| | |
|---|---|
| EMERG | LIST OF WARNING MESSAGES |
| | ELECTRICAL SYSTEM |
| | ENGINE & DRIVE SHAFT FAILURE<br>EMERGENCY SHUT DOWN |
| | FIRE & SMOKE |
| | LANDING GEAR, STATIC PORT OBSTRUCTION, LIGHTNING STRIKE |
| | ROTOR & TRANSMISSION |
| MALFUNCTION | LIST OF CAUTION MESSAGES |
| | AUTOMATIC FLIGHT CONTROL SYSTEM |
| | AVIONIC SYSTEMS |
| | ELECTRICAL SYSTEM |
| | ENGINE,<br>ENGINE RESTART IN FLIGHT |
| | FUEL SYSTEM |
| | HYDRAULIC SYSTEM |
| | LANDING GEAR,<br>MISCELLANEOUS |
| | PFD/MFD MESSAGES |
| | ROTOR & TRANSMISSION |
| | OEI FLIGHT PROCEDURES,<br>CAT A T-O LAND OEI PROCEDURES |
| | RESERVED |

# GENERAL

This section contains the procedures that should be performed in the event of an emergency or malfunction. The procedures used for each actual emergency or malfunction must result from consideration of the overall situation. Multiple emergencies or malfunctions may require a departure from normal corrective procedures detailed in this section and is at the discretion of the pilot.

The emergencies and malfunctions procedures are presented either as a procedural list of actions or in the form of flow charts.

The flow charts are based on cockpit indications that would be available to the pilot, a brief description of the emergency / malfunction, and the subsequent actions required by the pilot.

For some types of emergency / malfunction the flow charts give the pilot differing procedures depending on certain criteria. The correct procedure to follow can be defined by the flight condition, such as 'On ground' or 'In flight', by a Yes/No answer to certain questions, such as 'Does smoke clear?', or by '*IF*' statements to identify more precisely the exact condition encountered which will dictate the correct procedure to follow on the flow chart.

The necessary pilot actions in the procedures commence with a dash '-' and are typed in **bold text** to make them more conspicuous.

Emergency Procedures are concerned with foreseeable but unusual situations in which immediate and precise crew actions, as indicated by the actions in bold and boxed, will substantially reduce the risk to the helicopter and personnel.

**USE OF WARNINGS, CAUTIONS AND NOTES**

Warnings, Cautions and Notes are used to emphasize important and critical instructions and are used as follows:

**WARNING**

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

**CAUTION**

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

**Note**

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

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# List Of Figures

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# LIST OF WARNING MESSAGES

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# CAS WARNING MESSAGES

## VOICE WARNING MESSAGES AND PRIORITIES LOGIC

1. ROTOR LOW  ROTOR LOW“
2. “ENGINE ONE OUT  ENGINE ONE OUT“
3. “ENGINE TWO OUT  ENGINE TWO OUT“
4. “ENGINE ONE FIRE  ENGINE ONE FIRE”
5. “ENGINE TWO FIRE  ENGINE TWO FIRE”
6. “ROTOR HIGH  ROTOR HIGH”
7. “ENGINE ONE IDLE  ENGINE ONE IDLE”
8. “ENGINE TWO IDLE  ENGINE TWO IDLE”
9. “WARNING  WARNING“
10. “AUTOPILOT  AUTOPILOT”
11. “AIRSPEED  AIRSPEED“
12. LOW SPEED LOW SPEED
13. “LANDING GEAR“
14. “ONE HUNDRED AND FIFTY FEET“
15. “ALTITUDE  ALTITUDE”
16. “DECISION HEIGHT” (see Note)
17. “RNP, RNP”
18. “BACK UP MODE”
19. “ECO MODE” (Available only during AWG TEST)
20. “PLUS MODE”
21. “AURAL SYSTEM TEST”

**Note**

If DECISION HEIGHT is set to a HTAWS altitude call-out, the HTAWS altitude call-out will have priority and the DECISION HEIGHT will be placed in the queue.

## TABLE OF CAS WARNING MESSAGES

| CAS caption | Voice Warning | Audio | Failure/System State |
|---|---|---|---|
| ROTOR LOW<br>page 57 | ROTOR LOW | Tone | Power ON: NR 2% below datum set by FCS system<br>Power OFF: NR below 90% |
| 1(2) ENG OUT<br>page 21 | ENGINE 1(2) OUT | Tone | Affected engine has flamed out. |
| 1(2) ENG FIRE<br>page 39 or 40 | ENGINE 1(2) FIRE | Tone | Engine bay high temperature, fire or hot gas leak. |
| ROTOR HIGH<br>page 57 | ROTOR HIGH | Tone | Rotor speed more than 2% above the datum set by the FCS system (Power ON).<br>Rotor speed above 110% (Power OFF). |
| 1(2) ENG IDLE<br>page 23 | ENGINE 1(2) IDLE | None | Take-Off commenced withassociated engine at IDLE. |
| 1(2) ENG FAIL FIXED<br>page 20 | WARNING | None | Associated engine running at fixed power. |
| 1(2) ENG EECU FAIL<br>page 24 | WARNING | None | EECU has run the engine down to IDLE. |
| MGB OIL PRESS<br>page 60 | WARNING | None | Low pressure in MGB lubricating systems (less than 3.1 bar). |
| MGB OIL TEMP<br>page 61 | WARNING | None | Overheating MGB lubricating system (greater than 115 °C). |
| 1(2) ENG OIL PRESS<br>page 19 | WARNING | None | Low or high oil pressure in associated engine. |
| ELEC FAIL<br>page 13 | WARNING | None | Failure of both generators; electric system powered by batteries only. |
| BAG FIRE<br>page 41 | WARNING | None | Smoke detected in baggage bay. |

## VOICE MESSAGES

| | | |
|---|---|---|
| 1. | “AIRSPEED, AIRSPEED“ | Vne speed exceeded. |
| 2. | “150 FEET” | Aircraft at less than 150 ft RAD ALT height. |
| 3. | “AUTOPILOT, AUTOPILOT” | Any AFCS-Channel disengaged in flight or any linear actuator failed. |
| 4. | “ALTITUDE, ALTITUDE” | Altitude deviation in ALT or RHT mode exceeded<br>ALT Mode deviation greater than 150 ft (fixed)<br>RHT Mode<=20 ft, deviation greater than10 ft<br>RHT Mode=100 ft, deviation greater than 22 ft<br>RHT Mode=150 ft, deviation greater than 30 ft<br>RHT Mode=200 ft, deviation greater than 33 ft<br>RHT Mode=250 ft, deviation greater than 37 ft<br>RHT Mode=500 ft, deviation greater than 55 ft<br>RHT Mode=1000 ft, deviation greater than 90 ft<br>RHT Mode=1500 ft, deviation greater than 125 ft<br>RHT Mode>=2000 ft, deviation greater than 160 ft<br><br>This voice message also activate with any AFCS Collective mode when approaching AFCS Low Height thresholds. |
| 5. | “LOW SPEED, LOW SPEED” | AFCS upper modes automatic disengagement due to airspeed reducing to below 38 KIAS. |
| 6. | "RNP, RNP" | Lateral deviation exceeds RNP 0.3 during RNP 0.3 approach and RNP AR approach. |

**END**

## SAFE OEI FLIGHT

In general safe OEI flight is defined to mean (1) a sustainable airspeed of not less than 50 KIAS, (2) the ability to obtain a positive rate of climb at acceptable power levels and (3) an altitude which provides sufficient clearance from the ground/obstacles so that required manoeuvring can be reasonably achieved. At crew discretion, other procedural checks/actions may be carried out while these conditions are being established.

## EMERGENCY LANDING GUIDANCE

Throughout this Section, three terms are used to indicate the degree of urgency with which a landing must be effected. In cases where extremely hazardous landing conditions exist such as dense bush, heavy seas or mountainous terrain, the final decision as to the urgency of landing must be made by the pilot.

| | |
|---|---|
| **Land immediately:** | Land at once, even if for example this means ditching or landing in trees. The consequences of continued flight are likely to be more hazardous than those of landing at a site normally considered unsuitable. |
| **Land as soon as possible:** | Do not continue flight for longer than is necessary to achieve a safe and unhurried landing at the nearest site. |
| **Land as soon as practicable:** | Land at the nearest aviation location or, if there is none reasonably close, at a safe landing site selected for subsequent convenience. |

**Malfunctions during approach guidance**

**Discontinue approach:**

Throughout this section the Discontinue approach is reported whenever the capability of the helicopter to continue the approach being flown is lost.
The crew actions in the event of failures resulting in Discontinue approach depend on the operational situation and pre-flight planning should take into account the possibility of the loss of ability to continue the approach, as per normal VFR and IFR planning.
Considerations such as the specific kind of abnormal condition experienced, the availability of re-configuration options, alternate approach procedures, the environmental and meteorological conditions, kind of operation, fuel state, alternate availability and any other pertinent elements should be taken into account by the crew to take proper action.

**END**

## EMERGENCY EXITS

The markings on cabin door of Figure EM 1 and Figure EM 2 are required only if any of the seat is installed in cabin.

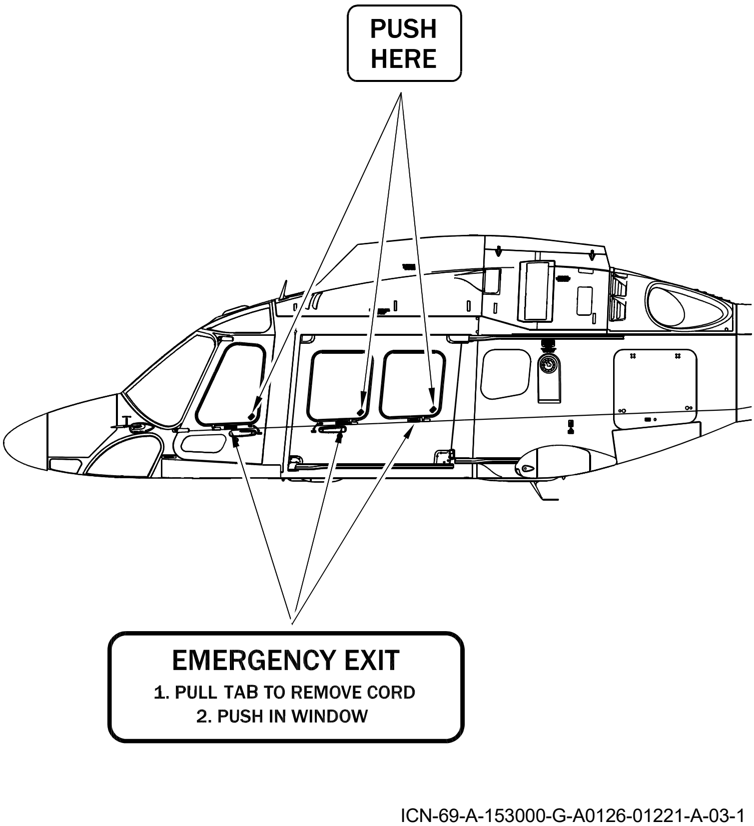


Figure EM 1: External Markings and Placards

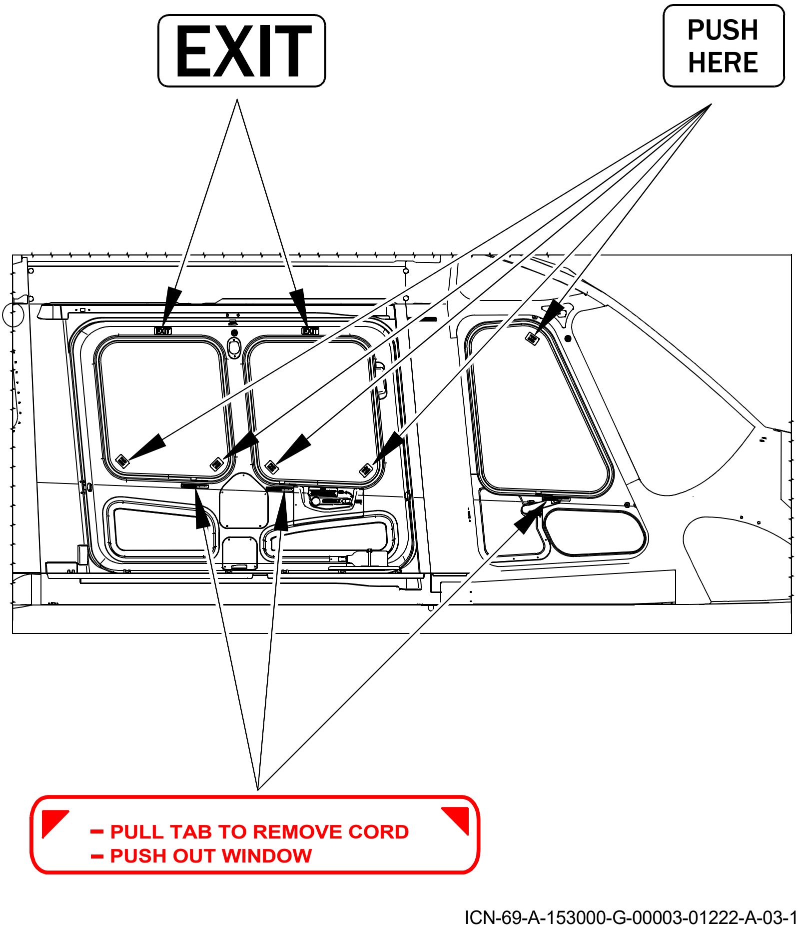


Figure EM 2: Internal Markings and Placards

**SECTION END**

# ELECTRICAL SYSTEM

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## ELECTRICAL SYSTEM

### DOUBLE DC GENERATOR FAILURE

**ELEC FAIL** +"WARNING WARNING" voice Warning

Double DC Generator failure.

| | | |
|---|---|---|
| **1.** | **Pilot utility light** | **— ON (for night operations).** |
| **2.** | **GEN 1 & 2 switches** | **— Select RESET and confirm ON.** |

Warning clears:

Both generators back on line.

