KAAN HAVACILIK SANAYİ VE TİC. A.Ş.

El Kitabı : OPERATIONS MANUAL PART B(KAMOV COMPANY KA-32)
Revizyon No : 2
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 : 2

TYPE(S) OF AIRCRAFT
KAMOV Company / KA-32
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

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00.01.01	2	23.07.2025
00.01.02	0	01.01.2019
00.01.03	1	23.06.2020
00.01.04	0	01.01.2019
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00.02.03	0	01.01.2019
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REVISION HIGHLIGHTS

Revision No:0

Initial issue

Revision No:1

Due to "SPO - Specialised Operations" - HESLO application:
00.01.03 A list and brief description of the various parts, their contents, applicability and use, 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, 00.02.05 Annotation of Changes, 00.02.06 Temporary Revisions, 00.02.07 Distribution System for the manuals, amendments and revisions, 01.00 General Information, 01.01 Certified Limitations and Applicable Operational Limitations, 01.01.04 Crew Composition; 01.01.05 Mass and Centre of Gravity (CG); 01.01.06 Speed Limitations, 01.01.09 Performance Limitations, 01.01.10 System Limitations, 02.01.01 Pre-flight; 02.01.02 Before Take-off; 02.01.04 Taxi, Take-off and Climb; 02.01.05 Noise Abatement; 02.01.06 In-flight and Descent; 02.01.07 Approach, Landing preparation and Briefing; 02.01.08 Normal Landing; 03.01.12 Birdstrike, 03.01.13 Cargo Hook Emergencies, 04.00 Performance - GENERAL, 04.02 Performance Class 2 Helicopter, 05.07 Selection of Aerodromes and Operating Sites, 06.06 Mass and Balance Documentation Contents, 06.09.04 Dry Operating Mass and corresponding centre of gravity (CG) or index, 07.01 Helicopter Systems, 10.02 Items for Communication to the RCC, 11.01 SPO - Specialised Operations - Instrument and Equipment

Revision No:2

00.01.01 Preamble - A statement that the manual complies with all applicable regulations, current manufacturer manuals and with the terms and conditions of the applicable 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

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00-ADMINISTRATION AND CONTROL OF OPERATIONS MANUAL

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

00.01-Introduction

ORO.MLR.100

(00.01.01)- Preamble - A statement that the manual complies with all applicable regulations, current manufacturer manuals and with the terms and conditions of the applicable AOC.

Revizyon No: 2 Revizyon Tarihi: 23.07.2025

ORO.MLR.100

KAAN AIR's **KAMOV KA32** Operations Manual Part B (OM PART B) document **Rev-2**, dated **23/07/2025**, EASA AIR OPS Regulation **Rev-22**, Rotorcraft Flight Manual **Rev-18** (RFM) published by Joint Stock Company «National Helicopter Center Mil&Kamov» (JSC «Helicopters Mil&Kamov») dated **30/09/2021** 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: 0 Revizyon Tarihi: 01.01.2019

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: 1 Revizyon Tarihi: 23.06.2020

ORO.MLR.100

The Operations Manual (OM) Part B consists of below separate chapters:

00-ADMINISTRATION AND CONTROL OF OPERATIONS MANUAL
01-LIMITATIONS
02-NORMAL PROCEDURES
03-ABNORMAL AND/OR EMERGENCY PROCEDURES
04-PERFORMANCE
05-FLIGHT PLANNING
06-MASS AND BALANCE
07-HELICOPTER SYSTEMS
08-LOADING
09-MINIMUM EQUIPMENT LIST (MEL)
10-SURVIVAL AND EMERGENCY EQUIPMENT INCLUDING OXYGEN
11-SPO - SPECIALISED OPERATIONS - INSTRUMENT AND EQUIPMENT
12-EMERGENCY EVACUATION PROCEDURES

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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

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: 1 Revizyon Tarihi: 23.06.2020

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: 2 Revizyon Tarihi: 23.07.2025

ORO.MLR.100

Rev. No.	Date	Reason for Revision	Inserted By
Original	01.01.2019	Initial Issue	Kadir ERDOĞAN
1	23.06.2020	Refer to Revision Highlights section	Kadir ERDOĞAN
2	23.07.2025	" "	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: 0 Revizyon Tarihi: 01.01.2019

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: 0 Revizyon Tarihi: 01.01.2019

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: 1 Revizyon Tarihi: 23.06.2020

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: 1 Revizyon Tarihi: 23.06.2020

ORO.MLR.100

Rev. No.	Date	Reason for Revision	Inserted By
0.01	11.05.2019	06.09.04 TC-HLF, TC-HLG added to fleet; Dry Operating Mass and corresponding centre of gravity (CG) or index	Kadir ERDOĞAN

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

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

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 (KA32)	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. All personnel can access to operations manual at KAAN AIR 's https://kaanair-depo.online/MANUALS/OPERATIONS/ . In the other side **Flight Operations Manager** or **Compliance Monitoring Manager** is responsible of distribution to all operations personel via e-mail ucus@kaanair.com as an approved Operation Manual PDF copy.

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 DGCA Approval Certificate on top of the page. All personnel shall look at the latest approval certificate before using operations manual. Flight Operations Manager and/or Compliance Monitoring Manager will send an e-mail to operations manual for current revision of operations manual via e-mail to ucus@kaanair.com .

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: 1 Revizyon Tarihi: 23.06.2020

AMC3 ORO.MLR.100 / SPO.POL.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.

During any phase of operation, the loading, the mass and the centre of gravity (CG) position of the aircraft will comply with any limitation specified in the RFM and/or OM-B. Placards, listings, instrument markings, or combinations thereof, containing those operating limitations prescribed by the RFM for visual presentation, will be displayed in the aircraft.

All of the dimensions, performance data and other calculation documents published in this document are taken from the respective current version of RFM KAMOV KA32. The calculations must be made together with the original data from this document.

01.00.02 Helicopter Type

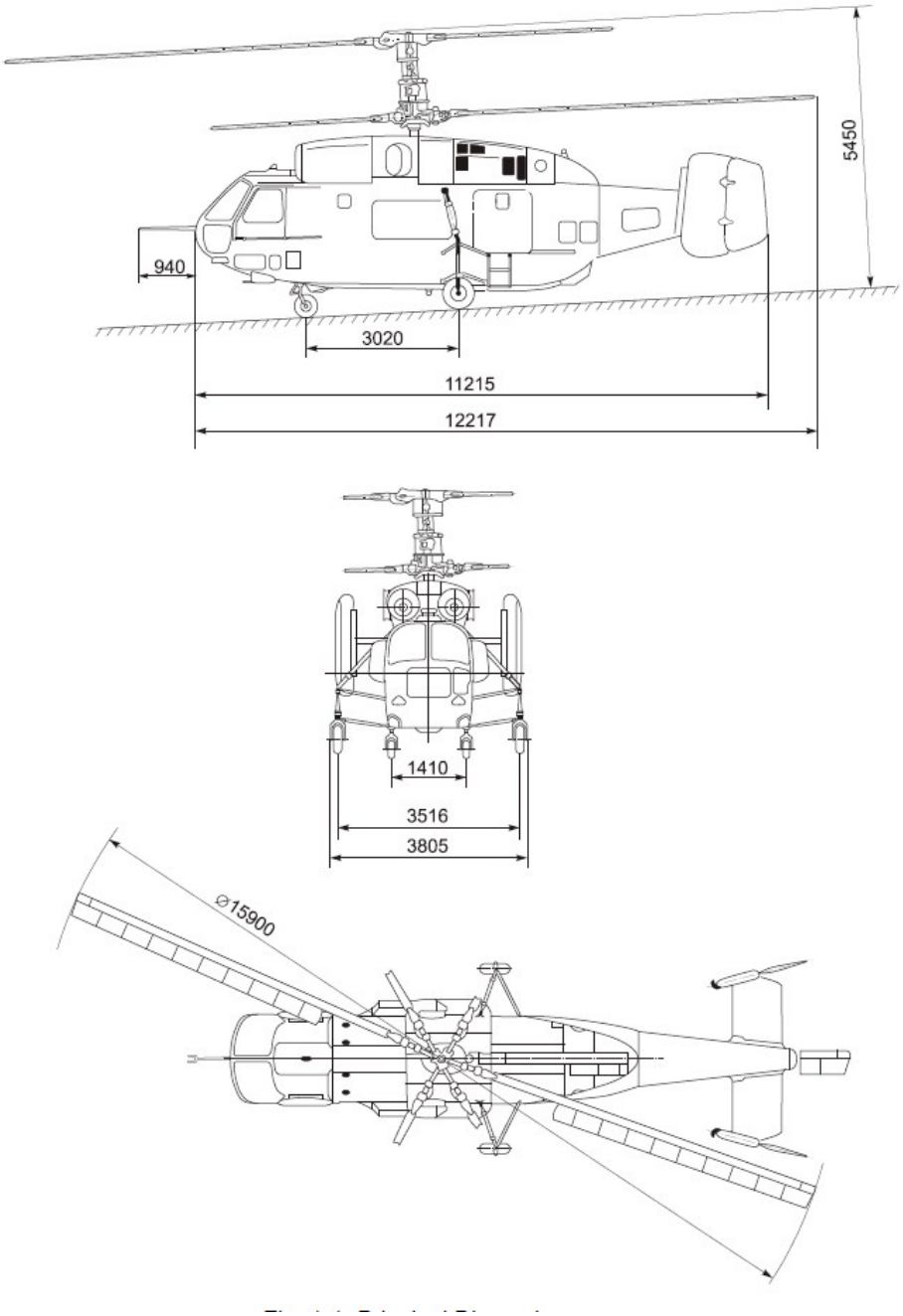
This part of the handbook is intended for the deployed helicopter:

- KA32A11BC

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



01.00.05 Measurement Units

The following measurement units are to be used:

- Length: Metric
- Temperature: Degrees Celsius
- Speed: Knots
- Climb & sink rate: Feet per minute
- Mass: Kilogram
- Liquid measurements: Litres, kilograms
- Air pressure: Hectopascal
- Working pressure: Bar

01.01-Certified Limitations and Applicable Operational Limitations

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

AMC3 ORO.MLR.100 / RFM

OPERATING LIMITATIONS

Compliance with the limitations in this section is mandatory. Anytime an operating limitation is exceeded, an appropriate entry shall be made in the helicopter logbook. The entry shall state which limit was exceeded, the duration of time, the extreme value attained, and any additional information essential in determining the maintenance action required.

According to Supplement 1A.1 External Cargo Operation
CONDITIONS OF OPERATION

Operation of the helicopter with no load on the external cargo suspension hook is authorized without removing the unit from helicopter within the basic RFM limitations.

CAUTION
THE GROUND PERSONNEL WILL BE INSTRUCTED THAT BEFORE STARTING THE HELICOPTER OPERATIONS WITH AN EXTERNAL LOAD AT HOVER THE LOWER HOOK OR CABLE MUST TOUCH THE GROUND TO DISCHARGE THE STATIC ELECTRICITY

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

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AMC3 ORO.MLR.100

BASIS OF CERTIFICATION

This helicopter is certified in the transport Category A and B in compliance with HPG 32.29 (equivalent to FAR and Chapter 529 of the Canadian Airworthiness Manual).

Type Certificate Data Sheet (TCDS) No.: EASA.IM.R.133 ,
can be found in the website;
https://www.easa.europa.eu/document-library/type-certificates/rotorcraft-cs-29-cs-27-cs-vlr/easaimr133 .

According to Supplement 68 Peculiarities in Operation of Helicopters Complying with EASA Certificate
This helicopter is certified in the restricted category in compliance with certification basis equivalent to FAR-29.

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

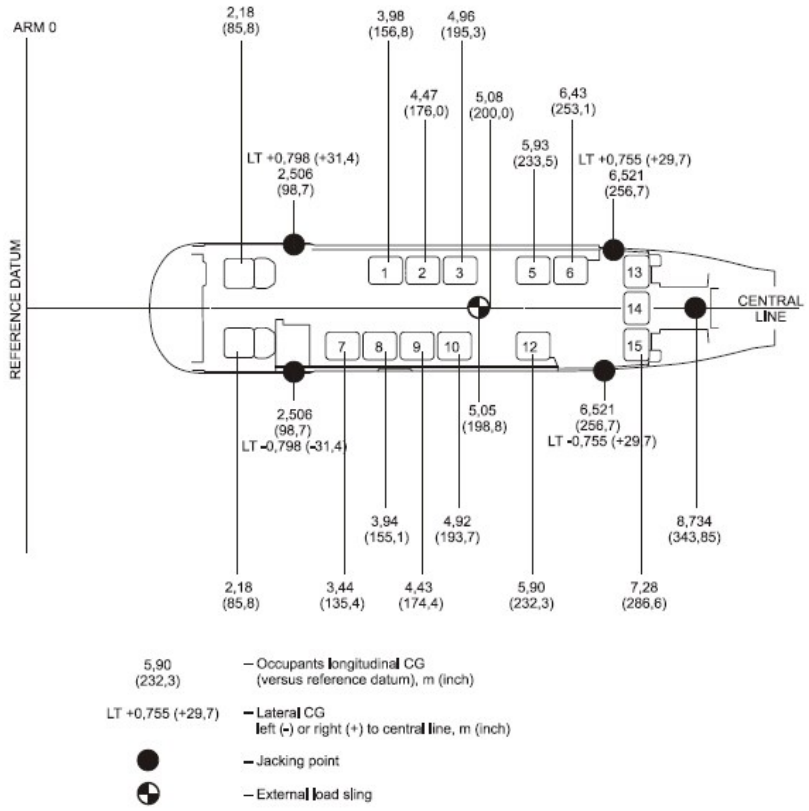
Revizyon No: 1 Revizyon Tarihi: 23.06.2020

AMC3 ORO.MLR.100

OCCUPANTS LIMITATIONS

- Maximum number of occupants on the board: **2 crewmembers** and **13 persons** essential to **aerial works.**
- When transporting **underslung loads** transportation of personnel essential to **aerial works** is prohibited.
- Prior to carrying personnel essential to aerial works a crew seat located behind the co-pilot seat must be removed.
- Smoking is prohibited during the whole flight.
- Safety harness must be fastened in flight.

RFM Sect.5, Fig. 5-2. Main ARM Location Diagram.



(01.01.03)- Types of Operation

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

AMC3 ORO.MLR.100

The helicopter is approved for operation in compliance with the operating limitations specified in the RFM for **VFR operations**, **day and night**, including internal load transportation, underslung load transportation and ferry flights.

The helicopter is **approved** for flights in **icing conditions,** but KAAN AIR do not use this capability.

According to Supplement 68 Peculiarities in Operation of Helicopters Complying with EASA Certificate

Intentional flight in known or forecast icing conditions is not approved. The rotor anti-icing system may be used during an inadvertent encounter while maneuvering to leave the icing conditions.

(01.01.04)- Crew Composition;

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AMC3 ORO.MLR.100 / RFM

FLIGHT CREW LIMITATIONS

The minimum crew for helicopter **VFR** operations is **2 (two) pilot** on the **left seat** according to TR DGCA directive of UOD-2014/17 according to MTOW is more than 3,175 kg: 11,000 kg.

According to Supplement 68 Peculiarities in Operation of Helicopters Complying with EASA Certificate

The minimum crew for Category B operation is **two pilots** with pilot-in-command on the left seat.

According to Supplement 1A.1 External Cargo Operation
FLIGHT CREW LIMITATIONS

Depending on the cargo, route and weather conditions the operator selects the flight crew:

- 2 pilots

- 2 pilots and an operator

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

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AMC3 ORO.MLR.100 / RFM

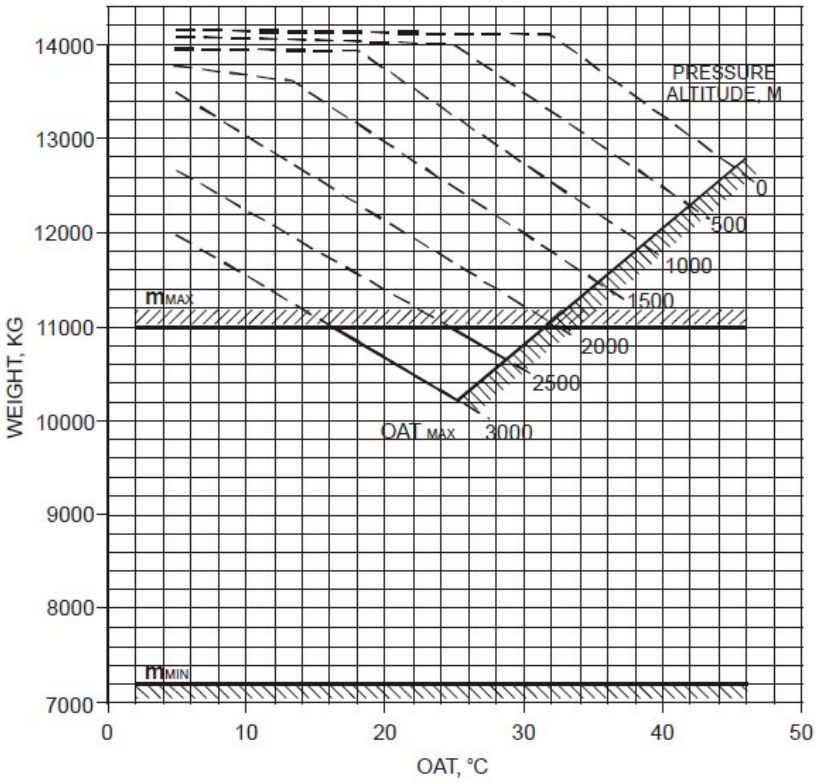
WEIGHT/CG LIMITATIONS
WEIGHT LIMITS
According to Supplement 68 Peculiarities in Operation of Helicopters Complying with EASA Certificate

Maximum allowable weight ..... 11,000 kg

Refer to Fig. 1-1 for maximum allowable weight versus altitude and air temperature.

Minimum weight ..... 7,200 kg

Fig. 1-1. (Sheet 2 of 2). Weight – Altitude – TO temperature limitations.



LONGITUDINAL CENTER OF GRAVITY LIMITS
Reference datum line (Station zero) is located 5.28 m (207.87 inches) forward of the main rotor axis.
Longitudinal center of gravity limits vary from stations 5.0 to 5.31 m (196.85 to 209.06 inches).

LATERAL CENTER OF GRAVITY LIMITS
Lateral center of gravity is not critical if the loads are located in compliance with the instructions of the present RFM, Section5.

INTERNAL LOAD LOCATIONS
Maximum load weight ..... 8157 lb (3700 kg)
Maximum allowable deck loading for cargo

- between frames No. 4 to No. 7 ..... 614 lb/sq.ft (3000kgf/sq.m);
- between frames No. 7 to No. 13 ..... 307 lb/sq.ft (1500 kgf/sq.m).

According to Supplement 1A.1 External Cargo Operation
WEIGHT LIMITATIONS

Maximum gross weight including external cargo load ..... 27998 lbs (12,700 kg)

To determine a flying weight for specific flight conditions, ref. RFM Supp.1A.1 Fig. 4-1.

Maximum external cargo load ..... 11023 lbs (5,000 kg)

(01.01.06)- Speed Limitations

Revizyon No: 1 Revizyon Tarihi: 23.06.2020
AMC3 ORO.MLR.100 / CAT.OP.MPA.140 / RFM

DOORS OPEN
Helicopter may be flown with crew doors open.
Flight operation is approved for the following alternative configurations:

- Both sliding crew doors fully open and secured at hover and at speeds of 0 KIAS (0 km/h IAS) to 27 KIAS (50 km/h IAS);
- One of the sliding crew doors (left or right) open for not more than 4 in (10 cm) and secured at speeds of 27 KIAS (50 km/h IAS) to 108 KIAS (200 km/h IAS).

The doors must be kept closed and locked at speeds above 108 KIAS (200 km/h IAS).

NOTE: *Prior to opening any door, check if all personal equipment and flight documents are reliably fastened.*

AIRSPEED LIMITATIONS
Basic VNE ..... **140 KIAS** (260 km/h IAS) at sea level.
VNE is limited for ambient conditions and weights in accordance with the position of the red index on pilot ASI.
Refer to Table 1-1 for VNE limits in case of airspeed limiting system failure or when the static pressure selector is switched to EMERGENCY.
VNE during autorotation ..... 95 KIAS (180 km/h IAS)
Minimum airspeed in level flight at altitudes higher
than OGE hover ceiling ..... 27 KIAS (50 km/h IAS).
Minimum airspeed during steady autorotation ..... 54 KIAS (100 km/h IAS).

According to Supplement 1A.1 External Cargo Operation
AIRSPEED LIMITATION

With an external cargo load VNE shall not exceed **102 KIAS** (190 km/h) or airspeeds indicated by ASI VNE index whichever is less.

In case of the Limit Signal System failure or with the static pressure selector switch in EMERGENCY position VNE shall be defined using Table 1-1 basic RFM.

(01.01.07)- Flight Envelope(s);

Revizyon No: 0 Revizyon Tarihi: 01.01.2019
AMC3 ORO.MLR.100

HEIGHT-VELOCITY ENVELOPE
The height-velocity envelope (H-V envelope) versus OAT is shown in the height-velocity diagram (Fig. 4-6). The diagram indicates the area which is critical for the helicopter operation in case of one engine failure during takeoff, landing or while carrying out other operations near the ground.

The diagram specifies the conditions under which the helicopter can be safely landed onto smooth and firm surfaces when the engine suddenly becomes inoperative.

It is recommended to avoid entering the specified area.

HEIGHT-VELOCITY ENVELOPE

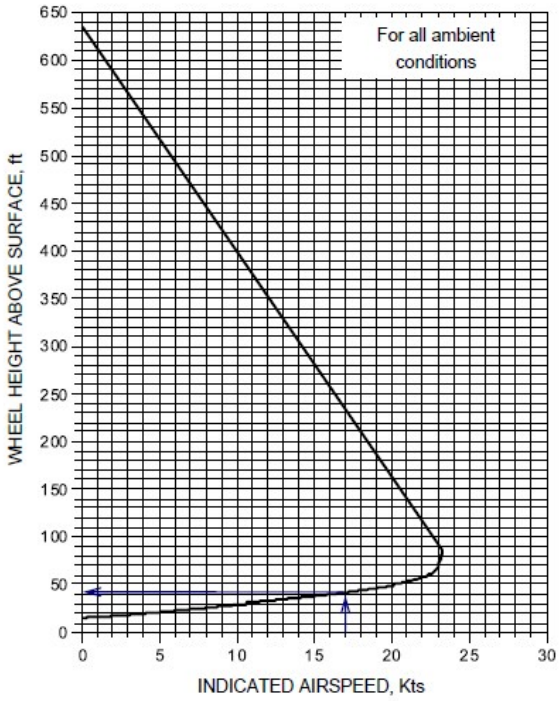


Fig. 4-6 (Sheet 1 of 2). Height-Velocity Diagram.

According to Supplement 68 Peculiarities in Operation of Helicopters Complying with EASA Certificate

HEIGHT-VELOCITY ENVELOPE

The height-velocity envelope (H-V envelope) versus OAT is shown in the height-velocity diagram (Fig. 4-6). The diagram indicates the area which is critical for the helicopter operation in case of one engine failure during takeoff, landing or while carrying out other operations near the ground.

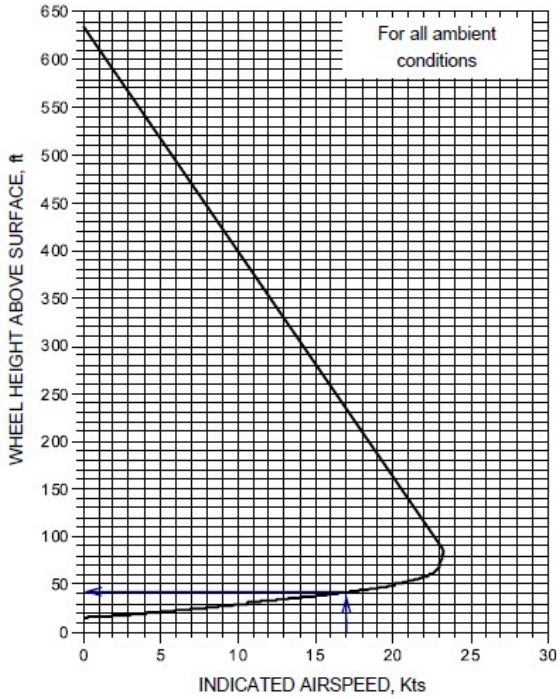
The diagram specifies the conditions under which the helicopter can be safely landed onto smooth and firm surfaces when the engine suddenly becomes inoperative.

It is recommended to avoid entering the specified area.

WARNING. THE H-V ENVELOPE HAS BEEN DEMONSTRATED FOR DENSITY ALTITUDES OF UP TO 3000 FT (914 METERS).

THE H-V ENVELOPE HAS BEEN CALCULATED FOR DENSITY ALTITUDES HIGHER THAN 3000 FT (914 METERS).

Fig. 4-6. Height-Velocity Diagram according to Supplement 68



(01.01.08)- Wind Limits

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WINDSPEED LIMITATIONS

Sideward flight or crosswind hover and rearward flight or tailwind hover has been demonstrated up to 20 knots (10 m/s).
The engine startup and shutdown have been demonstrated on ground for:

- headwind ..... up to 20 knots (10 m/s), gusts of up 30 knots (15 m/s) are tolerable;
- crosswind and tailwind ..... up to 20 knots (10 m/s).

(01.01.09)- Performance Limitations

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DESCENT LIMITATIONS

Maximum allowable rate of descent

- 590 ft/min (3 m/s) at 27 KIAS (50 km/h IAS) and below;
- 1575 ft/min (8 m/s) at 108 KIAS (200 km/h IAS) and above.

ALTITUDE LIMITATIONS

Maximum operational pressure altitude ..... 16400 ft (5000 m).
Maximum pressure altitude for takeoff and landing ..... 9840 ft (3000 m).

AMBIENT AIR TEMPERATURE LIMITATIONS

The maximum ambient air temperature is (tISA 30) °C for operations at all altitudes.
The minimum ambient air temperature minus 50 °C for operation at all altitudes.

According to Supplement 68 Peculiarities in Operation of Helicopters Complying with EASA Certificate

The maximum ambient air temperature is **ISA plus 25 °C** for operations at **sea level up to 16,400 feet** (5,000 m).

ICING FLIGHT LIMITATIONS

Minimum outside temperature in flights in icing conditions ..... minus 23 °C

MANEUVERING LIMITATIONS
Acrobatic maneuvers are prohibited.

According to Supplement 1A.1 External Cargo Operation
MANEUVERING LIMITATIONS

When carrying external cargo load the maximum allowable Roll angle is limited to 20 degrees.

PITCH LIMITS
Maximum in straight flight during acceleration: ..... –30 degrees
Maximum in straight flight during deceleration: ..... +25 degrees
Maximum in all other modes: ..... 20 degrees

ROLL LIMITS
Airspeed 32 KIAS to 108 KIAS (60 to 200 km/h IAS) and pressure
altitude up to 3280 ft (1000 m) maximum bank angle: ..... 35 degrees
All other airspeeds and pressure altitudes above 3280 ft (1000 m)
maximum bank angle ..... 20 degrees

YAW LIMITS
Yaw is limited to two ball diameters of deviation to the left and right sides.

SLOPE LANDING LIMITATIONS
Slope landings are limited to slopes not exceeding 6 degrees in any direction.

01.01.10-System Limitations

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According to Supplement 1A.1 External Cargo Operation
MAIN ROTOR SPEED LIMITATIONS

At repeated heavy lifts additional limitation of 85 % is introduced for the minimum allowed main rotor speed (below the minimum allowed steady speed of 87%) for not more than 2 sec for each load lifting/lowering.

NOTE
By repeated heavy load lift (RHL) operations flights with under sling loads are meant when loads are lifted more often that 10 times during one flight hour.

(01.01.10.01)- Power Plant

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NOTE. 2.5 min OEI rating has been demonstrated at the bench and flight tests. The helicopter performance data are indicated in this RFM without consideration to this rating.

DURATION OF MODES
ALL ENGINE OPERATING (AEO)
Takeoff ..... not exceeding 5 min
IDLE ..... not exceeding 20 min

ONE ENGINE INOPERATIVE (OEI)
2.5 min rating ..... not exceeding 2.5 min
30 min rating ..... not exceeding 30 min

CAUTION. UTILIZATION OF 2.5 MINUTE OEI RATING IS ALLOWED 8 TIMES AND 30 MINUTE RATING 2 TIMES

ONLY FOR THE PERIOD OF THE ENGINE TIME BETWEEN OVERHAUL

Minimum interval between usage of 2.5 min, 30 min and takeoff ratings is 5 min.

ENGINE START LIMITATIONS
Refer to figure 1-3 for gas generator rotor RPM (N1) and inlet turbine temperature (ITT) limitations at engine start up

GAS GENERATOR ROTOR RPM (N1) LIMITS
ALL ENGINES OPERATING (AEO)
Takeoff rating ..... not exceeding 101 %
Max continuous ..... not exceeding 99 %
The difference between LH and RH engine gas generator rotors RPM (N1) is limited to:

- in steady-state conditions ..... not exceeding 2 %
- at takeoff rating, when ITT limiter operates ..... not exceeding 3 %

NOTE. In transient conditions the difference between gas generators RPM (N1) is not limited.

The maximum gas generator RPM (N1)
prior to engine start up in flight ..... 7 %

ONE ENGINE INOPERATIVE (OEI)
2.5 min rating ..... not exceeding 101 %
30 min rating ..... not exceeding 101 %
Max continuous rating ..... not exceeding 99 %

INLET TURBINE TEMPERATURE LIMITS
At engine starting ..... not exceeding 780 °C

ALL ENGINE OPERATING (AEO)
Takeoff rating ..... not exceeding 990 °C
Max continuous ..... not exceeding 955 °C

ONE ENGINE INOPERATIVE (OEI)
2.5 min rating ..... 990 °C
30 min rating ..... 990 °C
Max continuous ..... 955 °C

OIL PRESSURE LIMITS
At IDLE rating ..... not below 2.0 kgf/sq.cm
At ratings exceeding IDLE ..... not below 3.0 kgf/sq.cm
Max allowable oil pressure at engine starting ..... 4.8 kgf/sq.cm

OIL TEMPERATURE LIMITS
Min oil temperature is limited to:

- at engine start up on the ground and in flight ..... minus 38 oC
- at ratings exceeding IDLE ..... +30 °C

Max oil temperature ..... +150 °C

NOTES: Carry out dry motoring run (cranking) prior to engine start up at oil temperatures below minus 35 °C.

(01.01.10.02)- Transmissions

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TRANSMISSION OIL PRESSURE LIMITS
Minimum oil pressure

- at IDLE..... 0.5 kgf/sq.cm
- at ratings exceeding IDLE ..... 2.5 kgf/sq.cm

Maximum oil pressure at engine starting ..... 5.0 kgf/sq.cm

TRANSMISSION OIL TEMPERATURE LIMITS
Minimum oil temperature at engine start up ..... minus 40 °C
Minimum oil temperature before
increasing the power above IDLE ..... minus 15 °C
Minimum oil temperature
for continuous operation ..... +30 °C
Maximum allowable oil temperature ..... +90 °C

(01.01.10.03)- Rotor Speed

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ROTOR RPM (NR) LIMITS – POWER ON

Maximum continuous .....92 %
Maximum transient at airspeeds
below 108 KIAS (200 km/h IAS) .....98 % (not to exceed 8 s if above 92 %)
Maximum transient at airspeeds
above 108 KIAS (200 km/h IAS) .....94 %
Minimum continuous.....87 %
Minimum transient .....83 % (not to exceed 30 s if below 87 %)

ROTOR RPM (NR) LIMITS OEI
Maximum continuous .....92 %
Maximum transient at airspeeds
below 108 KIAS (200 km/h IAS) .....98 % (not to exceed 8 s if above 92 %)
Maximum transient at airspeeds
above 108 KIAS (200 km/h IAS) .....94 %
Minimum continuous.....87 %
Minimum transient .....83 % (not to exceed 30 s if below 87 %)
Minimum at OEI landing touchdown .....73 % (not to exceed 10 s if below 83 %, 4 times during the engine service life only)

ROTOR RPM (NR) LIMITS – POWER OFF
Maximum continuous .....92 %
Maximum transient .....98 % (not to exceed 8 s if above 92 %)
Minimum .....ref. to Chart (fig.1-2)

ROTOR RPM (NR) LIMITS FOR BRAKE APPLICATION
Rotor brake application is limited to ground operation with both engines shut down and rotor RPM NR reduced to 20 % or below.

CAUTION AT A WIND SPEED EXCEEDING 16 KNOTS (8 M/S) TRANSFER OF THE BRAKE LEVER UPWARDS AGAINST THE STOP TO BRAKE THE ROTOR IS OBLIGATORY

(01.01.10.04)- Fuel System

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FUEL AND OIL LIMITATIONS

CAUTION. ONLY PRESSURE REFUELING POINT MAY BE USED FOR HELICOPTER REFUELING WITH RUNNING ENGINES.

