both lateral and vertical guidance. Vertical guidance is provided by SBAS (visualizing LPV1(2) below the Vertical Deviation Indicator).

LP approach: LP (Localizer Performance) is annunciated as the flight mode "LP APPR" in the lower left corner of the PFD. This approach includes both lateral and advisory vertical guidance.

Vertical guidance is provided by GPS (visualizing VNV1(2)-G below the Vertical Deviation Indicator).

RNP AR approach: RNP AR (Required Navigation Performance Authorization Required) is annunciated as the flight mode RNP X.X in the lower left corner of the PFD. This approach includes both lateral and vertical guidance. Lateral guidance is provided by the GPS, vertical guidance can be either provided by GPS (visualizing VNV1(2)-G below the Vertical Deviation Indicator) or by Baro-Altimeter (visualizing VNV1(2)-B below the Vertical Deviation Indicator).

The FMS meets the requirements for approach operations with RF (Radius to Fix) leg.

Note

RNP AR APCH 0.3/MA 1.0 certification approval DOES NOT constitute operational approval.

Operational approval must be requested by aircraft operator (AO) and granted by the local competent authority.

For RNP AR APCH a Flight Operational Safety Assessment (FOSA) methodology is used.

The FOSA must account for the facts that a loss of the GNSS reception (in case of loss of GNSS satellites view or dual GNSS receiver failures) has for consequence a reversion to dead reckoning and subsequent loss of RNP capabilities. In case of loss of RNP capability during RNP AR operations, the flight crew MUST discontinue the approach, unless the pilot has the runway visual reference in sight.

In this case the relevant and specific contingency procedure (assessed in the FOSA) must be applied to terminate the RNP navigation and revert to conventional navigation or applied specific ATC instruction.

ENGINE PRE-START CHECK

ELECTRICAL POWER-UP

1. Pilot PFD and MFD displays : Confirm ON.
Verify system status page:
- LPV mode status ENABLED.

FMS APPROACH PROCEDURES

APPROACH PROCEDURE

Prior to reach the FAF (Final Approach Fix)

1. APMS panel : Press GS pushbutton to arm NLOC & NGS modes and IAS pushbutton to engage IAS mode.
2. EFIS PFD : Verify the advisory message LPV APPR or LNV/VNV APPR or LNAV APPR or LP APPR or RNP X.X and set DH accordingly.

Note

In case of GNSS/SBAS failure during a LPV approach, the FMS may automatically revert to a different than selected approach involving higher minima.

The advisory message indicating the new selected approach type will be displayed on the EFIS PFD (left bottom corner).

3. Altimeters : Verify QNH.
4. Landing path : Reduce airspeed to maintain the ground speed within the limits of Section 1, [Table 1-1](#).

Perform APPROACH AND LANDING PROCEDURE as per basic Rotorcraft Flight Manual.

Note

When performing an approach to an heliport maximum recommended ground speed before reaching the MAP is 70 kts.

At the FAF

1. EFIS PFD : Verify the annunciation "LPV1(2)" or "VNV1(2)-G" or "VNV1(2)-B" displayed below the VD indicator.

During FAS

1. Airspeed : Adjust to not exceed ROD of -1000 ft/min.
2. PFD : Press ARM.

Note

If ARM is not pressed, the FMS lateral guidance of the Missed Approach Procedure will not be available after passing the Missed Approach waypoint.

At the MDA(H) or DA(H)

5. Cyclic : Press ATT pushbutton to disengage AFCS upper modes and fly manually to landing point.

MISSED APPROACH PROCEDURE

6. Collective : Press GA pushbutton.

Note

The published Missed Approach Procedure will be automatically coupled to the AFCS (Lateral guidance only).

The Pilot must manage the altitude according to Missed Approach Procedure).

7. Landing gear lever : UP at positive Rate of Climb.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

FMS APPROACH MALFUNCTION PROCEDURES

The following malfunction procedures are intended to integrate those of the basic RFM.

The following malfunction procedures are to be used only during a FMS approach.

If FMS-GPS navigation information is not available or invalid, use the remaining operational navigation equipment as appropriate.

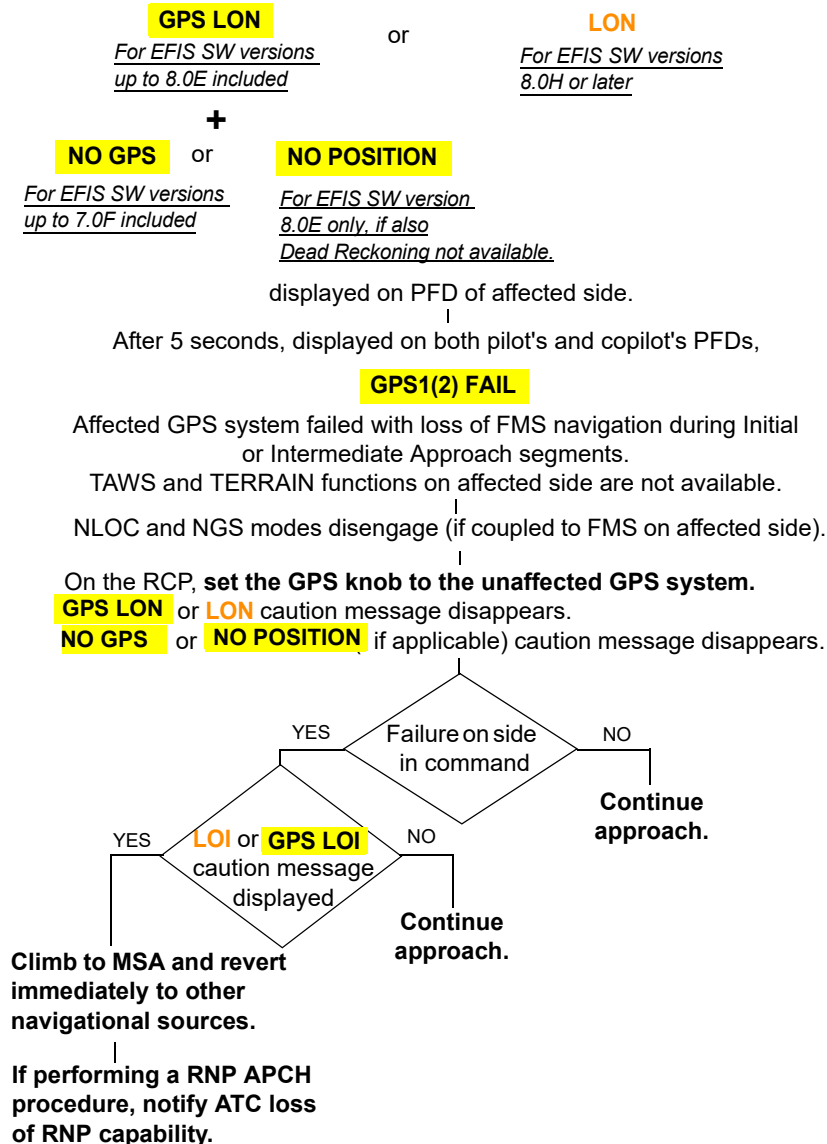
In the specific case of GPS Loss of Navigation the system reverts to dead reckoning.

In "dead reckoning" mode the EFIS continues to provide navigational position, groundspeed, and ground track information, based upon the last known wind, current air data, and heading. Terrain is removed immediately. The flight path marker is grayed out, and the highway in the sky is removed after one minute. Nevertheless the loaded approach procedure waypoints still remain displayed in the MFD. Revert immediately to other means of navigation and initiate a climb to MSA.

In the specific case of GPS Loss of Integrity the GPS data do not guarantee a correct position. GPS LOI (or FMS LOI for EFIS SW Version 8.0H or later) can only be displayed prior to FAF while after the FAF the message is replaced by GPS LON (or FMS LON for EFIS SW Version 8.0H or later). Revert immediately to other means of navigation and initiate a climb to MSA. The published Missed Approach procedure after the FAF should be performed following the approach plate.

In the specific case of GPS Miscompare extreme caution should be exercised by the pilot as misleading information remain displayed in the MFD. Revert immediately to other means of navigation and initiate a climb to MSA. The published Missed Approach Procedure after the FAF should be performed following the approach plate.

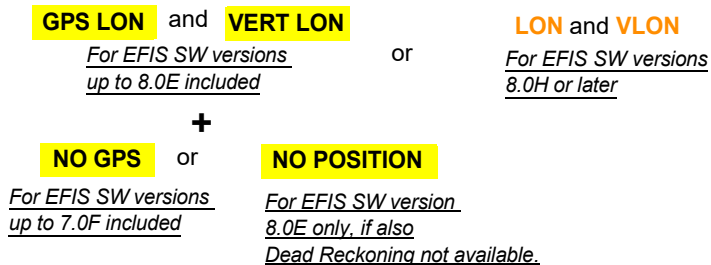
SINGLE GPS SYSTEM FAILURE (up to FAF)



Note

SAME NAV caution message displayed on both pilot's and copilot's PFDs.

SINGLE GPS SYSTEM FAILURE (after FAF)



displayed on PFD of affected side.

After 5 seconds, displayed on both pilot's and copilot's PFDs,

GPS1(2) FAIL

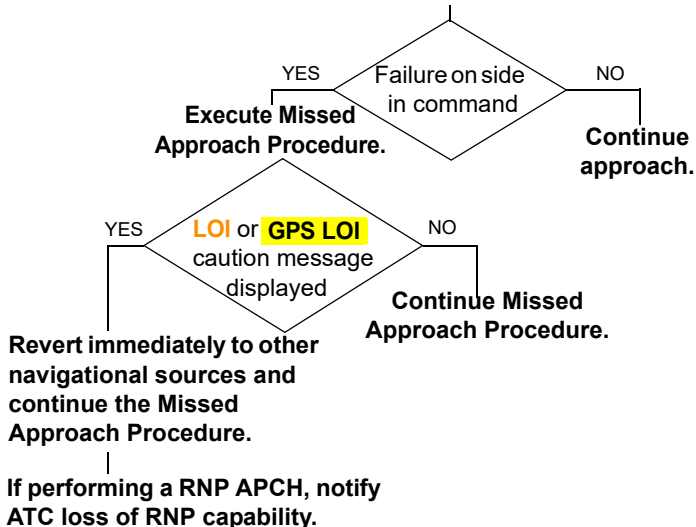
Affected GPS system failed with loss of FMS navigation in Final Approach segment.

TAWS and TERRAIN functions on affected side are not available.

NLOC and NGS modes disengage (if coupled to FMS on affected side).

On the RCP, **set the GPS knob to the unaffected GPS system.**

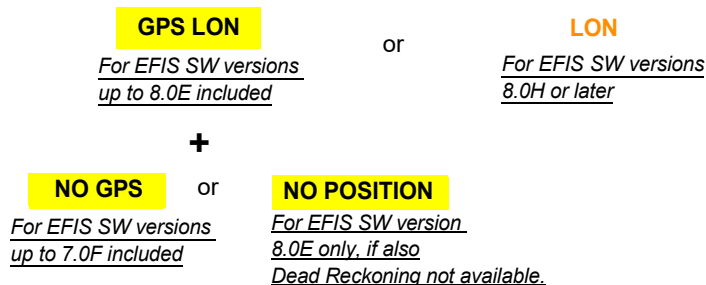
NO GPS or **NO POSITION** if applicable) caution message disappears.



Note

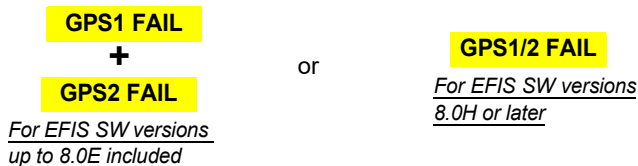
SAME NAV caution message displayed on both pilot's and copilot's PFDs.

DOUBLE GPS SYSTEM FAILURE (up to FAF)



displayed on both pilot's and copilot's PFDs.

After 5 seconds, displayed on both pilot's and copilot's PFDs,



Both GPS systems failed with loss of FMS navigation during
Initial or Intermediate approach segments.
TAWS and TERRAIN functions are not available.

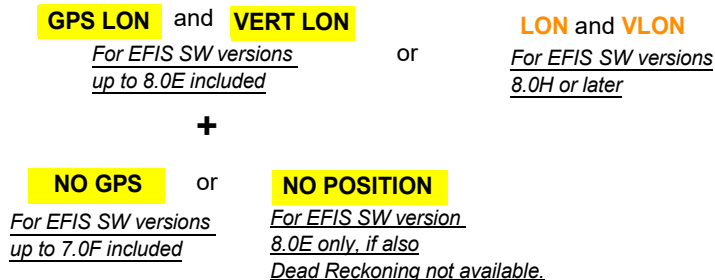
NLOC and NGS modes disengage (if coupled to FMS).

**Climb to MSA and revert immediately
to other navigational sources.**

**If performing RNP approach, notify ATC
loss of RNP capability.**

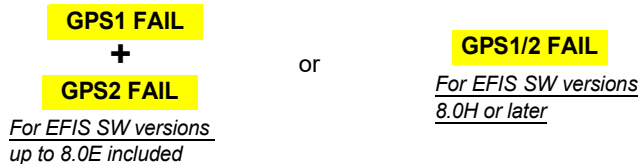
Continue flight.

DOUBLE GPS SYSTEM FAILURE (after FAF)



displayed on both pilot's and copilot's PFDs.

After 5 seconds, displayed on both pilot's and copilot's PFDs,



Both GPS systems failed with loss of FMS navigation during Final approach segment.
TAWS and TERRAIN functions are not available.

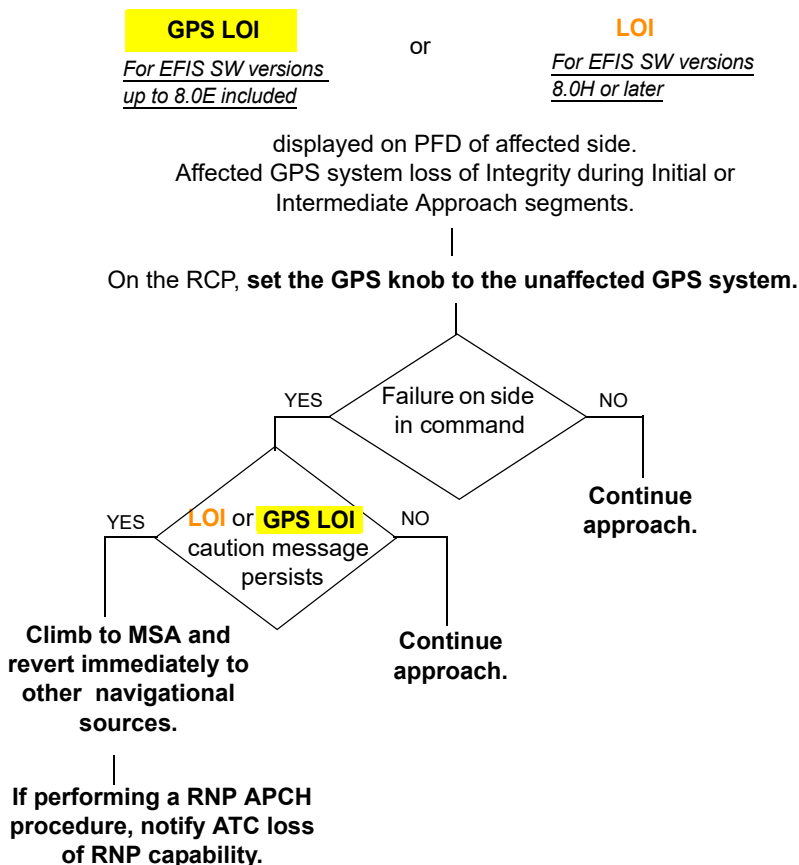
NLOC and NGS modes disengage.

Revert immediately to other navigational sources and execute the Missed Approach Procedure.

If performing RNP approach, notify ATC loss of RNP capability.

Continue flight.

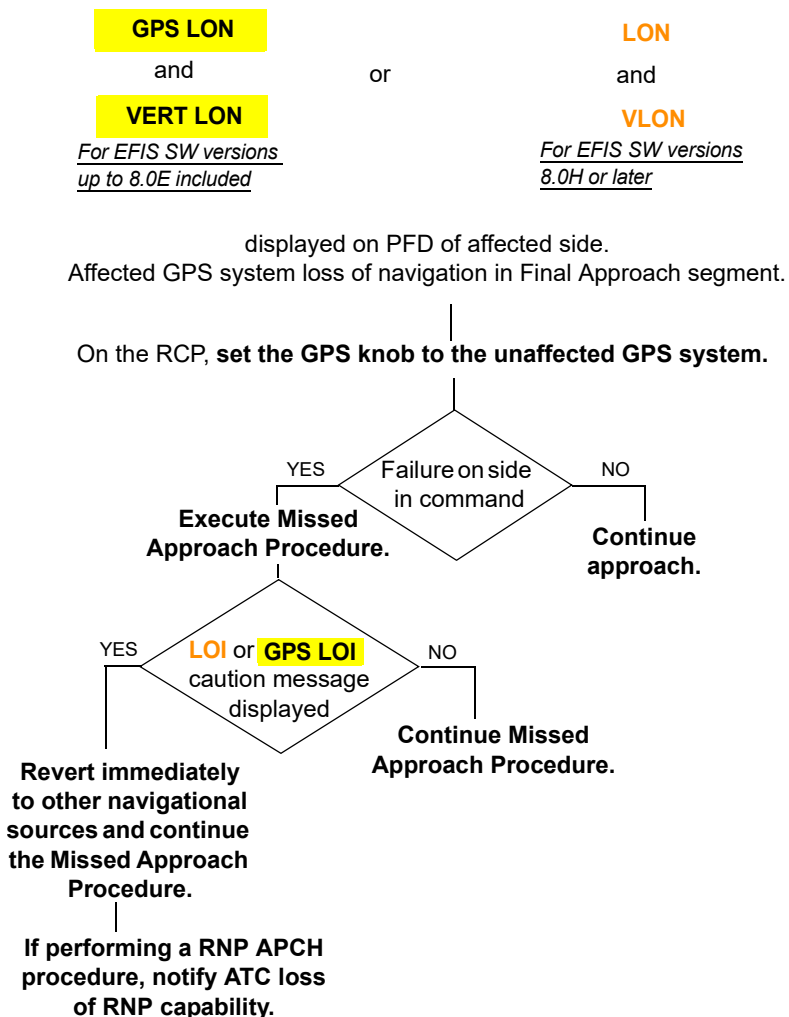
GPS LOSS OF INTEGRITY (up to FAF)



Note

SAME NAV and **SAME GPS** caution messages displayed on both pilot's and copilot's PFD.
TAWS and TERRAIN functions on affected side may not be available.

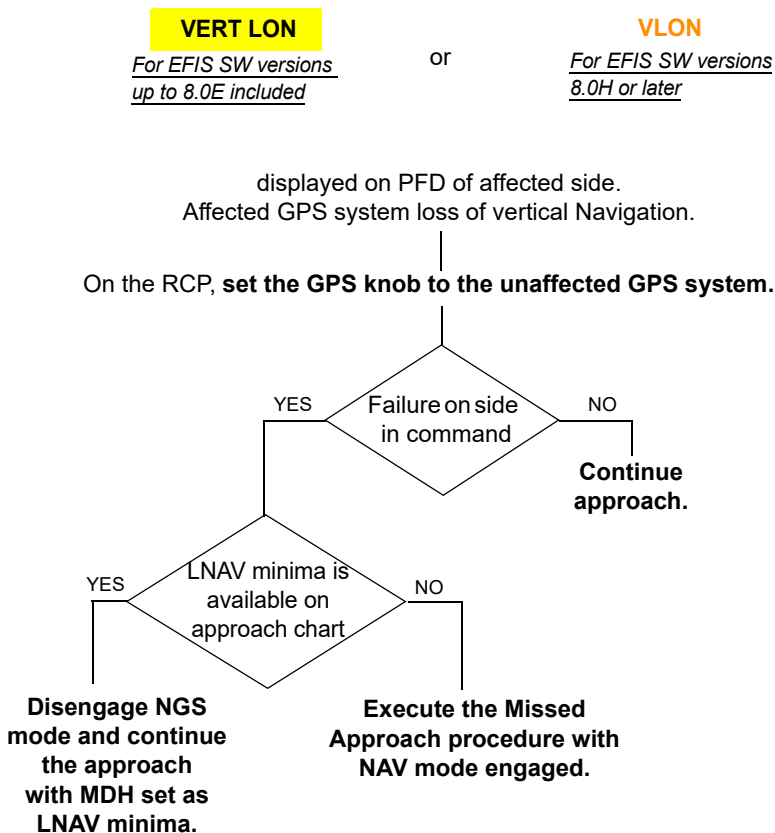
GPS LOSS OF NAVIGATION (after FAF)



Note

SAME NAV and **SAME GPS** caution messages displayed on both pilot's and copilot's PFD.
TAWS and TERRAIN functions on affected side may not be available.

