

**Operations Manual Part B**

**Helicopter Operating Matters**

ALL REPRODUCTION RIGHTS ARE RESERVED

COMMERCIAL IN CONFIDENCE

Contents

[**1.** **Operational Limitations** 4](#_Toc132429159)

[1.1 Operational Limitations 4](#_Toc132429160)

[1.2 Passenger seating configuration 5](#_Toc132429161)

[1.3 Mass and Center of Gravity. 5](#_Toc132429162)

[1.4 Speed Limitations. 5](#_Toc132429163)

[1.5 Crew Composition. 5](#_Toc132429164)

[1.6 Wind Limitations. 5](#_Toc132429165)

[1.7 General A/C Limitations. 5](#_Toc132429166)

[1.8 Loading and securing of items in the helicopter 5](#_Toc132429167)

[1.9 MEL 6](#_Toc132429168)

[1.10 Safety equipment 6](#_Toc132429169)

[1.11 Transponder 6](#_Toc132429170)

[1.12 ELT 6](#_Toc132429171)

[1.13 Fire Extinguisher 6](#_Toc132429172)

[**2.** **Normal Procedures** 7](#_Toc132429173)

[2.1 General 7](#_Toc132429174)

[2.2 Allocation of Crew Duties 7](#_Toc132429175)

[2.3 Crew Briefings and S.O.P Calls 7](#_Toc132429176)

[2.4 Operations in Falling or Blowing Snow 8](#_Toc132429177)

[2.5 Pre-Departure 8](#_Toc132429178)

[2.6 Altimeter Setting and Checking 9](#_Toc132429179)

[2.7 Taxing Procedures - Prevention of Rollover 9](#_Toc132429180)

[2.8 Take Off Procedure 12](#_Toc132429181)

[2.9 Noise Abatement 13](#_Toc132429182)

[2.10 En-route Procedures 13](#_Toc132429183)

[2.11 Landing Procedures 13](#_Toc132429184)

[**3.** **Emergency Procedures** 14](#_Toc132429185)

[3.1 Emergency Checklist 14](#_Toc132429186)

[3.2 Allocation of Duties 14](#_Toc132429187)

[3.3 Discover or Warning of an Explosive Device in the Aircraft 14](#_Toc132429188)

# Operational Limitations

## Operational Limitations

* + 1. Brook Aviation operates the following aircrafts:

|  |  |  |
| --- | --- | --- |
| A/C | Type | Registration |
| Helicopter | S76C++ | 4X-BHT |
| Helicopter | S76C++ | 4X-BHS |
| Helicopter | S76C++ | 4X-BHP |
| Helicopter | S76C++ | 4X-BEX |
| Helicopter | S76C++ | 4X-BOB |

* + 1. Those helicopters are leased from Milestone Aviation Group and marked 4X as required. The company operates only in Israel
    2. The company operates under Commercial operation license number 80/03/2019 from 20/05/2019 and under Air Operator Certificate-AOC which is subject to validity of commercial operation license. and under chapter 12 of flight regulations and A/C operation – Commercial Air Transport.
    3. Each aircraft is operated under specific Ops-Spec given to a specific 4X registration.
    4. In general- all helicopters are operated under the Israeli Flight Law and its regulations, Maintenance manual MCM, Aircraft operations manual and under this Company Operations Manual.
    5. Carrying of drugs in flight results in cancelation of operator license.
    6. Amendment of AOC -Can be done by CAAI or operator request with respect to flight safety. Such request shall be sent 15 days in advance.
    7. Amendment of Ops-Spec -Can be done by CAAI or operator request with respect to flight safety.
    8. Such request shall be sent 15 days in advance by the operator, if the CAAI refuses than appeal can be placed within 30 days, CAAI will inform the operator at least 7 days in advance about requested amendment. The amendment enters into force within 30 days. CAAI can enter amendment into force immediately if respect to flight safety.
    9. Brook Aviation shall not operate any of the above helicopters under chapter 12 of A/C Operation and Flight Regulations with a different commercial name than the name indicated in his license.
    10. Brook Aviation shall not publish or offer any flight operated under chapter 12 of A/C Operation and Flight Regulations which is not in accordance with his license (AOC).
    11. If Brook Aviation shall decide to stop flight activity under chapter 12 A/C Operation and Flight Regulations – it shall return his licenses to CAAI within 30 days

## Passenger seating configuration

* + 1. All aircraft can be operated with up to 12 passenger seats without crew seats,
    2. Number of seats will be instructed by the company operations as it influences and determines the crew composition, see part A 4.1.c
    3. The left crew seat is not to be occupied by a passenger with 8 seats configuration and above and/or with dual controls. Part A 8.3.l/m

## Mass and Center of Gravity.

* + 1. C&G calculation is required for each flight.
    2. Center of Gravity limitations information is presented in the A/C flight manual and in this O.M part A par 8.1k

## Speed Limitations.

* + 1. Refer to S76 flight manual, AIP and Law regulations.