FUEL/OIL GRADE LIMITATIONS
FUEL GRADES
Grades of fuel and anti-ice additives authorized for use are listed in Table 1-2.

NOTE. The anti-ice additive is to be used at OAT +5° and below in accordance with to Table 1-2.

Table 1-2. Engine and APU Fuels

FUEL GRADES		GOST, Spesifications	Airport air temperature for which the use of fuel is recomended
Basic	Alternative		
TC-1 (TS-1) PT (RT)	Jet A-1	GOST 10227-86 GOST 10227-86 DEF STAN 91-91 DERD 2494 ASTM D1655 CAN CGSB 3-23	Any Any Any Any Any Any
	Jet A	ASTM, D1655 CAN CGSB 3-23	> -20 °C > -20 °C

NOTE. At airport ambient temperatures below +5 °C anticrystallization fluid shall be added to fuels:
- russian fuels need ethyl cellosolve [liquid "N" ("I"), GOST 8313-88] in the amount of 0.1% of the fuel volume;
- fuels Jet A-1, Jet A needs methyl cellosolve (AL-31) DEF STAN 68-251 (DERD 2451) or MIL-I- 27686E, or CAN CGSB 3.526 to be added in the amount of 0.1– 0.15 % of the fuel volume.

(01.01.10.05)- Lubricant

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OIL GRADES

Grades of oil authorized for use in engines, APU and gear box are listed in Table 1-3.

Table 1-3. Engine and Gearbox Oils

Basic	Alternative	GOST, Specifications
(B-3V)	- Castrol 98 Mobil-Jet Oil 254	TY 38.101295-85 DERD 2487 MIL-L-23699

(01.01.10.06)- Hydraulics System

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HYDRAULIC PRESSURE LIMITS

MAIN HYDRAULIC SYSTEM
Minimum oil pressure ..... 64 kgf/sq.cm.
Maximum oil pressure ..... 90 kgf/sq.cm.

STANDBY HYDRAULIC SYSTEM
Minimum oil pressure ..... 64 kgf/sq.cm
Maximum oil pressure ..... 90 kgf/sq.cm

AUXILIARY HYDRAULIC SYSTEM
Minimum oil pressure ..... 75 kgf/sq.cm
Maximum oil pressure ..... 90 kgf/sq.cm

AUXILIARY PUMP
Minimum oil pressure ..... 200 kgf/sq.cm
Maximum oil pressure ..... 240 kgf/sq.cm

HYDRAULIC TEMPERATURE LIMITS

Minimum hydraulic oil temperature before engine start up ..... minus 50 °C
Maximum hydraulic oil temperature is limited to ..... +100 °C
Minimum hydraulic oil temperature before takeoff ..... minus 10 °C

AUXILIARY PUMP LIMITS

Maximum time of auxiliary pump operation is limited to:

on ground ..... not exceeding 30 min
in flight..... not exceeding 150 min

HYDRAULIC FLUID
Grades of oil authorized for use in the hydraulic system are listed in Table 1-4.

Table 1-4. Hydraulic Oil

Basic	Alternative	Spesifications
(AMG-10)	-	GOST 6794-78
	AeroShell Fluid 41 Grade OM-15	MIL-H-5606F DEF STAN 91-48/1, Gade Supperclean
		AIR-3520/B
	Brayco Micronic 756D	MIL-H-5606F
	Royco Micronic 756B	MIL-H-5606F
	FH51	AIR 3520/B, MIL-H-5606F DEF STAN 91-48/1
	FH-15	-

CAUTION. THE PURITY OF HYDRAULIC FLUID BEFORE FILLING THE HYDRAULIC SYSTEM SHALL BE NOT BELOW CLASS 6 BY GOST 17216-71 OR CLASS 10/7 BY ISO 4406

(01.01.10.07)- Wheel Brake

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MAIN WHEEL BRAKES
Maximum pressure for taxiing ..... 13 kgf/sq.cm
Maximum pressure for parking ..... 30 kgf/sq.cm
Maximum time of brakes applications for parking is limited by pressure in main wheel brakes as follows:

- maximum continuous ..... 17 kgf/sq.cm
- maximum 30 min ..... 17–25 kgf/sq.cm
- maximum 5 min ..... 25–30 kgf/sq.cm

(01.01.10.09)- Electrical System

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BATTERY LIMITATIONS
Maximum battery temperature, as indicated by illumination
of LH BAT HOT and/or RH BAT HOT warning lights ..... +65 °C
Minimum DC voltage ..... 20 V

(01.01.10.11)- Avionic

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AMC3 ORO.MLR.100

CAUTION: HELICOPTER OPERATION WITHOUT USING HEADSET IS PROHIBITED.

LIMITATIONS ON AUTO FLIGHT CONTROL SYSTEM USAGE
LIMITATIONS ON THE ROUTE MODE USAGE
Minimum pressure altitude for ROUTE mode actuation ..... 1000 ft (300 m)
Minimum airspeed for ROUTE mode actuation ..... 39 KIAS (70 km/h)
Maximum airspeed for ROUTE mode actuation ..... (Vne – 11) KIAS, (Vne – 20) km/h

NOTE. Additional equipment may be required depending on operating regulations.

(01.01.10.12)- Miscellaneous

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AIR CONDITIONING SYSTEM LIMITATIONS

Air conditioning system may be switched on not earlier than 5 min after completion of the engine compressor wash.

AUXILIARY POWER UNIT LIMITATIONS

Maximum pressure altitude to start up APU ..... 9840 ft (3000 m)
Refer to figure 1-4 for ambient air temperature limits for APU in-flight operation

NOTE. For starting APU on ground at ambient temperatures of minus 25 °C or below it is recommended to preheat the APU with hot air or to crank it before starting.

Turbine Exhaust Gas Temperature (EGT) is limited:

- during APU starting up ..... to 850 °C;
- during air bleeding at the main engines starting up ..... to 720 °C for OAT +15 °C and below; to 750 °C for OAT exceeding +15 °C.

Maximum number of APU successive attempted starts,
cranking or false starts ..... 3, with minimum
3 min cooling intervals between them.
After three successive APU attempted starts, crankings or false starts at least a 15-min cool down is required.
Cool down period for APU re-start ..... minimum 15 min.
The period of APU continuous operation ..... not more than 13 min.
For the period of the APU continuous operation not more than 5 APU air bleeds for the main engine startings, crankings or false startings are allowed.

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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

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

INTRODUCTION

This section contains instructions and procedures for operating the helicopter from the planning stage, through actual flight conditions, to exiting the helicopter after landing.

Normal and standard conditions are assumed in these procedures without helicopter optional use, stipulated in Supplements.

FLIGHT PLANNING

Each flight should be planned adequately to ensure safe operations and to provide the pilot with the data to be used during flight. Check type of mission to be performed and destination. Determine the initial data for calculation, determine the most favorable flight level and speed, calculate estimated flight time and fuel consumption determine the required fuel quantity, determine the maximum Gross Weight for takeoff, landing, and enroute flight, calculate the position of CG for takeoff and landing, determine the permissible payload, determine the maximum ITT and minimum N1.

Select appropriate performance data and charts to be used from RFM Section 4 and Section 5 and Manufacturer’s Data Section 2 and Section 3.

(02.01.01)- Pre-flight;

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

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.

According to Supplement 1A.1 External Cargo Operation
FLIGHT PREPARATION PARTICULARS

Prior to flights with an underslung load the Rotor RPM regulator shall be adjusted.

NOTE. If the rotor speed regulator is correctly adjusted, the Rotor RPM NR is maintained in steady hover and flight conditions within the limits of (0,5 - **90** + 1)% except for the max and min power ratings.

Before the flight, evaluate the operating conditions for the external cargo transportation and, taking into account the task, do the following:

Maximum external cargo weight ..... define
Maximum helicopter flying weight with the external load ..... calculate
Required helicopter fueling ..... calculate

NOTE. During operations with external load the height-velocity limitations may be left out of account. If possible, to avoid entering this zone during hooking, release or after dropping the load at hover, it is reasonable to calculate the helicopter flying weight by the moment of hooking the load according to recommendations of Sections 3 and 4 with account to the cable length and obstacle height (hover height over load hooking or unhooking area)

EXTERIOR CHECK
Cable with the lower hook (or without it) – deployed at the pad, if possible to a complete length, at the helicopter left and connected to the upper hook.

External cargo suspension system components (cable or rope, hooks) – undamaged.

INTERIOR CHECK
Rear view mirrors ..... adjust
Ground specialist (operator, flight mechanic) is positioned by the lower hook ..... check
LOWER HOOK CHECK, MAIN MODE command ..... issue
LOAD RELEASE switch (Fig. 2.1) ..... MAIN (if the hook is electrically controlled)
Load release trigger on the cyclic stick ..... press and maintain pressed
LWR HK OPEN light ..... ON
Load release trigger ..... release
LWR HK OPEN light ..... ON
Ground specialist's report on normal operation of the lower hook ..... receive
LOAD RELEASE switch ..... STBY
STBY MODE command ..... issue
Lower hook check procedure ..... repeat
Ground specialist's report on normal operation of the lower hook ..... receive
UPR HK CHECK command ..... issue
Ground specialist is positioned by the upper lock ..... check
EMERG RLS button on the cyclic stick ..... press and maintain pressed
UPR HK OPEN light..... ON
EMERG RLS button ..... release
UPR HK OPEN light..... ON
Ground specialist's report on normal operation of the upper lock ..... receive
UPR HK FROM PEDAL command ..... issue
Emergency release pedal ..... press
UPR HK OPEN light..... ON
Pedal ..... release
UPR HK OPEN light..... OFF
Ground specialist's report on normal operation of the upper lock ..... receive

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

According to Supplement 1A.1 External Cargo Operation

HOOKING THE LOAD
The load can be hooked after the helicopter landing near the load or at hover.

LOAD HOOKING WITH THE HELICOPTER LANDING AT THE HOOKING PAD
The helicopter shall be landed so that the load is in the pilot's field of view at a distance enabling the ground personnel to hook it up.

After having hooked up the load, in response to the ground personnel's command, takeoff and hover over the load.
FLIGHT-HOVER switch ..... HOVER
Lift the load (see below)

LOAD HOOKING AT HOVER
On command from the ground or from the operator hover over the cargo, so that it is in the pilot's field of view, on the left.

To discharge static electricity, lower the helicopter until the suspension assembly or the cable (if any) contacts the ground.

By a further little descent make the cable slack to allow the ground personnel to work with the suspension assembly.

LINE POSN FLIGHT – HOVER selector switch ..... HOVER
Lift the load (see below).

LOAD LIFTING
Using the rear-view mirrors and at a signal from the operator hover over the cargo.

Preliminary cable tension up to (200 – 600) kgf according
to the load meter ..... create carry out
At a signal from the ground the correct shackle fastening ..... verify
On HSI indications the correct hover over the load ..... check monitor
By a smooth rotor collective pitch increase uplift the load over the ground at a height of
7 – 10 ft (2 – 3 m).
The load weight ..... monitor by the load meter indications

NOTE. When lifting bulky loads on a short sling, the load meter indications exceed the real load weight because of the main rotor downwash effect on the load.

Load to a height, exceeding the height of obstacles
at the acceleration distance by 17 ft (5 m) ..... lift.

NOTE. If the load starts hunting at hover, by a smooth cyclic stick deflection move the helicopter in the direction of the load deflection and when the HSI pointer approaches zero position eliminate the helicopter displacement and press the trim button.

(02.01.03)- Systems Check;
Revizyon No: 0 Revizyon Tarihi: 01.01.2019
AMC1 ORO.GEN.110(f)(h)
Rotorcraft Flight Manual **and Supplement 68**

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;

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AMC1 ORO.GEN.110(f)(h) / AMC1 SPO.GEN.119 / SPO.GEN.119 / SPO.OP.115

02.01.04.00 **Procedures for taxiing**

Pilot in command / Commander takes into account:

a. application of sterile flight deck crew compartment procedures;
b. use of standard radio-telephony (RTF) phraseology;
c. use of lights;
d. measures to enhance the situational awareness. The following list of typical items shall be adapted to be taken into account its operational environment:

    1. the pilot-in-command shall have the necessary aerodrome layout charts available;
    2. if applicable, the pilot taxiing the aircraft shall announce in advance his/her intentions to the pilot monitoring;
    3. if applicable, all taxi clearances shall be heard, and understood by the pilot- in-command;
    4. if applicable, all taxi clearances shall be cross-checked against the aerodrome chart and aerodrome surface markings, signs and lights;
    5. an aircraft taxiing on the manoeuvring area shall stop and hold at all lighted stop bars, and may proceed further when an explicit clearance to enter or cross the runway has been issued by the aerodrome control tower, and when the stop bar lights are switched off;
    6. if the pilot-in-command is unsure of his/her position, he/she shall stop the aircraft and contact air traffic control;
    7. any action, which may disturb the pilot-in-command from the taxi activity, shall be avoided or done with the parking brake set.

02.01.04.01 **Hover Taxi**

Collective pitch ..... Increase to hover
Directional control ..... on landmarks
Cyclic control ..... As required to maintain desired position
Collective ..... As required to maintain desired height
Trim button ..... Press to unload controls

HOVER CHECK
Engines ..... within limits

NOTE. When the engines are correctly adjusted Rotor RPM at hover and in flight is automatically maintained within the limits of (90+01.5) % except for the maximum and minimum power ratings

02.01.04.02 **Take-off**

Before commencing take-off, the pilot-in-command shall be satisfied that:

a. according to the information available, the weather at the aerodrome or operating site and the condition of the runway or FATO intended to be used would not prevent a safe take-off and departure; and
b. applicable aerodrome operating minima will be complied with.

CATEGORY B TAKEOFF

Test hover height before acceleration .... 2 m (6 ft)
Cyclic..... Apply as required to attain pitch of 10 to 15 degrees nose down and start acceleration with a simultaneous climb
Collective ..... Apply minimum necessary to obtain a rate of climb and airspeed 65 km/h (35 kt) IAS at 15 m (50 ft) height.

NOTE. During takeoff, pitch attitude must be adjusted commensurate with power application to prevent entering the AVOID area of the Height-Velocity diagram Continue climb and acceleration to attain the best rate of climb speed at 30 m (100 ft).

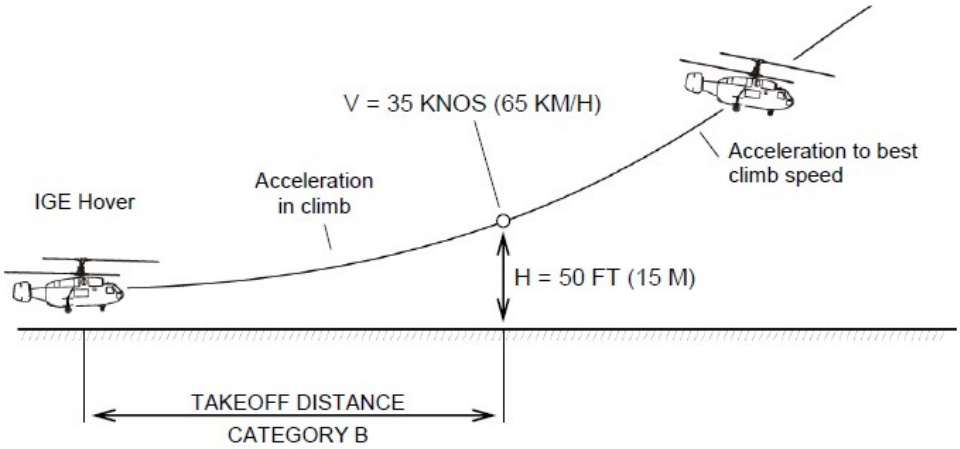
According to Supplement 68 Peculiarities in Operation of Helicopters Complying with EASA Certificate
TAKEOFF
The recommended hover height for takeoff is 6 feet (2 m).

TAKEOFF DISTANCE FROM HOVER TO 50 FEET (15 METERS) HEIGHT
The takeoff distance is determined from the chart (Fig.4-9) provides takeoff performance data utilizing a takeoff profile as shown in Fig. 4-9.

The chart provides the takeoff distance from hover at 6 feet (2 m) to a height of 50 feet (15 m) at various combinations of gross weight, pressure altitude, outside air temperature and in zero wind conditions.

Continued takeoff and climb capability is NOT assured (FAR 29, Category B) if an engine failure occurs during takeoff. Category B takeoff profile (Fig. 4-9) assures the capability to land safely (on a smooth level surface) from any point of the takeoff profile in case of one engine failure.

Fig. 4-8. Takeoff profile. Category B



02.01.04.03 **Departure**

a. The pilot-in-command shall use the departure procedures established by the aerodrome, if such procedures have been published for the runway or FATO to be used.
b. The pilot-in-command may deviate from a published departure route:

    1. provided obstacle clearance criteria can be observed, full account is taken of the operating conditions and any ATC clearance is adhered to; or
    2. when being radar-vectored by an ATC unit.

02.01.04.04 **Climb**

Climb at the best rate of climb speed (ref. RFM, Section 4 **and Supplement 68**).
Do not allow rotor RPM droop below 87 %.
Change over to level flight when the required altitude is reached by reducing the collective pitch.

(02.01.05)- Noise Abatement;

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

AMC1 ORO.GEN.110(f)(h) / SPO.OP.120 / GM1 SPO.OP.120

Rotorcraft Flight Manual and **Supplement 68**

NOISE LEVELS

The helicopter complies with ICAO Annex 16, Volume 1, Chapter 8 Environmental Protection requirements.

For the certified maximum takeoff and landing weight of 24,255 lb (11,000 kg) the noise levels are:

Stage of Flight	Noise levels obtained in certification tests (EPNdB)	Requirements (EPNdB)
Takeoff	93.5	100.4
Level flight at 0.9 VNE equal to 235 km/h IAS	99.4	99.4
Approach	96.8	101.4

The values have been obtained in the modes and flight paths regulated by ICAO Annex 16, Volume 1, Chapter 8.

There are no additional operating limitations in meeting the takeoff, approach or flyover noise requirements.

Noise Abatement Procedure

The pilot-in-command shall take into account published noise abatement procedures to minimise the effect of aircraft noise while ensuring that safety has priority over noise abatement.

Procedure / rule addresses only the vertical profile of the departure procedure. Lateral track has to comply with the standard instrument departure (SID).

(02.01.06)- In-flight and Descent;

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

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

LEVEL FLIGHT

The level flight is allowed, depending upon gross weight, within altitude and speed limits indicated in Section 1.

Speed and altitude – adjust, as required, by changing pitch angle and collective pitch accordingly.

IN FLIGHT OPERATIONS
AUTOMATIC ATTITUDE HOLD

Piloting with autopilot engaged:
Use the cyclic to establish the desired attitude and the collective to set the power, then depress and release the cyclic TRIM button. Repeat the above actions to make corrections or changes.
When autopilot actuators come to a stop (it is felt by cessation of stabilization and it is shown on the actuator indicator) to re-activate the stabilization mode depress and release the cyclic TRIM button.

Autopilot stabilization may be completely deactivated by depression of the AP OFF button on the cyclic. Separate channels may be switched off by setting to OFF the corresponding YAW, ROLL or PITCH switches on the Central Control Panel.

Complete AP deactivation may also be accomplished by setting the AP circuit breaker to OFF position.

AUTOMATIC ALTITUDE HOLD

NOTE: Refer to RFM, Section 1 for limitations in flight with Automatic Altitude Hold mode (ROUTE) switched ON.

In level flight establish and maintain the desired altitude, engage the Automatic Altitude Hold as follows:
PA switch ..... ON (PA)

ROUTE selector switch on collective pitch lever ..... ROUTE
PA light on Central Pedestal panel ..... on

Autopilot will automatically maintain the flight level pressure altitude.
Altitude in flight ..... observe
To change altitude with Automatic Altitude Hold mode activated

(A) Within 328 ft (100 m) of preset altitude:
Collective lever trigger ..... Press, hold
Altitude ..... adjust by deflecting the collective lever
Collective lever trigger ..... Release

(B) More than 328 ft (100 m) of preset altitude:
ROUTE switch on the collective ..... Off
PA switch ..... Off
PA light on the central panel ..... Off
Change collective pitch to set new ALTITUDE
PA switch ..... PA
ROUTE switch on the collective ..... ROUTE
PA light on the central panel ..... on

DESCENT

Before descent disengage altitude stabilization mode as follow:
ROUTE switch on the collective ..... Off
PA switch ..... Off
PA light on Central Pedestal panel ..... Off
Pre-selected speed ..... obtain by setting the corresponding helicopter pitch angle
Required vertical descent speed (within the limits) ..... obtain by decreasing the collective pitch

NOTE. Slightly change the collective pitch when variations of rotor rpm and engine instrument readings occur that may be caused by bleed valves cycling in engine derated power conditions

At flight speed of 27 knots (50 km/h) and less it is prohibited to exceed rate of descent of 500 ft/min (3 m/s).

During power-on descent at rate of descent close to autorotation within the flight speed range from 38 knots (70 km/h) to 27 knots (50 km/h) at MR speed more than 91 %, the helicopter can tend to turn to the right. To eliminate such a tendency it is recommended simultaneously with the displacement of the left pedal to increase the collective pitch and to decrease MR speed down to 91% and/or to roll left (within limitations) until the helicopter stops turning.

Minimum indicated gliding speed in autorotation mode is limited by 54 knots (100 km/h). This speed assures the directional control effectiveness required in autorotation.

Maximum gliding distance in autorotation is assured at flight speed 92 knots (170 km/h) irrespective of the gross weight.

According to Supplement 1A.1 External Cargo Operation
IN FLIGHT OPERATION
FLIGHT-HOVER selector switch ..... FLIGHT
Helicopter acceleration at engine takeoff rating or close to it ..... carry out vigorously
Cable position without allowing the HSI pointer
to go beyond the second division ..... monitor
At stabilized speed TRIM button ..... press and release

NOTES: 1. The load hunting in flight is identified by the HSI pointer deviation, load meter indications and appearance of variable loads on controls. To eliminate the load hunting it is necessary to transfer the helicopter to climb or descent. The helicopter transition to descent (if the height allows) at a vertical speed of 2 – 3 m/s and 100 –150 km/h IAS is the most effective method to stop the load hunting. The load hunting in flight can be also eliminated by making a coordinated turn in the direction contrary to the load deflection.

2. When lifting and lowering the loads do not allow abrupt shifts of the collective that lead to violation of the main rotor

speed limitations indicated in Section 1, Limitations. During repeated heavy lift (RHL) operations the co-pilot shall continuously monitor the power plant parameters not allowing them to go beyond the operational limitations and warn the crew commander (logging pilot) of any need to change the flying conditions.

The time of in-flight operation at ratings exceeding the maximum continuous (each engine power exceeding 1700 h.p. including take-off power) shall be recorded. The ratings shall be controlled by the side indices of ??-117 power rating indicator shifting to the area above the upper edge of the middle green mark of the indicator central scale.

Do not use any rating exceeding the maximum continuous at climbs.

Descent before starting deceleration at a speed not exceeding the limits of the RFM, Section 1
and with account to the external load behavior on the hook.
Helicopter deceleration without the load hunting ..... perform smoothly

CAUTION. AT A SPEED BELOW 50 KM/H IAS (27 KIAS) AND AT VERTICAL DESCENT MAINTAIN THE VERTICAL RATE OF NO MORE THAN 590 FT/MIN (3 M/S). AT AN UNINTENDED VERTICAL RATE EXCEEDING 590 FT/MIN (3 M/S) PROCEED AS FOLLOWS:

- THE VERTICAL RATE IS ABOVE 590 FT/MIN (3 M/S) BUT BELOW 4 M/S (800 FT/MIN) – SMOOTHLY INCREASE THE MAIN ROTOR COLLECTIVE PITCH AND SET THE VERTICAL RATE AT 590 FT/MIN (3 M/S), MAXIMUM.
- IF IT IS IMPOSSIBLE TO DECREASE THE VERTICAL RATE FROM 800 FT/MIN (4 M/S) TO 590 FT/MIN (3 M/S) BY INCREASING A COLLECTIVE PITCH OR IF THE VERTICAL RATE EXCEEDS 800 FT/MIN (4 M/S) – TRANSFER THE HELICOPTER TO ACCELERATION. AT A HAZARD OF THE LOAD CONTACTING THE GROUND OR AN OBSTACLE – RELEASE THE LOAD FROM THE HOOK
- AT ACHIEVING SPEED OF 27 KTS (50 KM/H) OR MORE – SET UP THE DESIRED FLYING MODE.

FLIGHT-HOVER selector switch ..... HOVER
Vertical cable position according to the HSI indications ..... maintain
Helicopter into the wind ..... turn
Hover height over a pad before the load stowage, which must be
at least equal to the cable length plus obstacle height increased
by 17 – 33 ft (5 – 10 m)..... monitor

(02.01.07)- Approach, Landing preparation and Briefing;

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

AMC1 ORO.GEN.110(f)(h) / SPO.OP.115 / SPO.OP.210 / AMC1 SPO.OP.210 / SPO.OP.211

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).
• Instrument departure procedure (if used) (SID and/or direction).
• Calls required during take-off (if different from SOP).
• Any pre-setting of AH modes and engagement point.
• 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).
• Any pre-setting of AH modes and engagement points.
• 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 #.1, stable approach? continue for running landing.

02.01.07.04 **VFR Approach**

By 50 ft (15 m) height obtain speed of 30 kt (55 km/h) and vertical rate of descent not above 300 ft/min (1,5 m/s).
Starting from 50 ft (15 m), smoothly decrease speed and rate of descent (pitch angle 13 degrees nose up, maximum limit value) to hover at 6 ft (2 m) height.

Hover height prior to landing ..... 6 ft (2 m)
Decent velocity after hover ..... not exceeding 100 ft/min (0.5 m/s)
Collective after landing ..... full down

02.01.07.05 **Approach and Landing Conditions**

Before commencing an approach to land, the pilot-in-command shall be satisfied that, according to the information available, the weather at the aerodrome or the operating site and the condition of the:

- final approach and take-off area (FATO);
- runway;

intended to be used would not prevent a safe approach, landing or missed approach.

The in-flight determination of the landing distance/FATO suitability shall be based on the latest available meteorological report, or the locally observed conditions where appropriate.

a. The pilot-in-command shall use the approach procedures established by the aerodrome, if such procedures have been published for the runway or FATO to be used.
b. The pilot-in-command may deviate from a published arrival route or approach procedure:
    1. provided obstacle clearance criteria can be observed, full account is taken of the operating conditions and any ATC clearance is adhered to; or
    2. when being radar-vectored by an ATC unit.
c. In the case of operations with complex motor-powered aircraft, the final approach segment shall be flown visually or in accordance with the published approach procedures.

(02.01.08)- Normal Landing;

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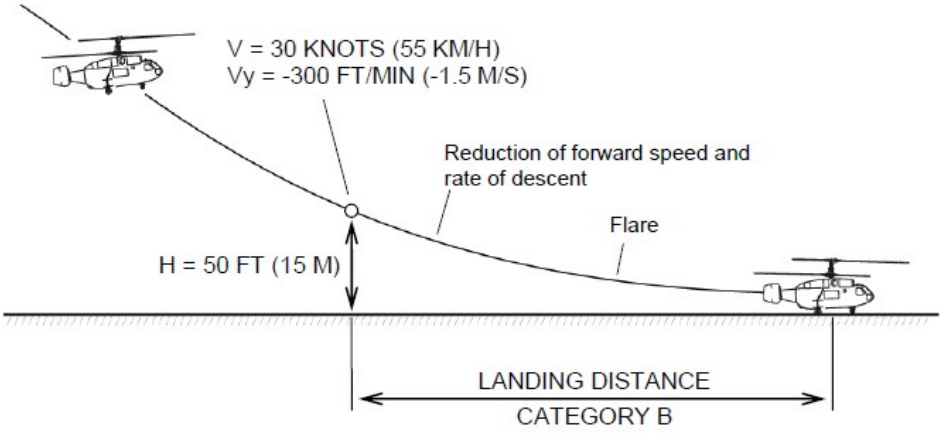
According to Supplement 68 Peculiarities in Operation of Helicopters Complying with EASA Certificate

LANDING
Category B landing profile (Fig. 4-14) assures the capability to land safely (on a smooth level surface) should an engine failure occurs any time prior to or during an approach.
Under certification basis (FAR 29, Category B), go-around capability is NOT assured during OEI operation.

LANDING DISTANCE FROM 50 FEET (15 METERS) HEIGHT TO A COMPLETE STOP ON GROUND
The landing distance required for AEO landing on a smooth, hard and dry level surface until the helicopter comes to a complete stop is 500 ft (150 m).
The landing distance required for OEI landing on a smooth, hard and dry level surface until the helicopter comes to a

complete stop is 650 ft (200 m).

Fig. 4-15. Landing profile. Category B.



According to Supplement 1A.1 External Cargo Operation
LOAD RELEASE

Vertical descent up to 10 – 7 ft (3 – 2 m) load height over the pad ..... execute
Load ..... calm
Load stowage place at 33 – 50 ft (10 – 15 m) on the left ..... observe
Smooth load transfer to the load stowage pad, on the operator's
and ground personnel's commands ..... execute
At a vertical rate of no more than 91 ft/min (0.5 m/s)
to place the load on the pad ..... perform
Cable ..... slacken
Load release trigger on the cyclic stick
(if the lower hook is unlocked electrically) ..... press
Taking the helicopter to the right the load release process ..... monitor
By the LWR HK OPEN light illumination ..... control the load release

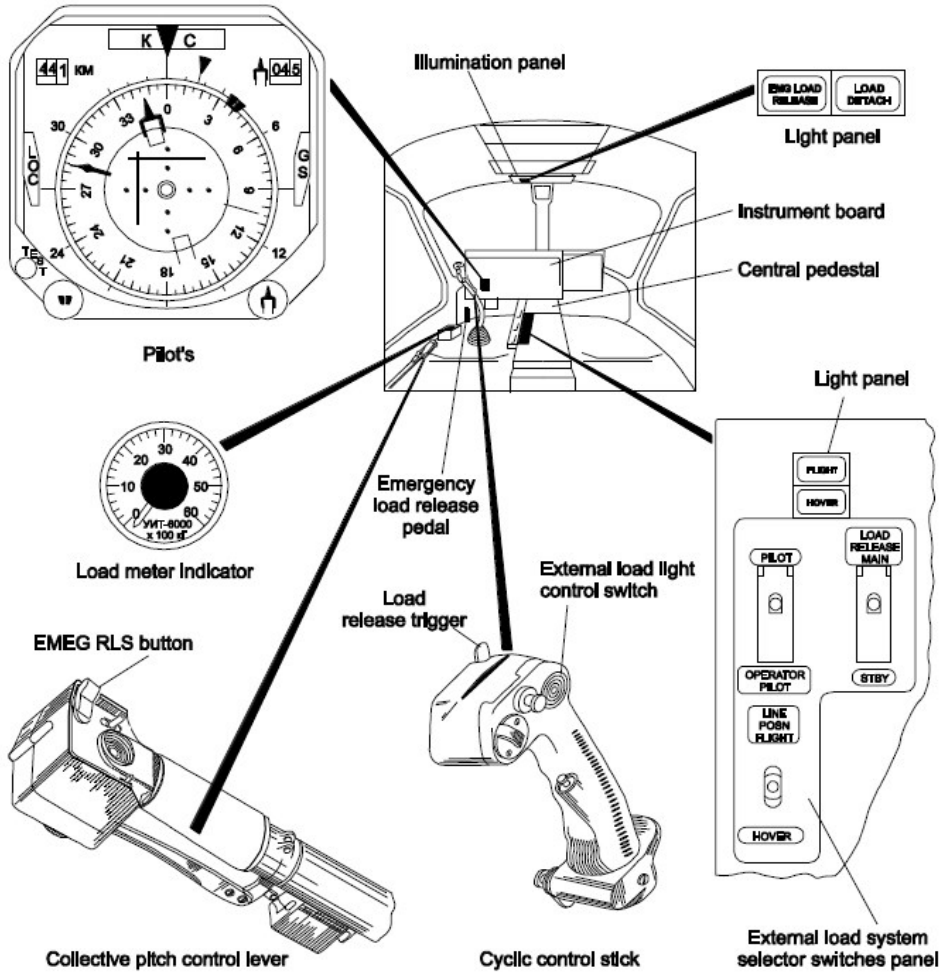


Fig. 2-1. External Load System Controls, Monitoring and Warning Elements

(02.01.09)- Shutdown, Post-flight Check.

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

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

Operator Procedure

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.