GPS LOSS OF VERTICAL NAVIGATION (after FAF)



Note

SAME NAV and **SAME GPS** caution messages displayed on both pilot's and copilot's PFD.
TAWS and TERRAIN functions on affected side may not be available.

GPS DATA DISCREPANCY

GPS MISCOMP

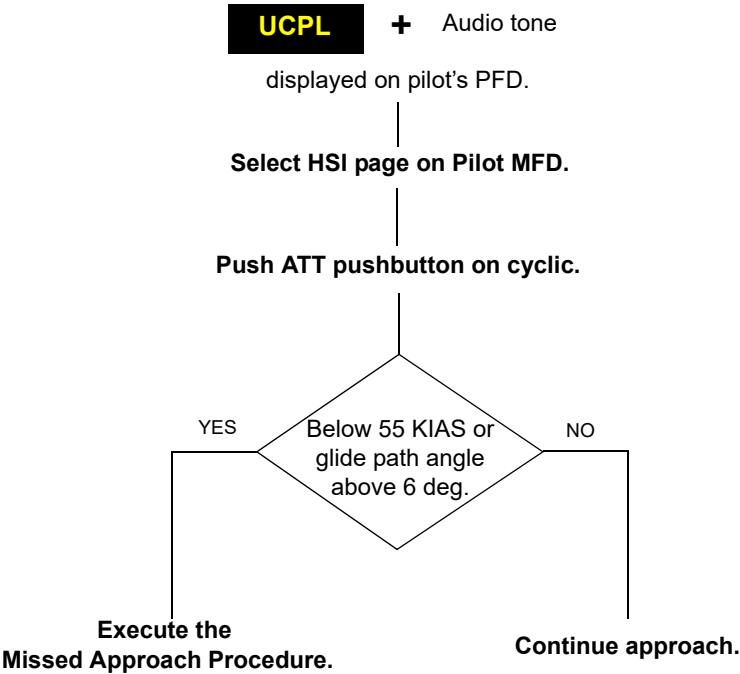
displayed on pilot's and copilot's PFD.

Excessive discrepancy between the two GPS units data.

WARNING

If GPS MISCOMP persists climb to MSA and revert immediately to other means of navigation or, if after the FAF, execute the Missed Approach Procedure. If performing a RNP APCH, notify ATC loss of RNP/ RNAV capability.

DEGRADATION TO UNCOUPLED FLIGHT



SECTION 4 - PERFORMANCE DATA

MAXIMUM DEMONSTRATED WIND

Maximum tail wind demonstrated at all glide path angle is 10 kts.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

No change.

WEATHER RADAR - RDR 2000 BENDIX KING

P/N 109-B810-15

This Supplement shall be attached to the A109SP RFM (Section 5) when the Weather Radar - RDR 2000 Bendix King is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE B: 26 JULY 2010
REVISION 1: 20 DECEMBER 2024**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue B	EASA Approval N° 10031061 dated 26 July 2010
1	Revised page 1 of 4.	Approved with NDC-109G9810-002 dated 20 December 2024 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1 and B-1.	Manufacturer's Data

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GENERAL

The Weather Radar RDR 2000 Bendix King P/N 109-B810-15 consists of the following pieces of equipment:

- Receiver/Transmitter
- Configuration Module (included in the Installation Kit)
- Antenna
- Control Panel (two P/N available).

The primary use of this RADAR is to aid the pilot in avoiding thunderstorms and associated turbulence. Areas of the display where the colors change rapidly over a short distance represent steep rainfall gradients, which are usually associated with severe turbulence.

A secondary objective of the RADAR system is gathering and presentation of terrain data. This data is represented in the form of a topographical map that can be employed as a supplement to standard navigation procedures.

The RDR 2000 system will interface with the EFIS, (on MFDs side-only).

SECTION 1 - LIMITATIONS

The weather radar RDR 2000 must not be used for obstacle or terrain avoidance.

The weather radar RDR 2000 must be switched off below 30 ft (10 m) AGL.

SECTION 2 - NORMAL PROCEDURES

SYSTEM CHECKS

Weather Radar : OFF or STBY.

Note

When STBY or TEST mode is selected the radar does not radiate.

The Weather Radar cannot be operated when the helicopter is on ground: a microswitch connected to the main landing gear inhibits the radar radiation even if the selector switch is in ON position.

IN FLIGHT

WARNING

Avoid to set the radar ON when there is personnel within 10 m (30 ft) from the radar antenna.

Note

Direct nose of helicopter such that antenna scan sector is free of large metallic objects such as hangars or other aircraft for a distance of 30 m (100 ft) and direct antenna fully upwards;

Avoid radar operation during other aircraft refueling operations within 30 m (100 ft);

Weather Radar : As desired.

APPROACH AND LANDING

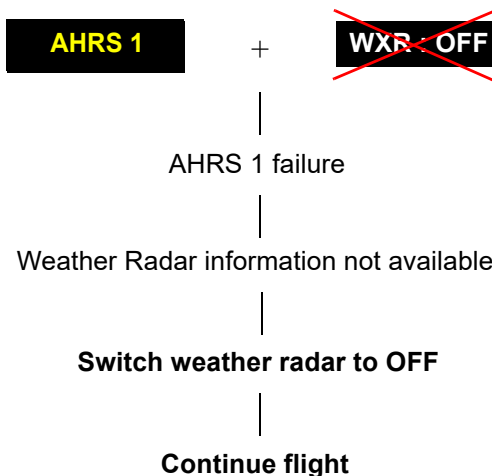
Weather Radar : OFF or STBY.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

Note

The Weather Radar image is not available if the MFD revert to PFD mode.

SYSTEM FAILURES



SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEMS DESCRIPTION

Refer to the basic A109SP RFM.

**AVIONIC BASIC
VARIANT
P/N 109G0206P02**

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Avionic Basic Variant is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 7 OCTOBER 2010

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue B	EASA Approval N° 10032087 dated 7 October 2010

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GENERAL

The Avionic Basic Variant installation P/N 109G0206P02, consist of a modification of the rear baggage compartment in order to install avionic equipments.

The Avionic Basic Variant is installed in the rear part of the baggage compartment (zones 4 and 5) and for this reason the new avionic bay will be delimited by a dedicated door in the baggage compartment.

SECTION 1 - LIMITATIONS

MISCELLANEOUS LIMITATIONS

BAGGAGE COMPARTMENT LIMITATIONS

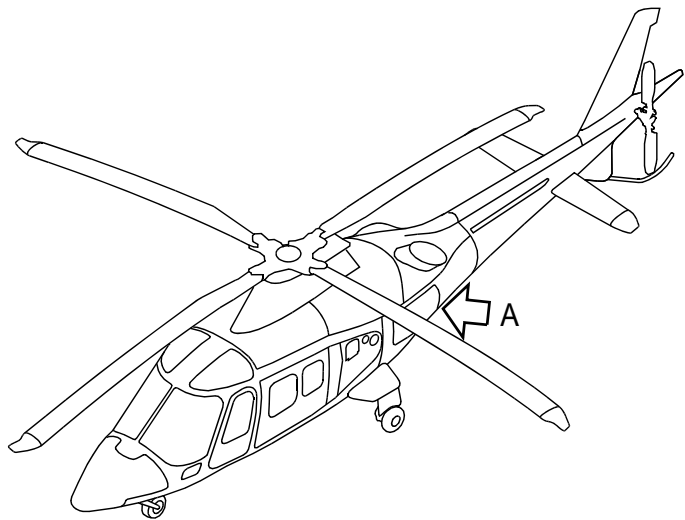
Maximum load..... 98 kg (216 lb)

Loading in the zones 4 and 5 of the baggage compartment is prohibited.

Note

Refer to [Section 6](#), **Weight and Balance**,
for load distribution.

PLACARD



A BAGGAGE COMPARTMENT

MAXIMUM ALLOWABLE BAGGAGE LOAD			
ZONE	1	2	3
KG (LB)	98 (216)	90 (198)	80 (176)
MAXIMUM TOTAL LOAD 98 KG (216 LB) MAX UNIT FLOOR LOADING 500 KG/M2 (102 LB/SQ.FT.) ALL CARGO MUST BE SECURED MAX LOAD PER TIE DOWN RING 91 KG (200 LB)			

ICN-0B-C-155036-G-A0126-01001-A-01-1

Figure 1-1 Placards in Baggage Compartment

SECTION 2 - NORMAL PROCEDURES

No change.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

ALLOWABLE BAGGAGE LOAD

The baggage compartment is divided in five zones. In [Figure 6-1](#) , the maximum baggage load for each zone is presented.

The maximum allowable baggage load is 98 kg.

The following table defines the longitudinal baggage moments for each zone.

The maximum allowable longitudinal baggage moment is 479860 kg mm.

An example of baggage loading is provided in [Figure 6-1](#) .

Baggage load (kg)	ZONE 1 STA 4880 mm	ZONE 2 STA 5240 mm	ZONE 3 STA 5560 mm
	Baggage moment (kg mm)		
10	48800	52400	55600
20	97600	104800	111200
30	146400	157200	166800
40	195200	209600	222400
50	244000	262000	278000
60	292800	314400	333600
70	341600	366800	389200
80	390400	419200	444800
90	439200	471600	
98	478240		

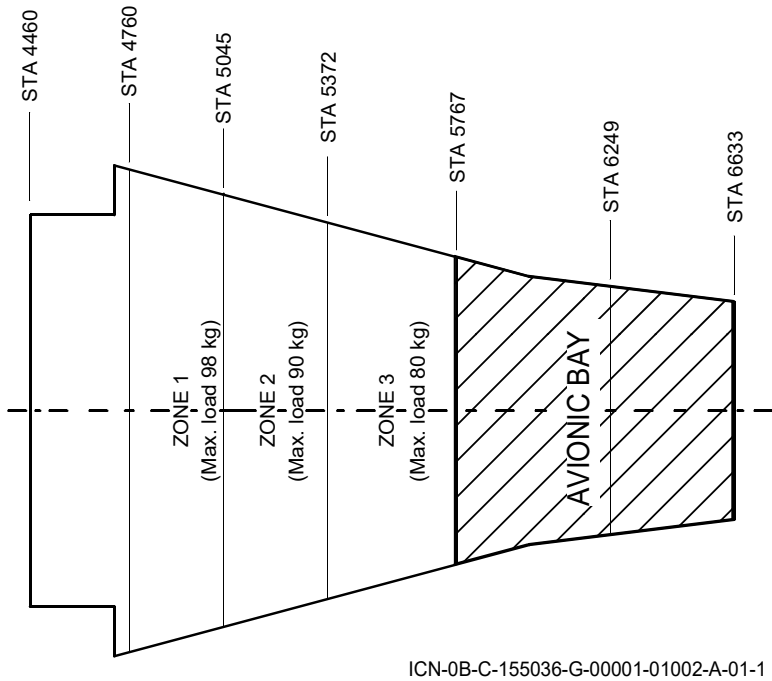


Figure 6-1 Baggage Loading Zones

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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OPEN PAX WINDOWS

P/N 109-0824-83

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Open Pax Windows are installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

Copy assigned to helicopter S/N: 22218.

ISSUE B: 15 OCTOBER 2010

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue B	EASA Approval N° 10032126 dated 15 October 2010

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GENERAL

The Open Pax Windows P/N 109-0824-83 consists of two hinged windows installed in both cabin passenger doors front transparents.

The windows are hinged on their front side, the opening is inward, the maximum opening angle is 105 deg.

Securing of the windows is guaranteed in both closed and open positions. In closed position by four rotating blocks, in open position by a special spring clips.

SECTION 1 - LIMITATIONS

AIRSPEED LIMITATIONS

Maximum Airspeed for opening / closing window(s)..... 100 KIAS

Maximum Airspeed with window(s) open..... 100 KIAS

MISCELLANEOUS LIMITATIONS

OPEN PAX WINDOWS LIMITATIONS

The pax windows must be closed and locked during take-off and landing or before opening the sliding doors.

The seat(s) beside the window(s) must not be occupied during windows opening/closing operations.

The window(s) can be opened/closed only by trained crew member after pilot authorisation.

When opened, window(s) must be secured on locking devices.

With the window(s) opened and locked, all occupants must be fastened with seat belts and shoulder harness.

Any kind of operations with the window(s) opened shall be compliant with the competent authority regulations.

The open window missions are allowed only with the minimum number of crew members needed to perform the mission.

PLACARDS

**THE WINDOW CAN BE OPENED ONLY
BY TRAINED CREW MEMBER
AFTER PILOT AUTHORIZATION**

Below Open Pax Window

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°7 (Cockpit Interior)

1. Open pax windows : Check condition, secure, closed and locked.
2. Locking devices : Check condition.

IN FLIGHT

Note

The operation for opening/closing the window, must be authorized by the pilot.

1. Opening pax window : After the pilot authorization, open the window and secure it to the locking devices.
2. Closing pax window : After the pilot authorization, close and lock the window.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES



In any emergency condition close and lock the pax windows.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

AUTOMATIC DEPLOYABLE EMERGENCY LOCATOR TRANSMITTER P/N 109G2560F05

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Automatic Deployable Emergency Locator Transmitter (ADELT) is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE A: 19 DECEMBER 2011
REVISION 1: 27 MAY 2025**

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10037737 dated 19 December 2011
1	Revised page 1, 2, 4 and 6 of 8.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1 and B-1.	Manufacturer's Data

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GENERAL

The Automatic Deployable Emergency Locator Transmitter (ADELT) P/N 109G2560F05, is a Crash Position Indicator (CPI) system with a primary radio location aid to alert Search and Rescue and assist location in the event of an aircraft distress condition.

The ADELT, mounted on the right hand side of the tail cone, consists of a locator beacon containing the transmitter and antenna. The beacon, which can be manually or automatically activated, is deployed from the aircraft in the event of a crash situation, providing full emergency frequency operation at 121.5 / 243 MHz and 406.025 MHz.

The CPI system also comprises of a Beacon Release Unit, System Interface Unit (SIU), Cockpit Control Panel (mounted in the interseat console, [Figure 1-1](#)), water activated switch and an Aircraft Identification Device.

The ADELT automatically activates during a crash or aircraft ditching and transmits the standard swept tone on 121.5 / 243 MHz until the battery power is exhausted, which will typically be 48hrs.

The 406.025 MHz transmitter sends an encoded digital message of aircraft position, as received from the GPS aircraft system via ARINC, and will operate for 24hrs.

SECTION 1 - LIMITATIONS

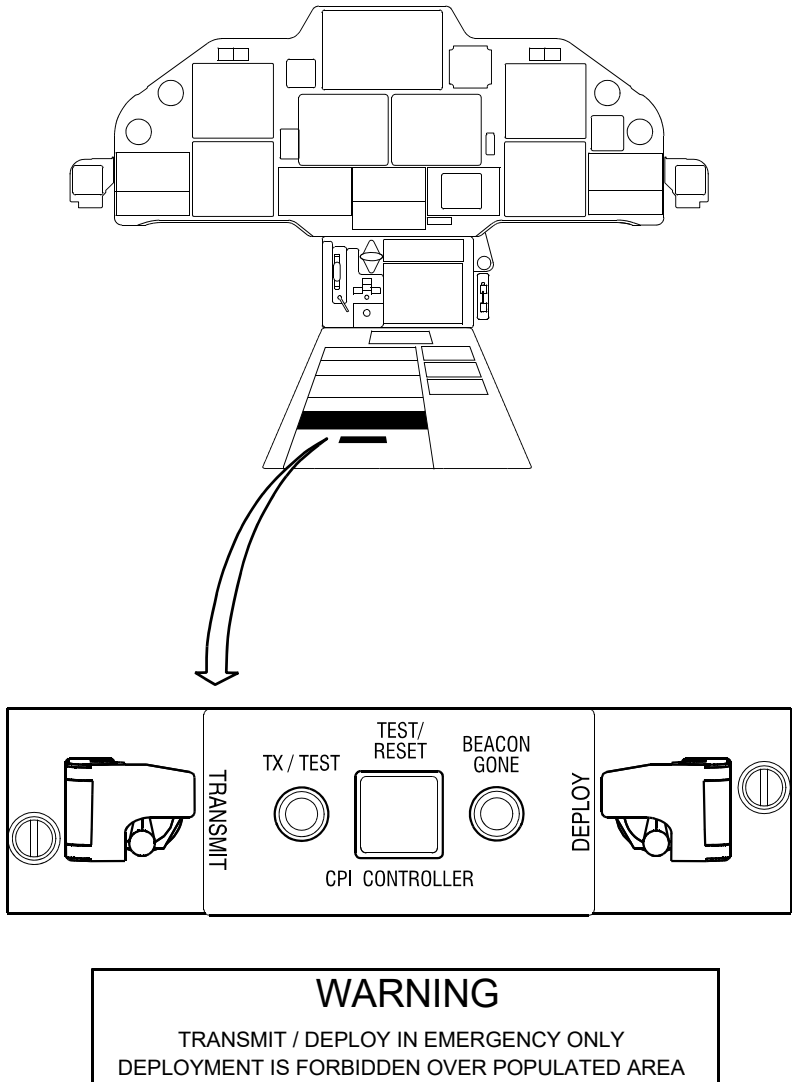
ADELT LIMITATIONS

The beacon must not be deployed other than in extreme emergency conditions and not when overflying populated area.

AMBIENT AIR TEMPERATURE LIMITATIONS

Minimum ambient air temperature for operation-20 °C (-4 °F)

PLACARDS



ICN-0B-C-155038-G-A0126-01001-A-01-1

Figure 1-1 Cockpit Placard

SECTION 2 - NORMAL PROCEDURES

GENERAL

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°6 (Fuselage - LH side)

1. Baggage compartment door : Open.
2. ADELT (SIU) : Confirm switch in ARM position.
3. Baggage compartment door : Secure.

SYSTEM CHECKS

ADELT

ADELT control panel : Check both TX/TEST and BEA-
CON GONE annunciator extin-
guished to indicate successful
BIT.

Note

Either or both of the TX/TEST and BEA-
CON GONE annunciator remain illumi-
nated, the automatic BIT has failed, and
manual BIT can be carried out, for maxi-
mum two times, pressing the TEST/
RESET button on the ADELT control panel.
In case the BIT failure remains a mainte-
nance action is required.

Note

Prior to manual BIT activation the nearest
Air Traffic Control establishment should be
notified that the following distress signals
transmitted is for test purpose only.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES



Transmit / Deploy in emergency only.
Deployment is forbidden over populated area.

The activation and deployment of the beacon is automatic for crash conditions or ditching.

Manual deployment can be carried out in extreme emergency condition when flying below 200 ft AGL and not when overflying populated area.

1. Manual Activation of beacon transmission	— On CPI CONTROLLER, lift guard and operate TRANSMIT switch. Confirm TX/TEST light illuminates and audio tone heard.

Note

Transmission may be stopped by return the TRANSMIT switch to its original position and by pressing TEST/RESET button.

2. Manual Activation of beacon transmission and beacon deploy	— On CPI CONTROLLER, lift guard and operate DEPLOY switch. Confirm TX/TEST and BEACON GONE lights illuminate.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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CABIN OPERATOR SEAT P/N 109G2520F22

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Cabin Operator Seat is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**ISSUE A: 9 OCTOBER 2012
REVISION 1: 9 OCTOBER 2012**

LIST OF REVISIONS

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–	Issue A	EASA Approval N° 10041705 dated 9 October 2012
1	Revised pages Title page, A-1, B-1, i thru iii and 1 thru 3 of 8.	Approved under the Authority of DOA N° EASA 21J.005 dated 9 October 2011
	Revised pages 4 thru 6 of 8. Added pages 7 and 8 of 8.	Manufacturer's Data

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GENERAL

The Cabin Operator Seat P/N 109G2520F22 consists of the replacement of the first row seats of the basic helicopter configuration, by one operator swivelling seat.

SECTION 1 - LIMITATIONS

NUMBER OF SEATS

Six - pilot(s) included.

MISCELLANEOUS LIMITATIONS

CABIN OPERATOR SEAT LIMITATIONS

The cabin operator seat must be locked in normal position during takeoff, landing and whenever the pilot judges necessary for safety.

