KAAN HAVACILIK SANAYİ VE TİC. A.Ş.

El Kitabı : OPERATIONS MANUAL PART B(LEONARDO A119)
Revizyon No : 8
Revizyon Tarihi : 23.07.2025

SİVİL HAVACILIK GENEL MÜDÜRLÜĞÜ

DIRECTORATE GENERAL OF CIVIL AVIATION

ONAY SERTİFİKASI
APPROVAL CERTIFICATE

OPERATIONS MANUAL PART B

KAAN HAVACILIK SANAYİ VE TİC. A.Ş.

KAAN HAVACILIK

Revision Date : 23.07.2025

Revision No : 8

TYPE(S) OF AIRCRAFT
Leonardo / A119

This Operations Manual (Part B / Aircraft Operating Matters - Type Related) has been evaluated and inspected in accordance with SHT-OPS Instructions and approved by the Turkish DGCA.

Approved By:

Turgay SENGER
Flight Standarts Coordinator

Approval Date

28/07/2025

T.C. ULAŞTIRMA VE ALTYAPI BAKANLIĞI

LIST OF EFFECTIVE PAGES

Section	Revision Number	Revision Date
00.01.01	8	23.07.2025
00.01.02	3	10.09.2018
00.01.03	3	10.09.2018
00.01.04	3	10.09.2018
00.02.01	7	19.02.2024
00.02.02	8	23.07.2025
00.02.03	3	10.09.2018
00.02.04	3	10.09.2018
00.02.05	3	10.09.2018
00.02.06	7	19.02.2024
00.02.07	7	19.02.2024
01.00	3	10.09.2018
01.01	3	10.09.2018
01.01.01	3	10.09.2018
01.01.02	3	10.09.2018
01.01.03	3	10.09.2018
01.01.04	3	10.09.2018
01.01.05	3	10.09.2018
01.01.06	3	10.09.2018
01.01.07	3	10.09.2018
01.01.08	3	10.09.2018
01.01.09	3	10.09.2018
01.01.10.01	3	10.09.2018
01.01.10.02	3	10.09.2018
01.01.10.03	3	10.09.2018
01.01.10.04	7	19.02.2024
01.01.10.05	3	10.09.2018
01.01.10.06	3	10.09.2018
01.01.10.12	3	10.09.2018
02.01.01	3	10.09.2018
02.01.02	3	10.09.2018
02.01.03	3	10.09.2018
02.01.04	3	10.09.2018
02.01.05	3	10.09.2018
02.01.06	3	10.09.2018

02.01.07	3	10.09.2018
02.01.08	3	10.09.2018
02.01.09	3	10.09.2018
02.02	3	10.09.2018
03.01	3	10.09.2018
03.01.01	3	10.09.2018
03.01.02	3	10.09.2018
03.01.03	3	10.09.2018
03.01.04	3	10.09.2018
03.01.05	7	19.02.2024
03.01.06	3	10.09.2018
03.01.07	3	10.09.2018
03.01.10	3	10.09.2018
03.01.11	3	10.09.2018
03.01.12	3	10.09.2018
04.00	3	10.09.2018
04.01	3	10.09.2018
04.02	3	10.09.2018
04.03	3	10.09.2018
05.01	3	10.09.2018
05.02	3	10.09.2018
05.03	3	10.09.2018
05.04	3	10.09.2018
05.05	3	10.09.2018
05.06	3	10.09.2018
05.07	7	19.02.2024
05.08	7	19.02.2024
06.01	3	10.09.2018
06.02	3	10.09.2018
06.03	3	10.09.2018
06.04	3	10.09.2018
06.05	3	10.09.2018
06.06	3	10.09.2018
06.07	3	10.09.2018
06.08	3	10.09.2018
06.09.00	8	23.07.2025

06.09.01	3	10.09.2018
06.09.02	3	10.09.2018
06.09.03	3	10.09.2018
06.09.04	8	23.07.2025
06.09.05	8	23.07.2025
07.01	3	10.09.2018
08.01	3	10.09.2018
08.02	3	10.09.2018
09.01	3	10.09.2018
10.01	3	10.09.2018
10.02	3	10.09.2018
10.03	3	10.09.2018
10.04	3	10.09.2018
10.05	3	10.09.2018
10.07	3	10.09.2018
10.08	3	10.09.2018
11.01	3	10.09.2018
11.02	3	10.09.2018

REVISION HIGHLIGHTS

Revision No:3

Existing OM-B-A119 transferred to electronic portal

Revision No:4

00.02.01 Person(s) Responsible for the issuance and insertion of amendments and revisions, 00.02.02 Amendments and Revisions with insertion dates and effective dates, 00.02.06 Temporary Revisions, 00.02.07 Distribution System for the manuals, amendments and revisions (Distribution website change), 06.09.04 Dry Operating Mass and corresponding centre of gravity (CG) or index, 06.09.05 Sample Mass and Balance Sheet (TC-HKD out of fleet)

Revision No:5

Related to changing FOM name and New Mass and Balance wighing numbers for helicopter;

00.01.01 A statement that the manual complies with all applicable regulations and with the terms and conditions of the applicable air operator certificate (AOC), 00.02.02 Amendments and Revisions with insertion dates and effective dates, 06.09.04 Dry Operating Mass and corresponding centre of gravity (CG) or index, 06.09.05 Sample Mass and Balance Sheet

Revision No:6

00.01.01 A statement that the manual complies with all applicable regulations and with the terms and conditions of the applicable air operator certificate (AOC), 00.02.02 Amendments and Revisions with insertion dates and effective dates, 06.09.04 Dry Operating Mass and corresponding centre of gravity (CG) or index, 06.09.05 Sample Mass and Balance Sheet

Revision No:7

00.01.01 A statement that the manual complies with all applicable regulations and with the terms and conditions of the applicable air operator certificate (AOC), 00.02.01 Person(s) Responsible for the issuance and insertion of amendments and revisions, 00.02.02 Amendments and Revisions with insertion dates and effective dates, 00.02.06 Temporary Revisions, 00.02.07 Distribution System for the manuals, amendments and revisions, 01.01.10.04 Fuel System, 03.01.05 Engine Failure, 05.07 Selection of Aerodromes and Operating Sites, 05.08 Fuel/Energy Scheme Fuel/Energy Planning and In-flight Re-planning Policy.

Revision No:8

TC-HKY and TC-HKZ entering into fleet and;
00.01.01 A statement that the manual complies with all applicable regulations and with the terms and conditions of the applicable air operator certificate (AOC), 00.02.02 Amendments and Revisions with insertion dates and effective dates, 06.09.00 WEIGHING of the AIRCRAFT (new procedure), 06.09.04 Dry Operating Mass and corresponding centre of gravity (CG) or index, 06.09.05 Sample Mass and Balance Sheet

TABLE OF CONTENTS

00-ADMINISTRATION AND CONTROL OF OPERATIONS MANUAL

AMC1 ORO.MLR.100 / AMC4 ORO.MLR.100 / AMC3 ORO.MLR.100 / AMC2 ORO.MLR.100 / ORO.MLR.100 / GM1 ORO.MLR.100(h) / ORO.MLR.101

00.01-Introduction

ORO.MLR.100

(00.01.01)- A statement that the manual complies with all applicable regulations and with the terms and conditions of the applicable air operator certificate (AOC).

Revizyon No: 8 Revizyon Tarihi: 23.07.2025

ORO.MLR.100

KAAN AIR's **Leonardo A119** Operations Manual Part B (OM PART B) document **Rev-8**, dated **23/07/2025**, EASA AIR OPS Regulation **Rev-22**, Rotorcraft Flight Manual **Rev-22** (RFM) published by Leonardo S.p.A. dated **21/06/2024** are in compliance with the requirements.

This OM PART B takes into account the operational conditions of the above mentioned aircraft types/classes/variants in the operating fleet of KAAN AIR within the scope of the requirements determined by the Turkish DGCA.

Prepared By	Controlled By	Approved By
Ali Metin UZUN Flight Ops. Manager, Captain KAAN Hvcl. San. Tic. A.Ş.	Kadir ERDOGAN Quality/Comp. Mont. & Safety Mng. Captain KAAN Hvcl. San. Tic. A.Ş.	M. Kemal SULER Accountable Manager, Captain KAAN Hvcl. San. Tic. A.Ş.

(00.01.02)- A statement that the manual contains operational instructions that are to be complied with by the relevant personnel.

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
ORO.MLR.100

Operations Manual contains information and instructions to enable operational personnel to perform their duties in best standards. KAAN AIR will make available this manual's procedures to operational personnel. The amendment of this manual and its procedures shall be properly controlled.

KAAN AIR will not introduce any alternative procedures to those prescribed in this manual unless needed and equivalent safety case has first been approved by Turkish DGCA.

It is accepted that these procedures do not override the necessity of complying with any new or amended regulation published by Turkish DGCA from time to time here these new or amended regulations are in conflict with these procedures.

The Turkish DGCA has been provided with a copy of the Operations Manual, and receives all amendments and revisions thereto.

The rules and regulations contained in the Operations Manual will be adhered to by the **relevant personnel** at all times; in the event of wilful or negligent disobedience to those rules and regulations the personnel concerned may become subject to disciplinary, legal or penal action. However, nothing contained in the Operations Manual will keep personnel from exercising their own best judgment during any irregularity for which the Operations Manual gives no provisions or in emergencies.

The **pilot-in-command** will, in an emergency situation that requires immediate decision and action, take any action he considers necessary under the circumstances. In such cases he may deviate from rules, operational procedures and methods in the interest of safety.

All **flight crewmembers** will have written copy of the Operations Manual in every aircraft . All **other operations personnel** will have easy access to the parts relevant to their respective duties. All **operating staff** is required to adhere to instructions laid down in this manual and any deviations should be reported, the reasons for such deviation being given.

Should any individual consider that all or any part of a procedure or instruction requires to be amended, he should notify the **Flight Operations Manager**.

(00.01.03)- A list and brief description of the various parts, their contents, applicability and use.

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
ORO.MLR.100

The Operations Manual consists of four separate parts respectively volumes:

- Part A General/Basic
- Part B Helicopter Operating Matters
- Part C Route and Aerodrome Instructions and Information
- Part D Training Manual

Part-A contains the non-type related operational policies, instructions and procedures required for a safe operation. It details the duties and responsibilities of all ground and flight operations personnel and their interrelationship to the operation as a whole.

Part-B contains all type related instructions and procedures required for a safe operation. It takes account of the different types of helicopter variants used in the KAAN AIR. It comprises the manufacturer's helicopter documentation. It contains relevant checklists, and a description and instructions for the use of emergency equipment and instructions relating to the action to be taken in emergencies.

Part-C comprises the Route and Aerodrome Instructions and Information required for the area of operation. Subparts of the Part-C are the current maps and charts and associated documents covering the intended flight inclusive of any diversion which may reasonably be expected and containing essential information relating to the Search and Rescue

Services in the area over which the helicopter will be flown.

Part-D comprises Training and contains all training instructions for personnel required for a safe operation.

(00.01.04)- Explanations and definitions of terms and words needed for the use of the manual.

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

ORO.MLR.100

Refer to OM Part A 00.01.04.

00.02-System of amendment and revision

ORO.MLR.100

(00.02.01)- Person(s) Responsible for the issuance and insertion of amendments and revisions

Revizyon No: 7 Revizyon Tarihi: 19.02.2024

ORO.MLR.100

The Operational Manual Part B, its amendments and revisions are published and issued by the **Flight Operations Manager** and **Compliance Monitoring Manager**.

The Flight Operations Manager is responsible for its contents, and for keeping the instructions and information up-to-date of chapters. Both managers will supply the Turkish DGCA with intended amendments and revisions in advance of the effective date.

The operations manual will be published in accordance with **easy usage** and **human factors** principles. The manual will be easy reading and understanding language by operations personnel.

All KAAN AIR employees have easy access to this OM Part via web site written in chapter 00.02.07 using their personal user names and passwords. The electronic version of part in the system contains whole up to date manual in PDF file format and may be used as a master document. Individually produced printouts from any electronic version of the part is for information only.

The binders and pages will be good handling and well reading on board of helicopters. In additions, the electronic copy will be colored and easy reading by users.

Note: *When an amendment concerns any provision or procedure, which must be approved by the Turkish DGCA, such approval will have been obtained before the amendment becomes effective. Only when immediate amendments or revisions are required in the interest of safety, they may be published and applied immediately provided that any approval required has been applied for.*

All holders of the part will revise the manual at the time specified in the amendment’s introduction, and record, on the Record of Revision, the insertion date, the effective date, and their name.

With each normal amendment an updated "List of Effective Pages" will be issued, which will enable the user to check whether his manual is up-to-date.

In order to identify changes, additions and deletions, a vertical line shall be used to outline revised or newly published paragraphs on the pages. In addition, an introduction ("Revision Letter") will be provided, identifying the revised pages and briefly describing the reason for their revision. Personnel are required to carefully take note of the change.

The page(s) affected will be entered in the "Temporary Revision Record". Temporary revisions will be brought to the attention of the Turkish DGCA immediately and, unless limited to a defined period of time, be followed by a normal amendment as soon as practicable.

(00.02.02)- Amendments and Revisions with insertion dates and effective dates

Revizyon No: 8 Revizyon Tarihi: 23.07.2025

ORO.MLR.100

Rev. No.	Date	Reason for Revision	Inserted By
Original	20.04.2011	Initial	Ertuğrul PEKER
1	11.10.2012	A119 Added	Ertuğrul PEKER
2	01.07.2013	AW139 Added	Metin YILDIZ
3	02.04.2014	Compliance of EC 965/2012	Kadir ERDOĞAN
3 Elect.	10.09.2018	OM-B-A119 transferred to electronic portal	Kadir ERDOĞAN
4	24.03.2021	Refer to Highlight Section	Kadir ERDOĞAN
5	17.11.2021	" "	Cemil PEKDEMİR Kadir ERDOĞAN
6	01.03.2023	" "	Cemil PEKDEMİR
7	19.02.2024	" "	Cemil PEKDEMİR
8	23.07.2025	" " (TC-HKY and HKZ entering into fleet)	Ali Metin UZUN

(00.02.03)- Handwritten amendments and revisions are not permitted, except in situations requiring immediate amendment or revision in the interest of safety

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

ORO.MLR.100

Handwritten amendments are permissible only in situations requiring immediate revision in the interest of safety; they will be initiated and put into force by a circular of the **Flight Operations Manager**. They will be followed by a formal amendment as soon as practicable and the Turkish DGCA will be informed immediately.

(00.02.04)- System for the Annotation of Pages or paragraphs and their effective dates

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

ORO.MLR.100

Permanent changes or revisions will be noted in the Record of Revisions along with the insertion date and the effective date. The List of Effective Pages will be updated and each revised page will be accompanied by a new "Effective Date" located at the top of each page of the Operations Manual.

All text revisions will be noted by a **single black line at the left/right side (l)** of the text and red colored that has been changed or added. The revision border will be removed when the section is revised again. Only the most current revision will have the text border.

Any text that has been deleted will be referenced in the Revisions Section of this Operations Manual along with a brief explanation of the text that was removed and why.

Each holder of Operations Manual, or appropriate parts of it, shall keep it up to date with the amendments or revisions supplied by the KAAN AIR.

KAAN AIR will supply the TR DGCA with intended amendments and revisions in advance of the effective date. When the amendment concerns any part of the Operations Manual which must be approved in accordance with the regulations, this approval will be obtained before the amendment becomes effective.

KAAN AIR will incorporate all amendments and revisions required by the regulations and the TR DGCA.

(00.02.05)- Annotation of Changes (in the text and, as far as practicable, on charts and diagrams)

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

ORO.MLR.100

All revisions or changes to diagram or charts will be identified by a revision bar to the right of the diagram or chart. The changes or revisions to the diagrams or charts will be noted in the Record of Revisions along with the insertion date and the effective date. The List of Effective Pages will be updated and each revised page will be accompanied by a new "Effective Date" located at the top of each page of the Operations Manual.

(00.02.06)- Temporary Revisions

Revizyon No: 7 Revizyon Tarihi: 19.02.2024

ORO.MLR.100

Temp Rev. No.	Date	Effective Subchapters	Inserted By
3.01	29.11.2019	06.09.04 Revised; Dry Operating Mass and corresponding centre of gravity (CG) or index for all A119 helicopter in the fleet	Kadir ERDOĞAN
3.02	12.02.2021	06.09.04 TC-HKD has been de-registered and out of fleet.	Kadir ERDOĞAN

(00.02.07)- Distribution System for the manuals, amendments and revisions

Revizyon No: 7 Revizyon Tarihi: 19.02.2024

ORO.MLR.100

Copy No	Distribution	Format
Original	Flight Operations Manager	Paper Copy
1	Turkish DGCA	PDF
2	Accountable Manager	PDF
3	Compliance Monitoring and Safety Manager	PDF
4	Training Manager	PDF
5	Ground Operations & Security Manager	PDF
6	Continuing Airworthiness / Technical Manager	PDF
7	Every Helicopters in the fleet (A119)	Paper Copy

The operations manual shall be distributed to all pilots, operations personnel when it issued and/or revised after approval to access the operations manuals **within 5 days after approval**. All personnel can access to operations manual PDF copies at KAAN AIR's https://kaanair-depo.online/MANUALS/OPERATIONS/ website.

Flight Operations Manager and/or Compliance Monitoring Manager is responsible of distribution and **revision info; immediately after approval** to all operations personel via https://ftl.safejets.net/ website which is notification portal has all the related operations personnel's email addresses recorded. Website will send a notification email which also has a quick link to access to attached document(s). Website also will log in a Notification Sheet/List for the personnel's access (by the way; been informed) date and time record for the further auditing purposes and as a legal proof.

All operations personnel can make a request copy of approved Operations Manual from Flight Operations Manager or Compliance Monitoring Manager when operation personnel outside of main base.

All operations manual shall be distributed with TR DGCA Approval Certificate in the 2nd page after cover. All personnel shall look at the latest approval certificate before using operations manual.

TABLE OF CONTENTS

01-LIMITATIONS

AMC3 ORO.MLR.100

(01.00)- General Information (e.g. aircraft dimensions), including a description of the units of measurement used for the operation of the aircraft type concerned and conversion tables.

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

01.00.01 General Information and Units of Measurement

The presented Operations Manual Part B (helicopter related operations documents) is a part of the Flight Operations Manual of KAAN AIR.

All of the dimensions, performance data and other calculation documents published in this document are taken from the respective current version of RFM LEONARDO A119. The calculations must be made together with the original data from this document.

01.00.02 Helicopter Type

This part of the handbook is intended for the deployed helicopter:

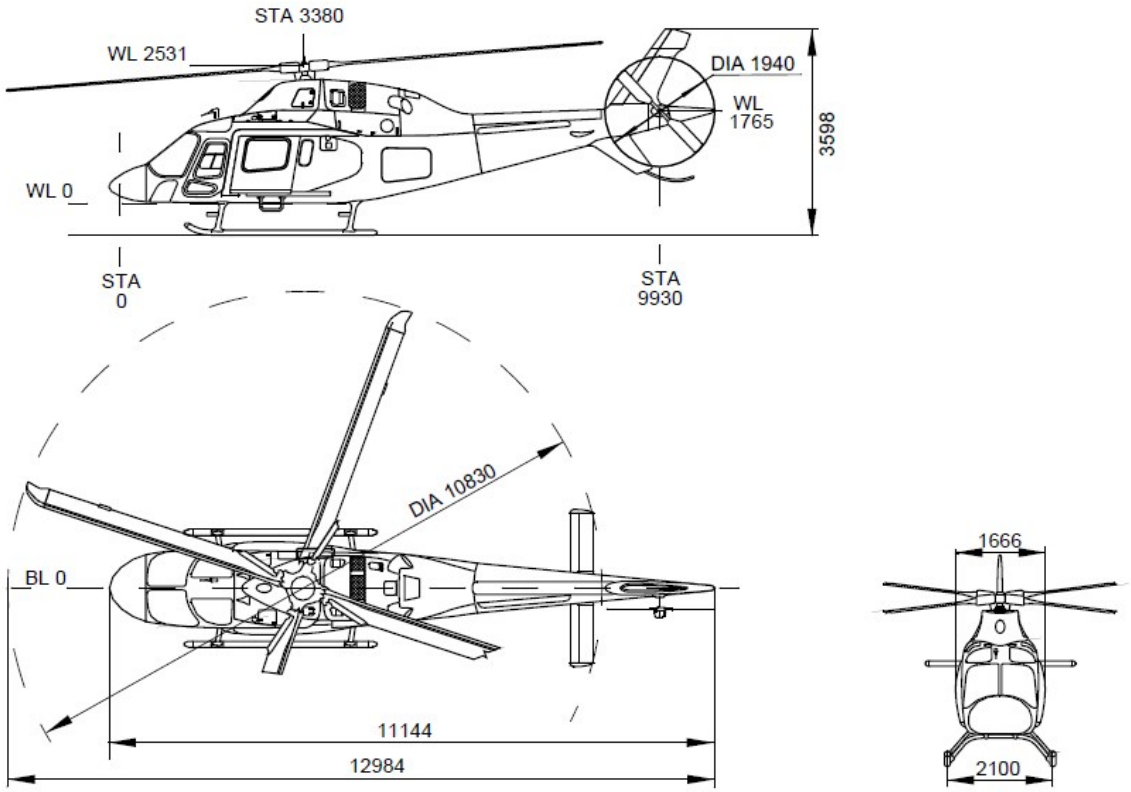
- A119

01.00.03 Helicopter Measurement

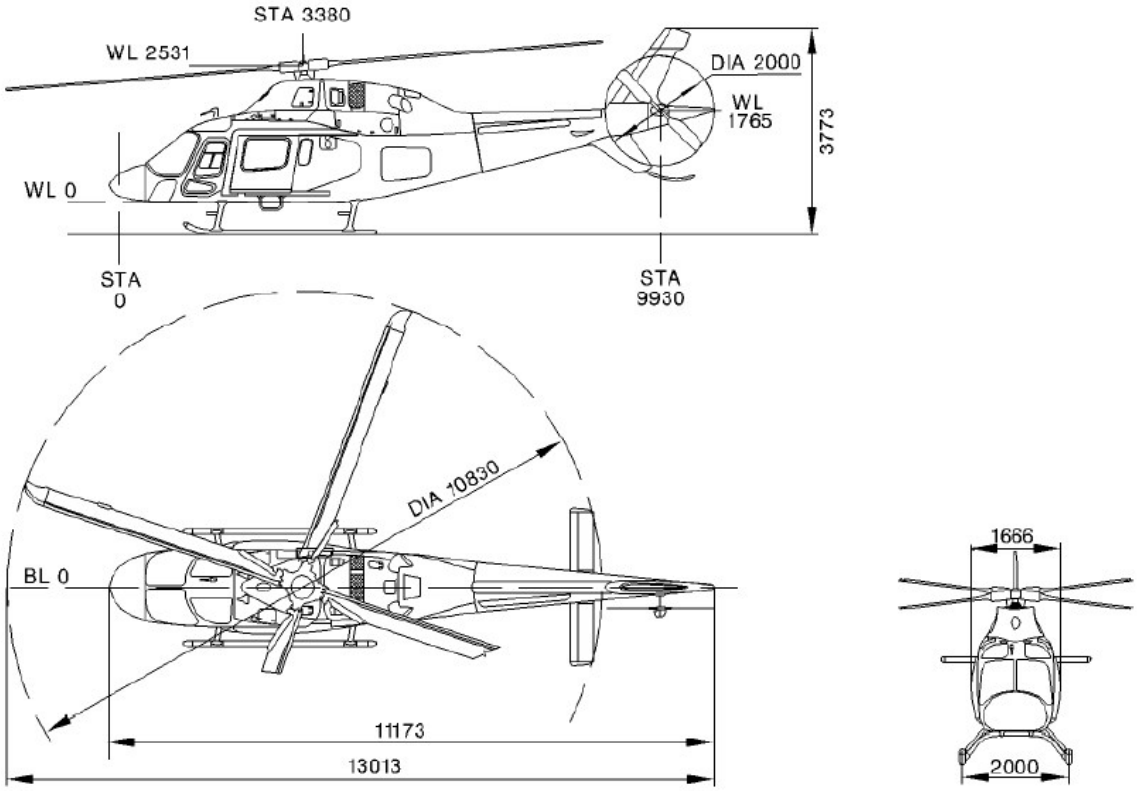
Calculations must be exclusively made using the measurements as given in the current Rotorcraft Flight Manual.

01.00.04 Dimensions

AW119 MK II - Dimentions



A119 I.D.S - Dimentions



01.00.05 Measurement Units

The following measurement units are to be used:

- Length: Metric
- Temperature: Degrees Celsius
- Mass: Kilogram
- Liquid measurements: Litres, kilograms

- Speed: Knots
- Climb & sink rate: Feet per minute
- Air pressure: Hectopascal
- Working pressure: Bar

01.01-Certified Limitations and Applicable Operational Limitations

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

GENERAL

Compliance with the operating limitations in section 1 of RFM is mandatory.

The helicopter must also be operated in accordance with the appropriate operating rules.

(01.01.01)- Certification Status (e.g. EASA (supplemental) type certificate, environmental certification, etc.);

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

BASIS OF CERTIFICATION

The helicopter is certified under CS 27 Small Rotorcraft Category, with the exemption of a limited number of paragraphs for which compliance has been demonstrated with CS 27.

(01.01.02)- Passenger Seating Configuration for each aircraft type including a pictorial presentation;

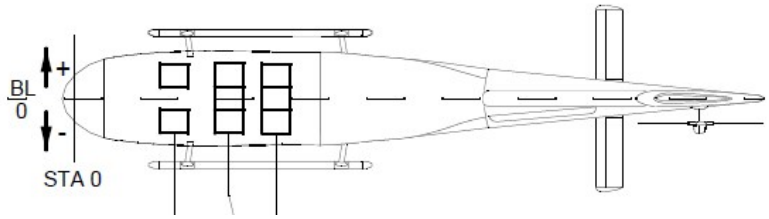
Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

NUMBER OF SEATS

Eight (pilot included).

STANDARD VERSION PILOTS AND PASSENGERS STATION



(01.01.03)- Types of Operation

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

This helicopter is approved for day and night VFR operation, in nonicing condition.

The helicopter equipped with only the Radio COMM KY196B (as alternative to Radio NAV/COMM KX165A) is approved for day VFR operation only.

No aerobatic maneuvres are permitted.

(01.01.04)- Crew Composition;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

FLIGHT CREW

The minimum flight crew consists of **one pilot** who shall operate the helicopter from the **right** crew seat.

(01.01.05)- Mass and Centre of Gravity (CG);

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

For AW119 MK II variant:

WEIGHT LIMITATIONS
Maximum Gross Weight..... : 2850 kg (6283 lb).
Minimum Gross Weight for flight ..... : 1725 kg (3803 lb).

CENTER OF GRAVITY LIMITATIONS
Longitudinal CG limits ..... : See Figures 1-2 and 1-3
Lateral CG limits ..... : See Figures 1-4 and 1-5

Note
In some loading conditions the longitudinal limitation (aft limit) can be exceeded. Refer to Section 6 for loading instructions.

Figure 1-2. Weight and Longitudinal CG Envelope (metric units)

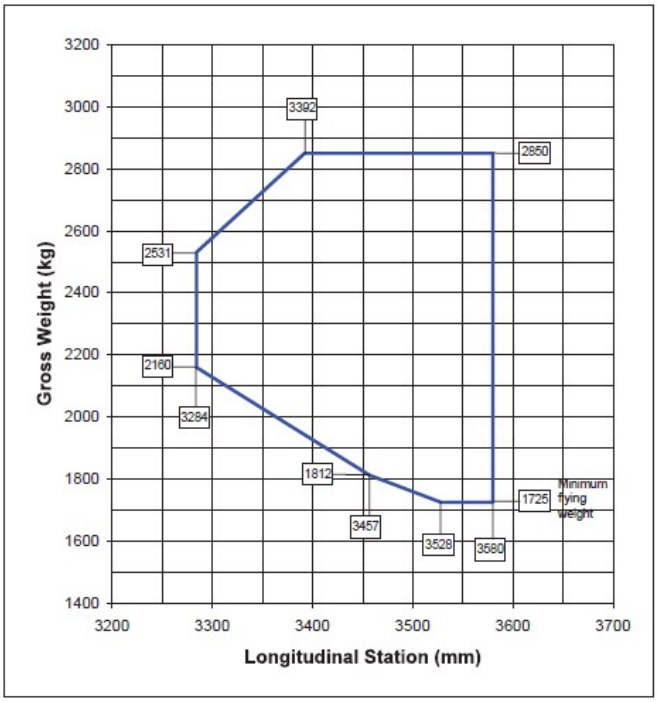
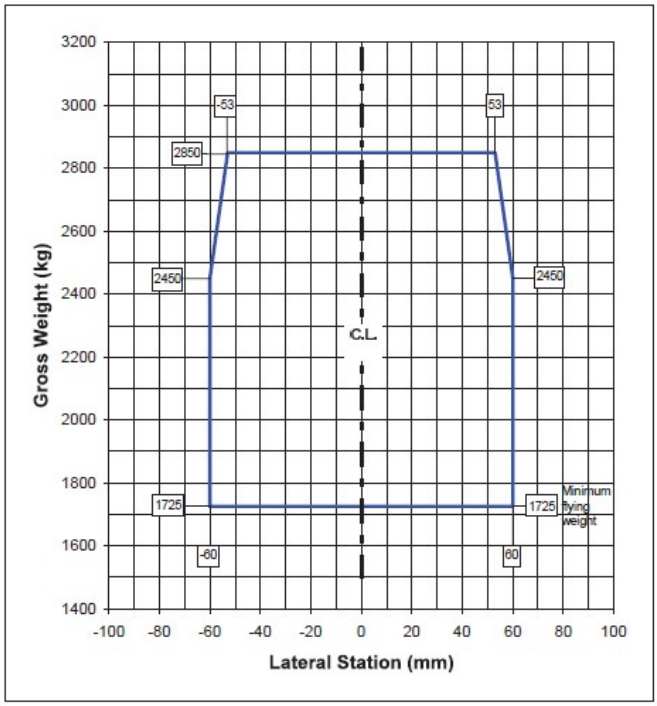


Figure 1-4. Weight and Lateral CG Envelope (metric units)



For A119 I.D.S. variant:

WEIGHT LIMITATIONS
according to A119 I.D.S. Supplement 06 Increased Internal Gross Weight 2720:

Maximum Gross Weight : 2720 kg (5997 lb) or
as shown in IGE hover performance charts in Section 4.
Minimum flying weight : 1700 kg (3748 lb).