AFTER EXITING HELICOPTER

If conditions allow, perform the following:

- Check general condition of helicopter and its systems;
- Make entries concerning malfunctions, failures, and post-flight inspection in Helicopter Logbook;
- Install main rotor blade tiedown socks on blade and secure to mooring points;
- Close and lock all doors;

- Cover powerplant with slip covers.

NOTE. Refer to RFM, Section 2 of Manufacturer's Data for additional information.

(02.02)- Crew Communication

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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

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

Rotorcraft Flight Manual

INTRODUCTION

The following procedures contains the indications of failures or malfunctions which affect safety of the crew, the helicopter, ground personal or property; the use of emergency features of primary and backup systems; and appropriate warnings, cautions, and explanatory notes.

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

The helicopter should not be operated following any emergency landing or shutdown until the cause of the malfunction has been determined and corrective maintenance action taken. RFM Tables 3-1 and 3-2 list fault conditions and corrective actions for warning and caution lights, respectively.

EMERGENCY EGRESS

GENERAL

In case of emergency landing the main task of the crew is to take the necessary measures to ensure safety of the occupants and crewmembers during landing, and their timely evacuation.
Before flight the captain should instruct occupants on-board on sequence of emergency egress after landing.

BEFORE EMERGENCY LANDING

The captain should command the crewmembers and occupants to prepare for landing.
The crewmembers should make sure that their seat belts are fastened.
People on-board must make sure that safety belts and harnesses are fastened securely and properly. Take the right position to avoid traumas and pose properly in order to prevent injury.

AFTER LANDING

The captain shuts down engines, closes shut-off valves, stops the rotors and de-energizes the helicopter by shifting a common bar PWR to the EMERG DISCOUNT position.
The captain should command the crewmembers to act in compliance with the emergency schedule before the rotors stop in case of landing on an even pad, with no considerable banking and pitching of the helicopter.
If otherwise, the captain should command the crewmembers to act in compliance with the emergency schedule after the rotors stop.

EMERGENCY SCHEDULE

Proceeding from the emergency situation on the land the occupants evacuation can be performed through the cargo compartment door, and/or crew compartment doors, and/or the emergency escape hatch.
The captain should supervise evacuation of occupants and take the survival radio set.
The co-pilot should open the RH crew compartment door, evacuate the people through its doorway, and should lead them aside to a safe distance.

(03.01.01)- Crew Incapacitation;

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AMC1 ORO.GEN.110(f)(h) / Operator 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;

FIRE
ENGINE FIRE ON GROUND
Indications:
MWL ..... on
CHECK FIRE light ..... on
Audio signal (headset) ..... on
LH (or RH) ENG FIRE light ..... on
BOTTLES-1 light..... off (at automatic operation of the fire extinguishing system)

Visible smoke of fire
Fumes
Procedure:
Affected engine shut-off lever ..... Closed
ENG SHUTOFF VLVS LH (OR RH) switch ..... Off (cap open)
If BOTTLES-1 light remains ON:
LH (OR RH) ENG FIRE button..... Press, Cap close
BOTTLES-1 light..... off
If CHECK FIRE light, MWL and audio signal remain ON:
BOTTLES 1-2 switch ..... 2, Cap closed
LH (OR RH) ENG FIRE button (Cap open) ..... Press
BOTTLES-2 light..... off
CHECK FIRE light, MWL and audio signal ..... off, Check
Good Engine ..... Shutoff
Deenergized helicopter.
Exit helicopter.
Use Helicopter fire extinguishers (if required).

ENGINE FIRE IN FLIGHT
Indications:
MWL ..... on
Audio signal (headset)..... on
CHECK FIRE light ..... on
LH (OR RH) ENG FIRE light ..... on
BOTTLES-1 light ..... off (at automatic operation of the fire extinguishing system)

Smell of burning and smoke of fire are possible.
Procedure:
Affected engine shut-off lever ..... Closed
ENG SHUTOFF VLVS LH (OR RH) switch ..... Off (cap open)
If BOTTLES-1 light remains ON:
LH (OR RH) ENG FIRE button ..... Press, Cap close
BOTTLES-1 light ..... off
If CHECK FIRE light, MWL and audio signal remain ON:
BOTTLES 1-2 switch (Cap open) ..... 2, Cap closed
LH (OR RH) ENG FIRE button (Cap open) ..... Press
BOTTLES-2 light ..... off
CHECK FIRE light, MWL and audio signal ..... off, Check
AIR SUPPLY switch ..... Off
FIREX WARN switch ..... Off, then On
LH (OR RH) ENG FIRE light ..... Off, Check
Land as soon as possible.

After landing:

Good Engine ..... Shutoff
Deenergized helicopter.
Exit helicopter.
Use Helicopter fire extinguishers (if required).

APU FIRE
Indication:
MWL ..... on
Audio signal (headset)..... on
CHECK FIRE light ..... on
APU FIRE light ..... on
BOTTLES-1 light ..... off (at automatic operation of the fire extinguishing system)

Procedure:
APU VALVE OPEN – CLOSED ..... CLOSED
If BOTTLES-1 light is still ON:
APU FIRE button (Cap open), ... Press, Cap closed
BOTTLES-1 light ..... off
If CHECK FIRE light, MWL and audio signal remain ON:
BOTTLES 1-2 switch ..... 2, Cap closed
APU FIRE button ..... Press
BOTTLES-2 light ..... off
APU FIRE light ..... off, Check
CHECK FIRE light, MWL and audio signal ..... off, Check
If APU fire occurred in flight:
FIREX WARN switch ..... Off, then On
Land as soon as possible.
After landing:
Main Engines ..... Shutoff
Deenergized Helicopter.
Exit helicopter. Use helicopter fire extinguishers (if required).

SMOKE OR FUMES IN CABIN
Indications:
Smoke, smell of burning, toxic fumes, etc., in cabin.
Plumes behind the helicopter.

Procedure:
Smoke protection mask ..... On
Open cockpit doors to remove smoke.
When flying according to VFR:
Master switch of emergency power
supply switching off ..... Off
When smoke generation source can be determined apply onboard fire extinguishers, if required.
Land as soon as possible.

After landing:
Main Engines ..... Shut down
Deenergize helicopter.
Exit helicopter.
Use extinguishers, if required.

(03.01.03)- Flight in Thunderstorms - Lightning;

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

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

Rotocraft Flight Manual

LIGHTNING STRIKES IN THE HELICOPTER STRUCTURE IN FLIGHT

Procedure:
Reduce airspeed to 65 KIAS (120 km/h)

Avoid extreme maneuvers.
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;

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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: 0 Revizyon Tarihi: 01.01.2019

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

Rotorcraft Flight Manual

SINGLE ENGINE FAILURE – HOVER IGE, HEIGHT UP TO 20 FT (6 M)
Indications:
Helicopter out of trim and height loss
MWL ..... on
Audio signal (headset)..... on
LH (or RH) ENG FAIL light ..... on
Affected engine Gas Generator RPM ..... decreases
Affected engine ITT ..... decreases
Running engine Gas Generator RPM ..... increases
Rotor RPM ..... decreases
LOW RPM warning light ..... on, when Rotor RPM = 85 % and below
Audio signal ..... changed frequency
Sound – Engine coming to stop.
Procedure:
Maintain heading and landing attitude.
Collective Lever ..... Increase as required to control the rate of descent
Accomplish landing on main wheels.
After landing:
Collective Lever ..... Full down
Wheel brake ..... Apply
Main Engines ..... Shut down
Deenergize Helicopter.

SINGLE ENGINE FAILURE DURING TAKEOFF (HEIGHT BELOW 50 FT / 15 METERS)
Indications:
Helicopter out of trim and altitude loss.
MWL ..... on

Audio signal (headset) ..... on
(LH or RH) ENG FAIL light ..... on
Affected engine Gas Generator RPM ..... decreases
Affected engine ITT ..... decreases
Running engine Gas Generator RPM ..... increases
Rotor RPM ..... decreases
LOW RPM warning light ..... on, when Rotor RPM = 85 % and below
Audio signal ..... changed frequency
Sound – Engine coming to stop.
Procedure:
Proceed as follows:
Collective Lever ..... Maintain Rotor RPM 85 %, minimum
Cyclic Stick ..... Pull to reduce speed (pitch angle 13°, maximum)
Descend at constant visual attitude control:
By 7–3 ft (2–1 m) altitude ..... attain the helicopter landing attitude (pitch angle 8–10°)
From 7–3 ft (2–1 m) altitude ..... increase the collective as required while helicopter approaches the ground.
Cyclic Stick – prevent an abrupt nose downward movement while touchdown.
After landing:
Collective Lever ..... Full down
Cyclic Stick ..... Neutral
Wheel brake ..... Apply
Engine shut-off levers ..... Close
Deenergize Helicopter.

SINGLE ENGINE FAILURE DURING TAKEOFF (HEIGHT ABOVE 50 FT / 15 METERS)
Indications:
Helicopter out of trim and altitude loss.
MWL ..... on
Audio signal (headset) ..... on
LH (or RH) ENG FAIL light ..... on
Affected engine Gas Generator RPM ..... decreases
Affected engine ITT ..... decreases
Running engine Gas Generator RPM ..... increases
Rotor RPM ..... decreases
LOW RPM warning light ..... on, when Rotor RPM = 85 % and below
Audio signal ..... changed frequency
Sound – Engine coming to stop.
Procedure:
For Cat. B takeoff – reject takeoff, accomplish single-engine landing as soon as possible:
Collective Lever ..... maintain Rotor RPM 85 %, minimum
Airspeed ..... Reduce up to 40 kts (70 km/h)
Change over to descent at vertical speed 300 ft/min (1.7 m/s), maximum.
From altitude 100 ft (30 m) AGL and below ..... decelerate at descent by a gradual pitch angle increase to 13° and corresponding collective pitch increase as the helicopter approaches the ground.

NOTE. The helicopter deceleration rate must ensure a decrease of the forward and vertical speeds to minimum by 3–7 ft (1–2 m) height.

At height of 3 to 7 ft (1–2 m) ..... reduce flare attitude (pitch 8-10° nose up, maximum)
At height of 3 to 7 ft (1–2 m) ..... increase the collective as required while the helicopter approaches the ground
Cyclic Stick – prevent an abrupt nose downward movement while touchdown.
After landing:
Collective Lever ..... Full down
Cyclic Stick ..... Neutral
Wheel Brakes..... Apply
Good Engine ..... Shutoff
Engine Shut-Off Valves ..... Close
Deenergize Helicopter.

SINGLE ENGINE FAILURE IN FLIGHT
CAUTION. RELIANCE SHOULD NOT BE PLACED ON ENGINE RESTART CAPABILITY IN FLIGHT.

Indications:
MWL ..... on
Audio signal (headset) ..... on
LH (or RH) ENG FAIL light ..... on
Affected engine Gas Generator RPM ..... decreases
Affected engine ITT ..... decreases
Running engine Gas Generator RPM ..... increases
Rotor RPM ..... decreases
LOW RPM warning light ..... on, when Rotor RPM = 85 % and below
Audio signal ..... changed frequency
Sound – Engine coming to stop.
Procedure:
Collective Lever ..... Maintain Rotor RPM 87 %, (if engine power is sufficient)

WARNING. TO MAINTAIN ROTOR RPM WITHIN THE RANGE OF 87 % TO 92 %, PUSH THE THROTTLE LEVER OF THE OPERATING ENGINE TO THE FORWARD STOP

Airspeed ..... maintain 60–65 KIAS (100–120 km/h IAS)
Determine the affected engine.
Complete shutdown of affected engine as follows:

WARNING. BE EXTREMELY CAREFUL NOT TO SHUT DOWN THE RUNNING ENGINE

SHUT-OFF LEVER affected engine ..... Close
FUEL SHUT-OFF VALVE affected engine ..... Close
Altitude ..... Descent to 1640 ft (500 m), if practical
MWL ..... Press to reset
Land as soon as practical.

NOTE. The combination of altitude and speed in OEI flight depends on helicopter gross weight and power of running engine. The greatest excess power is provided at airspeeds 65 KIAS (110–120 km/h IAS), and the best range consumption (kg per kilometer) is provided at 97 KIAS (180 km/h IAS).

LANDING OEI
Procedure:
Airspeed ..... Reduce to 40 KIAS (70– 75 km/h IAS).
At 100 ft (30 meters) AGL ..... initiate flare to reduce forward speed and rate of descent.
By Cyclic Stick ..... establish nose-up pitch 12–13 degrees
Collective Lever ..... smoothly increase as required when approaching the landing site.
At 3–7 ft (1–2 meters) height ..... establish landing attitude (pitch angle 8-10 degrees)
Collective Lever ..... increase as required while the helicopter approaching the ground.
Cyclic Stick ..... prevent abrupt nose downward movement while touchdown
After landing
Collective Lever ..... Full down
Wheel Brakes ..... Apply

DUAL ENGINE FAILURE
Indications:
MWL ..... on
Audio signal (headset)..... on
LH ENG FAIL light ..... on
RH ENG FAIL light ..... on
LOW RPM light ..... on
Sound – Engines coming to stop
Gas Generator RPM N1 (both engines) ..... below 60 % and decreasing
ITT (both engines) ..... decreasing
LH ENG OIL LOW light ..... on
RH ENG OIL LOW light..... on
LH GEN OFF light ..... on

RH GEN OFF light ..... on
36 V INV ON light ..... on
115 V INV ON light ..... on
LH RECT OFF and RH RECT OFF light ..... on
MAIN TRNS OFF light ..... on
BAT BUS light ..... on
Procedure:
Collective Lever ..... Full down immediately

WARNING. IF CORRECTIVE ACTION IS NOT INITIATED IMMEDIATELY, ROTOR RPM COULD DECAY EXCESSIVELY

Descent Airspeed ..... 70 KIAS (130 km/h IAS)
Turn to the direction of the nearest landing site.
Accomplish autorotation landing.

If time permits, before landing perform double engines shut down procedure, close shut-off valves.

(03.01.06)- System Failures;

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AMC1 ORO.GEN.110(f)(h) / RFM
Rotorcraft Flight Manual

CHIPS IN MAIN GEARBOX OIL
Indications:
MWL ..... on
Audio signal (headset)..... on
GRBX CHIP light ..... on
Oil pressure ..... reduces
Oil temperature ..... increases

Procedure:
Collective Lever ..... Reduce power
MWL ..... Press to reset

Land as soon as possible.

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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019
AMC1 ORO.GEN.110(f)(h)

DEFINITIONS

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

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 practical – The landing site and duration of flight are at the discretion of the pilot. Landing at the nearest airfield is recommended.

The following terms are used to describe the operating condition of a system, subsystem, assembly, or component:

Affected – Fails to operate in the intended or usual manner.
Normal – Operates in intended or usual manner.

(03.01.10)- Windshear;

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AMC1 ORO.GEN.110(f)(h) / Operator Procedure

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;

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

Rotorcraft Flight Manual

Proceed:
Approach ..... Upwind (if possible)
At 200 ft (60 meters) AGL ..... Establish airspeed 65 KIAS (120 km/h IAS)
At 150–100 ft AGL (50–30 m) flare attitude ..... Establish pitch angle (approx. to 12..13°) to reduce forward speed to 35 kt (65 km/h)

At 15-10 ft (3-5 m) flare attitude ..... establish landing attitude (pitch angle 8-10°degrees)
Collective Lever ..... Raise to reduce rate of descent and cushion landing
Cyclic Stick ..... Prevent abrupt nose downward movement while touchdown

After landing:
Collective Lever ..... Smoothly full down

(03.01.12)- Birdstrike

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

AMC1 ORO.GEN.110(f)(h) / Operator Procedure / RFM

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.

(03.01.13)- Cargo Hook Emergencies

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

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

According to Supplement 1A.1 External Cargo Operation

EMERGENCY LOAD RELEASE

External load must be released in the following cases:

- at hover and vertical descent for load stowage if the maximum engine power is used and it is impossible to set the necessary vertical descent speed (the main rotor RPM drops below 85 %)
- when the crew loses the visual contact with the ground in the snow (dust) storm conditions
- at a hazard of a load contact with ground or obstacle at the moment of acceleration or deceleration
- if it is impossible to eliminate the load hunting which affects the flight safety
- at a forced landing when it is impossible to land with cargo
- at both engine failures
- at one engine failure if horizontal flight OEI with external load is impossible
- in other cases endangering the flight safety upon the pilot decision

The emergency load release from the hook is made by pressing the EMERG RLS button on the collective pitch lever or by pushing the mechanical load release pedal.

NORMAL AND EMERGENCY LOAD RELEASE SYSTEM FAILURES

NORMAL LOAD RELEASE SYSTEM FAILURE (if the lower hook is fitted)

Indications:

At pressing the load release trigger on the cyclic stick ..... hook does not get unlocked
LWR HK OPEN light ..... OFF
LOAD RELEASE selector switch ..... MAIN

Procedure:

LOAD RELEASE selector switch ..... STBY
Load release trigger on the cyclic stick ..... press
Load release by the LWR HK OPEN light ..... control

EMERGENCY LOAD RELEASE ELECTRICAL SYSTEM FAILURE

Indications:

At pressing EMERG RLS button ..... Hook does not get unlocked
UPR HK OPEN light..... OFF

Procedure:

Press the mechanic load release pedal (it is located under the left control penal)
Load release by the UPR HK OPEN light ..... monitor

ENGINE FAILURE WHEN CARRYING EXTERNAL CARGO LOAD

Load from the external sling – release in emergency mode.

NOTE. If the engine failure has occurred at a forward speed assuring the flight without descent, release the load in a safe place before the landing approach on command from the flight operations director.

At the engine failure during the load hooking (or release) at hover or in climb (descent) phase without forward speed – act according to the preliminary evaluation of the operating conditions over the pad.

While evaluating it is recommended to account for the helicopter safe flying weight assuring the landing or OEI flight after releasing the load with the minimum required fuel reserve.

Taking into consideration all the above mentioned the following procedure is recommended after the load release:

At the engine failure in a 33 – 100 ft (10 – 30 m) height range over the landing pad under the

helicopter proceed as follows:

Main rotor collective pitch in order to maintain
the rotor RPM no less than 88 %, ... reduce by (2 – 5)°
Descending of the helicopter over the zone
free of people and cargo ..... perform
Rotor collective pitch at the 17 – 10 ft (5 – 3 m) ..... increase vigorously
to maximum
Collective pitch lever after the landing ..... full down
to the stop
Brake trigger on the cyclic stick ..... press
Engines ..... shut down
Parking brake lever up to the required system pressure ..... lift up
Helicopter ..... deenergize

At the engine failure in a 33 – 400 ft (10 – 120 m) height range over the obstacle to transfer to OEI flight proceed as follows:

Helicopter in the acceleration with a pitch angle up to minus 15° ..... transfer
Rotor RPM = 86 % by a (2 – 3)° rotor collective pitch reducing ..... maintain

In this case the engine must attain the 30-minute (or 2.5-minute) OEI rating

2.5 MIN PWR LIMIT LIGHT ..... on (possible)
Helicopter speed and height during the acceleration ..... Monitor
Helicopter acceleration after achieving a 27 – 32 kts (50 – 60 km/h)
speed ..... Continue in
horizontal flight or with
a smooth climb
Helicopter after achieving a 51 kts (95 km/h) speed ..... transfer in climb
Best flight speed ..... set
Further actions in flight – proceed as in the case of one engine failure.

LIMIT SIGNAL SYSTEM FAILURE

Indications:

Airspeed warning indicator flag ..... in sight

Procedure:

Refer to Table 1-1, RFM Section 1 for VNE limits.
Continue the flight.

TABLE OF CONTENTS

04-PERFORMANCE

CAT.POL.H.100

(04.00)- Performance - GENERAL

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

CAT.POL.H.100 / CAT.POL.H.105 / SPO.POL.120

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

The pilot-in-command shall only operate the aircraft if the **performance** is adequate to comply with;

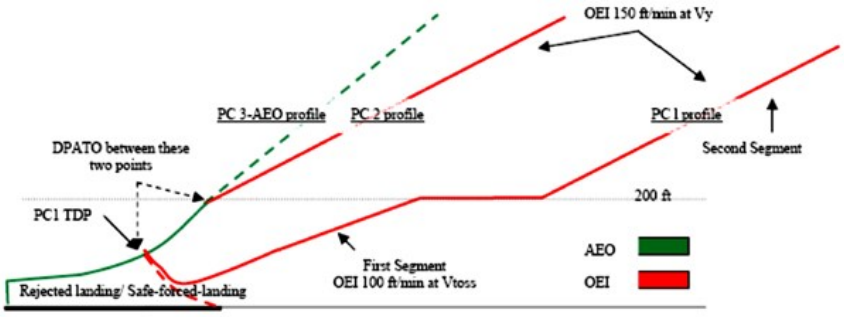
- the applicable rules of the air; and
- any other restrictions applicable to the flight, the airspace or the aerodromes or operating sites used;

taking into account the charting accuracy of any charts and maps used.

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)



According to Supplement 68 Peculiarities in Operation of Helicopters Complying with EASA Certificate

INTRODUCTION

The performance data presented herein are derived from the engine manufacturer's specification power and flight test data. These data are spread by means of calculation to all approved operation conditions. These data are applicable to the basic helicopter without optional equipment which would appreciably affect available power, helicopter thrust and drag. Takeoff and landing data presented for the level, smooth, dry surface with zero wind. Unless otherwise specified, the performance data are presented for throttle levers in AUTO position.

MAIN DEFINITIONS

CATEGORY B TAKEOFF – takeoff operation of the helicopter during which at least one of the conditions of Category A takeoff is not met, first of all – continued takeoff.
Takeoff distance – the horizontal distance along the takeoff path from the start of the takeoff to the height of 50 ft (15 m).
Rejected takeoff distance – the horizontal distance the helicopter covers from the start of the takeoff to the complete stop point after takeoff rejection in case of one engine failure.
CATEGORY B LANDING – landing operation of the helicopter during which at least one of the conditions of Category A landing is not met, first of all – rejected landing.
Landing distance – the horizontal distance from the height of 50 ft (15 m) to the landing point (landing without landing run) or to the point of complete stop on the landing field (landing with landing run).
True airspeed VTAS means the airspeed of a helicopter relative to still air in no wind conditions.
Indicated airspeed VIAS means the speed of a helicopter as shown on its Pitot static airspeed indicator calibrated to reflect standard atmosphere adiabatic compressible air flow at sea level uncorrected for airspeed system errors.
Calibrated airspeed VCAS means the indicated airspeed of a helicopter, corrected for position and instrument error.
Minimum airspeed VMIN means the lowest allowable helicopter speed for given helicopter weight and operation conditions.
Never exceed airspeed VNE means the highest allowable helicopter airspeed for given helicopter weight and operation conditions.
Maximum takeoff (landing) weight means the maximum allowable takeoff (landing) helicopter weight under actual conditions.

(04.01)- Performance Class 1 Helicopter

CAT.POL.H.200

04.01.01 Performance data

The Commander calculates the performance data for the performance class according to the RFM for the helicopter concerned. The basis of the calculation are the pressure altitude and temperature of the take-off location (and/or landing location where this value would be limiting). The performance data are to be found in the following parts:

- RFM - Section 4

04.01.02 Performance for special take-off and landing procedures according to Category A

Helicopter is certified in accordance with Category A and flown accordingly. The Commander is responsible for ensuring that the correct performance data are applied in order that Category A procedure profiles can be flown in the correct Performance Class, particularly with reference to the take-off and landing phases of flight in the event of a critical engine failure.

04.01.03 Take-off
CAT.POL.H.205

(a) The take-off mass shall not exceed the maximum take-off mass specified in the RFM for the procedure to be used.
(b) The take-off mass shall be such that:
(1) it is possible to reject the take-off and land on the FATO in case of the critical engine failure being recognised at or before the take-off decision point (TDP);
(2) the rejected take-off distance required (RTODRH) does not exceed the rejected take-off distance available (RTODAH); and
(3) the TODRH does not exceed the take-off distance available (TODAH).
(4) Notwithstanding (b)(3), the TODRH may exceed the TODAH if the helicopter, with the critical engine failure recognised at TDP can, when continuing the take-off, clear all obstacles to the end of the TODRH by a vertical margin of not less than 10,7 m (35 ft).
(c) When showing compliance with (a) and (b), account shall be taken of the appropriate parameters of CAT.POL.H.105(c) at the aerodrome or operating site of departure.
(d) That part of the take-off up to and including TDP shall be conducted in sight of the surface such that a rejected take-off can be carried out.
(e) For take-off using a backup or lateral transition procedure, with the critical engine failure recognition at or before the TDP, all obstacles in the back-up or lateral transition area shall be cleared by an adequate margin.

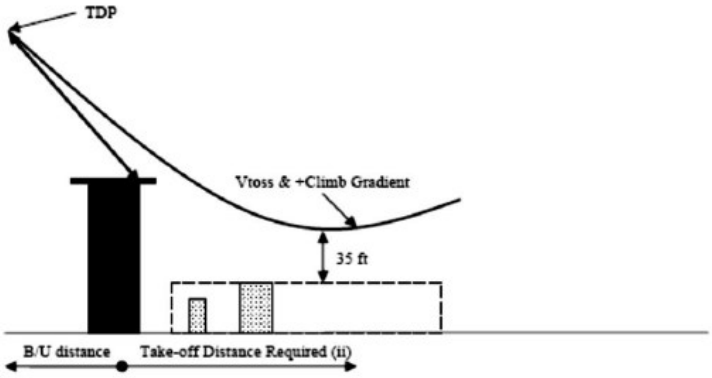
04.01.03.01 Definition of TODRH
GM1 CAT.POL.H.205(b)(4) (b)

'**Take-off distance required (TODRH)**' in the case of helicopters means the horizontal distance required from the start of the take-off to the point at which take-off safety speed (VTOSS), a selected height and a positive climb gradient are achieved, following failure of the critical engine being recognised at the TDP, the remaining engines operating within approved operating limits.

04.01.04 Elevated helipad procedures
GM1 CAT.POL.H.205(b)(4) (d)(2)

The elevated helipad procedure (see figure below) is a special case of the ground level helipad procedure discussed another section.

Elevate Helipad take–off



The main difference is that drop down below the level of the take-off surface is permitted. In the drop down phase, the Category A procedure ensures deck-edge clearance but, once clear of the deck-edge, the 35 ft clearance from obstacles relies upon the calculation of drop down. Subparagraph (b) of AMC1 CAT.POL.H.205(b)(4) is applied.

Although 35 ft is used throughout the requirements, it may be inadequate at particular elevated FATOs that are subject to adverse airflow effects, turbulence, etc.

04.01.05 En-route — critical engine inoperative
CAT.POL.H.215

(a) The mass of the helicopter and flight path at all points along the route, with the critical engine inoperative and the meteorological conditions expected for the flight, shall permit compliance with (1), (2) or (3):

(1) When it is intended that the flight will be conducted at any time out of sight of the surface, the mass of the helicopter permits a rate of climb of at least 50 ft/minute with the critical engine inoperative at an altitude of at least 300 m (1 000 ft), or 600 m (2 000 ft) in areas of mountainous terrain, above all terrain and obstacles along the route within 9,3 km (5 NM) on either side of the intended track.

(2) When it is intended that the flight will be conducted without the surface in sight, the flight path permits the helicopter to continue flight from the cruising altitude to a height of 300 m (1000 ft) above a landing site where a landing can be made in accordance with CAT.POL.H.220. The flight path clears vertically, by at least 300 m (1000 ft) or 600 m (2000 ft) in areas of mountainous terrain, all terrain and obstacles along the route within 9,3 km (5 NM) on either side of the intended track. Drift-down techniques may be used.

(3) When it is intended that the flight will be conducted in VMC with the surface in sight, the flight path permits the helicopter to continue flight from the cruising altitude to a height of 300 m (1000 ft) above a landing site where a landing can be made in accordance with CAT.POL.H.220, without flying at any time below the appropriate minimum flight altitude. Obstacles within 900 m on either side of the route need to be considered.

(b) When showing compliance with (a)(2) or (a)(3):

(1) the critical engine is assumed to fail at the most critical point along the route;

(2) account is taken of the effects of winds on the flight path;

(3) fuel jettisoning is planned to take place only to an extent consistent with reaching the aerodrome or operating site with the required fuel reserves and using a safe procedure; and

(4) fuel jettisoning is not planned below 1000 ft above terrain.

(c) The width margins of (a)(1) and (a)(2) shall be increased to 18,5 km (10 NM) if the navigational accuracy cannot be met for 95 % of the total flight time.

04.01.06 Landing
CAT.POL.H.220

(a) The landing mass of the helicopter at the estimated time of landing shall not exceed the maximum mass specified in the RFM for the procedure to be used.

(b) In the event of the critical engine failure being recognised at any point at or before the landing decision point (LDP), it is possible either to land and stop within the FATO, or to perform a balked landing and clear all obstacles in the flight path by a vertical margin of 10,7 m (35 ft). Only obstacles as specified in CAT.POL.H.110 have to be considered.

(c) In the event of the critical engine failure being recognised at any point at or after the LDP, it is possible to:

(1) clear all obstacles in the approach path; and

(2) land and stop within the FATO.

(d) When showing compliance with (a) to (c), account shall be taken of the appropriate parameters of CAT.POL.H.105(c) for the estimated time of landing at the destination aerodrome or operating site, or any alternate if required.

(e) That part of the landing from the LDP to touchdown shall be conducted in sight of the surface.

(04.02)- Performance Class 2 Helicopter

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

CAT.POL.H.300

04.02.01 General
CAT.POL.H.300

Helicopters operated in **Performance Class 2** shall be certified in category A or equivalent as determined by TR DGCA.

04.02.02 OPERATIONS IN PERFORMANCE CLASS 2
GM to Section 2, Chapter 3 performance class 2

(a) **Introduction**

This section describes performance class 2 as established in Part-CAT. It has been produced for the purpose of:

(1) explaining the underlying philosophy of operations in performance class 2;
(2) showing simple means of compliance; and
(3) explaining how to determine — with examples and diagrams:
(i) the take-off and landing masses;
(ii) the length of the safe forced landing area;
(iii) distances to establish obstacle clearance; and
(iv) entry point(s) into performance class 1.

It explains the derivation of performance class 2 from ICAO Annex 6 Part III and describes an alleviation that may be approved in accordance with CAT.POL.H.305 following a risk assessment. It examines the basic requirements, discusses the limits of operation, and considers the benefits of the use of performance class 2.

It contains examples of performance class 2 in specific circumstances, and explains how these examples may be generalised to provide operators with methods of calculating landing distances and obstacle clearance.

(b) **What defines performance class 2**

Performance class 2 can be considered as;

- **performance class 3 take-off or landing, and**
- **performance class 1 climb, cruise and descent.**

It comprises;

- **an all-engines-operating (AEO) obstacle clearance regime for the take-off or landing phases, and**
- **a OEI obstacle clearance regime for the climb, cruise, descent, approach and missed approach phases.**

For the purpose of performance calculations in Part-CAT, the CS/JAR 29.67 Category A climb performance criteria is used:

— 150 ft/min at 1000 ft (at Vy); and depending on the choice of DPATO:
— 100 ft/min up to 200 ft (at VTOSS) at the appropriate power settings.

(c) **The derivation of performance class 2** PC2 is primarily based on the text of ICAO Annex 6 Part III Section II and its attachments which provide for the following:

(1) obstacle clearance before DPATO: the helicopter shall be able, with all engines operating, to clear all obstacles by an adequate margin until it is in a position to comply with (2);
(2) obstacle clearance after DPATO: the helicopter shall be able, in the event of the critical engine becoming inoperative at any time after reaching DPATO, to continue the take-off clearing all obstacles along the flight path by an adequate margin until it is able to comply with en-route clearances; and
(3) engine failure before DPATO: before the DPATO, failure of the critical engine may cause the helicopter to force land; therefore, a safe forced landing should be possible (this is analogous to the requirement for a reject in performance class 1, but where some damage to the helicopter can be tolerated.)

(d) **Benefits of performance class 2**

Operations in performance class 2 permit advantage to be taken of an AEO procedure for a short period during take-off and landing — whilst retaining engine failure accountability in the climb, descent and cruise. The benefits include the ability to:

(1) use (the reduced) distances scheduled for the AEO — thus permitting operations to take place at smaller aerodromes and allowing airspace requirements to be reduced;
(2) operate when the safe forced landing distance available is located outside the boundary of the aerodrome;
(3) operate when the take-off distance required is located outside the boundary of the aerodrome; and
(4) use existing Category A profiles and distances when the surface conditions are not adequate for a reject, but are suitable for a safe forced landing (for example, when the ground is waterlogged).

Additionally, following a risk assessment when the **use of exposure** is approved by the TR DGCA the ability to:

(i) operate when a safe forced landing is not assured in the take-off phase; and
(ii) penetrate the HV curve for short periods during take-off or landing.