**- Continue fight.**

**1(2) DC GEN FAIL** illuminates:

**- Carry out** SINGLE DC GENERATOR FAILURE procedure.
See page 107.

**ELEC FAIL** remains:

**Confirm GEN BUS Switch (EDCU ELEC page) AUTO.**

**CAUTION**

Loss of all MAIN BUS and all NON ESS BUS.
See **Notes 1** and **2.**

**- Set AMMC 1 MASTER**
**- Select VHF 1 on right side to ensure continue radio communication.**
**- Carry out** LANDING GEAR EMERGENCY DOWN PROCEDURE. **See page 52.**

**- Land as soon as possible.**

**WARNING**

Battery power is available for maximum 30 minutes.

**Note 1**

See page 15 for services lost when BUS not available.

**Note 2**

*IF* MAIN BUS 1 required, on EDCU, ELEC page, set GEN BUS switch to OVRD to supply battery power to MAIN BUS 1 reducing the battery endurance.
*If* BUS TIE is switched OVRD the battery power is also supplied to MAIN BUS 2, with a further reduction in battery endurance.

**END**

## SERVICES AVAILABLE ON EMERGENCY/ESSENTIAL BUS 1 AND 2

### EMER BUS 1

CLOCK PLT **
REPU CTRL
LDG GEAR EMER
LDG GEAR CTRL PRI
ADI STBY
AFCS FORCE TRIM PRI
AFCS FCC 2 PRI
AFDX SWITCH A
AMMC 1 PRI
NAV/COMM ICS EMER
NAV/COMM VHF 1
ENGINE IGN 1 CH A
ENGINE ECU 1 CH A
FIRE ENG 1 DET
FIRE ENG 1 EXTG
FLOAT EMER KIT
CARGO HOOK EMER KIT

### ESS BUS 1 (REPU 1 CHANNEL B)

ELT
ENG CTRL PNL
FUEL LVL SNSR 1
FUEL SOV 1 CLOSE
FUEL SOV 1 OPEN
HYD SOV 1
FIRE BAG DET
ENG 1 IGN CHB
LT ANTI COLL ****
RTR BRK CTRL*
AFCS FCC 1 PRI*
ADAHRS 1 PRI*
CCD PLT*
RTR BRK PWR*
ENG 1 FADEC CHB*
XMS OIL LOW*
MFD PLT*
ENG 1 EAPS*
FUEL XFER PUMP 2-1*
CSL LT 28V AUX*

### EMER BUS 2

EDCU 2 PRI
RAD ALT 2
DISPLAY PFD PLT
DISPLAY DCP PLT
AFCS FCC 2 SEC
MWL & MCL PLT
ADAHRS 2 PRI
AMMC 2 PRI
NAV/COMM NAV 2
NAV/COMM XPDR ***
NAV/COMM GPS 2
LIGHTING LDG PWR PLT
LIGHTING CKPT PLT
ENGINE IGN 2 CH A
ENGINE ECU 2 CH A
FIRE ENG 2 DET
FIRE ENG 2 EXTG
HOIST CABLE CUT KIT

### ESS BUS 2 (REPU 2 CHANNEL B)

AFCS CP PRI
FUEL LVL SNSR 2
FUEL SOV 2 CLOSE
FUEL SOV 2 OPEN
HYD SOV 2
HYD TAIL SOV
CVFDR
PITOT 2 HTR
ENG 2 IGN CHB
EMERG LT
AFDX SW B*
LT POSN*
XMS CHIP BURN*
ENG 2 FADEC CHB*
COMM AMU NORM*
LT INST PNL*
XMS ACC DRIVE*
FLOAT AUTO*
LG CTRL*
LG MLG RH*
LG MLG LH*
DTD*
ENG 2 EAPS*
FUEL XFER PUMP 1-2*

*Services NOT available in case of DOUBLE DC GENERATOR FAILURE in flight. Services available on ground.

** Only if digital clock option not integrated.

*** Only if XPDR/TCAS integrated equipment not installed.

**** Only if ANTI COLL option is set to ESS BAR.

END

## SERVICES LOST IN CASE OF MAIN BUS FAILURES

### MAIN BUS 1
### (REPU 1 CHANNEL A)

WXR
NOSE FAN 1
ELE USB SOCKET
DCP CPLT
ADAHRS 1 SEC
EVS CAMERA
LT LDG PWR CPLT
CLOCK CPLT **
LT CKPT CPLT
COMM PIA
AMMC 1 SEC
PFD CPLT
COMM EXT SPEAKER
EDCU 1
ECS CKPT FAN 1
PITOT 1 HTR
COMM VHF FM
CAB CTRL PNL

### MAIN BUS 2
### (REPU 2 CHANNEL A)

AFCS CP SEC
COMM VHF 2
ADAHRS 2 SEC
AFCS TRIM
CCD CPLT
DME
LT STORM
LT DOME
LT OVHD
NOSE FAN 2
AFCS FCC 1 SEC
AMMC 2 SEC
MFDPRI
ECS CKPT FAN 2
LG NLG
WIPER PLT
ELE PWR SCKT 1
EMS 28VDC PWR
SEARCH LT

### MAIN BUS 3
### (REPU 3 CHANNEL A)

NAV 1
ECS SOV 1
GPS 1
LT CAB PSU
ENG GSE POWER
COMM SATCOM
COMM PSA
CARGO HOOK
ECS CAB FAN 2
ECS CAB FAN 1
COMM GSM PHONE
COMM TETRA
EMS 12VDC PWR1
HYD ELEC PUMP CTRL
EMS LT
AVCS ACT 0
AVCS ACT 2
HOIST CTRL

### MAIN BUS 4
### (REPU 3 CHANNEL B)

LT ANTI COLL ***
LT CAB
RAD ALT 1
RTB CAMERA
ECS CTRL
AFCS DTS
ECS SOV 2
ECS CDS FAN CTRL
ECS COMP
AVCS CTRL
ECS BKUP
ECS TCV
HOIST CUT 1
TCAS ***
CARGO HOOK CAM
HOIST ICS
EMS OXY RACK
ANTI COLL LT LOW
STROBE LT
WXR PWR

### MAIN BUS 5
### (REPU 4 CHANNEL B)

---

### MAIN BUS 6
### (REPU 4 CHANNEL A or REPU AUX)

COMM V/UHF CTRL
COMM V/UHF PWR
XPDR 2
RGB CAB LT
TAIL FLOOD LT
AVCS ACT 1
AVCS ACT 3 & 4
FLIR
FLIR LASER
FOOTSTEP
VIDEO DOWNLINK
NAV DF

** Only if digital clock option not integrated.

*** Renamed XPDR/TCAS if integrated equipment installed.

**** Only if ANTI COLL option is set to MAIN BAR.

**END**

## SERVICES LOST IN CASE OF NON ESSENTIAL BUS FAILURES



**NON ESS BUS 1**
**(REPU 1 CHANNEL A)**

ELE PWR SCKT 2

**NON ESS BUS 2**
**(REPU 2 CHANNEL A)**

ELE PWR SCKT 3

**NON ESS BUS 3**
**(REPU 3 CHANNEL A)**

EMS 12VDC PWR2
SEATBELT ON LT
WIPER CPLT

**NON ESS BUS 4**
**(REPU 3 CHANNEL B)**

ELE PWR SCKT 4
ELE UTIL PWR
EMS AC INVERTER
BAG COMP LT
OVER DOOR LT
EFB PWR
EXT CAMERA
REAR FAN

**NON ESS BUS 5**
**(REPU 4 CHANNEL B)**

---

**NON ESS BUS 4**
**(REPU 3 CHANNEL B)**

CABIN AC INVERTER
CMS AMBIENT LT
CMS LIGHTING
EXT STRIP LT
FOOTSTEP LT
CABIN PC
CMS AUDIO
CMS BASIC
CMS SERVICE
OPLS CPU
OPLS CTRL

**SECTION END**

# ENGINE & DRIVE SHAFT FAILURE EMERGENCY SHUTDOWN

ENG FAIL
SHT DWN

## ENGINE OIL PRESSURE

**1(2) ENG OIL PRESS** + " WARNING WARNING" voice Warning.

Associated engine oil pressure below or above limit.

| | | |
|---|---|---|
| **1.** | **Affected engine** | **— Check oil pressure and temperature on PFD/MFD.** |

*IF* engine oil pressure within limits:

**- Continue flight monitoring oil pressure and temperature.**

*IF* engine oil pressure below OR above limits, OR invalid:

**- Achieve safe OEI flight.**

On affected engine:

**- Carry out** ENGINE SHUTDOWN IN EMERGENCY **procedure.** **See page 35.**

**- Land as soon as practicable.**

**- Refer to** SINGLE ENGINE PROCEDURE. **See page 217**

**END**

ENG FAIL
SHT DWN

## ENGINE CONTROL FAILURE - FIXED

**1(2) ENG FAIL FIXED**

+ "WARNING WARNING"
voice warning.

Engine is running at fixed power.

| | | |
|---|---|---|
| 1. | **AFCS UPPER modes** | **— Disengage.** |
| 2. | **Flight condition** | **— Achieve safe OEI.** |

**Note**

Depending on the fixed power on the affected engine, be aware that large TQ split may develop with possible NR change.

If TQ split exceeds 30% **1 ENG DEGR** or **2 ENG DEGR** caution due to HANDLING will illuminate on the engine with higher TQ value.

**- Continue flight monitoring engines parameters.**

**- Land as soon as practicable.**

**CAUTION**

During descent with low power setting do NOT allow TQ on NOT affected engine to decrease below 10%.

*IF* TQ on affected engine equal or lower than 50%

**CAUTION**

During landing consider low power available on affected engine.

After touchdown:

- **Smootly lower collective to MPOG maintaining NR within limits.**
- **If NR increases above limit shudown affected engine before lowering collective to MPOG.**

*IF* TQ on affected engine higher than 50%

**CAUTION**

If affected engine is above MCP shutdown engine within 5 min.
During engine shutdown be aware of possible NR droop and largeTQ split.

Before approach for landing :

- **Carry out the** ENGINE SHUTDOWN II EMERGENCY **procedure,** **See page 35.**
- **Refer to** SINGLE ENGINE PROCEDURE. **See page 217.**

**END**

# ENGINE OUT



**1(2) ENG OUT** + Audio Tone *and* 'ENGINE ONE(TWO) OUT ENGINE ONE (TWO) OUT' voice Warning.

Affected engine has flamed out.

| | | |
|---|---|---|
| **1.** | **Flight condition** | **— Safe OEI.** |

**2.** **Land as soon as practicable.**

**3.** **Refer to** SINGLE ENGINE PROCEDURE**, page 217.**

**END**

## ENGINE DRIVE SHAFT FAILURE

ENG FAIL
SHT DWN

Rapid decrease in engine 1(2) TQ to 0 with NF1(2) above NR.