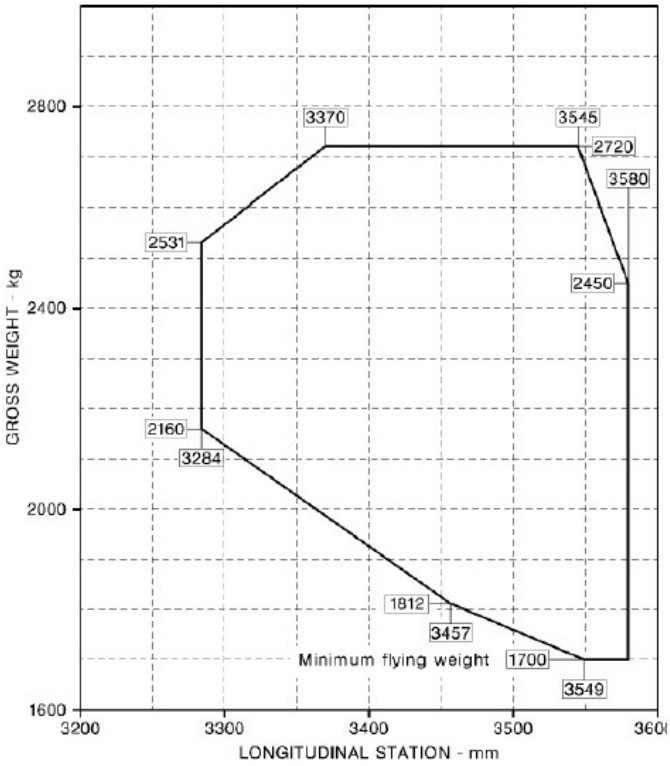
CENTER OF GRAVITY LIMITATIONS
according to A119 I.D.S. Supplement 06 Increased Internal Gross Weight 2720:

See figure 1-1 for longitudinal CG limits and figure 1-2 for lateral CG limits.

NOTE
In some loading conditions the longitudinal limitation (aft limit) can be exceeded. Refer to Section 6 for loading instructions.

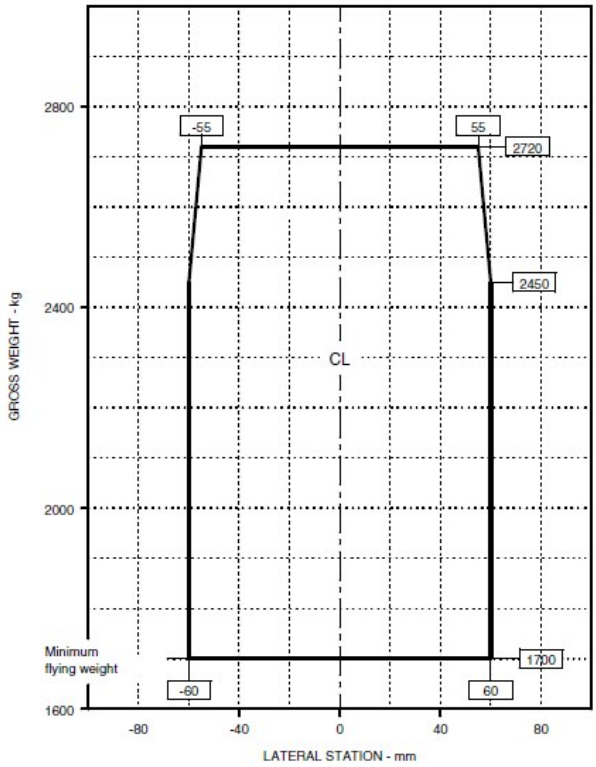
Figure 1-1 (sheet 1 of 2). Longitudinal CG limits (Metric)

Figure 1-2 (sheet 1 of 2). Longitudinal CG limits (Metric)



NOTE

Longitudinal station "0" is 1785 mm forward of the front jack point.



NOTE

The lateral Station "0" is 450 mm inboard from each main jack point and coincides with the helicopter longitudinal plane of symmetry.

(01.01.06)- Speed Limitations

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.OP.MPA.140 / AMC3 ORO.MLR.100

AIRSPEED LIMITATIONS (IAS)
VNE (Power-ON/OFF)..... : See Figure 1-1
Minimum airspeed in autorotation
(without close external references) .....: 60 KIAS
Maximum airspeed with torque between
100 and 108.5% (take-off power range).....: 75 KIAS

FLIGHT WITH PASSENGER CABIN DOORS OPEN OR REMOVED
VNE with one or both doors open or removed .....: 85 KIAS
VNE during doors opening and closing operation.....: 70 KIAS

Note
When passenger cabin doors are open or removed check the Weight and Balance of the helicopter.

GROUND SPEED LIMITATIONS
Maximum forward speed at touchdown
after engine failure ..... : 50 kts

(01.01.07)- Flight Envelope(s);

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

HEIGHT - VELOCITY DIAGRAM for AW119 Mk II
(Figures 4-12 and 4-13)

The Height-Velocity diagram defines the combination of airspeed and height above ground from which a safe landing on a

smooth, level and hard surface cannot be assured following an engine failure.

The Height-Velocity diagram is valid up to the maximum GW of 2850 kg.
Two Height-Velocity charts are provided:
— CHART A is applicable up to 3,000 ft Hd;
— CHART B is applicable from 3,000 to 7,000 ft Hd.

Figure 4-12
HEIGHT-VELOCITY DIAGRAM
FOR SMOOTH, LEVEL, HARD SURFACES
Chart A
APPLICABILITY: UP TO 3000 ft Hd

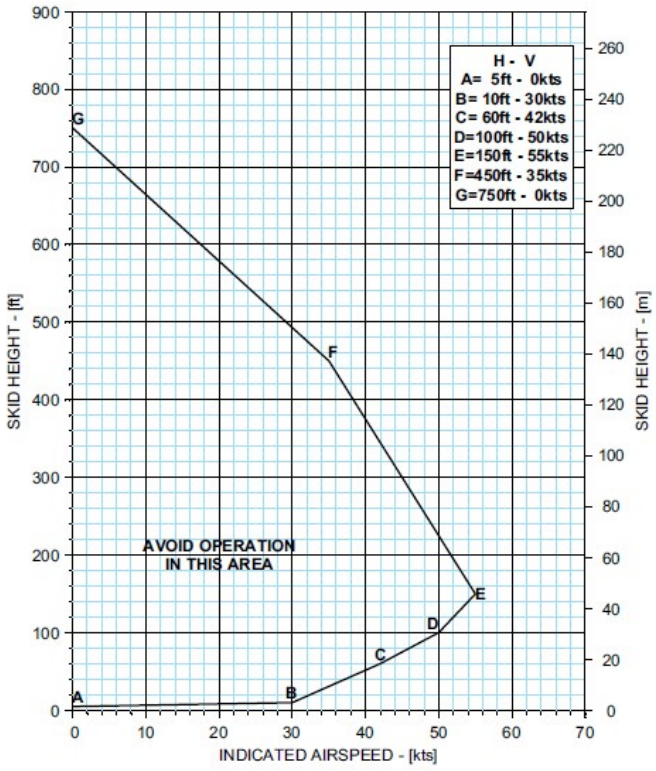
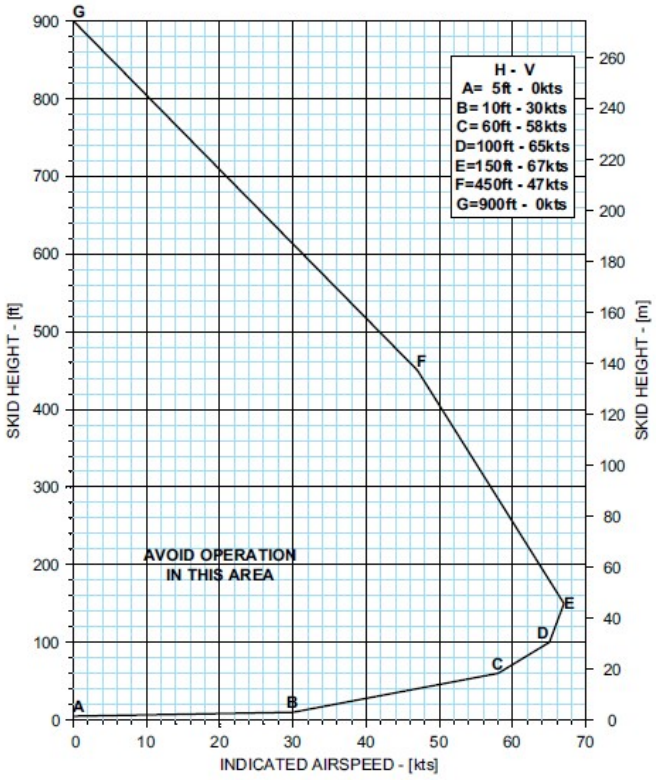


Figure 4-13
HEIGHT-VELOCITY DIAGRAM
FOR SMOOTH, LEVEL, HARD SURFACES
Chart B
APPLICABILITY: from 3000 TO 7000 ft Hd



HEIGHT - VELOCITY DIAGRAM
according to A119 I.D.S. Supplement 06 Increased Internal Gross Weight 2720:
(Figure 4-11)

The Height-Velocity diagram defines the combination of airspeed and height above ground from which a safe landing on a smooth, level and hard surface cannot be assured following an engine failure.
The Height-Velocity diagram (figure 4-11) is valid only when the helicopter GW does not exceed the limits of the Altitude vs Gross Weight for Height-Velocity diagram.
Two Height-Velocity charts are provided and these are applicable within the relevant Altitude vs Gross Weight envelope as specified in figure 4-10.
The Height-Velocity diagram has been demonstrated to 8000 ft Hd.

Figure 4-10. Altitude vs gross weight for height-velocity diagram

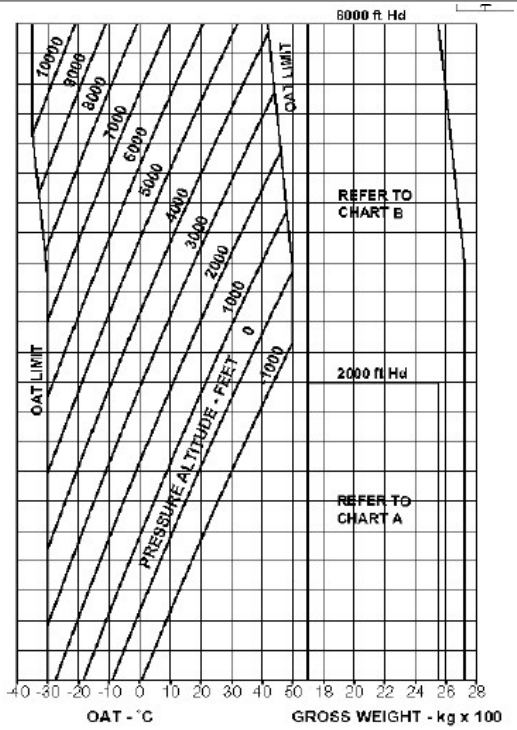


Figure 4-11 (sheet 1 of 2). Height-velocity diagram

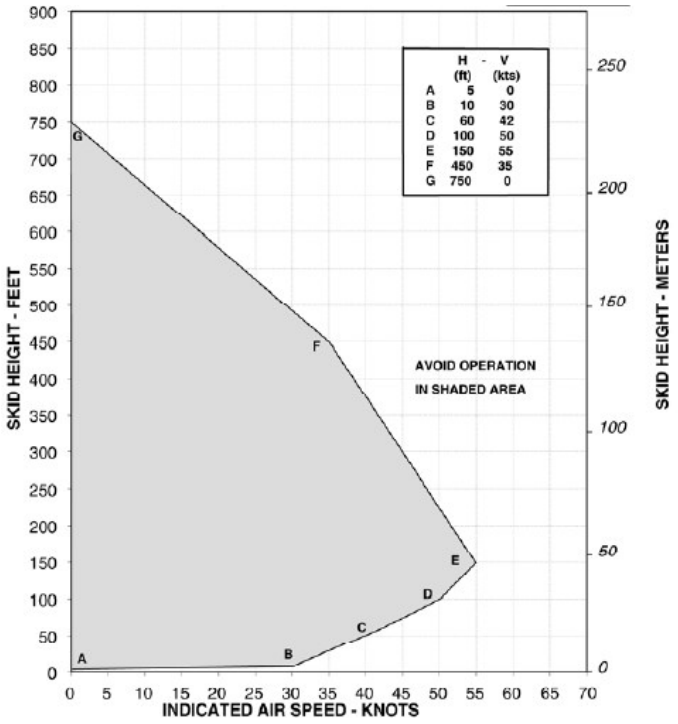
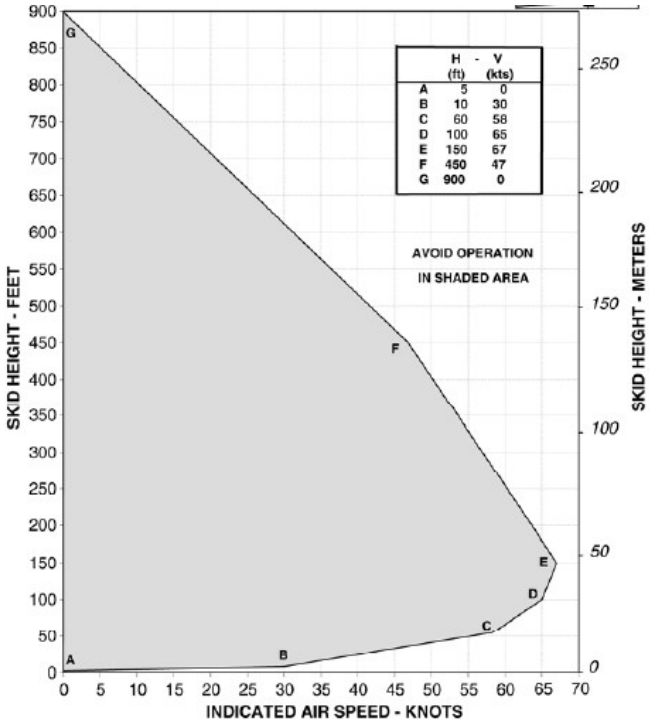


Figure 4-11 (sheet 2 of 2). Height-velocity diagram



(01.01.08)- Wind Limits

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

OPERATION VS ALLOWABLE WIND for AW119 Mk II

(Figure 4-7)

Satisfactory stability and control was demonstrated for sideways and rearward flight up to the maximum weight, in hover IGE or OGE in the following wind/ground speed azimuth envelope.

OPERATION VS ALLOWABLE WIND for A119 I.D.S. variant according to A119 I.D.S. Supplement 06 Increased Internal Gross Weight 2720:

(Figure 4-1)

Satisfactory stability and control in rearward and sideward flight has been demonstrated, at all loading conditions for hover in ground effect, from -1000 to 8000 ft Hd, in the following wind/ speed azimuth envelopes:

Figure 4-7. (sheet 1 of 2).
Figure 4-1. (sheet 1 of 2).
Wind/Ground Speed Azimuth Envelope
APPLICABILITY: UP TO 3000 ft Hd

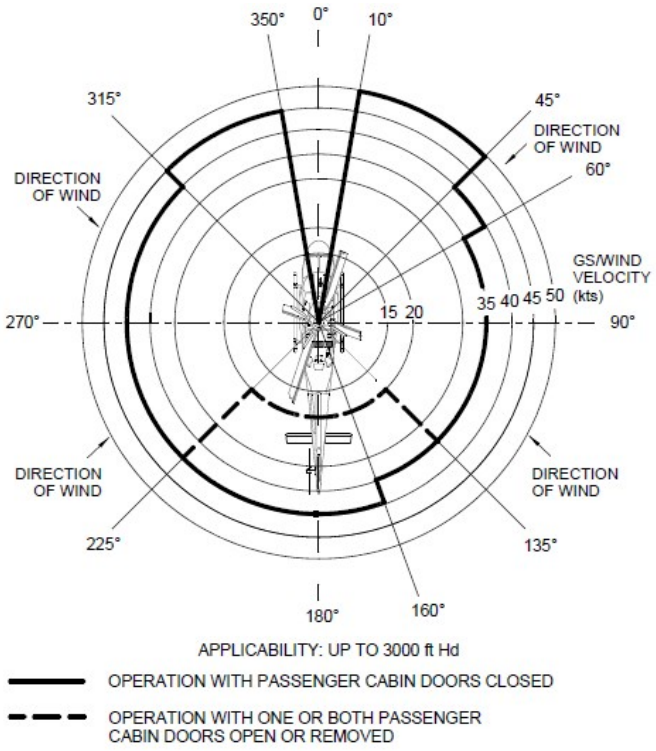
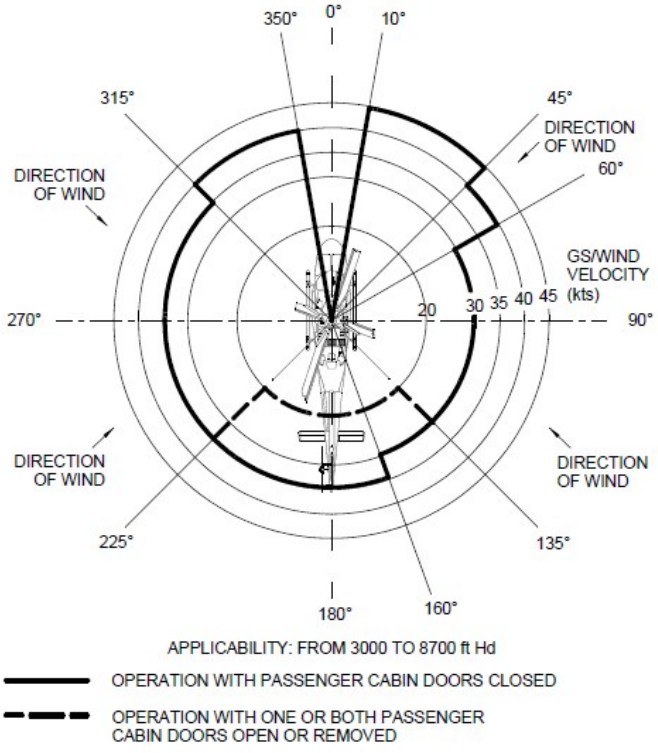


Figure 4-7. (sheet 2 of 2).
Figure 4-1. (sheet 2 of 2).
Wind/Ground Speed Azimuth Envelope
APPLICABILITY: FROM 3000 TO 8700 ft Hd for AW119 Mk II
(APPLICABILITY: FROM 3000 TO 8000 ft Hd) for A119 I.D.S. variant Supplement 06 IIGW 2720



(01.01.09)- Performance Limitations

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

SLOPE TAKE-OFF AND LANDING LIMITATIONS
Nose-up operations..... : 12 deg
Side-up operations..... : 10 deg
Nose-down operations ..... : 2 deg

ALTITUDE LIMITATIONS
Maximum operating altitude ..... : 15000 ft (4572 m) Hp

01.01.10-System Limitations

AMC3 ORO.MLR.100

(01.01.10.01)- Power Plant

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

The helicopter is powered by a Pratt & Whitney Canada PT6B-37A Build Specification 1242 turboshaft engine.

GAS GENERATOR SPEED (N1)
Minimum ..... : 51%
Cautionary (autorotation only)..... : 51 to 60%

Continuous operation..... : 60 to 100.1%
Take-off (5 minutes) ..... : 100.1 to 103.2%
Maximum take-off (5 minutes)..... : 103.2%
Transient (30 seconds) ..... : 103.8%

Note
Transient must not be used intentionally.

POWER TURBINE SPEED (N2)
Minimum ..... : 95%
Cautionary..... : 95 to 101% (95 to 99% A119.I.D.S.)
Continuous operation..... : 101 to 103% (99 to 101% A119.I.D.S.)
Cautionary (torque<50%) .....: (101 to 103% A119.I.D.S.)
Maximum ..... : 103%
Transient (10 seconds) ..... : 108%

Note
Transient must not be used intentionally.

INTER-TURBINE TEMPERATURE (ITT)
Maximum continuous ..... : 755 °C
Take-off (5 minutes) ..... : 755 to 810 °C
Maximum take-off (5 minutes)..... : 810 °C
Transient (5 seconds)..... : 860 °C
Maximum unlimited at starting ..... : 870 °C
Transient at starting..... : 1090 °C
(two second between 980 °C and 1090 °C. AW119 Mk II)
(2 seconds maximum above 980 °C. A lienar variation applies between 870 °C, 10 seconds, and 980 °C, 2 seconds A119 I.D.S.)

Note
A linear variation applies above 870 °C, ten seconds, and 980 °C, two seconds.

Note
Transient must not be used intentionally.

ENGINE TORQUE (TQ)
Maximum continuous .....: 100%
Take-off (5 minutes) .....: 100 to 108.5%
Maximum take-off (5 minutes).....: 108.5%
Transient (6 seconds)..... : 115%

Note
Transient must not be used intentionally.

(01.01.10.02)- Transmissions

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC3 ORO.MLR.100

MAIN TRANSMISSION LUBRICATION SYSTEM LIMITATIONS
OIL PRESSURE
Minimum .....: 30 psi
Continuous operation.....: 30 to 55 psi (30 to 50 psi A119 I.D.S.)
Cautionary.....: 55 to 70 psi (50 to 70 psi A119 I.D.S.)
Maximum .....: 70 psi

OIL TEMPERATURE
Minimum OAT for starting ..... : See Figure 1-1
Continuous operation..... : 0 to 115 °C
Maximum ..... : 115 °C

Note

Mixing of oils of different brands, types and manufacturers is prohibited.

Table 1-3. Approved lubricating oils

Designation	Specification
BP Turbo Oil 2380	MIL-PRF-23699
Mobil Oil Jet II	MIL-PRF-23699
Mobil Oil Jet 254	MIL-PRF-23699
Aeroshell Turbine Oil 500	MIL-PRF-23699
Aeroshell Turbine Oil 560	MIL-PRF-23699
Castrol 5000	MIL-PRF-23699
Aeroshell Turbine Oil 555	DOD-L-85734

Oils limited to ambient temperature above -40 °C (-40 °F)

Note
Mixing of oils of different brands, types and manufacturers is prohibited.

TAIL ROTOR GEARBOX LUBRICANT LIMITATIONS

Table 1-4. Approved lubricating oils

Designation	Specification
BP Turbo Oil 2380	MIL-PRF-23699
Mobil Oil Jet II	MIL-PRF-23699
Mobil Oil Jet 254	MIL-PRF-23699
Aeroshell Turbine Oil 500	MIL-PRF-23699
Aeroshell Turbine Oil 560	MIL-PRF-23699
Castrol 5000	MIL-PRF-23699
Aeroshell Turbine Oil 555	DOD-L-85734

Oils limited to ambient temperature above -40 °C (-40 °F)

Note
Mixing of oils of different brands, types and manufacturers is prohibited.

(01.01.10.03)- Rotor Speed

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

ROTOR LIMITATIONS (NR)

POWER-ON

Minimum ..... : 95%
Cautionary..... : 95 to 101% (95 to 99% A119 I.D.S.)
Continuous operation..... : 101 to 103% (99 to 101% A119 I.D.S.)
Cautionary (torque<50%)..... : (101 to 103% A119 I.D.S.)
Maximum ..... : 103%
Transient (10 seconds) ..... : 108%

Note
Transient must not be used intentionally.

POWER-OFF

Transient (10 seconds) ..... : 80%
Minimum ..... : 90%
Continuous operation..... : 90 to 110%
Maximum ..... : 110%

(01.01.10.04)- Fuel System

Revizyon No: 7 Revizyon Tarihi: 19.02.2024

FUEL PRESSURE
Cautionary..... : 0 to 7 psi
Continuous operation ..... : 7 to 25 psi
Maximum..... : 25 psi

Table 1-1. Approved fuel

Type	Specification
JET A	ASTM D1655
JET A-1	ASTM D1655
JET B (***)	ASTM D1655
JP-5 (*)	MIL-T-5624
JP-8 (*)	MIL-T-83133
No.3 Jet fuel (RP-3) (****)	GB-6537-2018
TS-1 (**)	GOST 10227-86, in addition complying to Decree 118

(*) Contains fuel system icing inhibitor (FSII) (for JP-8, MIL-T-83133C allows two grades. The grade meeting NATO code F-34 has FSII while the grade meeting code F-35 has no FSII without prior agreement).

(**) Use of TS-1 fuel complying with GOST 10227-86 specification, but not complying with Decree 118, is prohibited.

(***) Use of Jet B fuel, alone or mixed with other approved fuels, is limited to operation with ambient temperature up to +15 °C.

(****) Use of No. 3 Jet Fuel with additives T1502 or T1602 is prohibited.

Note
Any mixture of approved fuels may be used.

Note
For operation below 4 °C the use of anti-ice additive is authorized but not mandatory since the engine oil system is provided with an oil-to-fuel heater where, depending upon the temperature of the fuel, the engine oil is utilized to preheat the fuel. For additive requirements and blending procedures refer to EMM.

(01.01.10.05)- Lubricant

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC3 ORO.MLR.100

ENGINE LUBRICATION SYSTEM LIMITATIONS
OIL PRESSURE
Minimum .....: 40 psi
Cautionary (with N1 < 72%).....: 40 to 80 psi
Continuous operation..... : 80 to 110 psi
Maximum ..... : 110 psi

Note
During cold starting conditions the oil pressure can temporarily exceed 110 psi; it reduces as oil temperature increases.

OIL TEMPERATURE
Minimum OAT for starting ..... : See Figure 1-1
Continuous operation..... : 10 to 115 °C
Maximum ..... : 115 °C
Transient (5 minutes with N1 at 61 ± 1%) ..... : 127 °C

Table 1-2. Approved lubricating oils

Designation	Specification
BP Turbo Oil 2380	MIL-PRF-23699
Mobil Oil Jet II	MIL-PRF-23699
Aeroshell Turbine Oil 500	MIL-PRF-23699
Turbonycoil 525-2A	PWA 521

Royco Turbine Oil 500	MIL-PRF-23699
Castrol 5000	MIL-PRF-23699

Oils limited to ambient temperature above -40 °C (-40 °F).

Note
Mixing of oils of different brands, types and manufacturers is prohibited.

(01.01.10.06)- Hydraulics System

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC3 ORO.MLR.100

FLUID PRESSURE
Minimum..... : 1200 psi
Cautionary..... : 1200 to 1400 psi
Continuous operation ..... : 1400 to 1550 psi
Maximum..... : 1550 psi

APPROVED FLUIDS
The following hydraulic fluids are approved:

- MIL-PRF-5606
- MIL-PRF-83282.

Note
Mixing of fluids of different types is prohibited. When changing type of oil, the hydraulic system must be drained and completely flushed.

(01.01.10.12)- Miscellaneous

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC3 ORO.MLR.100

ENGINE STARTER LIMITATIONS
The engine starter duty cycle is the following:

On battery
— 40 seconds on, 60 seconds off
— 40 seconds on, 60 seconds off
— 40 seconds on, 30 MINUTES off
With external power
— 25 seconds on, 30 seconds off
— 25 seconds on, 30 seconds off
— 25 seconds on, 30 MINUTES off

GENERATOR LOAD LIMITATIONS
Continuous operation.....: 0 to 200 A
Maximum .....: 200 A
Transient (5 seconds) .....: 300 A

ENGINE CONTROL SYSTEM LIMITATIONS
The primary mode of operation of the engine control system is the electronic engine control (EEC).

The mechanical mode of operation (MEC) is to be used only in emergency when the EEC is failed or for training purposes.

BAGGAGE COMPARTMENT LIMITATIONS
Maximum load..... : 150 kg (330 lb)

Note
Refer to Section 6, Weight and Balance, for load distribution.

Maximum unit load.....: 500 kg/m2 (102 lb/sq ft)

LANDING LIGHTS OPERATION VS MAGNETIC COMPASS INDICATION LIMITATIONS
When operating the landing lights, the magnetic compass indications is not reliable.

UPPER DECK WINTER KIT LIMITATIONS (IF INSTALLED)
Maximum ambent air temperature for
Upper Deck Winter Kit P/N 109G2900F01-101 installation ..... : 10 °C

NORMAL IDS MODE OF OPERATION
The normal mode of operation of the IDS is with both the EDUs operating. The reversionary mode of operation is intended only for EDU malfunction or failure cases.