04.02.03 Take-off
CAT.POL.H.310

(a) The take-off mass shall not exceed the maximum mass specified for a rate of climb of 150 ft/min at 300 m (1000 ft) above the level of the aerodrome or operating site with the critical engine inoperative and the remaining engine(s) operating at an appropriate power rating.
(b) For operations other than those specified in CAT.POL.H.305, the take-off shall be conducted such that a safe forced landing can be executed until the point where safe continuation of the flight is possible.
(c) For operations in accordance with CAT.POL.H.305, in addition to the requirements of (a):
(1) the take-off mass shall not exceed the maximum mass specified in the RFM for an all engines operative out of ground effect (AEO OGE) hover in still air with all engines operating at an appropriate power rating; or
(d) When showing compliance with (a) to (c), account shall be taken of the appropriate parameters of CAT.POL.H.105(c) at the point of departure.
(e) That part of the take-off before the requirement of CAT.POL.H.315 is met shall be conducted in sight of the surface.

04.02.04 En-route — critical engine inoperative
CAT.POL.H.320

The requirement of CAT.POL.H.215 shall be complied with and as defined OM B 04.01.05.

04.02.05 Landing
CAT.POL.H.325

(a) The landing mass at the estimated time of landing shall not exceed the maximum mass specified for a rate of climb of 150 ft/min at 300 m (1000 ft) above the level of the aerodrome or operating site with the critical engine inoperative and the remaining engine(s) operating at an appropriate power rating.
(b) If the critical engine fails at any point in the approach path:
(1) a balked landing can be carried out meeting the requirement of CAT.POL.H.315; or
(2) for operations other than those specified in CAT.POL.H.305, the helicopter can perform a safe forced landing.

(c) For operations in accordance with CAT.POL.H.305, in addition to the requirements of (a):
(1) the landing mass shall not exceed the maximum mass specified in the RFM for an AEO OGE hover in still air with all engines operating at an appropriate power rating; or
(d) When showing compliance with (a) to (c), account shall be taken of the appropriate parameters of CAT.POL.H.105(c) at the destination aerodrome or any alternate, if required.
(e) That part of the landing after which the requirement of (b)(1) cannot be met shall be conducted in sight of the surface.

(04.03)- Performance Class 3 Helicopter

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

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** or helidecks **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** or helideck: when operating to an elevated FATO or helideck 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 or helideck. 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.

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05-FLIGHT PLANNING

CAT.OP.MPA.175(a)

(05.01)- Operational Flight Plan;

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

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: 0 Revizyon Tarihi: 01.01.2019

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

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: 0 Revizyon Tarihi: 01.01.2019
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: 0 Revizyon Tarihi: 01.01.2019
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).

05.04.02 Reference Data

- Maximum usable fuel 3080 Lt.

(05.05)- Engine(s)-Out Operations

Revizyon No: 0 Revizyon Tarihi: 01.01.2019
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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

CAT.GEN.MPA.180(a)(21)

Refer to OM A 08.01.12

(05.07)- Selection of Aerodromes and Operating Sites

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

CAT.OP.MPA.181

(a) For flights under instrument meteorological conditions (IMC), the commander shall select a takeoff **alternate** aerodrome within **one hour flying time** at normal cruising speed if it would not be possible to return to the site of departure due to meteorological reasons.

(b) For IFR flights or 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.

(c) 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.

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

(05.08)- Fuel needed for the various stages of flight

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

CAT.OP.MPA.190 / CAT.OP.MPA.191 / CAT.OP.MPA.195 / GM1 CAT.OP.MPA.195 / AMC1 CAT.OP.MPA.195 / AMC1 CAT.OP.MPA.191(b)&(c)

05.08.01 Fuel policy
CAT.OP.MPA.150

(a) KAAN AIR has established fuel policy for the purpose of **flight planning** and **in-flight replanning** to ensure that every flight carries **sufficient fuel** for the planned operation and **reserves** to cover deviations from the planned operation. The fuel policy and any change to it require prior approval by TR DGCA.
(b) KAAN AIR will ensure that the planning of flights is **based upon** at least:
(1) procedures contained in the operations manual and:
(i) data provided by the aircraft manufacturer; or
(ii) current aircraft-specific data derived from a fuel consumption monitoring system; and
(2) the operating conditions under which the flight is to be conducted including:
(i) aircraft fuel consumption data;
(ii) anticipated masses;
(iii) expected meteorological conditions; and
(iv) air navigation services provider(s) procedures and restrictions.

(c) KAAN AIR will ensure that the **pre-flight** calculation of usable fuel required for a flight includes:
(1) **taxi fuel**;
(2) **trip fuel**;
(3) **reserve fuel** consisting of:
(i) **contingency fuel**;
(ii) **alternate fuel**, if a destination alternate aerodrome is required;
GM1 CAT.OP.MPA.150(c)(3)(ii)
The departure aerodrome may be selected as the destination alternate aerodrome.
(iii) **final reserve fuel**; and

(iv) **additional fuel**, if required by the type of operation; and
(4) **extra fuel** if required by the commander.

(d) KAAN AIR will ensure that **in-flight replanning** procedures for calculating usable fuel required when a flight has to proceed along a route or to a destination aerodrome other than originally planned includes:
(1) trip fuel for the remainder of the flight; and
(2) reserve fuel consisting of:
(i) contingency fuel;
(ii) alternate fuel, if a destination alternate aerodrome is required;
(iii) final reserve fuel; and
(iv) additional fuel, if required by the type of operation; and
(3) extra fuel if required by the commander.

05.08.02 PLANNING CRITERIA — HELICOPTERS
AMC3 CAT.OP.MPA.150(b) Fuel policy
KAAN AIR has based the company fuel policy, including calculation of the amount of **fuel to be carried**, on the following planning criteria:
(a) The amount of:
(1) **taxi fuel**, which should not be less than the amount expected to be used prior to take-off. Local conditions at the departure site and APU consumption should be taken into account;
(2) **trip fuel**, which should include fuel:
(i) for take-off and climb from aerodrome elevation to initial cruising level/altitude, taking into account the expected departure routing;
(ii) from top of climb to top of descent, including any step climb/descent;
(iii) from top of descent to the point where the approach procedure is initiated, taking into account the expected arrival procedure; and
(iv) for approach and landing at the destination site;
(3) **contingency fuel**, which should be:
(i) for IFR flights, or for VFR flights in a hostile environment, 10 % of the planned trip fuel; or
(ii) for VFR flights in a non-hostile environment, 5 % of the planned trip fuel;
(4) **alternate fuel**, which should be:
(i) fuel for a missed approach from the applicable MDA/DH at the destination aerodrome to missed approach altitude, taking into account the complete missed approach procedure;
(ii) fuel for a climb from missed approach altitude to cruising level/altitude;
(iii) fuel for the cruise from top of climb to top of descent;
(iv) fuel for descent from top of descent to the point where the approach is initiated, taking into account the expected arrival procedure;
(v) fuel for executing an approach and landing at the destination alternate selected in accordance with CAT.OP.MPA.181;
(5) **final reserve fuel**, which should be:
(i) for VFR flights navigating by day with reference to visual landmarks, **20 minutes' fuel at best range speed**; or
(ii) for IFR flights or when flying VFR and navigating by means other than by reference to visual landmarks or at night, fuel to fly for **30 minutes at holding speed at 1500 ft (450 m) above** the destination aerodrome in standard conditions calculated with the estimated mass on arrival above the alternate, or the destination, when no alternate is required; and
(6) **extra fuel**, which should be at the discretion of the commander.

(b) When flying VFR and navigating by means other than by reference to visual landmarks;

KAAN AIR's fuel policy includes planning to when flying VFR and navigating by means other than by reference to visual landmarks, for which **a destination alternate does not exist**, the amount of fuel at departure should include:
(1) taxi fuel;
(2) trip fuel;
(3) contingency fuel calculated in accordance with (a)(3);
(4) **additional fuel** to fly for 2 hours at holding speed, **including final reserve fuel**; and
(5) extra fuel at the discretion of the commander.

(c) Sufficient fuel should be carried at all times to ensure that **following the failure of an engine occurring** at the most critical point along the route, the helicopter is able to:
(1) descend as necessary and proceed to an adequate aerodrome;
(2) hold there for 15 minutes at 1500 ft (450 m) above aerodrome elevation in standard conditions; and
(3) make an approach and landing.

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06-MASS AND BALANCE

CAT.POL.MAB.100

(06.01)- Mass and Balance, Loading

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

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: 0 Revizyon Tarihi: 01.01.2019

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.

Definitions - Technical:
Arm is the distance between the point at which a mass is located and the datum. The distance is measured mm.
Datums All calculations required for the determination of the mass and balance are made using datums set by the manufacturer. One datum concerns the horizontal centre of gravity and the other the lateral centre of gravity.
Lateral centre of gravity The position of the centre of gravity in relation to the lateral datum of the helicopter
Lateral datum (Buttock Line) runs along the length of the helicopter in plan view, looking forward. Measurements starboard (right) of this line have a positive value in calculations? measurements port (left) of the line have a negative value in calculations.
Longitudinal centre of gravity The result of all summed moments along the longitudinal datum divided by all summed masses.
Longitudinal datum (Station 0) is 1635 mm in front of the nominal centre of gravity of the helicopter
Moment is the result of the mass measured at a station multiplied by the arm. The result is given in kg-mm.
Optional equipment is the equipment fitted to the helicopter for operational purposes.

(06.03)- Mass Values for Crew Members

Revizyon No: 0 Revizyon Tarihi: 01.01.2019
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: 0 Revizyon Tarihi: 01.01.2019
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: 0 Revizyon Tarihi: 01.01.2019

CAT.POL.MAB.105 / AMC1 SPO.POL.115 / GM1 SPO.POL.115

(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: 1 Revizyon Tarihi: 23.06.2020

CAT.POL.MAB.105 / AMC1 SPO.POL.115 / SPO.POL.116

(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 will 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. The mass and balance documentation will contain the following information:

(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:

(i) for helicopters; the CG position **may not need to be** on the mass and balance documentation if, for example, the load distribution is in accordance with a pre-calculated balance table or if it can be shown that for the planned operations a correct balance can be ensured, whatever the real load is;

(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.

(b) Where mass and balance data and documentation is generated by a computerised mass and balance system, KAAN AIR will verify the integrity of the output data.

(06.07)- Last Minute Changes to the Load

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

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.

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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

AMC1 CAT.POL.MAB.105(b) / AMC1 SPO.POL.115(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: 2 Revizyon Tarihi: 23.07.2025

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

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-22 Mass and Balance Computation form to provide actual numbers to flight crews.

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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

CAT.POL.MAB.100

ADOPTED COORDINATE SYSTEM

The longitudinal coordinate of the cargo, unit and all helicopter center of gravity (Figs 5-1 and 5-2) (hereinafter called as Arm) is defined by the distance between the helicopter longitudinal axis intersection point (Arm 0) with the Arm passing through the center of gravity. All the Arms are parallel to the rotor shaft axis.

ARM-0 is located in front of the helicopter at a conditional distance where, for convenience of calculations, the extreme forward helicopter CG position is expressed by an integer (5.0 m or 207 inches). The coordinate of the main rotor shaft axis intersection point with the helicopter longitudinal axis is 5.28 m (208 inches) and the extreme aft CG position is 5.31 m (209 inches).

NOTE. To convert the coordinate system data relative to the main rotor shaft into the coordinate system data relative to Arm 0, it is necessary to subtract the coordinate value relative to the main rotor shaft (with its sign) from 5.28 m (208 inches).

The centre-of-mass transversal coordinates are defined relative to the projection of the longitudinal helicopter axis to the cargo cabin floor plane: to the left – "minus", to the right – "plus" according to the flight direction.

The vertical coordinates of various helicopter component mounting points are defined relatively to Water Line 0 passing in the plane of the lower rotor blade flapping hinges: down – "plus", up - "minus".

Fig. 5-1. Reference Plane Location Diagram.

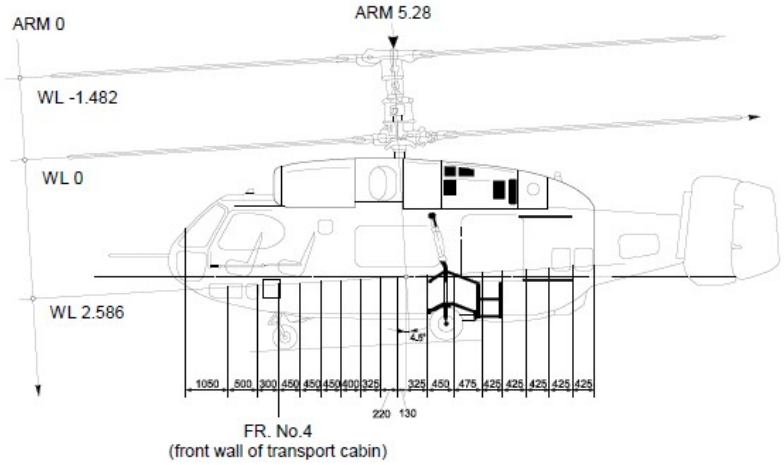
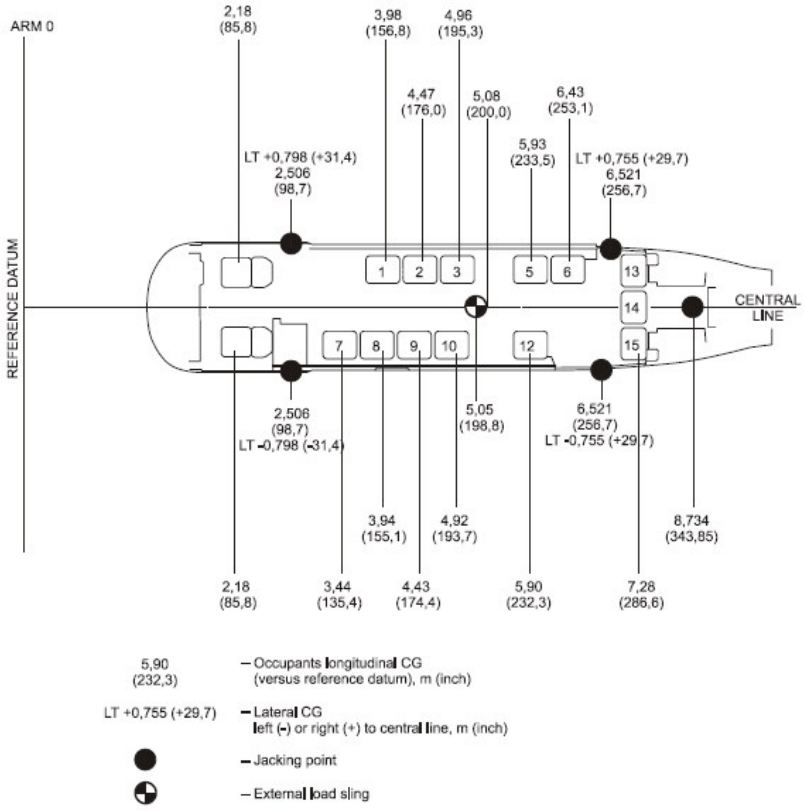


Fig. 5-2. Main ARM Location Diagram.



CARGO CABIN AND ITS COMPONENTS DIMENSIONS

Cargo cabin:
Length along the floor .....4.52 m (14.83 ft)
Width across the floor .....1.30 m (4.26 ft)
Height (maximum) .....1.32 m (4.33 ft)
Floor area .....5.90 sq.m (63.4 sq.ft)

Cargo cabin door:
Width .....1.14 m (3.74 ft)
Height .....1.15 m (3.77 ft)

Emergency hatch (RH side):
Width .....0.60 m (1.97 ft)
Height .....0.90 m (2.95 ft)

Floor hatch on the cargo cabin floor (between Frame 7a and Frame 8a):

Width .....0.35 m (1.15 ft)
Height .....0.60 m (1.97 ft)

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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

CAT.POL.MAB.100

LOADED HELICOPTER GROSS WEIGHT AND CG CALCULATION

It shall be the pilot's responsibility to ensure that the helicopter is properly loaded so that the entire flight is conducted within the limits of Center of Gravity Limitations.
The gross weight center of gravity may be calculated from the Actual Weight and Balance Record and the loading tables in this section or appropriate Flight Manual Supplements to assure safe flight in all the stages.
Arms for weight and balance calculations are shown in Fig. 5-1 and 5-2.
To determine if the Gross Weight and Center of Gravity for a given flight are within the limits, proceed as follows:

- obtain the aircraft weight and moment from the Weight and Balance Record in the Helicopter Logbook;
- determine the weight of crewmembers and the moment (Table 5-1 and 5-1a);
- determine the weight of equipment and the moment (Tables 5-2 and 5-3);
- determine the weight of fuel and the moment (Table 5-4);
- determine the quantity and location of occupants;
- determine the occupants CG coordinates, their weight and moment (Fig. 5-2, Table 5-5);
- determine the weight of cargo;
- determine the location of the cargo CG and its moment.

LOADING INSTRUCTIONS

CG of all cargo should be, as far as possible, in front of Zero marking made along the helicopter RH side scale (recommended position is from Zero to +0.23 on the blue arrow). In any case the loaded helicopter CG must not go beyond the limits from +0.28 (blue arrow) to -0.03 (red arrow) (see position A, Fig. 5-4).
Before the takeoff, the crew should be sure that based on the calculations made (see below) the helicopter CG position does not exceed the allowed limits.
Cargo loading accuracy (CG coordinate):
longitudinally, within 0.05 m (2 in) of the appropriate marking on the RH side;
laterally, within 0.05 m (2 in) of the centerline.

NOTE. Refer to Maintenance Manual regarding cargo arrangement and usage of mooring devices when transporting cargo and luggage.

When people and cargo are transported together in the cargo cabin, the cargo must be located in the front part of the cargo cabin in front of the seats occupied by people.
For luggage arrangement seats Nos. 7, 8, 9 should be folded and tied down. After arrangement of the cargo it is to be lashed with a special net. Maximum allowable luggage weight is 150 kg (330 lb).

EXAMPLE OF CG CALCULATION

Initial data for calculation:
The helicopter has to transport 5 occupants and 400 kg of cargo.
Fuel required (navigation calculation): 2580 kg.
Return to home airfield without occupants, cargo and co-pilot.
Formula for helicopter CG calculation:

$$CG_{H/C} = \left[\frac{(W \times CG)_{EMPTY\ H/C} + \sum (W \times CG)_{LOADED\ H/C}}{W_{FLYING\ H/C}} \right],$$

where:
CGH/C – loaded helicopter CG, m (in);
(W x CG)EMPTY H/C – empty helicopter CG static moment, kg·m (lb in);
(W x CG)LOADED H/C – CG static moment of each helicopter loading element, kg·m (lb in);
WFLYING H/C – loaded and fuelled helicopter mass, kg (lb)

Table 5-6. Helicopter CG Calculation Procedure (METRIC)

OUTBOUND FLIGHT WEIGHT, kg		CG coordinate, m	MOMENT, kg·m
Helicopter Empty Weight	**6800**	**5.234**	**35591.20**
+ Removable Equipment (auxiliary fuel tanks)	110		580.80
+ Skies, front	17		51.51
+ main	33		197.34
+ Thermoses (3 L)	4.6		14.17
+ Oil	90		518.40
+ De-icing fluid	15		49.20
+ Water	6		18.66
+ Captain (left seat)	80		174.40
+ Co-pilot (right seat)	80		174.40
Equipped helicopter	**7236**		**37370**
Cargo:			
in the area of mark 1.12 (along the blue scale marked on the helicopter RH side, between frames No. 6 and 7)	400	4.16	1663
Occupants:			
+ seat No. 9	80		354
+ seat No. 10	80		394
+ seat No. 5	80		474
+ seat No. 12	80		472
+ seat No. 6	80		514
Total Load incl. people	**800**		**3871**
Fuel (refueling)			
+ tank No. 1 LH	228		848
+ tank No. 1 RH	228		848
+ tank No. 2 LH	224		1113
+ tank No. 2 RH	224		1113
+ tanks Nos 3+4 LH	328		2227
+ tanks Nos 3+4 RH	328		2227
+ tank No. 5 LH	200		1022
+ tank No. 5 RH	200		1022
+ Auxiliary tanks	620		3274
Total Fuel Load	**2580**		**13694**
Helicopter Takeoff Weight	**10616**	**5.175**	**54935**
Fuel consumption in flight (ref. Sec. 3 of Manufacturer's Data)			
– Auxiliary tanks	-620		-3274
– tank No. 1 LH	-228		-848
– tanks Nos 3+4 RH	-267		-1813
– tanks Nos 3+4 LH	-39		-265
Total Fuel Consumption	**-1154**		**-6200**
Helicopter Landing Weight	**9462**	**5.151**	**48735**
– Unloading (occupants/cargo)	-800		-3871
– Co-pilot left behind	-80		-174.4
Total unloaded weight	**-880**		**-4045.4**
RETURN FLIGHT			
Takeoff Weight	**8582**	**5.208**	**44689**
Fuel Consumption in flight (ref. Sec. 3 of Manufacturer's Data)			
– tanks Nos 3+4 LH	-289		-1962.31
– tanks Nos 3+4 RH	-61		-414.19
– tank No. 1 RH	-228		-848.16

– tank No. 5 LH		-200	-1022
– tank No. 5 RH		-200	-1022
– tank No. 2 LH		-88	-437.36
– tank No. 2 RH		-88	-437.36
Total Fuel Consumption		**-1154**	**-6143.38**
Helicopter Landing Weight	**7426**	**5.19**	**38545.6**

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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

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: 2 Revizyon Tarihi: 23.07.2025

CAT.POL.MAB.100 / RFM

Below numbers are given in the actual weighing of related registered helicopters for below mentioned dates, originals are in the "Appendix B.KA32.06.09.04 TC-HLE, TC-HLF and TC-HLG wb" files:

MODEL	S/N	REG.MARK	DATE	PLACE	
KA32	523324019819	TC-HLE	24.05.2023	KAAN AIR	
	ITEM	**Weight (Kg)**	**STA (mm)**	**Long Mom. (Kgmm)**	- -
	HELICOPTER EMPTY	6.735,1	68	459,81	- -

MODEL	S/N	REG.MARK	DATE	PLACE	
KA32	523324299829	TC-HLF	25.05.2023	KAAN AIR	
	ITEM	**Weight (Kg)**	**STA (mm)**	**Long Mom. (Kgmm)**	- -
	HELICOPTER EMPTY	6.732,1	38	255,89	- -

MODEL	S/N	REG.MARK	DATE	PLACE	
KA32	523324299834	TC-HLG	26.05.2023	KAAN AIR	
	ITEM	**Weight (Kg)**	**STA (mm)**	**Long Mom. (Kgmm)**	- -
	HELICOPTER EMPTY	6.719,4	49	331,35	- -

(06.09.05)- Sample Mass and Balance Sheet

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

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

With the weight of 20.09.2018 (TC-HLE and TC-HLF), 03.10.2018 (TC-HLG) weighing :

1)

TC-HLE KA-32 WEIGHT AND BALANCE COMPUTATION FORM

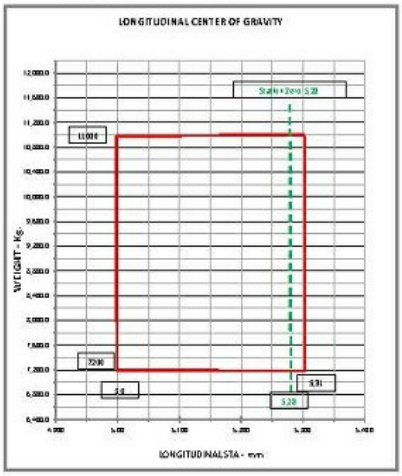
KAAN HAVACILIK SANAYİ VE TİCARET A.Ş.

Copilot(Kg) 1 | Pilot(Kg) 2

Baggage	(Kg)
Flight Time	(Minutes)
Take Off Fuel	(Kg)
Landing Fuel	(Kg)
Take Off Weight	(Kg)

	Fuel Calculation For Flight	
	Flight Fuel	Total Fuel
Kilograms		
Liters		
US Gallons		
Pounds (lbs)		

LONGITUDINAL CENTER OF GRAVITY



WEIGHT AND BALANCE COMPUTATION FORM

MODEL	S/N	REG.MARK	DATE	PLACE	COMPUTED BY	
KA32	523024019819	TC-HLE		KAAN		

Ref.	ITEM	Weight (Kg)	STA (m)	Long Mom. (Kgm)		
1	HELICOPTER EMPTY	6,735.0	68.00	459.81		
2	PILOT		2.18			
3	COPILOT		2.18			
4	FLIGHT OPERATOR (FR-8)		5.08			
5	FLIGHT OPERATOR (FR-10-13)		7.28			
6	Engine Oil	90		518.40		
7	RH seat No. 1		3.98			
8	RH seat No. 2		4.47			
9	RH seat No. 3		4.96			
10	RH seat No. 5		5.93			
11	RH seat No. 6		6.43			
12	LH seat No. 7		3.44			
13	LH seat No. 8		3.94			
14	LH seat No. 9		4.43			
15	LH seat No. 10		4.92			
16	LH seat No. 12		5.90			
17	At seat No. 13		7.28			
18	At seat No. 14		7.28			
19	At seat No. 15		7.28			
20	Baggage in the area of mark 1.12		4.16			
21						
22	Gross Weight (Zero Fuel)					
23	Fuel (Take off)					
24	TOTAL WEIGHT (T/O)					
25	Gross Weight (Zero Fuel)					
26	Fuel (landing)					
27	LANDING GROSS WEIGHT					

ROUTES	
KAAN	
Passenger (10 - 19)	
Crew	: 85 Kg.
Male	: 82 Kg.
Female	: 74 Kg.
Children (2-12)	: 35 Kg.
Hand Luggage	: 6 Kg.
Fuel Flow	
Fuel Flow	

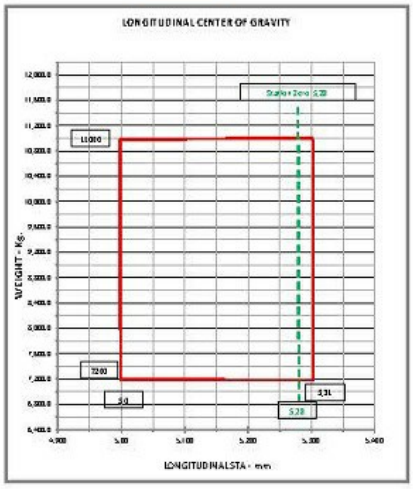
FOF-2.2 / REV-0 / 04.01.2019 Signature

1)

TC-HLF KA-32 WEIGHT AND BALANCE COMPUTATION FORM

KAAN HAVACILIK SANAYİ VE TİCARET A.Ş.

	Fuel Calculation for Flight	
	Flight Fuel	Total Fuel
Kilograms		
Liters		
US Gallons		
Pounds (lbs)		



WEIGHT AND BALANCE COMPUTATION FORM

MODEL	S/N	REG.MARK	DATE	PLACE	COMPUTED BY	
KA32	52332401981	TC-HLE		KAAN		

Ref.	ITEM	Weight (Kg)	STA (m)	Long Mom. (Kgm)		
1	HELICOPTER EMPTY	6,732.1	38.00	255.89		
2	PILOT		2.18			
3	COPILOT		2.18			
4	FLIGHT OPERATOR (FR-8)		5.08			
5	FLIGHT OPERATOR (FR-10-13)		7.28			
6	Engine Oil	90		518.40		
7	RH seat No. 1		3.98			
8	RH seat No. 2		4.47			
9	RH seat No. 3		4.96			
10	RH seat No. 5		5.93			
11	RH seat No. 6		6.43			
12	LH seat No. 7		3.44			
13	LH seat No. 8		3.94			
14	LH seat No. 9		4.43			
15	LH seat No. 10		4.92			
16	LH seat No. 12		5.90			
17	Aft seat No. 13		7.28			
18	Aft seat No. 14		7.28			
19	Aft seat No. 15		7.28			
20	Baggage in the area of mark 1.12		4.16			
21						
22	Gross Weight (Zero Fuel)					
23	Fuel (Take off)					
24	TOTAL WEIGHT (T/O)					
25	Gross Weight (Zero Fuel)					
26	Fuel (landing)					
27	LANDING GROSS WEIGHT					

ROUTES	
KAAN	
Passenger (10 - 19)	
Crew	: 95 Kg.
Male	: 92 Kg.
Female	: 74 Kg.
Children (2-12)	: 35 Kg.
Hand Luggage	: 6 Kg.
Fuel Flow	
Fuel Flow	

FOF-2.2 / REV-0 / 08.04.2019

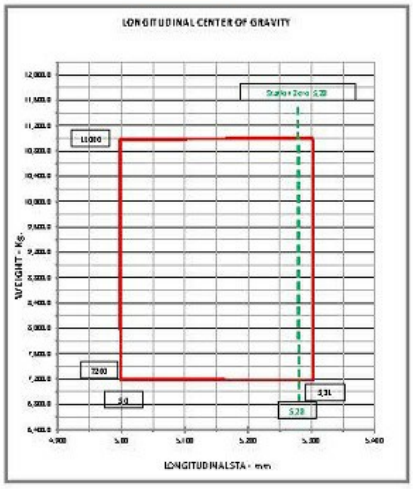
Signature

1)

TC-HLG KA-32 WEIGHT AND BALANCE COMPUTATION FORM

KAAN HAVACILIK SANAYİ VE TİCARET A.Ş.

Fuel Calculation for Flight		
	Flight Fuel	Total Fuel
Kilograms		
Liters		
US Gallons		
Pounds (lbs)		



WEIGHT AND BALANCE COMPUTATION FORM

MODEL	S/N	REG.MARK	DATE	PLACE	COMPUTED BY	
KA32	52332401981	TC-HLE		KAAN		

Ref.	ITEM	Weight (Kg)	STA (m)	Long Mom. (Kgm)		
1	HELICOPTER EMPTY	6,719.4	49.00	331.35		
2	PILOT		2.18			
3	COPILOT		2.18			
4	FLIGHT OPERATOR (FR-8)		5.08			
5	FLIGHT OPERATOR (FR-10-13)		7.28			
6	Engine Oil	90		518.40		
7	RH seat No. 1		3.98			
8	RH seat No. 2		4.47			
9	RH seat No. 3		4.96			
10	RH seat No. 5		5.93			
11	RH seat No. 6		6.43			
12	LH seat No. 7		3.44			
13	LH seat No. 8		3.94			
14	LH seat No. 9		4.43			
15	LH seat No. 10		4.92			
16	LH seat No. 12		5.90			
17	Aft seat No. 13		7.28			
18	Aft seat No. 14		7.28			
19	Aft seat No. 15		7.28			
20	Baggage in the area of mark 1.12		4.16			
21						
22	Gross Weight (Zero Fuel)					
23	Fuel (Take off)					
24	TOTAL WEIGHT (T/O)					
25	Gross Weight (Zero Fuel)					
26	Fuel (landing)					
27	LANDING GROSS WEIGHT					

ROUTES	
KAAN	
Passenger (10 - 19)	
Crew	: 95 Kg.
Male	: 92 Kg.
Female	: 74 Kg.
Children (2-12)	: 35 Kg.
Hand Luggage	: 6 Kg.
Fuel Flow	
Fuel Flow	

FOF-2.2 / REV-0 / 08.04.2019

Signature

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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: 1 Revizyon Tarihi: 23.06.2020

AMC3 ORO.MLR.100 / RFM

The description of the individual helicopter systems is to be found in Appendix B.07.01

Also the other Appendices are:

- Appendix B.KA32.02.01 RFM Normal Procedures
- Appendix B.KA32.03.01 RFM Emergencies
- Appendix B.KA32.06.01 RFM Mass and Balance
- Appendix B.KA32.07.01 RFM System Description
-
- Appendix B.KA32.Supp.1A.1 External Cargo Operation (323.9600.9000.000)
- Appendix B.KA32.Supp.68 Peculiarities in Ops of Helicopters Complying with EASA Cert.
-
- Appendix B.KA32.02.01.01.CL Preflight Checklist

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08-LOADING

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

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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

CAT.POL.MAB.100 / CAT.OP.MPA.160 / AMC2 CAT.OP.MPA.160 / AMC1 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: 0 Revizyon Tarihi: 01.01.2019

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 Turkish DGCA.

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09-MINIMUM EQUIPMENT LIST (MEL)

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

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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

ORO.MLR.105

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.

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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);

CAT.IDE.H.100

(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: 1 Revizyon Tarihi: 23.06.2020

CAT.IDE.H.330 / AMC1 SPO.GEN.135

10.02.01 Information on emergency and survival equipment carried

KAAN AIR shall, at all times, have available for immediate communication to rescue coordination centres (RCCs) lists containing information on the emergency and survival equipment carried on board.

10.02.02 Information on emergency and survival equipment carried

CONTENT OF INFORMATION

The information, compiled in a list, will include, as applicable:

a. the number, colour and type of life rafts and pyrotechnics;
b. details of emergency medical supplies and water supplies; and
c. the type and frequencies of the emergency portable radio equipment.