The cabin operator seat is in normal position when longitudinally oriented and set full down.

For P/N 109G2520F22-101 the seat must be rotated rearward facing and locked full back.

The cabin operator seat P/N 109G2520F22-101 is limited in rotation from rearward facing position (0 deg.) to 90 deg. right.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°7 (Helicopter interior)

Cabin interior

1. Cabin operator seat : Check swivel mechanism for correct action and unimpaired operation.
Check seat locked in normal position.

BEFORE TAKE-OFF

2. Cabin operator seat : Swivelled in normal position and locked.

IN FLIGHT

3. Cabin operator seat : Swivelled and locked as desired.

APPROACH AND LANDING

4. Cabin operator seat : Swivelled in normal position and locked.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY LANDING

5. Cabin operator seat : Swivelled in normal position and locked.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

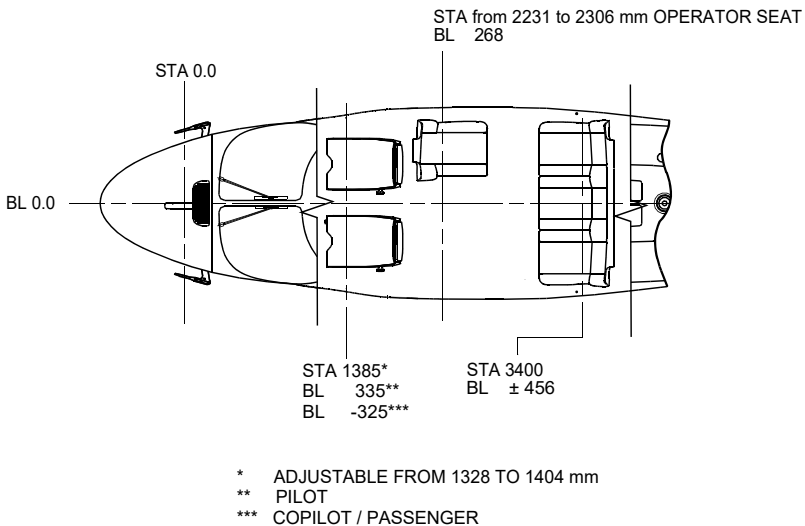
Refer to Chart A of basic RFM for computation of new empty weight and center of gravity location.

DATUM LINE LOCATIONS

Figures 6-1 and 6-2 present fuselage station (STA) and Butt Line (BL) data to aid in weight and balance computations.

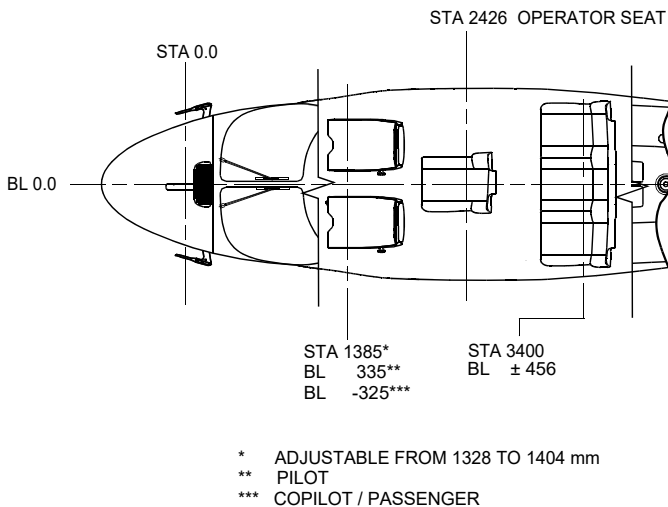
For moment calculation of the Cabin Operator Seat refer to “LONGITUDINAL MOMENTS” paragraph of this supplement.

CABIN OPERATOR SEAT



ICN-0B-C-155039-G-A0126-01001-A-01-1

Figure 6-1 Helicopter Station Diagram - Operator Seat Configuration (P/N 109G2520F22-101)



ICN-0B-C-155039-G-A0126-01002-A-01-1

Figure 6-2 Helicopter Station Diagram - Operator Seat Configuration (P/N 109G2520F22-201)

WEIGHTS, ARMS AND MOMENTS

LONGITUDINAL MOMENTS (P/N 109G2520F22-101/-201)

PASSENGERS		
Weight (kg)	Operator seat configuration P/N 109G2520F22-101 (STA 2231 mm)(*) Moment (kg mm)	Operator seat configuration P/N 109G2520F22-201 (STA 2426 mm) Moment (kg mm)
60	133860	145560
65	145015	157690
70	156170	169820
75	167325	181950
80	178480	194080
85	189635	206210
90	200790	218340
95	211945	230470
100	223100	242600
105	234255	254730
110	245410	266860
115	256565	278990
120	267720	291120
(*) Adjustable from 2231 to 2306 mm		

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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NIGHT VISION IMAGING SYSTEM (NVIS) / NVG

This Supplement shall be attached to the AW109SP RFM (Section 5) when the NVIS / NVG systems are installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

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GENERAL

The NVIS compatible lights consist of internal and external lighting installations to make the aircraft compatible for the use with NVG systems.

The aircraft configuration involving internal/external emitting/reflecting equipment approved for use with NVG is described in the Report 109G3360A001 AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK. Any internal/external emitting/reflecting equipment not defined in the above AW report invalidates NVIS approval.

INTERNAL LIGHTING

The NVIS compatible cockpit installation consists of compatible controller panels and lighting. See Document 109G3360A001 AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK.

The cockpit lights are controlled by the standard dimmers on overhead panel. The displays brightness is adjustable by appropriated control fitted on any display bezel. The MODE DAY/NIGHT/NVG switch is used to select the brightness of the displays and lighted indications. When selected to DAY, full brightness is available, via the standard dimmers, for the displays, instruments and lighted indications. When selected to NIGHT, displays and lighted indications are dimmed at prefixed level however, full display brightness is available by the appropriated controls. When NVG is selected the displays maximum brightness is limited to a prefixed level, and lighted indication are further dimmed. However, display brightness can still be adjusted by the appropriate controls. The master warning/caution lights are reduced to the fixed NIGHT operation brightness level, also with the switch in NVG mode.

The cockpit utility lights are NVG compatible.

Additionally a cockpit cabin dividing NVG curtain (P/N 109G2520F25) is installed to prevent inadvertent entry of non NVG compatible light from the cabin. An equivalent curtain, which prevents light leakage from the cabin to the cockpit, approved by the competent authority, may be installed.

EXTERNAL LIGHTING

The NVIS compatible external lighting consists of:

- An anti-collision light which is NVIS friendly normal light.
- Position lights which are NVIS friendly normal light.

External lights are controlled by dedicated switches on overhead panel.

In DAY/NIGHT or NVG MODE the anticollision (A-COLL) and position (POS) lights, when switched ON, operate with visible light but are NVIS compatible.

SECTION 1 - LIMITATIONS

NVIS

Any change to the aircraft configuration involving light emitting or reflective equipment not included in document 109G3360A001 AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK makes the aircraft not NVG compatible and invalidates NVIS approval.

TYPE OF OPERATION

The Operator must receive VFR NVG operations approval by the Competent Authority in accordance with the applicable National Operating Regulations.

MINIMUM FLIGHT CREW

The minimum flight crew consists of one pilot equipped with NVG's:

- an additional, trained, NVIS crew member is required during take-off and landing, on unimproved areas such as open fields, to assist in obstacle identification and clearance.
- no additional, trained, NVIS crew member is required during take-off and landing, on improved areas such as airfields or heliports night approved and when the aircraft is above 300 ft AGL and in cruise.

All crew members must be familiar with NVG operating procedures.

MISCELLANEOUS LIMITATIONS

NVIS OPERATION

The following required equipment must be in proper working order for NVG operations:

- Aviator's Night Vision Goggles Models as specified in document 109G3360A001 AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK.
- Helmet with NVG mount suitable for NVG Model being used.
- Cockpit/Cabin dividing curtain as specified in document 109G3360A001 AW109SP NVG COMPATIBILITY REFERENCE HANDBOOK or functionally equivalent and approved by the competent authority.

External mirrors, if any, must be tilted down or covered or removed.

PLACARDS



NVIS APPROVED

Installed on the instrument panel when the aircraft configuration complies with document 109G3360A001



NVIS NOT APPROVED

Installed on the instrument panel when the configuration of NVG compatible aircraft has been modified with components not defined in document 109G3360A001

SECTION 2 - NORMAL PROCEDURES

PRE FLIGHT CHECKS

Area N°2 (Fuselage - RH Side)

1. Windshield and roof transparent panels — Condition, cleanliness, free of scratches.

Area N°6 (Fuselage - LH Side)

1. Windshield and roof transparent panels — Condition, cleanliness, free of scratches.

Area N°7 (Helicopter Interior)

1. Lower and lateral transparent panels — Condition, cleanliness, free of scratches and no signs of brake fluid.
2. NVIS internal and external lighting switches — Select as required
3. Cockpit/Cabin dividing curtain — Present, condition, correctly installed when required.
4. NVGs and NVG helmet mounts — Present, condition.

SYSTEM CHECKS

1. NVGs
 - Adjust as required, check primary and spare battery power indicator not illuminated.
2. NVIS internal lighting
 - Select MODE to NVG.
Check for compatibility and leakage.
Adjust dimmers as required.
3. NVIS external lighting
 - Select as required, check for compatibility.
4. NVIS lighting
 - Select MODE switch as required.

IN FLIGHT

Note

Prior to select MODE switch to NVG (or vice versa to NIGHT) advise cabin occupants that NVG operations (or vice versa non NVG operations) are being undertaken.

1. MODE switch	— Select NVG as required.
2. NVIS lighting internal	— Adjust as required.
3. external lighting	— Select as required.

Note

Transition from NVG operations to non NVG operations (and vice versa) should be carried out during a non critical phase.

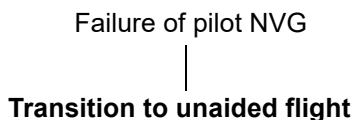
SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

NVIS

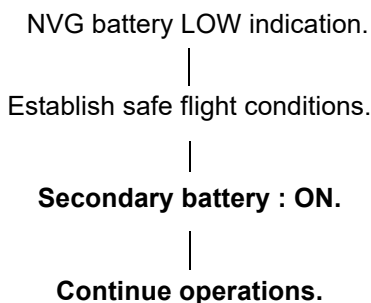
If aircraft emergencies or malfunctions occur during NVG operations the pilot must first maintain control of the aircraft and then initiate the RFM procedure for the emergency or malfunction. The pilot's decision to continue NVG operations should be based on the emergency or malfunction situation.

NVIS / NVG SYSTEMS MALFUNCTIONS

NVG Malfunction



NVG Battery Low Indication



Note

Be prepared to revert to unaided flight if battery problems persist.

NVIS Lighting Malfunction

Discontinue NVG use if the malfunction degrades the NVIS compatibility.

Inadvertent Entry in IMC

If inadvertent entry in IMC is encountered the pilot should:

Flip-up the goggles.

Level wings on attitude indicator.

Adjust airspeed to V_y .

Maneuver to recover VMC condition.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AN BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

No change.

WEATHER PROBE SYSTEM

P/N 109G3080F01

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Weather Probe System is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

Note

The “No Hazard” certification demands that the replacement of any equipment subject to this supplement is not allowed without the approval of the Manufacturer and of the competent Authority.

Changes to helicopter configuration (installation of approved equipments) are allowed only upon removal of the equipment subject of this supplement or after specific approval of the Manufacturer and of the competent Authority.

**Copy assigned to helicopter S/N: 22290, 22287, 22304,
22314, 22315, 22333,
22337, 22334, 22338,
22339, 22341, 22344,
22361, 22409.**

ISSUE A: 8 MARCH 2013
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LIST OF REVISIONS

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–	Issue A	EASA Approval N° 10043982 dated 8 March 2013
1	Revised pages Title page, A-1 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 20 March 2013
2	Revised pages Title page, A-1 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 16 May 2013
3	Revised pages Title page, A-1 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 16 July 2013
4	Revised pages Title page, A-1 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 17 July 2013
5	Revised pages Title page, A-1 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 6 November 2014
6	Revised pages Title page, A-1 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 5 December 2014
7	Revised pages Title page, A-1 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 8 December 2014
8	Revised pages Title page, A-1 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 16 February 2015

REVISION No.	SUBJECT	APPROVAL
9	Revised pages Title page, A-2 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 13 April 2015
10	Revised pages Title page, A-2 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 24 June 2015
11	Revised pages Title page, A-2 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 28 August 2015
12	Revised pages Title page, A-2 and B-1.	Approved under the Authority of DOA N° EASA 21J.005 dated 19 July 2016
13	Revised pages Title page, A-2 and B-1.	Approved with NDC-109G3080-019 dated 13 December 2019 under the authority of DOA ref EASA.21J.005
14	Revised pages Title page, A-2, B-1, i and iv.	Manufacturer's Data

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GENERAL

The Weather Probe System P/N 109G3080F01 includes the following components:

- a Weather Probe on the fuselage externally in the proximity of the co-pilot door;
- a WX PROBE pushbutton on the interseat console;
- a guarded WX PROBE TEST pushbutton on the interseat console;
- a WX PROBE indicator on the instrument panel.

SECTION 1 - LIMITATIONS

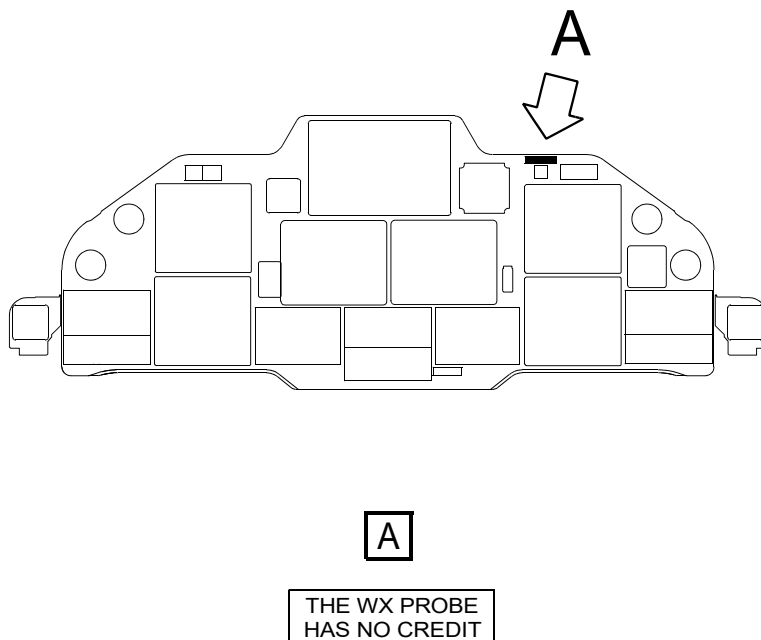
TYPE OF OPERATION

Flight in icing condition is prohibited (see Section 1 - Limitations of the basic RFM).

WARNING

- The pilot is responsible for monitoring icing conditions in order to avoid them.
- Icing conditions should be monitored by the pilot on the basis of the following clues:
 - outside air temperature;
 - visible moisture;
 - outside ice build-up on windshield wipers and/or windshield.
- The pilot must not give credit to weather probe system, installed under No Hazard principle, to monitor icing conditions.

PLACARDS



ICN-0B-C-155041-G-A0126-01001-A-01-1

Figure 1-1 Weather Probe System - Placard

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°6 (Fuselage - LH side)

1. Weather Probe : Condition and cleanliness.

SYSTEM CHECKS

WEATHER PROBE SYSTEM CHECK

1. WX PROBE pushbutton : Press.
Verify ON green light illuminates.
2. WX PROBE TEST pushbutton : Lift the guard, then press and hold.
3. WX PROBE indicator : Check the following message sequence on the WX PROBE indicator:
 - DET;
 - DET FAIL;
 - DET.
4. WX PROBE TEST pushbutton : Release and lower the guard.
5. WX PROBE indicator : Verify DET or FAIL message is not displayed.
6. WX PROBE pushbutton : Press.
Verify ON green light extinguishes.

IIN FLIGHT

1. WX PROBE pushbutton : Press when OAT below 4 °C.
Verify ON green light illuminates.

Note

Monitor icing conditions on the basis of the following clues:

- outside air temperature;
- visible moisture;
- outside ice build-up on windshield wipers and/or windshield.

If icing condition is detected, DET white message on WX PROBE indicator also illuminates.

SHUTDOWN

1. WX PROBE pushbutton : Press.
Verify ON green light extinguishes.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES

ELECTRICAL SYSTEM

DOUBLE DC GENERATOR FAILURE

Note

In case of double DC generator failure the weather probe system is lost.

MALFUNCTION PROCEDURES

WEATHER PROBE SYSTEM FAILURE



Displayed on WX PROBE indicator.



Weather probe system failure.



Continue flight.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

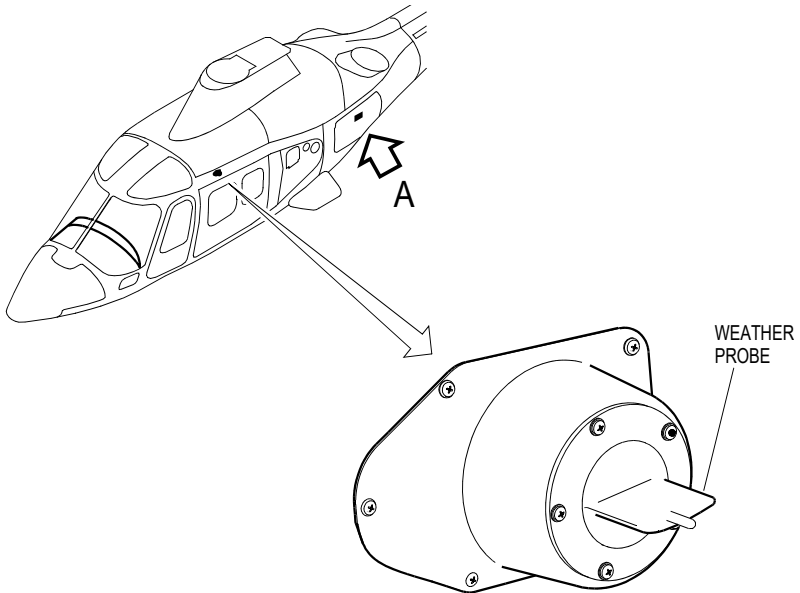
SECTION 7 - SYSTEM DESCRIPTION

WEATHER PROBE SYSTEM

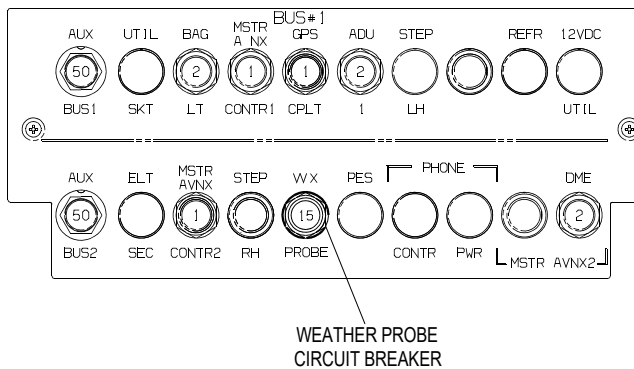
The Weather Probe System is designed to help the pilot to avoid potential entry into icing conditions.

The Weather Probe System (see [Figure 7-1](#)) consists of an weather probe installed on the left side of the helicopter fuselage externally in the proximity of the co-pilot door, moreover it includes a WX PROBE indicator installed on the instrument panel, a WX PROBE pushbutton and a guarded WX PROBE TEST pushbutton installed on the interseat console (see [Figure 7-2](#)).

The Weather Probe is powered by the 28 V dc BUS 2, through the circuit breaker WX installed in to rear avionic bay of the baggage compartment.