## Crew Composition.

* + 1. Refer to part A par. 4 of this O.M

## Wind Limitations.

* + 1. Refer to S76 flight manual
    2. Up to 10KT landing and take of up to +/- 90 degrees
    3. Above 10 KT landing and take-off up to +/-30 degrees

## General A/C Limitations.

* + 1. Refer to S76 flight manual

## Loading and securing of items in the helicopter

* + 1. Refer to Part A par. 8.2.b.10

## MEL

* + 1. Refer to Part A par. 8.4
    2. Refer to MCM

## Safety equipment

* + 1. Refer to Part A par 8.1.q
    2. First aid kit -Refer to Part A par. 8.1.q.3, the aircraft equipped with medium size first aid kit.

## Transponder

* + 1. Transponder should be operated during all flight

## ELT

* + 1. ELT shall be operated during the entire flight.
    2. Pilot shall make sure that before take-off and after landing ELT is on and will listen to 121.5 frequency to make sure that the ELT is not transmitting.
    3. After landing ELT shall be switched off

## Fire Extinguisher

* + 1. At least 1 fire extinguisher shall be allocated and available to the commander
    2. At least 1 fire extinguisher shall be allocated in passenger compartment when the configuration is of 10 seats without crew seats.

# Normal Procedures

## General

* + 1. The NOP Single Sheet Checklist is a list of vital actions which, if not completed might cause a safety hazard. It is not an exhaustive list of operating instructions for the aircraft. Reference must be made to the Operations Manual Part A & B, the Flight Manual, and to good aviation practice to determine the operation of the aircraft.

## Allocation of Crew Duties

* + 1. See part A chapter, 4.2.e.

## Crew Briefings and S.O.P Calls

The following list the minimum requirements to be briefed prior to all take-offs, approaches and landings. It should be noted that there is no standard brief nor is it the intention to introduce a format to be recited from memory. 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 his duties are during that phase of flight.

To help PM understand and effectively monitor the mode of flight (i.e. manual, fly-through or automated) PF should verbalize his actions, such as “Engaging GA”, “Flying-through”, “Releasing to Upper Modes” etc.

* + 1. Flight Preparations Brief contents
       1. All flight preparations mentioned in part A par 8.1 are part of the crew briefing even before approaching the helicopters.
       2. Commander duties can be divided to both crew members at the discretion of the commander.
       3. This briefing also includes all aerodromes or helipads, routes, time frame, fuel calculations, meteorological conditions and information, TAF METAR, NOTAMs, MEL C&G, and anything which is needed to conduct the flight safely and with accordance to this operation manuals, A/C flight manual and Israeli Flight Law and regulations.
    2. Onshore Take-Off Brief Contents
       1. Hover checks
       2. Type of take-off steep, shallow, surface conditions.
       3. Calls required (e.g. V1, Vtoss, Vy) and use of automation Monitor power / airspeed / rate of climb / Altitude if applicable.
       4. Actions in the event of an emergency.
    3. Approach Brief Contents (IFR)
       1. N/A
    4. Onshore Landing Brief Contents
       1. Landing type, runway/direction, obstacles, slope, dust, altitude.
       2. LDP, Go-around OEI using indicated Vtoss Actions in the event of an emergency
    5. Offshore Take-Off Brief Contents
       1. N/A
    6. Offshore Landing Brief Contents
       1. N/A
    7. Standard calls when using AFCS upper modes
       1. N/A

## Operations in Falling or Blowing Snow

* + 1. N/A Flying in icy conditions is prohibited

## Pre-Departure

* + 1. Refueling
       1. Whenever the fuel state allows, refueling should be arranged to distribute the fuel equally between the helicopters fuel tanks.
    2. Engine Start
       1. To equalize the number of first starts on each engine, the normal practice will be to start the No 1 engine first on odd numbered dates and No 2 engine first on even numbered dates. Or if FM specifies differently.
       2. External power pack is recommended.
    3. Radio Allocation
       1. Make sure that COM 1+2 are on in order to keep radio communication with the control unit and the company operations before startup and during the flight