(10.03)- First Aid Kit

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

CAT.IDE.H.220

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

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

To be kept up to date, first-aid kits should 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 **KA32** is equipped with 2 first aid kits. One is located in the center console of the cockpit and other in the cabin.

(10.04)- Emergency Lighting and marking

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

CAT.IDE.H.275

LIGHTING EQUIPMENT OF CARGO COMPARTMENTS AND EMERGENCY EXTERNAL LIGHTING

The cargo compartment is provided with the main and emergency lighting.

The main lighting is powered by aircraft sources and the emergency lighting can be powered both by aircraft and independent power sources.

Cargo compartment is illuminated by lamps (dome lights) located on the cargo compartment ceiling. Lamps are turned on by the MAIN CABIN 2 LAMPS-OFF-3 LAMPS selector switch in-stalled on the overhead panel.

NO SMOKING, FASTEN SEAT BELTS light panel in the cargo compartment is turned on by CARGO CMPT ANNUN switch located on the LH side panel of the overhead panel.

Emergency cabin lighting is provided by emergency lighting lamps and two light panels EXIT powered by autonomous batteries.

Emergency lighting lamps and EXIT light panel are turned on by LIGHTING EMERG CABIN se-lector switch that can be set in three positions ARM-OFF-ON and located on LIGHTING panel of the overhead panel.

When the selector switch is set to ON position main lighting lamps and EXIT light panel start to glow.

When the selector switch is set to ARM position main lighting lamps of EXIT light panel are turned on and connecting circuit of main lighting emergency lights is prepared for turning on.
When failure of rectifiers units and DC generators the main lighting lamps and EXIT light panel from battery bus start to glow.

In case of disconnection of aircraft power supply it is provided an automatic transfer of the emergency lighting lamps and EXIT light panel to emergency lighting lamps from autonomous batteries.

Emergency lighting provides for the required illumination level in critical conditions for no less than 10 min after primary electrical power supply failure.

(10.05)- Emergency Locator Transmitter (ELT)

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

CAT.IDE.H.280

The Crash Position Indicator (CPI) system is a primary radio location aid to alert Search and Rescue and assist location in the event of an aircraft distress condition.

The Emergency Locator Transmitter (ELT), mounted on the left hand side of the tail cone, consists of a locator beacon containing the transmitter and antenna. The beacon, which can be manually or automatically activated, is deployed from the aircraft in the event of a crash situation, providing full emergency frequency operation at 121.5 MHz and 406.025 MHz.

The CPI system also comprises of a Beacon Release Unit, System Interface Unit, Cockpit Control Panel (mounted in the interseat console, Figure 1), water activated switch and an Aircraft Identification Device.

The ELT automatically activates during a crash or aircraft ditching and transmits the standard swept tone on 121.5 MHz until the battery power is exhausted, which will typically be 48hrs. The 406.025 MHz transmitter sends an encoded digital message of aircraft position, as received from the GPS/FMS aircraft system via ARINC, and will operate for 24hrs.

(10.07)- Survival Equipment

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

(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: 0 Revizyon Tarihi: 01.01.2019

CAT.IDE.H.305

EMERGENCY EXITS

The flight compartment door openings, cargo compartment door and emergency hatch in the cargo compartment starboard side are used as emergency exits.

All doors are equipped with devices for their emergency jettisoning, the emergency hatch is closed with a door released by a jettisoning mechanism. With the emergency hatch open, the HATCH OPEN annunciator lights up on the instrument panel.

PROCEDURE OF EMERGENCY JETTISONING OF DOORS AND EMERGENCY HATCH

Emergency jettisoning of the LH door is effected by pulling the handle. The guide rail is jetti-soned together with the door.

Emergency jettisoning of the RH door may be effected from the front and rear handles. With any of the handles turned clockwise, the guide rail is jettisoned together with the door.

Emergency jettisoning handle of the cargo compartment door is placed in the pan recess on the internal side of the compartment skin. There is a marking over the door reading: PULL THE HANDLE PUSH THE DOOR

There is a marking in the door left corner reading: PUSH HERE

The door of the emergency hatch is jettisoned by turning one of the handles (inside or outside) up to the stop. There is a marking on the hatch cover reading TURN THE HANDLE AND PUSH THE COVER.

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11-SPO - SPECIALISED OPERATIONS - INSTRUMENT AND EQUIPMENT

ORO.SPO.100

(11.01)- SPO - Specialised Operations - Instrument and Equipment

Revizyon No: 1 Revizyon Tarihi: 23.06.2020

ORO.SPO.100 / SPO.IDE.H.100 / SPO.OP.160 / SPO.SPEC.HESLO.105

SPO.OP.160 Use of headset • Each flight crew member required to be on duty in the flight crew compartment shall wear a **headset** with boom microphone or equivalent, and • use it as the primary device to communicate **with ATS, other crew members and task specialists.**	
SPO.SPEC.HESLO.105 Specific HESLO equipment The helicopter shall be equipped with at least: a. one cargo **safety mirror** or alternative means to see the hook(s)/load; and b. one **load meter**, unless there is another method of determining the weight of the load.	
SPO.IDE.H.100 Instruments and equipment — general a. Instruments and equipment required by this Subpart shall be approved in accordance with the applicable airworthiness requirements if they are: 1. used by the flight crew to control the flight path; 2. used to comply with SPO.IDE.H.215; 3. used to comply with SPO.IDE.H.220; or 4. installed in the helicopter. b. The following items, when required by this Subpart, do not need an equipment approval: 1. independent portable light, 2. an accurate time piece, 3. chart holder, 4. first-aid kit, 5. survival and signalling equipment, and 6. sea anchor and equipment for mooring. c. Instruments and equipment not required by this Subpart as well as any other equipment that is not required by other applicable Annexes, but is carried on a flight, shall comply with the following: 1. the information provided by these instruments, equipment or accessories shall not be used by the flight crew to comply with Annex I to Regulation (EC) No 216/2008 or SPO.IDE.H.215	GM1 SPO.IDE.H.100(a) Instruments and equipment — general APPLICABLE AIRWORTHINESS REQUIREMENTS The applicable airworthiness requirements for approval of instruments and equipment required by this Part are the following: a. Commission Regulation (EU) No 748/2012 for helicopters registered in the EU; and b. Airworthiness requirements of the state of registry for helicopters registered outside the EU. GM1 SPO.IDE.H.100(b) Instruments and equipment — general REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS The functionality of non-installed instruments and equipment required by this Subpart and that do not need an equipment approval, as listed in SPO.IDE.H.100(b), should be checked against recognised industry standards appropriate to the intended purpose. The operator is responsible for ensuring the maintenance of these instruments and equipment. GM1 SPO.IDE.H.100(c) Instruments and equipment — general NOT REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS, BUT ARE CARRIED ON A FLIGHT

and SPO.IDE.H.220; and 2. the instruments and equipment shall not affect the airworthiness of the helicopter, even in the case of failures or malfunction. d. Instruments and equipment shall be readily operable or accessible from the station where the flight crew member that needs to use it is seated. e. Those instruments that are used by a flight crew member shall be so arranged as to permit the flight crew member to see the indications readily from his/her station, with the minimum practicable deviation from the position and line of vision which he/she normally assumes when looking forward along the flight path. f. All required emergency equipment shall be easily accessible for immediate use.	a. The provision of this paragraph does not exempt any installed instrument or item of equipment from complying with the applicable airworthiness requirements. In this case, the installation should be approved as required in the applicable airworthiness requirements and should comply with the applicable Certification Specifications. b. The failure of additional non-installed instruments or equipment not required by this Part or by the applicable airworthiness requirements or any applicable airspace requirements should not adversely affect the airworthiness and/or the safe operation of the helicopter. Examples may be the following: 1. portable electronic flight bag (EFB); 2. portable electronic devices carried by crew members or task specialists; and 3. non-installed task specialists equipment. GM1 SPO.IDE.H.100 (d) Instruments and equipment — general POSITIONING OF INSTRUMENTS This requirement implies that whenever a single instrument is required in a helicopter operated in a multi-crew environment, the instrument needs to be visible from each flight crew station.
SPO.IDE.H.105 Minimum equipment for flight A flight shall not be commenced when any of the helicopter's instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless: a. the helicopter is operated in accordance with the minimum equipment list (MEL), if established; b. for complex motor-powered helicopters, and for any helicopter used in commercial operations, the operator is approved by the competent authority to operate the helicopter within the constraints of the master minimum equipment list (MMEL); or c. the helicopter is subject to a permit to fly issued in accordance with the applicable airworthiness requirements.	
SPO.IDE.H.115 Operating lights Helicopters operated at night shall be equipped with: a. an anti-collision light system; b. navigation/position lights; c. a landing light; d. lighting supplied from the helicopter's electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the helicopter; e. lighting supplied from the helicopter's electrical system to provide illumination in all cabin compartments; f. an independent portable light for each crew member station; and g. lights to conform with the International Regulations for Preventing Collisions at Sea if the helicopter is amphibious.	AMC1 SPO.IDE.H.115 Operating lights LANDING LIGHT The landing light should be trainable, at least in the vertical plane, or optionally be an additional fixed light or lights positioned to give a wide spread of illumination.

SPO.IDE.H.120 Operations under VFR — flight and navigational instruments and associated equipment

a. Helicopters operated under VFR by day shall be equipped with a means of measuring and displaying the following:

1. magnetic heading,
2. time in hours, minutes and seconds,
3. pressure altitude,
4. indicated airspeed, and
5. slip.

b. Helicopters operated under VMC overwater and out of sight of the land or under VMC at night, shall be, in addition to (a), equipped with:

1. a means of measuring and displaying:

i. attitude,
ii. vertical speed, and
iii. stabilised heading;

2. a means of indicating when the supply of power to the gyroscopic instruments is not adequate; and
3. for complex motor-powered helicopters, a means of preventing malfunction of the airspeed indicating system required in (a)(4) due to condensation or icing.

c. Helicopters operated when the visibility is less than 1500 m, or in conditions where they cannot be maintained in a desired flight path without reference to one or more additional instruments, shall be, in addition to (a) and (b), equipped with a means of preventing malfunction of the airspeed indicating system required in (a)(4) due to condensation or icing.

d. Whenever two pilots are required for the operation, helicopters shall be equipped with an additional separate means of displaying:

1. pressure altitude,
2. indicated airspeed,
3. slip,
4. attitude, if applicable,
5. vertical speed, if applicable, and
6. stabilised heading, if applicable.

AMC1 SPO.IDE.H.120 & SPO.IDE.H.125 Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment
INTEGRATED INSTRUMENTS

a. Individual equipment requirements may be met by combinations of instruments, by integrated flight systems or by a combination of parameters on electronic displays. The information so available to each required pilot should not be less than that required in the applicable operational requirements, and the equivalent safety of the installation should be approved during type certification of the helicopter for the intended type of operation.
b. The means of measuring and indicating turn and slip, helicopter attitude and stabilised helicopter heading may be met by combinations of instruments or by integrated flight director systems, provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

AMC1 SPO.IDE.H.120(a)(1) & SPO.IDE.H.125(a)(1) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment
MEANS OF MEASURING AND DISPLAYING MAGNETIC HEADING

The means of measuring and displaying magnetic direction should be a magnetic compass or equivalent.

AMC1 SPO.IDE.H.120(a)(2) & SPO.IDE.H.125(a)(2) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment
MEANS OF MEASURING AND DISPLAYING THE TIME — COMPLEX MOTOR-POWERED AIRCRAFT

An acceptable means of compliance is a clock displaying hours, minutes and seconds, with a sweep- second pointer or digital presentation.

AMC1 SPO.IDE.H.120(a)(3) & SPO.IDE.H.125(a)(3) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment
CALIBRATION OF THE MEANS OF MEASURING AND DISPLAYING PRESSURE ALTITUDE

The instrument measuring and displaying pressure altitude should be of a sensitive type calibrated in feet (ft), with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight.

AMC1 SPO.IDE.H.120(a)(4) & SPO.IDE.H.125(a)(4) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment
CALIBRATION OF THE INSTRUMENT INDICATING AIRSPEED

a. The instrument indicating airspeed should be calibrated in knots (kt).
b. In the case of helicopters with an MCTOM below 2 000 kg, calibration in kilometres per hour (kph) or in miles per hour (mph) is acceptable when such units are used in the AFM.

AMC1 SPO.IDE.H.120(d) & SPO.IDE.H.125(c) Operations under VFR & operations under IFR — flight and navigational instruments and

	associated equipment MULTI-PILOT OPERATIONS — DUPLICATE INSTRUMENTS Duplicate instruments include separate displays for each pilot and separate selectors or other associated equipment where appropriate. AMC1 SPO.IDE.H.120(b)(1)(iii) & SPO.IDE.H.125(a)(8) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment STABILISED HEADING Stabilised direction should be achieved for VFR flights by a gyroscopic direction indicator, whereas for IFR flights, this should be achieved through a magnetic gyroscopic direction indicator. AMC1 SPO.IDE.H.120(b)(3) & SPO.IDE.H.125(d) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment MEANS OF PREVENTING MALFUNCTION DUE TO CONDENSATION OR ICING The means of preventing malfunction due to either condensation or icing of the airspeed indicating system should be a heated pitot tube or equivalent.
SPO.IDE.H.135 Flight crew interphone system Helicopters operated by more than one flight crew member shall be equipped with a flight crew interphone system, including headsets and microphones for use by all flight crew members.	AMC1 SPO.IDE.H.135 Flight crew interphone system TYPE OF FLIGHT CREW INTERPHONE The flight crew interphone system should not be of a handheld type.
SPO.IDE.H.140 Cockpit voice recorder a. Helicopters with an MCTOM of more than 7 000 kg and first issued with an individual CofA on or after 1 January 2016 shall be equipped with a CVR. b. The CVR shall be capable of retaining data recorded during at least the preceding 2 hours. c. The CVR shall record with reference to a timescale: 1. voice communications transmitted from or received in the flight crew compartment by radio; 2. flight crew members' voice communications using the interphone system and the public address system, if installed; 3. the aural environment of the cockpit, including, without interruption, the audio signals received from each crew microphone; and 4. voice or audio signals identifying navigation or approach aids introduced into a headset or speaker. d. The CVR shall start automatically to record prior to the helicopter moving under its own power and shall continue to record until the termination of the flight when the helicopter is no longer capable of moving under its own power. e. In addition to (d), depending on the availability of electrical power, the CVR shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit	AMC1 SPO.IDE.H.140 Cockpit voice recorder GENERAL a. The operational performance requirements for cockpit voice recorders (CVRs) should be those laid down in EUROCAE Document ED-112 (Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems March 2003, including Amendments No°1 and 2, or any later equivalent standard produced by EUROCAE. b. The operational performance requirements for equipment dedicated to the CVR should be those laid down in the European Organisation for Civil Aviation Equipment (EUROCAE) Document ED- 56A (Minimum Operational Performance Requirements For Cockpit Voice Recorder Systems) dated December 1993, or EUROCAE Document ED-112 (Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems) dated March 2003, including Amendments n°1 and n°2, or any later equivalent standard produced by EUROCAE.

checks immediately following engine shutdown at the end of the flight. f. If the CVR is not deployable, it shall have a device to assist in locating it under water. By 1 January 2020 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the CVR is deployable, it shall have an automatic emergency locator transmitter.	
SPO.IDE.H.145 Flight data recorder a. Helicopters with an MCTOM of more than 3 175 kg and first issued with an individual CofA on or after 1 January 2016 shall be equipped with an FDR that uses a digital method of recording and storing data and for which a method of readily retrieving that data from the storage medium is available. b. The FDR shall record the parameters required to determine accurately the helicopter flight path, speed, attitude, engine power, configuration and operation and be capable of retaining data recorded during at least the preceding 10 hours. c. Data shall be obtained from helicopter sources that enable accurate correlation with information displayed to the flight crew. d. The FDR shall start automatically to record the data prior to the helicopter being capable of moving under its own power and shall stop automatically after the helicopter is incapable of moving under its own power. e. If the FDR is not deployable, it shall have a device to assist in locating it under water. By 1 January 2020 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the FDR is deployable, it shall have an automatic emergency locator transmitter.	AMC1 SPO.IDE.H.145 Flight data recorder OPERATIONAL PERFORMANCE REQUIREMENTS FOR HELICOPTERS HAVING AN MCTOM OF MORE THAN 3 175 KG AND FIRST ISSUED WITH AN INDIVIDUAL CofA ON OR AFTER 1 JANUARY 2016 AND BEFORE 1 JANUARY 2023 a. The operational performance requirements for flight data recorders (FDRs) should be those laid down in EUROCAE Document ED-112 (Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems) dated March 2003, including amendments No°1 and No°2, or any later equivalent standard produced by EUROCAE. b. The FDR should record, with reference to a timescale, the list of parameters in Table 1 and Table 2, as applicable. c. The parameters recorded by the FDR should meet, as far as practicable, the performance specifications (designated ranges, sampling intervals, accuracy limits and minimum resolution in read-out) defined in EUROCAE ED-112, including amendments No°1 and No°2, or any later equivalent standard produced by EUROCAE. d. FDR systems for which some recorded parameters do not meet the performance specifications of EUROCAE Document ED-112 may be acceptable to the Agency. AMC2 SPO.IDE.H.145 Flight data recorder OPERATIONAL PERFORMANCE REQUIREMENTS FOR HELICOPTERS HAVING AN MCTOM OF MORE THAN 3 175 KG AND FIRST ISSUED WITH AN INDIVIDUAL CofA ON OR AFTER 1 JANUARY 2023 a. The operational performance requirements for flight data recorders (FDRs) should be those laid down in EUROCAE Document 112A (Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems) dated September 2013, or any later equivalent standard produced by EUROCAE. b. The FDR should, with reference to a timescale, record: 1. the list of parameters in Table 1 below; 2. the additional parameters listed in Table 2 below, when the information data source for the parameter is used by helicopter systems or is available on the instrument panel for use by the flight crew to operate the helicopter; and 3. any dedicated parameters related to novel or unique design or operational characteristics of the helicopter as determined by the Agency. c. The parameters to be recorded should meet the performance specifications (range, sampling intervals, accuracy limits and resolution in read-out) as defined in the relevant tables of EUROCAE Document 112A, or any later equivalent standard produced by EUROCAE.
SPO.IDE.H.150 Data link recording	AMC1 SPO.IDE.H.150 Data link recording

a. Helicopters first issued with an individual CofA on or after 1 January 2016 that have the capability to operate data link communications and are required to be equipped with a CVR shall record on a recorder, where applicable:

1. data link communication messages related to ATS communications to and from the helicopter, including messages applying to the following applications:

i. data link initiation;
ii. controller-pilot communication;
iii. addressed surveillance;
iv. flight information;
v. as far as is practicable, given the architecture of the system, aircraft broadcast surveillance;
vi. as far as is practicable, given the architecture of the system, aircraft operational control data; and
vii. as far as is practicable, given the architecture of the system, graphics;

2. information that enables correlation to any associated records related to data link communications and stored separately from the helicopter; and
3. information on the time and priority of data link communications messages, taking into account the system's architecture.

b. The recorder shall use a digital method of recording and storing data and information and a method for readily retrieving that data. The recording method shall allow the data to match the data recorded on the ground.
c. The recorder shall be capable of retaining data recorded for at least the same duration as set out for CVRs in SPO.IDE.H.140.
d. If the recorder is not deployable, it shall have a device to assist in locating it under water. By 1 January 2020 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the recorder is deployable, it shall have an automatic emergency locator transmitter.
e. The requirements applicable to the start and stop logic of the recorder are the same as the requirements applicable to the start and stop logic of the CVR contained in SPO.IDE.H.140 (d) and (e).

GENERAL

a. As a means of compliance with SPO.IDE.H.150, the recorder on which the data link messages are recorded should be:

1. the CVR;
2. the FDR;
3. a combination recorder when SPO.IDE.H.155 is applicable; or
4. a dedicated flight recorder. In such case, the operational performance requirements for this recorder should be those laid down in EUROCAE Document ED-112 (Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems), dated March 2003, including amendments No°1 and No°2, or any later equivalent standard produced by EUROCAE.

b. As a means of compliance with SPO.IDE.H.150 (a)(2), the operator should enable correlation by providing information that allows an accident investigator to understand what data was provided to the aircraft and, when the provider identification is contained in the message, by which provider.
c. The timing information associated with the data link communications messages required to be recorded by SPO.IDE.H.150(a)(3) should be capable of being determined from the airborne- based recordings. This timing information should include at least the following:

1. the time each message was generated;
2. the time any message was available to be displayed by the flight crew;
3. the time each message was actually displayed or recalled from a queue; and
4. the time of each status change.

d. The message priority should be recorded when it is defined by the protocol of the data link communication message being recorded.
e. The expression 'taking into account the system's architecture', in SPO.IDE.H.150 (a)(3), means that the recording of the specified information may be omitted if the existing source systems involved would require a major upgrade. The following should be considered:

1. the extent of the modification required;
2. the down-time period; and
3. equipment software development.

f. Data link communications messages that support the applications in Table 1 should be recorded.
g. Further details on the recording requirements can be found in the recording requirement matrix in Appendix D.2 of EUROCAE Document ED-93 (Minimum Aviation System Performance Specification for CNS/ATM Recorder Systems), dated November 1998.

GM1 SPO.IDE.H.150 Data link recording
GENERAL

a. The letters and expressions in Table 1 of AMC1-SPO.IDE.H.150 have the following meaning:

1. C: complete contents recorded.
2. M: information that enables correlation with any associated records stored separately from the helicopter.
3. *: applications that are to be recorded only as far as is

	practicable, given the architecture of the system. 4. F1: graphics applications may be considered as AOC messages when they are part of a data link communications application service run on an individual basis by the operator itself in the framework of the operational control. 5. F2: where parametric data sent by the helicopter, such as Mode S, is reported within the message, it should be recorded unless data from the same source is recorded on the FDR. b. The definitions of the applications type in Table 1 of AMC1 SPO.IDE.H.150 are described in Table 1 below. GM1 SPO.IDE.H.150(a) Data link recording APPLICABILITY OF THE DATA LINK RECORDING REQUIREMENT a. If it is certain that the helicopter cannot use data link communication messages for ATS communications corresponding to any application designated by SPO.IDE.H.150(a)(1), then the data link recording requirement does not apply. b. Examples where the helicopter cannot use data link communication messages for ATS communications include but are not limited to the cases where: 1. the helicopter data link communication capability is disabled permanently and in a way that it cannot be enabled again during the flight; 2. data link communications are not used to support air traffic service (ATS) in the area of operation of the helicopter; and 3. the helicopter data link communication equipment cannot communicate with the equipment used by ATS in the area of operation of the helicopter.
SPO.IDE.H.155 Flight data and cockpit voice combination recorder Compliance with CVR and FDR requirements may be achieved by one flight data and cockpit voice combination recorder.	GM1 SPO.IDE.H.155 Flight data and cockpit voice combination recorder COMBINATION RECORDERS a. A flight data and cockpit voice combination recorder is a flight recorder that records: 1. all voice communications and the aural environment required by SPO.IDE.H.140; and 2. all parameters and specifications required by SPO.IDE.H.145, with the same specifications required by SPO.IDE.H.140 and SPO.IDE.H.145. b. In addition, a flight data and cockpit voice combination recorder may record data link communication messages and related information required by SPO.IDE.H.150.
SPO.IDE.H.160 Seats, seat safety belts and restraint systems a. Helicopters shall be equipped with: 1. a seat or station for each crew member or task specialist on board; 2. a seat belt on each seat, and restraint devices for each station; 3. for helicopters first issued with an individual CofA after 31 December 2012, a seat belt with an upper torso restraint system for each seat; and 4. a seat belt with upper torso restraint system incorporating a device that will automatically	AMC2 SPO.IDE.H.160 Seats, seat safety belts and restraint systems UPPER TORSO RESTRAINT SYSTEM The following systems are deemed to be compliant with the requirement for an upper torso restraint system: a. For other-than complex helicopters, a seat belt with a diagonal shoulder strap; b. For all helicopters, a restraint system having a seat belt and two shoulder straps that may be used independently. c. For all helicopters, a restraint system having a seat belt, two shoulder straps and additional straps that may be used independently.

restrain the occupant's torso in the event of rapid deceleration on each flight crew seat. b. A seat belt with upper torso restraint system shall have a single point release.	SEAT BELT A seat belt with a diagonal shoulder strap (three anchorage points) is deemed to be compliant with the requirement for a seat belt (two anchorage points).
SPO.IDE.H.165 First-aid kit a. Helicopters shall be equipped with a first-aid kit. b. The first-aid kit shall be: 1. readily accessible for use; and 2. kept up-to-date.	AMC2 SPO.IDE.H.165 First-aid kit CONTENT OF FIRST-AID KIT — COMPLEX MOTOR-POWERED HELICOPTERS a. First-aid kits should be equipped with appropriate and sufficient medications and instrumentation. However, these kits should be amended by the operator according to the characteristics of the operation (scope of operation, flight duration, number and demographics of persons on board etc.). b. The following should be included in the FAKs: 1. Equipment: i. bandages (assorted sizes); ii. burns dressings (unspecified); iii. wound dressings (large and small); iv. adhesive dressings (assorted sizes); v. adhesive tape; vi. adhesive wound closures; vii. safety pins; viii. safety scissors; ix. antiseptic wound cleaner; x. disposable resuscitation aid; xi. disposable gloves; xii. tweezers: splinter; and xiii. thermometers (non-mercury). 2. Medications: i. simple analgesic (may include liquid form); ii. antiemetic; iii. nasal decongestant; iv. gastrointestinal antacid, in the case of helicopters carrying more than nine persons; v. anti-diarrhoeal medication in the case of helicopters carrying more than nine persons; and vi. antihistamine. 3. Other: i. a list of contents in at least two languages (English and one other). This should include information on the effects and side effects of medications carried; ii. first-aid handbook; iii. medical incident report form; and iv. biohazard disposal bags. 4. An eye irrigator, although not required to be carried in the FAK, should, where possible, be available for use on the ground. AMC3 SPO.IDE.H.165 First-aid kit MAINTENANCE OF FIRST-AID KIT To be kept up to date, the first-aid kit should be: a. inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use;

	b. replenished at regular intervals, 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.
SPO.IDE.H.175 Supplemental oxygen — non-pressurised helicopters a. Non-pressurised helicopters **operated at flight altitudes when the oxygen supply is required** in accordance with (b) shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the required oxygen supplies. b. Non-pressurised helicopters operated above flight altitudes at which the pressure altitude in the cabin compartments is above 10 000 ft shall carry enough breathing oxygen to supply: 1. all crew members for any period in excess of 30 minutes when the pressure altitude in the cabin compartment will be between 10 000 ft and 13 000 ft; and 2. all crew members and task specialists for any period that the pressure altitude in the cabin compartment will be above 13 000 ft. c. Notwithstanding (b), excursions of a specified duration between 13 000 ft and 16 000 ft may be undertaken without oxygen supplies, -in accordance with SPO.OP.195(b).	AMC1 SPO.IDE.H.175 Supplemental oxygen — non-pressurised helicopters DETERMINATION OF OXYGEN The amount of oxygen should be determined on the basis of cabin pressure altitude and flight duration, consistent with the operating procedures, including emergency, procedures, established for each operation and the routes to be flown as specified in the AFM.
SPO.IDE.H.180 Hand fire extinguishers a. Helicopters, except ELA2 helicopters, shall be equipped with at least one hand fire extinguisher: 1. in the flight crew compartment; and 2. in each cabin compartment that is separate from the flight crew compartment, except if the compartment is readily accessible to the flight crew. b. The type and quantity of extinguishing agent for the required fire extinguishers shall be suitable for the type of fire likely to occur in the compartment where the extinguisher is intended to be used and to minimise the hazard of toxic gas concentration in compartments occupied by persons.	AMC1 SPO.IDE.H.180 Hand fire extinguishers NUMBER, LOCATION AND TYPE a. The number and location of hand fire extinguishers should be such as to provide adequate availability for use, account being taken of the number and size of the cabin compartments, the need to minimise the hazard of toxic gas concentrations and the location of toilets, galleys, etc. These considerations may result in the number of fire extinguishers being greater than the minimum required. b. There should be at least one hand fire extinguisher installed in the flight crew compartment and this should be suitable for fighting both flammable fluid and electrical equipment fires. Additional hand fire extinguishers may be required for the protection of other compartments accessible to the flight crew or task specialist in flight. Dry chemical fire extinguishers should not be used in the flight crew compartment, or in any compartment not separated by a partition from the flight crew compartment, because of the adverse effect on vision during discharge and, if conductive, interference with electrical contacts by the chemical residues. c. Where only one hand fire extinguisher is required in the cabin compartments, it should be located near the task specialist's station, where provided. d. Where two or more hand fire extinguishers are required in the cabin compartments and their location is not otherwise dictated by consideration of (a), an extinguisher should be located near each end of the cabin with the remainder distributed throughout the cabin as evenly as is practicable. e. Unless an extinguisher is clearly visible, its location should be indicated by a placard or sign. Appropriate symbols may also be used to supplement such a placard or sign.

SPO.IDE.H.185 Marking of break-in points If areas of the helicopter's fuselage suitable for break-in by rescue crews in an emergency are marked, such areas shall be marked. Marking of break-in points	AMC1 SPO.IDE.H.185 Marking of break-in points COLOUR AND CORNERS' MARKING a. The colour of the markings should be red or yellow and, if necessary, should be outlined in white to contrast with the background. b. If the corner markings are more than 2 m apart, intermediate lines 9 cm x 3 cm should be inserted so that there is no more than 2 m between adjacent markings.
SPO.IDE.H.190 Emergency locator transmitter (ELT) a. Helicopters certified for a maximum seating configuration **above six** shall be equipped with: 1. an automatic ELT; and 2. one survival ELT (ELT(S)) in a life-raft or life-jacket when the helicopter is operated at a distance from land corresponding to more than 3 minutes flying time at normal cruising speed. b. Helicopters certified for a maximum seating configuration of six or less shall be equipped with an ELT(S) or a personal locator beacon (PLB), carried by a crew member or a task specialist. c. ELTs of any type and PLBs shall be capable of transmitting simultaneously on 121,5 MHz and 406 MHz.	AMC1 SPO.IDE.H.190 Emergency locator transmitter (ELT) BATTERIES a. All batteries used in ELTs or PLBs should be replaced (or recharged if the battery is rechargeable) when the equipment has been in use for more than 1 cumulative hour or in the following cases: 1. Batteries specifically designed for use in ELTs and having an airworthiness release certificate (EASA Form 1 or equivalent) should be replaced (or recharged, if the battery is rechargeable) before the end of their useful life in accordance with the maintenance instructions applicable to the ELT. 2. Standard batteries manufactured in accordance with an industry standard and not having an airworthiness release certificate (EASA Form 1 or equivalent), when used in ELTs should be replaced (or recharged if the battery is rechargeable) when 50 % of their useful life (or for rechargeable, 50 % of their useful life of charge), as established by the battery manufacturer, has expired. 3. All batteries used in PLBs should be replaced (or recharged, if the battery is rechargeable) when 50 % of their useful life (or for rechargeable 50 % of their useful life of charge), as established by the battery manufacturer, has expired. 4. The battery useful life (or useful life of charge) criteria in (1), (2) and (3) do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals. b. The new expiry date for a replaced (or recharged) battery should be legibly marked on the outside of the equipment. AMC2 SPO.IDE.H.190 Emergency locator transmitter (ELT) TYPES OF ELT AND GENERAL TECHNICAL SPECIFICATIONS a. The ELT required by this provision should be one of the following: 1. Automatic fixed (ELT(AF)). An automatically activated ELT that is permanently attached to an aircraft and is designed to aid SAR teams in locating the crash site. 2. Automatic portable (ELT(AP)). An automatically activated ELT that is rigidly attached to an aircraft before a crash but is readily removable from the aircraft after a crash. It functions as an ELT during the crash sequence. If the ELT does not employ an integral antenna, the aircraft-mounted antenna may be disconnected and an auxiliary antenna (stored on the ELT case) attached to the ELT. The ELT can be tethered to a survivor or a life-raft. This type of ELT is intended to aid SAR teams in locating the crash site or survivor(s). 3. Automatic deployable (ELT(AD)). An ELT that is rigidly attached to the aircraft before the crash and that is automatically ejected, deployed and activated by an impact, and, in some cases, also by hydrostatic sensors. Manual

	deployment is also provided. This type of ELT should float in water and is intended to aid SAR teams in locating the crash site. 4. Survival ELT (ELT(S)). An ELT that is removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed to be tethered to a life-raft or a survivor. A water-activated ELT(S) is not an ELT(AP). b. To minimise the possibility of damage in the event of crash impact, the automatic ELT should be rigidly fixed to the aircraft structure, as far aft as is practicable, with its antenna and connections arranged so as to maximise the probability of the signal being transmitted after a crash. c. Any ELT carried should operate in accordance with the relevant provisions of ICAO Annex 10, Volume III and should be registered with the national agency responsible for initiating search and rescue or other nominated agency. AMC3 SPO.IDE.H.190 Emergency locator transmitter (ELT) PLB TECHNICAL SPECIFICATIONS a. A personal locator beacon (PLB) should have a built-in GNSS receiver with a cosmicheskaya sistyema poiska avariynich sudov — search and rescue satellite-aided tracking (COSPAS-SARSAT) type approval number. However, devices with a COSPAS-SARSAT with a number belonging to series 700 are excluded as this series of numbers identifies the special-use beacons not meeting all the technical requirements and all the tests specified by COSPAS-SARSAT. b. Any PLB carried should be registered with the national agency responsible for initiating search and rescue or other nominated agency. AMC4 SPO.IDE.H.190 Emergency locator transmitter (ELT) BRIEFING ON PLB USE When a PLB is carried by a task specialist, he/she should be briefed on its characteristics and use by the pilot-in-command before the flight. GM1 SPO.IDE.H.190 Emergency locator transmitter (ELT) TERMINOLOGY a. An ELT is a generic term describing equipment that broadcasts distinctive signals on designated frequencies and, depending on application, may be activated by impact or may be manually activated. b. A PLB is an emergency beacon other than an ELT that broadcasts distinctive signals on designated frequencies, is standalone, portable and is manually activated by the survivors. GM2 SPO.IDE.H.190 Emergency locator transmitter (ELT) MAXIMUM CERTIFIED SEATING CONFIGURATION The maximum certified seating configuration does not include flight crew seats.
SPO.IDE.H.197 Life-jackets — complex motor-powered helicopters	AMC1 SPO.IDE.H.197 Life-jackets — complex motor-powered helicopters ACCESSIBILITY OF LIFE-JACKETS

a. Helicopters shall be equipped with a life-jacket for each person on board, that shall be worn or stowed in a position that is readily accessible from the seat or station of the person for whose use it is provided, when:

1. operated on a **flight over water** at a distance from land corresponding to **more than 10 minutes** flying time at normal cruising speed, where in the case of the critical engine failure, the helicopter is able to sustain level flight;
2. operated on a **flight over water** beyond auto-rotational distance from the land, where in the case of the critical engine failure, the helicopter is not able to sustain level flight; or
3. taking off or landing at an aerodrome or operating site where the take-off or approach path is so disposed **over water** that in the event of a mishap there would be the likelihood of a ditching.

b. Each life-jacket shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

The life-jacket, if not worn, should be accessible from the seat or station of the person for whose use it is provided, with a safety belt or a restraint system fastened.