Affected engine should be automatically shutdown by overspeed protection system.

1. **Flight condition — Safe OEI.**
2. **Carry out** ENGINE SHUTDOWN IN EMERGENCY **procedure. See page 35.**
3. **Land as soon as practicable.**
4. **Refer to** SINGLE ENGINE PROCEDURE**, page 217.**

**END**

## ENGINE IDLE

**1(2) ENG IDLE**

+ Audio tone *and* "ENGINE ONE (TWO) IDLE ENGINE ONE (TWO) IDLE" voice Warning.

(Warning triggered only with aircraft on ground).

Take-Off commenced with associated engine at IDLE,
OR
Associated ENG MODE knob at IDLE and collective not fully down,
OR
Engine 1 in APU mode.

**1. Reduce collective to MPOG.**

*IF* ENG 1 is set to APU:

- **ENG 1 MODE knob: set to IDLE.**
- **ENG 1 ACC switch: set to MAIN.**
  **ENG ACCESSORY MODE** advisory clears and **ENG ACC TRAN** advisory shows.
  When **ENG ACC TRAN** advisory clears on MFD ENGINE page confirm actuator position fully engaged**.**
- **ENG 1 MODE knob: set to FLT.**

*IF* ENG 1(2) MODE knob at IDLE :

- **Check**
  **ENG ACCESSORY MODE**
  **and**
  **ENG APU MODE advisory lights extinguished.**
- **ENG 1(2) MODE knob: set to FLT.**

**END**

# ENGINE EECU FAIL

ENG FAIL
SHT DWN

**1(2) ENG EECU FAIL**

+ “WARNING WARNING” voice Warning.

EECU has run the engine down to IDLE

| | | |
|---|---|---|
| **1.** | **Flight condition** | **— Safe OEI.** |
| **2.** | **ENG MODE knob** (on affected engine) | **— IDLE.** |
| **3.** | **Affected engine** | **— Leave at IDLE to keep associated DC GEN on line.** |
| **4.** | **Land as soon as practicable.** | |

**END**

## DOUBLE ENGINE FAILURE

A sequential or simultaneous failure of both engines will require entry into autorotation.



### ENTRY IN AUTOROTATION

Depending on collective and airspeed at the time, a simultaneous or sequential engine failure will result in a large and very rapid drop in rotor speed (NR) requiring a large and rapid collective adjustment in order to recover and maintain rotor speed within the Power Off range. It is imperative that these adjustment be made quickly and decisively.

*IF* the failure occurs at considerable height above ground level (AGL), it is possible that sufficient time will be available for attempting an engine re-start (assuming that the cause of the failure can be rapidly analysed). Assuming an average autorotative sink rate of 2000 ft per minute, a minimum AGL height of 3000 to 5000 ft would be required to provide sufficient time to complete engine restart procedures.

*IF* time and conditions permits and no attempt to restart is made, carry out the ENGINE SHUTDOWN IN EMERGENCY procedure page 35 while the helicopter is manoeuvred toward the landing area.

*IF* sufficient additional time is available to make an engine re-start feasible, use the ENGINE START MALFUNCTIONS AND RESTART IN FLIGHT PROCEDURE procedure page 131.

**END**

## AUTOROTATIVE LANDING PROCEDURE ON LAND



The procedure which follows outlines the steps required to execute a successful autorotation landing, time permitting, consult the appropriate Emergency Procedure for the additional steps required to deal with a specific type failure.

| | | |
|---|---|---|
| 1. | Collective | — Reduce accordingly to enter autorotation. |
| 2. | Cyclic | — Adjust to obtain autorotation at between minimum rate of descent speed (75 KIAS) and best glide speed (105 KIAS). |
| 3. | Collective | — Adjust to maintain NR within Power Off limits. |
| 4. | Landing gear | — DOWN; three green lights illuminated on LDG control panel. If autorotation is due to DOUBLE ENGINE FAILURE carry out LANDING GEAR EMERGENCY DOWN PROCEDURE procedure. |
| 5. | PARK BRAKE | — Confirm released. |
| 6. | Landing site | — Select and manoeuvre into wind. |
| 7. | Briefing | — Inform cabin crew and occupants. |
| 8. | Radar altimeter | — Verify working. |
| 9. | Distress procedure | — Broadcast Mayday (time permitting). |
| 10. | Flare | — At approximately 150 ft AGL,apply cyclic to get approx 25 deg pitch attitude. |
| 11. | Collective | — Adjust, as required, to maintain NR at 110% maximum during the flare. |
| 12. | Cyclic /Collective | — Reduce attitude below 15 deg pitch at approximately 40 ft AGL and apply collective, as required, to achieve touchdown at less than 450 fpm. |
| 13. | Touchdown speed | — As required by surface characteristics. (Maximum touchdown speed 60 kts GS on paved surface and 50 kts GS on prepared grass surface). |
| 14. | Collective | — Following touchdown, lower promptly to conserve the remaining rotor speed. |

15. Wheel brakes — Apply as required.

**Note**

When on ground consider using the nose wheel steering and/or differential braking.

16. Shutdown — If not carried out previously, execute the EMERGENCY GROUND EGRESS procedure.
See page 36.



**END**

ENG FAIL
SHT DWN

## AUTOROTATIVE LANDING PROCEDURE ON WATER

The procedure which follows outlines the fundamental steps required to execute a successful emergency water landing. Time permitting, consult the appropriate Emergency procedure for the additional steps required to deal with the specific type failure that prompted the decision to proceed with the emergency water landing process.

**WARNING**

As considerable error can result from estimation of height over water, the radar altimeter should be used for height cues during descent.

**CAUTION**

At high touchdown speeds, the rotorcraft may roll and turn to the left after touchdown due to gyroscopic effects if the aircraft is allowed to pitch down rapidly. This will require pilot corrective action.

| | | |
|---|---|---|
| 1. | Collective | — Reduce accordingly to enter autorotation. |
| 2. | Cyclic | — Adjust to obtain autorotation at between minimum rate of descent speed (75 KIAS) and best glide speed (105 KIAS). |
| 3. | Collective | — Adjust to maintain NR within Power Off limits. |
| 4. | Landing direction | — Select and manoeuvre into wind. |
| 5. | Briefing | — Inform cabin crew and occupants. |
| 6. | Radar altimeter | — Verify working. |
| 7. | Windscreen wipers | — Select FAST. |
| 8. | Distress procedure | — Broadcast Mayday (time permitting). |
| 9. | Flare | — At approximately 150 ft AGL, apply cyclic to get approx 25 deg pitch attitude. |
| 10. | Collective | — Adjust, as required, to maintain NR at 110% maximum during the flare. |
| 11. | Cyclic /Collective | — Reduce attitude below 15 deg pitch at approximately 40 ft AGL and apply collective, as required, to achieve touchdown at less than 450 fpm. |

ENG FAIL
SHT DWN

| | |
|---|---|
| 12. Landing | — Dependent on sea state, prevailing winds and current, approach into oncoming waves, or at 45° offset. |
| 13. Touchdown speed | — Not exceeding 30 kts GS. |
| 14. Collective | — Following touchdown, lower promptly. |
| 15. Shutdown | — If not carried out previously, execute the EMERGENCY GROUND EGRESS procedure. See page 36. |
| 16. Evacuation | — Evacuate the aircraft, with survival equipment. |

**END**

# ENGINE FAILURE

ENG FAIL
SHT DWN

## GENERAL

In the event of partial or complete power failure, establishing a safe flight condition is the prime consideration, until the cause of the failure can be analysed.

Care should be taken in confirming the failed engine prior to commencing engine shutdown as given in the ENGINE SHUTDOWN IN EMERGENCY procedure page 35.

## ENGINE FAILURE RECOGNITION

The following cues could be available to the crew following a single or multiple engine failure:

— **Noticeable right sideslip (helicopter nose swinging to the left).**

— **Illumination of the CAS Warning 1(2) ENG OUT caption.**

— **An audible tone and an "ENGINE 1(2) OUT" voice warning.**

— **The failed engine PI/TQ will split significantly from the operational engine.**

— **Dependent on collective position at the time of the failure, a drop in rotor speed (NR) may occur.**

## SINGLE ENGINE FAILURE

A single engine failure will result in an increase in PI/TQ on the live engine. Depending on collective position and airspeed at the time of the failure, a drop in rotor speed (NR) may occur requiring a collective adjustment in order to maintain rotor speed within the Power On range.

*If* the execution of the ENGINE FAILURE procedure has resulted in shutting down the engine, consider analyzing the cause of the failure with a view toward re-starting the engine.
Refer to SINGLE ENGINE PROCEDURE, page 217.

**END**

## SINGLE ENGINE FAILURE IN HOVER OGE SAFE OEI VERTICAL REJECT PROCEDURE



A safe OEI vertical reject is assured if the maximum gross weight is at or below that defined in the WAT Safe OEI Vertical Reject charts on **GEN CHART** tab Figure Perf 50 for the ambient conditions.

The procedure for the vertical reject is the following:

| | | |
|---|---|---|
| 1. | Collective/cyclic control | — Adjust collective to establish a descent, maintaining rotor speed close to 100% NR.<br>— Adjust pitch attitude as required to maintain position. |
| 2. | Touchdown | — At approximately 10-5 ft (3-1.4 m) ALS increase collective to cushion the landing allowing the rotor to droop. |
| 3. | Landing | — After touchdown centralize cyclic and lower collective to MPOG. |
| 4. | Engine | — On failed engine carry out the ENGINE SHUTDOWN IN EMERGENCY procedure.<br>See page 35. |

**END**

ENG FAIL
SHT DWN

## SINGLE ENGINE FAILURE IN HOVER OGE FLYAWAY PROCEDURE

The hover flyaway height loss defined in on **GEN CHART** tab Figure Perf 52 and Figure Perf 53 assume the following flyaway procedure is followed:

1. Collective/Cyclic control
   — Rotate pitch down to an attitude of -15°.
   — Maintain this attitude until 15 kts GS, then rotate nose up to level attitude and maintain for 1 second. After 1 second continue rotation to 5° nose up and maintain to accelerate to VFASS (45 KIAS). Adjust collective to maintain NR close to 93%.
2. Climb
   — When the aircraft reaches VFASS (45 KIAS) adjust pitch attitude to maintain airspeed.
   — When a positive rate of climb is achieved lower collective to recover NR to 98%.
   — Continue to climb accelerating to Vy using 2.5 min power rating as required.

**Note**

The height loss indicated on chart on **GEN CHART** tab Figure Perf 52 and Figure Perf 53 for ambient condition and aircraft weight guarantees that VFASS (45 KIAS) will be achieved and a subsequent minimum Rate Of Climb of 150 fpm at Vy (75 KIAS, decreases by 1 kt every 1000 ft above 10000 ft HP) is assured. Refer to para SINGLE ENGINE FAILURE IN HOVER OGE FLYAWAY in section 4 of RFM.