INSTRUMENT MARKINGS
Instruments are marked as follows:
Safe operating limits..... : Red radial line
Safe operating range..... : Green arc
Take-off and cautionary range.....: Yellow arc
Transient limit ..... : Red dot
Transient limit during starting .....: Red triangle

For the back-up dual tachometer indicator the following markings are provided for the needles:
Engine .....: E
Main rotor ..... : R

TABLE OF CONTENTS

02-NORMAL PROCEDURES

AMC3 ORO.MLR.100

02.01-Normal Procedures and duties assigned to the crew, the appropriate checklists, the system for their use and a statement covering the necessary coordination procedures between flight and cabin/other crew members

AMC1 ORO.GEN.110(f)(h)

(02.01.01)- Pre-flight;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

Each crew member must begin their flight duty time such that a thorough flight preparation can be carried out. The time for flight preparation shall not be less than 30 minutes. Flight preparation can vary according to mission.

Fundamentally, the following aspects shall be covered

- **Weather** data to be evaluated with respect to;
    - flight routes, airspace
    - the period during which the flight shall take place
    - alternate aerodromes, where appropriate
- **NOTAMs** shall be checked for;
    - FIR sectors of the flight
    - Aerodromes
- The creation of an operational flight plan
- The creation and filing of an air traffic services flight plan (when required).
- The calculation of the minimum fuel required for the planned flight.
- The creation of a mass calculation (in table form) with confirmation of the centre of gravity (in graph form) taking into account the particular equipment for the mission involved and the loading for the planned flight.
- Carrying out a visual inspection of the helicopter prior to flight (external and internal check in accordance with the checklist.
- A check of the required configuration and equipment for the flight planned.
- A check of the technical log book to ensure that the helicopter is available for the planned flight.
- Further measures
    - For passenger flights a safety briefing shall be given to the passengers to be carried.
    - If cargo is to be carried, the load shall be checked to be as secure.

(02.01.02)- Before Take-off;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

02.01.02.01 **Safety Briefing**

A safety briefing is to be carried out for every flight. This is carried out by check-in/ground handling staff and shall include:

- The safety equipment of the helicopter
- The use of the safety belts (securing and releasing)
- The operation of the emergency exits
- Approaching the helicopter whilst the rotors are running
- The use of electronic devices during the flight
- An advisory regarding the prohibition of carrying dangerous goods.
- The requirement to wear ear protection

This is given in visual and audible form. If it is not possible to play a safety video, the Commander shall carry out a safety briefing directly in front of the helicopter. The content of the briefing shall reflect the content above.

02.01.02.02 **Pre-Departure**
02.01.02.02.01 **Prior to Starting the Engines**

Engine start with a tailwind is to be avoided. Before the engines are started, all passengers shall be seated in the helicopter with their safety belts on. If available, the ATIS information is to be obtained prior to engine start. Where required, an approval to start engines from ATC is to be obtained (for example, from Clearance Delivery or Ground frequencies).

Prior to starting the engines, the flight crew must ensure that no unauthorised person is present in the vicinity of the helicopter. If authorised personnel are present in the vicinity of the helicopter, the engines can only be engaged if said personnel are wearing adequate hearing protection.

Engines shall be started in accordance with the relevant checklist.

02.01.02.02.02 **Prior to Engaging the Rotor**

Rotor engagement is automatic following engine start. Increased caution is called for where ground conditions are slippy (snow, ice). It may be necessary to prepare the ground surface with anti-slip materials (such as anti-slip mats or sand). The limitations for engaging the rotor as per the RFM are to be observed.

02.01.02.02.03 **Prior to Hovering for Departure**

Before the helicopter taxis for departure, it shall be determined that persons who have entered the helicopter whilst the rotors where running, are at their places with seat belt fastened. The Commander must ensure that a safe taxi to the departure point can be carried out. All system checks are to be carried out in accordance with the checklist. The taxi checklist is to be followed. The clearance is to be obtained (where required).

02.01.02.02.04 **Taxiing for Departure**

During taxi, the flight instruments are to be checked for correct function:
- Direction instruments for proper indication of direction
- Aircraft attitude instruments (EADI, standby ADI) for proper reliable indication of aircraft attitude

The Commander is responsible for the maintaining safe distances whilst taxiing. Taxi speed **shall not be more than twice walking speed**.

An Engine power check is to be carried out in accordance with the RFM.

02.01.02.02.05 **Prior to Departure**

Prior to take-off, a departure briefing is to be carried out:
Under Visual Flight Rules (VFR)
- The planned take-off procedure
- The departure route
- The planned altitude

Applying the pre-take-off checklist

(02.01.03)- Systems Check;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC1 ORO.GEN.110(f)(h)
Rotorcraft Flight Manual

02.01.03.01 **Altimeter Setting and Checking**

Altimeters shall be set in accordance with OM A 08.03.03. The standby altimeter shall be set to the appropriate QNH at all times, whereas the PF and PM main altimeters are to be set to the appropriate QNH below transition altitude, or 1013 mb above transition altitude.

02.01.03.01.01 **Prior to Take-off**

The altimeters shall be set to the local QNH, obtained from the local air traffic service unit. The maximum difference between altimeters shall not be more than 120 ft.

02.01.03.01.02 **In Flight**

VFR;
For flights in visual meteorological conditions, the QNH of the nearest aerodrome shall be set.
If a flight is receiving a service from air traffic control, the QNH given by ATC shall be set.
If no local QNH is available, the regional QNH shall be set.
If the altitude flown is higher than the radar altimeter can display, the standby altimeter is to be reset to the given QNH.

(02.01.04)- Taxi, Take-off and Climb;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC1 ORO.GEN.110(f)(h)

TAKE-OFF AND CLIMB
Collective : Increase slowly and bring the helicopter to a 3 ft AGL hover.
Pedals : Apply as necessary to maintain direction.
Flight instruments : Check.
Engine parameters : Within limits.
Hydraulic systems instruments : Within limits.

Cyclic and collective : Rotate the nose down approximately 10° from the hover datum. While accelerating increase slightly the torque to avoid loss of altitude.

At 30 KIAS increase torque by approximately 15% and adjust cyclic to obtain 0° attitude. Continue acceleration to VY. At VY increase torque as required by the desired flight path.

Note
Do not exceed TQ and ITT limits (refer to Section 1).

Force trim pushbutton (on cyclic stick): Trim as desired for attitude reference changes during hover and climb out.

(02.01.05)- Noise Abatement;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC1 ORO.GEN.110(f)(h)

NOISE CHARACTERISTICS for AW119 Mk II
The following noise level complies with ICAO Annex 16, Chapter 8, 4th Edition:

Model: AW119 MKII Engine Pratt & Whitney PT6B-37A Maximum Gross Weight 2850 kg			
Configuration	**Level Flyover EPNL (EPNdB)**	**Take-off EPNL (EPNdB)**	**Approach EPNL (EPNdB)**
Clean aircraft. No external kit installed	88.2	90.8	91.0

NOISE LEVEL for A119 I.D.S. variant
The following noise level complies with ICAO Annex 16, Chapter 11 for the A119 helicopter model at maximum weight of 2720 kg.

Corrected noise level SEL dB(A)
86.5

At GW of 2550 kg the noise level decrease consequently.
There are no operating limitations to meet any of the noise requirement.

(02.01.06)- In-flight and Descent;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

For every flight which leaves the pattern of the departure aerodrome, the relevant air traffic service is to be contacted.

02.01.06.01 **En Route**
Particular attention is to be given to monitor the airspace for other aircraft, the weather conditions and possible hazards. When flying below 1000 ft (2000 ft in mountainous areas) in areas of bad weather, a continuous assessment shall be made of the flight corridor 8 km to each side of the helicopter on the intended route. Where there is doubt as to the position or altitude of the aircraft, a climb to the Minimum Obstacle Clearance Altitude (MOCA) is to be made. If this is not possible, a circling pattern is to be flown until the position can be determined and the flight continued.

02.01.06.02 **Change of Altitude En Route**
Prior to a change in altitude is carried out, a clearance from ATC is to be obtained. The change of altitude is to be carried out with a minimum descent/climb rate of 500 ft/min but not more than 1000 ft/min. 100 ft prior to reaching the target altitude, the descent /climb rate is to be adjusted to avoid overshooting.

02.01.06.03 **Fuel Management**
Fuel consumption shall be monitored throughout the flight. This shall be documented on passing waypoints. If the fuel consumption is higher than the value calculated during flight planning, an assessment shall be made as to whether the contingency fuel and any additional fuel carried are sufficient to fly an alternative route, or whether a change of altitude or power can be made, in order to conclude the flight safely. This means that after landing, the required reserves shall still be intact. If the Point of Safe Return is reached, the flight shall be aborted and a return from offshore to an aerodrome on land shall be made.

For flights on land during which it is determined that the aerodrome of intended landing cannot be reached with the legally required fuel reserves, the flight shall be aborted and a landing shall be made at the nearest available aerodrome. If the landing cannot be made prior to using final reserve fuel, an urgency message shall be sent to the relevant air traffic service unit. After landing, this shall be documented and reported as an occurrence report i.a.w. OM A Ch 11.

02.01.06.04 **Operational Flight Plan**
The operational flight plan shall be managed throughout the flight. Upon passing a waypoint the time shall be recorded in order to determine possible deviations from the planned flight time. Should a new calculation be necessary during the flight it must be determined that the continued safe flight is assured. If continued safe flight is not assured, the intended flight shall be aborted an aerodrome flown to for landing. The relevant air traffic control service is to be informed of any change to the intended flight.

02.01.06.05 **Communication**
A listening watch shall be maintained on all frequencies necessary for the flight. If only one aviation VHF frequency is needed, the second shall be set to 121.5

02.01.06.06 **Navigation**
GPS shall form the basis of navigation. All other navigations systems are to be set to the nearest navigation station. The information these sources provide shall be used to verify GPS position.

02.01.06.07 **Weather**
The Commander shall use all means to obtain current weather information during a flight. This may be done via:
• ATC
• ATIS
• VOLMET
• Or any other available station (control tower etc.)

02.01.06.08 **ADVERSE WEATHER CONDITIONS**
If adverse weather conditions are expected during flight, with possible risk of engine flame out, perform the following:

IGN switch : CONT.
EDU 1 : IGNITER ON advisory message displayed.

Note
When the IGN switch is set to CONT the engine automatic starter feature is armed and permits automatic starting of the engine in case of flame out.

(02.01.07)- Approach, Landing preparation and Briefing;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC1 ORO.GEN.110(f)(h)
Operator Procedure

02.01.07.01 **Crew briefing**

The reason for crew briefing is to run through an important phase of flight, before it commences so that each crew member is aware of what is about to happen and knows what their duties are during that phase of the flight. Standard operating procedures do not need to be briefed by the crew, unless the situation requires a particular operating procedure to be discussed. Briefings should be kept to the absolute minimum essential for a safe departure or arrival; however, the brief must include the minimum requirements listed below for each type of approach.

These items may be briefed for example during the cruise to a destination before the initial approach checks have been completed. Once the briefing item appears in the checklist then a comment can be made to reflect that the brief has already occurred unless there are any changes to the profile/approach to be flown. When operating to or from an unfamiliar airfield, a more in-depth briefing will be required, i.e. complicated SID/STAR.

02.01.07.02 **Take-off brief contents**
- Take-off direction and profile (i.e. runway and VTOSS/TDP used).
- Calls required during take-off (if different from SOP).
- Actions in the event of a non-normal event.

02.01.07.03 **Landing brief contents**
- Landing runway/final approach track.
- Landing Decision Point (LDP).
- Go-around procedure (VTOSS).
- Actions in the event of a non-normal event.

Clear Area Landing runway 02: In case of emergency before decision point climb runway heading 500 ft and remain in the pattern. In the event of an emergency prior to LDP, the Commander may elect to land if a safe landing considered possible. For example: Engine failure, stable approach; continue for running landing.

02.01.07.04 **Approach**
Rotorcraft Flight Manual

Perform the approach at 75 KIAS. Reduce the airspeed gradually with the cyclic.

CAUTION
Landing lights operation shall be limited to the time necessary to carry out takeoff and landing manoeuvres in order to avoid overheating.

Note
When operating the landing lights, the stand-by magnetic compass indications is not reliable.

(02.01.08)- Normal Landing;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC1 ORO.GEN.110(f)(h)
Rotorcraft Flight Manual

At 70 ft make a flare and apply collective as required to bring the helicopter to a 3 ft AGL hover. After reaching a hover descend slowly to the ground surface.

CAUTION
Additional care must be taken during nose-down slope operations in order not to touch the ground with tail.

(02.01.09)- Shutdown, Post-flight Check.

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC1 ORO.GEN.110(f)(h)

After landing, the runway is to be vacated either by taxiway or hover taxi. The instructions of Ground Control or a marshaller are to be followed.

If neither ATC nor a marshaller are available, the Commander shall direct the helicopter to the parking position ensuring safe distance from obstacles.

a) If the engines are not shut down, passengers may only disembark the helicopter once authorized personnel (ground ops staff etc.) have indicated this, doing so directly to the side. They shall leave the hazard area directly from the side.

b) Once having reached the parking position, the engines shall be shutdown using the engine shut-down checklist. Once the rotors are stopped, the passengers may disembark.

The helicopter is to be secured against the risk of rolling from position and unauthorised access by third parties.

POST FLIGHT CHECK

If conditions require, perform the following:

Pitot, intake and exhaust covers : Installed.

CAUTION

Wait at least 5 minutes after pitot heat has been switched off before installing pitotstatic tube covers. Wait at least 30 minutes after engine shutdown before installing engine exhaust ducts covers. Refer to the A119/AW119MKII Maintenance Manual for additional information.

(02.02)- Crew Communication

AMC1 ORO.GEN.110(f)(h)

When **two-pilot** in flight:

Example:
Person Call Action
New QNH given by ATC
PM QNH 1018 set on the left Sets the new QNH
PF Set on the left and on standby As above
PF Checked
etc.

02.02.01 Check List Actions

Example:
Person Call Action
PF Pre Landing Check
PM Pre-Landing Check Reads and actions landing check items
etc.

Once the checklist has been completed:
PM Checklist completed

02.02.02 Emergency procedure

Emergency procedures are carried out using the read and do method. Critical actions (ECLs, engine mode switches, hydraulics CBs, fuel system etc.) are always carried out following verification by the other crew member.

Example:
Person Call Action
PM Engine mode switch identified
PF Verified
Verifies that the correct switch is identified by the PM
PM Selected to OFF
Where the PM In carries out an emergency procedure, it should be considered whether management of radio calls should be assumed by the PF in order to enable the PM to concentrate on the checklist. This can be achieved with the crew phrase:
"I have the radios"

02.02.03 Departure

02.02.03.01 At the aerodrome

02.02.03.01.01 Taxi / hover to the take-off point

Prior to taxi /hover a clearance or field information shall be obtained
Person Call Action
PF Taxi Check
PM Taxi Check Reads the items on the checklist etc.
PM Checklist completed
Prior to departure, a take-off briefing is to be carried out

02.02.03.01.02 Prior to lifting into the hover

Person Call Action
PF Pre take-off check
PM Pre take-off check Reads the checklist
etc.
PM Checklist completed

02.02.03.01.03 In the hover

Person Call Action
PF Lifting Adds power in order to come into the hover
PM Hover power X%
PF Checked
PM T&P's green
PF Rotate / Applying power (vertical t/o)
PM POWER, POWER, … Set Until the power value for the procedure is reached
PM TDP Decision
PM VToss Upon reaching VToss
PF Checked
PM Vy
PF Checked

02.02.03.01.04 During departure

Person Call Action
Once 500 ft AGL has been reached
PF 500 ft - After Take-Off Check
PM After Take Off Check Reads out the items on the checklist

02.02.04 Cruise flight

The PM conducts all communications during the flight with all parties

02.02.05 Descent- / Approach

During descent the PM should announce the altitude in 1000 ft intervals.
Below 500 ft, the altitude shall be announced in intervals of 100 ft.

02.02.05.01 At the aerodrome

The PF announces each turn of direction.
Person Call Action
PF Turning Base Initiates the turn
PM Clear right/left (in so far as necessary)
PF Starting Descent Initiates the turn
PM Checked

On final under 500 ft:
Person Call Action
PM Passing 400, 60 knots
PF Checked
PM Passing 300, 50 knots
PF Checked
PM Approaching LDP, 100 to go
PF Checked
PM LDP
PF Decision / go around According to conditions at the decision point

02.02.06 Deviation Calls

If the PM detects deviations from defined flight parameters (such as speed, descent rate, bank angle, deviation from CAT procedure) this shall be verbalised to the PF. If there is no prompt response from the PF during a critical flight phase (especially under 1000 ft AGL), and there is doubt as to the safe execution of the flight, the PM shall assume immediately control with the words "I have control".

Generally, crew internal communication shall follow the following format:
Person Call Description
PM Check altitude / descent rate / bank angle
Deviation from the altitude / descent rate /bank angle

PF Correcting

The same format is also use with other air traffic services. General communication with air traffic services accords with the AIP.

TABLE OF CONTENTS

03-ABNORMAL AND/OR EMERGENCY PROCEDURES

AMC3 ORO.MLR.100

03.01-Abnormal and/or Emergency Procedures and duties assigned to the crew, the appropriate checklists, the system for their use and a statement covering the necessary coordination procedures between flight and cabin/other crew members

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

INTRODUCTION

The following procedures contain the indications of equipment or system failure or malfunction, the use of emergency features of primary and backup systems, and appropriate cautions, warnings and explanatory notes.

All corrective action procedures listed herein assume the pilot gives first priority to aircraft control and a safe flight path.

(03.01.01)- Crew Incapacitation;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

Opeartor Procedure

Indications of incapacitation:

- The crew member does not react when spoken to.
- The crew member answers out of context (confused answer).
- The crew member responds in context, but fails to carry out the procedure.
- The crew member makes illogical decisions and deviates from standard procedures.

Immediate measures in the event of crew incapacitation:

1. Control of the helicopter

- Assumption of control ("I have control")
- Take whatever action is necessary in order to deal with the immediate danger.
- Climb to a safe altitude
- Abort the approach (if not stabilised) and carry out the missed approach procedure.

2. Request assistance

- Declare an emergency – to the relevant air traffic service and, if present, other crew members.

3. Assess the situation

- Determine the status of the flight
- What is the fuel state?
- Is the destination the best decision?
- Assess weather factors (avoid flight into IMC, if possible).

4. Secure the incapacitated crew member

- Request help from other crew members if possible.
- If possible, move the seat back into the furthest rear position and lock it.
- Secure the incapacitated crew member with their seat belt.

Once the incapacitated crew member does not pose an imminent danger for the flight:

Flight safety is paramount

5. Discuss the next actions
   a) Abort the flight and return to an aerodrome on land.
   b) According to the condition of the incapacitated person, a landing is possible, when in the immediate vicinity of the installation.
   c) For flights on land, land at the next convenient aerodrome.

In any event, inform the air traffic services and other crew members of intentions.

(03.01.02)- Fire and Smoke Drills;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

ENGINE FIRE ON GROUND

INDICATIONS
EDU 1 : ENG FIRE warning message displayed and "ENGINE FIRE" aural warning activated.
Engine area : Smoke, fumes and fire.
PROCEDURE
Shutdown the engine as follows:
Engine throttle : OFF.
FUEL VALVE switch : CLOSED.
FUEL PUMP 1 and 2 switches : OFF.
Xfer PUMP switch : OFF.
GEN switch : OFF.
BAT switch : OFF.
Evacuate the helicopter as soon as possible.

ENGINE FIRE DURING FLIGHT

INDICATIONS
EDU 1 : ENG FIRE warning message displayed and "ENGINE FIRE" aural warning activated.
Engine area : Smoke, fumes and fire.
PROCEDURE
Collective : Immediately reduce as required to maintain NR between 90 and 110%.
Cyclic : Adjust to obtain desired autorotative airspeed.

Note
Airspeed for minimum rate of descent is 80 KIAS.
Airspeed for maximum glide distance is 110 KIAS.

Shutdown the engine as follows:
Engine throttle : OFF.
FUEL VALVE switch : CLOSED.
FUEL PUMP 1 and 2 switches : CLOSED.
Xfer PUMP switch : OFF.
GEN switch : OFF.

Execute an autorotative descent and landing (refer to "**Autorotative landing**" procedure).
After landing:
BAT switch : OFF.
Evacuate the helicopter as soon as possible.

SMOKE IN CABIN, TOXIC FUMES, ETC.

INDICATIONS
Cabin : Smoke, toxic fumes.
PROCEDURE
VENT switch : ON.
Sliding windows (if installed) and vents : Open.

Note
If the altitude permits and the source is suspected to be of an electrical origin, attempt to isolate the source by switching OFF electrical circuits.

Land as soon as possible.

(03.01.03)- Flight in Thunderstorms - Lightning;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

Rotocraft Flight Manual

When flying in thunderstorms, the helicopter may be struck by lightning. If it is suspected that the helicopter has been struck by lightning proceed as follows:

Airspeed : Reduce (VNE 80 KIAS)

CAUTION

Avoid extreme manoeuvers.

Land as soon as possible.

If it is suspected that the rotorcraft has been struck by lightning, verify the state of the following systems for unintended change and confirm their functionality:

— barometric setting and displayed altitude
— selected altitude
— selected navigational aid
— selected course
— selected heading
— selected decision height
— selected radio frequencies (including radio comms transmission check).

Flight in thunderstorm cells and storm zones is fundamentally to be avoided. If it is not possible to avoid entry into such an area or cell, or the route passes in the immediate vicinity of such and diversion is not possible, the following procedure shall be followed:

- Upon approaching an area affected by thunderstorms, ensure that all persons on board have their seat belt securely fastened and all loose objects are safely stowed.
- On a multi-crew flight, one pilot steers the aircraft and pays attention to the attitude of the aircraft independent of other influences. The other pilot (PM) pays attention to the altitude, route and all other instruments, constantly giving the Pilot Flying corrective information to facilitate **leaving the thunderstorm zone** at the earliest opportunity and at a safe altitude.
- The airspeed is to be established such that **VNE is avoided**.
- All systems which **protect against icing** shall be switched **ON**.
- **Maximum lightening** in the cockpit shall be used in order to reduce the risk of glare from lightening.

In the event of a lightning strike, the following is to be considered:

During the flight:

- Check all radios, navigation devices and weather radar.

After landing:

- The lightning strike shall be entered in the technical logbook
- Compass deviation shall be assessed
- Cells shall be inspected for damage
- Aerials and pitot tubes are to be inspected
- All radio and navigation devices are to be checked.

(03.01.04)- Distress Communications and alerting ATC to emergencies;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

Every observation of a danger for air traffic shall be reported without delay to the competent aviation authorities. Each report must contain all details which are pertinent for air safety.

03.01.04.01 **Emergency Call – MAYDAY (imminent danger)**

Emergency calls shall be made on the frequency in use or the emergency frequency (121.50).

The emergency call shall be initiated as follows:

- Initiation using the emergency term MAYDAY, preferably repeated three times.

- the station called
- own call sign

The emergency message which follows shall contain the following information:

- Nature of the emergency
- The intentions of the crew
- Nature of assistance required
- Information as to position, course, and altitude

An emergency call shall not be unduly delayed, even if its origin is based on an error or misapprehension. The call can be withdrawn.

If no discrete squawk has been set, the transponder shall be set to the emergency code 7700.

If the radio has failed (or this is suspected), an emergency message shall be sent by setting the transponder code 7600.

03.01.04.02 **Urgency Call – PAN-PAN**

Pan-Pan is used for urgency messages, which concern the safety of an aircraft, another craft or person.

The urgency call shall contain the following information:

- Initiation using the urgency term PAN-PAN (preferably repeated three times).
- the station called
- own call sign

The urgency message which follows shall contain the following information:
- Nature of the urgency
- Further information which may be important for providing assistance
- Intentions of the Commander, where appropriate
- Information as to position, course, and altitude

(03.01.05)- Engine Failure;

Revizyon No: 7 Revizyon Tarihi: 19.02.2024

AMC1 ORO.GEN.110(f)(h)

FAILURE OF ENGINE

INDICATIONS
Helicopter : Left yaw.
Audio signal : Present.
EDU 1 : ROTOR LOW warning message displayed and "ROTOR LOW" aural warning activated.
ENG OUT warning message displayed and "ENGINE OUT" aural warning activated when N1 below 51% and decreasing.
Gas generator (N1) : Rapidly decreasing.
NR : Rapidly decreasing.
ITT : Rapidly decreasing.
Torque : Rapidly decreasing.

PROCEDURE - HOVER IGE and TAKE-OFF (up to 30 KIAS)
Pedals : Control yaw rate.
Collective : Maintain initially then increase to cushion the touchdown.
Cyclic : Adjust as required to obtain a level attitude touchdown (landing skid parallel to the ground).

PROCEDURE - HOVER OGE
Pedals : Control yaw rate.
Collective : Lower immediately to stop the NR decay.
Cyclic : Forward to obtain approximately 25 deg nose down. Increase airspeed up to 80 KIAS.
Perform an autorotative landing (refer to "**Autorotative landing**" procedure).

PROCEDURE - TAKE-OFF ABOVE 30 KIAS
Pedals : Control yaw rate.
Collective : Lower immediately to stop the NR decay.
Cyclic : Flare as required to increase NR above 100%.
Collective : Apply at the end of the flare, before touchdown, to reduce the rate of descent.
Cyclic : Forward to obtain a level attitude (landing skid parallel to the ground).
Collective : Continue application to cushion the touchdown.
Pedals : Maintain direction.

Note
In case of ground contact on the aft portion of the landing skid, avoid counteracting the pitch down with cyclic.

PROCEDURE - CRUISE
Pedals : Control yaw rate.
Collective : Lower immediately to stop the NR decay.
Then maintain the NR between 90 and 110%.
Cyclic : Adjust to obtain desired autorotative airspeed.

Note
Airspeed for minimum rate of descent is 80 KIAS.
Airspeed for maximum glide distance is 110 KIAS.

If condition permits, confirm engine failure:

If N2 and ITT not rapidly decreasing : N1 Tachometer failure.

Engine : Still available.
Manoeuver to EXIT from Authorotation.
Land as soon as practicable, monitoring N2 and ITT values.

If N2 and ITT rapidly decreasing : Engine Failure confirmed.

Engine throttle : OFF.
If altitude permits, attempt to restart the engine (see "**Engine restart in flight**" procedure).

CAUTION
When the cause of engine failure is suspected to be of a mechanical nature, do not attempt a restart.

If the engine cannot be restarted:
FUEL VALVE switch : CLOSED.
FUEL PUMP 1 and 2 switches : OFF.
Xfer PUMP switch : OFF.
GEN switch : OFF.
Perform an autorotative landing (refer to "**Autorotative landing**" procedure).

(03.01.06)- System Failures;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC1 ORO.GEN.110(f)(h)

ELECTRONIC ENGINE CONTROL (EEC) MALFUNCTIONS
There are two levels of electronic engine control (EEC) malfunctions:
— EEC failed;
— EEC degraded.

EEC failed malfunctions
INDICATIONS
EDU 1 : EEC FAIL caution message displayed.
Engine mode of operation : Automatic reversion from EEC to MEC.
EDU 1 : MEC OPN caution message displayed.

PROCEDURE
EEC/MEC switch : MEC.

Proceed with flight. Refer to paragraph "**Engine operation in mechanical mode (MEC)**" in this section.
— Refer to the A119/AW119MKII Maintenance Manual for the proper action to be taken.

EEC degraded malfunctions
"EEC degraded" malfunctions have no impact on engine performance. The EEC DEGRADED caution message is only displayed on ground (at NR < 20%), for maintenance purposes.
INDICATIONS
On ground (at NR < 20%)
EDU 1 : EEC DEGRADED caution message displayed.

PROCEDURE
On ground, "EEC degraded" malfunctions may be cleared by cycling the EEC/MEC switch from EEC to MEC and back to EEC.
EEC/MEC switch : MEC then EEC.
If the EEC DEGRADED caution message is still illuminated:
— Refer to the A119/AW119MKII Maintenance Manual for the proper action to be taken.

ENGINE OPERATION IN MECHANICAL MODE (MEC)

Note
MEC mode is to be used only in case of EEC failure or for training purposes.
The mechanical mode is an automatic mode of operation which is accomplished through a mechanical N2 governor connected to the collective control by a mechanical linkage. A droop compensator, connected to the collective, maintains the NR at approximately 102% as collective pitch is raised. A rotor speed beep trim allows fine adjustment to maintain NR within limits (refer to Section 1 for NR/N2 limitations).

Note
In MEC mode it may not be possible to obtain NR/N2 needle split in autorotation without retarding the throttle to IDLE. Therefore autorotation practice is not recommended in MEC mode.

Engine operation in mechanical mode (MEC) in flight
N2/NR : Maintain at 102% (using NR TRIM switch, as required)

HYDRAULIC SYSTEM MALFUNCTION
The helicopter is equipped with two independent hydraulic systems for cyclic and collective pitch control. Either system can deliver adequate power to control the helicopter. The tail rotor pedals are boosted by system n.1 only.

PRESSURE LOSS IN SYSTEM N.1
INDICATIONS
EDU 1 : SERVO 1 caution message displayed.
EDU 2 : N.1 HYD system pressure below minimum.
Pedals : In hover and in high power condition tendency to move slowly to the tail rotor traction zero position. In all other flight conditions tendency to maintain the initial position.
Cyclic and collective : No change in control force.