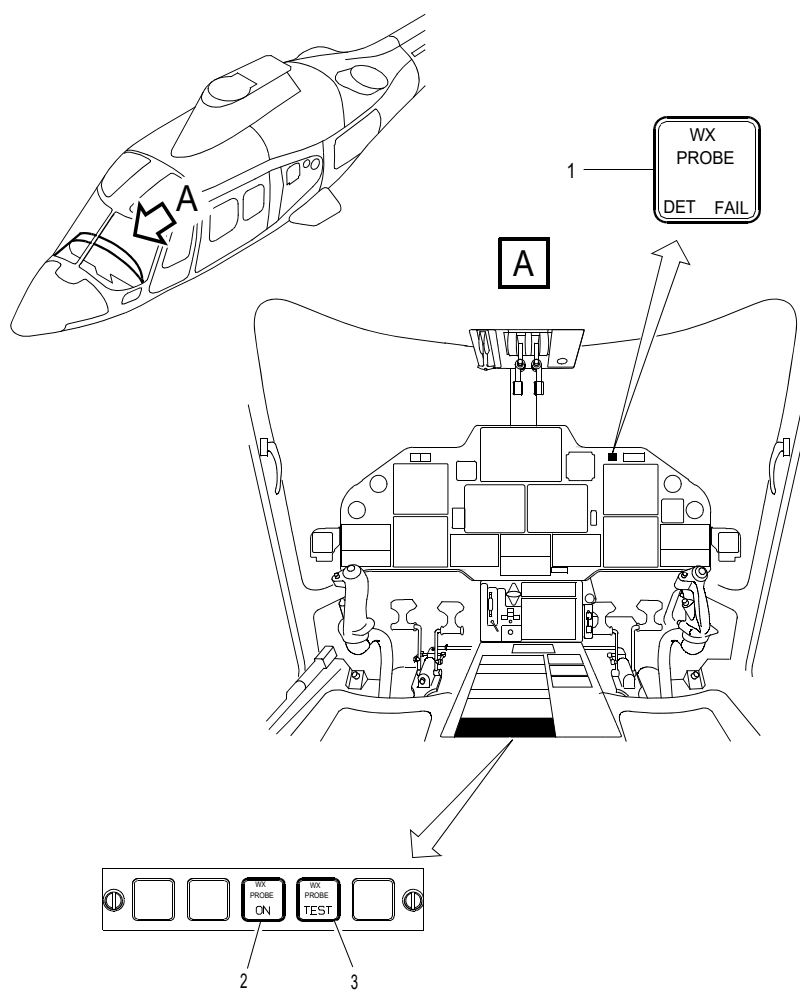
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ICN-0B-C-155041-G-A0126-01002-A-01-1

Figure 7-1 Weather Probe System - Component Location

WEATHER PROBE CONTROLS AND INDICATORS



ICN-0B-C-155041-G-A0126-01003-A-01-1

Figure 7-2 Weather Probe System - Controls and Displays

Table 7-1 Weather Probe - Controls and Indicators

Ref.	Control/Display	Function
1	WX PROBE indicator	The WX PROBE indicator, shows DET indication as additional mean for monitoring icing condition and FAIL indication when the weather probe system has a failure. The WX PROBE indicator shows the following message sequence DET, DET FAIL, DET when the WX PROBE TEST pushbutton is pressed.
2	WX PROBE pushbutton	The switch, pushbutton type, engages the weather probe system, when pressed ON green light illuminates.
3	Guarded WX PROBE TEST pushbutton	The guarded switch, pushbutton type, engages the test of the system, when pressed the following message sequence DET, DET FAIL, DET is shown on the WX PROBE indicator.

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V/UHF AM-FM FLEXCOMM II

P/N 109G2310F16

This Supplement shall be attached to the AW109SP RFM (Section 5) when the V/UHF AM-FM Flexcomm II system is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

Note

The “No Hazard” certification demands that the replacement of any equipment subject to this supplement is not allowed without the approval of the Manufacturer and of the competent Authority.

Changes to helicopter configuration (installation of approved equipments) are allowed only upon removal of the equipment subject of this supplement or after specific approval of the Manufacturer and of the competent Authority.

**Copy assigned to helicopter S/N: 22330, 22354, 22357,
22377, 22379.**

ISSUE A: 10 OCTOBER 2014
REVISION 4: 30 NOVEMBER 2017

LIST OF REVISIONS

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–	Issue A	EASA Approval N° 10050780 dated 10 October 2014
1	Revised pages Title page, A-1 and B-1.	Approved with NDC-109G2310-023 dated 9 March 2016 under the authority of DOA ref EASA.21J.005
2	Revised pages Title page, A-1 and B-1.	Approved with NDC-109G2310-027 dated 11 May 2016 under the authority of DOA ref EASA.21J.005
3	Revised pages Title page, A-1 and B-1.	Approved with NDC-109G2310-029 and NDC-109G2310-030 dated 14 November 2017 under the authority of DOA ref EASA.21J.005
4	Revised pages Title page, A-1 and B-1.	Approved with NDC-109G2310-031 dated 30 November 2017 under the authority of DOA ref EASA.21J.005

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GENERAL

The V/UHF Flexcomm II system P/N 109G2310F16 type RT- 5000, is a FM/AM synthesized multi band radio. The RT will receive all frequencies between 29.7 and 960 MHz - FM across the entire range and AM from 118 to 156 MHz and from 200 to 400 Mhz.

The system consists of:

- one RT-5000 transceiver and a Logic Converter Unit installed in the rear avionic bay;
- one remote control panel, located on the rear interseat console;
- one tunable antenna installed in the rear bottom fuselage.

The remote control panel controls the transceiver via a serial tuning bus. The RT-5000 is connected to the Logic Converter Unit for tuning control and to the active antenna by two coaxial cables, one active at frequency of 400 MHz or higher one active at frequencies below 400 MHz.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

The V/UHF Flexcomm II system can only be used for mission related communications.

The V/UHF Flexcomm II system is considered as a secondary radio system and can not be used for radio communication with Air Traffic Control (ATC).

The use of the V/UHF Flexcomm II system is prohibited during IFR operation.

The use of the V/UHF Flexcomm II control panel, by the pilot flying is prohibited.

It is responsibility of the operator to obtain the operational approval of the V/UHF Flexcomm II from the Competent Authority.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°2 (Fuselage - RH side)

1. ➡ Antenna : Condition.

Area N°6 (Fuselage - LH side)

1. ➡ Antenna : Condition.

SYSTEM CHECKS

V/UHF AM-FM FLEXCOMM II

1. V/UHF Flexcomm II control panel : Push the PUSH ON button to start the equipment self test.

IN FLIGHT

1. V/UHF Flexcomm II control panel : As desired.
2. ICS control panel : As desired.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

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SATCOM DZMx FLIGHTCELL

P/N 109G2310F20

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Satcom DZMx Flightcell is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE B: 11 JULY 2022
REVISION 1: 27 MAY 2025

LIST OF REVISIONS

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–	Issue A	Approved with NDC-109G2310-022 dated 9 March 2016 under the authority of DOA ref EASA.21J.005
1	Revised pages Title page, A-1 and B-1.	Approved with NDC-109G2310-021 dated 23 March 2016 under the authority of DOA ref EASA.21J.005
2	Revised pages Title page, A-1 and B-1.	Approved with NDC-109G2310-024 dated 25 March 2016 under the authority of DOA ref EASA.21J.005
3	Revised pages Title page, A-1 and B-1.	Approved with NDC-109G2310-026 dated 11 May 2016 under the authority of DOA ref EASA.21J.005
4	Revised pages Title page, A-1 and B-1.	Approved with NDC-109G2310-029 and NDC-109G2310-030 dated 14 November 2017 under the authority of DOA ref EASA.21J.005
–	Issue B	EASA Approval N° 10079693 dated 11 July 2022
1	Revised page 6 of 6.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
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GENERAL

The Satcom DZMx Flightcell P/N 109G2310F20, is a powerful communication system that uses the Iridium satellite and cellular networks to provide: global phone calling, two way messaging and aircraft tracking. The Satcom DZMx 4G WIFI/BT version also provides WIFI and Bluetooth capabilities.

The Satcom DZMx Flightcell system consists of a modular box integrated on the control panel, a Iridium satellite antenna and a cellular antenna. The control panel allows the system interface with the helicopter InterCom System (ICS) to allow hands free operation in pilot cabin.

A Ethernet/USB connector module is also present to provide access to the cellular data, to configure the system using the DZMx manager, for firmware upgrades and for downloading diagnostic.

SECTION 1 - LIMITATIONS

SATCOM DZMx FLIGHTCELL LIMITATIONS

The use of the Satcom DZMx Flightcell telephone is prohibited for the pilot flying, both in transmission and receiving modes while the aircraft is airborne.

It is responsibility of the operator to obtain the operational approval of the Satcom DZMx Flightcell telephone from the Competent Authority.

The use of the bluetooth functionality is prohibited for the cockpit crew.

PLACARD

IT IS PROHIBITED FOR THE PILOT FLYING TO USE THE TELEPHONE WHILE AIRBORNE

Near pilot audio panel

SECTION 2 - NORMAL PROCEDURES

Note

For full information on the use of the Satcom DZMx, refer to Flightcell DZMx Operator Manual, latest revision.

EXTERNAL PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°4 (Fins, tail gearbox and skid)

Iridium antenna : Check condition.

Area N°6 (Fuselage - LH side)

PHONE CONTR and PHONE : In.
PWR circuit breakers
(baggage compartment)

Cellular antenna : Check condition.

BEFORE TAKE-OFF CHECKS

Pilot flying ICS selector : Press SAT control knob to
mute satcom communica-
tions.

IN FLIGHT

SATCOM DZMx FLIGHTCELL OPERATION

(not be used by the pilot flying)

To make a telephone call:

- ICS selector : Set to SAT.
- Satcom control panel : Press  or  pushbuttons next to the name of the network to be used.
- Dial the number and press  pushbutton to make the telephone call.
- PTT trigger switch (on cyclic stick or pedal) : Press to 2nd detent and release to communicate.
- Satcom control panel : Press  pushbutton to close telephone call.
- PTT trigger switch (on cyclic stick or pedal) : Press to 2nd detent and release.
- ICS selector : Set as desired.

To answer a telephone call:

Note

Incoming telephone calls are announced by an audio tone and by the CALL flashing light on the instrument panel.

- ICS selector : Set to SAT.
- Satcom control panel : Press  pushbutton.
- PTT trigger switch (on cyclic stick or pedal) : Press to 2nd detent and release to communicate.

- Satcom control panel : Press  pushbutton to close telephone call.
- PTT trigger switch : Press to 2nd detent and release.
(on cyclic stick or pedal)
- ICS selector : Set as desired.

To mark a waypoint:

- Satcom control panel : Press “1” (MARK) pushbutton.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

- Refer to the basic AW109SP RFM.

DIRECTION FINDER P/N 109G3450F13

This Supplement shall be attached to the AW109SP RFM (Section 5) when the Direction Finder system is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

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GENERAL

The Direction Finder KIT P/N 109G3450F13 is a stand-alone direction finding system with an integral synthesized receiver covering 30 to 470MHz and 5 separate guard receivers to monitor predefined distress frequencies.

All 6 receivers take bearings simultaneously; may be separately switched on and off; and may have individual squelch levels set.

The bearing display screen displays the age of the applicable bearing, enabling an operator to see how long-ago (in seconds) the bearing value was valid.

The DF bearing may be displayed overlaid to the DMG image on the LCD Central Display (if optional equipment is installed).

The DF has an input which inhibits the receivers, freezes the value of the bearing data on all receivers and removes any signal presence status when a radio is transmitting (Radio PTT interlock).

The DF audio is audible activating the DF channel on the Audio Control Panel.

The Direction Finder KIT P/N 109G3450F13 is composed by:

- DF Receiver and Antenna unit, installed under the helicopter belly.
- DF controller and display, installed in the cockpit.

SECTION 1 - LIMITATIONS

DIRECTION FINDER LIMITATIONS

The Direction Finder control panel must be operated from the front left seat only.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

Area N°2 (Fuselage - RH Side)

1. Direction Finder antenna/receiver — Check condition.

IN FLIGHT

Note

During SX-16 steering operations the Direction Finder system indication is not consistent.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AN BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

No change.

FLIR UF350HD SYSTEM

P/N 109G9300F06

This Supplement shall be attached to the AW109SP RFM (Section 5) when the FLIR UF350HD system is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

Note

Only for S/N 22373, 22375 helicopters the “No Hazard” certification demands that the replacement of any equipment subject to this supplement is not allowed without the approval of the Manufacturer and of the competent Authority.

Changes to helicopter configuration (installation of approved equipments) are allowed only upon removal of the equipment subject of this supplement or after specific approval of the Manufacturer and of the competent Authority.

ISSUE B: 11 JUNE 2025

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	EASA Approval N° 10062829 dated 7 August 2017
1	Revised pages Title page, A-1 and B-1.	Approved with NDC-109G9300-006 dated 27 September 2017 under the authority of DOA ref EASA.21J.005
–	Issue B	Approved with NDC-109G9300-015 dated 11 June 2025 under the authority of DOA ref EASA.21J.005

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GENERAL

The FLIR UF350HD system installation P/N 109G9300F06 is an observation system that provides high-resolution, stabilized video images. The system includes an Hand Control Unit (HCU) with a comprehensive set of controls to manipulate both the Stabilized Turret Unit (STU) and the resultant video images.

It is capable of null rotations in Azimuth and Elevation.

The FLIR UF350HD system have two different installation options which allow the system to be operated from two different positions:

- Installation option P/N 109G9300F06-101/-111 allows the FLIR to be operated from left crew seat, through the HCU and the instrument panel 8.4" Multi Function Display (MFD);
- Installation option P/N 109G9300F06-107/-117 allows the FLIR to be operated from passenger cabin, through the HCU and 17.3" Multi Function Display (MFD) installed on the mission console.

The Mission Console (for Installation option P/N 109G9300F06-107/-117 only) consists of a support frame providing space and power provisions for the following equipments:

- Multi-Function Display (MFD) 17.3" LCD monitor;
- Digital Video Recorder (DVR) control panel;
- Video Amplifier and Distribution Unit (VADU);
- PTT foot switch support;
- FLIR Hand Control Unit (HCU);
- Intercom (ICS) control panel;
- Headset socket connector;
- Utility light.

The mission console is installed on the left side of the passengers compartment, in front of the left aft forward-facing seat, and is secured to the cabin floor rails.

The operator can operate the console sitting in the left aft fwd-facing seat.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

Use of the FLIR UF350HD system is only permitted during operations in VFR conditions.

The FLIR UF350HD system must not be used for navigation, flight path control or obstacle avoidance.

MINIMUM FLIGHT CREW

The minimum flight crew for FLIR operations consists of one pilot, who shall operate the helicopter from the right crew seat, and one operator.

The FLIR UF350HD system can be operated by an operator from two different positions:

1. In the co-pilot position only upon previous removal of all the co-pilot controls (Installation options P/N 109G9300F06-101/-111).
2. In the passenger cabin, if the mission console is installed (Installation options P/N 109G9300F06-107/-117).

NUMBER OF SEATS

When the mission console is installed in the passenger cabin (installation option P/N 109G9300F06-107/-117), the maximum number of seats is five, including the pilot's seat.

MISCELLANEOUS LIMITATIONS

BAGGAGE COMPARTMENT LIMITATIONS

Maximum load with FLIR turret 74 kg (163 lb)

Maximum load without FLIR turret 98 kg (216 lb)

FLIR UF350HD LIMITATIONS

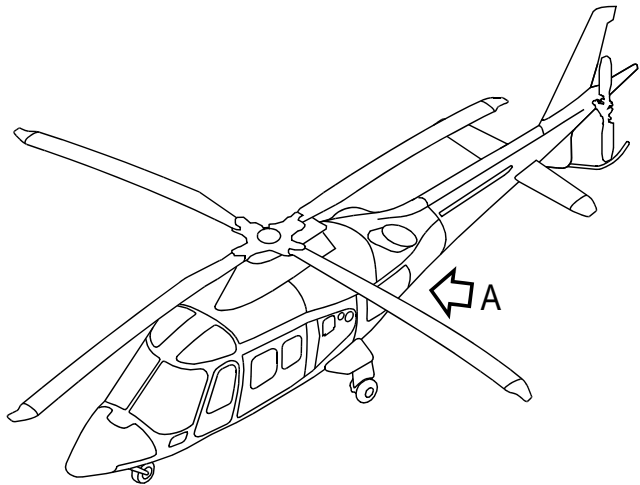
The FLIR system TCU must be stowed during ground taxiing, take-off and landing.

The FLIR HCU must be stowed during ground taxiing, take-off and landing.

LASER LIMITATIONS

The FLIR Eye Safe Laser Range Finder (ESLRF) must not be operated when close to personnel.

PLACARDS



BAGGAGE COMPARTMENT

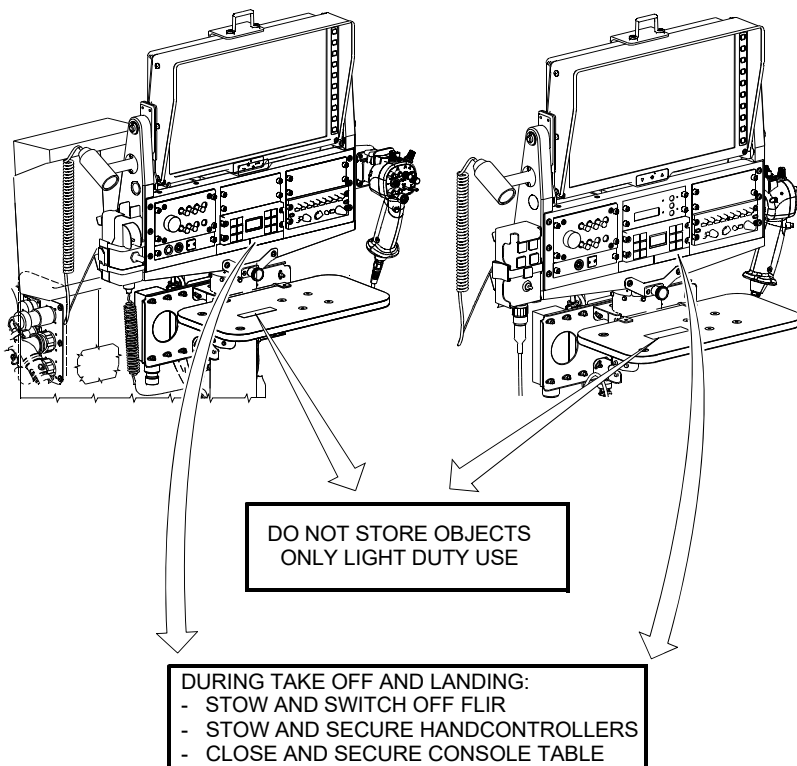
MAXIMUM ALLOWABLE BAGGAGE LOAD				
ZONE	1	2	3	
KG (LB)	74 (163)	69 (152)	65 (143)	WITH FLIR TURRET
KG (LB)	98 (216)	90 (198)	80 (176)	WITHOUT FLIR TURRET
MAXIMUM LOAD 74 KG (163 LB) WITH FLIR TURRET				
MAXIMUM LOAD 98 KG (216 LB) WITHOUT FLIR TURRET				
MAX UNIT FLOOR LOADING 500 KG/M2 (102 LB/SQ.FT.)				
ALL CARGO MUST BE SECURED				

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Figure 1-1 Placards in Baggage Compartment

Applicable to P/N 109G9300F06-117

Applicable to P/N 109G9300F06-107



ICN-0B-A-155045-G-A0126-10002-A-02-1

Figure 1-2 Placards on Mission Console

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°2 (Fuselage - RH Side)

1. FLIR UF350HD TCU : Condition and secure.

Note

The TCU can be moved by hand if it is in the STOW position, only if the system is unpowered and prior to flight.

After the check, reset the TCU in STOW position.

STOW position is considered +90° lookup (to engage the STOW magnetic brake) and 180° from the flight path (aiming backward).

- : -Check that it has mechanical freedom of movement and that no interference from surrounding object/obstructions is present.
- Check EO/IR lens condition and cleanliness.

Area N°6 (Fuselage - RH Side)

1. FLIR circuit breaker : Check in.
(in baggage compartment)

Area N°7 (Helicopter interior)

Cabin interior

For installation options P/N 109G9300F06-107/-117:

1. Mission console : Check mission console for security, equipment for security and connection, control units for condition, stowed and secured.

Cockpit interior

For installation options P/N 109G9300F06-101/-111:

1. Hand Control Unit (HCU) : Check present, condition, stowed and secured.

ENGINE PRE-START CHECK

1. FLIR UF350HD : Confirm in STOW position and switched OFF.
2. MISSION BUS switch : OFF.
(Overhead covnsole)

For installation options P/N 109G9300F06-107/-117:

On mission console:

3. DISP circuit breaker : Check in.
4. VADU circuit breaker : Check in.
5. VCR circuit breaker : Check in.
6. CSL LT circuit breaker : Check in.
7. AUX SCK circuit breaker : Check in.

SYSTEM CHECKS

1. FLIR UF350HD : Confirm in STOW position and OFF.

CAUTION

Avoid to power-off the system during the initialization phase.