**END**

## SINGLE ENGINE FAILURE IN HOVER (5 TO 10 FT)



| | | |
|---|---|---|
| 1. | Collective | — Maintain collective setting or lower collective slightly if required to establish descent. |
| 2. | Touchdown | — Increase collective to cushion landing as touchdown becomes imminent. |
| 3. | Landing | — After touchdown, centralize cyclic and simultaneously reduce collective to minimum. Apply wheel brakes as required. |

**END**

## SINGLE ENGINE FAILURE ON TAKE-OFF CATEGORY B

*If* gross weight and flight path permit, Take-Off and climb out may be continued. For a rejected Take-Off carry out the following:

| | | |
|---|---|---|
| 1. | Collective | — Reduce as necessary to maintain rotor RPM if altitude permits. |
| 2. | Cyclic | — Make a partial flare to reduce ground speed. Limit flare to 15° when close to the ground. |
| 3. | Collective | — Apply to cushion touchdown. |
| 4. | Landing | — After touchdown centralize cyclic and simultaneously reduce collective to minimum. |
| 5. | Brakes | — Apply wheel brakes to minimize ground roll. |

**END**

## SINGLE ENGINE LANDING

| | | |
|---|---|---|
| 1. | Pre-landing checks | — Establish normal approach and carry out pre-landing checks. |
| 2. | Landing direction | — Orientate the aircraft for an approach into the prevailing wind. |
| 3. | Initial point | — Stabilize the aircraft on final approach at 70 KIAS/300 ft ALS. |

| | | |
|---|---|---|
| 4. | Descent | — At 300 ft initiate a descent and a deceleration to pass at 50 ft, 40 KIAS with a rate of descent of less than 350 fpm. |
| 5. | Collective/cyclic control | — Adjust collective to continue the descent.<br>— Adjust pitch attitude as required to reduce airsped. |
| 6. | Touchdown | — Perform a running landing increasing collective to cushion the landing. Maximum nose up attitude at touchdown 15°. |
| 7. | Landing | — After touchdown, centralize cyclic and reduce collective to minimum. |
| 8. | Braking | — Apply wheel brakes, as required. |

**END**

**SINGLE ENGINE FAILURE DURING CRUISE**

| | | |
|---|---|---|
| 1. | Collective | — Adjust as necessary to maintain rotor RPM and PI within limits. |
| 2. | Cyclic | — Establish safe OEI flight. |
| 3. | Collective | — Re-adjust collective to minimize altitude loss by applying up to maximum OEI power. |
| 4. | Engine | — Consider engine re-start if cause of initial failure has been determined and corrected. See ENGINE START MALFUNCTIONS AND RESTART IN FLIGHT PROCEDURE procedure. See page 131. |
| 5. | Engine | — If engine restart fails or no attempt to restart is made carry out the ENGINE SHUTDOWN IN EMERGENCY procedure. See page 35. |

**END**

## ENGINE SHUTDOWN IN EMERGENCY



**CAUTION**

Care should be taken in confirming the failed engine prior to commencing this shutdown procedure.

**CAUTION**

If there is evidence of combustion after engine shutdown in flight, carry out a dry MOTORING PROCEDURE page 137, as required to extinguish any possible fire.

Following an engine failure/malfunction, establish a safe OEI flight condition.

On the failed engine, carry out the following shut down procedures:

| | | |
|---|---|---|
| **1.** | **ENG MODE knob** | **— Confirm and OFF.** |
| **2.** | **ENG FIRE ARM pushbutton** | **— Confirm lift guard and press.** |
| **3.** | **FUEL SOV**<br>(EDCU FUEL page) | **— Confirm and CLOSE.** |

4. Fuel contents — Monitor.

**END**

## EMERGENCY GROUND EGRESS

In the event of an emergency egress or emergency/crash landing, priority must be given to ensuring that personnel are evacuated safely at the most appropriate time.

The following procedure must be initiated for a condition potentially endangering life or physical injury of passengers and crew:

1. PARK BRAKE — Apply.
2. ENG1 & 2 MODE knobs — OFF.
3. ENG 1 & 2 FIRE ARM pushbuttons — Lift guard and press.
4. ATC — Notify (condition and intention to evacuate).
5. EMERG LT switch — Select ON.
6. ELT — Activate (if available).
7. Emergency Exits — OPEN/EJECT.
8. When rotor stopped. — Passenger evacuation, assist away from helicopter.
9. MCOS switch — CUT OFF.
10. Helicopter — Abandon.

**SECTION END**

FIRE

# FIRE & SMOKE

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# FIRE

## ENGINE BAY FIRE (FLIGHT)

**1(2) ENG FIRE** + Audio tone *and* "ENGINE ONE (TWO) FIRE ENGINE ONE (TWO) FIRE" voice Warning.

| | | |
|---|---|---|
| **1.** | **Confirm ENGINE FIRE light ON on engine control panel.** | |
| **2.** | **Flight condition** | **— Safe OEI.** |
| **3.** | **Affected ENG MODE knob** | **— Confirm and IDLE.** |
| **4.** | **Engine FIRE** | **— Confirm.** |
| **5.** | **Affected ENG MODE knob** | **— Confirm and OFF.** |
| **6.** | **Affected ENG FIRE ARM push-button** | **— Confirm, lift guard and press. ARM illuminated.** |
| **7.** | **FIRE EXTING switch** | **— Set to BTL 1.** |

**FIRE BTL LOW P** caution illuminates after bottle has discharged

*IF* warning clears:

On affected engine:

- **Fuel SOV: CLOSE** (on EDCU FUEL page).
- **Deselected ENG FIRE/ARM pushbutton.**
- **Refer to** SINGLE ENGINE PROCEDURE See page 217 (omit Step 1 as engine is already shutdown).
- **Land as soon as possible.**

*IF* **1(2) ENG FIRE** remains:

- **FIRE EXTING switch: set to BTL2.**

**2 FIRE BTL LOW P** caution illuminates after bottle has discharged.

*IF* warning clears: (go to On affected engine: above)

*IF* **1(2) ENG FIRE** remains:

- **LAND IMMEDIATELY.**
- **Carry out** EMERGENCY GROUND EGRESS **procedure.** **See page 36.**

**CAUTION**

In case of a subsequent fire in the other engine bay the initial ENG FIRE ARM 1(2) pushbutton must be deselected to allow operation of the ENG FIRE ARM 2(1) pushbutton.

**END**

FIRE

## ENGINE BAY FIRE (GROUND)

**1(2) ENG FIRE** + Audio tone *and* "ENGINE ONE (TWO) FIRE ENGINE ONE (TWO) FIRE" voice Warning.

| | | |
|---|---|---|
| **1.** | **Confirm ENGINE FIRE light ON on engine control panel** | |
| **2.** | **ENG 1 & 2 MODE knob** | **— OFF.** |
| **3.** | **Affected ENG FIRE ARM push-button** | **— Lift guard and press. ARM illuminated.** |
| **4.** | **FIRE EXTING switch** | **— Set to BTL 1.** |

**FIRE BTL LOW P** caution illuminates after bottle has discharged

*IF* warning clears:

*IF* **1(2) ENG FIRE** remains:

- FIRE EXTING switch: set to BTL2.

**2 FIRE BTL LOW P** caution illuminates after bottle has discharged.

- **Carry out** EMERGENCY GROUND EGRESS **procedure.** **See page 36.**

**CAUTION**

In case of a subsequent fire in the other engine bay the initial ENG FIRE ARM 1(2) pushbutton must be deselected to allow operation of the ENG FIRE ARM 2(1) pushbutton.

**END**

## BAGGAGE BAY FIRE (FLIGHT)

**BAG FIRE** + "WARNING WARNING" voice Warning.

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

- **Carry out** EMERGENCY GROUND EGRESS **procedure.** **See page 36.**

**END**

## BAGGAGE BAY FIRE (GROUND)

**BAG FIRE** + "WARNING WARNING" voice Warning.

- **Carry out** EMERGENCY GROUND EGRESS **procedure.** **See page 36.**

**END**

FIRE

## COCKPIT / CABIN FIRE (FLIGHT)

An in-flight fire has no single set of detailed procedures that can address all the fire scenarios that are possible in flight. The most urgent action is to get the aircraft on the ground as soon as possible with a reasonable degree of safety.

FIRE in cockpit or cabin

| | | |
|---|---|---|
| **1.** | **ECS** | **— BACKUP.** |
| **2.** | **COCKPIT / CABIN FAN** | **— OFF.** |

*IF* the fire source is determined:

- **Use on board hand held extinguisher to fight fire.**

*IF* fire is extinguished:

- **COCKPIT/CABIN FAN: ON.** (FANS must remain ON to clear smoke and fumes)
- **Land as soon as possible.**

*IF* fire persists:

- **LAND IMMEDIATELY.**
- **Carry out** EMERGENCY GROUND EGRESS **procedure.** **See page 36.**

*IF* the fire source is NOT determined and the fire persists:

- **LAND IMMEDIATELY.**
- **Carry out** EMERGENCY GROUND EGRESS **procedure.** **See page 36.**

**CAUTION**

*IF* the fire is not completely extinguished, increased ventilation may aggravate the problem

**END**

## COCKPIT / CABIN FIRE (GROUND)

No single set of detailed procedures can address all the fire scenarios that are possible. The most urgent action is to get the aircraft shut down and evacuated immediately.

FIRE in cockpit or cabin.

- **Use on board hand held extinguisher to fight fire.**
- **Carry out** EMERGENCY GROUND EGRESS **procedure.** **See page 36.**

**END**

## ENGINE EXHAUST FIRE AFTER SHUTDOWN

*IF* there are visible signs of fire in the engine exhaust, possibly accompanied by a rising ITT after shutdown, personnel should not be allowed to exit until the following actions have been carried out:

1. FUEL SOV (EDCU FUEL page) — Check CLOSE.
2. Fire warnings — Confirm not illuminated.

**Note**

Choose one of the following three CRANK cycles:

| No | Cycle |
|---|---|
| 1 | 45 seconds on, 10 minutes off |
| 2 | 30 seconds on, 5 minutes off |
| 3 | 15 seconds on, 2 minutes off |

The chosen cycle can be repeated 3 times followed by a normal engine start or 30 minutes rest time to repeat CRANK cycle.

3. Engine CRANK switch — Select 1 or 2, as required and release when sufficient ITT decrease is noted.
4. Gas generator (NG) — Note increasing while cranking.
5. Rotors stopped — Evacuate aircraft.

**END**

## ELECTRICAL FIRE/SMOKE (GROUND)

An electrical fire is indicated by a smell of burning insulation and/or acrid smoke. If fire occurs:

Carry out EMERGENCY GROUND EGRESS procedure. See page 36.

**END**

FIRE

## ELECTRICAL FIRE/SMOKE (FLIGHT)

Electrical fires are often indicated by a smell of burning insulation and/or acrid smoke. The most important consideration is to maintain safe flight conditions while investigating the cause. Unnecessary electrical equipment must be switched off while detecting the source of an electrical fire. Unless the source of the smoke or fire can be positively identified (CAS display or C/B panel or EDCU display) and the equipment electrically isolated, carry out procedure detailed on next page.

| | | |
|---|---|---|
| **1.** | **Airspeed** | **— Reduce to Vy.** |
| **2.** | **Landing gear** | **— DOWN; three green lights illuminated on LDG control panel.** |
| **3.** | **ECS** | **— BACKUP.** |
| **4.** | **COCKPIT / CABIN FAN** | **— OFF.** |
| **5.** | **Pilot DV windows** | **— Open to ventilate.** |
| **6.** | **COM/NAV** | **— Select VHF 1 on right side to ensure continue radio communication.** |
| **7.** | **PILOT UTILITY LIGHT** | **— ON (for night operations).** |
| **8.** | **Land as soon as possible** | |

**— GEN 1 switch** — **OFF,** (Loss of all NON-ESS BUS).

Does smoke clear?

Yes

**Land as soon as practicable.**
All NON ESS BUS not available.

No

**- GEN 1 switch: ON.**
**- GEN 2 switch: OFF.**
(Loss of all NON ESS BUS ).

Does smoke clear?

Yes

**Land as soon as practicable.**
All NON ESS BUS not available.

No

**- MAIN BATT switch: OFF.**
**- AUX BATT switch: OFF.**

Does smoke clear?

***CONTINUED NEXT PAGE***

FIRE

**ELECTRICAL FIRE/SMOKE PROCEDURE (FLIGHT) CONTINUED**

***CONTINUATION FROM PREVIOUS PAGE***

Yes

**Land as soon as practicable.**
**MAIN BATT OFF** and **AUX BATT OFF** cautions are illuminated.
(Loss of batteries backup power supply).

No

- **MAIN BATT switch: ON.**
- **AUX BATT switch: ON.**

**Note**

AP1 will disengage. AP2 and ATT will remain engaged, but relevant green lights on autopilot control panel will be OFF.

- **GEN 1 switch: OFF.**

All NON ESS BUS and all MAIN BUS not available.

If smoke/fire severe?

No

- **Land as soon as possible.**

**WARNING**

Battery power is available for maximum 30 minutes.

Yes

- **LAND IMMEDIATELY.**
- **Carry out** EMERGENCY GROUND EGRESS **procedure. See page 36.**

**END**

## WHEEL BRAKE FIRE



**CAUTION**

Use of pedal brakes or parking brake may aggravate the fire.

### In Flight

| | | |
|---|---|---|
| **1.** | **Landing gear** | **— Extend.** |
| **2.** | **Aircraft** | **— Land as soon as possible.** |

When aircraft is stationary on the ground:

3. Shutdown — Carry out EMERGENCY GROUND EGRESS procedure. See page 36.

### On Ground

Do not brake.