PROCEDURE
Airspeed : Reduce gradually avoiding pull up manoeuvers; recommended maximum 90 KIAS and 25 deg bank angle in order to maintain acceptable control loads.
Flight controls : Avoid rapid movements.
Failed hydraulic system : OFF.
Land as soon as practicable.

PRESSURE LOSS IN SYSTEM N.2
INDICATIONS
EDU 1 : SERVO 2 caution message displayed.
EDU 2 : N.2 HYD system pressure below minimum.
Cyclic, pedals and collective : No change in control force.

PROCEDURE
Proceed as per failure of hydraulic system n.1.
Land as soon as practicable.

(03.01.07)- Guidance for diversion in case of serious technical failure;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

DEFINITIONS

The following items indicate the degree of urgency in landing the helicopter:

LAND IMMEDIATELY : The urgency of the landing is paramount. The primary consideration is to assure the survival of the occupants.

LAND AS SOON AS POSSIBLE : Land without delay at the nearest suitable area (i.e., open field) at which a safe approach and landing is reasonably assured.

LAND AS SOON AS PRACTICABLE:The duration of the flight and landing site are at the discretion of the pilot. Extended flight beyond the nearest approved landing area is not recommended.

(03.01.10)- Windshear;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

If the crew experience wind shear it shall:

- During landing:
  - Apply maximum available power to arrest the sink rate.
  - Not allow the airspeed to go below 45 KIAS or go above VNE.
  - If normal value for landing cannot be maintained, the landing shall be aborted and a new approach and landing carried out or flight to an alternative aerodrome undertaken.
  - ATC shall be advised of the wind shear.
- During take-off:
  - Maximum available power shall be applied in order to maintain the climb rate and achieve the greatest height above ground.
  - The airspeed shall be kept above 45 KIAS.
  - If the available power is insufficient to assure a safe take-off, a safety landing is to be carried out.
  - ATC shall be advised of the wind shear.

(03.01.11)- Autorotative Landing / Ditching;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

Cyclic : At approximately 150 ft AGL, initiate a flare and hold the flare to reduce the forward speed.
Collective : Apply at the end of the flare, before touchdown, to reduce the rate of descent.
Cyclic : Forward to obtain a level attitude (landing skid parallel to the ground).
Collective : Continue application to cushion the touchdown.
Pedals : Maintain direction.

Note

In case of ground contact on the aft portion of the landing skid, avoid counteracting the pitch down with cyclic.

(03.01.12)- Birdstrike

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 ORO.GEN.110(f)(h)

If a birdstrike has occurred or believed to have occurred, the aircraft shall land

a) If stark vibrations are present

- For flights over land, a safety landing shall be carried out

b) If engine malfunctions are present

- Malfunction of one engine – land as soon practicable
- Malfunction of both engines – land as soon as possible
- Severe malfunction of both engines – land immediately

The aircraft must undergo maintenance inspection before further flight

c) If there no malfunction is manifest – land as soon as practicable.

After landing a visual inspection shall be carried out.

- If there is evidence of a birdstrike, a technical inspection must be carried out.
- If there is no evidence of a birdstrike, the flight may be continued.

TABLE OF CONTENTS

04-PERFORMANCE

CAT.POL.H.100

(04.00)- Performance - GENERAL

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.H.100 / CAT.POL.H.105

04.00.01 Applicability

(a) KAAN AIR Helicopters will be operated in accordance with the applicable performance class requirements.

(b) Helicopters shall be operated in **Performance Class 1:**
When operated to/from aerodromes or operating sites located in a congested hostile environment, except when operated to/from a public interest site (PIS) in accordance with CAT.POL.H.225;

(c) Unless otherwise prescribed by (b), helicopters that have an MOPSC of 19 or less but more than nine shall be operated in **Performance Class 1 or 2.**

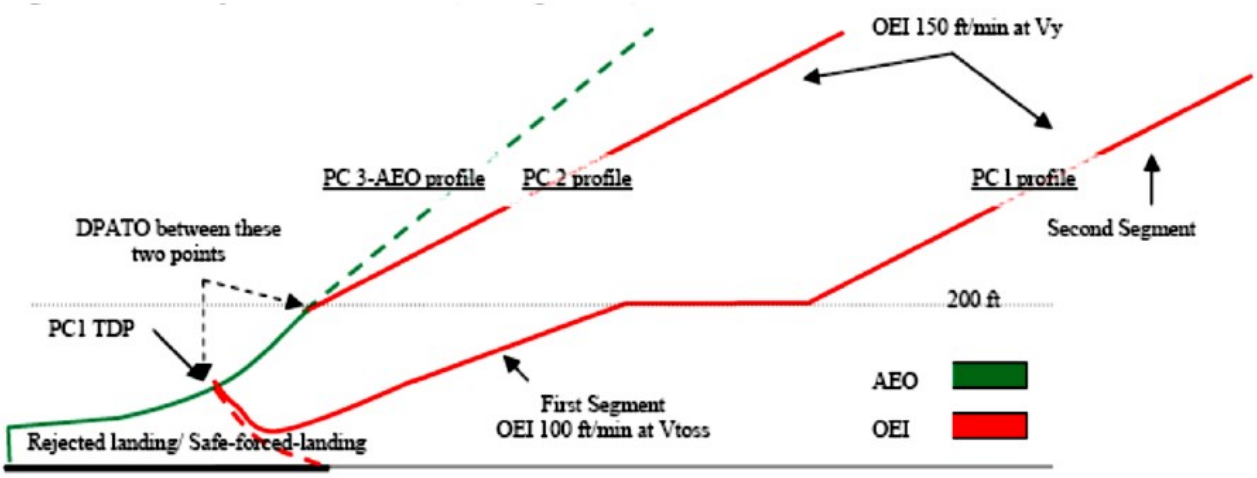
(d) Unless otherwise prescribed by (b), helicopters that have an MOPSC of nine or less shall be operated in **Performance Class 1, 2 or 3.**

04.00.02 General

When showing compliance with the requirements of this section, account shall be taken of the following parameters:

(1) mass of the helicopter;
(2) the helicopter configuration;
(3) the environmental conditions, in particular:
  (i) pressure altitude and temperature;
  (ii) wind:
    (A) except as provided in (C), for take-off, take-off flight path and landing requirements, accountability for wind shall be no more than 50 % of any reported steady headwind component of 5 kt or more;
    (B) where take-off and landing with a tailwind component is permitted in the RFM, and in all cases for the take-off flight path, not less than 150 % of any reported tailwind component shall be taken into account; and
    (C) where precise wind measuring equipment enables accurate measurement of wind velocity over the point of take-off and landing, wind components in excess of 50 % may be established by KAAN AIR, provided that the operator demonstrates to the TR DGCA that the proximity to the FATO and accuracy enhancements of the wind measuring equipment provide an equivalent level of safety;
(4) the operating techniques; and
(5) the operation of any systems that have an adverse effect on performance.

04.00.03 All Performance Classes (a comparison)



(04.01)- Performance Class 1 Helicopter

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.H.200

N/A

(04.02)- Performance Class 2 Helicopter

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.H.300

N/A

(04.03)- Performance Class 3 Helicopter

CAT.POL.H.400

04.03.01 General
CAT.POL.H.400

(a) Helicopters operated in **Performance Class 3** shall be certified in category A or equivalent as determined by TR DGCA, or category B.

(b) Operations shall only be conducted in a **non-hostile environment**, except:
(1) when operating in accordance with CAT.POL.H.420; or
(2) for the take-off and landing phase, when operating in accordance with (c).

(c) Provided KAAN AIR is approved in accordance with CAT.POL.H.305, operations may be conducted to/from an aerodrome or operating site located outside a congested hostile environment **without an assured safe forced landing capability**:
(1) during take-off, before reaching Vy (speed for best rate of climb) or 200 ft above the takeoff surface; or
(2) during landing, below 200 ft above the landing surface.

(d) Operations shall not be conducted:
(1) out of sight of the surface;
(2) at night;
(3) when the ceiling is less than 600 ft; or
(4) when the visibility is less than 800 m.

04.03.02 General - THE TAKE-OFF AND LANDING PHASES (PERFORMANCE CLASS 3)
GM1 CAT.POL.H.400(c)

(a) To understand the use of ground level exposure in performance class 3, it is important first to be aware of the logic behind the use of ‘take-off and landing phases’.

Once this is clear, it is easier to appreciate the aspects and limits of the **use of ground level exposure**. This GM shows the derivation of the term from the ICAO definition of the ‘en-route phase’ and then gives practical examples of the use, and limitations on the use, of ground level exposure in CAT.POL.400(c).

(b) The take-off phase in performance class 1 and performance class 2 may be considered to be bounded by ‘the specified point in the take-off’ from which the take-off flight path begins.
(1) In performance class 1, this specified point is defined as ‘the end of the take-off distance required’.
(2) In performance class 2, this specified point is defined as DPATO or, as an alternative, no later than 200 ft above the take-off surface.
(3) There is no simple equivalent point for bounding of the landing in performance classes 1 & 2.

(c) Take-off flight path is not used in performance class 3 and, consequently, the term ‘take-off and landing phases’ is used to bound the limit of exposure. For the purpose of performance class 3, the take-off and landing phases are as set out in CAT.POL.H.400(c) and are considered to be bounded by:
(1) during take-off before reaching Vy (speed for best rate of climb) or 200 ft above the take-off surface; and
(2) during landing, below 200 ft above the landing surface.

(ICAO Annex 6 Part III, defines **en-route phase** as being "That part of the flight from the end of the take-off and initial climb phase to the commencement of the approach and landing phase.’

The use of take-off and landing phase in this text is used to distinguish the take-off from the initial climb, and the landing from the approach: they are considered to be complimentary and not contradictory.)

(d) **Ground level exposure** — and **exposure for elevated FATOs in a non-hostile environment** — is permitted for operations under an approval in accordance with CAT.POL.H.305. Exposure in this case is limited to the ‘take-off and landing phases’. The practical effect of bounding of exposure can be illustrated with the following examples:
(1) A clearing: KAAN AIR may consider a take-off/landing in a clearing when there is sufficient power, with all engines operating, to clear all obstacles in the take-off path by an adequate margin (this, in ICAO, is meant to indicate 35 ft). Thus, the clearing may be bounded by bushes, fences, wires and, in the extreme, by power lines,

high trees, etc. Once the obstacle has been cleared, by using a steep or a vertical climb (which itself may infringe the height velocity (HV) diagram), **the helicopter reaches Vy or 200 ft**, and from that point **a safe forced landing must be possible**. The effect is that whilst operation to a clearing is possible, operation to a clearing in the middle of a forest is not (except when operated in accordance with CAT.POL.H.420).
(2) An aerodrome/operating site surrounded by rocks: the same applies when operating to a landing site that is surrounded by rocky ground. Once Vy or 200 ft has been reached, a safe forced landing must be possible.
(3) **An elevated FATO**: when operating to an elevated FATO in performance class 3, exposure is considered to be two-fold: **firstly**, to a deck-edge strike if the engine fails after the decision to transition has been taken; and **secondly**, to operations in the HV diagram due to the height of the FATO. Once the take-off surface has been cleared and the helicopter has reached the knee of the HV diagram, the helicopter should be capable of making a safe forced landing.

(e) Operation in accordance with CAT.POL.400(b) does not permit excursions into a hostile environment as such and is specifically concerned with the absence of space to abort the take-off or landing when the take-off and landing space are limited; or when operating in the HV diagram.

(f) Specifically, the use of this exception to the requirement for a safe forced landing (during take-off or landing) does not permit semi-continuous operations over a hostile environment such as a forest or hostile sea area.

04.03.03 Take-off
CAT.POL.H.405

(a) The take-off mass shall **be the lower of**:
(1) the MCTOM; or
(2) the maximum take-off mass specified for a hover in ground effect with all engines operating at take-off power, or if conditions are such that a hover in ground effect is not likely to be established, the take-off mass specified for a hover out of ground effect with all engines operating at take-off power.

(b) Except as provided in CAT.POL.H.400(b), in the event of an engine failure the helicopter shall be able to perform a safe forced landing.

04.03.04 En-route
CAT.POL.H.410

(a) The helicopter shall be able, with all engines operating within the maximum continuous power conditions, to continue along its intended route or to a planned diversion without flying at any point below the appropriate minimum flight altitude.

(b) Except as provided in CAT.POL.H.420, in the event of an engine failure the helicopter shall be able to perform a safe forced landing.

04.03.05 Landing
CAT.POL.H.415

(a) The landing mass of the helicopter at the estimated time of landing shall **be the lower of**:
(1) the maximum certified landing mass; or
(2) the maximum landing mass specified for a hover in ground effect, with all engines operating at take-off power, or if conditions are such that a hover in ground effect is not likely to be established, the landing mass for a hover out of ground effect with all engines operating at take-off power.

(b) Except as provided in CAT.POL.H.400(b), in the event of an engine failure, the helicopter shall be able to perform a safe forced landing.

TABLE OF CONTENTS

05-FLIGHT PLANNING

CAT.OP.MPA.175(a)

(05.01)- Operational Flight Plan (OFP)

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.OP.MPA.175 / AMC1 CAT.OP.MPA.175(a)

The Commander is responsible for proper and complete flight planning. The Commander can delegate tasks involved in flight planning, but remains responsible for it.

Flight planning includes at least the following tasks:

- The creation of an **operational flight plan**
- Mass and balance calculation
- A passenger &/or cargo manifest
- The determination of an alternate landing site.
- Fuel requirement for the planned flight
- Evaluation of all information relevant to the flight:
  - NOTAMs
  - Weather
  - Approvals, etc.
- Coordination and task assignment for other crew members
- Creation of a flight plan

- The operational flight plan and its use has been described in the OM A 08.01.10
- Items that operational flight plan used and the entries made during flight are listed OM A 08.01.10
- All entries on the operational flight plan will be made concurrently and be permanent in nature.

(05.02)- Data and Instructions necessary for Pre-Flight

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100 / AMC1 CAT.OP.MPA.175(a) / CAT.OP.MPA.175 / CAT.OP.MPA.185

05.02.01 Flight preparation

(a) An **operational flight plan** will be completed for each intended flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes/operating sites concerned.

(b) The flight will not be commenced **unless the commander is satisfied** that:

(1) all items stipulated in 2.a.3 of Annex IV to Regulation (EC) No 216/2008 concerning the airworthiness and registration of the aircraft, instrument and equipment, mass and centre of gravity (CG) location, baggage and cargo and aircraft operating limitations can be complied with;

(2) the aircraft is not operated contrary to the provisions of the configuration deviation list (CDL);

(3) the parts of the operations manual that are required for the conduct of the flight are available;

(4) the documents, additional information and forms required to be available by CAT.GEN.MPA.180 are on board;

(5) current maps, charts and associated documentation or equivalent data are available to cover the intended operation of the aircraft including any diversion that may reasonably be expected;

(6) space-based facilities, ground facilities and services that are required for the planned flight are available and adequate;

(7) the provisions specified in the operations manual in respect of fuel, oil, oxygen, minimum safe altitudes, aerodrome operating minima and availability of alternate aerodromes, where required, can be complied with for the planned flight;

(8) any navigational database required for performance-based navigation is suitable and current; and

(9) any additional operational limitation can be complied with.

(c) Notwithstanding (a), an operational flight plan is not required for operations under VFR of:

Helicopters with an MCTOM of 3 175 kg or less, by day and over routes navigated by reference to visual landmarks in a **local area** as specified in the OM A.

05.02.02 Information to be retained on the ground

(a) The KAAN AIR will ensure that at least **for the duration of each flight** or series of flights:
(1) information relevant to the flight and appropriate for the type of operation is preserved on the ground
(2) the information is retained until it has been duplicated at the place at which it will be stored or, if this is impracticable
(3) the same information is carried in a fireproof container in the aircraft.

(b) The information referred to in (a) includes:
(1) **a copy of the operational flight plan**, where appropriate;
(2) **copies** of the relevant part(s) of the aircraft **technical log;**
(3) route-specific **NOTAM** documentation if specifically edited by the operator;
(4) **mass and balance** documentation if required; and
(5) special **loads** notification.

(05.03)- Air Traffic Services (ATS) Flight Plan

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
CAT.OP.MPA.177 / AMC1 CAT.OP.MPA.177

05.03.01 Submission of the ATS flight plan

(a) If an ATS flight plan is not submitted because **it is not required by the rules** of the air, adequate information shall be deposited in order to permit alerting services to be activated if required.

(b) When operating from a site where **it is impossible to submit an ATS flight plan**, the ATS flight plan shall be transmitted as soon as possible **after take-off** by the commander or KAAN AIR.

05.03.02 Flights Without ATS Flight Plan

(a) When unable to submit or to close the ATS flight plan **due to lack of ATS facilities** or any other means of communications to ATS, **Flight Operations Planning and Coordination Dispatcher** is responsable for alerting search and recue services with the instructions below;

(b) To ensure that each flight is located at all times, these instructions should:
(1) provide the nominated person with at least the information required to be included in a VFR flight plan, and the **location**, **date** and **estimated time** for re-establishing communications;
(2) if an aircraft is overdue or missing, provide for notification to the appropriate ATS or search and rescue facility; and
(3) provide that the information will be retained at a designated place until the completion of the flight.

(05.04)- Data and instructions necessary for Pre-flight and In-flight Planning including factors such as Speed schedules and Power settings

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC3 ORO.MLR.100
Operator Procedure

05.04.01 Fuel Planning

The fuel planning and in-flight monitoring is conducted according to the OM A 08.01.07 (Determination of fuel, oil and water/methanol to be carried).

(05.05)- Engine(s)-Out Operations

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC3 ORO.MLR.100

Refer to OM B 03.01.05 Engine Failure

(05.06)- List of documents, forms and additional information to be carried

Refer to OM A 08.01.12

(05.07)- Selection of Aerodromes and Operating Sites

Revizyon No: 7 Revizyon Tarihi: 19.02.2024
CAT.OP.MPA.192 / GM1 CAT.OP.MPA.192(c)&(d)

(a) When flying under VFR and navigating by means other than by reference to visual landmarks, the commander shall specify at least **one destination alternate** aerodrome in the operational flight plan unless:

(1) for a flight to any other land destination, the duration of the flight and the meteorological conditions prevailing are such that, at the estimated time of arrival at the site of intended landing, an approach and landing is possible under visual meteorological conditions (VMC); or

(2) the site of intended landing is isolated and no alternate is available; in this case, a point of no return (PNR) shall be determined.

(b) KAAN AIR will select **two destination alternate** aerodromes when:

(1) the appropriate weather reports and/or forecasts for the destination aerodrome indicate that during a period commencing **one hour before** and **ending one hour after the estimated time of arrival**, the weather conditions will be below the applicable planning minima; or

(2) **no meteorological information** is available for the destination aerodrome.

(c) KAAN AIR will specify any required alternate aerodrome(s) **in the operational flight plan.**

05.07.01 Landing Forcast

(a) Meteorological data conforms to ICAO Annex 3 and to Annex V (Part-MET) to Regulation (EU) 2017/373. As the following meteorological data are point specific, caution should be exercised when associating it with nearby aerodromes (or helidecks).

(b) **(METARs)**

(1) Routine and special meteorological observations at offshore installations should be made during periods and at a frequency agreed between the competent authority of the meteorological service provider and KAAN AIR. They should conform to points MET.TR.200 and MET.TR.205 of Part-MET, including the desirable accuracy of observations, which is specified in GM2 MET.TR.210.

(2) Routine and selected special reports are exchanged between meteorological offices in the METAR (aerodrome routine meteorological report) or SPECI (aerodrome special meteorological report) code forms that are prescribed by the World Meteorological Organisation.

(c) Aerodrome forecasts **(TAFs)**

(1) The aerodrome forecast consists of a concise statement of the expected meteorological conditions at an aerodrome and any significant changes expected to occur during a specified period of validity, which is usually **not less than 9 hours**, and **not more than 30 hours**. The forecast includes surface wind, visibility, weather and cloud, and expected changes of one or more of these elements during the period. Additional elements may be included as agreed between the meteorological authority and KAAN AIR. Where these forecasts relate to **offshore installations**, barometric pressure and temperature should be included to facilitate the planning of helicopter landing and take-off performance.

(2) Aerodrome forecasts are most commonly exchanged in the TAF code form, and the detailed description of an aerodrome forecast is promulgated in point MET.TR.220 of Part-MET, together with the operationally desirable accuracy elements that are specified in GM3 MET.TR.220.

(d) Landing forecasts **(TRENDS)**

(1) The landing forecast consists of a concise statement that indicates any significant changes expected to occur at an aerodrome during the **2-hour period immediately following the time of the observation** to which it is appended. It contains one or more of the following meteorological elements: surface wind, visibility, weather phenomena, clouds, and other significant information, such as barometric pressure and temperature, as may be agreed between the meteorological authority and KAAN AIR.

(2) The detailed description of the landing forecast is promulgated in point MET.TR.225 of Part-MET, together with

the operationally desirable accuracy of the forecast elements. In particular, the value of the observed cloud height and visibility elements should remain within ± 30 % of the forecast values in 90 % of the cases.

(3) Landing forecasts most commonly take the form of a TREND forecast appended to a local routine report, local special report, METAR, or SPECI.

(05.08)- Fuel/Energy Scheme Fuel/Energy Planning and In-flight Re-planning Policy

Revizyon No: 7 Revizyon Tarihi: 19.02.2024

CAT.OP.MPA.190 / CAT.OP.MPA.191 / AMC1 CAT.OP.MPA.191(b)&(c)

05.08.01 Fuel/Energy Scheme

(a) KAAN AIR has established, implemented, and will maintain a fuel/energy scheme that comprises:

(1) a fuel/energy planning and in-flight re-planning policy; and

(2) an in-flight fuel/energy management policy.

(b) The fuel/energy scheme shall:

(1) be appropriate for the type(s) of operation performed; and

(2) correspond to the capability of KAAN AIR to support its implementation.

05.08.02 Fuel/Energy Scheme – Fuel/Energy Planning and In-flight Re-Planning Policy

(a) As part of the fuel/energy scheme, KAAN AIR shall establish a fuel/energy planning and in-flight re-planning policy to ensure that the aircraft carries a sufficient amount of usable fuel/energy to safely complete the planned flight and to allow for deviations from the planned operation.

(b) KAAN AIR shall ensure that the fuel/energy planning of flights is based upon at least the following elements:

(1) procedures contained in the operations manual as well as:

(i) current aircraft-specific data derived from a fuel/energy consumption monitoring system; or

(ii) data provided by the aircraft manufacturer; and

(2) the operating conditions under which the flight is to be conducted including:

(i) aircraft fuel/energy consumption data;

(ii) anticipated masses;

(iii) anticipated meteorological conditions;

(iv) the effects of deferred maintenance items or of configuration deviations, or both; and

(v) procedures and restrictions introduced by air navigation service providers.

(c) KAAN AIR shall ensure that the pre-flight calculation of the usable fuel/energy that is required for a flight includes:

(1) **taxi** fuel/energy, which shall not be less than the amount expected to be used prior to take-off;

(2) **trip** fuel/energy;

(3) **contingency** fuel/energy;

(4) **destination alternate** fuel/energy if a destination alternate aerodrome is required;

(5) **final reserve** fuel/energy, which shall not be less than:

(i) if flying under visual flight rules (**VFR**) and navigating by day **with reference to visual landmarks**, **20-minute** fuel/energy at best-range speed; or

(ii) if flying under **VFR** and navigating by means **other than by reference to visual landmarks** or at **night**, **30-minute** fuel/energy at best-range speed; or

(iii) if flying under instrument flight rules (**IFR**), **30-minute** fuel/energy at holding speed at 1 500 ft (450m) above the aerodrome elevation in standard conditions, calculated according to the helicopter estimated mass on arrival at the destination alternate aerodrome or at the destination aerodrome when no destination alternate aerodrome is required;

(6) **extra** fuel/energy, to take into account anticipated delays or specific operational constraints; and

(7) **discretionary** fuel/energy, if required **by the commander**.

(d) KAAN AIR shall ensure that if a flight has to proceed along a route or to a destination aerodrome other than the ones originally planned, **in-flight re-planning procedures** for calculating the required usable fuel/energy include:

(1) trip fuel/energy for the remainder of the flight;

(2) reserve fuel/energy consisting of:

(i) contingency fuel/energy;

(ii) alternate fuel/energy if a destination alternate aerodrome is required;

(iii) final reserve fuel/energy; and

(iv) additional fuel/energy, if required by the type of operation;

(3) extra fuel/energy, to take into account anticipated delays or specific operational constraints; and

(4) discretionary fuel/energy, if required by the commander.

(e) As an alternative to points (b) to (d), for helicopters with a maximum certified take-off mass (MCTOM) of **3 175 kg or less**, flying by day and over routes navigated by reference to visual landmarks, or **for local helicopter operations** (LHO), the fuel/energy policy shall ensure that on completion of the flight, or series of flights, the final reserve fuel/energy is sufficient for:

(1) 30-minute flying time at best-range speed; or

(2) 20-minute flying time at best-range speed, if operating within an area providing continuous and suitable operating sites.

TABLE OF CONTENTS

06-MASS AND BALANCE

CAT.POL.MAB.100

(06.01)- Mass and Balance, Loading

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.MAB.100 / GM1 CAT.POL.MAB.100(g)

Operator Procedure

(a) During any phase of operation, the loading, mass and centre of gravity (CG) of the aircraft shall comply with the limitations specified in the RFM, or the operations manual if more restrictive.
(b) KAAN AIR will establish the mass and the CG of any aircraft by actual weighing prior to initial entry into service and thereafter at intervals of **4 (four) years** if individual aircraft masses are used, or nine years if fleet masses are used. The accumulated effects of modifications and repairs on the mass and balance shall be accounted for and properly documented. Aircraft shall be reweighed if the effect of modifications on the mass and balance is not accurately known.
(c) The weighing shall be accomplished by the manufacturer of the aircraft or by an approved maintenance organisation.
(d) KAAN AIR will determine the mass of all operating items and crew members included in the aircraft **dry operating mass** by weighing or by using standard masses. The influence of their position on the aircraft's CG shall be determined.
(e) KAAN AIR will establish the mass of the traffic load, including any ballast, by actual weighing or by determining the mass of the traffic load in accordance with standard passenger and baggage masses.

- In commercial air taxi; **standart masses** will be used,

(f) In addition to standard masses for passengers and checked baggage, KAAN AIR will use standard masses for other load items, if it demonstrates to the TR DGCA that these items have the same mass or that their masses are within specified tolerances.
(g) KAAN AIR will determine the mass of the **fuel load** by using the actual density or, if not known, the density calculated in accordance with a method specified below, typical fuel density values are:

(1) Gasoline (piston engine fuel) – 0.71
(2) JET A1 (Jet fuel JP 1) – 0.79
(3) JET B (Jet fuel JP 4) – 0.76
(4) Oil – 0.88

(h) KAAN AIR will ensure that the loading of:
(1) its aircraft is performed under the supervision of **qualified personnel**; and
(2) traffic load is **consistent with the data** used for the calculation of the aircraft mass and balance.
(i) KAAN AIR will comply with additional structural limits such as the floor strength limitations, the maximum load per running metre, the maximum mass per cargo compartment and the maximum seating limit.

For helicopters, in addition, KAAN AIR will take account of **in-flight changes** in loading.

(06.02)- Principles and Methods involved in the Loading and in the Mass and Balance system

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.MAB.100

The Commander is responsible for ensuring that the helicopter is loaded such that it remains in accordance with the centre of gravity limitations for the aircraft published in the RFM throughout a given flight.

Definitions - General:
Basic Empty Mass: It is the mass of an aircraft plus standard items such as: unusable fuel and other unusable fluids, lubricating oil in engine and auxiliary units, fire extinguishers, pyrotechnics, emergency oxygen equipment, supplementary electronic equipment.
Dry Operating Mass: The total mass of the helicopter ready for a specific type of operation excluding all usable fuel and traffic load.
Maximum Landing Mass: The maximum permissible total aircraft mass on landing under normal circumstances.
Maximum Take-Off Mass - MTOM: The maximum permissible total helicopter mass at takeoff.
Maximum Zero Fuel Mass: It is the maximum permissible mass of an aircraft with no usable fuel.
Passenger classification:
Adults, male and female, are defined as persons of an age of **12 years and above**.
Children are defined as persons of an age of **two years and above** but who are less than 12 years of age:

Infants are defined as persons who are **less than two years** of age.
Traffic Load: The total mass of passengers, baggage and cargo, including any non-revenue load.

(06.03)- Mass Values for Crew Members

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC2 CAT.POL.MAB.100(d)

(a) KAAN AIR will use the following mass values for **crew** to determine the dry operating mass:
(1) In offshofe flights; **actual masses** including any **crew baggage**;
(2) In commercial air taxi; **standard masses**, including hand baggage, of

- **85 kg for flight crew**/technical crew members and
- 75 kg for cabin crew members.

(b) KAAN AIR will correct the dry operating mass to account for any **additional baggage**. The position of this additional baggage should be accounted for when establishing the centre of gravity of the aircraft.

(06.04)- Mass Values for Passengers and Baggage

Revizyon No: 3 Revizyon Tarihi: 10.09.2018
AMC1 CAT.POL.MAB.100(e)

(a) The predetermined mass for hand baggage and clothing will be established by KAAN AIR on the basis of studies relevant to his particular operation. In any case, it should not be less than:
(1) **4 kg for clothing**; and
(2) **6 kg for hand baggage**.