For installation options P/N 109G9300F06-107/-117:

2. MISSION BUS : As desired.

BEFORE TAKE-OFF

1. FLIR UF350HD : Confirm stowed.
On mission console (if installed):
2. D-VAR status : As desired.

IN FLIGHT

FLIR OPERATION

1. FLIR UF350HD : As desired.
2. 8.4" MFD : As desired.
(on instrument panel)
3. 17.3" MFD : As desired.
on mission console (if installed)

Note

If the MFD image (on the instrument panel) becomes excessively distracting in demanding operating conditions, e.g. visual flight with poor external visual references, turn OFF the display or select a different video source.

CAUTION

Avoid to power-off the system during the initialization phase.

Note

When FLIR is not being used it should be stowed to protect EO/IR lens and the TCU.

Note

The IR sensor may require approximately 7 minutes to cool down. IR image will not be available during this period.

LASER SYSTEM OPERATION

CAUTION

Reflected Laser energy from objects closer than 100m (330ft) can cause damage to the LRF receiver.

APPROACH AND LANDING

1. FLIR UF350HD : Set in STOW position and switch OFF.
2. Hand Control Unit (HCU) : Stowed and secured.

For installation options P/N 109G9300F06-107/-117:

3. Mission console : Stow the table and the control units.

PRE-SHUTDOWN

1. FLIR UF350HD : Confirm FLIR switched OFF and HCU stowed.

On mission console:

2. D-VAR : If used, stop recording.
3. MISSION BUS switch (overhead console) : Select OFF.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY LANDING

1. FLIR HCU : Stow and secured.

For installation options P/N 109G9300F06-107/-117:

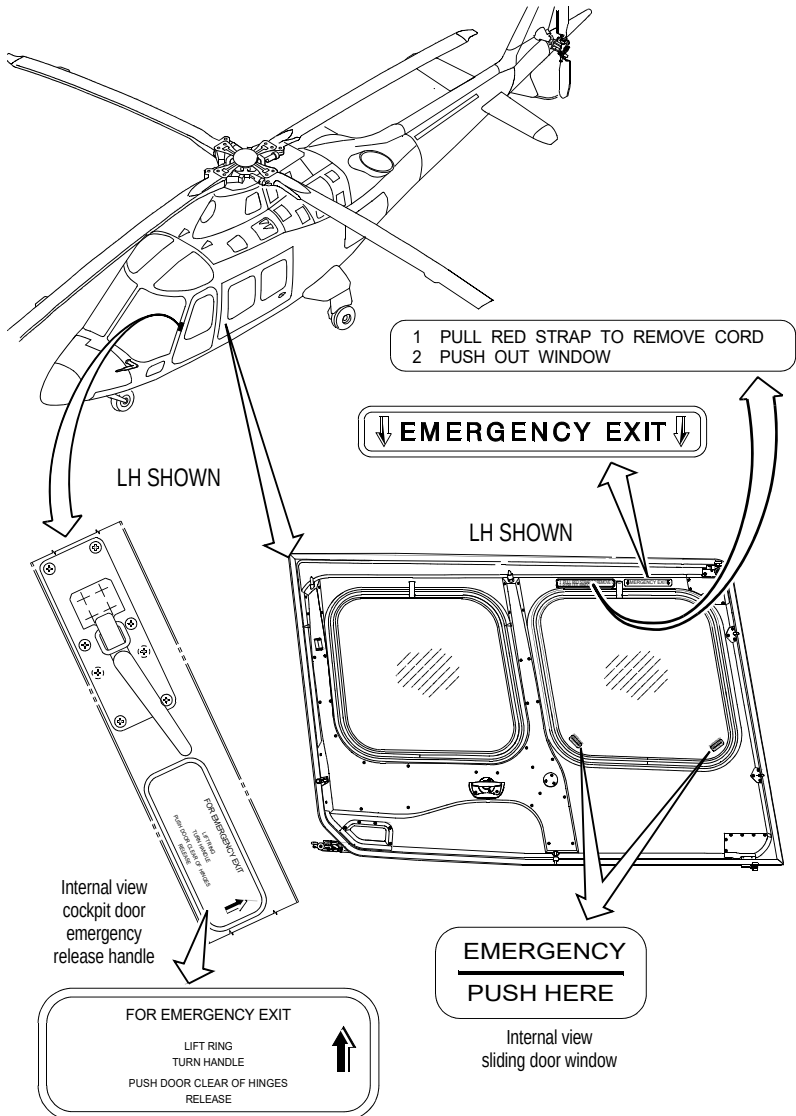
2. Mission console : Stow the table and the control units.

EMERGENCY EXITS

The emergency exits are shown in [Figure 3-1](#) and [Figure 3-2](#) of this supplement.

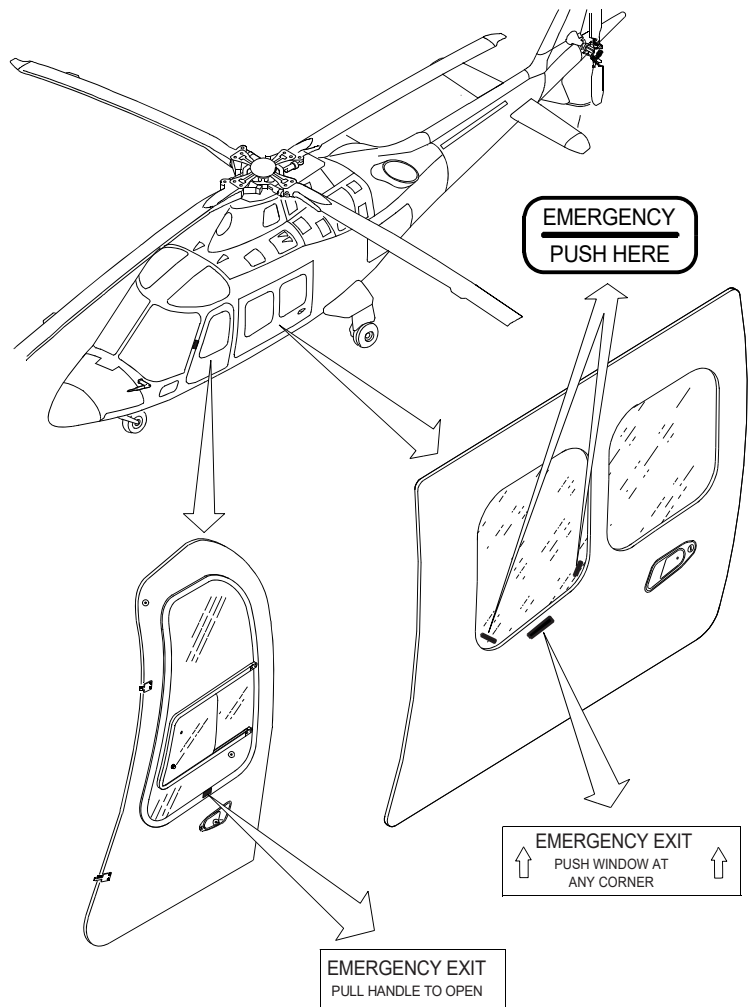
WARNING

The cabin LH aft window is not an emergency exit.



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Figure 3-1 Internal Markings and Placards

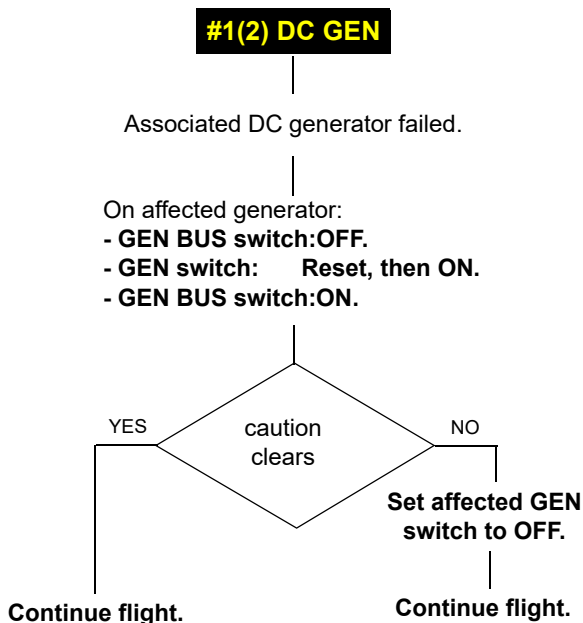


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Figure 3-2 External Markings and Placards

ELECTRICAL SYSTEM

FAILURE OF A GENERATOR



CAUTION

Switch OFF the FLIR and the MISSION BUS if the remaining generator exceeds load limit.

CAUTION

If TCU is not in STOW position, TCU lenses can be damaged during landing.

SECTION 4 - PERFORMANCE DATA

RATE OF CLIMB

With FLIR UF350HD system installed, reduce the Rate of Climb (ROC) performance by the value reported in the following table for each specific power rating:

ROC (ft/min)			
TOP	MCP	2,5 min.	MCP OEI
-50	-60	-70	-75

If others kits are installed refer to chapter [PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#) in the Introduction.

CATEGORY A OPERATIONS

PERFORMANCE CORRECTION AFTER KIT INSTALLATION

Drag factor of FLIR UF350HD installation to be used for Cat.A.

Equipment	P/N	Drag Factor (m²)
FLIR UF350HD	109G9300F06-101	0.33
	109G9300F06-107	
FLIR UF350HD	109G9300F06-111	0.10
	109G9300F06-117	

109G1580A022 Rev.K

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Table 4-1 Optional Equipment Drag Factor

SECTION 6 - WEIGHT AND BALANCE

ALLOWABLE BAGGAGE LOAD

The baggage compartment is divided in three zones. In [Figure 6-1](#), the maximum baggage load for each zone is presented.

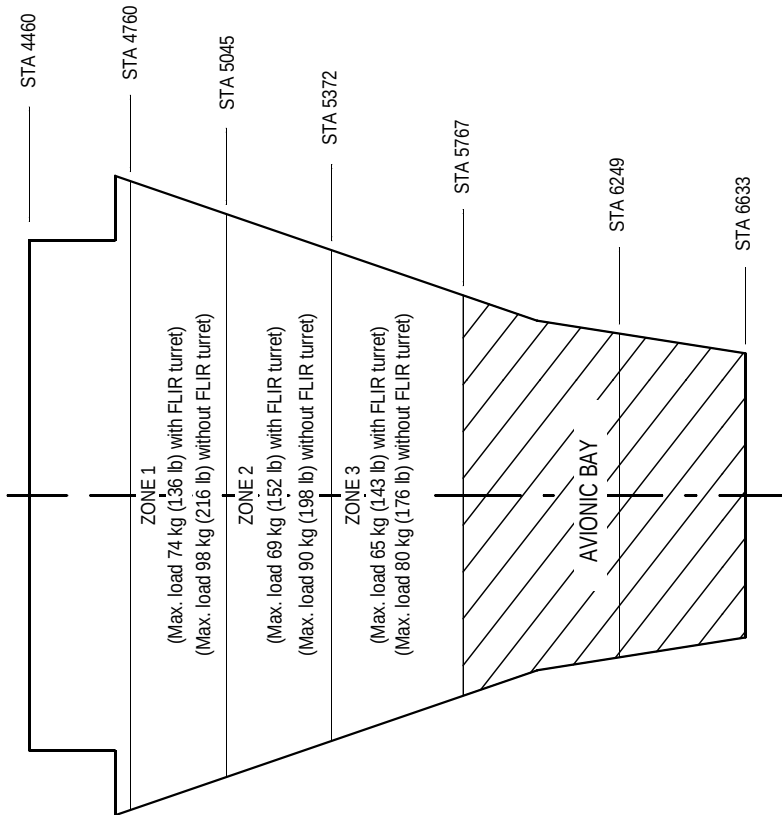
The maximum allowable baggage load is 74 kg with FLIR turret and 98 kg without FLIR turret.

The following table defines the longitudinal baggage moments for each zone.

An example of baggage loading is provided in [Figure 6-1](#).

Baggage load (kg)	ZONE 1 STA 4880 mm	ZONE 2 STA 5240 mm	ZONE 3 STA 5560 mm
	Baggage moment (kg mm) with FLIR turret		
10	48800	52400	55600
20	97600	104800	111200
30	146400	157200	166800
40	195200	209600	222400
50	244000	262000	278000
60	292800	314400	333600
65	317200	340600	361400
69	336720	361560	
74	361120		

Baggage load (kg)	ZONE 1 STA 4880 mm	ZONE 2 STA 5240 mm	ZONE 3 STA 5560 mm
	Baggage moment (kg mm) without FLIR turret		
10	48800	52400	55600
20	97600	104800	111200
30	146400	157200	166800
40	195200	209600	222400
50	244000	262000	278000
60	292800	314400	333600
70	341600	366800	389200
80	390400	419200	444800
90	439200	471600	
98	478240		



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Figure 6-1 Baggage Loading Zones

SECTION 7 - SYSTEM DESCRIPTION

THERMAL IMAGING SYSTEM (UF350HD)

The thermal imaging system ([Figure 7-1](#)) consists of the FLIR UltraForce 350HD installation.

The system consists of a Turret Camera Unit (TCU), a FLIR hand control unit, a 8.4" cockpit central monitor and a 17.3" monitor installed on the mission console.

The FLIR UF350HD system have two different installation options which allow the system to be operated from two different positions:

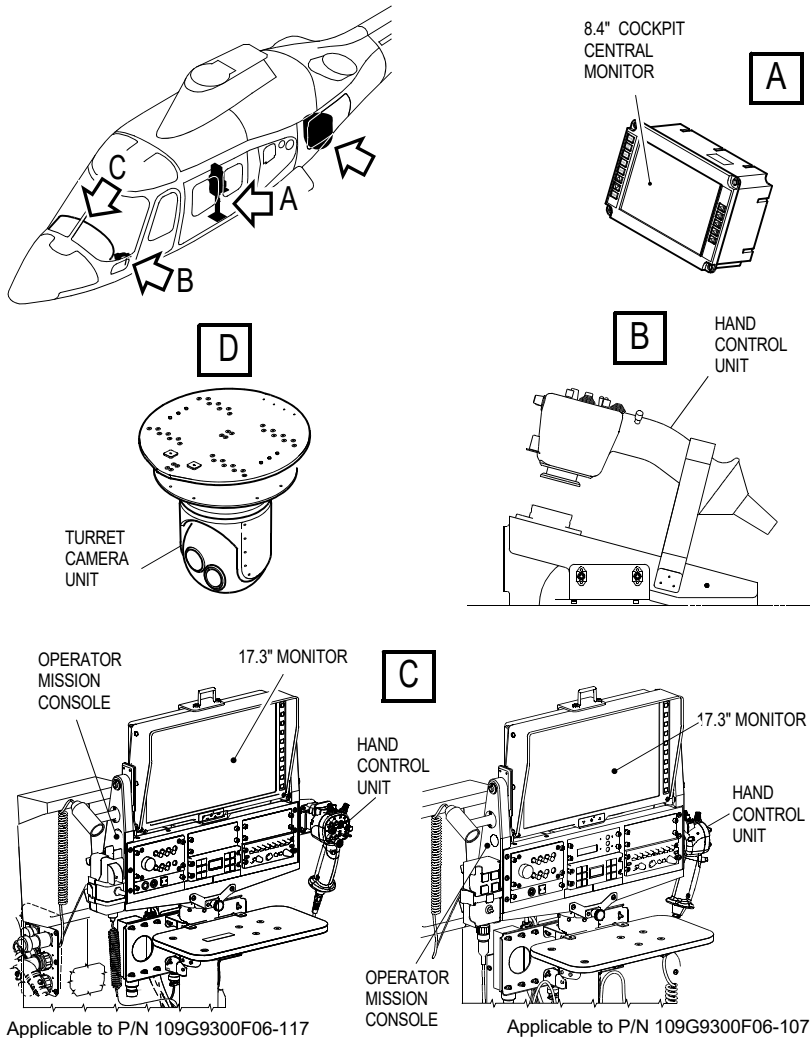
- Installation option P/N 109G9300F06-101/-111 allows the FLIR to be operated from left crew seat, through the HCU and the instrument panel 8.4" Multi Function Display (MFD);
- Installation option P/N 109G9300F06-107/-117 allows the FLIR to be operated from passenger cabin, through the HCU and 17.3" Multi Function Display (MFD) installed on the mission console.

The Mission Console (for Installation option P/N 109G9300F06-107/-117 only) consists of a support frame providing space and power provisions for the following equipments:

- Multi-Function Display (MFD) 17.3" LCD monitor;
- Digital Video Recorder (DVR) control panel;
- Video Amplifier and Distribution Unit (VADU);
- PTT foot switch support;
- FLIR Hand Control Unit (HCU);
- Intercom (ICS) control panel;
- Headset socket connector;
- Utility light.

The mission console is installed on the left side of the passengers compartment, in front of the left aft forward-facing seat, and is secured to the cabin floor rails.

The operator can operate the console sitting in the left aft fwd-facing seat.

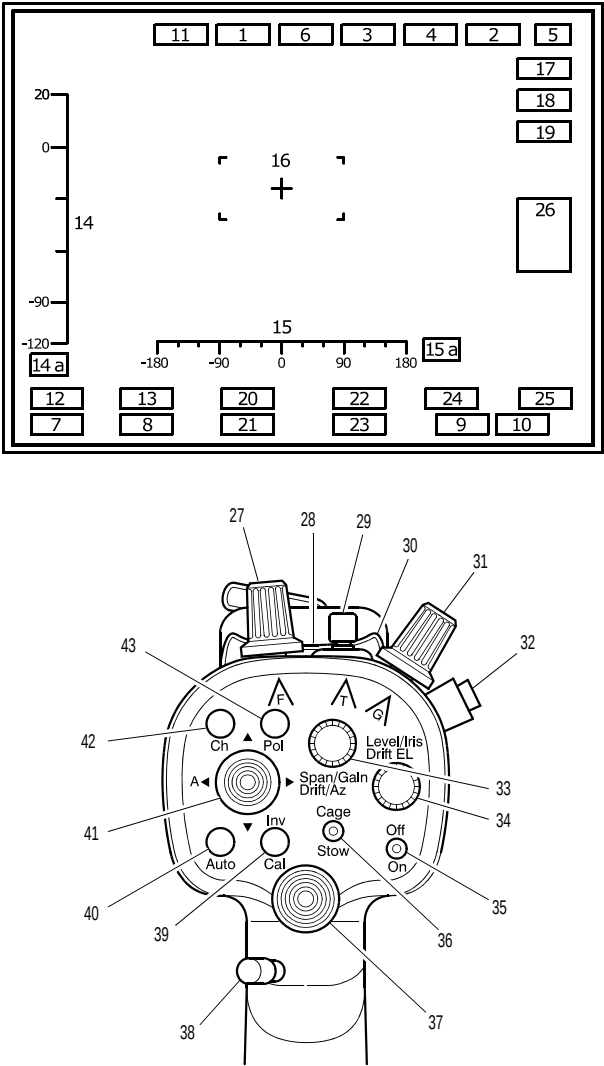


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**Figure 7-1 Thermal Imaging System (UF350HD)
- Component Location**

THERMAL IMAGING SYSTEM (UF350HD) CONTROLS AND DISPLAYS

Refer to [Figure 7-2](#).



ICN-0B-A-155045-G-A0126-10005-A-01-1

**Figure 7-2 Thermal Imaging System (UF350HD)
- Controls and Displays**

Key to **Figure 7-2**

Ref	Control/Display	Function
	Multifunction display and central display	Shows the video images of the IR camera, the color TV camera and the spotter camera or the Graphic data or system menu pages.
1	Symbol area	STOW: It shows that the system is in STOW mode. CAGE: It shows that the system is in CAGE mode. STEER: It shows that the system is in STEER mode. TRACK: It shows that the system is in TRACK mode. COAST: It shows that auto tracker is in COAST mode and working to re-acquire target.
2	Symbol area	TI/A: It shows that Thermal imager is in auto span and level mode. TI/M: It shows that Thermal imager is in manual span and level mode. TV/A: It shows that the TV is in automatic mode. TV/M: It shows that the TV is in the manual mode.
3	Symbol area	XX: It shows that Thermal Imager Electronic Zoom is not engaged. XXE: It shows that applies Thermal Imager Electronic Zoom value of x2. XX: Value indicating TV Camera approximate horizontal FOV in degrees. XX x2: Same as above and x2 electronic zoom.