### When aircraft is stationary

1. Shutdown — Carry out EMERGENCY GROUND EGRESS procedure. See page 36.

**Note**

Consider using one of the cabin hand fire extinguishers or other available extinguishers to extinguish the fire.

**SECTION END**

# LANDING GEAR, STATIC PORT OBSTRUCTION, LIGHTNING STRIKE

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## LANDING GEAR

### LANDING GEAR FAILS TO LOCK DOWN



*IF*, after selecting the landing gear DOWN one or more indicator light remains black or green and amber, carry out the following:

- **Press LAMP TEST key** (on EDCU TEST page) **and confirm indicator lights are all ON.**
- **Confirm airspeed below 80 KIAS.**

- **Confirm at least 30 seconds elapsed since landing gear selected DOWN.**

*IF* all indicator lights illuminate green (down and locked):

- **Continue landing.**

*IF* one or more indicator light remains black or green and amber:

- **Select landing gear UP and wait at least 30 seconds.**
- **Select landing gear DOWN wait at least 30 seconds**

***CONTINUED NEXT PAGE***

LANDING GEAR FAILS TO LOCK DOWN **CONTINUED**

***CONTINUATION FROM PREVIOUS PAGE***

LDG GR
STC PRT

*IF* all indicator lights illuminate green (down and locked):

**- Continue landing.**

*IF* one or more indicator light remains black or green and amber:

- **Carry out** LANDING GEAR EMERGENCY DOWN PROCEDURE **See page 52.**

**WARNING**

The landing gear may collapse if not locked down.

- **Land vertically on a flat hard surface, reducing slowly collective to assess landing gear supporting aircraft weight.**
- **Do not taxi.**

Consider evacuating aircraft, supporting aircraft or landing on a suitable soft surface prior to shut down engines.

**END**

## LANDING GEAR FAILS TO RAISE

*IF,* after selecting the landing gear UP one or more indicator light remains green and amber or amber, carry out the following:

- **Confirm landing gear circuit breakers IN (on EDCU BREAKERS page).**
- **Check EMER DOWN pushbutton not selected.**

- **Confirm airspeed below 80 KIAS.**
- **Confirm at least 30 seconds elapsed since landing gear selected UP**

*IF* all indicator lights are black (up and locked):

- **Continue flight.**

*IF* one or more indicator light remains green and amber, or amber:

- **Select landing gear DOWN and wait at least 30 seconds**

*IF* landing gear is down and locked:

- **Continue flight.**

*IF* one or more indicator light remains black or green and amber:

- **Carry out LANDING GEAR EMERGENCY PROCEDURE**

**Note**

Fuel consumption will be increased with landing gear down.

**END**

## LANDING GEAR EMERGENCY DOWN PROCEDURE



**Note**

When the landing gear has been extended using EMERGENCY DOWN PROCEDURE, subsequent retraction is not possible.

**Note**

If OAT is below -10 °C ensure IAS not less than 50 kts before performing the following procedure.

- **Confirm landing gear lever UP.**
- **EMERG DOWN pushbutton:**
  **Lift guard and press, allowing enough time for the landing gear to lock down.**
  Three green lights and three amber lights illuminate.
- **Select landing gear lever DOWN.**
  Only three green lights remains.

**END**

## STATIC PORT OBSTRUCTION

*If* erratic readings from the altimeter indicator occur, with the STATIC source switch in NORMAL position, proceed as follows:

| | | |
|---|---|---|
| 1. | DV window and vents | - Closed. |
| 2. | ECS | - BACKUP. |
| 3. | STATIC source switch | - Remove the guard and select ALTERNATE. |
| 4. | Continue flight. | |

This procedure selects an alternate static source utilizing cabin air.

**CAUTION**

When utilizing the alternate static source, decrease the altimeter reading by 200 ft (60 m).

**Note**

Selection of an alternate static port source may cause AVSR FAIL (NR fix value 103%).

**END**

## LIGHTNING STRIKE

*If* it is suspected that the rotorcraft has been struck by lightning LAND AS SOON AS POSSIBLE, verifying 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;

— current and selected heading;

— selected decision height;

— selected radio frequencies (including radio comms transmission check).

The landing gear normal extension/retraction could become inoperative if a lightining strike occurred during operations. Follow the LANDING GEAR FAIL TO LOCK DOWN or LANDING GEAR FAIL TO RAISE procedures.

As soon as operational conditions permit, disengage AFCS NAV or HDG modes and carry out EDCU TUNE TEST.

**SECTION END**

# ROTOR & TRANSMISSION

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## ROTOR

### ROTOR UNDER-SPEED

ROTOR LOW + Audio Tone *and* 'ROTOR LOW ROTOR LOW' voice Warning.

Rotor speed more than 2% below the datum set by the FCS system (Power ON).
Rotor speed below 90% (Power OFF).

| | | |
|---|---|---|
| **1.** | **Collective** | **— Adjust to increase the rotor speed.** |

Refer to Engine Emergency and Malfunction drills if relevant.

**END**

### ROTOR OVER-SPEED

ROTOR HIGH + Audio Tone *and* 'ROTOR HIGH ROTOR HIGH' voice Warning.

Rotor speed more than 2% above the datum set by the FCS system (Power ON).
Rotor speed higher than 110% (Power OFF).

| | | |
|---|---|---|
| **1.** | **Collective** | **— Adjust to decrease the rotor speed.** |

Refer to Engine Emergency and Malfunction drills if relevant.

**END**

## LOSS OF TAIL ROTOR EFFECTIVENESS

Loss of tail rotor effectiveness will result in a rapid yaw to the right and a loss of yaw control, possibly accompanied by noise or vibration in the tail section. The severity of the initial yaw rate will be determined by the airspeed, altitude, gross weight, center of gravity and torque settings at the time that the failure occurs. The effectiveness of the vertical fin in limiting the yaw rate and yaw angle will depend on the airspeed at the time of the failure, fin effectiveness increasing at higher airspeeds.

The following cues will be present:

— Aircraft increase of yaw rate;

— Loss of yaw control, pedals free but ineffective;

— Possible noise and vibration from the aft fuselage area.



Severe yaw rates will result in large yaw angles within a very short period of time and, depending on the flight conditions at the time of failure, it is possible that yaw angles in excess of 30° will be experienced.

Additionally, very high yaw rates will produce aircraft pitching and rolling making retention of control difficult without the use of large cyclic inputs, which are structurally undesirable. Finally, very high yaw rates will produce disorienting effects on the pilots. Therefore, it is vital that corrective action, as outlined in the following procedures, be taken quickly to prevent post-failure yaw rates from reaching unacceptable high levels.

**In Hover**

— **Lower collective to LAND IMMEDIATELY while maintaining attitude and minimizing lateral translation with the cyclic control;**

— **Select both ENG MODE knobs to OFF if time available.**

**In Forward Flight**

— **Move collective immediately to minimize yaw rate (lowering the collective to reduce yaw right / increasing the collective to reduce yaw left);**

— **Establish a suitable airspeed/rate of descent/attitude combination to reach a stable condition;**

— **At landing site assess running landing capability;**

— **If a running landing cannot be carried out with a suitable power and speed, shutdown engines;**

— **Carry Out** AUTOROTATIVE LANDING PROCEDURE ON LAND **page 26 or** AUTOROTATIVE LANDING PROCEDURE ON WATER **page 28.**

**Note**

— Land into wind;

— Raising or Lowering the collective while maintaining NR within limits may be effective in helping control sideslip (increase collective to reduce yaw left).

**END**

**TRANSMISSION SYSTEM FAILURES OR DEGRADATIONS**

The most common transmission system (main, intermediate, tailrotor gearbox) failures are of three general types:

— Lubrication system failure (oil pump, ducts, nozzles etc);

— Transmission component failure (gears, bearings, etc);

— Accessory component failure (hydraulic pumps, electrical generators, coolers etc).

The transmissions are monitored with chip detectors, oil pressure and/or oil temperature indicators as well as CAS Warning and Caution messages to inform the pilot of the operating condition of the system. It is probable that one or more of these indications will be present if a mechanical transmission failure is imminent. However, whether these indications are present or not, crew sensory perceptions such as:

— abnormal mechanical noise, and/or:

— heavy vibration levels, and/or:

— the odour of hot metal fumes.

all play an important part in diagnosis of impending transmission system failures and assist the pilot in determining what actions are required.

**END**

## MGB OIL PRESSURE LOW

**MGB OIL PRESS** + “WARNING WARNING” voice warning.

Oil pressure below limits at both engine MGB inputs or at one engine MGB input and in MGB oil system (less than 3.1 bar).

| | | |
|---|---|---|
| **1.** | **TQ 1 & 2** | **— Reduce not to exceed 55/55%.** |
| **2.** | **Clock** | **— START.** |
| **3.** | **PFD / MFD** | **— Check MGB oil pressure.** |



*IF* MGB oil pressure within limits:

**- Land as soon as practicable monitoring MGB oil pressure and temperature and input bearing temperature.**

**- Do not activate the chip burner.**

**- Torque value may be resumed to previous setting.**

*IF* MGB oil pressure low or invalid:

*IF* MGB oil pressure is permanently above 1.5 bar:

**Land as soon as practicable.**
Maintain power at torque not exceeding 55/55%.

**- Do not activate the chip burner.**

*IF* MGB oil pressure is permanently equal or below 1.5 bar, or invalid:

**- Land as soon as possible.**

**- Landing or ditching should be made within 33 minutes.**

**- Do not activate the chip burner.**

**Note**

55/55% TQ may be shortly exceeded for the final part of the landing manoeuvre.

**END**

## MGB OIL TEMPERATURE HIGH

**MGB OIL TEMP** + "WARNING WARNING" voice warning.

MGB oil temperature above limit (greater than 115 °C).

| | | |
|---|---|---|
| **1.** | **TQ 1 & 2** | **— Reduce not to exceed 55/55%.** |
| **2.** | **MGB oil temperature** | **— Check on PFD/MFD .** |



*IF* MGB oil temperature within limit:

**- Continue flight monitoring oil temperature.**

*IF* MGB oil temperature above limit or invalid:

**- Land as soon as possible.**

**Note**

55/55% TQ may be shortly exceeded for the final part of the landing manoeuvre.

**SECTION END**

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# LIST OF CAUTION MESSAGES

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## CAUTIONS WITH VOICE MESSAGES

— 'LANDING GEAR' voice message, associated with LANDING GEAR amber caution, is active when the radio altimeter height is less than 200 ft and undercarriage is retracted.

— 'AUTOPILOT AUTOPILOT' voice message, associated with any AP amber caution.

## TABLE OF CAS CAUTION MESSAGES

| CAS Caption | Page | Failure/System State |
| --- | --- | --- |
| 1(2) ADS FAIL | 96 | Associated ADS failed. |
| AFCS PNL FAIL | 87 | Failure of Upper Modes and FD mode pushbuttons. |
| 1(2) AHRS FAIL<br>and/or<br>ATT FAIL HDG FAIL | 95<br>169<br>170 | Associated AHRS has partially or completely failed. |
| 1(2) AMMC DEGR | 99 | Associated AMMC degraded. |
| 1(2) AMMC FAIL | 98 | Associated AMMC failed. |
| AP AHRS 1(2) FAIL | 87 | AFCS not receiving data from associated AHRS. |
| AP DEGR | 86 | AFCS not receiving ESIS data or ESIS data miscompare with AHRS data. |
| 1(2) AP FAIL | 77 | Associated AFCS channel failed. |
| 1(2) AP MAINT | 92 | Associated AP channel has a failure (only displayed on ground). |
| 1(2) AP MRA FAIL | 79 | Associated Main Rotor single series-actuator failure. |
| 1(2) AP OFF | 78 | Associated autopilot switched OFF. |
| 1(2) AP TEST DEGR | 92 | Associated AP channel unable to carry out pre flight test.<br>(only displayed on ground). |