MEANS OF ILLUMINATION FOR LIFE-JACKETS

The means of electric illumination should be a survivor locator light as defined in the applicable ETSO issued by the Agency or equivalent.

GM1 SPO.IDE.H.197 Life-jackets – complex motor-powered helicopters
SEAT CUSHIONS

Seat cushions are not considered to be flotation devices.

SPO.IDE.H.198 Survival suits — complex motor-powered helicopters

Each person on board shall wear a survival suit when so determined **by the pilot-in-command based on a risk assessment** taking into account the following conditions:

a. **flights over water** beyond autorotational distance or safe forced-landing distance from land, where, in the case of a critical engine failure, the helicopter is not able to sustain level flight; and
b. the **weather report** or forecasts available to the pilot-in-command indicate that the **sea temperature** will be **less than plus 10 °C** during the flight.

GM1 SPO.IDE.H.198 Survival suits — complex motor-powered helicopters
ESTIMATING SURVIVAL TIME

a. Introduction

1. A person accidentally immersed in cold seas (typically offshore Northern Europe) will have a better chance of survival if he/she is wearing an effective survival suit in addition to a life-jacket. By wearing the survival suit, he/she can slow down the rate which his/her body temperature falls and, consequently, protect himself/herself from the greater risk of drowning brought about by incapacitation due to hypothermia.
2. The complete survival suit system – suit, life-jacket and clothes worn under the suit – should be able to keep the wearer alive long enough for the rescue services to find and recover him/her. In practice the limit is about 3 hours. If a group of persons in the water cannot be rescued within this time they are likely to have become so scattered and separated that location will be extremely difficult, especially in the rough water typical of Northern European sea areas. If it is expected that in water protection could be required for periods greater than 3 hours, improvements should, rather, be sought in the search and rescue procedures than in the immersion suit protection.

b. Survival times

1. The aim should be to ensure that a person in the water can survive long enough to be rescued, i.e. the survival time should be greater than the likely rescue time. The factors affecting both times are shown in Figure 1. The figure emphasises that survival time is influenced by many factors, physical and human. Some of the factors are relevant to survival in cold water and some are relevant in water at any temperature.
2. Broad estimates of likely survival times for the thin individual

	offshore are given in Table 1 below. As survival time is significantly affected by the prevailing weather conditions at the time of immersion, the Beaufort wind scale has been used as an indicator of these surface conditions. 3. Consideration should also be given to escaping from the helicopter itself should it submerge or invert in the water. In this case escape time is limited to the length of time the occupants can hold their breath. The breath holding time can be greatly reduced by the effect of cold shock. Cold shock is caused by the sudden drop in skin temperature on immersion and is characterised by a gasp reflex and uncontrolled breathing. The urge to breath rapidly becomes overwhelming and, if still submerged, the individual will inhale water resulting in drowning. Delaying the onset of cold shock by wearing an immersion suit will extend the available escape time from a submerged helicopter. 4. The effects of water leakage and hydrostatic compression on the insulation quality of clothing are well recognised. In a nominally dry system, the insulation is provided by still air trapped within the clothing fibres and between the layers of suit and clothes. It has been observed that many systems lose some of their insulating capacity either because the clothes under the 'waterproof' survival suit get wet to some extent or because of hydrostatic compression of the whole assembly. As a result of water leakage and compression, survival times will be shortened. The wearing of warm clothing under the suit is recommended. 5. Whatever type of survival suit and other clothing is provided, it should not be forgotten that significant heat loss can occur from the head.
SPO.IDE.H.199 Life-rafts, survival ELTs and survival equipment on extended overwater flights — complex motor-powered helicopters Helicopters operated: a. on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed where in the case of the critical engine failure, the helicopter is able to sustain level flight; or b. on a flight over water at a distance corresponding to more than 3 minutes flying time at normal cruising speed, where in the case of the critical engine failure, the helicopter is not able to sustain level flight, and if so determined by the pilot-in-command by means of a risk assessment, shall be equipped with: 1. at least one life-raft with a rated capacity of not less than the maximum number of persons on board, stowed so as to facilitate their ready use in emergency; 2. at least one survival ELT (ELT(S)) for each required life-raft; and 3. life-saving equipment, including means of sustaining life, as appropriate to the flight to be undertaken.	AMC1 SPO.IDE.H.199 Life-rafts, survival ELTs and survival equipment on extended overwater flights – complex motor-powered helicopters LIFE–RAFTS AND EQUIPMENT FOR MAKING DISTRESS SIGNALS a. Each required life-raft should conform to the following specifications: 1. be of an approved design and stowed so as to facilitate their ready use in an emergency; 2. be radar conspicuous to standard airborne radar equipment; 3. when carrying more than one life-raft on board, at least 50 % of the rafts should be able to be deployed by the crew while seated at their normal station, where necessary by remote control; and 4. life-rafts that are not deployable by remote control or by the crew should be of such weight as to permit handling by one person. 40 kg should be considered a maximum weight. b. Each required life-raft should contain at least the following: 1. one approved survivor locator light; 2. one approved visual signalling device; 3. one canopy (for use as a sail, sunshade or rain catcher) or other mean to protect occupants from the elements; 4. one radar reflector; 5. one 20 m retaining line designed to hold the life-raft near the helicopter but to release it if the helicopter becomes totally submerged; 6. one sea anchor; and 7. one survival kit, appropriately equipped for the route to be flown, which should contain at least the following:

	i. one life-raft repair kit; ii. one bailing bucket; iii. one signalling mirror; iv. one police whistle; v. one buoyant raft knife; vi. one supplementary means of inflation; vii. sea sickness tablets; viii. one first-aid kit; ix. one portable means of illumination; x. 500 ml of pure water and one sea water desalting kit; and xi. one comprehensive illustrated survival booklet in an appropriate language.
SPO.IDE.H.200 Survival equipment Helicopters operated over areas in which **search and rescue would be especially difficult** shall be equipped with: a. signalling equipment to make distress signals; b. at least one survival ELT (ELT(S)); and c. additional survival equipment for the route to be flown taking account of the number of persons on board.	AMC1 SPO.IDE.H.200 Survival equipment ADDITIONAL SURVIVAL EQUIPMENT a. The following additional survival equipment should be carried when required: 1. 500 ml of water for each four, or fraction of four, persons on board; 2. one knife; 3. first-aid equipment; and 4. one set of air/ground codes. b. In addition, when polar conditions are expected, the following should be carried: 1. a means of melting snow; 2. one snow shovel and one ice saw; 3. sleeping bags for use by 1/3 of all persons on board and space blankets for the remainder or space blankets for all persons on board; and 4. one arctic/polar suit for each crew member. c. If any item of equipment contained in the above list is already carried on board the aircraft in accordance with another requirement, there is no need for this to be duplicated. AMC1 SPO.IDE.H.200(b) Survival equipment SURVIVAL ELT An ELT(AP) may be used to replace one required ELT(S) provided that it meets the ELT(S) requirements. A water-activated ELT(S) is not an ELT(AP). GM1 SPO.IDE.H.200 Survival equipment SIGNALLING EQUIPMENT The signalling equipment for making distress signals is described in ICAO Annex 2, Rules of the Air. GM2 SPO.IDE.H.200 Survival equipment AREAS IN WHICH SEARCH AND RESCUE WOULD BE ESPECIALLY DIFFICULT The expression 'areas in which search and rescue would be especially difficult' should be interpreted, in this context, as meaning: a. areas so designated by the authority responsible for managing search and rescue; or

	b. areas that are largely uninhabited and where: 1. the authority referred to in (a) has not published any information to confirm whether search and rescue would be or would not be especially difficult; and 2. the authority referred to in (a) does not, as a matter of policy, designate areas as being especially difficult for search and rescue.
SPO.IDE.H.202 Helicopters certified for operating on water — miscellaneous equipment Helicopters certified for operating on water shall be equipped with: a. a sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the helicopter on water, appropriate to its size, weight and handling characteristics; and b. equipment for making the sound signals prescribed in the International Regulations for Preventing Collisions at Sea, where applicable.	GM1 SPO.IDE.H.202 Helicopters certificated for operating on water — miscellaneous equipment INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA International Regulations for Preventing Collisions at Sea are those that were published by the International Maritime Organisation (IMO) in 1972.
SPO.IDE.H.203 All helicopters on flights over water — ditching Complex motor-powered helicopters operated on a **flight over water in a hostile environment** at a distance from land corresponding to **more than 10 minutes**' flying time at normal cruising speed and other-than complex motor-powered helicopters flying over water in a hostile environment beyond a distance of 50 NM from land shall be: a. designed for landing on water in accordance with the relevant airworthiness code; b. certified for ditching in accordance with the relevant airworthiness code; or c. fitted with emergency flotation equipment.	AMC1 SPO.IDE.H.203 All helicopters on flights over water — ditching EMERGENCY FLOTATION EQUIPMENT The considerations of **AMC1 SPA.HOFO.165(d)** should apply in respect of emergency flotation equipment. **AMC1 SPA.HOFO.165(d)** Additional procedures and equipment for operations in hostile environment INSTALLATION OF THE LIFE RAFT (a) Projections on the exterior surface of the helicopter that are located in a zone delineated by boundaries that are 1.22 m (4 ft) above and 0.61 m (2 ft) below the established static waterline could cause damage to a deployed life raft. Examples of projections that need to be considered are aerials, overboard vents, unprotected split-pin tails, guttering, and any projection sharper than a three-dimensional right-angled corner. (b) While the boundaries specified in (a) above are intended as a guide, the total area that should be considered should also take into account the likely behaviour of the life raft after deployment in all sea states up to the maximum in which the helicopter is capable of remaining upright. (c) Wherever a modification or alteration is made to a helicopter within the boundaries specified, the need to prevent the modification or alteration from causing damage to a deployed life raft should be taken into account in the design. (d) Particular care should also be taken during routine maintenance to ensure that additional hazards are not introduced by, for example, leaving inspection panels with sharp corners proud of the surrounding fuselage surface, or by allowing door sills to deteriorate to a point where their sharp edges may become a hazard.
SPO.IDE.H.205 Individual protective equipment Each person on board **shall wear individual protective equipment that is adequate** for the type of operation being undertaken.	GM1 SPO.IDE.H.205 Individual protective equipment TYPES OF INDIVIDUAL PROTECTIVE EQUIPMENT Personal protective equipment should include, but is not limited to: **flying suits, gloves, helmets, protective shoes, etc.**

SPO.IDE.H.210 Headset Whenever a radio communication and/or radio navigation system is required, helicopters shall be equipped with a headset with boom microphone or equivalent and a transmit button on the flight controls for each required pilot, crew member and/or task specialist at his/her assigned station.	AMC1 SPO.IDE.H.210 Headset GENERAL a. A headset consists of a communication device that includes two earphones to receive and a microphone to transmit audio signals to the helicopter's communication system. To comply with the minimum performance requirements, the earphones and microphone should match the communication system's characteristics and the flight crew compartment environment. The headset should be adequately adjustable in order to fit the flight crew's head. Headset boom microphones should be of the noise cancelling type. b. If the intention is to utilise noise cancelling earphones, the operator should ensure that the earphones do not attenuate any aural warnings or sounds necessary for alerting the flight crew on matters related to the safe operation of the helicopter. GM1 SPO.IDE.H.210 Headset GENERAL The term 'headset' includes any aviation **helmet** incorporating headphones and microphone worn by a flight crew member.
SPO.IDE.H.215 Radio communication equipment a. Helicopters operated under IFR or at night, or when required by the applicable airspace requirements, shall be equipped with radio communication equipment that, under normal radio propagating conditions, shall be capable of: 1. conducting two-way communication for aerodrome control purposes; 2. receiving meteorological information; 3. conducting two-way communication at any time during flight with those aeronautical stations and on those frequencies prescribed by the appropriate authority; and 4. providing for communication on the aeronautical emergency frequency 121,5 MHz. b. When more than one communications equipment unit is required, each shall be independent of the other or others to the extent that a failure in any one will not result in failure of any other. c. When a radio communication system is required, and in addition to the flight crew interphone system required in SPO.IDE.H.135, helicopters shall be equipped with a transmit button on the flight controls for each required pilot and crew member at his/her assigned station.	GM1 SPO.IDE.H.215 Radio communication equipment APPLICABLE AIRSPACE REQUIREMENTS For helicopters being operated under European air traffic control, the applicable airspace requirements include the Single European Sky legislation.
SPO.IDE.H.220 Navigation equipment a. Helicopters shall be equipped with navigation equipment that will enable them to proceed in accordance with: 1. the ATS flight plan, if applicable; and 2. the applicable airspace requirements. b. Helicopters shall have sufficient navigation equipment to ensure that, in the event of the failure of one item	

of equipment at any stage of the flight, the remaining equipment shall allow safe navigation in accordance with (a), or an appropriate contingency action to be completed safely. c. Helicopters operated on flights in which it is intended to land in IMC shall be equipped with navigation equipment capable of providing guidance to a point from which a visual landing can be performed. This equipment shall be capable of providing such guidance for each aerodrome at which it is intended to land in IMC and for any designated alternate aerodromes. d. For PBN operations the aircraft shall meet the airworthiness certification requirements for the appropriate navigation specification. e. Helicopters shall be equipped with surveillance equipment in accordance with the applicable airspace requirements.	
SPO.IDE.H.225 Transponder Where required by the airspace being flown, helicopters shall be equipped with a secondary surveillance radar (SSR) transponder with all the required capabilities.	AMC1 SPO.IDE.H.225 Transponder GENERAL a. The SSR transponders of helicopters being operated under European air traffic control should comply with any applicable Single European Sky legislation. b. If the Single European Sky legislation is not applicable, the SSR transponders should operate in accordance with the relevant provisions of Volume IV of ICAO Annex 10.
SPO.IDE.H.230 Management of aeronautical databases a. Aeronautical databases used on certified aircraft system applications shall meet data quality requirements that are adequate for the intended use of the data. b. The operator shall ensure the timely distribution and insertion of current and unaltered aeronautical databases to all aircraft that require them. c. Notwithstanding any other occurrence reporting requirements as defined in Regulation (EU) No 376/2014, the operator shall report to the database provider instances of erroneous, inconsistent or missing data that might be reasonably expected to constitute a hazard to flight. In such cases, the operator shall inform flight crew and other personnel concerned, and shall ensure that the affected data is not used.	AMC1 SPO.IDE.H.230 Management of aeronautical databases AERONAUTICAL DATABASES When the operator of an aircraft uses an aeronautical database that supports an airborne navigation application as a primary means of navigation used to meet the airspace usage requirements, the database provider should be a Type 2 DAT provider certified in accordance with Regulation (EU) 2017/373 or equivalent. GM1 SPO.IDE.H.230 Management of aeronautical databases AERONAUTICAL DATABASE APPLICATIONS a. Applications using aeronautical databases for which Type 2 DAT providers should be certified in accordance with Regulation (EU) 2017/373 may be found in GM1 DAT.OR.100. b. The certification of a Type 2 DAT provider in accordance with Regulation (EU) 2017/373 ensures data integrity and compatibility with the certified aircraft application/equipment. GM2 SPO.IDE.H.230 Management of aeronautical databases TIMELY DISTRIBUTION The operator should distribute current and unaltered aeronautical databases to all aircraft requiring them in accordance with the validity period of the databases or in accordance with a procedure established in the operations manual if no validity period is defined. GM3 SPO.IDE.H.230 Management of aeronautical databases STANDARDS FOR AERONAUTICAL DATABASES AND DAT PROVIDERS a. A 'Type 2 DAT provider' is an organisation as defined in Article 2(5)

	(b) of Regulation (EU) 2017/373. b. Equivalent to a certified 'Type 2 DAT provider' is defined in any Aviation Safety Agreement between the European Union and a third country, including any Technical Implementation Procedures, or any Working Arrangements between EASA and the competent authority of a third country.

TABLE OF CONTENTS

12-EMERGENCY EVACUATION PROCEDURES

AMC3 ORO.MLR.100

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

Revizyon No: 0 Revizyon Tarihi: 01.01.2019

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)

(12.02)- 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: 0 Revizyon Tarihi: 01.01.2019

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

Model: KA 32 A 11 BC

NORMAL CHECK LIST

This checklist is part of the helicopter documentation and must be on board at all times.

It must be used in all phases of the flight described in the same, in helicopters operated by KAAN AIR

NOTE

☒ ☐ : Pilot flying
☐ ☒ : Pilot monitoring
☒ ☒ : Both pilots

☒ ☐ⓘ➔ : It means that the items marked in advance can be carried

☒ ☐✓ : It means that they are limitations, checks / actions that must be known by memory.

☒ ☐☆ : Corresponds to important data / limitations.

❍ DAILY CHECK LIST

FUSELAGE - CABIN LEFT SIDE

☒☐ Exterior Surfaces	CONDITION
☒☐ Side Hatches	CLOSED
☒☐ Filler Cap 3+4 Tank	SECURED
☒☐ LH Main Landing Gear	CONDITION
☒☐ Engine Nacelle	CONDITION, LOCKED
☒☐ LH Engine Oil Level	CHECK
☒☐ Engine Drain Lines	CLEAN
☒☐ Filler Cap No. 5 Tank	SECURED
☒☐ Filler Cap No 1 Tank	SECURED
☒☐ LH nose Landing Gear	CONDITION
☒☐ LH Battery	CONNECTED, hatch CLOSED
☒☐ Crew Cabin LH Door	CONDITION
☒☐ Windshield	CLEAN
☒☐ Rotor Blades.	Out of exhaust zone
☒☐ Side Drain Lines	CLEAN

FUSELAGE – FRONT

☒☐ Front View	NO BANKING
☒☐ Windshield	CONDITION
☒☐ Wipers	CONDITION
☒☐ Exterior Surfaces	CONDITION
☒☐ Lights	RETRACTED
☒☐ Antennas	CONDITION
☒☐ Front Engine Nacelle	CONDITION

FUSELAGE - CABIN RIGHT SIDE

☒☐ Crew Cabin RH Door	CONDITION
☒☐ Windshield	CONDITION
☒☐ RH Battery	CONNECTED, hatch CLOSED
☒☐ Side Drain Lines	CLEAN
☒☐ Side Hatches	CLOSED
☒☐ RH nose Landing Gear	CONDITION
☒☐ Filler Cap No. 1 Tank	SECURED
☒☐ Anti-collision light	CONDITION
☒☐ RH Main Landing Gear	CONDITION
☒☐ Engine Nacelle	CONDITION
☒☐ RH Engine Oil Level	CHECK
☒☐ Filler Cap No 5 Tank	SECURED
☒☐ WOW switch	Red marks in line
☒☐ Engine Drain Lines	CLEAN
☒☐ Filler Cap No 3+4 Tank	SECURED
☒☐ Rotor Blades	CONDITION
☒☐ Hydraulic Hatch	CLOSED

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DAILY

TAIL BOOM RIGHT SIDE

☒☐ Exterior Surfaces	CONDITION
☒☐ RH NAV Light	CONDITION
☒☐ Fin Slat	CONDITION
☒☐ Fillets	CONDITION
☒☐ RH Rudder	CONDITION
☒☐ RH Stabilizer	CONDITION
☒☐ Stabilizer Struts	CONDITION
☒☐ Rear NAV Light	CONDITION
☒☐ TOP anti-collision light	CONDITION
☒☐ FIREX No 1 Bottle	CONDITION

TAIL LEFT SIDE

☒☐ LH Stabilizer	CONDITION
☒☐ Stabilizer Struts	CONDITION
☒☐ LH Rudder	CONDITION
☒☐ Fillets	CONDITION
☒☐ Fin Slat	CONDITION
☒☐ LH NAV Light	CONDITION
☒☐ Antennas	CONDITION

TAIL BOOM LEFT SIDE

☒☐ Exterior Surfaces	CONDITION
☒☐ Electronic Equipment Hatch	CLOSED, screws in line
☒☐ Drain Holes	CONDITION
☒☐ Lower cargo door	SECURED

HELICOPTER TOP

☒☐ Rear Engine Nacelle	CONDITION
☒☐ Rotor Mast	CONDITION
☒☐ Unfolded Blade Device	IN PLACE, SECURED
☒☐ Electric Cables	CONDITION
☒☐ Rotor Blades	CONDITION

FIRE EXTINGUISHING OPERATION

☒☐ Basket	CLOSED,PINS SECURED
☒☐ Cargo hook	TEST, CONDITION CLOSED
☒☐ BAMBI Control head	Label forward, CONDITION
☒☐ BAMBI Bucket	CABLES GENERAL CONDITION
☒☐ Mirrors	CONDITION, SECURED

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CABIN INTERIOR CHECK

☒☐ ①➔Fire extinguisher	INSTALLED
☒☐ ①➔ Aircraft Documentation	ON BOARD
☒☒ ①➔Seat, and seat belts	CONDITION, ADJUSTED
☒☒ ①➔Headsets/helmets	PLUGGED
☒☒ ①➔Mirrors (if installed)	ADJUSTED
☒☒ ①➔ Emergency release door handle	LOCKED SECURED
☒☒ ①➔Collective	FULL DOWN
Route	OFF
Light	OFF
Latch	OFF
☒☒ ①➔Cyclic	CENTERED
Load detach	UP
☒☐ ①➔OVERHEAD PANEL	AS REQUIRED
☒☐ CD Voltage Switch LH, RH	Voltmeter 25,5 min
☒☐ ①➔CD Voltage Switch	CDU-4 or CD-3
☒☐ ①➔Heat Pitot Clock	OFF
☒☐ ①➔Lights	OFF
☒☐ ①➔Anti-Ice Rotor	OFF
☒☐ ①➔Transponder, Radios,	AS REQUIRED
☒☐ ①➔ ICS	ON
☒☐ ①➔INSTRUMENT PANELS	AS REQUIRED
☒☐ ①➔ Fuel Wafer	T
☒☐ ①➔Copilot Altimeter	SET
☒☐ ①➔Clock	ACTUAL TIME, WIND UP
☒☐ ①➔ LIM SIG SYS ON	T/O WEIGHT AS CALCULATED
☒☐ ①➔CENTRAL PEDESTAL	AS REQUIRED
☒☐ Throttles	OPEN / CLOSE - **CLOSED**
☒☐ Shut Off Levers	OPEN / CLOSE - **CLOSED**
☒☐ ①➔ Gyro Consum **M-** CS-**OFF** Mode **Ms**	**MAG**
☒☐ ①➔Auto Pilot	OFF
☒☐ Rotor Brake	ON

Daily Check-List completed

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❍ PRE FLIGHT CHECK

PRE FLIGHT

☒☐ Main ENG Exhaust Cover	REMOVED
☒☐ Static Vents covers	REMOVED
☒☐ Rotor blades	UNTIED
☒☐ Pitot Tube Cover	REMOVED
☒☐ Both Engine inlet covers	REMOVED
☒☐ Any other cover or tie	REMOVED, UNTIED

❍ PRE-START CHECK

☒☒Helmet and gloves	ON
☒☒ Seat Belts	FASTENED
☒☐ Parking Brake	Max 17 Kg ON
☒☐ Rotor Brake	RELEASED
☒☐ All switches	AS REQUIRED, CAPS CLOSED
☒☐ Circuit Breakers	All FORWARD except AUX PUMP
☒☐ Electric Switches	ALL OFF except INVERT MAN
☒☐ NAV Switches	ALL OFF
☒☐ Ext. PWR	IF NECESSARY, ON
☒☐ BATT	ON

APPENDIX 3: BEFORE STARTING ENGINES TESTS

☒☐ Fuel quantity	AS REQUIRED
☒☐ Throttles, and shut off levers	**CLOSED**
☒☐ Fuel valves RH and LH	ON, caps closed
☒☐ Fuel valves APU	ON, Caps closed
☒☐ Fuel Pump Switch/es	ON check light/s

APU START:NOTE: For APU start only pump 2 RH is necessary
Press APU STOP Button if:

- ✓ ● after 9 sec. APU EGT does NOT rise
- ✓ ●aft 9 sec.OIL PRESS NORM is not ON
- ✓ ● after 24 sec. APU ON Light is not on
- ✓ ● APU EGT is higher than 850º C
- ✓ ● APU overspeed light ON

AFTER FAILED APU START, WAIT 3 MINUTES, PERFORM CRANK,
(FOR APU CRANK SEE APENDIX 1) WAIT 3 MINUTES, REPEAT START

☒☐ CREW	ALERT
☒☐ APU Selector Switch	START
☒☐ APU Starter	PRESS (2 SECS.)
☐☒ Stop Watch	START
➢ ☆APU EGT rise in less than 9 sec	CHECK
➢ ☆APU OIL PRESS NORM	LIGHT ON (Verify)
➢ ☆APU ON in less than 24 sec	LIGHT ON

1- MINUTE WARM UP

❍ MAIN ENGINE START

FIRST ENGINE START

NOTE:START FIRST THE ENGINE OPPOSITE TO WIND DIRECTION

Close FUEL SHUT OFF VALVE Lever and press MAIN ENGS STOP IF

- ✓ **No fuel ignition at 20%N**
- ✓**Rotor does NOT turn at 25% N1**
- ✓**ITT exceeds Limit (780° C)**
- ✓**APU TOT exceeds Limit (720° if T<15°or 750° if T>15°)**
- ✓**N1 does not rise continuously (hangs up for more than 3 sec.)**
- ✓**Gas generator has not reached Idle N1 in 60 sec**
- ✓**START VALVE Light ON at 67% N1**
- ✓**Oil Pressure lest than 2Kg/cm² at IDLE**
- ✓**No Pressure in MAIN + STBY HYDR Systems**
- ✓**Ground Personnel commands to stop Engine**

IT IS PROHIBITED TO SHIFT THE ENGINE THROTTLE LEVERS OR THE ROTOR BRAKE IN THE PROCESS OF STARTING.