(b) When determining the actual mass by weighing, passengers' personal belongings and hand baggage should be included. Such weighing should be conducted immediately prior to boarding the aircraft.

(c) **In commercial air taxi**; when determining the mass of passengers by using standard mass values, the standard mass values in Tables 2 below will be used. The standard masses include hand baggage and the mass of any infant carried by an adult on one passenger seat. Infants occupying separate passenger seats should be considered as children.

AMC1 CAT.POL.MAB.100(e) / (c) Table 2;
Standard masses for passengers — aircraft with a total number of passenger seats of 19 or less

Passenger seats:	**1 - 5**	**6 - 9**	**10 - 19**
Male	104 kg	96 kg	92 kg
Female	86 kg	78 kg	74 kg
Children	35 kg		

(1) On all helicopter flights where **no hand baggage is carried in the cabin** or where hand baggage is accounted for separately, **6 kg may be deducted** from male and female masses in Table 2. Articles such as an overcoat, an umbrella, a small handbag or purse, reading material or a small camera are not considered as hand baggage.
(2) For helicopter operations in which a **survival suit** is provided to passengers, **3 kg** should be **added** to the **passenger mass value**.

(d) **Mass values for baggage** For aircraft with 19 passenger seats or less, the actual mass of checked baggage should be **determined by weighing.**

(e) **Revised standard masses** will not be used in KAAN AIR flights.

(f) On any flight identified as carrying a significant number of passengers whose masses, including hand baggage, are expected to significantly **deviate from the standard passenger mass**, KAAN AIR will determine the actual mass of such passengers by weighing or by adding an adequate mass increment.

(g) If standard mass values for checked baggage are used and a significant number of passengers checked baggage is

expected to significantly **deviate from the standard baggage mass**, KAAN AIR will determine the actual mass of such baggage by weighing or by adding an adequate mass increment.

(06.05)- Mass and Balance Data and Produce Documentation;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.MAB.105

(a) KAAN AIR has established mass and balance data and produce mass and balance documentation prior to each flight specifying the load and its distribution. The mass and balance documentation shall enable the commander to determine that the load and its distribution is such that the mass and balance limits of the aircraft are not exceeded.

(b) **Where mass and balance data and documentation is generated by a computerised mass and balance system, the operator shall verify the integrity of the output data.**

(c) The person supervising the loading of the aircraft shall **confirm by hand signature** or equivalent that the load and its distribution are in accordance with the mass and balance documentation given to the commander. The commander shall indicate his/her acceptance **by hand signature** or equivalent.

SIGNATURE OR EQUIVALENT

AMC1 CAT.POL.MAB.105(c)

*Where a signature by hand is impracticable or it is desirable to arrange the equivalent verification by electronic means, the following conditions should be applied in order to make an electronic signature the equivalent **of a conventional hand-written signature:***

(1) electronic 'signing' by entering a personal identification number (PIN) code with appropriate security, etc.;

(2) the computer system logs information to indicate when and where each PIN code has been entered;

(3) the use of the PIN code is, from a legal and responsibility point of view, considered to be fully equivalent to signature by hand;

(4) the requirements for record keeping remain unchanged; and

(5) all personnel concerned are made aware of the conditions associated with electronic signature and this is documented.

(d) KAAN AIR has specified procedure for **last minute changes** explained in the further section.

(06.06)- Mass and Balance Documentation Contents

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.MAB.105

(1) Aircraft registration and type;
(2) Flight identification, number and date;
(3) Name of the commander;
(4) Name of the person who prepared the document;
(5) Dry operating mass and the corresponding CG of the aircraft:
(6) Mass of the fuel at take-off and the mass of trip fuel;
(7) Mass of consumables other than fuel, if applicable;
(8) Load components including passengers, baggage, freight and ballast;
(9) Take-off mass, landing mass and zero fuel mass;
(10) Applicable aircraft CG positions; and
(11) **The limiting mass and CG values.**

The information above shall be available in flight planning documents or mass and balance systems. Some of this information may be contained in other documents readily available for use.

(06.07)- Last Minute Changes to the Load

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.MAB.105

Operator Procedure

Any **last minute change** after the completion of the mass and balance documentation is brought **to the attention of the commander** and **new mass and balance documentation** is prepared.

Last minute change (LMC) limit is:

- 1 passenger and/or 15 kg cargo, and then **new mass and balance documentation** is prepared.

(06.08)- Integrity of Mass and Balance data and Documentation generated by a computerised system

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC1 CAT.POL.MAB.105(b)

KAAN AIR will verify the **integrity** of mass and balance data and documentation generated by a computerised mass and balance system, **at intervals not exceeding 6 months**. KAAN AIR has established a system; **Flight Operations Manager** to **manually check** that amendments of its input data are incorporated properly in the system and that the system is operating correctly on a continuous basis.

06.09-Instructions and Data for the Calculation of the Mass and Balance;

CAT.POL.MAB.100

(06.09.00)- WEIGHING of the AIRCRAFT

Revizyon No: 8 Revizyon Tarihi: 23.07.2025

CAT.POL.MAB.100 / AMC1 CAT.POL.MAB.100(b)

KAAN AIR will establish the mass and the CG of any aircraft by **actual weighing** prior to initial entry into service and thereafter at intervals of **four years** (4 years) if individual aircraft masses are used, or nine years if fleet masses are used.

The accumulated effects of **modifications and repairs** on the mass and balance will be accounted for and properly documented. Aircraft will be **reweighed** if the **effect of modifications** on the mass and balance is **not accurately known**.

(a) **New aircraft** that have been **weighed at the factory** may be placed into operation without reweighing if the mass and balance records have been adjusted for alterations or modifications to the aircraft. Aircraft transferred from one TR/EU operator to another TR/EU operator do not have to be weighed prior to use by the receiving operator; unless more than 4 years have elapsed since the last weighing.

(b) The mass and centre of gravity (CG) position of an aircraft **will be revised** whenever the cumulative changes to the dry operating mass **exceed ±0.5 % of the maximum landing mass**. This may be done by weighing the aircraft or by calculation. If the RFM requires to record changes to mass and CG position below these thresholds, or to record changes in any case, and make them known to the commander, mass and CG position will be revised accordingly and made known to the commander.

(c) When weighing an aircraft, normal **precautions** will be taken consistent with good practices such as:

(1) checking for **completeness** of the aircraft and equipment;

(2) determining that **fluids** are properly accounted for;

(3) ensuring that the aircraft is **clean**; and

(4) ensuring that weighing is accomplished in an **enclosed building**.

(d) Any **equipment used for weighing** will be properly **calibrated**, zeroed, and used in accordance with the manufacturer's instructions. Each scale will be calibrated either by the manufacturer, by a civil department of weights and measures or by an appropriately authorised organisation **within two years** or **within a time period defined by the manufacturer** of the weighing equipment, **whichever is less**.

The equipment will enable the mass of the aircraft to be established accurately. One single accuracy criterion for weighing equipment cannot be given. However, the weighing accuracy is considered satisfactory if the accuracy criteria in Table1 are met by the individual scales/cells of the weighing equipment used:

Table 1

Accuracy criteria for weighing equipment

For a scale/cell load	An accuracy of
Below 2 000 kg	±1 %
From 2 000 kg to 20 000 kg	±20 kg
Above 20 000 kg	±0.1 %

After any weighing activity or Chart C revision completion;

A copy of the filled and signed document Chart C will be sent **to Flight Operations Manager** **by Continuing Airworthiness Management department (CAMO) related engineer** to provide new Basic Mass, CG and Moment numbers to flight crews. Then Flight Operations Manager will revise OM-B 06.09.04 "Dry Operating Mass and corresponding centre of gravity (CG) or index" table and apply for approval of TR DGCA, and revise draft FOF-03 Mass and Balance Computation form to provide actual numbers to flight crews.

(06.09.01)- Calculation System (e.g. index system);

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.MAB.100

Note

In accordance with EASA procedures, the detail weight and balance data of this Section are not subject to EASA approval.

The loading instructions of this Section, however, have been accepted by EASA as satisfying all requirements for instructions on loading of the rotorcraft within approved limits of weight and center of gravity, and on maintaining the loading within such limits.

GENERAL

This Section provides information for the weight and balance computation of the AW119 MKII helicopter. It is the pilot's responsibility to ensure that the helicopter is properly loaded to maintain for the duration of the flight the Center of Gravity (CG) within the limitations defined in Section 1 of the Rotorcraft Flight Manual.

WARNING

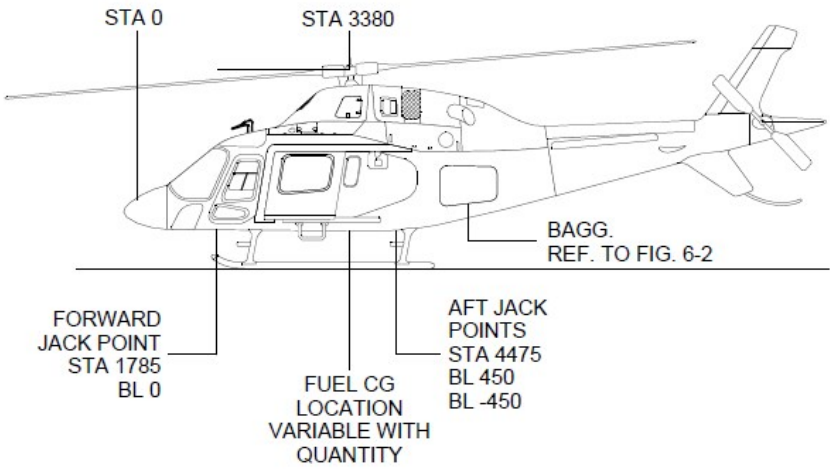
Operation outside of prescribed weight and balance limitation could result in an accident and serious or fatal injury.

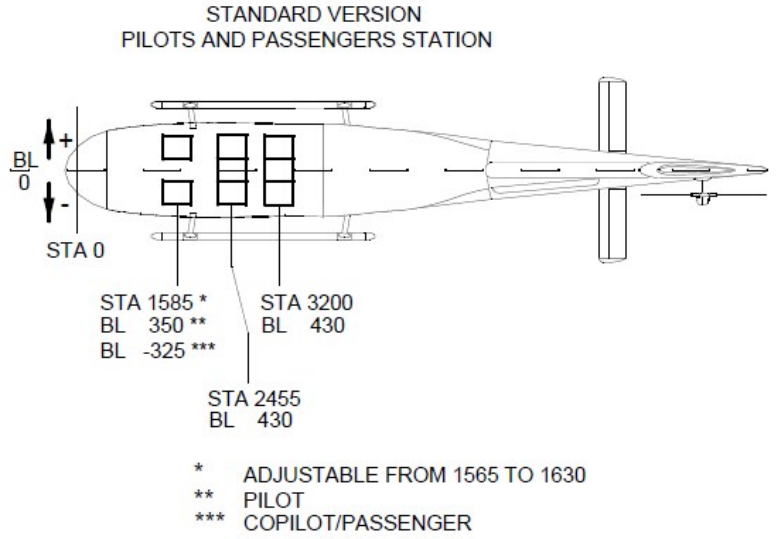
Figures, charts and examples are provided to assist the pilot in computing the proper loading conditions.

DATUM LINE LOCATIONS

Figure 6-1 presents fuselage stations and butt lines data to aid in weight and balance computations.

Figure 6-1. Stations and Butt Lines



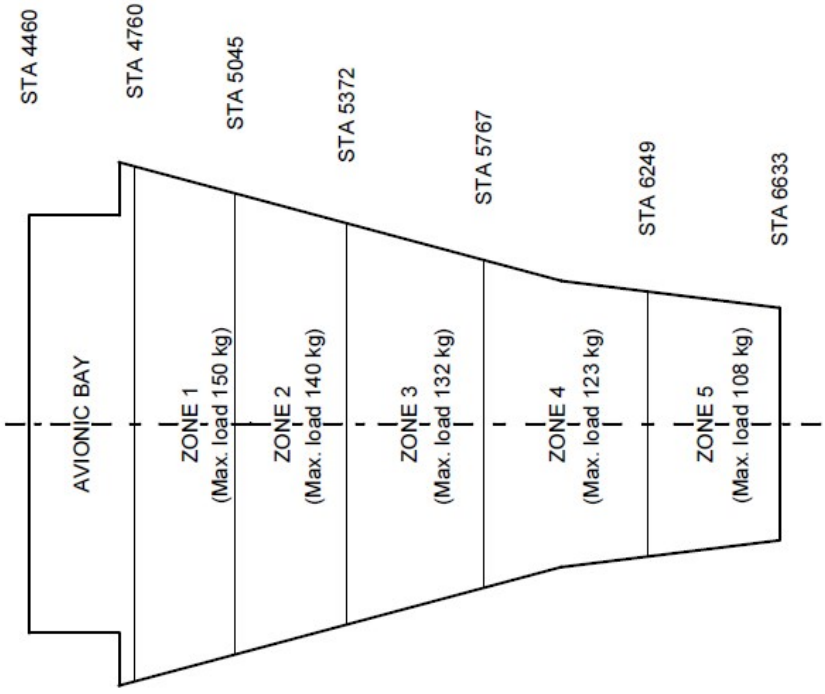


ALLOWABLE BAGGAGE LOAD

The baggage compartment is divided in five zones. In Figure 6-2, the maximum baggage load for each zone is presented. The maximum allowable baggage load is 150 kg.

The following table defines the baggage moments for each zone. The maximum allowable baggage moment is 734000 kg mm.

Figure 6-2. Baggage Loading Zone



(06.09.02)- Information and instructions for completion of mass and balance documentation, including manual and computer generated types;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.MAB.100

Rotorcraft Flight Manual

WEIGHT AND BALANCE DETERMINATION

Instructions for weight and balance determination are herewith enclosed with instructions for use of charts to enable the operator to obtain all necessary data as to basic helicopter configuration, empty weight and center of gravity. These charts will also provide for continuous control of weight and balance of the helicopter. This system of weight and balance

computation requires the use of charts and forms. They are identified as follows:

a. Chart A - Equipment List.
b. Chart B - Helicopter Weighing Record.
c. Chart C - Basic Weight and Balance Record.
d. Chart D - Data for Helicopter Weight and Balance Computation
e. Chart E -Weight and Balance Computation

WEIGHT AND BALANCE DATA RESPONSIBILITY

The aircraft manufacturer inserts all helicopter identifying data on the various charts. This record constitutes the basic weight and balance data of the helicopter, to which the Rotorcraft Flight Manual was assigned, for the condition shown on Chart A. The operator shall keep this data up-to-date by recording all changes made to the configuration of the helicopter.

HELICOPTER WEIGHING

The helicopter must be weighed:
a. When major modifications or repairs are made, or optional equipment are installed/removed.
b. When the basic weight data is suspected to be in error.
c. At time of major overhaul.
d. In accordance with EASA instructions.

USE OF CHARTS AND FORMS

USE OF CHART A

For all pages of Chart A:
— √ Means installed on the helicopter
— ○ Means not installed on the helicopter

Page 1 of 1

CHART A - EQUIPMENT LIST
Report 109G0840W030

RECORD OF CHECKING (Date and Signature)

MODEL: AW119 MKII	REGISTRATION MARKS	S/N

ITEM NUMBER	POWER PLANT SYSTEM		Q.ty	WEIGHT (Kg)	ARM (mm)	MOMENT (Kg mm)	Basic configuration	In helicopter	Chart C entry	In helicopter	Chart C entry	In helicopter	Chart C entry
	P/N	DENOMINATION											

The Chart A gives the weight, arm and moment of all the basic and optional equipment. The manufacturer of the helicopter places check marks in the "Basic Configuration" column to identify which items are installed in the helicopter during the weighing. A check (V) in the columns headed "In Helicopter" indicates the presence of the item in the helicopter, and a zero (0) indicates its absence. The next columns of Chart A will permit inspection of the helicopter for equipment actually installed. When making an inventory, note whether any items have been installed or removed and if so enter corresponding weight and moment change on Chart C.

Subsequent check list inventories shall be carried out in the following cases:
a. When the helicopter undergoes modification, major repair or overhaul.
b. When changes in equipment are made for a different type of operation.
c. When the helicopter is reweighed.

USE OF CHART B

CHART B - HELICOPTER WEIGHING RECORD							Sheet 1 of 2
MODEL:		S/N:		REGISTRATION MARKS:			
DATE:		PLACE:		SIGNATURE:			
Reason for weighing:							
Scale type:							
JACKPOINTS	SCALE READING	TARE	NET WEIGHT	STA (1)	LONGITUDINAL MOMENT	BL (2)	LATERAL MOMENT
	(Kg)	(Kg)	(Kg)	(mm)	(Kg mm)	(mm)	(Kg mm)
FORWARD				1785		0	
LH AFTERWARD				4475		-450	
RH AFTERWARD				4475		450	
TOTAL (as weighed) (to Sht. 2 of 2)							

Note 1
The forward lower Central Cabin is provided by two FWD jack points, only one FWD jack point is assured by using a proper tool which collect both jacking points.
The Station Reference Datum (STA 0) is located 1785 mm forward the FWD jack points. Therefore the STA are positive.
E = Distance from the reference datum (STA 0) to the FWD jackpoint Station of 1785 mm.
F = Distance from the reference datum (STA 0) to the LH and RH aft jackpoints Station of 4475 mm.

Note 2
The Butt Line Reference Datum (BL 0) is located on the fuselage Center Line.
Therefore the BL are negative on the Left Hand side and positive on the Right Hand side.

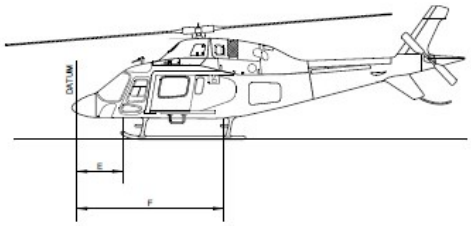


CHART B - HELICOPTER WEIGHING RECORD					Sheet 2 of 2
DESCRIPTION	NET WEIGHT (Kg)	STA (mm)	LONG. MOMENT (Kg mm)	BL (mm)	LAT. MOMENT (Kg mm)
TOTAL (as weighed) (from Sht. 1 of 2)					
SUBTRACT (from Tab. 1)					
ADD (from Tab. 2)					
BASIC AIRCRAFT (to Chart C)					

TABLE 1 ITEMS WEIGHED BUT NOT PART OF BASIC WEIGHT

DENOMINATION	WEIGHT (Kg)	STA (mm)	LONG. MOMENT (Kg mm)	BL (mm)	LAT. MOMENT (Kg mm)
TOTAL					

TABLE 2 BASIC ITEMS NOT INSTALLED WHEN WEIGHED

DENOMINATION	WEIGHT (Kg)	STA (mm)	LONG. MOMENT (Kg mm)	BL (mm)	LAT. MOMENT (Kg mm)
TOTAL					

Reasons of the weighing: | Type Scales:

NOTE:
Remove the weight of the mission equipment items, which are pointed out in Chart A

a. Enter the actual scale readings in the first column of sheet 1. Subtract tare, if any, from the scale readings to obtain the net weight.
b. Multiply the net weights by their respective arms.
c. Add the net weight and moments.
d. Divide the total moment by the net weight to obtain "as weighed" CG position. Transfer the "TOTAL" (as weighed) weight arm and moment to the sheet 2 of Chart B.
e. Subtract the total weight and moment of equipment weighed but not part of the basic helicopter (list these items in column one).
f. Add the weight and moment of unusable fuel.
g. Add the total weight and moment of the basic items not in helicopter when weighed (list these in column two). Added items shall be marked on Chart A.
h. Enter the new basic weight and moment on Chart C.

KAAN AIR

USE OF CHART C

CHART C - BASIC WEIGHT AND BALANCE RECORD															Page N°
MODEL				S/N			REGISTRATION MARKS								
DATE	Item n° see Chart A		DENOMINATION	LOADING CHANGE					BASIC WEIGHT, MOMENT & CG						SIGNAT.
	IN (1)	OUT (2)		WGT (3) (Kg)	STA CG (mm)	LONG MOMENT (Kg mm)	BL CG (mm)	LATERAL MOMENT (Kg mm)	WGT (Kg)	LONG MOMENT (Kg mm)	STA CG (mm)	LATERAL MOMENT (Kg mm)	BL CG (mm)		
Note 1 IN = installed component Note 2 OUT = removed component Note 3 Weight of an installed component is positive (+) Weight of a removed component is negative (-)															

Chart C is a continuous history of the basic weight and moment resulting from modifications and equipment which alter the current weight and balance status of the basic helicopter. Make additions or subtractions to the basic weight and moment in Chart C as follows:

a. When the helicopter undergoes modification, major repair or overhaul.

b. When changes in equipment are made for a different type of operation When the helicopter is reweighed.

Note

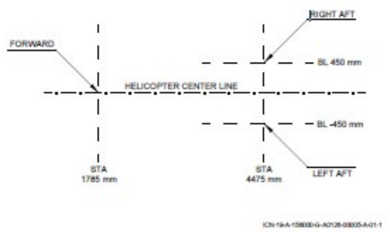
If any equipment is not listed on Chart A, determine its weight and arm, and list corresponding data on Charts A and C.

USE OF CHART D

CHART D - DATA FOR HELICOPTER WEIGHT & BALANCE COMPUTATION

MODEL AW119 MKII

JACKPOINTS LOCATION



Longitudinal sta 0 (datum) is 1785 mm forward of the front jackpoint.

Chart D provides information necessary for weight and balance computation.

USE OF CHART E

CHART E - WEIGHT & BALANCE COMPUTATION FORM						
MODEL	S/N	REGISTRATION MARKS		DATE	PLACE	COMPUTED BY
Ref.	ITEM	WEIGHT (Kg)	STA (mm)	LONG.MOMENT (Kg mm)	BL (mm)	LAT.MOMENT (Kg mm)
1	HELICOPTER BASIC (Ref. To Chart C)					
2	PILOT					
3	COPILOT					
4	PASSENGER					
5	PASSENGER					
6	PASSENGER					
7	PASSENGER					
8	PASSENGER					
9	PASSENGER					
10	LOOSE EQUIPMENT LOAD					
11	CABIN LOAD					
12	BAGGAGE COMPARTMENT LOAD					
13						
14						
15						
16						
17						
18						
19						
20						
21	DRY WEIGHT					
22	FUEL (at Take-off)					
23	GROSS WEIGHT (at Take-off)					
24	FUEL (at Landing)					
25	GROSS WEIGHT (at Landing)					
26	BALLAST (If required)					
LIMITATIONS Refer to Section 1		REMARKS				

Chart E serves as a work sheet and records the calculations and any corrections that must be made to ensure that helicopter will be within weight and CG limits.

Note
A Chart E shall be filled prior to any flight.

a. Enter the helicopter basic weight and moment. Obtain these values from the last entry on Chart E.
b. Enter the weight of all applicable items in the marked "Weight". Obtain the corresponding arms from Chart D and calculate the moments.
c. Add weights and add moments. Divide total moment by total weight to obtain CG arm.
d. Ascertain that CG is within allowable limits.
e. Should corrections be required, readjust ballast to return CG within allowable limits.

(06.09.03)- Limiting masses and centre of gravity for the types, variants or individual aircraft;

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.MAB.100

Refer to OM B section 01.01.05 Mass and Centre of Gravity (CG) with the pictorial graphics.

(06.09.04)- Dry Operating Mass and corresponding centre of gravity (CG) or index

Revizyon No: 8 Revizyon Tarihi: 23.07.2025

CAT.POL.MAB.100

1)

MODEL	S/N	REG MARK	DATE	PLACE		
A119	**14707**	**TC-HKE**	**14.08.2024**	**KAAN**		
	ITEM	*Weight (Kg)*	*STA CG (mm)*	*Long Mom. (Kgmm)*	*BL CG (mm)*	*Lateral Mom. (Kgmm)*
	HELICOPTER EMPTY	**1.752,78**	**3.535**	**6.196.590,2**	**38,351**	**76.050**

2)

MODEL	S/N	REG MARK	DATE	PLACE		
A119 Kx	**14932**	**TC-HKY**	**03.01.2025**	**LEONARDO**		
	ITEM	*Weight (Kg)*	*STA CG (mm)*	*Long Mom. (Kgmm)*	*BL CG (mm)*	*Lateral Mom. (Kgmm)*
	HELICOPTER EMPTY	**1.816,25**	**3.648,12**	**6.625.905,35**	**-4,05**	**-7.348,50**

3)

MODEL	S/N	REG MARK	DATE	PLACE		
A119	**14735**	**TC-HKZ**	**20.07.2022**	**NORWAY / ARCTIC AVIA**		
	ITEM	*Weight (Kg)*	*STA CG (mm)*	*Long Mom. (Kgmm)*	*BL CG (mm)*	*Lateral Mom. (Kgmm)*
	HELICOPTER EMPTY	**1.756**	**3.594**	**6.311.350**	**-10**	**-17.550**

(06.09.05)- Sample Mass and Balance Sheet

Revizyon No: 8 Revizyon Tarihi: 23.07.2025

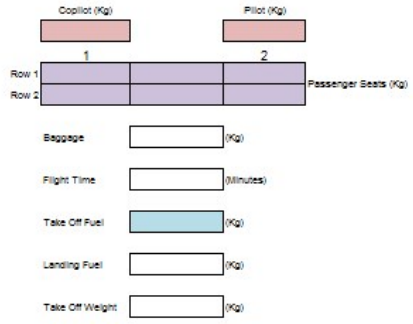
CAT.POL.MAB.105 / CAT.POL.MAB.100

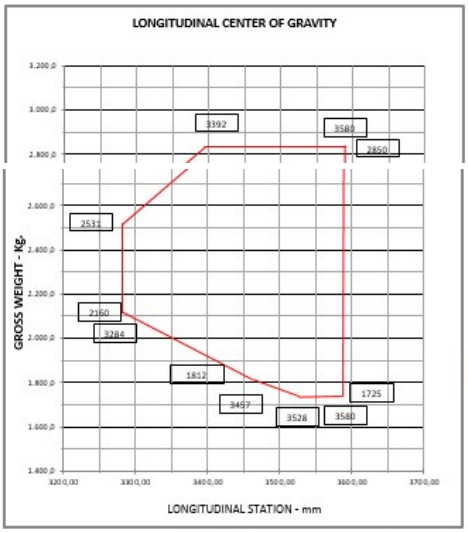
Sample for AW-119 Mk II (TC-HKE, TC-HKY, TC-HKZ)

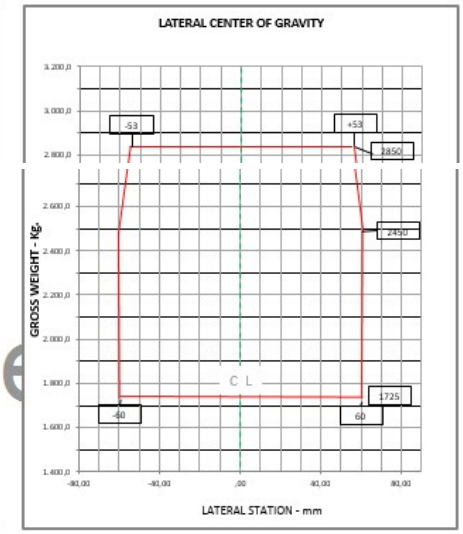
1)

TC-HKE AW-119 MK II - MASS AND BALANCE COMPUTATION FORM

KAAN HAVACILIK SANAYİ VE TİCARET A.Ş.







WEIGHT AND BALANCE COMPUTATION FORM

MODEL	S/N	REG.MARK	DATE	PLACE	COMPUTED BY	
AW-119 Mk II				KAAN		
Ref.	**ITEM**	**Weight (Kg)**	**CG Arm (mm)**	**Moment (lbs. Inches)**	**Butt line (Arm) (mm)**	**Moment (lbs. Inches)**
1	Empty Weight	1.774,3	3811,0	6.408.707,4	0,0	0,0
2	Pilot		1585,0			
3	Copilot / Passenger Forward		1585,0			
4	If Mid Seat Installed	0	0,0	0,0	0,0	0,0
5	Engine Oil	10,2	4675,0	47.685,0	0,0	0,0
6	Passenger Fwd - Right		2455,0		430,0	
7	Passenger Fwd - Mid		2455,0		0,0	
8	Passenger Fwd - Left		2455,0		-430,0	
9	Passenger Aft - Right		3200,0		430,0	
10	Passenger Aft - Mid		3200,0		0,0	
11	Passenger Aft - Left		3200,0		-430,0	
12	Baggage		4880,0		0,0	
13	Gross Weight (Zero Fuel)					
14	Fuel (Take off)		0,0		0,0	
15	TAKE OFF GROSS WEIGHT					
16	Gross Weight (Zero Fuel)					
17	Fuel (landing)		0,0		0,0	
18	LANDING GROSS WEIGHT					

ROUTES	
Passenger (6 - 9)	
Crew	: 85 Kg.
Male	: 96 Kg.
Female	: 78 Kg.
Children (2-12)	: 35 Kg.
Hand Luggage	: 6 Kg.
Survival	: 3 Kg.
Max. Fuel	: 478 Kg.
Fuel Flow	: 150 Kg/h
Fuel Flow	: 2,5 Kg/min.