| CAS Caption | Page | Failure/System State |
|---|---|---|
| 1(2) AP TEST FAIL | 91 | Associated AP channel PFT failed (only displayed on ground). |
| AP CAS FAIL | 86 | AFCS CAS and audio messages not available. |
| APU MODE FAIL | 132 | APU mode not available due to faults with actuator position or motion. |
| APU-MAIN INHIBIT | 133 | APU clutch-declutch actuator movement inhibited. |
| APU-PMS IN FLIGHT | 134 | ENG 1 ACC switch set to ACC with ENG 1 MODE knob set to FLT. |
| 1(2) AP Y FAIL | 79 | Associated yaw axis single series actuator failure. |
| ATT OFF | 80 | AFCS attitude mode OFF or failed. |
| AUX BATT HOT | 112 | Auxiliary battery overheating. |
| AUX BATT OFF | 111 | Auxiliary battery off line. |
| AVIONIC CONF FAIL | 100 | Software discrepancy between AMMC 1 and 2, configuration validation operation required (displayed on ground only) |
| AVIONIC FAULT | 97 | Avionic fault. |
| AVSRFAIL | 213 | Adaptive Variable Speed Rotor system failed. |
| BAG DOOR | 159 | Baggage door open. |
| 1(2) BCU HOT | 111 | Associated Brushless Control Unit overheating. |
| 1(2) BRG TEMP | 211 | Associated ENG-MGB input bearing overheating. |
| BUS TIE OPEN | 113 | DC MAIN bus tie open. |
| C TRIM FAIL | 85 | AFCS collective trim actuator failed. |
| CABIN DOOR | 159 | Cabin door open. |

| CAS Caption | Page | Failure/System State |
|---|---|---|
| CBVENT FAIL | 160 | Cabin ventilation fan failed |
| CHIP DET UNIT | 214 | Drive system chip detector unit failed. |
| CKPT VENT FAIL | 160 | Cockpit ventilation fan failed |
| COCKPIT DOOR | 158 | Cockpit door open. |
| CVR FAIL | 101 | Cockpit voice recorder failed. |
| DC EXT PWRDOOR | 160 | External Power door open. |
| 1(2) DC GEN FAIL | 107 | Associated generator failed, loss of affected non essential bus bars. |
| 1(2) DC GEN HOT | 108 | Associated generator overheating. |
| 1(2) DC GEN OVLD | 109 | Associated generator in overload condition. |
| ECS FAIL | 161 | Failure of automatic management of ventilation |
| 1(2) EDCU OVERTEMP | 168 | EDCU over temperature. |
| 1 EMER BUS FAIL | 109 | Associated emergency bus failure. See page 15 for services lost when bus not available. |
| 2 EMER BUS FAIL | 110 | Associated emergency bus failure. See page 15 for services lost when bus not available. |
| EMER LDG FAIL | 155 | Landing gear emergency extension failure |
| 1(2) ENG CH FAIL | 126 | Engine channel failed. |
| 1(2) ENG CHIP FAIL | 123 | Associated engine oil chip detector system failed. |
| 1(2) ENG DEGR | 125 | Associated engine operation degraded. |
| 1(2) ENG FUEL PRESS | 128 | Fuel pressure below limit. |

| CAS Caption | Page | Failure/System State |
|---|---|---|
| 1(2) ENG LIM EXPIRE | 119 | Associated engine exceeded 2.5 min OEI rating. |
| 1(2) ENG LARGE CHIP | 122 | Associated engine large chip detected. |
| 1(2) ENG OIL CHIP | 122 | Associated engine chip detected. |
| 1(2) ENG OIL FILTER | 121 | Associated engine oil filter impending bypass. |
| 1(2) ENG OIL LOW | 121 | Associated engine oil level low. |
| 1(2) ENG OIL TEMP | 120 | Associated engine oil overtemp (greater than 130 °C). |
| 2 ENG TRNST INHBT | 134 | ENG 2 MODE knob selected to IDLE during accessory actuator movement. |
| FDR FAIL | 101 | Flight data recorder failed. |
| 1(2) FIRE BTL LOW P | 124 | Associated fire bottle low pressure. |
| 1(2) FIRE SYS DET | 123 | Associated fire detect system failed. |
| FMS/GPS MSCP | 103 | Miscompare between FMS and GPS position data. |
| FPLN MSCP | 103 | Miscompare between FMS1 and FMS2 active flight plan. |
| 1(2) FUEL FLTR BLOCK | 127 | Associated engine fuel filter blockage. |
| 1(2) FUEL FLTR DEGR | 127 | Associated engine fuel filter impending blockage. |
| 1(2) FUEL LOW | 137 | Associated fuel level less than 51 kg. |
| 1(2) FUEL LOW FAIL | 138 | Associated fuel low system failed. |
| 1(2) FUEL PROBE | 139 | Associated fuel contents probe failed. |

CAUTION MSGs

| CAS Caption | Page | Failure/System State |
|---|---|---|
| 1(2) GPS FAIL | 102B | Associated GPS failed. |
| 1-2 GPS FAIL | 102E<br>102F | Associated GPS failed. |
| GPS/GPS MSCP | 102<br>102A | Miscompare between FMS and GPS position data. |
| GPS/GPS MSCP UNAVL | 102B<br>102C<br>102D | GPS/GPS position data checking function not available. |
| 1(2) HOT START | 127 | Associated engine ITT limits exceeded on engine starting. |
| 1(2) HYD MIN | 146 | Associated hydraulic system fluid level low. |
| 1 HYD OIL PRESS | 143 | Associated hydraulic system pressure low (less than 163 bar). |
| 2 HYD OIL PRESS | 144 | Associated hydraulic system pressure low (less than 163 bar). |
| 1(2) HYD OIL TEMP | 145 | Associated hydraulic system over-temp (greater than 134° C). |
| 1(2) HYD SERVO | 147 | Associated hydraulic servo actuator in bypass. |
| IGB OIL TEMP | 212 | Intermediate gearbox oil overtemp (greater than 115 °C). |
| LANDING GEAR | 153 | Landing gear retracted when aircraft height is less than 200 ft (60 m) AGL/ASL. |
| LDG CTR FAIL | 154 | Landing gear control module not available. |
| LDG EMER DOWN | 149 | The Landing gear has been extended using EMER DOWN push-button. |
| MAIN BATT HOT | 112 | Main battery overheating. |
| MAIN BATT OFF | 110 | Main battery off line. |
| MGB OIL LOW | 207 | Main gearbox oil level low (only active on ground). |

CAUTION MSGs

| CAS Caption | Page | Failure/System State |
|---|---|---|
| 1(2) MGB OIL PRESS | 210 | Associated MGB engine input oil pressure low. |
| MISTRIM | 80 | Linear actuators not re-centered by trim. |
| 1(2) NOSE FAN FAIL | 100 | Nose avionic bay fan failed. |
| NOSE WHL UNLK | 153 | Nose wheel not locked in fore and aft direction in flight. |
| PARK BRK ON | 148 | Park brake system pressurized. |
| PARK BRK PRESS | 149 | No pressure in the park brake system. |
| P TRIM FAIL | 82 | AFCS pitch trim actuator failed. |
| 1(2) PITOT HEAT OFF | 156 | Associated pitot heating system off or failed with OAT less than 4° C. |
| R TRIM FAIL | 83 | AFCS roll trim actuator failed. |
| ROTOR BRK FAIL | 205 | Rotor brake system failure. |
| ROTOR BRK HOT | 206 | Rotor brake system overheated (only displayed on ground). |
| ROTOR BRK INHB | 206 | Criteria for rotor brake application not met. |
| SNSR DORMANT FAIL | 158 | Failure of at least one transmission and/or hydraulic system monitoring-sensors (caution only active on ground with both engines OFF) |
| TGB OIL TEMP | 213 | Tail gearbox oil overtemp (greater than 109° C). |
| TRIM FAIL | 81 | AFCS trim system failure. |
| VENT FAIL | 161 | Cockpit and cabin ventilation fan failed. |
| 1(2) WOW FAIL | 157 | Associated Weight On Wheels (WOW) switch failed. |
| XMSN LARGE CHIP | 208 | Transmission oil large chip detected. |

| CAS Caption | Page | Failure/System State |
|---|---|---|
| XMSN CHIP | 208 | Transmission oil chip detected. |
| XMSN CHIP FAIL | 209 | Chip sensor failure. |
| XMSN OVTQ | 207 | Main gearbox overtorque. |
| Y TRIM FAIL | 84 | AFCS yaw trim actuator failed. |

**TABLE OF PFD AND MFD MESSAGES**

**RED Messages**

| | | |
|---|---|---|
| ATT FAIL | 169 | Failure of attitude information (on associated side). |
| HDG FAIL | 170 | Failure of heading information (on associated side). |
| RA | 174 | Double Rad Alt failure. |
| 1(2) CAS MSCP on PFD | 177 | AMMC 1 (2) CAS Warning message list has discrepancies. |
| Airspeed display tape crossed | 173 | Airspeed information not available (on associated side). |
| Vertical speed tape crossed | 169 | Vertical speed information not available (on associated side). |
| Altitude display tape crossed | 173 | Altitude information not available (on associated side). |

**AMBER Messages**

| | | |
|---|---|---|
| DU OVHT | 182 | Associated display unit in overheat condition. |
| 2.5 m on side of PI and between NG and ITT indications | 184 | Associated side engine in 2.5 minute rating. Message illuminates amber. Within 10 seconds of exceeding 2.5 min rating it blinks red inverse video and then red steady inverse video when time is expired. |

CAUTION MSGs

CAUTION MSGs

| | | |
|---|---|---|
| **5 m** on side of PI and between NG and ITT indications | 185 | Associated side engine in 5 minute rating. Message illuminates amber for final 5 minutes of 30 min rating. Within 10 seconds of exceeding 30 min rating it blinks red inverse video and then red steady inverse video when time is expired. |
| **ADU** on attitude indicator | 173 | Pilot and Copilot ADU information from the same source. (1-Copilot side 2-Pilot side). |
| **AHRS** on attitude indicator | 169 | Pilot and Copilot attitude information from the same source. (1-Copilot side 2-Pilot side). |
| **ALT** on altitude display tape | 187 | Miscompare between ADS 1 & 2 for altitude information (±125 ft). |
| DH | 189 | RAD ALT height equal or lower to selected decision height (DH) |
| **DR** | 203<br>102<br>102A<br>102F | FMS Navigation source is automatically switched to DR (Dead Reckoning) |
| **1(2) CAS MSCP** on PFD | 178 | AMMC 1 (2) CAS Caution message list has discrepancies. |
| **CHECK PFD** on PFD | 181 | Display unit cross checking has detected at least one parameter dicrepancy. |
| **DU MON** on PFD | 179<br>180 | Sensors monitoring function inhibited for at least one parameter. |
| FCS LINK FAIL on PFD | 195 | Loss of AFCS communication to PFD. |
| **FMS DGR** | 196 | FMS Performance Monitoring and Alerting System detects that the FMS cannot guarantee, with sufficient integrity, the navigation performance required in the navigation specification. |
| **GS** | 192 | Miscompare between Glideslope vertical deviation (±0.75 ft dot). |

| | | |
|---|---|---|
| **GPS DGR** | 102<br>102C<br>102E | The Alerting Message UNABLE GNSS RNP in conjunction with GPS DGR alerting annunciator on both PFDs provide the pilot the information that the FMS is using DME/DME or VOR/DME as FMS Navigation Source for Present Position computation. |
| **HDG** on attitude indicator | 187 | Miscompare between AHRS 1 & 2 for Heading information (±10° heading). |
| **HT LOSS** on attitude indicator | 190 | AFCS Low height protection not available. |
| **IAS** on airspeed tape | 187 | Miscompare between ADS 1 & 2 air-speed information (±20 kts). |
| **LG** on PFD | 192 | Miscompare between navigation Lateral Guidance information from FMS sources. |
| **LOC** | 192 | Miscompare between LOC Lateral deviation (±0.75 ft dot). |
| LOW HT | 190 | AFCS Low height protection active. |
| **MAG DEGR** | 171 | Abnormal magnetic field caused loss of heading computation by AHRS on associated HSI display. |
| **NR** on NR scale | 186 | NR miscompare between EECU 1 & 2 (±3%). |
| **OAT** on NR scale | 192 | Miscompare between ADS 1 & 2 for Outside Air Temperature information (± 3°C). |
| OEI on side of PI, TQ, ITT, NG indications | 186 | Associated engine failed. |
| **PITCH** on attitude indicator | 188 | Miscompare between AHRS 1 & 2 for Pitch information (±5° in pitch). |
| PWR LIM | 191 | AFCS Power Limit/Autorotation protection active. |
| **PWR LOSS** | 191 | AFCS Power Limit/Autorotation protection not available. |

CAUTION MSGs

CAUTION MSGs

| | | |
|---|---|---|
| **RA** on RAD ALT display | 189 | Miscompare between RAD ALT 1 & 2 information. |
| **RA1(2)** on RAD ALT display | 175 | RAD ALT faiure, reconfiguration to functioning system. |
| **REV** On PFD | 176 | Display unit in reversionary. |
| **ROLL** on attitude indicator | 187 | Miscompare between AHRS 1 & 2 for Roll information (±5° in roll). |
| **UCPL** | 191 | AFCS Collective mode uncoupled automatically due to transition to OEI. |
| **VG** on PFD | 192 | Miscompare between navigation Vertical Guidance information from FMS sources. |
| **VNE** | 187 | Miscompare between ADS 1 & ADS 2 Airspeed (±7 kts). |
| **VS** | 187 | Miscompare between AHRS 1 & AHRS 2 Vertical Speed (±200 ft/min). |

**SECTION END**

# AUTOMATIC FLIGHT CONTROL SYSTEM

# AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS)

## AUTOPILOT FAIL

**1(2) AP FAIL** + Aural Message 'AUTOPILOT AUTOPILOT'

Associated AFCS channel failed.