## Altimeter Setting and Checking

* + 1. Altimeter settings shall be made in accordance with the Operations Manual Part A. par 8.3.c.2
    2. In order to increase PMs monitoring capability, PF and PM should be set to the same barometric pressure setting.
    3. When setting a target for altitude acquire, crews should bear in mind that the altitude set is referenced to the altimeter on the side that has the “master” autopilot control. The master side is that side (LH or RH) which has the inverse video on the MFD navigation source text.
    4. The master side can be changed by coupling AFCS navigation to an MFD on the appropriate side. On the ground, the master side can be changed even though no upper modes will be engaged. On power-up, the master side defaults to the RHS. Before take-off, crews are to ensure that PF has the master side, and in the event of a change of PF during flight, the master side should be swapped accordingly.
    5. When an altimeter pressure setting is changed on one side only, the ALT.A target will change on the non-master side.
    6. When the crew have different altimeter settings, there will be a difference in the displayed altitude acquire target between the crew, and this must be considered when cross-checking.
    7. Decision of Bug Settings
       1. Rad-alt bug (DH) settings should be made in accordance with the Operations Manual Part A. par 8.3.c.2

## Taxing Procedures - Prevention of Rollover

* + 1. *Static Rollover:* The major forces producing fuselage rolling moments during ground taxiing are weight, crosswind, tail rotor force and main rotor hinge moment. Forces arising from cornering, ground slope and fuel slosh may also be present but generally their effect is small. When the collective is fully lowered for taxiing, lift from the main rotor is low. On the ground the helicopter's rolling axis tends to be along a line drawn between a main wheel and the nosewheel. The effect of weight is always to provide a stabilizing moment provided that the center of gravity remains inboard of this axis. On the other hand, the tail rotor force in a right turn tends to roll the helicopter to the left. With high rotor hub above the ground, applying of full right pedal creates a rolling force to the left. In some conditions the rolling moment generated is sufficient to overbalance the helicopter. This phenomenon is known as "static rollover".
    2. *Effect of Vertical CG Position on the Rollover Threshold*: Although the effect of weight is stabilizing when the helicopter starts to roll, once the center of gravity moves outside the rolling axis, the effect of weight is de- stabilizing and the rollover becomes self-sustaining.
    3. The boundary (expressed as roll angle) between stabilizing and de- stabilizing moments varies with weight and position, particularly the vertical position, of the CG.
    4. *Points of Emphasis:*
       1. The use of full right pedal should be avoided. Full right pedal is a very powerful control and generates a substantial rolling moment to the left.
       2. Always anticipate the requirement for a coordinated lateral cyclic input in the same direction as the applied yaw pedal when entering a turn. Do not wait for the "out-of-turn" fuselage lean to develop. The normal limit of lateral cyclic displacement from neutral is 2”, however this may be increased in the into-wind direction if there is a strong crosswind. Avoid large cyclic movements with the collective fully lowered.
       3. Tight turns to the right are more critical than to the left. Prior to taxiing, thought must be given to choosing the optimum route. Tight turns should be avoided. If unavoidable, tight turns to the left are preferable. If a tight turn to the right has to be made, apply a moderate amount of right cyclic, use differential braking and keep right pedal application to the minimum required to achieve the maneuver. Stop the maneuver if it becomes apparent that an unusually large amount of right pedal will be required to complete it.
       4. Adverse slopes, crosswinds and low all-up weights may increase the risk of rollover and require extra care with respect to lateral cyclic/pedal co-ordination.
       5. The perception of fuselage roll (e.g. the onset of rollover) may be more difficult at night in some surroundings and that any delay in applying corrective lateral cyclic may be catastrophic.
       6. If the onset of "out-of-turn" rollover is suspected, immediate corrective action should be the reduction of "in-turn" pedal and the addition of "in-turn" cyclic
    5. Turning Difficulties whilst Taxiing
       1. Due to stiff nosewheel characteristics or partial re-engagement of the nosewheel lock pin, there have been occasions when aircraft have failed to achieve the turn radius expected by the pilot flying. If this occurs in the vicinity of obstructions, the aircraft must be stopped immediately and all available options reviewed before continuing with the safest course of action (e.g. shut down, obtain marshalling assistance etc.).
    6. Prevention of Rotor Head Damage
       1. Flapping restrainer system damage is easily incurred if the correct taxiing technique is not used. Contact with the blade droop and coning restrainers generates high stresses and is most likely when the collective lever is at a low pitch setting with the cyclic control in a position other than neutral. The following points should be noted:
       2. *Commencing the Taxi:* With the nosewheel lock disengaged, taxiing should be commenced by firstly raising the collective lever to between 2 and 3 on the FLI, and then easing the cyclic control slightly forward.
       3. On no account should forward cyclic be applied before raising the collective lever. To reduce speed, centralize the cyclic then reduce collective pitch, to minimum if necessary. Use the wheel brakes if further speed reduction is required.
       4. Use the automatic cyclic centering button (depress upper mode release button for 2 seconds with the collective fully down) to centralize the cyclic before taxi, then move the cyclic against the spring trim during taxi to retain the central datum.
       5. *Braking:* The toe brakes should be used for normal braking. The parking brake should not be applied unless the aircraft is stationary. Except for differential braking to assist turning, do not apply wheel braking unless the collective is fully lowered.
    7. Avoidance of Biomechanical Vertical Oscillations
       1. When on the ground, it is important always to keep the collective in trim by depressing the trim release when moving it. Care must be taken to avoid inadvertent movements of the collective against the trim, e.g. whilst traversing a bump on the taxiway, as this could trigger violent biomechanical oscillations. Therefore, the collective must not be grasped unless the trim release is depressed. When it is not necessary to move the collective, it must nevertheless be guarded by keeping a hand lightly touching or in close proximity to it.
       2. Should such biomechanical oscillations occur, the recovery action is to depress the trim release, fully lower the collective, then let go of the collective lever. The AFCS must always be engaged during taxi.
    8. Use of Collective Friction, Lock and Parking Brake
       1. Collective friction should be fully released, unless there is a system failure that precludes use of collective trim. If friction is used in flight, this is likely to impair the autopilot’s safety features and possibly damage the collective trim actuator.
       2. When the aircraft is stationary on the ground (other than momentary pauses during taxi) the collective lock must be applied. When coming to a halt during taxiing and applying the collective lock and parking brake, the sequence must be to lock the collective first, then engage the parking brake. To move off, first disengage the parking brake, and then unlock the collective. Clear hand over techniques must be adopted when changing control between pilots.
       3. Care must be taken to only apply the parking brake when the aircraft is stationary. As PF the LHS pilot should not apply/release the parking brake, instead request its operation by the RHS pilot.