NOTE. If engine fails to start, make the next starting after cranking. (Apx 2)

☒☐ All Fuel Pump Switches	ON, caps closed, check lights
☒☐ Anti-Collision Lights	ON
☒☐ Engine Selector Switch	SELECT
☒☐ Engine START / CRANK Switch	START
☒☐ Crew	ALERT
☒☐✓ Engine Start Button	PUSH 1-2 Sec
☒☐✓ START VALVE Light	ON
☒☐✓SELECTED ENG Shut Off Lever	OPEN
☒☐✓ STOP WATCH	START
➢ ☆at 20% N1	IGNITION
➢ ☆at 25% N1	BLADES TURNING
➢ ☆ENG Oil Press	RISE min 2kg/cm² (VERIFY)
➢ ☆Main and Standby Hydraulic Oil Pressure	INCREASE
➢ ☆Transmission Oil Pressure	INCREASE
➢ ☆START VALVE Light	OFF at max 65% N1
➢ LH/RH EEG OFF	LIGHT OFF

SECOND ENGINE START

☒☐ Engine Selector Switch	SELECT
☒☐ Proceed as with First Engine	PROCEED
☒☐ Stop Watch	START, 1minute
☒☐ ENG Start Switch Cap	CLOSE
☒☐ APU Stop Button	PUSH
➢ APU ON Light	OFF (Verify), CLOSE CAP

➢ BOTH ENG OIL	TEMP min 30ºC VERIFY
☒☐ Throttles	MOVE TO AUTO
➢ ☆Rotor RPM 88%-92%	VERIFY
➢ ☆Engines oil pressure	3-4 Kg/cm² CHECK
☒☐ GEN LH + RH ON,	CHECK voltage, amperage and lights OFF
➢ Transformer	MAIN, check light OFF
☒☐ Inverter	AUTO, light OFF
☒☐ Rectifiers LH + RH	ON
☒☐ Battery LH + RH	ON (Caps Closed)
➢ BAT BUS	Light OFF
☒☐ Ext PWR OFF Advise Crew	UNPLUG, CHECK light OFF
☒☐ NAV Switches from R to L	ON (ALL)
☒☐ AUX PUMP	ON, VERIFY PRESS

AFTER ENGINES START

Stop watch 2 minutes

☒☐Gyro Slave Button	MAG, PUSH
☒☐ Gyro check both panels with compass heading	DG
☒☐ VG erect	PUSH
➢ VG FAIL light, and FDI RED index	OFF
☒☐ Auto Pilot	ON, CHECK 3 GREEN LIGHTS
☒☐ TRANSPONDER,	AS REQUIRED
☒☐ VHF Radio 1&2	AS REQUIRED
☒☐ Art Horizon 3 MINUTES after switching on	DISENGAGE

TESTS. (appendix 4)

TAXI CHECK

☒☐Chocks (Advise crew)	REMOVED
☒☐ Wheel Brakes	RELEASE

BEFORE TAKE OFF

TAKE OFF

☒☐ Advisory Panel lights	AS REQUIRED
☒☐ Caution and Warning lights	OUT
☒☐ All Temperatures and pressure ind	WITHIN LIMITS

HOVER CHECK

☒☐ Engines Parameters	WITHIN LIMITS

NR Between 89%-90,5% EXCEPT MAX AND MIN POWER RATINGS

☒☐ Caution and Warning Lights	OFF
☒☐ Load (if necessary)	CHECK

CATEGORY A TAKEOFF

☒☐ Control hover altitude 20 ft	Check power applied

☒☐✓ Cyclic	PUSH 10º-15º to start acceleration together with lifting

TDP achieved at VTOSS 35Knots and Height 50 ft

☒☐ Continue to accelerate to 50 kias, with a smooth climb up to 80 ft	
☒☐ ✓At 80 ft height transfer to the best rate of climb speed	Vy

PRE LANDING

☒☐ Caution, Warn. Lights, temperature and pressure ind.	CHECK
☒☐ Brakes	AS REQUIRED

LDP achieved at approx. 40 k, 80 ft , 300 ft/min max vertical speed

AFTER LANDING CHECK

☒☐ Parking Brake	ON
☒☐ Auto Pilot	OFF
☒☐ Art Horizon	CAGE
☒☐ Radio(s) + Transponder	OFF
☒☐ AUX HYDR PUMP Breaker	OFF
☒☐ Navigation light	OFF
☒☐ Landing, search , emergency, or any other light	OFF
☒☐ ANTI-ICE Switches	OFF
☒☐ NAV Switches from L to R	OFF (ALL)
☒☐ RECT LH RH	OFF
☒☐ INV	MANUAL
☒☐ GEN LH RH	OFF
☒☐ Cyclic	NEUTRAL, Check light
☒☐ Gyro	MAG
☒☐ Throttles (Both)	IDLE
☒☐ Stop Watch	START

SHUT DOWN

2 Minute Engines Cool down

☒☐ Engine Shut Off Levers (Both)	CLOSED
➢ ☆BELOW 20% NR	Apply rotor brake
☒☐ Fuel Pumps and Fuel Valves (NR<10%)	Evaluate OFF
☒☐ Overhead breakers	FUEL PUMP CTL RH LH-OFF
AUX PUMP	INV CTL 36V 115V- OFF
☒☐ Anti-Collision Light	OFF
☒☐ Battery LH + RH	OFF
☒☐ Rotor Brake	UPPER STOP
☒☐ Chocks	ON, Check with ground crew
☒☐ Wheel brake	RELEASED
Check-List	COMPLETED

• APPENDIX 1: APU CRANKING

APPENDIX

☒☐LH (RH) TANK PUMPS 2 switches	ON, CHECK
☒☐LH (RH) TANKS 2 PUMP lights	ON, CHECK
☒☐ APU VALVE switch	OPEN, VERIFY
☒☐ APU VLV CLOSED light	OFF, CHECK
☒☐ENG APU START-STOP-CRANK-FALSE START	CRANK
☒☐ APU START button	Press for 1-2 s
CRANKING complete in10-15 s	
☒☐APU STOP button	PRESS
☒☐ENG APU START-STOP-CRANK-FALSE START	START
	RFM Issue 4 sec 2.27
Note: If illogical APU Ovrspeed light is ON, reset BATT twice	

APPENDIX 2: MOTOR CRANKING (DRY MOTORING RUN)

☒☐Engine SHUT-OFF lever	CLOSE, VERIFY
☒☐Engine SHUT-OFF valve	OPEN
☒☐Corresponding booster fuel pump (2 LH or RH)	ON
☒☐MAIN ENGS START CRANK	CRANK
☒☐ MAIN ENG START button	PRESS FOR 2 SEC
➢ When cranking is over	
☒☐MAIN ENGS START-CRANK selector switch	START.
	RFM Issue 4 sec 2.30

APPENDIX 3: BEFORE STARTING ENGINES TESTS

☒☐ ITT (inop)	CHECK
☒☐ ENG Vibration	CHECK
☒☐ Warning Lights + Audio	CHECK
☒☐ Fuel Gauge test	CHECK
☒☐Throttles	AUTO
➢ LH and RH ENG FAIL	ON
➢ MAIN and STBY HYD FAIL	ON
➢ NO BOOST PRESS	ON
➢ RH LG GEN OFF	ON
➢ RH LH RECT OFF	ON
☒☐Throttles	IDLE

FIRE EXTINGUISHING OPERATION

☒☒ WATER RELEASE	CHECK
☒☒ BAMBI RELEASE	CHECK
☒☐ MECHANICAL BAMBI RELEASE	CHECK

• FIRE EXTINGUISHING SYSTEM CHECK (FIREX)

☒☐ OPER-TEST selector switch	TEST
☒☐ DETECTOR TEST selector switch	GR1
➢ MWL (and audio)	FLICKERS
➢ Red CHECK FIRE PNL light	FLICKERS
➢ Red RH/LH/APU ENG FIRE light	ON
☒☐DETECTORS TEST selector switch	NEUTRAL
➢ MWL and Audio signal	OFF
☒☐ **Firex WARN switch**	**OFF then ON**
Failure to reset warning switch can trigger off FIREX system	
➢ FIRE PANEL LIGHTS	OFF
If not OFF, reset system, but DO NOT switch to OPER	
Repeat similar test for pickups GR 2 and GR 3.	
☒☐FIREX SYS OPER-TEST switch	OPER, (cap closed)
	RFM ISSUE 4 sec 2.25

APPENDIX 4; RUNNING ENGINES TESTS

DC SYSTEM CHECK

➢ DC Voltmeter	27–29 V, check

AC SYSTEM CHECK

➢ AC voltmeter	115–119 V, check

STBY TRANS CHECK

☒☐MAIN TRANS-STBY TRANS switch	STBY TRANS
➢ MWL	ON
➢ MAIN TRANS OFF light	ON
➢ 36 V INV ON light	OFF
☒☐MAIN TRANS-STBY TRANS switch	MAIN TRANS
➢ MWL and MAIN TRANS OFF light	OFF

INVERTERS CHECK

☒☐INV AUTO-MAN selector switch	MAN
➢ 36 V AND 115 INV ON light	ON
☒☐INV AUTO-MAN selector switch	AUTO
➢ 36 V AND 115 INV ON light	OFF

INVERTERS AUTOMATIC SWITCHING CHECK (THROTTLES AUTO)

☒☐LH and RH GEN switch	OFF
➢ MWL	ON
➢ LH and RH GEN OFF LIGHT	ON
➢ 36 and 115 V INV ON light	ON
➢ MAIN TRANS OFF light	ON
➢ BAT BUS light	ON
➢ LH RECT and RH RECT OFF light	ON
☒☐ LH GEN Switch	ON

➢ Electrical LIGHTS	ALL OFF except RH GEN Fail
☒☐ RH GEN Switch	ON
☒☐ LH GEN Switch	OFF
➢ Electrical LIGHTS	ALL OFF except LH GEN OFF
☒☐ LH GEN and RH Switch	ON
➢ Electrical LIGHTS	ALL OFF

LOW RPM light and LH (RH) GEN OFF lights

☒☐Engine throttle levers – move smoothly to IDLE up to **NR =75 % and back**	
➢ LOW RPM light	ON at NR = (83–85) %
➢ Audio signal	ON
➢ LH/RH GEN OFF light	ON at NR = (82–84) %
➢ ELECTRICAL LIGHTS	ON
☒☐Engine throttle levers	move smoothly to AUTO
➢ LOW RPM, LH &RH GEN OFF and other warning lights	OFF

EEG FREE TURBINE CIRCUIT CHECK

☒☐Throttle levers both engines	IDLE
☒☐ EEG Free Turbine TEST switch	to FRT-1
☒☐ LH or RH Throttle lever move towards AUTO to attain R RPM 88.5 %	
➢ LH or RH ENG OVERSPD light	ON(rotor RPM 84.5 - 88.5 %)
➢ MWL and audio	ON
☒☐ Throttle lever smoothly move towards IDLE to reduce NR by 5 or 7 %	
➢ LH RH ENG OVERSPD light	remains ON
☒☐ Throttle levers of tested engine	IDLE
☒☐ EEG TEST switch	OPER
➢ **LH or RH ENG OVERSPD light**	**OFF**
➢ MWL and audio	OFF
☒☐EEG Free Turbine TEST switch	FRT-2, Proceed as with FRT1
When switching between FRT2 and FRT1 stop at OPER, Check OVRSPD light OFF	
☒☐Throttle levers of both engines	IDLE
☒☐EEG TEST switch	OPER
➢ LH RH ENG OVERSPD light	OFF
➢ MWL and audio	OFF
☒☐Throttle levers of both engines	AUTO

PARTIAL ACCELERATION TIME CHECK

☒☐Throttle levers of both engines	AUTO
☐☒Gas Generator RPM N1	Write down N1
☒☐Throttle levers of both engines	IDLE
☒☐Throttle levers of both engines	to AUTO in 1 or 2 s
☐☒Watch the time required by gas generators to reach speed that is by 1-1.5 % less than the earlier recorded value starting with the beginning of the throttle motion.	**In normal operation it takes 3 to 6 sec.**

	RFM ISSUE 4 sec 2.37

ENGINES ANTI-ICING SYSTEM CHECK

☒☐AUTO ENG: LH (RH)-OFF-MAN ENG selector switch	MAN ENG
➢ LH & RH ENG ANTI-ICE SYS light	ON VERIFY
➢ ITT	increased by (20–50) °C
☒☐AUTO ENG: LH (RH)-OFF-MAN ENG selector switch	AUTO
➢ LH & RH ENG ANTI-ICE SYS light	OFF

RADIO ALTIMETER CHECK

☒☐ TEST button	PRESS
➢ Indicator pointer	(15–20) m
➢ ALT ALERT light	OFF
☒☐ TEST button	RELEASE
☒☐ Indicator pointer	**0 (zero)**
➢ ALT ALERT light. ON, if altitude alert index is set to 20 m and above	

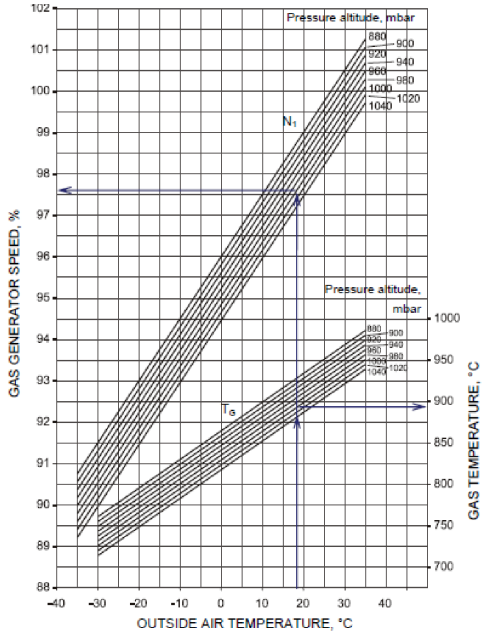
FDI and HSI and LIMIT SIGNAL INDICATOR CHECK

☒☐TEST button	PRESS, flags insight
☒☐ TEST button	RELEASE flags, out of sight
☒☐LSS TEST button	PRESS
➢ MWL and AUDIO	ON
➢ Index VNE on Speed Indicator	approx. 108 Kts
☒☐LSS TEST button	RELEASE

HYDRAULIC SYSTEM CHECK

➢ MAIN and STBY HYD SYS Pressure	64 to 90 kgf/cm^2
➢ AUX HYD PUMP	200 to 220 kgf/cm^2
➢ AUX HYD SYS	75 to 90 kgf/cm^2
☒☐TO MAIN – MAIN ON – MAIN OFF switch	MAIN OFF
➢ MWL and MAIN HYD FAIL LIGHT	ON
➢ STBY HYD SYS gauge pressure	64 to 90 kgf/cm^2
☒☐STBY ON – OFF switch	STBY OFF
➢ STBY HYD FAIL light	**OFF**
➢ STBY HYD SYS gauge pressure	**64 to 90 kgf/cm^2**
☒☐STBY ON– OFF switch	STBY ON
☒☐MAIN ON – OFF switch	MAIN ON
➢ MAIN and STBY HYD SYS gauge	64 to 90 kgf/cm^2
➢ MWL and MAIN HYD FAIL light	OFF
☒☐ STBY ON-OFF switch	STBY OFF
➢ STBY HYD FAIL light	ON
➢ MAIN HYD SYS gauge pressure	64 to 90 kgf/cm^2
☒☐TO MAIN – MAIN ON – MAIN OFF switch	MAIN OFF

➢ MAIN HYD FAIL light	**OFF**
➢ MAIN HYD SYS Pressure	**64 to 90 kgf/cm^2**
☒☐ TO MAIN – MAIN ON – MAIN OFF	MAIN ON
☒☐ STBY ON– OFF switch	STBY ON
➢ MAIN and STBY HYD SYS gauge	64 to 90 kgf/cm^2
➢ MWL and STBY HYD FAIL light	OFF
BACKUP CONTROL VALVES CHECK	
☒☐BACKUP CTRL VALVES-MAIN HYD SWITCH	TEST
➢ MWL and MAIN CTRL VALVE light ON when the controls start to move	
➢ MWL and MAIN CTRL VALVE light OFF when the controls stop	
☒☐BACKUP CTRL VALVES-MAIN HYD SWITCH	NORMAL
➢ MWL and MAIN CTRL VALVE lights	OFF
➢ Repeat test with STBY HYD switch	
POWER ASSURANCE CHECK ON GROUND	
➢ The wind velocity should be no less than 10 knots (5 m/s).	
➢ Before check use chart to determine gas generator RPM N1 and gas temperature ITT according to the OAT and pressure	
Procedure:	
☒☐ Engines	Start, Warm up
☒☐ AUTO ENG LH (and RH) ENG	AUTO
☒☐ switches on engine icing panel	OFF, Verify
☒☐ AIR SUPPLY CARGO CABIN PILOT switches	OFF, Verify
☒☐ Helicopter	Turn into wind
☒☐ Throttle lever of the engine under test	AUTO
☒☐Throttle lever of the other engine towards IDLE till N1 reaches (no less than 78%)	78…80%
☒☐ Collective lever,….. match side index with the top edge of central middle mark	Power indicator Maintain 20 sec
☒☐ N1 and ITT of tested engine	DETERMINE
NOTE. The collective pitch lever must be moved one-way, only upward. If the center mark is passed over, lower the collective lever to the stop and repeat the procedure.	
The checking procedure for the second engine is similar.	
NOTE. (Pressure altitude, mbar), QFE is shown in colsman window with ALT = 0 or subtracting to QNH 1 mbr each 27 ft	
RFM ISSUE 4 sec 4.14	



Prepared for Kamov fleet by

Responsible

Aproved by OPS

EMERGENCY AND MALFUNCTION PROCEDURES

ENGINE FIRE APU FIRE SMOKE OR FUMES IN CABIN	CHECK FIRE PNL
SINGLE ENGINE FAILURE INDICATIONS SINGLE ENGINE FAILURE PROCEDURE ENGINE FAILURE PROCEDURE AFTER LANDING ENGINE RESTART IN FLIGHT	ENG FAIL
DUAL ENGINE FAILURE	
ENGINE OIL PRESSURE BELOW LIMIT ENGINE OIL TEMPERATURE ABOVE LIMIT	ENG OIL PRESS
CHIPS IN ENGINE OIL	ENG CHP
EEG AUTOMATIC CUTOUT GAS GENERATOR CIRCUIT EEG FAILURE	EEG
LH/ RH ENG OVERSPEED LIGHT (ENG SHUTOFF OR FALSE) FREE TURBINE RPM GOVERNOR FAILURE	ENG OVSPD HIGH RPM
DANGEROUS OR INCREASED ENGINE VIBRATION	
MAIN GEARBOX OIL PRESSURE BELOW LIMIT SIMULTANEOUS OIL TEMPERATURE INCREASE IN BOTH ENGINES AND GEARBOX MAIN GEARBOX OIL TEMPERATURE ABOVE LIMIT CHIPS IN MAIN GEARBOX OIL MAIN GEARBOX OIL PRESSURE BETA MAX	GEARBOX
FUEL LOW TANK OVERFLOW TRANSFER PUMP FAILURE BOOSTER PUMPS FAILURE TRANSFER AND BOOSTER PUMPS FAILURE	FUEL
FUEL FILTER CLOGGING	FUEL FLTER
BATTERY CASE TEMPERATURE ABOVE LIMIT AC GENERATOR FAILURE RECTIFIER FAILURE MAIN TRANSFORMER FAILURE	ELECTRICAL
MAIN HYDRAULIC SYSTEM OIL PRESSURE OR TEMPERTURE STAND BY HYDRAULIC OIL PRESSURE BELOW OR TEMPERATURE MAIN OR STBY SYSTEM PRIMARY CONTROL VALVES JAMMING AUXILIARY HYDRAULIC SYSTEM FAILURE NO BOOST PRESS	HYDRAULIC
VERTICAL GYRO FAILURE AUTOPILOT FAILURE COMPASS SYSTEM FAILURE	CHECK AP PNL
HORIZON FAILURE	HOR FAIL
RADIO ALTIMETER FAILURE	RAD ALT FAIL
PITOT HEAT FAILURE	PITOT HT FAIL
ENGINE and ROTOR ANTI-ICING SYSTEM FAILED HSI FDI FAILURE	ICE
LIMITING SIGNALS SYSTEM FAILURE	LSS
LIGHTNING STRIKES THE HELICOPTER STATIC PRESSURE SYSTEM FAILURE	

RECORTAR PARA QUE SE VEAN LAS PESTAÑAS DESDE EL DIRECTORIO, PERO SI ES POSIBLE DEJAR EL PLASTIFICADO DEL MISMO TAMAÑO QUE LA MUESTRA PARA QUE, SIENDO TRASPARENTE PROTEJA LAS OTRAS HOJAS

❍ ENGINE FIRE

Indications:

► MWL and audio signal ..... ON
► CHECK FIREPNL light ..... ON
► LH (or RH) ENG FIRE light..... ON
► BOTTLES-1 light ..... OFF(at automatic operation of the fire extinguishing system)
► Visible smoke of fire
► Fumes

Procedure:

IF ENGINE FIRE OCCUR IN FLIGHT ESTABLISH OEI CONDITIONS

☒ ☐ Affected engine shut-off lever .....CLOSED
☒ ☐ ENG SHUTOFF VLVS LH (OR RH) switch ..... OFF(cap open)
► If BOTTLES-1 light remains ON
☒ ☐ LH (OR RH) ENG FIRE button… ..... Open cap and PRESS
►BOTTLES-1 light shall extinguish)

► If CHECK FIRE PNL light, MWL and audio signal remain ON, proceed as follows:

☒ ☐ BOTTLES 1-2 switch .....Position 2
☒ ☐ LH(OR RH)ENG FIRE button (cap open) .....PRESS
► (BOTTLES-2 light shall extinguish)

☒ ☐ CHECK FIRE PNL light, MWL and audio signal ..... OFF, CHECK

► If engine fire occur in flight, continue procedure as follows:

☒ ☐ AIR SUPPLY switch.....OFF
☒ ☐ FIREX WARN switch.....OFF, then ON
☒ ☐ LH (OR RH) ENG FIRE light.....OFF, CHECK
☒ ☐ EXTERNAL CARGO LOAD.....EVALUATE RELEASING
☒ ☐ MWL and Audio… ..... OFF, CHECK

Land as soon as possible

► On ground proceed as follows:

☒ ☐ Good engine..... Shutoff
☒ ☐ Helicopter ..... Deenergized
► Exit helicopter
☒☒ Helicopter fire extinguisher ..... Use if required

❍ APU FIRE

Indications:

► MWL and audio signal ..... ON
► CHECK FIRE PNL light ..... ON
► APU FIRE light..... ON
► BOTTLES-1 light ..... OFF (at automatic operation of the fire extinguishing system)

Procedure

☒ ☐ APU VALVE OPEN – CLOSED.....CLOSED
► If BOTTLES-1 light is still ON
☒ ☐ APU FIRE button ..... Open cap and PRESS
►BOTTLES-1 light shall extinguish

► If CHECK FIRE PNL light, MWL and audio signal remain ON, proceed as follows:

☒ ☐ BOTTLES 1-2 switch (cap open).....Position 2
☒ ☐ APU FIRE button ..... PRESS
►BOTTLES-2 light shall extinguish.

☒ ☐ CHECK FIRE PNL light, MWL and audio signal ..... OFF, CHECK
☒ ☐ FIREX WARN switch – OFF, then ON (if APU fire occurred in flight)
☒ ☐ APU FIRE light .....OFF, CHECK
☒ ☐ MWL and Audio.....OFF, CHECK

FIRE

❍ SMOKE OR FUMES IN CABIN

Indications:

► Smoke, smell of burning, toxic fumes, etc., in cabin.
► Plumes behind the helicopter.

Procedure:

☒ ☒Open cockpit doors to remove smoke.
☒ ☐ EXTERNAL CARGO LOAD ..... EVALUATE RELEASING
☒ ☐ EMERG DISCONN.....EVALUATE OFF
☐ ☒ FIRE EXTINGUISHER……..EVALUATE APPLYING

IF APU FIRE OCCURRED IN FLIGHT, OR/AND WITH SMOKE OR FUMES IN CABIN;

Land as soon as possible.

► After landing, proceed as follows:

☒ ☐ ENGINES ..... Shutoff
☒ ☐ Helicopter ..... DE ENERGIZE
► Exit helicopter
☒☒ Helicopter fire extinguishers..... Use if required

❍ SINGLE ENGINE FAILURE in flight

_H ENG FAIL

❍ SINGLE ENGINE FAILURE INDICATIONS

► Helicopter-out of trim and height loss
► MWL and audio.....ON
► LH (or RH) ENG FAIL light .....ON
► Affected engine Gas Generator RPM .....DECREASES
► Affected engine ITT..... DECREASES
► Running engine Gas Generator RPM ..... INCREASES
► Rotor RPM.....DECREASES
► LOW RPM warning light ..... ON, when Rotor RPM drops below 85 %
► Audio signal.....CHANGED frequency
► Sound – Engine coming to stop

❍ SINGLE ENGINE FAILURE PROCEDURE

☒ ☐ Airspeed.....maintain 60–65 KIAS
☒ ☐ COLLECTIVE..... Maintain Rotor RPM 87 %,
☒ ☐ MWL..... PRESS TO RESET
☒ ☐ EXTERNAL CARGO LOAD.....EVALUATE RELEASING

WARNING. TO MAINTAIN ROTOR RPM WITHIN THE RANGE OF 87 % TO 92 %, PUSH THE THROTTLE LEVER OF THE OPERATING ENGINE TOWARDS THE FORWARD STOP

► Determine the affected engine
► Complete shutdown of affected engine as follows:

WARNING. BE EXTREMELY CAREFUL NOT TO SHUT DOWN THE GOOD ENGINE

☒ ☐ SHUT-OFF LEVER affected engine.....Close
☒ ☐ FUEL SHUT-OFF VALVE affected engine.....Close
☒ ☐ Altitude – Descent to 1640 ft (500 m), if practical

NOTE: V max range OEI 97 KIAS

Land as soon as practical

❍ LANDING OEI

☒ ☐Airspeed .....REDUCE TO 40 KIAS
☒ ☐At 100 ft. AGL..... INITIATE FLARE

❍ ENGINE FAILURE PROCEDURE AFTER LANDING

☒ ☐CYCLIC STICK.....NEUTRAL
☒ ☐ COLLECTIVE.....Full down
☒ ☐ Wheel brake.....Apply
► Engines.....Shut down
☒ ☐ Shutoff levers.....CLOSED
☒ ☐ Fuel Valves… .....CLOSED
☒ ☐ Helicopter .....De-energize

❍ SINGLE ENGINE FAILURE – HOVER IGE, HEIGHT UP TO 20 FT (6 M)

_H ENG FAIL

► Single engine failure indications

Procedure:

☒ ☐ Maintain heading and landing attitude
☒ ☐ COLLECTIVE LEVER ..... INCREASE AS REQUIRED to control the rate of descent
☒ ☐ Accomplish landing on main wheels

► Follow engine failure procedure after landing

❍ SINGLE ENGINE FAILURE -DURING TAKEOFF (HEIGHT BELOW 50 FT/15 METERS)

_H ENG FAIL

► Single engine failure indications

Procedure:

☒ ☐ COLLECTIVE LEVER..... maintain Rotor RPM 85 %, minimum
☒ ☐ CYCLIC STICK ..... PULL to reduce speed (Pitch angle 13°, maximum)

► Descend at constant visual attitude control:
☒ ☐ By 7–3 ft. (2–1 m) altitude, attain the helicopter landing attitude (Pitch angle 8º–10º)
☒ ☐ From 7–3 ft. (2–1 m) altitude, increase the collective as required while helicopter approaches the ground.
☒ ☐ CYCLIC STICK – prevent an abrupt nose downward movement while touchdown.

► Follow engine failure procedure after landing

❍ SINGLE ENGINE FAILURE -DURING TAKEOFF (HEIGHT ABOVE 50 FT/15 METERS)

_H ENG FAIL

► Single engine failure indications

REJECTED TAKE OFF for Cat A or B procedure

Accomplish single-engine landing as soon as possible

☒ ☐ COLLECTIVE ..... Maintain Rotor RPM 85 %, minimum
☒ ☐ Reduce speed up to 40 kts
☒ ☐ Change over to descent at vertical speed 300 ft/min max
☒ ☐ At height of 3 to 7 ft reduce flare attitude (pitch 10º nose up, max)
☒ ☐ COLLECTIVE LEVER ..... increase as required while the helicopter approaches the ground.
☒ ☐ CYCLIC STICK – prevent an abrupt nose downward movement while touchdown

► Follow engine failure procedure after landing

CONTINUED TAKEOFF for category A procedure:

AFTER TDP

☒ ☐ Continue acceleration prevent loss of altitude of more than 35 feet
☒ ☐ At speed 51 knots… ..... TRANSFER INTO CLIMB
☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ At 200 ft height ..... 60, 65 KIAS

► Follow single engine failure procedure

❍ ENGINE RESTART IN FLIGHT

WARNING. IT IS FORBIDDEN TO START THE FAILED ENGINE IF LH (RH) ENG OVRSPD IS ILLUMINATED

► Procedure:

☒ ☐ Descend to 9,480 feet (3,000 m) or less.
☒ ☐ Fuel shut-off lever (stopped engine) ..... CLOSED
☒ ☐ Fuel shut-off valve (stopped engine) ..... OPEN
☒ ☐ Engine throttle lever ..... IDLE

APU START

☐ ☒ RH TANK PUMPS 2 selector switch ..... ON
☐ ☒ APU shut-off valve ..... OPEN
☐ ☒ APU SELECTOR SWITCH ..... START
☐ ☒ APU STARTER ..... PRESS
► APU Warm UP ..... 1 MINUTE

ENGINE CRANKING

☐ ☒ SHUT OFF LEVER (of restarted engine) ..... CLOSED
☐ ☒ MAIN ENG LH-RH selector switch ..... To engine being started
☐ ☒ MAIN ENG START – CRANK selector switch ..... CRANK
☐ ☒ MAIN ENG START button ..... Press for 1 or 2 s

☐ ☒ After (5–10) s Stop cranking by pressing MAIN ENG STOP button

ENGINE START

☐ ☒ MAIN ENGS START – CRANK selector switch ..... START

► ITT (restarted engine) below 200 °C, ... Check
► Gas Generator RPM not above 7 %, ... Check

☐ ☒ MAIN ENGS START button ..... PRESS FOR 1 OR 2 S,
☐ ☒ START VALVE light ..... ON, CHECK
☐ ☒ Fuel Shut-off Lever (restarted engine) ..... OPEN
☐ ☒ After one minute Engine throttle lever ..... AUTO
☐ ☒ APU ..... STOP

❍ DUAL ENGINE FAILURE

LH ENG FAIL RH ENG FAIL

Indications:

► MWL and Audio signal ..... ON
► LH ENG FAIL light ..... ON
► RH ENG FAIL light ..... ON
► LOW RPM light ..... ON
► LH ENG OIL LOW light ..... ON
► RH ENG OIL LOW light ..... ON
► LH GEN OFF light ..... ON
► RH GEN OFF light ..... ON
► 36 V INV ON light ..... ON
► 115 V INV ON light ..... ON
► LH RECT OFF light ..... ON
► RH RECT OFF light ..... ON
► MAIN TRNS OFF light ..... ON
► BAT BUS light ..... ON

► ENGINES COMING TO STOP

Procedure:

☒ ☐ COLLECTIVE LEVER..... FULL DOWN **immediately**

WARNING. IF CORRECTIVE ACTION IS NOT INITIATED IMMEDIATELY, ROTOR RPM COULD DECAY EXCESSIVELY

☒ ☐ Establish descent at airspeed ……..aprox.70 .KIAS
► Minimum airspeed 54 Kias
☒ ☐ Turn to the direction of the nearest landing site
☒ ☐ Accomplish autorotation landing.
☒ ☐ EXTERNAL CARGO LOAD ..... EVALUATE RELEASING
☐ ☒ If time permits, before landing perform double engines shut down Procedure, close shut-off valves

► Follow engine failure procedure after landing

❍ ENGINE OIL PRESSURE BELOW LIMIT

_H ENG OILPRESS

Indications:

► MWL ..... ON
► LH (RH) ENG OIL PRES light ..... ON

Procedure:

☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ Engine oil pressure and temperature indication ..... CHECK

► If affected engine oil pressure **does not drop below 2,0 kg/CM², and oil temperature does not exceed 150º C:**
Continue flight, monitor engine operation more closely

► If engine oil pressure **drops below 2,0 kg/Cm² or oil temperature exceeds 150º C:**
► Follow single engine failure procedure ;
SHUT DOWN AFFECTED ENGINE

❍ ENGINE OIL TEMPERATURE ABOVE LIMIT

Indications: **There isn't a light indicating malfunction**

► Engine oil temperature above 150º C

Procedure:

☒ ☐ COLLECTIVE ..... Reduce power
► If oil temperature of affected engine remains above 150ºC

► Follow single engine failure procedure ;
SHUT DOWN AFFECTED ENGINE

❍ CHIPS IN ENGINE OIL

_H ENG CHIP

Indications:

► MWL ..... ON
► LH (RH) ENG CHIP lights ..... ON

Procedure:

☒ ☐ MWL ..... PRESS TO RESET

Land as soon as practical

❍ EEG AUTOMATIC CUTOUT

_H EEG OFF

Indications:

► MWL ..... ON
► LH (RH) EEG OFF light ..... ON

Procedure:

☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ LH (RH) EEG switch ..... OFF, then – ON
► Even if LH (RH) EEG OFF light remains ON, **continue flight**.
► Monitor the operating parameters of engine.

CAUTION. DO NOT EXCEED TAKE-OFF POWER

❍ GAS GENERATOR CIRCUIT EEG FAILURE

Central pedestal power limit signal **spontaneous** ON

Indications:

► LH (RH) ENG PWR LIMIT light ..... ON
► N_1 (affected engine) ..... spontaneous drop to about 85%

Procedure:

☒ ☐ Set a flight mode like as if an engine failed.
☒ ☐ LH (or RH) EEG switch ..... OFF, then – ON
► If N_1 (affected engine) has not restored.
☒ ☐ LH (or RH) EEG switch ..... OFF
► The engine operating parameters have restored.
CAUTION. DO NOT EXCEED TAKE-OFF POWER

Land as soon as practical

❍ AUTOMATIC ENGINE SHUT-OFF WITH SIMULTANEOUS ILLUMINATION OF LH (RH) ENG OVERSPD LIGHT

OVRSPD

Indications:

► MWL and Audio signal (headset)..... ON
► LH (RH) ENG FAIL light..... ON
► LH (RH) ENG OVERSPD light ..... ON
► **Single engine failure indications**

► **Follow single engine failure procedure**

❍ FREE TURBINE CIRCUIT FAILURE (FALSE OPERATION OF LH OR RH ENG OVERSPEED LIGHT)

Indications:

► MWL and audio… .....ON
► LH (or RH) ENG OVERSPD light .....ON

► **Engine operating parameters** ..... **NO CHANGE**

NOTE. If EEG is operable, the affected engine is automatically cut out after illumination of the corresponding ENG OVERSPD light

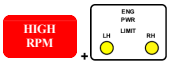
Procedure:

☒ ☐Switch LH (or RH) EEG.....OFF, then ON
► If LH (or RH) ENG OVERSPD light is still ON, LH (or RH)
☒ ☐ LH (or RH)EEG switch ..... OFF
☒ ☐MWL.....PRESS TO RESET

CAUTION. DO NOT EXCEED TAKE-OFF POWER

Land as soon as practical

❍ FREE TURBINE RPM GOVERNOR FAILURE



Indications:

► Spontaneous rise of the ROTOR RPM

► MWL.....ON
► AUDIO signal (headset)..... ON (at Nꝛ 99.4 %)
► HIGH RPM light at Nꝛ 99.4 % ..... ON
► N_1 affected engine(s).....Maximum
► EEG 2.5 MIN light (affected engine) – may be.....ON

Procedure:

☒ ☐**Collective pull abruptly to obtain the ROTOR RPM normal value**
☒ ☐ 2.5 MIN PWR switch (affected engine) ..... OFF
☒ ☐ MWL.....PRESS TO RESET

► Check the Synchronization System cut out:
☒ ☐COLLECTIVE.....move smoothly downward, monitoring the ROTOR RPM

IF Synchronization System has been cut out	IF Synchronization System has NOT been cut out
► The normally operating engine N_1 .....=DECREASES	► Both Engines = Slight CHANGE
► ROTOR RPM .....=DECREASES	► ROTOR RPM =INCREASES
	☒ ☐COLLECTIVE move smoothly further down to increase the ROTOR RPM to **(99–103 %).**
CAUTION	► ROTOR RPM INCREASE ABOVE 98 % CUTS OUT THE SYNCHRONIZATION SYSTEM. (Only 3 secs allowed)
CAUTION	► EEG SWITCHES ENGINE OFF AT ROTOR RPM 106.5±2%)
☒ ☐Shift the THROTTLE lever of the affected engine to position marked by a red line	
☒ ☐COLLECTIVE move smoothly to control the engines power and ROTOR RPM	

Land as soon as practical

☒ ☐An entry regarding exceeding the Rotor RPM limitation shall be made by the pilot in the logbook after the flight is completed

❍ DANGEROUS OR INCREASED ENGINE VIBRATION

VIBR

Indications:

► MWL and Audio signal (headset)..... ON
► LH (RH) ENG VIBR light (red).....ON
► LH (RH) ENG VIBR light (amber) .....ON

Procedure:

☒ ☐ COLLECTIVE LEVER ..... Reduce the power setting
☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ Engine operation parameters.....CHECK

► **If** red LH (RH) ENG VIBR = **OFF** and Amber LH (RH) ENG VIBR= **ON**:
☒ ☐ Engine operation parameters.....MONITOR
☒ ☐ WARN CHECK button.....PRESS
IF PARMETERS ARE OK AND LIGHT GLOWS:
CONTINUE FLIGHT MONITORING PARAMETERS CLOSELY

► **If** red LH (RH) ENG VIBR =**ON**
but amber LH (RH) ENG VIBR =**OFF**
☒ ☐ VIBR METER button on upper panel.....PRESS
☒ ☐ WARN CHECK button.....PRESS
Then proceed as follows:
(a) If amber LH (RH) ENG VIBR light does not glow.
(b) and red LH (RH) ENG VIBR light continues to glow with the button released
►Follow single engine failure procedure ;
SHUT DOWN AFFECTED ENGINE

(c) If amber LH (RH) ENG VIBR light glows each time, it indicates a false operation of red LH (RH) ENG VIBR indication

☒ ☐ Engine operation parameters.....Monitor
CONTINUE FLIGHT MONITORING PARAMETERS CLOSELY

► If red LH (RH) ENG VIBR =**ON** and Amber LH(RH)ENG VIBR =**ON**

► Follow single engine failure procedure ;
SHUT DOWN AFFECTED ENGINE

❍ MAIN GEARBOX

AND / OR

AND / OR

Procedure:

☒ ☐ COLLECTIVE..... Reduce power
☒ ☐ MWL.....PRESS TO RESET
► CHECK GEARBOX PRESS INSTRUMENT
► CHECK GEARBOX TEMPERATURE INSTRUMENT
► CHECK BOTH ENGINES OIL TEMPERATURE INSTRUMENT

Land as soon as possible.