**- Reduce speed not to exceed 120 KIAS.**
**- Continue flight attentive.**

**- The following AFCS Upper Modes may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS.**

- *IF* subsequent **1-2 AP FAIL** *OR* **2(1) AP OFF** caution illuminates

+ Aural Message 'AUTOPILOT AUTOPILOT'

**- Continue flight manually not to exceed 120 KIAS.**

AFCS

**Note**

If any AP channel is failed, **AVSR FAIL** caution will be displayed.

**END**

## AUTOPILOT OFF

**1(2) AP OFF** + Aural Message 'AUTOPILOT AUTOPILOT"

Associate AP not engaged.

**- Reduce speed not to exceed 120 KIAS.**
**- Continue flight attentive.**

On affected AP
**- Engage channel on AFCS panel.**

*IF* caution clears:

**- Continue flight.**

*IF* caution remains:

**- Maintain speed not to exceed 120 KIAS.**
**- The following AFCS Upper Modes may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS.**

*IF* subsequent **2(1) AP FAIL** *or* **1-2 AP OFF** caution illuminate + Aural Message 'AUTOPILOT AUTOPILOT'

**- Continue flight manually not to exceed 120 KIAS.**

**END**

## AUTOPILOT MRA FAIL

**1(2) AP MRA FAIL** + Aural Message
'AUTOPILOT AUTOPILOT

AP1/2 main rotor series actuator failed.

- **Reduce speed not to exceed 120 KIAS.**
- **Continue flight attentive.**
- **The following AFCS Upper Modes may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS.**

**END**

AFCS

## AUTOPILOT TRA FAIL

**1(2) AP Y FAIL** + Aural Message
'AUTOPILOT AUTOPILOT

Yaw axis single channel failed.

- **Reduce speed not to exceed 120 KIAS.**
- **Continue flight attentive.**
- **The following AFCS Upper Modes may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS.**

**Note**

*IF* **1-2 AP Y FAIL** illuminates fly feet on pedals.

**END**

## ATTITUDE MODE OFF

**ATT OFF**

Attitude mode not engaged.

**- Engage ATT mode by pushing ATT button on cyclic.**

*IF* ATT hold not available.

**- Continue flight manually not to exceed 120 KIAS.**



**END**

## MISTRIM

**MISTRIM**

Series actuators(s) not centred.

**- Continue flight, using FTR button and pedal switches as appropriate to obtain desired flight condition and promptly centre series actuators to extinguish the caution.**

**- Be attentive to autopilot functioning and monitor AFCS actuators on MFD AFCS Synoptic page as necessary.**

**CAUTION**

**MISTRIM** caution may also be displayed in turbulence with AFCS Upper Modes engaged.

**- Continue flight manually.**

**- Disengage AFCS Upper Modes.**

**END**

**TRIM FAIL**

AFCS trim system failure,
pitch, roll, yaw and collective
trim functions not available.

- **Reduce speed not to exceed 120 KIAS.**
- **Dis-engage then re-engage AP 1.**

*IF* caution clears:

- **Continue flight.**

*IF* **TRIM FAIL** remains:

- **Dis-engage then re-engage AP 2.**

*IF* caution clears:

- **Continue flight.**

*IF* **TRIM FAIL** remains:

- **Continue flight.**
being aware that AFCS
pitch, roll, yaw and
collective trim functions
are unavailable.
Any change of flight conditon
must be flown manually.

*IF* subsequent:

**MISTRIM**

caution illuminates
see page 80.

**Note**

Collective AFCS Upper Modes will
disengage and cannot be re-engaged.

**END**

## PITCH TRIM FAILURE

**P TRIM FAIL**

AFCS pitch trim actuator failed.

**- Reduce speed not to exceed 120 KIAS.**
**- Dis-engage then re-engage AP 1.**

*IF* caution clears:

**- Continue flight.**

*IF* **P TRIM FAIL** remain:

**- Dis-engage then re-engage AP 2.**

*IF* caution clears:

**- Continue flight.**

*IF* **P TRIM FAIL** remain:

**- Continue flight.**
being aware that trim function in pitch is unavailable.
Any change of flight condition must be flown manually.

*IF* subsequent:

**MISTRIM**

caution illuminates
see page 80.

**END**

AFCS

**R TRIM FAIL**

AFCS roll trim
actuator failed.

**- Reduce speed not to exceed 120 KIAS.**
**- Dis-engage then re-engage AP 1.**

*IF* caution clears:

**- Continue flight.**

*IF* **R TRIM FAIL** remain:

**- Dis-engage then re-engage AP 2.**

*IF* caution clears:

**- Continue flight.**

*IF* **R TRIM FAIL** remain:

**- Continue flight.**
being aware that trim function
in roll is unavailable.
Any change of flight condition
must be flown manually.

*IF* subsequent:

**MISTRIM**
caution illuminates
see page 80.

**END**

AFCS

YAW TRIM FAILURE



**Y TRIM FAIL**

AFCS yaw trim actuator failed.

- **Fly feet-on.**
- **Reduce speed not to exceed 120 KIAS**
- **Dis-engage then re-engage AP 1.**

*IF* caution clears:

- **Continue flight.**

*IF* **Y TRIM FAIL** remain:

- **Dis-engage then re-engage AP 2.**

*IF* caution clears:

- **Continue flight.**

*IF* **Y TRIM FAIL** remain:

- **Continue flight** being aware that trim function in yaw is unavailable Any change of flight condition must be flown active feet-on to avoid **MISTRIM**

*IF* subsequent:

**MISTRIM** caution illuminates see page 80.

**END**

## COLLECTIVE TRIM FAILURE

**C TRIM FAIL**

AFCS collective trim actuator failed.

**- Reduce speed not to exceed 120 KIAS**
**- Dis-engage then re-engage AP 1.**

*IF* caution clears:

**- Continue flight.** Collective modes may be engaged.

*IF* **C TRIM FAIL** remain:

**- Dis-engage then re-engage AP 2.**

*IF* caution clears:

**- Continue flight.** Collective modes may be engaged.

*IF* **C TRIM FAIL** remain:

**- Continue flight.** being aware that AFCS collective modes are unavailable.

**Note**

Collective AFCS Upper Modes will disengage and cannot be re-engaged.

**END**

## AUTOPILOT DEGRADED

**AP DEGR**

ESIS attitude data misaligned with PFD or lost

**- Check ESIS data.**

ESIS Attitude data misaligned with PFD values

ESIS Attitude data lost

Be aware that a subsequent AHRS failure may cause both AP channels to disengage.

**- Reduce speed not to exceed 120 KIAS.**
**- Continue flight attentive.**
**- The following AFCS Upper Modes may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS.**



**END**

## AUTOPILOT CAS FAILURE

**AP CAS FAIL**

AFCS CAS messages and audio attention getters unavailable.

**- Reduce speed not to exceed 120 KIAS.**
**- Continue flight attentive.**
**- The following AFCS Upper Modes may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS.**

**Note**

The AFCS status may be monitored on AFCS synoptic page.

**END**

## AFCS PANEL FAILURE

**AFCS PNL FAIL**

Failure of upper modes controls on AFCS panel (AP 1 & 2 pushbuttons will still allow engagement and disengagement of autopilot, even if buttons not illuminated)

**- Continue flight.**

Upper modes may be disengaged using cyclic ATT pushbutton.
GA mode may be engaged using collective GA/TU pushbutton.

**END**



## AUTOPILOT- AHRS FAILURE

**AP AHRS 1(2) FAIL**

The AFCS is not receiving information from associated AHRS.

**- Reduce speed not to exceed 120 KIAS.**
**- Continue flight attentive.**
**- Disengage associated AP channel.**

**1(2) AP OFF** + Aural Message ‘AUTOPILOT AUTOPILOT”

**- The following AFCS Upper Modes may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS.**
**- Maintain speed not to exceed 120 KIAS.**

**END**

## AFCS OSCILLATORY MALFUNCTION



Repeated oscillations in one or more axes.

*IF* oscillations severe:

- **Reduce speed not to exceed 120 KIAS.**
- **Fly manually**

- **Double press of AP OFF pushbutton on cyclic to disengage AP.**

- **Engage AP 1.**

*IF* fault clears:

*IF* fault remains:

- **Engage AP 2 and disengage AP 1.**

- **Maintain speed not to exceed 120 KIAS.**
- **Continue flight attentive.**
- **The following AFCS Upper Modes may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS.**

**END**

## LOSS OF FORCE FEEL ON CYCLIC

Longitudinal and/or Lateral Flight Control not anchored by Trim clutch
Force feel not available while Cyclic is moved without depressing FTR switch

**ATT OFF** not displayed on CAS list

Cyclic Flight Control might move from its selected position

**- Continue flight manually not to exceed 120 KIAS.**

**ATT OFF** displayed on CAS list

**SAS** Mode is annunciated on both PFD longitudinal and lateral field

**- Refer to** ATTITUDE MODE OFF **procedure page 80.**

END

## CYCLIC FORCE TRIM RELEASE FAILURE

Depressing the Cyclic Force Trim Release (FTR) switch does not remove the Force Feel on Longitudinal and/or Lateral flight control

**- Fly the aircraft manoeuvring the cyclic control against the force feel spring, or use the cyclic beep trim to modify the trim position.**

END

## LOSS OF FORCE FEEL ON COLLECTIVE

Collective Flight Control not anchored by Trim clutch
Force feel not available while Collective is moved without depressing FTR switch

**- Continue flight**
**- Fly hands-on Collective**

END

AFCS

## COLLECTIVE FORCE TRIM RELEASE FAILURE

Depressing the Collective Force Trim Release (FTR) switch does not remove the Force Feel on Collective.

**- Fly the aircraft manoeuvring the collective control against the force feel spring or, in case an AFCS Collective Upper Mode is engaged, use the collective longitudinal beep trim to modify the trim position.**

**END**

## LOSS OF FORCE FEEL ON PEDALS



Pedals not anchored by Trim clutch
Force feel not available while Pedals are moved without depressing FTR switch

**- Continue flight.**

**- Fly feet-on.**

**END**

## PEDALS FORCE TRIM RELEASE FAILURE

Depressing the Pedals Force Trim Release (FTR) switch does not remove the Force Feel on Pedals

**- Fly the aircraft manoeuvring the Pedals against the force feel spring or, in case of airspeed less than 40 KIAS , use the collective lateral beep trim to modify the pedal trim position.**

**END**

**AFCS COMBINED FAILURES**

A combination of AFCS failures, that are not directly related, could cause the loss of an AFCS axis. For example a 1 AP MRA FAIL (loss of N°1 Main Rotor series actuator) and a subsequent 2 AP FAIL would cause a complete loss of the AFCS on pitch and roll axis which would require the aircraft to be flown manually.

For any combination of AFCS failures the pilot should fly manually until the functionality of the AFCS system has been assessed.

**AFCS TEST FAILURE**
**(available on ground only)**

**1(2) AP TEST FAIL**

Associated AP channel has failed the pre-flight test.

**- Repeat TEST ensuring that cyclic and pedals flight controls are centered and collective is fully down and all controls are free during the test.**

*IF* caution remains:

**- Shutdown aircraft.**

**Note**

Should pilot or copilot PFD be deactivated, **1-2 AP TEST FAIL** caution will display. Refer to MMEL for dispatch conditions.

**END**

**AFCS TEST PARTIALLY COMPLETED**
**(available on ground only)**

**1(2) AP TEST DEGR**

Associated AP channel was unable to carry out all the pre-flight tests.