Form No:FOF-07 Rev:03 Date: 07.04.2017

Signature

TABLE OF CONTENTS

07-HELICOPTER SYSTEMS

AMC3 ORO.MLR.100

(07.01)- Helicopter Systems, related controls and indications and operating instructions (consideration should be given to use the ATA number system when allocating chapters and numbers)

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

Rotocraft Flight Manual

The description of the individual helicopter systems is to be found in Appendix B.07.01
Also the other Appendices are:

- Appendix B.A119.02.01 RFM Normal Procedures
- Appendix B.A119.03.01 RFM Emergencies
- Appendix B.A119.06.01 RFM Mass and Balance
- Appendix B.A119.07.01 RFM System Description
-
- Appendix B.A119.S.06 Increased Internal Gross Weight 2720 kg.
- Appendix B.A119.S.09 Supplementary Fuel Tanks
- Appendix B.A119.S.10 Rotor Brake
-
- Appendix B.A119. Preflight Checklist

TABLE OF CONTENTS

08-LOADING

AMC1 CAT.OP.MPA.160 / AMC2 CAT.OP.MPA.160 / CAT.OP.MPA.160 / CAT.POL.MAB.100

(08.01)- Loading, Unloading and Securing the load in the aircraft.

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.MAB.100 / AMC2 CAT.OP.MPA.160 / AMC1 CAT.OP.MPA.160 / CAT.OP.MPA.160

A manifest must be created for every flight on which persons or cargo are carried. Prior to the flight the Commander must ensure that the passengers are securely seated and that cargo is safely loaded. The Commander may delegate this task to another crew member or ground personnel. The personnel to whom this task is delegated shall confirm to the Commander that passengers /cargo / baggage are securely and properly loaded.

08.01.01 Passenger Transport

Passengers may only be carried when they are properly seated and their shoulder and lap safety belts are fastened. Where needed a crew member or ground handling personnel shall assist passengers. In scheduled commercial air taxi flight :

- Only hand baggage that can be adequately and securely stowed is taken into the passenger compartment,

08.01.02 CARRIAGE OF CARGO IN THE PASSENGER COMPARTMENT

The following should be observed before carrying cargo in the passenger compartment, for helicopters: the mass of cargo should **not exceed the structural loading** limits of the floor or seats; the number/type of restraint devices and their attachment points should be capable of restraining the cargo in accordance with applicable Certification Specifications; and the location of the cargo should be such that, **in the event of an emergency evacuation**, it will **not hinder egress nor impair the crew's view**.

08.01.03 Cargo Transport

All **baggage and cargo** on board that might cause injury or damage, or obstruct aisles and exits if displaced, is **stowed** so as to prevent movement.

08.01.04 STOWAGE PROCEDURES

Hand baggage and cargo are adequately and securely stowed should take account of the following:

- each item carried in a cabin should be stowed only in a location that is capable of restraining it;
- **weight limitations** placarded on or adjacent to stowages should **not be exceeded**;
- under seat stowages should not be used unless the seat is equipped with a restraint bar and the baggage is of such size that it may adequately be restrained by this equipment;
- baggage and cargo placed in lockers should not be of such size that they prevent latched doors from being closed securely;
- baggage and cargo should not be placed where it can impede **access to emergency equipment**; and
- checks should be made before take-off, before landing and whenever the 'fasten seat belts' signs are illuminated or it is otherwise so ordered to ensure that baggage is stowed where it **cannot impede evacuation** from the aircraft or **cause injury by falling** (or other movement), as may be appropriate to the phase of flight.

(08.02)- Dangerous Goods transport by air

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.POL.MAB.100 / SPA.DG.100

KAAN AIR **has not approved** on the transport dangerous goods with helicopters which approval is taken from the TR DGCA.

TABLE OF CONTENTS

09-MINIMUM EQUIPMENT LIST (MEL)

ORO.MLR.105

(09.01)- MEL for each aircraft type or variant operated and the type(s)/area(s) of operation

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

ORO.MLR.105 / Regulation (EC) No. 216/2008 Annex IV

The Minimum Equipment List is separately approved by the TR DGCA and kept in the folder MEL of the Flight Operations Department.

Additionally, a digital version is available to all Crew / Staff via the intranet.

TABLE OF CONTENTS

10.01-List of Survival Equipment to be carried for the routes to be flown and the procedures for checking the serviceability of this equipment prior to take-off, Instructions regarding the location, accessibility and use of survival and emergency equipment and its associated checklist(s);

10.02-Items for Communication to the RCC - RESCUE COORDINATION CENTRE, The information, compiled in a list, should include, as applicable, the number, colour and type of life rafts and pyrotechnics, details of emergency medical supplies, e.g. first-aid kits, emergency medical kits, water supplies and the type and frequencies of emergency portable radio equipment.

10.03-First Aid Kit

10.04-Emergency Lighting and marking

10.05-Emergency Locator Transmitter (ELT)

10.07-Survival Equipment

10.08-Procedures to ensure that before taxiing, take-off and landing and when safe and practicable to do so, all means of assistance for emergency evacuation that deploy automatically are armed.

10-SURVIVAL AND EMERGENCY EQUIPMENT INCLUDING OXYGEN

CAT.IDE.H.100

(10.01)- List of Survival Equipment to be carried for the routes to be flown and the procedures for checking the serviceability of this equipment prior to take-off, Instructions regarding the location, accessibility and use of survival and emergency equipment and its associated checklist(s);

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.IDE.H.100

N/A

(10.02)- Items for Communication to the RCC - RESCUE COORDINATION CENTRE, The information, compiled in a list, should include, as applicable, the number, colour and type of life rafts and pyrotechnics, details of emergency medical supplies, e.g. first-aid kits, emergency medical kits, water supplies and the type and frequencies of emergency portable radio equipment.

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.IDE.H.330

N/A

(10.03)- First Aid Kit

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.IDE.H.220

(a) KAAN AIR helicopters will be equipped with at least one first-aid kit.

(b) First-aid kits will be:
(1) readily accessible for use;
(2) kept up to date.

To be kept up to date, first-aid kits will be:

(a) inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use;

(b) replenished **once a year**, in accordance with instructions contained on their labels, or as circumstances warrant; and

(c) replenished after use-in-flight **at the first opportunity** where replacement items are available.

The **A119** is equipped with 1 first aid kit. It is located **under the front passenger seat row**.

(10.04)- Emergency Lighting and marking

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.IDE.H.275

KAAN AIR will not conduct any flight in accordance with CAT.IDE.H.275 (b) (1) and (2).

(10.05)- Emergency Locator Transmitter (ELT)

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.IDE.H.280

GENERAL
The emergency locator transmitter, installed inside of the tail boom, provides an emergency standard swept tone on 121.5 and 243.0 MHz automatically activated during a crash. The system is also used within the SARSAT satellite program.

The system consists of the following components:

- ELT UNIT
- BATTERY PACK
- FIXED ANTENNA
- COCKPIT REMOTE SWITCH ASSEMBLY

The Unit includes a g. switch, a transmitter, a microprocessor and transmitter module. The Unit has a dual outputs which are automatically actuated during the crash. The transmitter transmits a standard swept tone on the frequency of 121.5 and 243.0 MHz and, every 50 seconds for the duration of 520 milliseconds, also the 406.025 MHz transmitter is turned ON. During this period an encoded digital message is sent to the satellite. The digital message contains the transmitter serial number, the country code and the manufacturer name. This information is decoded by the ground computers and from that the owner's name, the address, the telephone number and type of aircraft are known and passed to the search and rescue team.

The crash force activation sensor or G-Switch is designed to activate with a change of velocity of 3.5 fps ± 0.5 fps both under normal conditions and while being subjected to 30 G's of cross axis forces.

The ELT radiated power is 5 Watts for a time of 24 hours at a temperature of -20°C. The battery pack is composed of 6 rechargeable batteries that are suitable to allow transmission for at least 72 hours. The ELT antenna is a normal monopole type antenna, on top of tail boom of the helicopter The remote control (cockpit panel switch) provides "MANUAL ON", "ARMED", and "RESET" modes.

OPERATION

Under normal operation the switch configuration on the front panel is the down position reading "ARM". The switch on the ELT unit will also be positioned down to read "OFF". Should an emergency arise to the degree that you want to manually activate your ELT, reverse either switch so it is in the up ("ON") position. As long as the front panel and ELT switches are in ARM/OFF position the ELT will automatically activate on impact.

If the ELT is activated accidentally, reset can be done by moving the front panel switch to "ON", then immediately rocking it back to "ARM". You may also reset the ELT at the unit itself by positioning the switch on the ELT up to "ON", then immediately back down to "OFF".

To change from the "INACTIVE" to the "ACTIVE" state the unit requires a positive switch transition from one of two sources: Panel Mounted Remote Switch Unit Mounted Switch

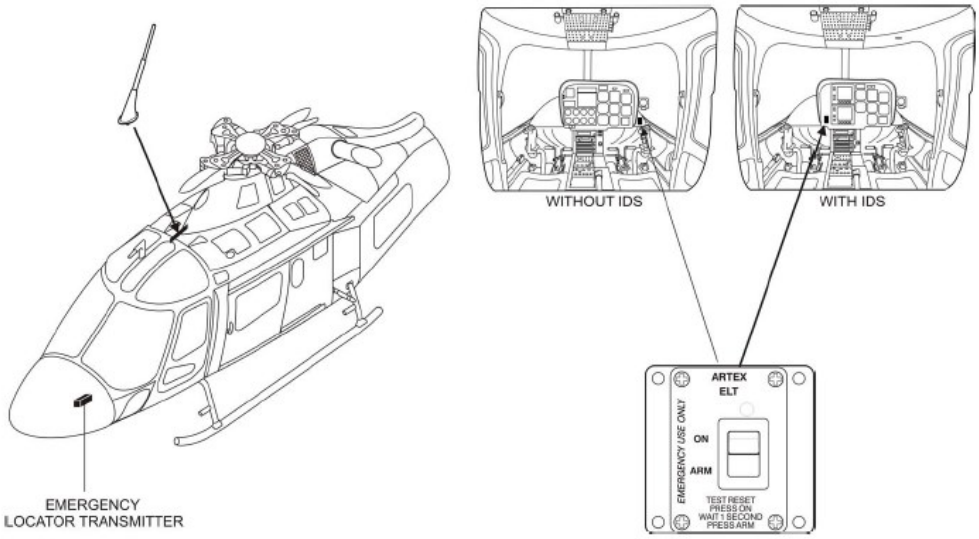
SARSAT OPERATION DESCRIPTION

When the satellites are in direct view of the transmitting beacon, the electronics on board of the satellite: receives the signal transmitted by the beacon measures the frequency received, included the Doppler shift introduced by the relative satellite/beacon velocity date the measurement performed recovers data in the message transmitted by the beacon sends back all information, in real time.

The main advantages of the transmitters operating at 406.MHz are:

- Position accuracy
- The transmitter is identified by serial number and manufacturer
- The capability of uploading the "position fix" in the message format
- Total worldwide coverage
- Immediate search and rescue response.

At ELT activation, the 406.025 MHz is detected by the satellites which derive the transmitter position while the two guard frequencies (121.5 and 243.0 MHz) are used to provide a homing signal to the crash site.



(10.07)- Survival Equipment

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.IDE.H.295 / CAT.IDE.H.305

N/A

(10.08)- Procedures to ensure that before taxiing, take-off and landing and when safe and practicable to do so, all means of assistance for emergency evacuation that deploy automatically are armed.

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

CAT.IDE.H.300

COCKPIT DOORS

Each cockpit door consists of an alluminum alloy box structure. The door is secured to two fittings on the airframe. The hinge-pin of each fitting is connected to the emergency door release mechanism, which is actuated by a jettison handle located on windshield side post.

The **emergency door release mechanism** consists of rods and bellcranks connected to the handle located on windshield side post. The handle permits a quick-release of the door by extracting the rod pins from hinges.

PASSENGER COMPARTMENT DOORS

Each passenger compartment door consists of a carbon fiber material structure, a window, and a latching mechanism. Each door slides on a special rail by means of rollers. The door window consists of a transparent panel fitted in the door structure by means of a rubber seal.

In the event of an emergency the window can be released by pulling the red strap fitted at the internal edge of each window. The doors are fitted with stops allowing them to be kept in the open position.

TABLE OF CONTENTS

11-EMERGENCY EVACUATION PROCEDURES

AMC3 ORO.MLR.100

(11.01)- Instructions for preparation for emergency evacuation including crew coordination and emergency station assignment

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

After landing, the captain gives the order to evacuate the helicopter. If the captain is not able to do so, the co-pilot must give the order.

The passengers and the crew leave the helicopter using the assigned emergency exits (if possible). After evacuation, the crew checks if all passengers are present and initiates further steps (mayday call, signals, etc.)

Passengers must be briefed on emergency procedures before each flight. This briefing must include how to use the emergency exits. In the helicopter, each passenger must be able to see where the emergency exits are located and which exit he or she must use in the case of emergency. In case of emergency, the captain must inform the passengers thereof (provided time allows him or her to do so)

(11.02)- Emergency Evacuation procedures (Duties of all members of the crew for the rapid evacuation and handling of the passengers in the event of a forced landing, ditching or other emergency)

Revizyon No: 3 Revizyon Tarihi: 10.09.2018

AMC3 ORO.MLR.100

11.02.01 **Landing as Soon as Practicable (example: engine failure)**

The captain informs the passengers:
"Ladies and gentlemen, due to a technical malfunction we will not be able to continue the flight to our destination, but will be re-routing to the nearest airfield"
PM informs ATC of the emergency situation (urgency call PAN-PAN)

11.02.02 **Landing as Soon as Possible (example: electrical fire)**

The captain informs the passengers:
"Ladies and gentlemen, we have a technical problem and we must land as quickly as possible. Please fasten your seat belts and assume the brace position"
PM informs ATC of the emergency situation (distress call MAYDAY)

11.02.03 **Immediate Landing (example: tail rotor failure)**

The captain informs the passengers:
"Emergency, fasten your seat belts and assume BRACE position"
PM informs ATC of the emergency situation (distress call MAYDAY)

The captain informs the passengers before touching down
For landings on land: "BRACE, BRACE, BRACE"
For landings on water: "DITCHING, DITCHING, DITCHING"

KAAN AIR

LEONARDO

AW119 MkII

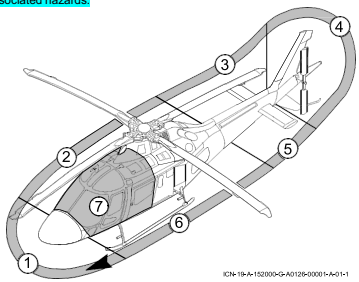
(Capt. .....)

PILOT'S DAILY PRE-FLIGHT CHECK

COLD WEATHER OPERATIONS

The battery should be stored in a warm place during prolonged helicopter inactivity. Engine starting with a cold, fully charged battery was demonstrated down to an OAT of -10 °C.

Passengers should be briefed on relevant operational procedures and associated hazards.



AREA N°1: Helicopter nose
AREA N°2: Fuselage - RH side
AREA N°3: Tail boom - RH side
AREA N°4: Fins, 90° gearbox, tail rotor, tail skid
AREA N°5: Tail boom - LH side
AREA N°6: Fuselage - LH side
AREA N°7: Cabin interior

FIGURE 1- Pre-flight Check Sequence

(First flight of the day)

The following procedure outlines the pilot walk-around and interior checks (FIGURE-1).

Technical Logbook & Documents	: Checked.
Main and tail rotor tie-downs (if present)	: Removed.
Area N°1 (Helicopter Nose)	
Nose exterior	: Condition.
Landing lights	: Condition.
Nose compartment access door	: Open.
Battery	: Secured; connectors secured.
Electrical/avionic equipment	: Secured.
Nose compartment access door	: Secured; fastener security pin out.
Area N°2 (Fuselage - RH side)	
Lateral panel, windshield and roof transparent panel	: Condition and cleanliness.
Windshield wiper (if installed)	: Condition.
External power receptacle	: Door secured.
OAT probe	: Condition.
Pilot door, window and, if installed, sliding window	: Condition, cleanliness, security and correct operation of locking mechanism. Sliding window closed.
Pitot tube/static ports	: Cover removed; condition and obstructions.
Fuselage exterior	: Condition.
Ventilation air intake	: Free of obstructions.

Upper Deck Winter kit covers (if installed)	: Condition.
Passenger door, window and, if stalled, sliding window	: Condition, cleanliness and security. Sliding window closed.
Passenger door lock	: Check.
Passenger door jettison window	: Security of window and seal retainer. Check red strap secured.
Drain and vent lines	: Leaks.
Landing gear skid and attachments	: Condition.
Fuel filler cap	: Secured.
Servo hydraulic system valves and filters group	: Leaks and bypass indication (red button out: filter clogged). Door secured.
Hydraulic system reservoirs	: Correct oil level, filler caps secured. Quick-disconnect return lines secured. Door secured.
Main rotor head and blades	: Condition. In cold weather check for the removal of snow, frost or ice. Turn the rotor by hand at least once before start-up.
Main rotor dampers	: Check for correct fluid level.
Main rotor pitch change links	: Condition and security.
Upper anti-collision light	: Condition.
Swashplate and driving scissors	: Condition and security
Servo actuator	: Condition and leaks.

Main transmission and accessories (visible area)	: Condition and leaks.
Transmission external oil filter	: Bypass indication (red button out: filter clogged). Door secured.
Engine upper and RH air intake screens and plenum chamber	: Covers removed; foreign matter and condition.
Engine oil	: Correct level and cap secured.
Engine area	: Leaks of fuel and/or oil.
Engine to transmission drive shaft	: Condition.
Engine cowling	: Condition; secured.
Engine exhaust duct	: Cover removed; condition.
Cowlings and fairings	: Condition and secured.
Access doors	: Secured.
Area N°3 (Tail boom - RH side)	
Tail boom exterior	: Condition.
Lower anti-collision light	: Condition.
Antenna(s)	: Condition.
Stabilizer and protective fairing	: Condition and security.
Navigation light	: Condition.
Area N°4 (Fins, 90° gearbox, tail rotor and tail skid)	
Exterior	: Condition.
Tail skids	: Condition and security.
Tail rotor (90°) gearbox	: Check oil level. Check for leaks. Filler cap secured.
Access doors	: Secured.
Tail navigation light	: Condition.
Tail rotor hub and blades	: Condition, security and

	freedom of flapping. In cold weather check for the removal of snow, frost or ice.
Tail rotor pitch change mechanism	: Condition and secured.
Area N°5 (Tail boom - LH side)	
Tail boom exterior	: Condition.
Stabilizer and protective fairing	: Condition and security.
Navigation light	: Condition.
Antenna(s) (if installed)	: Condition.
Tail rotor drive shaft bearing	: Condition.
Tail rotor drive shaft dampers	: Condition.
Tail rotor drive fairing	: Secured.
Area N°6 (Fuselage - LH side)	
Tail rotor servo actuator (inside baggage compartment)	: Condition and leaks.
Baggage compartment	: Cargo properly secured. Door secured.
Fuselage exterior	: Condition.
Drain and vent lines	: Leaks.
Oil cooler rear end	: Foreign matter.
Transmission to fan shaft	: Condition and security.
Engine area	: Leaks of fuel and/or oil.
Engine oil filter	: Check for bypass indication (button out: filter clogged).
Engine cowling	: Condition; secured.
Engine exhaust duct	: Cover removed; condition.
Main rotor head and blades	: Condition. In cold weather check for

	the removal of snow, frost or ice.
Main rotor dampers	: Check for correct fluid level.
Main rotor pitch change links	: Condition and security.
Main rotor servo actuators	: Condition and leaks. Door secured.
Main transmission and accessories (visible area)	: Condition and leaks.
Transmission	: Filler cap secured.
Transmission oil	: Correct level. Door secured.
Rotor brake pump, flexible hose, calliper	: Check for condition and leaks.

Note

If rotor brake has been used, the oil level indication could be lower than the actual level. When the oil level is below the minimum level mark, the determination of the correct amount of oil, required to top up the transmission, can be made only after a shutdown without operating the rotor brake.

Engine LH air intake screen and plenum Chamber	: Cover removed; foreign matter, and condition.
Cowlings and fairings	: Condition and secured.
Access doors	: Secured.
Landing gear skid and attachments	: Condition and security.
LH and RH fuel sumps or (if installed and d.c. power connected) fuel drain valve #1 (#2) switch	: Drain.
Upper Deck Winter kit covers (if installed)	: Condition.
Roof transparent panel, windshield and lateral panel	: Condition and security.
Windshield wiper (if installed)	: Condition.
Passenger door, window and, if installed, sliding window	: Condition, cleanliness

	and security. Sliding window closed.
Passenger door lock	: Check.
Passenger jettison window	: Security of window and seal retainer. Check red strap secured.
Co-pilot door, window and, if installed, sliding window	: Condition and cleanliness, security and correct operation of locking mechanism. Sliding window closed.

Check following systems for correct operation (connect d.c. electrical power supply):

- Navigation and anti-collision lights;
- Landing lights.

Disconnect the d.c. electrical power supply.

Area N° 7 (Cabin interior)	
Cabin interior	: Security of equipment and cargo.

Note

Operation with passenger sliding doors open or removed requires the removal or securing of all cabin equipment.

First aid kit (if installed)	: Security and contents on board.
Cabin fire extinguisher (if installed)	: Security.
Co-pilot door jettison handle and safety latch	: Correct position.
Co-pilot safety belt and inertia reel	: Condition and belt fastened if seat is unoccupied.
Pilot door jettison handle and safety latch	: Correct position.
Pilot safety belt and inertia reel	: Condition.
Relay box circuit breakers	: IN.
Pilot flight controls	: Condition and security.
Instruments	: Condition and legibility.

(Every flight)

Technical Logbook & Documents	: Checked.
Main and tail rotors tie-downs	: Removed.
Nose compartment access door	: Condition; latched.
RH side, windshield and roof transparencies	: Condition and cleanliness.
Pitot tube/static ports	: Cover removed; free of obstructions.
RH side crew/passenger doors	: Condition, hinges and latches. Sliding windows (if installed) Closed.
RH forward fuselage	: Condition.
RH landing gear skid assembly	: Condition.
Fuel filler cap	: Secured
Servo hydraulic system valves and filters group	: Leaks and bypass indication (Red button out: Filter clogged).
Main rotor blades	: Condition and cleanliness.
Main rotor dampers	: Correct fluid level.
RH engine air intake	: Cover removed; free of obstructions.
Engine oil	: Correct level and cap secured.
RH engine exhaust	: Cover removed.
RH side access panels	: Closed and secured.
RH aft fuselage	: Condition.
RH horizontal stabilizer/fairing	: Condition and security.
Vertical fins/tail skid	: Condition and security.
Tail rotor gear box	: Correct oil level.
Tail rotor blades and hub	: Condition, cleanliness and security.

LH horizontal stabilizer/fairing	: Condition and security
Tail rotor drive shaft cover	: Closed and latches secured.
LH aft fuselage	: Condition.
Antenna(s) (if installed)	: Condition.
Baggage compartment	: Baggage secured; door latched.
LH engine exhaust	: Cover removed.
LH engine air intake	: Cover removed; free of obstructions.
Transmission oil	: Correct level. Door secured.

Note

If rotor brake has been used, the oil level indication could be lower than the actual level. When the oil level is below the minimum level mark, the determination of the correct amount of oil, required to top up the transmission, can be made only after a shutdown without operating the rotor brake.

LH landing gear skid assembly	: Condition.
LH side access panels	: Closed and secured.
LH side crew/passenger doors	: Condition, hinges and latches. Sliding windows (if installed) Closed.
LH forward fuselage	: Condition.
LH side, windshield and roof transparencies	: Condition and cleanliness.

Mount Assembly and Turret Camera Unit (TCU)	: Security and wiring properly connected. Check TCU in stowed position and lens for condition.
Cabin interior	: Loose items secured.
Passenger cabin (under aft facing Seat row) Interface Unit (IFU)	: Security and wiring properly connected.
Hand Control Unit (HCU) and monitor	: Check condition, wiring properly connected stowed and secured.

Note

Operation with passenger sliding doors open or removed requires the removal or securing of all cabin equipment.

First aid kit (if installed)	: Security and contents on board.
Cabin fire extinguisher (if installed)	: Security.
Seat belts/shoulder harnesses	: Unoccupied belts / harnesses secured

ENGINE PRE-START CHECK

All switches	: OFF or CLOSED.
Pedals and seats	: Adjust.
Seat belt	: Fasten and adjust.
Altimeter	: Set.
Cyclic stick	: Centered (or positioned to counter wind) and friction adjusted.
Collective lever	: Fully down and friction adjusted.
Engine throttle	: OFF. Check IDLE and FLT positions; move MAN/NOR selector to MAN and rotate the throttle full open up to MAX then back to FLT. Return the MAN/NOR selector to NOR and up (locked) position. Rotate the throttle to IDLE. Release the IDLE stop until throttle returns to the OFF position. After prolonged exposure on ground to very low temperature (below -20°C), the force required to rotate the engine throttle may slightly increase.
Circuit breakers	: IN.
STATIC source switch	: NORM and protected.
BAT switch	: ON;
EDU 1 and 2	: Dim / Brt --> BRT

Note

In cold weather conditions wait for EDUs warm-up period until the information on the displays are clearly readable.

BUS switch	: ON, check voltage at least 24 V

Note

On helicopter power-up, the IDS FAN caution light temporarily illuminates (built-in test). No corrective action is required.

External power (if used)	: Connect.

Note

Be sure that external power source supplies not less than 28V.

Electronic Display Units (EDU1 andEDU2)	: Check on.
MCL and MWL	: Push to reset.
IGN switch	: AUTO.
ENG HTR switch	: ON.
A-COLL lights switch	: ON.
POS lights switch	: As required.
HEATER, MIX, S/OFF switches	: OFF
COMPASS MAG/DG switch	: MAG
F-TRIM switch	: ON
SERVO switch	: NORM.

CAUTION

The SWE400 system must be switched OFF at engine starting to eliminate any system damage from voltage transients.

CAMERA breaker	: Check IN.
Hand Control Unit (Operator's check)	: Check that the system is OFF.
Headset	: As desired
EDU1	: Press TEST key; Check the following test sequences on the EDUs and on the IDS FAN caution light.

EDU 1 : ENG FIRE warning message and FUEL LOW caution message are presented for 4 seconds in the message area.
The ENG FIRE aural message is activated twice.

Note

During the test the IDS will activate the MASTER WARNING/MASTER CAUTION lights: they will be reset automatically at the end of the test sequence.

Note

If a failure is detected on Engine Fire and/or Fuel Low detectors, the caution messages FIRE DET and/or FLOW FAIL will remain displayed on EDU1. In this case the MCL will not be reset automatically.

EDU 2 : Check that FUEL quantity indications decrease on both scales, that the LH fuel quantity indication becomes boxed and yellow and that the RH fuel quantity indication becomes boxed and crossed as soon as the indicated quantity decreases below 120kg.

IDS FAN caution light : Temporarily illuminates.
EDU 1and EDU 2 : At the end of the test automatically return to previous formats.

EDU 2 : Press TEST key; observe the same sequences as above on EDU 1 and EDU 2.

Note

In case of different result of test sequence refer to the pertinent paragraph of Section3 or to the A119/ AGUSTA A119 Maintenance Manual.

Rotor brake lever : Move from OFF to ON.
Check for freedom of movement.
EDU 1 : Verify that the RTR BRK ON warning message activates.
Rotor brake lever : Select OFF. Check locked and warning message on EDU1 extinguished.

Note

The ROTOR BRK caution message can be temporarily displayed on EDU1 during the rotor brake lever travel.

Aural Warning Generator test : Set AWG switch on TEST and maintain. Check the aural message "TEST OK" and, after approximately 3 seconds, the AWG FAIL caution message activates and the vocal alarm operates in the following sequence:
1) "ROTOR LOW"
2) "ENGINE OUT"
3) "ENGINE FIRE"
4) "WARNING"
5) "ROTOR HIGH"
6) "ONE HUNDRED-FIFTY FEET".

Fuel quantity : Check.
FUELVALVE switch : OPEN and associated light illuminated.
Xfer PUMP switch : XFER.
EDU 1 : XFERPUMP caution message out.
FUEL PUMP1 switch : ON.
EDU 1 : FUELPUMP 1 caution message out.
EDU 2 : Check fuel pressure.
FUEL PUMP 1 switch : OFF.
FUEL PUMP 2 switch : ON.
EDU 1 : FUELPUMP 2 caution message out.
EDU 2 : Check fuel pressure.
FUEL PUMP 1switch : ON.
EEC/MEC switch : Accomplish EEC self-test by cycling the switch (MEC-EEC): check that EEC FAIL, EEC DEGRADED and MEC OPN caution messages illuminate sequentially.
A successful self-test is indicated by the MEC OPN caution message remaining displayed at the end of the test sequence.

Note

With NR below 30%, the MEC OPN caution message is displayed regardless of the EEC/MEC switch position.

STARTING PROCEDURE

Rotor Area : Clear
Collective control : Flat pitch, check.

CAUTION

The rotor brake must be disengaged before starting.

ENGINESTART

Throttle : CLOSE
START push button : Press and release.
(On collective lever)

EDU1 : ENG START and IGNITER ON
Advisory messages displayed.

Note

Observe starter limitations in Section1.

ENGINE STARTER LIMITATIONS

The engine starter duty cycle is the following:

On battery
—40 seconds on, 60 seconds off
—40 seconds on, 60 seconds off
—40 seconds on, 30 MINUTES off

With external power
—25 seconds on,30 seconds off
—25 seconds on,30 seconds off
—25 seconds on,30 MINUTES off

Engine throttle (withN1>12% And residual ITT< 100°C) : IDLE.