IF POSSIBLE DETERMINE FAILURE

➢ **MAIN GEARBOX OIL PRESSURE BELOW LIMIT INDICATIONS**

► MWL and Audio signal (headset)..... ON
► GRBX OIL PRES LOW light.....ON
► Oil pressure ..... Less than 1.3 kgf/cm^2
► Oil temperature .....INCREASES

➢ **SIMULTANEOUS OIL TEMPERATURE INCREASE ABOVE LIMIT IN BOTH ENGINES AND GEARBOX INDICATIONS**
(Oil cooler fan failure)

Indications:

► MWL.....ON
► GRBX OIL HOT light .....ON
► GRBX OIL PRESS LOW light and audio.....(expected)
► Gearbox oil temperature ..... 100ºC or above
► Both engines oil temperature .....Approaches or exceeds 150ºC

➢ **MAIN GEARBOX OIL TEMPERATURE ABOVE LIMIT INDICATIONS**

► MWL.....ON
► GRBX OIL HOT light .....ON
► Gearbox oil temperature above 100ºC

➢ **CHIPS IN MAIN GEARBOX OIL INDICATIONS**

Indications:

► MWL Audio signal (headset)..... ON
► GRBX CHIP light.....ON
► GRBX OIL HOT light .....(expected)
► GRBX OIL PRESS LOW light and audio.....(expected)

❍ MAIN GEARBOX OIL PRESSURE BELOW NORMAL (AT MAXIMUM SLIP ANGLE)

GRBX PRSS ß MAX

GRBX

Indications:

► MWL ..... ON
► OIL PRES β_{NE} light ..... ON
► Oil pressure ..... below 2.5 kgf/CM^2, VERIFY

Procedure:

☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ Reduce slip angle less than two slip ball diameters indicated by FDI
☒ ☐ OIL PRES β_{NE} light ..... OFF, VERIFY

Continue flight

❍ FUEL LOW IN LH OR RH TANKS GROUP

Indications:

► MWL and audio ..... ON
► 125 L LH/RH TNKS light ..... ON

Procedure:

☒ ☐ Remaining fuel in tank # 2 H ..... CHECK
☒ ☐ XFEED valve ..... OPEN
☒ ☐ XFEED VLV OPEN light ..... ON
☒ ☐ MWL ..... PRESS TO RESET

Plan landing according to remaining fuel

❍ FUEL LOW IN LH AND RH TANKS GROUPS

Indications:

► MWL and audio ..... ON
► 125 L LH TNKS light ..... ON
► 125 L RH TNKS light ..... ON

Procedure:

☒ ☐ Total remaining fuel in tanks # 2 LH and # 2 RH ..... CHECK
☒ ☐ X-FEED valve ..... OPEN
☒ ☐ X-FEED VALVE light ..... ON
☒ ☐ MWL ..... PRESS TO RESET

LAND AS SOON AS POSSIBLE

WARNING. WHEN TOTAL FUEL QUANTITY IS 250 LITERS ENDURANCE IS 15 min UNTIL ALL FUEL IS CONSUME

ONLY WITH TANK 6F INSTALED

❍ 1ST LH TANK OVERFLOW

LH TNK 1

Indications:

► MWL ..... ON
► On TANKS OVERFLOW Caution Lights Panel:
► LH TNK 1 light ..... ON

Procedure:

☒ ☐ FRONT TANK 6 transfer pump switch ..... OFF
☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ Switching ON and OFF TANK 6 PUMPS FRONT, TRANSFER FUEL
☒ ☐ Maintain quantity of fuel in the 1ST LH tank within 50 to 200 L

ONLY WITH TANK 6R INSTALED

❍ 3RD+4TH RH TANK OVERFLOW

RH TNK 3+4

Indications:

► MWL ..... ON
►On TANKS OVERFLOW Caution Lights Panel
►RH TNK 4 light ..... ON

Procedure:

☒ ☐ TANK 6 PUMPS REAR switch ..... OFF
☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ Switching ON and OFF TANK 6 PUMPS REAR,.TRANSFER FUEL
☒ ☐ Maintain quantity of fuel in 3RD+4TH RH tank within 100 to 300 L

❍ 5TH LH TANK OVERFLOW

LH TNK 5

Indications:

► MWL ..... ON
► On TANKS OVERFLOW Caution Lights Panel:
► LH TNK 5 light ..... ON

Procedure:

☒ ☐ LH TANK PUMPS 1 switch (cap open) ..... OFF
☒ ☐ LH TANK PUMPS 3+4 switch (cap open) ..... OFF
☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ Switching ON and OFF LH tank pumps..... TRANSFER FUEL
☒ ☐ Maintain quantity of fuel in 5 LH tank within 50 to 200 L

❍ 5TH RH TANK OVERFLOW

RH TNK 5

Indications:

► MWL ..... ON
► On TANKS OVERFLOW Caution Lights Panel:
► RH TNK 5 light ..... ON

Procedure:

☒ ☐ RH TANK PUMPS 1 switch (cap open) ..... OFF
☒ ☐ RH TANK PUMPS 3+4 switch (cap open) ..... OFF
☒ ☐ MWL ..... PRESS TO RESE
☒ ☐ Switching ON and OFF RH tank pumps..... TRANSFER FUEL
☒ ☐ Maintain quantity of fuel in 5 RH tank within 50 to 200 L

❍ 1ST LH TANK TRANSFER PUMP FAILURE

1 LH TNK PUMP

FUEL

Indications: (If take off was full of fuel, before 35 min flight)

► 1 LH TNK PUMP light ..... OFF,(with fuel in the tank)

Procedure:

☒ ☐ Fuel quantity in the 1st LH TANK ..... CHECK
☒ ☐ LH TANK PUMPS 1 switch (cap open) ..... OFF
☒ ☐ TANK 6 PUMPS FRONT switch (if tank installed) ..... OFF
☒ ☐ XFEED VALVE switch ..... OPEN (cap open)
☒ ☐ XFEED VLV OPEN light ..... ON, VERIFY
☒ ☐ LH TANK PUMPS 2 switch (cap open) ..... OFF
☒ ☐ Fuel quantity in the 3+4 RH TANKS ..... MONITOR
►When 3+4 RH tank is zero
☒ ☐ LH TANK PUMPS 2 switch ..... ON
☒ ☐ XFEED VLV ..... CLOSE
☒ ☐ XFEED VLV OPEN light ..... OFF
►Fuel trapped in the 1st LH tank is unusable

❍ 3+4 RH TANKS TRANSFER PUMP FAILURE

3+4 RH TNK PUMP

Indications: (If take off was full of fuel, before 45 min flight)

► 3+4RH TANK PUMP light ..... OFF,(with fuel in the tank)

Procedure:

☒ ☐ Fuel quantity in the 3+4 RH TANKS ..... CHECK
☒ ☐ RH TANK PUMPS 3+4 switch (cap open) ..... OFF
☒ ☐ 6 TANK PUMPS REAR if installed ..... OFF
☒ ☐ XFEED VALVE OPEN switch ..... OPEN (cap open)
► XFEED VLV OPEN light ..... ON
☒ ☐ RH TANK PUMPS 2 switch ..... OFF
☒ ☐ Fuel quantity in the 1st LH TANK ..... MONITOR
►When 1st LH tank is zero
☒ ☐ LH TANK PUMPS 2 switch ..... ON
☒ ☐ XFEED VLV ..... CLOSE
☒ ☐ XFEED VLV OPEN light ..... OFF
►Fuel trapped in the 3+4 RH tank is unusable

NOTE
With 3+4 RH or 1st LH TANKS TRANSFER PUMP FAILURE:
If in doubts with CG proceed as follows.

☒ ☐ 3+4RH TANK PUMPS ..... OFF
☒ ☐ 6 TANK PUMPS REAR if installed ..... OFF
☒ ☐1 LH TANK PUMPS ..... OFF
☒ ☐ 6 TANK PUMPS FRONT switch (if installed) ..... OFF
►Fuel trapped in the 1st LH, 6F, 6R, 3+4 R tanks is unusable

❍ 3+4 LH TANKS TRANSFER PUMP FAILURE

3+4 LH TNK PUMP

Indications: If took off full, before 1L or 3+4R pump light is off.

► 3+4 LH TANK PUMP light ..... OFF(with fuel in the tank).

Procedure:

☒ ☐ Fuel quantity in the 3+4 LH TANKS ..... CHECK
☒ ☐ LH TANK PUMPS 3+4 switch (cap open) ..... OFF
☒ ☐ XFEED VALVE OPEN switch ..... OPEN (cap open)
☒ ☐ XFEED VLV OPEN light ..... ON, VERIFY
☒ ☐ LH TANK PUMPS 2 switch ..... OFF
☒ ☐ Fuel quantity in the 1st RH TANK ..... MONITOR
►When 1st RH tank is zero
☒ ☐ LH TANK PUMPS 2 switch ..... ON
☒ ☐ XFEED VLV ..... CLOSE
☒ ☐ XFEED VLV OPEN light ..... OFF
►Fuel trapped in the 3+4 LH tank is unusable

❍ 1ST RH TANK TRANSFER PUMP FAILURE

1 RH TNK PUMP

Indications: If took off full, before 1L or 3+4R pump light is off.

► 1 RH TNK PUMP light ..... OFF ,(with fuel in the tank)

Procedure:

☒ ☐ Fuel quantity in the 1st RH TANK ..... CHECK
☒ ☐ RH TANK PUMPS 1 switch ..... OFF (cap open)
☒ ☐ XFEED VALVE OPEN switch ..... OPEN (cap open)
☒ ☐ XFEED VLV OPEN light ..... ON
☒ ☐ RH TANK PUMPS 2 switch ..... OFF (cap open)
☒ ☐ Fuel quantity in the 1 LH TANKS ..... MONITOR
►When 3+4 LH tank is zero
☒ ☐ RH TANK PUMPS 2 switch ..... ON
☒ ☐ XFEED VLV ..... CLOSE
☒ ☐ XFEED VLV OPEN light ..... OFF
►Fuel trapped in the 1st RH tank is unusable

NOTE.
With 1ST RH or 3+4 LH TANK TRANSFER PUMP FAILURE:
If in doubts with CG proceed as follows.

☒ ☐ 1RH TANK PUMP ..... OFF
☒ ☐ 3+4 LH TANK PUMP ..... OFF
►Fuel trapped in the 1st RH and 3+4 LH tanks is unusable

❍ BOOSTER PUMPS FAILURE

Indications:

On the Indication Light Panel:

► LH 2 TNK PUMP light and/or RH 2 TNK PUMP light ..... OFF

Procedure:

☒ ☐ In flight at up to 9840 ft (3000 m) altitude ..... Continue flight
☒ ☐ In flight at altitudes above 9840 ft (3000 m) ..... Descent to 9840 ft (3000 m)
☒ ☐ Fuel quantity in the 2nd LH TANK and 2nd RH TANK ..... MONITOR

Continue flight

❍ TRANSFER AND BOOSTER PUMPS FAILURE

Indications:

► Failed pumps light ..... OFF

Procedure:

☒ ☐ Evaluate the possibility of continuing flight

► Fuel will be used only from tanks 5TH and 2ND of RH, LH group.

❍ FUEL FILTER CLOGGING

►Indications:

► MWL ..... ON
► LH (RH) FUEL FILTER light ..... ON

Procedure:

☒ ☐ COLLECTIVE ..... Reduce power
☒ ☐ MWL ..... PRESS TO RESET

Land as soon as practical

❍ ELECTRICAL POWER FAILURE

❍ BATTERY CASE TEMPERATURE ABOVE LIMIT

❍ ONE BATTERY

_H BAT HOT

Indications:

► MWL and AUDIO ..... ON
► LH (RH) BAT HOT light ..... ON

Procedure:

☒ ☐ LH (RH) BAT switch ..... OFF
☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ LH (RH) BAT HOT light ..... OFF, CHECK

Continue flight

❍ TWO BATTERIES

LH BAT HOT | RH BAT HOT

Indications:

► MWL ..... ON
► Audio signal (headset) ..... ON
► LH BAT HOT light ..... ON
► RH BAT HOT light ..... ON

Procedure:

☒ ☐ LH BAT switch ..... OFF
☒ ☐ RH BAT switch ..... OFF
☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ LH BAT HOT and RH BAT HOT lights ..... OFF, CHECK

Land as soon as practical

NOTE. The batteries after overheating may be used in flight till discharge in case of generators or rectifiers failure

❍ AC GENERATOR FAILURE

_H GEN OFF

Indications:

► MWL ..... ON
► LH (or RH) GEN OFF light ..... ON

Procedure:

☒ ☐ Switch OFF and then ON the generator switches.
☒ ☐ AC AMPS ..... In accordance with circuit load, VERIFY
☒ ☐ AC VOLTS ..... 115–119 V, VERIFY
☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ AC AMPS ..... Monitor

Land as soon as practical

❍ DUAL AC GENERATORS FAILURE

LH GEN OFF | RH GEN OFF

Indications:

► MWL ..... ON
► LH GEN OFF light ..... ON
► RH GEN OFF light ..... ON
► 36 V INV ON light ..... ON
► 115 V INV ON light ..... ON
► LH RECT OFF light ..... ON
► RH RECT OFF light ..... ON
► MAIN TRNS OFF light ..... ON
► BAT BUS light ..... ON
► AC Ammeter ..... Zero
► AC Voltmeter ..... Zero

Procedure:

☒ ☐ Generator switches ..... OFF, then ON
► If LH GEN OFF, and RH GEN OFF lights remain ON and
► Inverters fail to switch on automatically proceed as follows:
☒ ☐ INVERT AUTO – MAN selector switch ..... MAN
☒ ☐ 36 V INV ON light ..... ON, VERIFY
☒ ☐ 115 V INV ON light ..... ON, VERIFY
☒ ☐ MWL ..... PRESS TO RESET

Note 1

Land as soon as possible

❍ RECTIFIER FAILURE

_H RECT OFF

Indications:

► MWL ..... ON
► LH (or RH) RECT OFF light ..... ON

Procedure:

☒ ☐ DC VOLTS (27–30) V ..... VERIFY
☒ ☐ MWL ..... PRESS TO RESET

Continue flight

❍ DUAL RECTIFIERS FAILURE

LH RECT OFF | RH RECT OFF

Indications:

► MWL AND Audio signal ..... ON
► LH RECT OFF light ..... ON
► RH RECT OFF light ..... ON
► BAT BUS light ..... ON

Procedure:

☒ ☐ MWL ..... PRESS TO RESET.

Note 1 **Land as soon as possible.**

NOTE 1: With dual generator failure and/or dual rectifiers failure:

To extend flight time to 30 min, switch off all fuel **transfer** pumps, and emergency lighting in cabin

WARNING. WHEN PUMPS ARE SWITCHED OFF FUEL TRANSFERS ONLY FROM TANKS 5&2

ELECTRICAL

❍ MAIN TRANSFORMER FAILURE

MAIN TRANS OFF

Indications:

► MWL ..... ON
► MAIN TRNS OFF light ..... ON
► 36 V INV light ..... ON

Procedure:

☒ ☐ MAIN TRANS – STBY TRANS selector switch ..... STBY TRANS
☒ ☐ MWL ..... PRESS TO RESET
☒ ☐ 36 V INV ON ..... CHECK OFF

Continue flight

❍ HYDRAULIC SYSTEMS FAILURES

MAIN HYD FAIL

❍ MAIN HYDRAULIC SYSTEM OIL PRESSURE BELOW LIMIT

Indications:

► MWL ..... ON
► MAIN HYD FAIL light ..... ON
► Pressure in main hydraulic system…… drops below (50+-5) kgf/cm²
► ACTUATOR INDICATOR marks ..... Zero
► AUX PUMP ..... ON

Procedure:

☒ ☐MWL ..... PRESS TO RESET
☒ ☐YAW, ROLL, PITCH, switches on the Autopilot panel ..... OFF
☒ ☐Pressure in **STBY** hydraulic system……. 64 to 90 kgf/cm² VERIFY

► Auxiliary pump starts automatically: CHECK
☒ ☐Pump hydraulic pressure… ..... 200 to 220 kgf/cm² VERIFY
☒ ☐Pressure in **AUX** hydraulic system ..... 75 to 90 kgf/cm² VERIFY
► If auxiliary pump fails to start;.
☒ ☐ Before landing ..... AUX PUMP EMERG ON
.
☒ ☐Monitor the standby hydraulic system status

Land as soon as possible

NOTE. If pressure in the main hydraulic system comes back to the normal, the autopilot functions can be restored by switching it ON once again.

HYDRAULIC

❍ MAIN HYDRAULIC OIL TEMPERATURE BEYOND THE LIMITS

Indications:

► MWL ..... ON
► MAIN HYD FAIL light ..... ON

Procedure:

☒ ☐MWL ..... PRESS TO RESET
☒ ☐Oil temperature in the STBYhydraulic system...(88.5 to 96)ºC, CHECK
☒ ☐Oil pressure in the STBY hydraulic system (64 to 90) kgf/cm², CHECK
☒ ☐Oil pressure in the MAIN hydraulic system (64 to 90) kgf/cm², CHECK

► Then proceed as follows:

NOTE In case of pressure increase in **AUX hydraulic** more than 95Kgf/cm² or in **AUX HYD pump** beyond 240Kgf/cm² when main and standby hydraulic systems are serviceable ..... proceed as follows too.

☒ ☐Oil temperature in the MAIN hydraulic system ..... CHECK

► If oil temperature **does not exceed 100ºC**..**Land as soon as practical**
NOTE: Oil temperature increase above +85 °C is allowed during **no** more than 30 minutes

► If oil temperature **exceeds 100ºC** ..... **Land as soon as possible**

❍ STAND BY HYDRAULIC OIL PRESSURE BELOW LIMITS: Indications:

STBY HYD FAIL

► MWL ..... ON
► STBY HYD FAIL light ..... ON
► Pressure in standby hydraulic system ..... drops below 50 kgf/cm²

Procedure:

☒ ☐Pressure in **MAIN** hydraulic system (64 to 90) kgf/cm² ..... VERIFY
☒ ☐MWL ..... PRESS TO RESET

Land as soon as possible

❍ STANDBY HYDRAULIC OIL TEMPERATURE ABOVE LIMITS

Indications:

► MWL ..... ON
► STBY HYD FAIL light ..... ON

Procedure:

☒ ☐MWL ..... PRESS TO RESET
☒ ☐Oil temperature in the MAIN hydraulic system ..... (88.5 to 96)ºC, CHECK
☒ ☐Oil pressure in the MAIN hydraulic system .....(64 to 90) kgf/cm², CHECK
☒ ☐Oil pressure in the STBY hydraulic system …(64 to 90) kgf/cm², CHECK

► Then proceed as follows:
☒ ☐Oil temperature in the STBY hydraulic system ..... CHECK

► If oil temperature **does not exceed 100ºC**..**Land as soon as practical**
NOTE: Oil temperature increase above +85 °C is allowed during **no** more than 30 minute

► If oil temperature **exceeds 100ºC** ..... **Land as soon as possible**

❍ MAIN OR STBY SYSTEM PRIMARY CONTROL VALVES JAMMING

MAIN HYD CTRL VLV

Indications:

► MWL ..... ON
► MAIN HYD (STBY HYD) CTRL VLV light ..... ON

Procedure:

☒ ☐MWL ..... PRESS TO RESET
☒ ☐Pressure in main and standby systems ..... 64 to 90 kgf/cm² VERIFY
☒ ☐Monitor the hydraulic systems instruments

Land as soon as possible

❍ AUXILIARY HYDRAULIC SYSTEM FAILURE

AUX HYD FAIL

Indications:

► MWL ..... ON
► AUX HYD FAIL light ..... ON.

NOTE: In case of an auxiliary hydraulic system failure the AUX HYD FAIL light is **on** only in the following cases:

- In flight with the main hydraulic system failed.
- On ground when the hydraulic tanks are pressurized

► Pressure in AUXILIARY hydraulic system below 50 kgf/cm²

Procedure:

☒ ☐MWL ..... PRESS TO RESET

Continue flight.

► Just before the landing
☒ ☐AUX PUMP EMERG ON – AUTO ..... EMERG ON (cap open)
☒ ☐Aux pump start by instruments ..... CHECK
► If the auxiliary pump has failed to start, the engines can be switched off at parking only after putting the chocks under the wheels

❍ HYDRAULIC SYSTEM PRESSURIZATION FAILURE

Indications:

NO BOOST PRESSURE

► MWL ..... ON
► NO BOOST PRESS light ..... ON

Procedure:

☒ ☐MWL ..... PRESS TO RESET

Continue flight.

► Just before the landing
☒ ☐AUX PUMP EMERG ON – AUTO ..... EMERG ON (cap open)

CAUTION. AFTER LANDING WITH NO HYD BOOST PRESS LIGHT ON THE AUXILIARY PUMP WILL CUT OUT AUTOMATICALLY

AP PNL

❍ VERTICAL GYRO FAILURE

CHECK AP PNL

Indications:

► MWL ..... ON
► VG FAIL light ..... ON
► CHECK AP PNL light ..... ON
► Autopilot (roll, pitch channels) ..... OFF (spontaneously)
► ROLL light ..... ON/Flickers
► PITCH light ..... ON/Flickers
► FDI warning flag HOR, (GH) ..... IN SIGHT
► Discrepancy between FDI , HORs and helicopter actual attitude

Procedure:

☒ ☐MWL ..... PRESS TO RESET
☒ ☐Transfer to piloting HOR:
☒ ☐COURSE switch .(Yaw) ..... OFF
☒ ☐ROLL switch ..... OFF
☒ ☐PITCH switch ..... OFF

Land as soon as practical

❍ AUTOPILOT FAILURE

CHECK AP PNL

Indications:

► Helicopter does not get stabilized in failed channel (yaw, roll, pitch)
► MWL ..... ON
► CHECK AP PNL light ..... ON
► Failed channel lamp ..... OFF
► Movable mark on the zero indicator of the failed channel ..... set to «0»

Procedure:

☒ ☐TRIM button on the cyclic ..... PRESS AND RELEASE
☒ ☐MWL ..... PRESS TO RESET
☒ ☐Failed channel switch ..... OFF
☒ ☐CHECK AP PNL light ..... OFF

Note: For emergency disconnection use AP OFF button on the cyclic
In this case, YAW, ROLL and PITCH switches on the AP PANEL: OFF

Continue flight.

❍ MAIN C S CHANNEL FAILURE

CHECK AP PNL

Indications:

► MWL ..... ON
► CHECK AP PNL light and COMPASS FAIL ..... ON
► AP Central Control Panel COURSE light ..... ON/Flickers
► M light on CS panel ..... ON
► HSI warning flag ..... IN SIGHT

Procedure:

☒ ☐MWL ..... PRESS TO RESET
☒ ☐ CONSUM selector switch M-S ..... To S
► In case of COURSE light flickering ..... switch OFF then ON
► Copilot HSI ..... INOPERATIVE
► PILOT HSI ..... READING RESTORED, CHECK

Continue flight.

❍ STANDBY CHANNEL FAILURE

Indications:

► MWL and COMPASS FAIL ..... ON
► S light on CS panel ..... ON
► Copilot (flight-navigator) HSI CS warning flag ..... IN SIGHT

Procedure:

☒ ☐MWL ..... PRESS TO RESET
☒ ☐CONSUM M-S selector switch ..... M, CHECK
☒ ☐ Pilot HSI readings ..... CORRECT
☒ ☐During flight determine the course by Pilot HSI Magnetic compass readings and GPS
☒ ☐Monitor Compass System and HSI

Continue flight.

❍ FAILURE OF BOTH CS CHANNELS

CHECK AP PNL

Indications:

► MWL and COMPASS FAIL ..... ON
► CHECK AP PNL light ..... ON
► M and S lights on CS control panel ..... ON
► Pilot and Copilot HSI CS warning flags ..... IN SIGHT.

Procedure:

☒ ☐MWL ..... PRESS TO RESET
☒ ☐COURSE switch on AP Panel, (YAW) ..... OFF
☒ ☐During flight determine the course by Magnetic compass reading

Land as soon as practical

❍ HORIZON FAILURE (HOR 1 or HOR 2)

HOR 1 FAIL

Indications:

(a) If HOR 1 fails:
► MWL ..... ON
► HOR 1 FAIL light ..... ON
► HOR 1 warning flag HOR ..... IN SIGHT
► Discrepancy between HOR 1, FDI and HOR 2 indications
(b) If HOR 2 fails:
► HOR 2 warning flag HOR ..... IN SIGHT
► Discrepancy between HOR 2, FDI and HOR 1 indications

Procedure:

☒ ☐MWL ..... PRESS TO RESET
► Do not use indications of affected HORIZON
☒ ☐**Leave switch of affected HOR..... ON**
☒ ☐Monitor helicopter attitude by FDI indications and working HOR

Continue flight.

❍ RADIO ALTIMETER FAILURE

RAD ALT FAIL

Indications:

► MWL ..... ON
► RAD ALT FAIL light ..... ON

Procedure:

☒ ☐Circuit breaker RALT ..... OFF
☒ ☐MWL ..... PRESS TO RESET
► Monitor altitude and: **Continue flight.**

❍ LH/RH PITOT HEAT FAILURE

_H PITOT HT FAIL

MISCELLANY

Indications:

► MWL..... ON
► LH RH PITOT HEAT light ..... ON

Procedure:

In icing conditions proceed as follows:

☒ ☐ MWL.....PRESS TO RESET
☒ ☐ Monitor airspeed by copilot ASI if LH Pitot failed
☒ ☐ Monitor airspeed by pilot ASI if RH Pitot failed

Land as soon as practical

❍ DUAL PITOTS HEAT FAILURE

LH PITOT HT FAIL

RH PITOT HT FAIL

Indications:

► MWL..... ON
► LH PITOT HEAT light..... ON
► RH PITOT HEAT light..... ON

Procedure:

☒ ☐ MWL .....PRESS TO RESET
☒ ☐ If practical, leave icing condition zone

NOTE. If airspeed and pitch angle do not match, maintain pitch angle 0ºcorresponding to 65 KIAS

Land as soon as practical

❍ ENGINE ANTI-ICING SYSTEM FAILED TO SWITCH ON AUTOMATICALLY

Indications:

► With OAT below plus 5ºC and Engine Anti-icing System in AUTO ENG mode, (caps closed) LH (RH) ENG ANTI-ICE light(s) does not switch ON

Note: SW ON PITOT HT audio and light will be ON at approx. plus 5º

Procedure: **CAUTION.** SWITCH ON THE ENGINE ANTI-ICING SYSTEM MANUALLY IMMEDIATELY; IF ONE MINUTE DELAY , DO NOT SWITCH ON THE ENGINE ANTI-ICING SYSTEM AT ALL.

☒ ☐ ANTI-ICE AUTO ENG-OFF-MAN ENG……MAN ENG (cap open)
☒ ☐ LH (RH) ENG ANTI-ICE light(s) after (20–40) s..... ON, CHECK

► If Engine Anti-ice System is switched ON manually and LH(RH) ENG ANTI-ICE light(s) does(do) not switch ON proceed as follows:
☒ ☐ ANTI-ICE AUTO ENG-OFF-MAN ENG..... OFF (cap open)
☒ ☐ Monitor parameters of engine(s) with affected Anti-icing System
.

Land as soon as practical

❍ ENGINE ANTI-ICING SYSTEM FAILED TO SWITCH OFF AUTOMATICALLY

Indications:

► With OAT above plus 10ºC LH (RH) ENG ANTI-ICE light(s)..... ON

Procedure:

☒ ☐ANTI-ICE AUTO ENG-OFF-MAN ENG..... OFF (cap open)
☒ ☐LH (RH) ENG ANTI-ICE light(s).....OFF, CHECK
► If ENG ANTI-ICE light(s) remains ON
☒ ☐Monitor the operating parameters of affected engine

Continue flight.

❍ ROTOR ANTI ICE SYSTEM FAILURE

RTR ICE FAIL

Indications of inoperative rotor anti icing system in icing condition

► MWL…..... ON
► ICE Light…..... ON
► RTR AIS FAIL light…..... ON
► Green ROTOR ANTI-ICE ..... OFF
► AC amps..... Less than 75 AMPS

Indications of operative rotor anti icing system

► ROTOR ANTI ICE Light…..... ON
► ROTOR AIS FAIL light…..... OFF
► AC Amps…..... Not below 75 AMPS

Procedure in icing conditions :

☒ ☐ AUTO ROTOR selector switch…..... MAN
☒ ☐anti icing system ..... CHECK OPERATION

IF icing condition persists and rotor anti icing system remains inoperative: LAND AS SOON AS POSSIBLE

❍ DIFFERENCE OF HSI PILOT AND COPILOT INDICATIONS

Indications:

► Discrepancy of 5 degrees between heading HIS indications

Procedure:

☒ ☐Compare both HSI indications with magnetic compass indications
► If magnetic compass and Pilot HSI indications are the same
☒ ☐ CONSUN M-S switch…..... M
► If magnetic compass and Copilot HSI indications are the same
☒ ☐ CONSUM M-S switch…..... S
► Copilot HSI warning flag..... IN SIGHT
☒ ☐Compass system and HSI.....MONITOR

Continue flight.

❍ FLIGHT DIRECTOR INDICATOR (FDI) FAILURE

Indications:

► MWL..... ON
► FDI HOR (GH) warning flag.....IN SIGHT
► Discrepancy between FDI readings and the helicopter actual attitude

Procedure:

☒ ☐FDI indications.....Do not use
☒ ☐MWL .....PRESS TO RESET
☒ ☐Control the helicopter attitude against horizon and other flight instruments

Continue flight.

❍ LIMITING SIGNALS SYSTEM FAILURE

Indications:

► Airspeed indicator warning flag..... IN SIGHT

Procedure:

☒ ☐Refer to Table 1-4, Section 1, RFM for V_{NE} limits

Continue flight.

❍ LIGHTNING STRIKES THE HELICOPTER STRUCTURE IN FLIGHT

► In case of suspected lightning strike

Procedure:

☒ ☐ Reduce airspeed 65KIAS
☒ ☐ Extreme maneuvers ..... AVOID

LAND AS SOON AS POSSIBLE

❍ FIRST SUB-SYSTEM OF FUSELAGE STATIC PRESSURE SYSTEM FAILURE

Indications:

► Discrepancy between pilot and co-pilot altimeter by more than 100 ft

Procedure:

☒ ☐Compare both altimeter indications with the additional panel altimeter
► If pilot altimeter and additional altimeter indications are the same do not use co-pilot altimeter indications
► If co-pilot altimeter and additional altimeter indications are the same set EMERGENCY selector switch to EMEG position
☒ ☐Monitor V_{NE} against table 1-4

Continue flight

This Check List is an extract from KAMOV KA32A11BC RFM

If there is a discrepancy with this or subsequent RFM or with approved revisions, KAMOV KA 32A11BC RFM will prevail over this Check list.

Both, Check List and RFM must be on board at any time during flight.

Prepared for Kamov fleet by