Key to **Figure 7-2 (Continued)**

Ref	Control/Display	Function
4	Symbol area	WHT: It shows that the Thermal Imager shows white images as hot surface. BLK: It shows that the Thermal Imager shows black images as hot surface. FLT: It shows that the TV IR cut-off filter is off.
5	Symbol area	AF: It shows that the selected camera operates in auto focus mode. MF: It shows that the selected camera operates in manual focus mode.
6	Symbol area	FAULT XX: It shows that the system self test has detected a fault, a two digit code (XX) reports the nature of fault. FREEZE: It shows that the selected camera is in Freeze mode. INIT: It shows that Thermal Imager is cooling down and initializing, text is removed once initializing is done. During INIT the camera can not be controlled from the HCU. DDE OFF: It shows that DDE (IR camera Digital Detail Enhancement) is not active. 25%: It shows that the DDE is activated on a 25% level 40%: It shows that the DDE is activated on a 25% level 55%: It shows that the DDE is fully activated

Key to Figure 7-2 (Continued)

Ref	Control/Display	Function
7	Symbol area	It shows the aircraft position Latitude as supplied by an external GPS system. Displayed format is Deg: Min: two dec places of minutes: Sign (N or S).
8	Symbol area	It shows the aircraft position Longitude as supplied by an external GPS system. Displayed format is Deg: Min: two dec places of minutes: Sign (E or W).
9	Symbol area	It shows the date as supplied by the tracker. Displayed format is: Year (four digits) / Month / Day.
10	Symbol area	It shows the time as supplied by the tracker. Displayed format is: 24hr standard, Hours / minutes / Seconds.
11	Symbol area	This area is used to display autotracker status, it shows the same messages in thermal and TV operation modes. Blank field CENTR: It shows that auto tracker is in Standby mode. CORR: It shows that auto tracker is in Correlation mode. SCENE: It shows that auto tracker is in Scenelock mode. GEO: It shows that INS is used for Geo-Target mode
12	Symbol area	If IMU function is included this area is used to display Target Latitude Displayed format is Deg, Min: Two decimal places of minutes: Sign (N or S).

Key to Figure 7-2 (Continued)

Ref	Control/Display	Function
13	Symbol area	If IMU function is included this area is used to display Target Longitude. Displayed format is Deg, Min: Two decimal places of minutes: Sign (E or W).
14	Symbol area	It shows elevation Line of Sight angle.
15	Symbol area	It shows the azimuth Line of Sight angle.
16	Symbol area	Auto Tracker operational acquire and track symbology
17	Symbol area	It shows the status of the Laser Range finder and displays the target LOS distance.
18	Symbol area	It shows the Laser Pointer and Laser Illuminator status.
19	Symbol area	Not in use.
20	Symbol area	If IMU function is included this area is used to display Target Altitude.
21	Symbol area	If IMU function is included this area is used to display Aircraft Altitude.
22	Symbol area	If IMU function is included this area is used to display Target Slant Range.
23	Symbol area	If IMU function is included this area is used to display Aircraft Ground Speed.
24	Symbol area	If IMU function is included this area is used to display either Camera Line of Sight relative True North or Aircraft Heading relative True North.

Key to Figure 7-2 (Continued)

Ref	Control/Display	Function
25	Symbol area	If IMU function is included this area is used to display Status of the IMU. INS INIT: Initialising IMU. INACTIVE: IMU initialising complete. INS WAIT: Waiting for initial position before the alignment can start. ALIGNING: Alignment mode. ALIGN.COMP: Alignment completed. INS NAV: Navigation mode, target coordinates can be computed. BAD GPS: Indicates poor GPS reception
26	Symbol area	Menu area Menu Area will open in this position
27	FOCUS DIAL potentiometer and button	It has two functions related to the selected sensor as follows: TV Manual focus: TV selected - If TV is in auto focus mode the initial rotation of the control change mode to manual until the F button is hold pressed. TV Auto focus: TV selected - Momentary push changes the TV camera to auto focus mode. TI Manual Focus: TI selected - Manual control over TI focus. TI Auto focus: TI selected - Momentary push causes the TI camera to do one shot auto focus. Set Az joystick gain: TV selected with more than 50% zoomed - You can set Azimut joystick gain with the FUNCTION button and FOCUS DIAL potentiometer.

Key to **Figure 7-2 (Continued)**

Ref	Control/Display	Function
28	HCU NVG backlight adjust potentiometer	It lets a fine adjust of the HCU backlight
29	VIDEO TRACKER button	Start Track - It does a cycle of autotracker between engage and acquire operation modes. Coast Mode - When in autotrack it try to re-acquire target.
30	ZOOM selector	It has two functions related to the selected sensor as follows: TV Zoom: TV zoom control - Push "T" causes the TV camera to zoom towards (NFOV). Push "W" causes the TV camera to zoom inward (WFOV). TI FOV Change: TI lens change - Push "T" causes the TI camera to change its lens to the next NFOV. Push "W" causes the TI camera to change its lens to the next WFOV.

Key to Figure 7-2 (Continued)

Ref	Control/Display	Function
31	VIDEO TRACKER GATE DIAL potentiometer and button	It has the multiple functions as follows: TRACK MODE: Momentary pushed it cycles the autotracker modes as follows: Standby. Correlation. Scene. TRACK GATE (Window): Turned, it controls the size of the autotracker gate. Turned clockwise: it increase the gate size. Turned counterclockwise: it decrease the gate size. EL joystick gain: It increase or decrease the Elevation joystick gain with the TV selected, zoomed more than 50% and the Function button hold pushed.
32	EZOOM button	It has the two functions that follow: TV EZoom: Momentary pushed it changes between X2 and no EZoom options. TI EZoom: Momentary pushed it changes between X2 and no EZoom options.

Key to **Figure 7-2 (Continued)**

Ref	Control/Display	Function
33	SPAN/GAIN DRIFT/ AZ encoder and but- ton	It has the multiple functions as follows: AZ Drift: It adjust the azimuth drift with the Function button pushed. It sets the gimbals drift caused by the servo loop offsets. TV Manual Gain: Turned, it manually adjust the TV gain. If TV is in auto adjust mode, the initial rotation of the control change the mode to manual until the AUTO button is hold pressed. TI Manual Span: Turned, it manually adjust the TI span. If TI is in auto adjust mode, the initial rotation of the control change the mode to manual until the AUTO button is hold pressed. The button does not operate
34	LEVEL/IRIS DRIFT EL encoder and button	It has the multiple functions as follows: AZ Drift: It adjust the elevation drift with the Function button pushed. It sets the gimbals drift caused by the servo loop offsets. TV Manual Iris: Turned, it manually adjust the TV iris. If TV is in auto adjust mode, the initial rotation of the control change the mode to manual until the AUTO button is hold pressed. TI Manual Level: Turned, it manually adjust the TI level. If TI is in auto adjust mode, the initial rotation of the control change the mode to manual until the AUTO button is hold pressed. The button does not operate.
35	POWER ON/OFF button	Pushed it causes power on or off of the system.

Key to Figure 7-2 (Continued)

Ref	Control/Display	Function
36	CAGE/STOW button	The three positions toggle button has the functions that follow: CAGE: When momentary set to cage, the TCU moves in Elevation and Azimuth to the memory stored cage position. If the joystick moves over the position threshold, the CAGE become disabled and cause a change to the STEER mode. Cage Position: When push the Cage button and adjust Drift Az and Drift El the CAGE position is set to the pending angle. The new cage position is held in a non-volatile memory after a time of 10 seconds. STOW: When set to this position, the button lets the TCU move to the factory STOW (park) position. Centre position: The STEER mode is engaged when the button is set to this position. In STEER mode the TCU is manually moved using the thumb joystick.
37	Thumb Joystick	It has the two functions that follow: Turret steering Az and El: In STEER mode the thumb joystick lets manual steering of the TCU line of sight in azimuth and elevation. Airpoint Refinement: When autotracker is on it lets the autotracker mode related function that follow: Correlation - Autotracker aim point refinement Scene - Autotracker aim point refinement

Key to Figure 7-2 (Continued)

Ref	Control/Display	Function
38	Function button (blue color)	When pushed lets activation of secondary functions
39	INV/CAL button	It has the two functions that follow: Change EI joystick sense: It changes the joystick elevation sense according to the related operator preference Zero set of joystick offset: It reset joystick offset when pushed with the Function button together.
40	AUTO button	It has the two functions that follow: TV Auto Gain & IRIS: It changes the TV mode to AUTO Gain & Iris modes TI Auto Span & Level: It changes the TI mode to AUTO Span & Level modes NUC: With TI sensor selected, push Function button and Auto causes a Non Uniform Correction (NUC).
41	4-Way switch	It has the multiple functions as follows: TV Image Freeze: With the TV sensor on, set the switch to FRZ. It causes the cycle between frozen and active images. TI Image Freeze: With the TI sensor on, set the switch to FRZ. It causes the cycle between frozen and active images. TV camera IR filter: Set the switch to FRZ. It causes the cycle between in and out of the cut-off filter. IR camera DDE: When pushed FLT it cause a cycle between IR camera DDE off and different levels.

Key to Figure 7-2 (Continued)

Ref	Control/Display	Function
42	CH button	It has the two functions that follow: Change Sensor and Picture in Picture (PIP): If no PIP is selected, it cycles the displayed sensors between TV and TI. If PIP is selected, it swaps PIP sensor with master sensor. Time and Date: Refer to 4-Way switch. Select PIP: Refer to 4-Way switch.
43	POL button	Polarity: When pushed causes the change of TI polarity.

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SWE400 CAMERA SYSTEM

P/N 109G9300F07

This Supplement shall be attached to the AW109SP RFM (Section 5) when the SWE400 camera system is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

Note

The “No Hazard” certification demands that the replacement of any equipment subject to this supplement is not allowed without the approval of the Manufacturer and of the competent Authority.

Changes to helicopter configuration (installation of approved equipments) are allowed only upon removal of the equipment subject of this supplement or after specific approval of the Manufacturer and of the competent Authority.

Copy assigned to helicopter S/N: 22388.

ISSUE A: 25 SEPTEMBER 2018
REVISION 1: 27 MAY 2025

LIST OF REVISIONS

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1	Revised page 9 of 22.	Approved with MAF 109G0257A445 dated 27 May 2025 under the authority of DOA ref EASA.21J.005
	Revised pages Title page, A-1, and B-1.	Manufacturer's Data

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GENERAL

The SWE400 camera system P/N 109G9300F07 is a Quad Camera platform installed on a gyro stabilized camera gimbal attached to a structural frame installed on the right hand side of the helicopter forward fuselage and connected to the fuselage via the standardized Emergency Floats right forward attachment hard point.

The SWE400 system consists of the following Line Replaceable Units (LRU):

- Turret Camera Unit (TCU);
- Hand Control Unit (HCU);
- Interface Unit (IFU);
- 17" Monitor.

The mission console is installed on the central position of the passengers compartment, in front of central forward-facing seat, and is secured to the cabin floor rails.

The operator can operate the console sitting in the central second row seat.

SECTION 1 - LIMITATIONS

MINIMUM FLIGHT CREW

The minimum flight crew consists of one pilot who shall operate the helicopter from the right crew seat.

The SWE400 camera system must be operated by an operator in the passenger cabin.

NUMBER OF SEATS

Three (Pilot included).

AIRSPPEED LIMITATIONS

Maximum Airspeed: 135 KIAS

SLOPE, TAKE-OFF AND LANDING LIMITATIONS

Right Side UP operations: 5 deg

MISCELLANEOUS LIMITATIONS

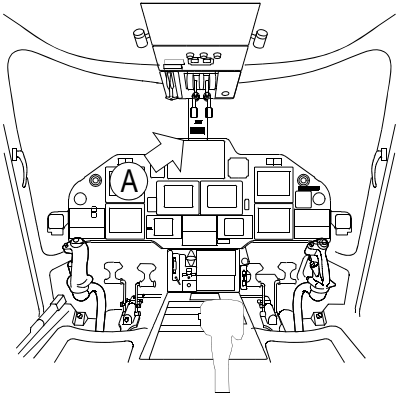
SWE400 CAMERA SYSTEM LIMITATIONS

Ambient Air Temperature Range
with Turret Camera Unit operative or stowed: -20 °C to 50 °C

Taxiing, takeoff and landing with the Turret Camera Unit in unstowed position is prohibited.

During takeoff and landing table console must be stowed and secured.

PLACARDS

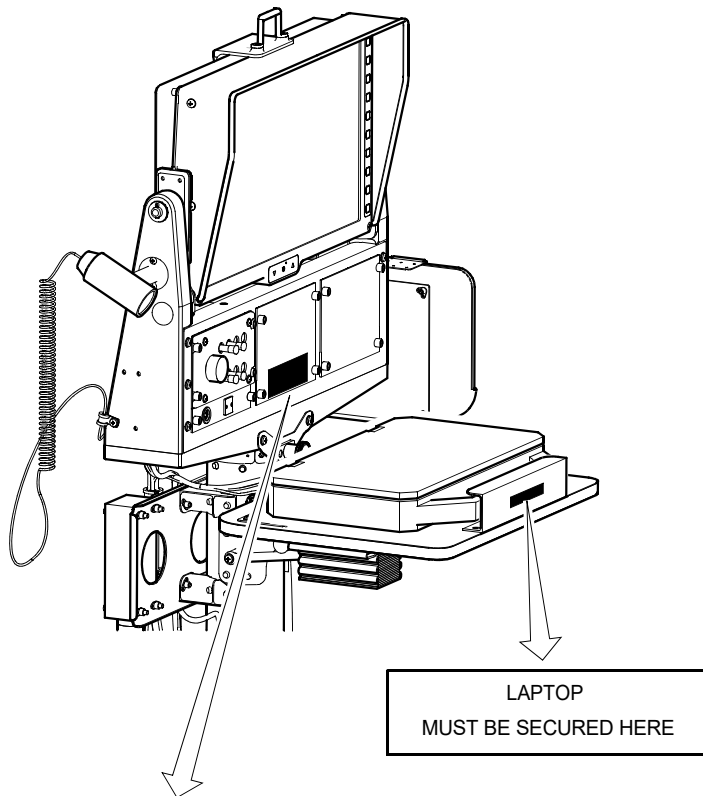


A

AIRSPEED LIMITATIONS V_{NE} - KIAS									
OAT°C Hp-ft	-25	-20	-10	0	10	20	30	40	50
-1000	168	168	168	168	168	168	168	168	168
0	168	168	168	168	168	168	168	168	168
2000	168	168	168	168	168	168	168	168	-
4000	168	168	168	168	168	168	166	161	-
6000	168	168	168	168	165	160	156	-	-
8000	168	168	164	160	155	151	146	-	-
10000	162	159	154	150	145	141	137	-	-
12000	152	149	145	140	135	131	-	-	-
14000	142	140	135	129	122	115	-	-	-
16000	132	128	121	113	107	-	-	-	-
18000	116	112	105	-	-	-	-	-	-
20000	100	-	-	-	-	-	-	-	-
V_{NEI} :					REDUCE V_{NE} BY 20 KIAS				
AUTOROTATION OR OEI:					REDUCE V_{NE} BY 40 KIAS				
MAX FWD TOUCHDOWN SPEED: 40 Kts					V_{LO} AND V_{LE} : 140 KIAS				
SWE400 CAMERA: MAX AIRSPEED 135 KIAS									

ICN-0B-C-155046-G-A0126-01002-A-01-1

Figure 1-1 Cockpit Placards



DURING ENGINES STARTING:
- SWITCH OFF SWE400
DURING TAKE OFF AND LANDING:
- SWITCH ON AND STOW SWE400
- STOW AND SECURE HANDCONTROLLER
- STOW AND SECURE CONSOLE TABLE
DURING ALL OTHER CONDITIONS:
- SWITCH ON SWE400, IF USED
- SWITCH ON AND STOW SWE400, IF NOT USED

ICN-0B-C-155046-G-A0126-01001-A-01-1

Figure 1-2 Cabin Placards

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

AREA N° 2 (Fuselage - RH side)

1. Mount Assembly and Turret Camera Unit (TCU) : Security and wiring properly connected.
Check TCU in stowed position and lens for condition

AREA N° 7 (Helicopter interior)

Cabin interior

1. Mission console : Check mission console for security.
Check equipment for security and connection.
Check control units for condition.
Check console table stowed and secured.
2. Interface Unit (IFU)) : Security and wiring properly connected.
3. Hand Control Unit (HCU) and monitor : Check condition, wiring properly connected, stowed and secured.

ENGINE PRE-START CHECK

CAUTION

The SWE400 system must be switched OFF at engine starting to eliminate any system damage from voltage transients.

1. MISSION BUS switch : Check OFF.
(Overhead panel)

SYSTEM CHECKS

1. MISSION BUS switch : ON.
(Overhead panel)

Operator in passenger cabin:

2. HCU : Remove from storage.
: Switch the system ON.
3. Monitor : Turn on and verify that the camera moved to CAGE position, initializes and properly displays the image of the selected video mode.
4. HCU : Operate the joystick to verify that the TCU may be commanded in the azimuth and elevation axes.
Null out drift components, if any, by pushing the appropriate trim adjust button.
Stow the TCU.
5. HCU : Stow and secure.

HOVER TAXIING AND TAKE-OFF

CAUTION

The Turret Camera Unit (TCU) must be in stowed position during taxiing, take off and landing.

Operator in passenger cabin:

1. HCU : Set the TCU in stowed position.
Shut the system down.
: Stow and secure.
2. Console table : Stow and secure.

IN FLIGHT

1. SWE 400 system : As desired.

APPROACH AND LANDING

Operator in passenger cabin:

1. TCU : Verify the TCU in stowed position.
2. Monitor and HCU : Stow and secure.
3. Console table : Stow and secure.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

CAUTION

In any emergency condition the Console Table and the Hand Control Unit (HCU) must be stowed and secured before landing.

SECTION 4 - PERFORMANCE DATA

RATE OF CLIMB

With SWE400 Camera System installed, reduce the Rate Of Climb (ROC) performance by the value reported in the following table for each specific power rating:

ROC (ft/min)			
TOP	MCP	2.5 min	MCP OEI
-50	-60	-70	-75

If others kits are installed refer to chapter [PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#) in the Introduction.

CATEGORY A OPERATION

PERFORMANCE CORRECTION AFTER KIT INSTALLATION

Drag factor of SWE 400 Camera system to be used.

Equipment	P/N	DRAG FACTOR (m ²)
SWE400	109G9300F07	0.31

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

GENERAL

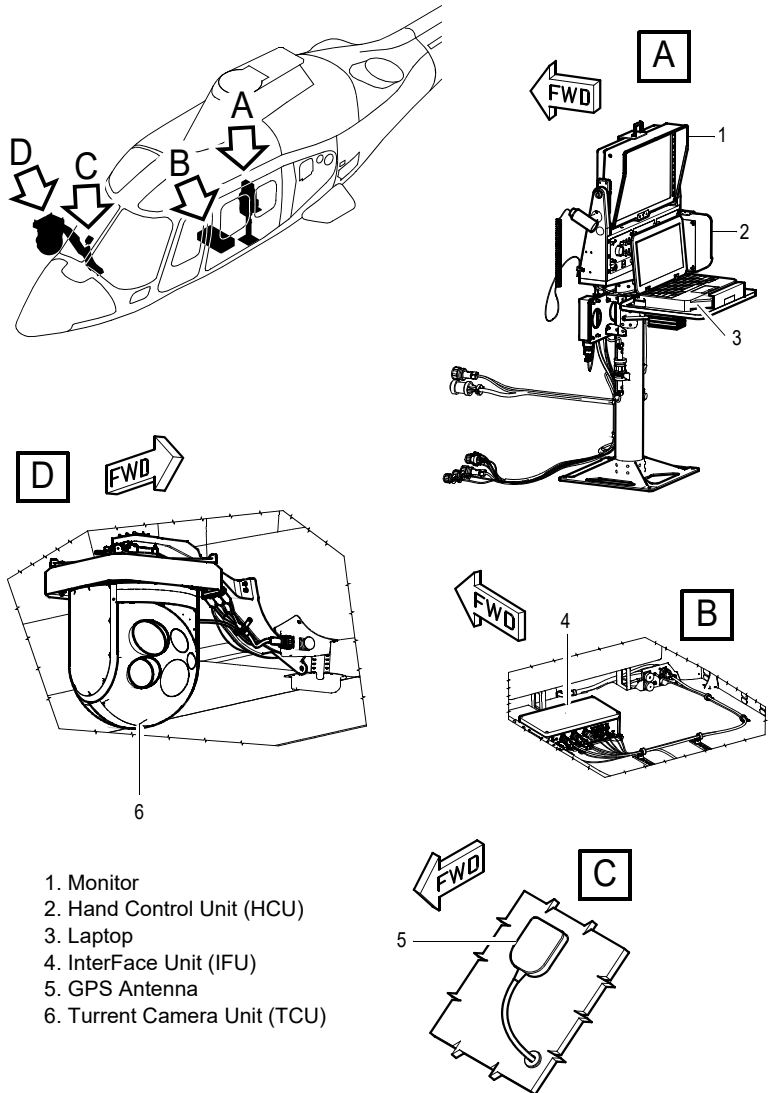
The SWE400 camera system P/N 109G9300F07 contains the following cameras:

- High Resolution Thermal camera with radiometric capabilities;
- High Definition Video Camera;
- Bi-Spectral UV Camera;
- Digital SLR Frame Camera.