Gas generator (N1) : Note increasing.
Engine temperature (ITT) : Note increasing.

CAUTION

Maximum ITT transient during starting is1090°C,not to exceed two seconds above 980°C. A linear variation applies above 870°C, ten seconds, and 980°C, two seconds. Consult EMM if ITT limits are exceeded.

CAUTION

Monitor engine start and if light-up is not obtained within 10 seconds after the throttle has been set to IDLE, shutdown the engine by returning the throttle to OFF and press and release again the START switch.
Following an aborted start perform the following procedure before restarting:

- After N1 has come to a complete stop, allow a 30 seconds fuel drain period;
- Perform a 15 seconds DRY MOTORING RUN.

Refer to Section 1 for engine starter limitations and to DRY MOTORING RUN procedure in this section.

DRY MOTORING RUN

The following procedure is used to clear the engine of internally trapped fuel and vapor or if there is evidence of fire within the engine.

Engine throttle : OFF.
IGN switch : OFF.
FUEL VALVE switch : CLOSED.
FUEL PUMP 1 and 2 switches : OFF.
START push button : Push and hold as necessary.
(on collective lever)

Note

Observe starter limitations in Section 1.

START push button : Release.
(on collective lever)
IGN switch : AUTO.

Engine oil pressure : Check.

Note

During cold starting conditions, the engine oil pressure can temporarily exceed 110 psi; it reduces as oil temperature increases.

Engine starter : Automatically deactivated when N1 reaches approximately 43%.

EDU 1 : ENG START and IGNITER ON advisory message out.

Note

EDU 1 automatically changes to CRUISE format 5 seconds after N1 reaches 51%.

Hydraulic systems : When main rotor begins to rotate, check rise in hydraulic pressure.

Pedals : Paired.

Note

Avoid any cyclic movement below 85% NR except to prevent hitting blade stops.

Gas generator (N1) : Stabilized at 61±1%, check.

Note

During cold starting, low IDLE N1 speed may occur. Provided the N1 is not less than 51%, a warm-up period of 3 minutes should restore the correct N1 IDLE setting. If not, an additional 3 minutes warm-up period should be accomplished. At the end, if the N1 IDLE setting is still below 61±1%, shutdown the engine and consults the EMM.

Engine and transmission oil : Check pressures and temperatures.

Note

On ground, in IDLE condition, the transmission oil pressure indication can be below the green arc. No corrective action is required provided that the oil temperature indication is in the green arc.

BAT switch : Check ON.

External power : Disconnect (if used); Door secured.

EDU 1 : EXT PWR ON caution message out.

GEN switch : ON. Check DC GEN caution message out.

INV 1 and 2 switches : ON. Check INV 1(2) OFF caution messages out.

ICS switch : ON.
RAD MSTR switch : ON.

Ammeter : Check current within limits.

Engine throttle : Rotate to FLT position.

Note

With engine oil temperature below 10°C, leave the engine throttle at IDLE until the engine oil temperature reaches10°C. Then, if transmission oil temperature is still at 0°C, the engine throttle should be rotated to FLT position smoothly to prevent exceedance of the transmission oil pressure maximum limit.

Note

During engine throttle increase, if the transmission oil pressure is still below the green arc the XMSN OIL PRESS warning messages activates. No corrective action is required provided that the oil temperature is in the green arc.

EDU 1 : PLA POS caution message out.

NR : 102%.
100% for A119 with IDS

EEC/MEC switch (first flight of the day only) : MEC.

EDU 1 displayed. : MEC OPN caution message

Note

A small power and NR change is to be expected when switching from EEC to MEC and vice-versa.

NR : Check at 97%
Check at 95 to 96% for A119 with IDS
(adjust, if needed, using NR TRIM switch).

EEC/MEC switch : EEC. Check MEC OPN caution message out.

Note

With the EEC mode engaged the NR TRIM switch is inoperative.

NR : 102%.
100% for A119 with IDS

If using supplementary fuel tank

EDU2 : check fuel quantity indication.

CAUTION

When only RH tank cell is installed and fuel system is fully serviced, a difference of fuel quantity indication, equivalent to the fuel contained into the RH tank cell, is normal. Such difference decreases with the consumption up to zero when about 110 kg of fuel is reached in each main tank.

Proceded to "SYSTEM CHECK".

INTENTIONALLY LEFT BLANK

SYSTEMS CHECK

Engine and transmission oil : Pressure and temperature within limits.

HYDRAULIC SYSTEMS

Note

During very cold temperature conditions, the longitudinal cyclic control force may increase up to 2kg maximum.

SERVO switch : NORM, check. Make small clockwise cyclic movements and collective and pedal movements. Pressure drops must be equal for both N.1 and N.2 systems and should not exceed 70 psi.

Set 2 OFF; SERVO 2 caution message displayed on EDU1. Check operation of system N°1 with same cyclic, collective and pedal movements.

Pressure drop should not exceed 70 psi and there should be no force increase, discontinuity or cyclic/collective coupling. Repeat check with switch Set to1 OFF to check system N°2, then Set to NORM.

Note

Tail rotor boost pressure is furnished by system N°1.

When system N°2 is being checked, it is normal for the pedals to be un-boosted.

FUELSYSTEM

XFER PUMP switch : OFF.
EDU 1 : XFER PUMP caution message displayed.

FUEL PUMP 1 and 2 switches : OFF.

EDU 2 : Note fuel pressure fall.

EDU 1 : FUEL PUMP 1 and 2 caution messages displayed.

Engine driven fuel pump : Check operation.

FUEL PUMP1 switch : ON.

EDU 2 : Fuel pressure within limits.

EDU 1 : FUEL PUMP 1 caution message out.

FUEL PUMP 1 switch : OFF.

FUEL PUMP 2 : Repeat above.

Repeat the check on fuel pump 2 following the procedure shown for fuel pump1 in the two previous steps; check that associated FUEL PUMP caution message is out.

FUEL PUMP 1 and 2 switches : ON.

EDU 1 : FUEL PUMP 1 and 2 caution messages out.

EDU 2 : Fuel pressure within limits.

Xfer PUMP switch : XFER.

EDU 1 : XFER PUMP caution message out.

ELECTRICAL AC SYSTEM

INV 1 switch : OFF.

EDU 1 : INV 1 OFF caution message displayed.

#1 AC electrical loads : No loss, check voltage. Check ADI and HDG flags retracted.

INV 1 switch : ON.

EDU 1 : INV 1 OFF caution message out.

INV 2 switch : OFF.

EDU 1 : INV 2 OFF caution message displayed.

#2 AC electrical loads : No loss, check voltage. Check ADI and HDG flags retracted.

INV2switch : ON.

EDU 1 : INV 2 OFF caution message out.

Note

VG 1(2) caution message temporarily illuminates after INV 1(2) is switched off.

MISCELLANEOUS

PITOT heat switch : ON.
Check current peak on ammeter and PITOT HEAT advisory message displayed on EDU 1;then OFF.

Cyclic stick : Friction fully unlocked, freedom of movement.

Marker beacon lights (if installed) : Test.

ADI (if installed) : Erected and flag retracted.

Altimeter : Check flag retracted and set.

VSI : Check zero indication.

HSI (if installed):

HDG flag : Retracted.

Gyro compass heading : Set.

RMI/HSI selector knob : As desired.

Clock : Check and set.

Radio Altimeter (if installed):

Indication : Zero altitude.

OFF flag : Retracted.

TEST switch : Press and maintain.

DH light : Out.

Needle : 100 ft.

TEST switch : Release.

DH light : On.

Pilot/Co-pilot (if installed):

NORM/FAIL switch : FAIL, perform a radio check then back to NORM.

HELIPILOT SYSTEM

SAS 1 switch	: SAS 1.
EDU 1	: SAS 1 caution message out.
SAS 2 switch	: SAS 2.
EDU 1	: SAS 2 caution message out.
ATTD HOLD switch	: OFF.
EDU 1	: ATT OFF caution message displayed.
Cyclic stick	: Motion will cause PITCH and ROLL HELIPILOT indicators motion.
Pedals	: Motion will cause YAW HELIPILOT indicator motion.
SAS 1 switch	: OFF.
EDU 1	: SAS 1 caution message displayed.
Cyclic stick	: Motion will cause PITCH and ROLL HELIPILOT indicator motion.
SAS 2 switch	: OFF.
EDU 1	: SAS 2 OFF caution message displayed.
ATTD HOLD switch	: Automatically trips to ATTD HOLD.
EDU 1	: ATT OFF caution message out.
SAS 1 switch	: SAS 1.
EDU 1	: SAS 1caution message out.
SAS 2 switch	: SAS 2.
EDU 1	: SAS 2 caution message out.

SWE 400 SYSTEMS CHECK

Operator in passenger cabin:

Monitor and Hand Control Unit (HCU)	: Remove from storage. Position the monitor on the first Row seats and secure.
HCU	: Switch the system ON.
Monitor :	Turn on and verify that the Camera moved to CAGE position, initializes and properly displays the image of t he selected video mode.
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.
Monitor and HCU	: Stow and secure.

MOTOR YIKAMA / RINSE PROCEDURE

IGNT Cb	OUT
FUEL VALVE	OFF
FUEL PUMPS	ON
XFER	OFF
A COLL	ON
ENG HEATER	ON
IGNT	AUTO
BAT	ON
BUS	ON
Start 20 Sec	Then leave
ALL	Back to previous Pos.

BEFORE TAKE OFF

Power Assurance Check	: Check the parameters.
SAS 1 and 2 switch	: Check SAS 1 and 2 .
Communication and navigation Frequencies	: Set as required
Voltammeter	: Within limits.
Cockpit lights	: As required.
External lights	: Check and leave as required.

CAUTION

Landing lights operation shall be limited to the time necessary to carry out take-off and landing maneuvers in order to avoid overheating.

Note

When operating the landing lights, the stand-by magnetic compass indication is not reliable.

Caution and Warning messages : Check none.

HOVER TAXIING AND TAKE-OFF (SWE-400)

Operator in passenger cabin:

Turret Camera Unit (TCU)	: Confirm in stowed position.
Monitor and HCU	: Confirm stowed and secured.

TAKE-OFF AND CLIMB

Collective	: Increase slowly and bring the helicopter to a 3 ft AGL hover.
Pedals	: Apply as necessary to maintain direction.
Flight instruments	: Check.

Engine parameters	: Within limits.
Hydraulic systems instruments	: Within limits.
Cyclic and collective	: Rotate the nose down approximately 10° from the hover datum. While accelerating increase slightly the torque to avoid loss of altitude. At 30 KIAS increase torque by approximately 15% and adjust cyclic to obtain 0° attitude. Continue acceleration to V_Y. At V_Y increase torque as required by the desired flight path.

Note

Do not exceed TQ and ITT limits (refer to Section 1).

Force trim pushbutton (on cyclic stick) : Trim as desired for attitude reference changes during hover and climb out.

IN FLIGHT

Collective	: Adjust as necessary to keep engine parameters within limits.
Airspeed	: Maintain within limits shown on V_{NE} placards.
Landing lights	: OFF, if used.
EDU 1	: LANDING LT ON advisory message out.
PITOT heat	: As required.

IN FLIGHT (SWE-400)

SWE 400 system : As required.

CAUTION

Turn Pitot heat on for flight in visible moisture and in rain regardless of ambient temperature.

Altitude : As required.

CAUTION

Refer to applicable operating rules for high altitude oxygen requirements.

Note

Above 7000 ft Hp NR/N2 needle split in autorotation may occur above 103% N2.

(For A119 with IDS) Above 9000 ft Hp, NR/N2 needle split in autorotation may occur between 103 and 105% N2 (transient 10 sec.)

In this case, in accordance with N2 limitations reduce N2 within the limit of 103% using engine throttle.

If transient limit is exceeded consult EMM.

Note

In case of intentional selection of EEC/MEC switch to MEC position, reduce engine power below 50% TQ before re-selecting the switch to EEC position to minimize torque transients.

HELIPILOT indicators : Monitor and re-center by de- pressing the FTR pushbutton switch on cyclic grip.

Note

During very cold temperature conditions, the longitudinal cyclic control force may increase up to 2 kg maximum.

ADVERSE WEATHER CONDITIONS

If adverse weather conditions are expected during flight, with possible risk of engine flame out, perform the following.

IGN switch : CONT.

EDU 1 : IGNITER ON advisory message displayed.

Note

When the IGN switch is set to CONT the engine auto- matic starter feature is armed and permits automatic starting of the engine in case of flame out.

APPROACH AND LANDING

Engine parameters : Within limits.

External lights : As required.

Landing lights : As required.

CAUTION

Landing lights operation shall be limited to the time necessary to carry out take off and landing maneuvers in order to avoid overheating.

Note

When operating the landing lights, the stand-by magnetic compass indications is not reliable.

Approach path : Perform the approach at 75 KIAS. Reduce the airspeed gradually with the cyclic. At 70 ft make a flare and apply collective as required to bring the helicopter to a 3 ft AGL hover. After reaching a hover descend slowly to the ground surface.

CAUTION

Additional care must be taken during nose-down slope operations in order not to touch the ground with tail.

APPROACH AND LANDING (SWE-400)

Operator in passenger cabin:

HCU : Set the TCU in stowed position. Shut the system down.

Monitor and HCU : Stow and secure.

INTENTIONALLY LEFT BLANK

SHUTDOWN

Collective lever : Check fully down.

Cyclic stick and pedals : Centered and trimmed.

Pedals : Centered.

Note

Do not apply collective in this phase and during rotor deceleration, particularly in windy conditions.

Below 85% NR, avoid any cyclic movement except to prevent hitting blade stops.

Engine throttle : IDLE for at least 30 seconds to allow ITT to stabilize.

EDU 1 : PLA POS caution message displayed.

Engine throttle : OFF.

CAUTION

During shut down check that the N1 speed decelerates freely. Note any abnormal noise or rapid run down. In this event perform corrective maintenance action as per EMM.

FUEL PUMP 1 and 2 switches : OFF.

EDU 1 : FUEL PUMP 1and 2 caution messages displayed.

FUEL VALVE switch : CLOSED.

Associated light : Out.

Xfer PUMP switch : OFF.

EDU 1 : XFER PUMP caution message displayed.

PITOT heat : OFF, if used

Rotor brake lever : ON and locked below 40% rotor RPM. RTR BRK ON warning message displayed on EDU 1.

CAUTION

In case of use of rotor brake outside the limitations any further use of the system is prohibited until maintenance checks have been carried out.

ENG HTR switch : OFF.

Cockpit lights : OFF.

External lights : OFF.

Landing lights : OFF, if used.

RAD-MSTR switch : OFF.

Miscellaneous switches : OFF.

INV 1 and INV 2 switches : OFF.

when rotor stopped;

A-COLL light : OFF,

GEN switch : OFF. (Together OFF)
BAT switch : OFF.

POST FLIGHT CHECK

If conditions require, perform the following:

Rotor brake lever : OFF and locked.

Pitot, intake and exhaust covers : Installed.

CAUTION

Wait at least 5 minutes after pitot heat has been switched off before installing Pitot-static tube covers.
Wait at least 30 minutes after engine shut-down before installing engine exhaust ducts covers.
Refer to the A119/AW119 MKII Maintenance Manual for additional information.

EMERGENCY AND MALFUNCTION PROCEDURES

INTRODUCTION

The following procedures contain the indications of equipment or system failure or malfunction, the use of emergency features of primary and backup systems, and appropriate cautions, warnings and explanatory notes.
All corrective action procedures listed here in assume the pilot gives first priority to aircraft control and a safe flight path.

DEFINITIONS

The following items indicate the degree of urgency in landing the helicopter.

LAND IMMEDIATELY : The urgency of the landing is paramount.
The primary consideration is to assure the survival of the occupants.

LAND AS SOON AS POSSIBLE : Land without delay at the nearest suitable area (i.e.open field) at which a safe approach and landing is reasonably assured.

LAND AS SOON AS PRACTICABLE : The duration of the flight and landing site are at the discretion of the pilot.
Extended flight beyond the nearest approved landing area is not recommended.

WARNINGSYSTEM

(Figure 1)

Many of the malfunctions described in this Section are indicated through the display of red warning messages or yellow caution messages on the EDU 1. Aircrew attention is drawn to the warnings/ cautions by flashing MASTER WARNING/CAUTION lights. Some of the red warnings are accompanied by an audio warning tone and by a vocal warning.
Green advisory and cyan status messages are also displayed on EDU 1.

Whenever a warning/caution message activates, appropriate actions should be taken to deal with the indicated malfunction, after which the associated warning/caution message should be acknowledged either by pressing the MASTER RESET push button on the cyclic stick or by pressing the MCL/MWL light(s) on the instrument panel.

By cancelling the red/yellow master light(s) also the audio warning tone and aural messages are suppressed for future indications while the warning/caution visual messages on EDU 1 switch from inverse video to normal video mode.

The ROTOR LOW warning is an exception as the visual message and the master warning light cannot be reset, remaining active until the causative condition no longer exists.

The EDU 1 presents a specific area capable of displaying up to 18 lines of 15 characters each, for warning, caution, advisory and status messages.

The order of priority of the messages is:

Priority	Messages	Color
1	WARNING	red
2	CAUTION	yellow
3	ADVISORY	green
4	STATUS	cyan

The "last-in" message goes always on the top of the relative screen area and displaces the existing list down.
When the messages list exceeds18, the additional caution/advisory/ status messages can be displayed by pressing the MORE key on the bottom side of the EDU, while the warning messages always remain displayed at the top of the list.
Warning and caution messages remain presented until the causative condition has been corrected.

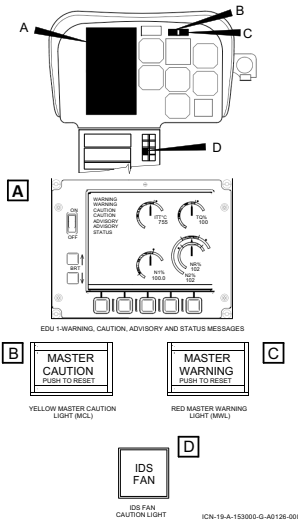


Figure 1- Cockpit Layout of the Warning and Caution System

MASTER WARNING AND MASTER CAUTION LIGHT

Panel wording	Fault condition	Corrective action
MASTER WARNING	See warning message on EDU 1.	Reset after malfunction acknowledgement and relative action.
MASTER CAUTION	See caution message on EDU 1.	Reset after malfunction acknowledgement and relative action.

WARNING (RED) AND ASSOCIATED AURAL MESSAGES

Panel wording (aural message)	Fault condition	Corrective action
ROTORLOW ("rotor low")	Rotor RPM low. Rotor RPM between 80 and 96%.	Use collective to adjust RPM.
	Note With rotor RPM between 80 and 96%, a cabin acoustic signal is activated.	
ROTOR HIGH ("rotor high")	Rotor RPM high. Rotor RPM above 108%.	Use collective to adjust RPM.
XMSN OIL HOT ("warning")	Transmission oil temperature above maximum limit (115 °C).	Reduce power, LAND AS SOON AS POSSIBLE
XMSN OIL PRESS ("warning")	Transmission oil pressure below minimum limit (30psi).	Reduce power, LAND AS SOON AS POSSIBLE
BATT HOT ("warning")	Battery temperature exceeding limits.	Switch battery off (BATT OFF warning message activates). LAND AS SOON AS POSSIBLE

Panel wording (aural message)	Fault condition	Corrective action
BATT OFF ("warning")	Battery disconnected	Check battery switch position. If the switch is ON, LAND AS SOON AS PRACTICABLE Correct trouble before next flight.
ENG OUT ("engine out")	N1 RPM abnormally low (below 51%). Engine power failure.	Reduce collective immediately to auto rotate. If altitude permits investigate failure and attempt engine restart. (See the pertinent paragraphs in this section).
	Note With ENG OUT warning message illuminated, a cabin acoustic signal is activated.	
ENG FIRE ("engine fire")	Fire in engine compartment.	Shut down engine. Perform autorotative landing.(See the pertinent paragraphs in this section).
ENG OIL PRESS ("warning")	Engine oil pressure low (<40 psi).	Reduce power by lowering collective, LAND AS SOON AS POSSIBLE
ENG OIL HOT ("warning")	Engine oil temperature high (>115°C)	Reduce power by lowering collective. Check oil temperature indication: if rising above maximum, LAND AS SOON AS POSSIBLE
RTR BRK ON	Rotor brake in operation	Check rotor brake lever position.

In flight:
- if the lever is in the OFF position land immediately.
- if the lever is not in the OFF position, set it to OFF and land immediately.

On ground:
- if the lever is in the OFF position, shut down the engine immediately.
- if the lever is not in the OFF position, set it to OFF and shut down the engine immediately.

CAUTION MESSAGES (YELLOW)

Panel wording	Fault condition	Corrective action
FUEL LOW	Fuel quantity is low.	Verify fuel quantity in tank 1. Land as soon as practicable (10 minutes of flight remaining at MCP).
	Note Avoid sideways flight and hovering in crosswind when the indicated fuel quantity is less than 10kg.	
FLOW FAIL	Fuel low sensor failure. No fuel low indication.	Keep under control the fuel quantity and proceed with flight.
FUEL DRAIN1 (2)	Fuel drain valve 1(2) (if installed) open.	Close the valve before refuelling and/or taking off.
FUEL PUMP 1 (2)	Fuel pump n.1(n.2) in tank 1 failed.	Affected fuel pump OFF. Land as soon as practicable.
XFER PUMP	Fuel tank 2 empty or, if fuel quantity in tank 2 is not empty, transfer fuel pump failed.	Set PUMP switch to OFF.
	Note In case the transfer fuel pump is switched off or fails and the fuel quantity in tank 2 is less than120 kg, the RH fuel quantity indication becomes boxed and crossed to indicate that the remaining fuel in tank 2 is not usable.	
FUEL FILTER	Engine fuel filter partially clogged.	Land as soon as practicable. Correct malfunction before next flight.
EXT PWR ON	External power receptacle door not closed.	Close door before flight.

Panel wording	Fault condition	Corrective action
GEN CONTR	Generator relay box circuit breaker tripped out.	Correct malfunction before operating the engine starter.
DC GEN	See paragraph "**Failure of the generator and d.c.bus**" in this section.	
INV 1(2) OFF	Failure of inverter n.1 (n.2).	See paragraph "**Failure of an inverter**" in this section.
SAS1 (2)	No power to the system.	Check SAS 1(2) engage switch, breakers and VG 1 (2) caution message. Proceed with flight (referto paragraph" **Failure of one Helipilot**"in this section).
ATTOFF	No pitch and roll attitude retention. Probable switch failure.	Check ATTD HOLD switch. Proceed with flight. Correct malfunction before next flight.
VG1 (2)	Gyro not erected, loss of power to gyro.	Check breaker. Check SAS 1 (2) engage switch and SAS1(2)caution message. Proceed with flight (refer to paragraph "**Failure of one Helipilot**" in this section).
SERVO 1 (2)	Failure of one of the two hydraulic systems.	Check for low hydraulic pressure. Land as soon as practicable (refer to paragraph "**Hydraulic system malfunction**" in this section).
FIRE DET	Engine fire detection system inoperative	Land as soon as practicable. Correct trouble before next flight
ENG OIL PRESS	Engine oil pressure low (in yellow arc).	Proceed as per paragraph "**Engine oil pressure below normal range**" in this section.

Panel wording	Fault condition	Corrective action
EEC DEGRADED	See paragraph "**Electronic engine control(EEC) malfunctions**"in this section.	
EEC FAIL	Electronic engine control (EEC) failure.	Engine control automatically trips to MEC mode. Proceed with flight(refer to paragraph "**Electronic engine control (EEC) malfunctions**"in this section).
MEC OPN	Mechanical (MEC) mode of operation following an EEC failure.	Refer to paragraph"**Engine operation in mechanical mode (MEC)**" in this section.
ENG AGB CHIPS	Metallic particles in engine accessory gearbox lubricating oil.	Reduce power by lowering collective. LAND AS SOON AS POSSIBLE
ENG RGB CHIPS	Metallic particles in engine reduction gearbox lubricating oil.	Reduce power by lowering collective. LAND AS SOON AS POSSIBLE
XMSN OIL CHIPS	Metallic particles in the main transmission oil.	Reduce power by lowering collective. LAND AS SOON AS POSSIBLE
T/R BOX CHIPS	Metallic particles in the 90 deg tail rotor gearbox lubricating oil.	Reduce power by lowering collective. LAND AS SOON AS POSSIBLE
DOORS OPEN	The door(s) of pilot and/or passenger and/or baggage compartments is (are) not correctly closed.	Close door(s) correctly before flight. If the message illuminates in flight, reduce speed below 70KIAS and check door(s) closed. If the light is still illuminated, maintain speed below 70 KIAS and LAND AS SOON AS PRACTICABLE
AWG FAIL	Aural warning system failure.	Proceed with flight, correct trouble before next flight.

Panel wording	Fault condition	Corrective action
IDS FAN	Failure of the IDS cooling fan.	In flight: Open windows and vents and select VENT to HIGH. Land as soon as practicable within 30 minutes. Correct malfunction before next flight. On ground: Correct malfunction before taking off.
PLA POS	Engine throttle out of FLT position.	Check throttle position. In flight (power on condition only): - set throttle correctly and check MAN/NOR selector to NOR and up (locked). -If still illuminated, toggle the EEC/MEC switch to MEC and proceed with flight (refer to paragraph "**Engine operation in mechanical mode(MEC)**" in this section. Correct trouble before next flight. On ground: - before take off set throttle correctly and check MAN/NOR selector to NOR and up (locked). - If still illuminated, shut down the engine and refer to A119/AW119MKIIMaintenance Manual for the proper action to be taken.
PITOT HTR FAIL (if caution light is installed)	Failure of the pitot heater.	During night flight LAND AS SOON AS PRACTICABLE

Panel wording	Fault condition	Corrective action
MISCMP-P(S)	Some primary (secondary) data from one of the two EDUs invalid. Possible degradation in system function.	Try to identify the faulty information and take the pertinent corrective action. Refer to paragraph "**Integrated Display System Failure**"in this section.
CHECK CONFIG	IDS system configuration setting in disagreement between EDU 1 and 2(only programmable parameters).	In flight: proceed with flight, correct trouble before next flight. On ground: correct trouble before taking-off.
CHECK STRAP	IDS hard ware configuration setting incorrect.	In flight: proceed with flight, correct trouble before next flight. On ground:correct trouble before taking-off.
CHECK CAL	Some parameter calibration discordance (greater than±1.5%) between EDU 1and 2.	In flight: proceed with flight, correct trouble before next flight. On ground: correct trouble before taking-off.
EDU FAIL-PRI	Failure of primary EDU	In flight: proceed with flight, correct trouble before next flight. On ground: correct trouble before taking-off.
EDU FAIL-SEC	Failure of secondary EDU	In flight: proceed with flight, correct trouble before next flight. On ground: correct trouble before taking-off.
ROTOR BRK	Rotor brake warning system degraded.	Proceed with flight with-out operating the rotor brake and correct malfunction before next flight. Refer to Maintenance Manual for proper action.

ENGINE FAILURES

FAILURE OF ENGINE

INDICATIONS

Helicopter	: Left yaw.
Audio signal	: Present.
EDU 1	: ROTOR LOW warning message displayed and "ROTOR LOW" aural warning activated. ENG OUT warning message displayed and "ENGINE OUT" aural warning activated when N1 below 51% and decreasing.
Gas generator (N1)	: Rapidly decreasing.
NR	: Rapidly decreasing.
ITT	: Rapidly decreasing.
Torque	: Rapidly decreasing.

PROCEDURE- HOVER IGE and TAKE-OFF (up to 30 KIAS)

Pedals	: Control yaw rate.
Collective	: Maintain initially then increase to cushion the touchdown.
Cyclic	: Adjust as required to obtain a Level attitude touchdown (landing skid parallel to the ground).

PROCEDURE-HOVER OGE

Pedals	: Control yaw rate.
Collective	: Lower immediately to stop the NR decay.
Cyclic	: Forward to obtain approximately 25º nose down. Increase airspeed up to 80 KIAS.

Perform an autorotative landing (refer to "**Autorotative landing**" procedure).

PROCEDURE-TAKE-OFFABOVE30KIAS

Pedals	: Control yaw rate.
Collective	: Lower immediately to stop the NR decay.
Cyclic	: Flare as required to increase NR above 100%.
Collective	: Apply at the end of the flare, before touchdown, to reduce the rate of descent.
Cyclic	: Forward to obtain a level attitude (landing skid parallel to the ground).
Collective	: Continue application to cushion the touchdown.
Pedals	: Maintain direction.

Note

In case of ground contact on the aft portion of the landing skid, avoid counteracting the pitch down with cyclic.

PROCEDURE- CRUISE

Pedals	: Control yaw rate.
Collective	: Lower immediately to stop the NR decay. Then maintain the NR between 90 and 110%.
Cyclic	: Adjust to obtain desired autorotative airspeed.

Note

Airspeed for minimum rate of descent is 80 KIAS.

Airspeed for maximum glide distance is 110 KIAS.

If conditions permit, Confirm engine failure:

If N2 and ITT **NOT** rapidly decreasing : N1 tachometer failure.
Engine : Still available.

Maneuver to Exit from Autorotation.
Land as soon as practicable, monitoring N2 and ITT values.