## Take Off Procedure

Refer to Section 4 (Performance) or Flight Manual Supplement to establish restricted take-off weights.

* + 1. Onshore Take-off
       1. The take-off profiles will be as described in the helicopter Flight manual.
       2. Whenever take-off distance constraints allow, crews shall nominate a Vtoss at least 5 kts higher than the indicated Vtoss (not exceeding Vy) to ensure a comfortable rate of climb OEI.
    2. Offshore Take-off
       1. N/A

## Noise Reduction

* + 1. Noise Reduction procedures are detailed for individual Aerodromes in OM Part C ‘Helicopter Offshore Route Guide’ (HORG).
    2. More detailed procedures if applicable are detailed in the Base Guides for each individual operating base contained in the Appendices to Section 4 of OM Part C.

## En-route Procedures

* + 1. Cruise Power Settings
       1. The standard cruise power setting for the S76 is Maximum Continuous Power (MCP).
    2. Fuel Management in Flight
       1. When fuel is carried in the sponsons, these shall be emptied first by activating the “auto-transfer” system shortly after take-off.
       2. Fuel balancing between the forward and aft tank groups shall be carried out, if necessary.
    3. Bank Angles in Flight
       1. +/- 30 degress roll
       2. +/- 10 degrees nose up and 5 degrees nose down

## Landing Procedures

* + 1. Identification of Landing Location
       1. Before landing it is important to ensure that the landing will take place at the intended location. Therefore, the NOP Finals checklist includes an item to “IDENTIFY DESTINATION”. For offshore installations, this shall be confirmed by checking the GPS range & bearing to the installation on short finals, and by visual confirmation of the location name before committal point. For onshore locations, this should be confirmed either by checking the GPS range & bearing on finals, or by visual identification.

# Emergency Procedures

## Emergency Checklist

* + 1. The full Emergency Procedures check list is copied from the Flight Manual. This is a laminated document, separate to this Operations Manual.
    2. The crew shall act in accordance with this check list in case of emergency

## Allocation of Duties

* + 1. The Commander has final responsibility for the safety of the aircraft and malfunction handling, securing engines, switching off systems, PAN/MAYDAY calls, etc. If functioning as PF, the Commander should consider whether to hand over control in order to better manage the situation.
    2. The Commander must manage the flight not only to deal with the presented emergency but also other risks that might be introduced through distraction and preoccupation.
    3. The Commander must determine a plan of subsequent action, consulting with the crew, and should ensure that the passengers and any cabin crew are briefed as soon as practicable.
    4. See Part A par 1.4.1

## Discover or Warning of an Explosive Device in the Aircraft

* + 1. Should the crew receive a warning of a suspected explosive device being on board the aircraft, the Commander must decide whether to land immediately, return to the departure point or divert elsewhere, dependent upon the urgency of the warning