The SWE400 system consists of the following Line Replaceable Units (LRU):

- Turret Camera Unit (TCU);
- Hand Control Unit (HCU);
- InterFace Unit (IFU);
- Radiometric Package;
- GPS Antenna;
- Monitor.

The SWE400 camera system is operated by an operator seated at the second passenger seat row.



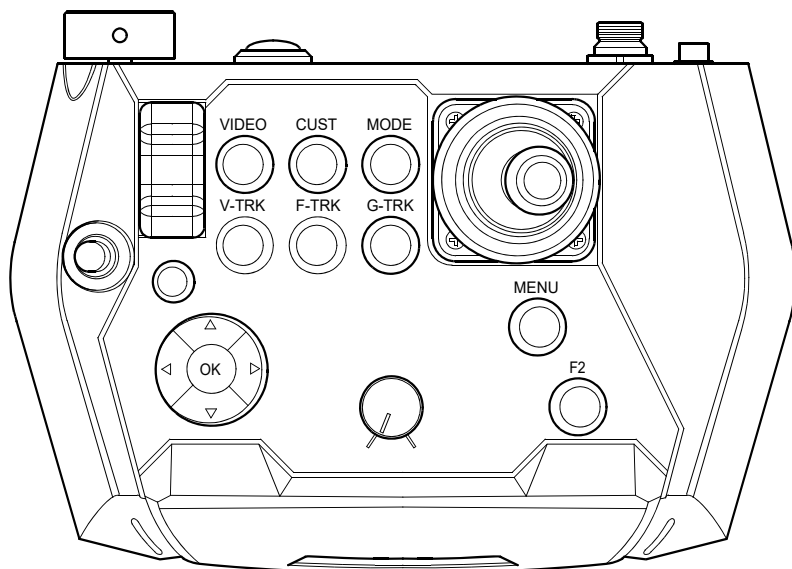
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Figure 7-1 SWE400 Camera System - Component Location

SWE400 SYSTEM CONTROLS AND DISPLAYS

The operator's interface with the SWE400 camera system is obtained by means of a Hand Control Unit (HCU) located under the passenger aft facing seat row.

The HCU is shown in [Figure 7-2](#)



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Figure 7-2 SWE400 Camera System - HCU

TURRET CONTROLS

Power ON/OFF Switch

The power select switch is located at the back of the hand control unit and it is used to control the power distribution within the system. When this switch is in the OFF (O) position, all power is removed from the system. When the switch is placed in the ON (I) position, the TCU and all electronics are powered and video is present once system initialization is completed.

Joystick

The Joystick installed on the HCU controls the movement of the TCU in azimuth and elevation. This control translates the direction and amount of deflection into a command used to steer the TCU. When a small amount of deflection is applied to the Gimbal Joystick, the TCU will respond by moving slowly in the commanded direction. A large deflection will command the TCU to rotate in the commanded axis at a faster speed.

Cage

The Cage position is a user configurable position that places the TCU's line-of-sight (LOS) at a predetermined azimuth and elevation position. This provides the operator with a known start position to operate from. Any Joystick input will disable the Cage position mode.

To configure and store the Cage position, hold Mode button, and navigate to the desired Cage angle using arrow buttons. When the system is rebooted the Cage, position returns to the original position

Stow (Menu + Mode)

The Stow Command is used to protect the optics of the system when the system is not currently in use.

- To Stow the system, Press and hold F1 and click Mode button.
- To Unstow the system Press and hold F1 and click Mode button.

Azimuth and Elevation Trim Adjust Menu + arrows)

The Azimuth and Elevation Trim Adjust commands are used to trim out any drift component that may exist in either of the axes. When a drift component exists in either axis, pushing the appropriate trim adjust button will null out the drift component.

- Press and hold F1 buttons and click or press and hold applicable arrow button.

It may be necessary to null out the drift component upon start up and then again after the system operating temperature stabilizes. Note that Drift components only can be "nulled out" in Joystick mode with HD-EO sensor selected.

Should be performed before take-off.

Invert Joystick (Menu + Video)

The Joystick elevation sense can be inverted to suit operator's preference.

Push to look down (Pilot Mode), Pull to look down (Gamer Mode).

To invert joystick sense:

- .Press and Hold F1 button and click Video button

Zoom Feedback (Menu + OK)

Enables or disables zoom feedback. This change can only be made when TV mode is selected. Zoom feedback is always enabled at start-up. See Joystick Gain.

To enable or disable zoom feedback.

- Press and hold F1 button and click OK button

Joystick Gain

Rotating the dial will increase or decrease the gain between joystick and TCU depending on the Zoom Feedback.

Zoom Feedback ON With Zoom Feedback is ON; rotating the dial will linearly increase or decrease the speed of the TCU depending on the zoom position. The speed will increase towards the WFOV and decrease towards the NFOV

Zoom Feedback OFF With Zoom Feedback, OFF; rotating the dial will increase or decrease the speed of the TCU set by the dial, regardless of the zoom position

Video

The Video button enables TV, IR or UV Modes. Controls with multiple functions are activated depending on which mode is selected

— To cycle video sensors Click video button.

TV CAMERA CONTROL FUNCTIONS

Manual Focus (Rotate Focus Dial)

The focus dial has multiple functions. Rotating the Focus dial moves focus far or near.

- Rotate the Focus knob to the right to move focus towards infinity.
- Rotate the Focus knob to the left to move focus towards near.
- Rotating the Focus knob quickly will cause a faster focus movement.
- Rotating the Focus knob click by click lets you fine tune your focus setting.

Auto Focus (Press Focus Dial)

Auto focus mode is entered by pressing the dial. The camera will automatically adjust its focus. The auto focus mode is disabled when the dial is rotated.

Zoom

The Zoom rocker allows the operator to zoom the HD-EO camera optically. Zoom speed is determined by the amount of Zoom rocker deflection from its center position.

- To Zoom-in, press the Zoom rocker away from you.
- To Zoom-out, press the Zoom rocker towards you.

TV Digital Zoom (F2 + Zoom)

The continuous E-zoom can be activated via the HCU, once full optical zoom has been reached the E-zoom will engage when activated. The amount of E-zoom is controlled by the zoom rocker on the HCU. The maximum E-zoom available is 12x.

- To activate E-zoom: Press and hold F2 button and push the zoom rocker forward.
- To deactivate E-zoom: Press and hold F2 button and push the zoom rocker towards you.

Iris (Up/Down Arrows)

Use the Up/Down Arrow Buttons to adjust the IRIS. The down button closes the iris and the up button opens it. Iris changes for every time the button is pressed in.

Gain (Left/Right Arrows)

Use the Left/Right Arrow Buttons to adjust the GAIN. The right button increases the gain and the left button lowers it. Gain changes for every time the button is pressed in.

Auto Gain & Iris Adjust (OK)

Both the Iris and the Gain will be automatically adjusted by the camera's internal electronics depending on the scene conditions. Auto Adjust becomes disabled once any of the Arrow Buttons are pressed.(See IRIS and GAIN).

Low Light mode (F2 + Video)

This command removes the IR cut off filter from in front of the detector. The image will become black and white with an increase in the camera's sensitivity which is suitable when operating in low light conditions.

- To toggle De-Fog mode ON/OFF, press and hold F2 button and click OK button.

De-fog (F2 + OK)

De-fog allows a clearer image when operating under foggy or misty conditions.

- To toggle De-Fog mode ON/OFF, press and hold F2 button and click OK button.

IR CAMERA CONTROL FUNCTIONS

Manual Focus (Rotate Focus Dial)

The operator can manually focus the IR camera by rotating the Focus knob.

- Rotate the Focus knob to the right to move focus towards infinity.
- o Rotate the Focus knob to the left to move focus towards near.

One shot Auto Focus (Press Focus Dial)

Auto focus mode is entered by pressing the dial. The camera will automatically adjust its focus one time (One Shot Focus) and then return to manual mode.

Digital Zoom

The two-way switch controls the digital zoom of the IR camera. Pressing the switch forward will increase the amount of digital zoom and pressing the switch backwards will decrease the amount of digital zoom.

Palette (Menu + Video)

The Palette command changes the IR image colors, there are several different palettes.

- Press and hold F1 button and click the video button.

Palettes are cycled for every time the video button is pressed.

Level (Up/Down Arrow)

Use the Up/Down Arrow Buttons to adjust the temperature Level in the image. The Up button moves the level up the temperature range and the down button moves the level down the temperature range. Press and hold up or down arrow to continuously adjust the level.

Click up or down arrow for fine adjustment of level.

Span (Left/right Arrows)

Use the Left/Right Arrow Buttons to adjust the temperature Span in the image. Pressing the right button increases the temperature span and pressing the left button decreases the temperature span.

- Press and hold left or right arrow to continuously adjust the level.
- Click left or right arrow for fine adjustment of level.

Auto Span & Level Adjust (OK)

Press OK to enter Auto adjust. Both the

Level and the Span will be automatically adjusted by the camera's internal electronics depending on the scene conditions.

Auto Adjust becomes disabled once any of the Arrow Buttons are pressed. (See Level and Span)

NUC (Menu + OK)

Pressing and holding F1 and clicking OK button will cause the camera to perform a Non-Uniformity Correction (NUC). The image will temporarily freeze.

Temperature measurement Box (F2 + OK)

Enables and disables the Temperature measurement box of the Thermal camera.

Save IR Image (AUX)

Use Aux button to store thermal Images to the computer if used.

Ensure proper connections:

- Ethernet Connection from Gimbal to Computer.
- Communication Cable between IFU and Computer.

UV CAMERA CONTROL FUNCTIONS

Gain (Left/Right Arrows)

Increase or decrease Gain level by pressing Right or Left arrows.

Blob Counter mode (OK)

Choose Blob counting mode by pressing the OK button.

Zoom Mode (Menu+Zoom)

Enable Digital Zoom mode by pressing Menu button + Zoom Forward.

Disable Zoom Mode by pressing Menu + Zoom Backward.

UC Color (Menu+Video)

Switch the color of the UV blobs.

DSLR CAMERA CONTROL FUNCTIONS (HCU)

Trigger

The Trigger button will send a picture store command to the DSLR camera and/or to the PC. Each time the button is pressed another picture will be stored inside the camera and/or PC.

Make sure to have the Nikon GPS Antenna connected; each picture will have the GPS position in the Meta Tag Data.

Focus

The Focus button will send an auto focus command to the DSLR camera.

TV to DSLR Zoom Slaving (F2+ > arrow)

This command will control both the movements of the photo camera's and TV cameras zoom lens. Normally ON.

Note: Slaving command is only available in TV Mode.

TV/Photo zoom slaving is enabled at power on.

Manual Zoom (Menu + Zoom)

Deactivate TV to DSLR zoom slaving to activate manual zoom mode. Press and hold Func button use zoom rocker to zoom DSLR camera. This command will control the movement of the zoom lens (70-200 mm).

Note: Zoom command is only available in TV Mode.

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VHF/FM NPX138

P/N 109G2310F26

This Supplement shall be attached to the AW109SP RFM (Section 5) when the VHF/FM NPX138 system is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

Note

The replacement of the equipment detailed in this Supplement is not allowed without the successful of the additional verifications reported in the Maintenance Manual.

Changes to the helicopter configuration (ie. installation of approved equipments) are not allowed without the successful completion of the verifications reported in the Maintenance Manual.



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REVISION 2: 21 MARCH 2022

LIST OF REVISIONS

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2	Revised pages Title page, A-1 and B-1.	Approved with NDC-109G0257-004 dated 21 March 2022 under the authority of DOA ref EASA.21J.005

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GENERAL

The VHF/FM NPX138 radio communication system P/N 109G2310F26 covers the frequency range of 138.0000 – 173.995 MHz with 5 kHz increments.

The system consists of:

- one NPX138 panel mounted transceiver installed, located on the rear interseat console;
- one antenna installation.

The VHF/FM NPX138 is connected to the AMU FM1 interface.

Pilot and Copilot manage the AMU by means of the related ICS Control Panels via serial link.

The VHF/FM NPX138 is connected to the FM1 antenna COMANT/COBHAM Type CI-177-1 by a coaxial cable.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

The VHF/FM NPX138 system can only be used for mission related communications.

The VHF/FM NPX138 system is considered as a secondary radio system and can not be used for radio communication with Air Traffic Control (ATC).

The use of the VHF/FM NPX138 control panel, by the pilot flying is prohibited.

During Take-off and Landing operations, the NPX-138 VHF-FM audio switch located on the Pilot flying Radio panel must be set to OFF.

It is responsibility of the operator to obtain the operational approval of the VHF/FM NPX138 from the Competent Authority.

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

AREA N° 2 (Fuselage - RH side)

1. ➡ Antenna : Condition.

AREA N° 6 (Fuselage - LH side)

1. ➡ Antenna : Condition.

SYSTEM CHECKS

VHF/FM NAT NPX 138

1. VHF/FM NPX138 control panel : Rotate the main volume control clockwise, away from the OFF detent position to start the equipment self test.

IN FLIGHT

1. VHF/FM NPX138 : As desired.
2. ICS control panel : As desired.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

GENERAL

Tactical VHF NAT FM Digital Radio Communication system ([Figure 7-1](#)) consists of one NPX138 panel mounted transceiver and one antenna installation.

The NAT NPX138 is connected to the AMU FM1 interface.

Signals between NPX138 and AMU are analogical as well as those between AMU and Pilot and Copilot headsets weather inside the AMU the signals are digitalized.

Pilot and Copilot manage the AMU by means of the related ICS Control Panels via serial link.

The NPX138 is connected to the FM1 antenna COMANT/COBHAM Type CI-177-1 by a coaxial cable.

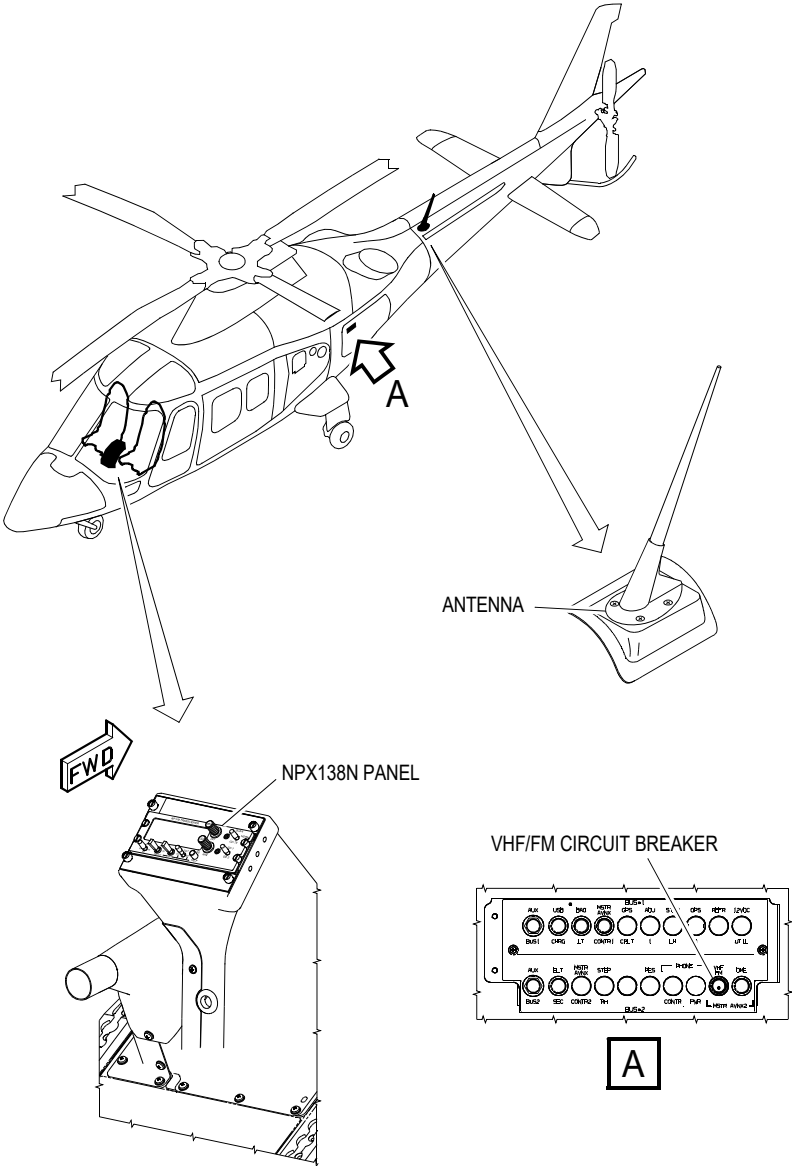
The system covers the frequency range of 138.0000 - 173.995 MHz with 5 kHz increments.

The NPX138 has a memory that can support up to 100 preset channels, each of whom can be configured for independent transmit and receive frequencies, and subaudible tones (CTCSS).

For each channel, an Alphanumeric ID can be assigned, in addition to the frequency and the channel number, to make easier the identification of channels by the operator.

Two different bands of operation are available: the Wideband operation provides a bandwidth of 25 kHz while the Narrowband operation provides a bandwidth of 12.5 kHz.

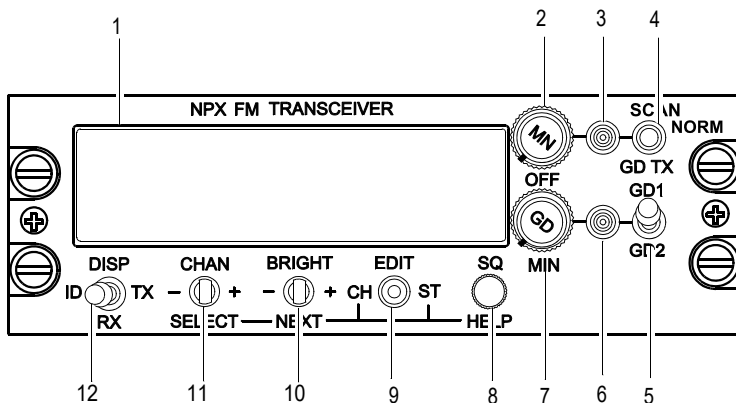
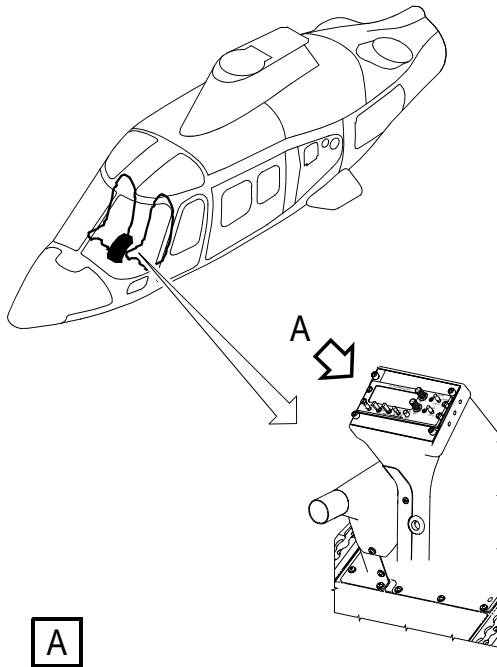
A Scan functions allows scanning of selected channels. Transmit power of either 1 watt or 10watt is selectable from the control head. Simplex and Semi-duplex operations are available.