If N2 and ITT rapidly decreasing : Engine failure confirmed.
Engine throttle : OFF.

If altitude permits, attempt to restart the engine (see" **Engine restart in flight**" procedure).

CAUTION

When the cause of engine failure is suspected to be of a mechanical nature, do not attempt a restart.

If the engine cannot be restarted:

FUELVALVE switch	: CLOSED.
FUELPUMP 1 and 2 switches	: OFF.
Xfer PUMP switch	: OFF.
GEN switch	: OFF.

Perform an autorotative landing (refer to "**Autorotative landing**" procedure).

AUTOROTATIVE LANDING

Cyclic	: At approximately 150 ft AGL, initiate a flare and hold the flare to reduce the forward speed.
Collective	: Apply at the end of the flare, before touchdown, to reduce the rate of descent.
Cyclic	: Forward to obtain a level attitude (landing skid parallel to the ground).
Collective	: Continue application to cushion the touchdown.
Pedals	: Maintain direction.

Note

In case of ground contact on the aft portion of the landing skid, avoid counteracting the pitch down with cyclic.

ENGINE RESTART IN FLIGHT

Note

Engine restart in flight has not been demonstrated.

If altitude permits and a restart is attempted, proceed as follows:

CAUTION

When the cause of an engine failure is suspected to be of a mechanical nature, do not attempt a restart.

Collective : Adjust to maintain NR between 90 and 110%.

Cyclic : Adjust to obtain desired autorotative airspeed.

Note

Airspeed for minimum rate of descent is 80 KIAS.

Airspeed for maximum glide distance is 110 KIAS.

GEN switch : OFF.

Engine throttle : OFF.

FUELVALVE switch : Check OPEN.

Associated light : Illuminated.

FUELPUMP 1 and 2 switches : Check ON.

Fuel pressure : Check.

START push button (on collective lever):Press and release.

EDU 1 : ENG START and IGNITER ON advisory messages displayed.

Engine throttle (N1 between 10 and 20%) : IDLE.

Note

A light-up should be obtained within 10 seconds. If this is not the case, engine restart may be attempted with the manual override system.(See "**Engine restart in flight with manual override system (MAN)**"procedure).

Gas generator N1 : Note increasing to 61±1%.

ITT : Note increasing.

Engine oil pressure : Check positive indication.

Engine starter : Automatically deactivated when N1 reaches approximately 43%.

EDU 1 : ENG START and IGNITER ON advisory messages out, check.

Gas generator N1 : Stabilized at 61±1%.

Engine throttle : FLT.

EDU 1 : PLA POS caution messages out, check

GEN switch : ON.

Engine oil : Pressure and temperature in green arc.

Xfer PUMP switch : Check XFER.

MALFUNCTION OF THE FUEL CONTROL SYSTEM

INDICATIONS

EDU 1 : N1 and/or ITT unstable.

Engine power : Un-commanded change.

PROCEDURE

If an automatic fuel control system malfunction arises in flight, the manual override system (MAN) can be used. The MAN overrides automatic control features associated with normal operation of the engine. The pilot will have to compensate for collective and pedal movements by rotating the engine throttle.

WARNING

When using the MAN, the engine response is directly related to the rate at which the engine throttle is rotated. Additional care is required during engine acceleration.

Monitor cockpit indicators closely to avoid the possibility of overtemperature, overtorque, overspeed or engine surge.

Note

An initial dead band (no engine response) may occur while operating in MAN.

If the fuel control system malfunction causes an increase in power:

Engine throttle : Slowly rotate towards IDLE.

If the fuel control system malfunction causes a decrease in power:

Collective : Adjust.

MAN/NOR selector (on collective) :MAN.

Engine throttle : Slowly rotate towards MAX.

WARNING

Monitor N1closely. Do not allow N1 to decrease below minimum speed (51%).

WARNING

If N1 is below 60%, extreme caution is required when rotating the throttle towards MAX as engine surge or over-temperature is possible.

LAND AS SOON AS POSSIBLE

ENGINE RESTART IN FLIGHT WITH MANUAL OVERRIDE SYSTEM (MAN)

Note

Engine restart in flight has not been demonstrated.

If engine restart fails or automatic fuel control system failure causes engine shut down, engine restart may be attempted when altitude permits by using the MAN.

Collective : Adjust to maintain NR between 90 and 110%.

Cyclic : Adjust to obtain desired autorotative airspeed.

Note

Airspeed for minimum rate of descent is 80 KIAS.

Airspeed for maximum glide distance is 110 KIAS.

GEN switch : OFF.

Engine throttle : OFF.

FUELVALVE switch : Check OPEN.

Associated light : Illuminated.

FUELPUMP 1 and 2 switches: Check ON.

Fuel pressure : Check.

MAN/NOR selector (on collective) :MAN.

START push button (on collective lever) :Press and release.

EDU 1 : ENG START and IGNITER ON advisory messages displayed.

Engine throttle (N1 between 10 and 20%) : Slowly rotate until engine light up.

Note

During a start using the MAN, a dead band (no engine response) may occur between the OFF and the IDLE positions and extend beyond the FLT position of the throttle.

N1 and ITT : Note increasing.

Engine throttle : Continue rotating towards MAX until N1 is 61±1%.

Engine starter : Automatically deactivated when N1 reaches approximately 43%.

EDU 1 : ENG START and IGNITERON advisory messages out, check.

WARNING

When operating using the MAN, the engine response is directly related to the rate at which the engine throttle is rotated. Additional care is required during engine acceleration.

WARNING

If N1 is below 60%, extreme caution is required when rotating the throttle towards MAX as engine surge or overtemperature is possible.
N1 should not remain below 60% for more than 40 seconds.

Gas generator (N1) : Stabilized at 61±1%, check.

Engine Throttle : Slowly rotate towards MAX to Increase power.

CAUTION

When operating using the MAN, monitor cockpit indicators closely to avoid the possibility of overtemperature, overtorque,overspeed or engine surge.

GEN switch : ON.

LAND AS SOON AS POSSIBLE

If restart is unsuccessful, abort the engine start as follows:

Engine throttle : OFF.

FUEL VALVE switch : CLOSED.

FUEL PUMP 1 and 2 switches : OFF.

Xfer PUMP switch : OFF.

GEN switch : OFF.

Perform an autorotative landing (refer to "**Autorotative landing**" procedure).

ELECTRONIC ENGINE CONTROL(EEC) MALFUNCTIONS

There are two levels of electronic engine control(EEC) malfunctions:

—EEC failed;

—EEC degraded.

EEC failed malfunctions

INDICATIONS

EDU 1 : EEC FAIL caution message displayed.

Engine mode of operation : Automatic reversion from EEC to MEC.

EDU 1 : MEC OPN caution message displayed.

PROCEDURE

EEC/MEC switch : MEC.

Proceed with flight. Refer to paragraph "**Engine operation in mechanical mode (MEC)**" in this section.

—Refer to the A119/AW119MKII Maintenance Manual for the proper action to be taken.

EEC degraded malfunctions

"EEC degraded" malfunctions have no impact on engine performance. The EEC DEGRADED caution message is only displayed on ground (at NR<20%), for maintenance purposes.

INDICATIONS

On ground(at NR<20%)

EDU 1 : EEC DEGRADED caution message displayed.

PROCEDURE

On ground, "EEC degraded" malfunctions may be cleared by cycling the EEC/MEC switch from EEC to MEC and back to EEC.

EEC/MEC switch :MEC then EEC.

If the EEC DEGRADED caution message is still illuminated:

— Refer to the A119/AW119MKII Maintenance Manual for the proper action to be taken.

ENGINE OPERATION IN MECHANICAL MODE(MEC)

Note

MEC mode is to be used only
- in case of EEC failure or
- for training purposes.

The mechanical mode is an automatic mode of operation which is accomplished through a mechanical N2 governor connected to the collective control by a mechanical linkage. A droop compensator, connected to the collective, maintains the NR at approximately 102% as collective pitch is raised. A rotors peed beep trim allows fine adjustment to maintain NR within limits (refer to Section 1 for NR/N2 limitations).

Note

In MEC mode it may not be possible to obtain NR/N2 nee-dle split in autorotation without retarding the throttle to IDLE. Therefore autorotation practice is not recommended in MEC mode.

Engine operation in mechanical mode(MEC)in flight

N2/NR : Maintain at 102%
Maintain at 100% (A119 with IDS) (using NR TRIM switch, as required)

ENGINE HOT START

A hot start is caused by an accumulation of fuel in the combustion chamber, and/or delay in light-up, causing flames to be emitted from the exhausts and/or an over-temperature.

INDICATIONS

ITT : Increasing beyond transient starting limits.

CAUTION

Maximum ITT transient during starting is 1090°C, not to exceed two seconds above 980°C. A linear variation applies between 870°C, ten seconds, and 980°C, two seconds.

Engine exhausts : Visible smoke, flames or fire.

PROCEDURE

Abort engine start as follows:

Engine throttle : OFF.

IGN switch : OFF.

Engine starter : Continue to operate.

CAUTION

Observe starter limitations in Section 1.

FUEL VALVE switch : CLOSED.

FUELPUMP 1 and 2 switches : OFF.

Xfer PUMP switch : OFF.

Refer to EMM for inspection requirements.

ENGINE OIL PRESSURE BELOW NORMAL RANGE

INDICATIONS

EDU 1 : ENG OIL PRESS caution message displayed.

PROCEDURE

If N1 is above 72% and engine oil pressure is between 40 and 80 psi (yellow arc).

Cyclic : As required to obtain level attitude.

Collective : Reduce power by lowering.

Airspeed : 60 to 70 KIAS level flight.

When N1 is below 72% proceed as follow:

Engine oil pressure : Check:

– if stable between 40 and 80psi (yellow arc) LAND AS SOON AS PRACTICABLE
– if below 40psi (ENG OIL PRESS warning message activated) or between 40 and 80psi (yellow arc) and decreasing LAND AS SOON AS POSSIBLE

(A119 with IDS)
– if between 40 and 80 psi (yellow arc) and decreasing or below 40 psi (ENG OIL PRESS warning message activated) LAND AS SOON AS POSSIBLE

ENGINE COMPRESSOR STALL

INDICATIONS

Engine :"Popping" sounds.

ITT : Abnormally increasing.

N1 : Decreasing.

PROCEDURE

Collective : Reduce power by lowering.

Airspeed : 60 to 70 KIAS, level flight.

ITT and N1 : Check for normal indications.

Note

The consequences of a compressor stall may vary depending upon its severity.

Avoid the condition that resulted in compressor stall.

LAND AS SOON AS PRACTICABLE

ENGINE DROOP COMPENSATION BINDING

The mechanical engine droop compensator is connected to the collective lever through a linkage in corporating a shear section.
If engine droop compensator linkage binding occurs, an increased collective force of 4kg (8.8pounds) maximum will be necessary to cut the shear section.
When the section has been cut, the collective force will return to normal level but the mechanical droop compensator (MEC) will be inoperative.
The EEC mode of operation will not be affected.

PROCEDURE

EEC/MEC switch : EEC, check.

LAND AS SOON AS PRACTICABLE

TAIL ROTOR FAILURES

Tail rotor failures may typically result;
- 1) in a complete loss of tail rotor control or
- 2) in a jamming of the tail rotor pitch.

1) COMPLETE LOSS OF TAIL ROTOR CONTROL

A tail rotor drive failure results in a loss of yaw control with a consequent yaw to the right, which increases in rapidity at low forward speed sand high torque levels.
A tail rotor drive failure may be accompanied by noise, vibration or oscillation in the tail section.

The vertical fin produces an antitorque component which is a function of the forward speed and which assists in controlling the helicopter in low torque conditions.

The action to be taken depends upon whether the helicopter is in hover or in forward flight. In both cases, the landing should be made at the lowest possible power or even with the engine out.
While a tail rotor drive failure in hovering is immediately detected, the same failure maybe less evident in cruise.
If trouble in the tail rotor is suspected when flying at cruise speed, proceed as follows:

Altitude : Maintain the cruise altitude.

Airspeed and pedal control : Reduce gradually to 60 KIAS and meanwhile check the helicopter response to pedal control displacement and the appearance of any anomalous vibrations and/or noise.

If the check confirms the tail rotor failure, proceed as per paragraph "**Complete loss of tail rotor control in cruise**", otherwise accomplish the following further check:

Airspeed : Maintain 60 KIAS.

Collective : Slowly raise, to increase the anti-torque demand, as close as possible to maximum continuous power and let the helicopter climb.

Pedals : Check the pedals effectiveness in controlling the yaw and any anomalous vibration and/or noise.

If the pedals are not effective in controlling the yaw, proceed as per paragraph " **Complete loss of tail rotor control in cruise**".
If on the contrary nothing seems to confirm a tail rotor failure, proceed with flight.

Complete loss of tail rotor control in hovering

PROCEDURE

Engine throttle : Chop to IDLE.

Collective : As necessary to cushion the touchdown.

Note

A slight rotation can be expected at touchdown.

Complete loss of tail rotor control in cruise

PROCEDURE

If a suitable landing site is not available:

Collective : Lower as necessary to eliminate yaw to the right.

Airspeed/power : As necessary in order to reach a suitable landing site.

Note

Power may be increased if necessary; however an increase in power necessitates an increase in speed to prevent the helicopter from turning.

On reaching the point of intended landing:

Collective : Decrease and enter autorotation.

Engine throttle : OFF.

FUEL VALVE switch : CLOSED.

FUEL PUMP1 and 2 switches : OFF.

Xfer PUMP switch : OFF.

GEN switch : OFF.

BAT switch : OFF (except as needed in night flight).

Perform an autorotative landing, into wind, maintaining forward speed (35 KIAS).

2) JAMMING OF TAIL ROTOR PITCH

This condition produces an inability to change tail rotor thrust with pedals.

INDICATIONS

Helicopter response : No yaw response when pedals are moved.

OR

Pedals : Locked.

CAUTION

If the pedals cannot be moved with a moderate amount of force, do not apply excessive force since a more serious malfunction could result.

Note

If helicopter is in a trimmed flight condition when malfunction occurs, TQ and airspeed should be noted and helicopter flown to a suitable landing area. Combinations of torque and airspeed will correct yaw attitude and these should be adjusted to land the helicopter.

PROCEDURE

HOVERING

Do not close engine throttle unless a severe right yaw occurs. If pedals lock in any position during hovering, landing can be accomplished with greater safety under power-controlled flight rather than closing engine throttle and entering autorotation.

INFLIGHT-HIGH POWER CONDITION

In a high power condition, helicopter will yaw to the left when the power is reduced. If air speed is increased, vertical fin will become more effective and left yaw will increase.

To accomplish landing proceed as follows:

Collective : Reduce to establish a power-on approach.

Airspeed : Reduce to ensure an acceptable side slip.

At about 3ft above touchdown area:

Collective : Apply to stop the rate of descent, left yaw will be reduced.

Airspeed : Zero.

Land.

IN FLIGHT-LOW POWER CONDITION

In a low power cruise flight or descent condition, helicopter will yaw to the right when power is increased.

A low power run-on type landing will be necessary:

Airspeed : Approach at 60 to 70 KIAS.

At about 50 feet AGL, reduce airspeed to arrive at the intended landing point at about 30 KIAS.

At 2 to 5 feet AGL, apply collective to cushion landing and simultaneously gradually reduce engine throttle to maintain heading. If right yaw becomes excessive, rotate engine throttle to IDLE.

SYSTEM FAILURES

HYDRAULIC SYSTEM MALFUNCTION

The helicopter is equipped with two independent hydraulic systems for cyclic and collective pitch control.
Either system can deliver adequate power to control the helicopter.
The tail rotor pedals are boosted by system n.1only.

PRESSURE LOSS IN SYSTEM N.1

INDICATIONS

EDU 1 : SERVO 1caution message displayed.

EDU 2 : N.1 HYD system pressure below minimum.

Pedals : In hover and in high power condition tendency to move slowly to the tail rotor traction zero position. In all other flight conditions tendency to maintain the initial position.

Cyclic and collective : No change in control force.

PROCEDURE

Airspeed : Reduce gradually avoiding pull up maneuvers; recommended maximum 90 KIAS and 25º bank angle in order to maintain acceptable control loads.

Flight controls : Avoid rapid movements.

Failed hydraulic system : OFF.

LAND AS SOON AS PRACTICABLE

PRESSURE LOSS IN SYSTEM N.2

INDICATIONS

EDU 1 : SERVO 2 caution message displayed.

EDU 2 : N.2 HYD system pressure below minimum.

Cyclic, pedals and collective : No change in control force.

PROCEDURE

Proceed as per failure of hydraulic system n.1.

LAND AS SOON AS PRACTICABLE

JAMMING OF A SERVO VALVE

The helicopter is equipped with three hydraulic servo actuators, dual body type, on main rotor controls (cyclic and collective) and with one hydraulic servo actuator, single body type, on tail rotor control (pedals).

INDICATIONS

The jamming of a servo valve of main rotor servo actuators can be detected only during the system check on ground before take-off (refer to Section 2) when hydraulic systems are alternatively deactivated.

PROCEDURE

Airspeed : Reduce gradually avoiding pull up manoeuvers; maximum 90 KIAS and 25 deg bank angle.

LAND AS SOON AS PRACTICABLE

WARNING

Following the loss of tail rotor servo actuator avoid landing and/or operating in conditions which require a high degree of maneuverability (i.e. avoid operating in enclosed areas, avoid operation with side ward winds, in particular with wind from the right).

ELECTRICAL POWER FAILURE

Failure of the generator and DC bus

INDICATIONS

EDU 1 : DC GEN caution message displayed.

Following the generator and DC bus failure the caution messages listed below will also be displayed:

- INV 2 OFF;
- VG2;
- SAS 2;
- FUEL PUMP 2;
- BATT DISCH.

PROCEDURE

GEN switch : RESET, then ON.
If DC GEN caution message is still displayed, set the switch to OFF.

GEN BUS switch : If ON, set to OFF (loss of DC bus).

Copilot ICS (if installed) NORM/FAIL switch : FAIL.

WARNING

With this failure, the battery is capable of supplying power for approximately 30 minutes. In this condition the engine is fed by the fuel pump n. 1 only.

Land as soon as practicable and before battery discharge (within max. 30 minutes).

Note

The battery will supply the following indicators and systems:

—N1 and ITT indicators (on EDU 1);
—torque meter indicator (on EDU 1);
—dual tachometer indicator (on EDU 1);
—warning, caution and advisory messages(on EDU 1);
—transmission & engine oil indicators (on EDU 2);
—voltammeter indicator (except for VDC-on EDU 2);
—fuel pressure indicator (on EDU 2);
—fuel quantity indicator (on EDU 2);
—hydraulic pressure indicator (on EDU 2);
—back up dual tachometer indicator;
—fuel pump n.1;
—fuel transfer pump;
—fuel valve;
—EEC;
—SAS n.1system;
—inverter n.1;
—force trim;
—landing light (max.3 minutes before landing);
—anticollision light;
—pilot spot light;
—ADI indicator (if installed);
—pilot/copilot ICS (if installed);
—transponder (if installed);
—pilot windshield wiper (if installed).

Battery Discharging

INDICATIONS

EDU 1 : BATT DISCH caution message displayed.

Probable DC Generator failure: following a DC generator failure the caution messages listed below may or may not be displayed:

- DC GEN;
- INV 2 OFF;
- VG 2;
- SAS 2;
- FUEL PUMP 2.

PROCEDURE

GEN switch : Check ON.

- If GEN switch is OFF, reset to ON:

EDU 1 : BATT DISCH, DC GEN, INV 2 OFF, FUEL PUMP 2, VG 2 caution messages out.

SAS 2 switch : When VG 2 caution message is out, set to ON.

EDU 1 : SAS 2 caution message out.

Proceed with flight.

- If GEN switch is already ON, undetected DC generator failure confirmed:

EDU 1 : DC GEN caution message not displayed.

GEN BUS switch : If ON, set to OFF (loss of d.c. bus).

Copilot ICS (if installed)
NORM/FAIL switch : FAIL.

WARNING

With this failure, the battery is capable of supplying power for approximately **28 minutes**. In this condition the engine is fed by the fuel pump n. 1 only.

Land as soon as practicable and before battery discharge (within max. **28 minutes**).

Refer to **Failure of the generator and d.c. bus** procedure for the list of equipment supplied by the battery.

Failure of an inverter

In the event of an inverter failure (#1 or #2) the remaining inverter will automatically power the115V and 26V busses of the failed inverter.

INDICATIONS

EDU 1 : INV 1(2)OFF caution message displayed.
SAS 1(2) caution message displayed.

PROCEDURE

INV 1(2) switch : Attempt reset.
If INV 1(2) OFF caution message is still illuminated set failed inverter switch to OFF.

SAS 1(2) switch : ON.

EDU 1 : SAS 1(2) caution message out.

Proceed with flight.

Correct malfunction before next flight.

RAD MSTR (radio master) switch failure

In case of RAD MSTR (radio master) switch failure disengage the RADIO MASTER circuit breaker; then use the radio equipment as desired, by means of their control panels.

HELIPILOT SYSTEM MALFUNCTION

During operation of the Helipilot system, malfunctions may occur which require pilot intervention.

These malfunctions are treated in detail in the following paragraphs.

Note

The Helipilot indicators normally refer to Helipilot 1. Turning SAS 1 off, the Helipilot indicators will automatically switch to SAS2.

Note

Following one of the two Helipilot failures, attitude beep trim on the cyclic is inoperative.

Failure of one Helipilot

PROCEDURE

Cyclic and collective : Hands on.

Max. airspeed : Reduce V_{NE} by 30KIAS.

Max.ROC :750ft/min.

Proceed with flight.

Repair failed system before next flight.

Repeated disturbances during pitch, roll or yaw operation

PROCEDURE

Retrim the helicopter; failed Helipilot system can be identified by observing the Helipilot indicators. Disengage the failed system and proceed as per "**Failure of one Helipilot**" procedure.

Note

SAS 2 pitch and roll linear actuator positions may be observed by pressing the SAS 2 PUSH pushbutton on the Helipilot control panel.

Oscillatory malfunction during pitch, roll or yaw operation

PROCEDURE

Identify affected axis; isolate SAS 1 or SAS 2 by observing Helipilot indicators, or switchSAS1off.

If SAS 1 disengagement eliminates the oscillation, disengage the failed system and proceed as per "**Failure of one Helipilot**" procedure.

If oscillations persist,re-engageSAS1andswitchSAS2off.

If oscillations occur in yaw, disengage Helipilot 1 by switching SAS1 off and proceed as per "**Failure of one Helipilot**" procedure leaving SAS2 on.

WARNING

Landing should not be attempted while an oscillatory malfunction exists.

Note

SAS2 pitch and roll linear actuator positions may be observed by pressing the SAS 2 PUSH pushbutton on the Helipilot control panel.

INTERCOMMUNICATION SYSTEM FAILURE

PROCEDURE

FAIL/NORM switch (on inter communication panel) : FAIL.

Resume normal operation.

INTEGRATED DISPLAY SYSTEM FAILURE

The internal I.D.S. failures may differ according to the following cases:

EDU failure

INDICATIONS

Affected EDU : Blank or unusable.

Healthy EDU : Automatically set to REVERSIONARY mode.

PROCEDURE

ON/OFF switch on affected EDU : OFF.

Proceed with flight and correct trouble before next flight

EDU display degradation

INDICATIONS

Affected EDU : Visible display degradation (i.e. graphical and/or lighting degradation

PROCEDURE

ON/OFF switch on affected EDU : OFF.

Healthy EDU : REVERSIONARY mode displayed.

Proceed with flight and correct trouble before next flight.

Failure of both EDUs

INDICATIONS

EDU 1and EDU 2 : Blank or unusable.

PROCEDURE

EDU 1 and EDU 2 : Switch to OFF.

CAUTION

Primary and secondary parameters, warning, caution and advisory visual and aural messages no more available except:

—N2/NR (on back up tachometer)

—"ONE-FIFTY FEET" aural message

Note

Engine and rotor governing still maintained by EEC.

Land as soon as practical taking care that fuel quantity and FUEL LOW caution indications are no more available.

Loss of EDU primary (secondary) parameter(s)

Each EDU receives electrical signals from the sensors of all primary and secondary parameters but displays only the parameters data related to its current display format. Two failure cases are possible:

— Loss of primary parameter(s) in EDU 1or secondary parameter(s) in EDU 2;

— Loss of secondary parameter(s) in EDU 1or primary parameter(s) in EDU 2.

LOSS OF PRIMARY (SECONDARY) PARAMETER(S) IN EDU 1(2)

INDICATIONS

EDU 1(2) : No indication of the affected parameter and white dashes (---) in the digital box.

EDU 1 : MISCMP-P(S) caution message displayed.

PROCEDURE

ON/OFF switch on affected EDU : OFF.

Healthy EDU : REVERSIONARY mode automatically displayed.

Note

If affected EDU is the EDU 2, then OAT and electrical parameters no more available.

Proceed with flight and correct trouble before next flight.

LOSS OF SECONDARY (PRIMARY) PARAMETER(S) IN EDU 1(2)

INDICATIONS

EDU 1 : MISCMP-P(S) caution message displayed.

PROCEDURE

Refer to the following paragraph "**Miscompare of EDU primary (secondary) parameter(s)**".

Miscompare of EDU primary(secondary) parameter(s)

The two EDUs perform a continuous cross-comparison of the electrical signals received from the sensors of all primary and secondary parameters. In case a discrepancy results from this comparison, two failure cases are possible:

— Miscompare between primary parameter(s) of the two EDUs;

— Miscompare between secondary parameter(s) of the two EDUs.

MISCOMPARE OF PRIMARY PARAMETER(S)

INDICATIONS

EDU 1 : MISCMP-P caution message displayed.

PROCEDURE

If flight conditions permit, try to identify the faulty information by comparing indications on EDU 1 with indications on EDU 2 forced to REVISIONARY display mode.

Note

To force each EDU to REVERSIONARY display mode, switch the other EDU to OFF.

Return EDUs to normal mode of operation, proceed with flight monitoring the faulty parameter.

Correct trouble before next flight.

MISCOMPARE OF SECONDARY PARAMETER(S)

INDICATIONS

EDU 1 : MISCMP-S caution message displayed.

PROCEDURE

If flight conditions permit, try to identify the faulty information by comparing indications on EDU 2 with indications on EDU 1 forced to REVISIONARY display mode.

Note

In case no information discrepancy results from displays comparison, the faulty information is OAT or voltammeter indication.

Return EDUs to normal mode of operation, proceed with flight monitoring the faulty parameter.

Correct trouble before next flight.

FIRE

ENGINE FIRE ON GROUND

INDICATIONS

EDU 1 : ENG FIRE warning message displayed and "ENGINE FIRE" audio warning message activated.

Engine area : Smoke, fumes and fire.

PROCEDURE

Shut down the engine as follows:

Engine throttle : OFF.

FUELVALVE switch : CLOSED.

FUELPUMP 1 and 2 switches : OFF.

Xfer PUMP switch : OFF.

GEN switch : OFF.

BAT switch : OFF.

Evacuate the helicopter as soon as possible.

ENGINE FIRE DURING FLIGHT

INDICATIONS

EDU 1 : ENG FIRE warning message displayed and "ENGINE FIRE" aural warning activated.

Engine area : Smoke, fumes and fire.

PROCEDURE

Collective : Immediately reduce as required to maintain NR between 90 and 110%.

Cyclic : Adjust to obtain desired autorotative airspeed.

Note

Airspeed for minimum rate of descent is 80 KIAS.

Airspeed for maximum glide distance is 110 KIAS.

Shut down the engine as follows:

Engine throttle : OFF.

FUELVALVE switch : CLOSED.

FUELPUMP 1 and 2 switches : CLOSED.

Xfer PUMP switch : OFF.

GEN switch : OFF.

Execute an autorotative descent and landing (refer to"**Autorotative landing**" procedure).

After landing:

BAT switch : OFF.

Evacuate the helicopter as soon as possible.

SMOKE IN CABIN, TOXIC FUMES, ETC.

INDICATIONS

Cabin : Smoke, toxic fumes.

PROCEDURE

VENT switch : ON.

Sliding windows (if installed) and vents : Open.

Note

If the altitude permits and the source is suspected to be of an electrical origin, attempt to isolate the source by switching OFF electrical circuits.

LAND AS SOON AS POSSIBLE

STATIC PORT OBSTRUCTION

When operating in adverse weather conditions, if erratic readings from the airspeed indicator and altimeter occur, with the STATIC source switch in NORM position, proceed as follows:

Doors, vents and, if installed, sliding windows : Closed.

STATIC source switch : Remove the guard and select ALTERNATE.

This procedure selects an alternate static source utilizing cabin air.

Proceed with flight.

CAUTION

When the alternate static source is used decrease the altimeter readings by 250 ft.

Note

The airspeed indications obtained through the alternate static source is slightly higher than the actual value in all the speed range.

FLIGHT IN THUNDER STORMS– LIGHTNING

When flying in thunderstorms, the helicopter may be struck by lightning.

If it is suspected that the helicopter has been struck by lightning proceed as follows:

Airspeed : Reduce (V_{NE} 80 KIAS)

CAUTION

Avoid extreme manoeuvers.

LAND AS SOON AS POSSIBLE

EMERGENCY AND MALFUNCTION PROCEDURES

SWE 400 SYSTEM

CAUTION

In any emergency condition;
the Monitor and the Hand Control Unit
must be stowed and secured before landing.