ICN-0B-A-157000-G-00001-10527-A-01-1

Figure 7-1 VHF/FM NPX138 System - Component location

CONTROLS AND DISPLAYS



ICN-0B-A-157000-G-00001-10528-A-01-1

Figure 7-2 VHF/FM NPX138 Control Panel

Key to Figure 7-2

Ref.	Control/Display	Function
1	Display	Shows the channel number, the channel label or its frequency (RX or TX), the scan flags or the tone code.
2	Volume knob	OFF - The system is de-energized. Turned clockwise - When moved away from the OFF detent position, it energizes the system and increases the radio volume.
3	RX/TX STATUS light	In the transmission mode, comes on at green color.. In the receiving mode, when the signal is on, the RX/TX STATUS light comes on at amber color.
4	Scan/Guard TX switch	SCAN - The system does the scan of all the channels with flags (SC or P1) and stops when it finds the carrier signal of a frequency. The scan flag SC is entered on the right side of the channel label when the control panel is in the channel editing mode. The scan flag P1 is entered on the right side of the channel label when the control panel is in the status editing mode. The system uses the scan mode (LIST, PRIORITY, LIST + PRIORITY), that was set on the control panel in the status editing mode. NORM - Set the normal mode of radio operation. GD TX
5	Guard Select switch	GD1. GD2.
6	Guard RX indicator	It comes on at amber color when there is activity on the selected guard channel.
7	Guard RX Volume knob	It sets the guard RX volume independently. It lets the radio operator to hear activity on the guard channel (at the preset minimum level)..

Key to Figure 7-2 (Continued)

Ref.	Control/Display	Function
8	SQ/HELP pushbutton	When pushed with the control panel in the usual operation mode (EDIT switch at OFF), it overrides the squelch function. If pushed again, the squelch function operates. When pushed with the control panel in the channel or the status editing mode (EDIT switch at CH or ST), it operates the on-line help system.
9	EDIT switch	CH - Lets you do a check, or change the data related to each channel. The data are set with the DISPLAY and SELECT switch. ST - Lets you do a check or change the selection related to each function of the system (PWR UP CHAN, TX MODE, TONES, POWER, TONE DISP, SCAN, P1). You can do the selection of each function with the SELECT switch. The functions are set with the NEXT switch.
10	BRIGHT/NEXT switch	BRIGHT controls the brightness of the radio display. Momentarily press it to the right "+" to increment the display brightness by one level and to the left "-" to decrease by one level. There are seven brightness levels from which to select. NEXT control exit of the on-line help function or moves the editing cursor by one position at a time. Momentarily press it to "+" it set the cursor to one position to the right and momentarily press it to "-" it set the cursor to one position to the left.

Key to Figure 7-2 (Continued)

Ref.	Control/Display	Function
11	CHAN/SELECT switch	When moved to + or - with the control panel in the usual operation mode, it increases or decreases the channel number. When moved to + or - with the control panel in the channel editing mode (EDIT switch at CH), it enter the alphanumeric character in the related digit. When moved to + or - with the control panel in the status editing mode (EDIT switch at ST), it lets you do the necessary selection in the set function.
12	DISP switch	ID - The display shows the label and the scan flags of the set channel. RX - The display shows the frequency of the channel that receives and the tone code. TX - The display shows the frequency of the channel that transmits and the tone code.

EXTERNAL LOUDSPEAKER

P/N 109G2300F02-117

This Supplement shall be attached to the AW109SP RFM (Section 5) when the External Loudspeaker is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

ISSUE A: 11 JUNE 2025

LIST OF REVISIONS

REVISION No.	SUBJECT	APPROVAL
–	Issue A	Approved with NDC-109G2300-003 dated 11 June 2025 under the authority of DOA ref EASA.21J.005

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LIST OF EFFECTIVE PAGES

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B-1 and B-2	0
i and ii	0
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GENERAL

The external loudspeaker, P/N 109G2300F02-117, allow the crew to communicate to ground personnel while remaining in flight.

The system consists of one external loudspeaker, a control panel and an amplifier.

The external loudspeaker is mounted in a fixed position underneath the fuselage at the baggage compartment station.

SECTION 1 - LIMITATIONS

No change.

SECTION 2 - NORMAL PROCEDURES

EXTERNAL PREFLIGHT CHECKS

PILOT'S PREFLIGHT CHECK

Area N°2 (Fuselage - RH side)

External loudspeaker : Check condition and secured.
Check wiring connections for condition and security.

Area N°6 (Fuselage - LH side)

External loudspeaker : Check condition and secured.
Check wiring connections for condition and security.

PA PWR circuit breaker : Check in.
(in baggage compartment).

Area N°7 (Cockpit interior)

SPKR AMPL circuit breaker : Check in.
VOL knob : Confirm to OFF.

ENGINE PRE-START CHECKS

ELECTRICAL POWER-UP

Miscellaneous

Loudspeaker Control Panel :

WAIL / OFF / YELP switch	: Check OFF.
VOL knob	: Set as required.
MIC / AUX / RADIO switch	: Check MIC.
EXT PA / INT PA switch	: As required.
PTT switch	: Push and talk briefly. Check audible message.
VOL knob	: OFF.

IN FLIGHT

Note

During external loudspeaker operations, all helicopter doors and windows should be closed to avoid feedback to the microphone.

Note

At maximum volume, the loudspeaker can only be ON for maximum period of 15 seconds followed at least by a 15 seconds OFF interval.

PUBLIC ADDRESS (PA) OPERATION

ICS control panel : Select to PA.

Loudspeaker Control Panel :

VOL knob : ON and adjust volume.

MIC / AUX / RADIO switch : Check MIC.

EXT PA / INT PA switch : As required.

PTT trigger switch : Push (at the second detent for
(on cyclic stick) the cyclic switch) and talk.

When loudspeaker operation is no longer required:

VOL knob : OFF.

SIREN OPERATION

Loudspeaker Control Panel :

VOL knob : ON and adjust volume.
MIC / AUX / RADIO switch : Check MIC.
EXT PA / INT PA switch : Set to EXT PA.
WAIL / OFF / YELP switch : Set to WAIL or YELP, as required.

When system operation is no longer required:

WAIL / OFF / YELP switch : Set to OFF.
VOL knob : OFF.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

No change.

SECTION 4 - PERFORMANCE DATA

No change.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

Refer to the basic AW109SP RFM.

SX-16 SEARCHLIGHT

P/N 109G3340F11

This Supplement shall be attached to the AW109SP RFM (Section 5) when the SX-16 searchlight is installed.

The information contained herein supplements the information of the basic Rotorcraft Flight Manual.

For limitations, procedures and performance data not contained in this supplement, consult the basic Rotorcraft Flight Manual.

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–	Issue A	EASA Approval N° 10087294 dated 11 June 2025

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GENERAL

The SX-16 searchlight, P/N 109G3340F11, is a high intensity external light source and is installed on a gimbal support mounted on the left hand side of the helicopter.

The installation consists of the searchlight, gimbal support, a pendant control box and necessary hardware and cabling.

The pendant control box P/N 030620-11 includes the following controls:

- ON/OFF/START switch;
- FOCUS switch;
- DOWN-UP-LEFT-RIGHT slew switch;
- IFCO (In-Flight Change Over) switch.

SECTION 1 - LIMITATIONS

TYPE OF OPERATION

The use of the SX-16 searchlight in IFR condition is prohibited.

MINIMUM FLIGHT CREW

The minimum flight crew, for SX-16 searchlight operations, consists of one pilot and one SX-16 operator.

AIRSPEED LIMITATIONS

Maximum airspeed with lamp and filter in fixed position 140 KIAS

Maximum airspeed for lamp or filter moving 85 KIAS

ALTITUDE LIMITATIONS

Maximum altitude for operation
with SX-16 searchlight 15000 ft (4572 m)

Maximum altitude with
SX-16 searchlight not operative (Lamp OFF) 20000 ft (6096 m)

MISCELLANEOUS LIMITATIONS

SX-16 SEARCHLIGHT USE LIMITATIONS

The pilot flying must not operate the SX-16 pendant control box.

Use of the SX-16 searchlight is permitted only during night operation.

If copilot flight controls are installed and the SX-16 operator occupies the copilot side, removal of the pendant control box from its housing on the interseat console is prohibited.

Operation of the SX-16 searchlight is restricted to trained crew members only.

The SX-16 searchlight must be switched OFF:

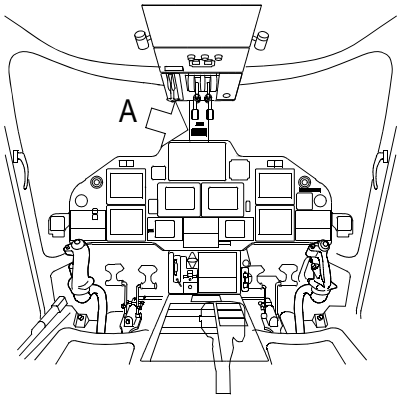
- below 50 ft (15 m) AGL
- in cloud or fog conditions.

The SX-16 searchlight must not be used as a landing light.

For pendant control box P/N 030620-11 installation:

Do not hold the OFF/ON/START switch in START position for more than 5 seconds to avoid damage to the SX-16.

PLACARDS



A

SX-16 SERCHLIGHT

CAUTION

DO NOT USE
BELOW 50 FT AGL
OR IN FOG OR
CLOUD CONDITIONS.
MONITOR LOADMETER
WHEN IN USE.

MAXIMUM AIRSPEED

•LAMP AND
FILTER IN FIXED
POSITION:
140 KTS

•LAMP OR
FILTERS MOVING:
85 KTS

STOW BEFORE LANDING

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Figure 1-1 Cockpit Placard

SECTION 2 - NORMAL PROCEDURES

PRE-FLIGHT CHECKS

PILOT'S PRE-FLIGHT CHECK

Area N°6 (Fuselage - LH side)

1. SX-16 searchlight : Secured and wiring properly connected.
Check conditions and lens for cleanliness.

Area N°7 (Helicopter interior)

Cockpit interior

1. BAT switch : Set to ON.
2. GEN BUS 1 switch : Set to ON.
3. SUN CONTR circuit breaker : Check in.
4. Pendant control box : Check present, condition,
(if installed in the cockpit) stowed and secured.
5. IFCO switch : Check in CLOSE position.

Cabin interior

(on mission console, if installed)

1. Pendant control box : Check present, condition,
(if installed in the cabin) stowed and secured.
2. IFCO switch : Check in CLOSE position.

SX-16 checks

CAUTION

Do not set OFF/ON/START switch to START.

1. OFF/ON/START switch : Set to ON.
(on pendant control box)
2. UP/LEFT/DOWN/RT switch : Move control and verify correct
(on pendant control box) movement of searchlight.
3. IFCO switch : Set to OPEN.
(on pendant control box)
4. IFCO switch : Set to CLOSE.
(on pendant control box)
5. OFF/ON/START switch : Set to OFF.
(on pendant control box)

IN FLIGHT

SX-16 SEARCHLIGHT OPERATING PROCEDURE

CAUTION

Avoid to direct the beam towards other aircraft or vehicles to prevent temporary blinding effect.

CAUTION

The SX-16 must not be directed in areas where the operator can not observe the searchlight beam.

1. OFF/ON/START switch : Set to ON.
(on pendant control box) Only the fan on the aft end of the searchlight will start. The light is still off.
2. OFF/ON/START switch : Hold in START position until the
(on pendant control box) ignition of the gas in the lamp has occurred, but NOT for longer than 5 seconds.

CAUTION

Holding the switch in the START position, after ignition of the gas in the lamp, may damage the SX-16.

Note

Only 3 START attempts can be performed. If the SX-16 searchlight does not light up after the third trial (maximum of 5 seconds for each attempt), turn the OFF/ON/START switch to OFF.

3. UP/LEFT/DOWN/RT switch : As necessary to oriented light
(on pendant control box) as desired.
4. FOCUS pushbutton : As necessary to focus light
(on pendant control box) beam as desired.
5. IFCO switch : As desired.
(on pendant control box)

When SX-16 searchlight operations are completed:

6. IFCO switch : Set to CLOSE.
(on pendant control box) The NVG filter will close, and a green "IR" advisory message will appear on the pendant control box.

7. OFF/ON/START switch : Set to OFF.
(on pendant control box)
8. SX-16 PRESS pushbutton : Press to ON.
(on instrument panel) Verify SX-16 in stow position.
9. SX-16 pendant control box : Stow.

APPROACH AND LANDING

1. SX-16 searchlight : Confirm OFF and stowed.
2. SX-16 pendant control box : Confirm stowed.

SECTION 3 - EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES

For any emergency condition carry out the following procedure:

1. OFF/ON/START switch : Set to OFF.
(on pendant control box)

MALFUNCTION PROCEDURES

ELECTRICAL SYSTEM

DC Generator/s or Generator Bus Failures

1. OFF/ON/START switch : Set to OFF.
(on pendant control box)

SECTION 4 - PERFORMANCE DATA

RATE OF CLIMB

With the SX-16 Searchlight installed, the reduction in the Rate of Climb performance from the Clean aircraft configuration or for combination with other optional equipment refer to chapter [PERFORMANCE CORRECTION AFTER KIT INSTALLATION](#) in the Introduction.

SECTION 6 - WEIGHT AND BALANCE

No change.

SECTION 7 - SYSTEM DESCRIPTION

GENERAL

The SX-16 searchlight system P/N 109G3340F11 is a high intensity external light source installed on the left side of the cabin of the helicopter. It provides further external lighting for reconnaissance operations during night time.

The installation consists of the searchlight, the gimbal support, the pendant control box.

The searchlight is installed on the left-hand side of the helicopter between STA 2962 and 3730, thus avoiding any possible interference. The xenon lamp of the searchlight system is equipped with an In-Flight Change Over (IFCO) filter.

In-Flight Change Over (IFCO) filter only allows desired light wavelengths to pass through it.

The pendant control box is installed on its support in the aft part of the interseat console, but when the alternative mission console assembly is installed, the pendant control box is relocated on the mission console (not illustrated). The operator can remove the pendant control box from its support to control the searchlight from the cabin.

With the pendant control box, the operator can:

- Set the searchlight on or off
- Adjust the width of the light beam
- Point the light beam to the required direction
- Set the IFCO filter open or closed.

The SX-16 PRESS ON lighted-pushbutton, on the instrument panel, lets the pilot to shut-off the searchlight and move it to the stowed position. The lighted-pushbutton illuminates when the searchlight operates and goes off when the searchlight is in the stowed position.

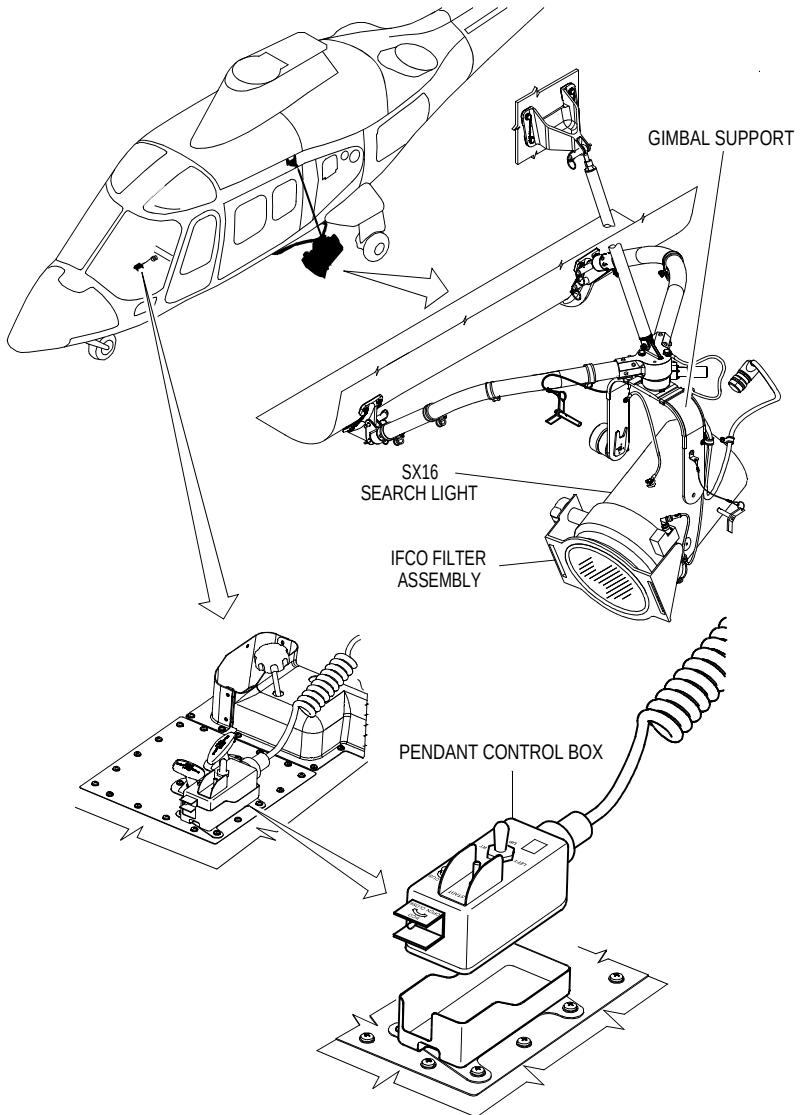
The SX-16 searchlight system is powered through the toggle-type circuit breaker installed on the overhead panel:

- LT SYS - SUN CONTR (not illustrated).

The main components of the SX-16 searchlight system and their location are shown in [Figure 7-1](#).

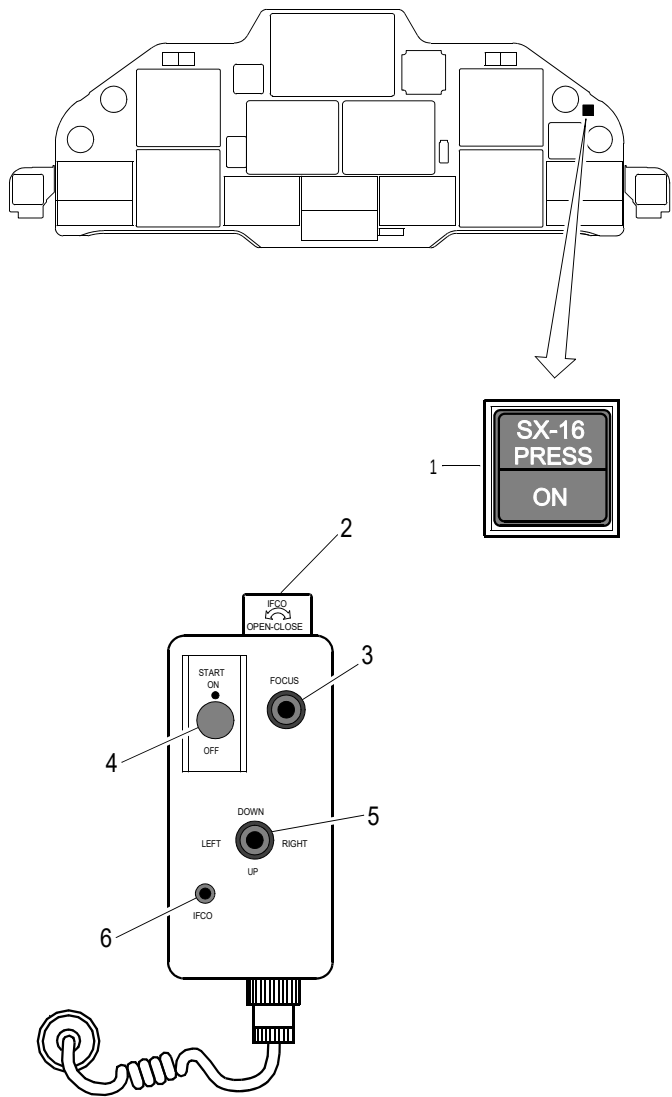
SX-16 SEARCHLIGHT SYSTEM CONTROLS AND DISPLAYS

Refer to [Figure 7-2](#).



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Figure 7-1 SX-16 Searchlight System - Component Location



ICN-0B-C-157000-G-00001-12691-A-002-01

Figure 7-2 SX-16 Searchlight System - Controls and Displays

Key to Figure 7-2

Ref.	Control/Display	Function
1	SX-16 PRESS ON push-button	ON position - The SX16 search-light is retracted. The green legend "SX16 PRESS ON" is illuminated.
2	IFCO OPEN/CLOSE switch	OPEN position - The IFCO filter is open (does not operates). CLOSED position - The IFCO filter is closed (it operates).
3	FOCUS switch	Push to adjust the light-beam width from a high-intensity small diameter to a low-intensity large diameter. The light beam width changes continuously from large to small to large again.
4	START/ON/OFF switch	START momentary position - The lamp starting circuit is energized. When the lamp turns on, the switch must be released to the ON position. ON position - The lamp and the cooling fan are energized for the continuous operation. OFF position - The system is de-energized and the light extinguishes.
5	DOWN/UP/LEFT/RIGHT slew switch	The 4-way direction switch moves the search-light up, down, right or left.
6	IFCO light indicator	The IFCO light indicator is on when the IFCO filter-hood is closed.

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