**- Repeat TEST ensuring that cyclic and pedals flight controls are centered and collective is fully down and all controls are free during the test.**

*IF* caution remains:

**- Shutdown aircraft.**



**END**

**AUTOPILOT CHANNEL FAILURE**
**(available on ground only)**

**1(2) AP MAINT**

Associated AP channel has a failure (Caution displayed on ground after flight only).

**- Shutdown aircraft.**

**SECTION END**

# AVIONIC SYSTEMS

## AHRS FAILURE

**1(2) AHRS FAIL**

\+ **ATT FAIL** **HDG FAIL** and loss of attitude, heading slip skid and vertical speed data on Left (Right) PFD.

Associated AHRS failed

**- Reduce speed not to exceed 120 KIAS.**
**- Continue flight attentive.**
**- Disengage associated AP channel.**

\-

**1(2) AP OFF** Caution illuminates

**- Maintain speed not to exceed 120 KIAS.**
**- The following AFCS Upper Modes, may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP,NLOC/NGS.**

**- On Reconfiguration Control Panel move AHRS knob to non failed AHRS.**

**AHRS** illuminates on attitude indicators to highlight both attitude indicators are using the same source data.

\+

**- Monitor PFD attitude with ESIS.**

**Note**
Fuel quantity indication accuracy degraded.

**END**

**1(2) ADS FAIL**

**+**

loss of:
- Airspeed
- Altitude
- Vertical Speed

data on Left (Right)
PFD indicators.

Associated ADS system failure.

**- On Reconfiguration Control Panel move ADS knob to non failed ADS.**

**ADU** illuminates on attitude indicators to highlight both air data indicators are using the same source data.

**- Monitor PFD airspeed, altitude, vertical with ESIS.**

**END**

**AVIONIC FAULT**

Loss of redundancy in avionic system.

On ground.

- **Shutdown aircraft.**

In flight.

*IF* associated with:
**1-2 AMMC DEGR** caution

- **Land as soon as practicable.**

*IF* associated with:
◁ or ▷
Replaces green arrow above attitude indicator on PFD.

At least one DCP has failed.

- **Continue flight using PFD bezel keys.**

*IF* at least one CCD or RCP has failed:

- **Continue flight.**

**END**

## AMMC FAILURE

**1(2) AMMC FAIL**

Associated AMMC failed.
See Note 1.

*IF* **1(2) AMMC DBU READY** advisory not displayed after 2 min.

- **Continue Flight**
Be aware AMMC redundancy lost.
See Note 2.

*IF* **1(2) AMMC DBU READY** advisory displayed.

- **Activate DBU** (on EDCU AVIONICS page).
See Note 4.
- **Confirm caution clears.**

- **Continue flight.**

AVIONIC

### Note 1

The **1(2) AMMC FAIL** caution may generate DU MON message on PFD if the selected NAV source is FMS.

### Note 2

In case of **1 AMMC FAIL**: loss of TGB OIL TEMP indication, HYD 1 pressure and temperature indications, FUEL 1 pressure and FUEL quantity indications, FMS 1 and DMAP 1 (if fitted),

In case of **2 AMMC FAIL**: loss of MGB OIL PRESS, IGB OIL TEMP indication, HYD 2 pressure and temperature indications, FUEL 2 pressure and FUEL quantity indications, FMS 2 and DMAP 2 (if fitted).

### Note 3

IF AMMC1(2) in failure corresponds to the FMS1(2) selected as NAV SOURCE, select NAV SOURCE to the alternate FMS to keep FLIGHT PLAN steering data.

### Note 4

DBU execution will remove SID STAR and APPROACH procedures from current active FLIGHT PLAN, therefore in case of need they have to be reloaded.

**END**

**1(2) AMMC DEGR**

Associated AMMC degraded.

**- Select 2(1) AMMC to MASTER**
(EDCU AVIONICS page).

Be aware of possible AMMC loss of redundancy.

**- Confirm AWG SHORT TEST functional**
(EDCU TEST page).

IF AWG SHORT TEST functional.

**- Continue Flight.**

IF AWG SHORT TEST not functional.
Complete loss of aural warning sytem.

**- Continue flight monitoring CAS system and AFCS mode indications as aural warning does not function.**

AVIONIC

**END**

## AVIONIC CONFIGURATION FAILURE

**AVIONIC CONF FAIL**

Software discrepancy between AMMC 1 and 2, configuration validation operation required (displayed on ground only)

**- Shutdown aircraft.**

**END**

## NOSE BAY FAN FAIL
**(Available on ground only)**

**1-2 NOSE FAN FAIL**

Both nose bay fans failed.

Some avionic functions may be degraded or fail during prolonged ground operations with OAT warmer than +45 °C.

**- Shutdown aircraft.**

**END**

## FLIGHT DATA RECORDER FAILURE

**FDR FAIL**

Flight Data Recorder partial or total failure.

On ground.

**Refer to minimum equipment list.**

In flight.

**Continue flight.**

**END**

## COCKPIT VOICE RECORDER FAILURE

**CVR FAIL**

Cockpit Voice Recorder failed.

On ground.

**Refer to minimum equipment list.**

In flight.

**Continue flight.**

**END**

## GPS/GPS MISCOMPARE + GPS DGR ON PFD

**GPS/GPS MSCP** + GPS DGR on PFD
+ UNABLE GNSS RNP on MSG

Miscompare between FMS position using GNSS 1(2) and standby GNSS 2(1) position data.
Loss of GNSS system for FMS navigation.

FMS navigation or RNP approach or RNP procedures

- **Discontinue FMS Approach.**
- **Revert to Radio Navigation, deselecting the FMS as Primary NAV source.**
- **Notify ATC loss of RNP capability.**

All other operations.

- **Continue flight.**

AVIONIC

**Note**

- FMS position source is automatically set to VOR/DME or DME/DME if available, nevertheless crew has to manually deselect FMS as primary navigation source and must not rely on position DME/DME or VOR/DME available on EDCU PROGRESS/PPOS page.
- In case of temporary GNSS positioning miscompare if GPS/GPS MSCP and GPS DGR are removed the pilot can reselect the FMS as Primary NAV source to restore the normal PBN operation.

**END**

## GPS/GPS MSCP + DR ON PFD

**GPS/GPS MSCP** + DR on PFD
+ NO POSITION SENSOR and UNABLE GNSS RNP on MSG

Miscompare between FMS position using selected GNSS 1(2) and standby GNSS 2(1) position data.

*If* FMS navigation or RNAV(GNSS) approach or RNP procedures

- **Discontinue FMS Approach.**
- **Revert to Radio Navigation, deselecting the FMS as Primary NAV source.**
- **Notify ATC loss of RNAV/RNP capability.**

All other operations.

- **Continue flight.**



**Note**

The DR annunciation, displayed when **GPS/GPS MSCP** occurs, provides the indication that FMS is navigating using the Dead Reckoning position; any AFCS mode coupled to FMS remains engaged.

**END**

AVIONIC

## SINGLE GPS FAIL WITH GPS/GPS MISCOMPARE UNAVAILABLE

**1(2) GPS FAIL** + **GPS/GPS MSCP UNAVL**

Single GNSS system failure
Loss of GNSS redundancy for FMS navigation and comparison between GNSS positions not being performed.

Continue Flight.

**Note**

Any RNP procedures can be continued with single GNSS sensor as the RNP Performance Monitoring and Alerting function is operative on the active GNSS.

**END**

## GPS/GPS MISCOMPARE UNAVAILABLE

**GPS/GPS MSCP UNAVL**

At least one GNSS unit is not in NAV, SBAS NAV or SBAS PA mode or at least one GNSS unit is INHIBIT on EDCU/GPS page.
Loss of GNSS redundancy for FMS navigation and comparison between GNSS position not being performed.

Continue Flight

**Note**

Any RNP procedures can be continued with single GNSS sensor as the RNP Performance Monitoring and Alerting function is operative on the active GNSS.

**END**

## GPS/GPS MISCOMPARE UNAVAILABLE + GPS DGR

**GPS/GPS MSCP UNAVL** + GPS DGR on PFD
+ UNABLE GNSS RNP on MSG

Both GNSS units are not in NAV, SBAS NAV or SBAS PA mode or both GNSS units are in INHIBIT or EDCU/GPS page.
Loss of GPS for FMS navigation.

*If* FMS navigation or RNP approach or RNP procedures

- **Discontinue FMS Approach.**
- **Revert to Radio Navigation, deselecting the FMS as Primary NAV source.**
- **Notify ATC loss of RNP capability.**

All other operations.

- **Continue flight.**

**Note**

- The system is capable but not certified to perform multisensor navigation: FMS position source is automatically set to VOR/ DME or DME/DME if under radio coverage. Crew has to manually deselect FMS as primary navigation source and must not rely on position DME/ DME or VOR/DME available on EDCU PROGRESS/PPOS page.
- In case of temporary GNSS outage if **GPS/GPS MSCP UNAVL** and GPS DGR are removed the pilot can reselect the FMS as Primary NAV source to restore the normal PBN operation.

AVIONIC

**END**

## GPS/GPS MISCOMPARE UNAVAILABLE + DR

**GPS/GPS MSCP UNAVL** + DR on PFD
+ NO POSITION SENSOR and UNABLE GNSS RNP on MSG

Both GNSS units are not in NAV SBAS NAV or SBAS PA mode or both GNSS units are in INHIBIT on EDCU/GPS page.

*If* FMS navigation or RNAV(GNSS) approach or RNP procedures

- **Discontinue FMS Approach.**
- **Revert to Radio Navigation, deselecting the FMS as Primary NAV source.**
- **Notify ATC loss of RNAV/RNP capability.**

All other operations.

- **Continue flight.**

AVIONIC

**Note**

The DR annunciation, displayed when GPS/GPS MSCP UNAVL occurs, provides the indication that FMS is navigating using the Dead Reckoning position; any AFCS mode coupled to FMS remains engaged.

**END**

## DOUBLE GPS FAIL + GPS DGR MESSAGE

**1-2 GPS FAIL**
+ GPS DGR on PFD
+ UNABLE GNSS RNP on MSG

Double GNSS system failure.

*If* FMS navigation or RNP approach or RNP procedures

- **Discontinue FMS Approach.**
- **Revert to Radio Navigation, deselecting the FMS as Primary NAV source.**
- **Notify ATC loss of RNP capability.**

All other operations.

HOV/TU/TDH modes automatically disengage (if engaged)

- **Continue flight.**



**Note**

- FMS position source is automatically set to VOR/DME or DME/ DME if available, nevertheless crew has to manually deselect FMS as primary navigation source and must not rely on position DME/DME or VOR/DME available on EDCU PROGRESS/PPOS page.
- GSPD mode if engaged, will automatically revert to IAS mode.

**END**

## DOUBLE GPS FAIL + DR MESSAGE

**1-2 GPS FAIL** + DR on PFD
+ NO POSITION SENSOR on MSG

Double GNSS system failure.

*If* FMS navigation or RNAV(GNSS) approach or RNP procedures

- **Discontinue FMS Approach.**
- **Revert to Radio Navigation, deselecting the FMS as Primary NAV source.**
- **Notify ATC loss of RNAV/RNP capability.**

All other operations.

HOV mode automatically disengages (if engaged)

- **Continue flight.**

AVIONIC

**Note**

- GSPD mode if engaged, will automatically revert to IAS mode.
- The DR annunciation, displayed when **1-2 GPS FAIL** occurs, provides the indication that FMS is navigating using the Dead Reckoning position; any AFCS mode coupled to FMS remains engaged.

**END**

## FMS/GPS MISCOMPARE

**FMS/GPS MSCP**

Miscompare between the manually selected FMS position (DME/DME or VOR/DME) and the GNSS position.

- Set position to AUTO in EDCU/POS SOURCE page to restore the FMS navigation through GNSS based data.
- When GNSS position is restored on EDCU/PPOS page, continue flight

**Note**

Manual selection of VOR/DME and DME/DME on EDCU/POS SOURCE page as FMS Navigation source alternative to GNSS is prohibited.

**END**



## FLIGHT PLAN MISCOMPARE

**FPLN MSCP**

Miscompare on FMS 1 and FMS 2 active flight plans displayed at CDS..

FMS navigation or RNAV (GNSS) approach or RNP procedures

**- If FMS Approach, Discontinue approach.**
**- Revert to Radio Navigation, deselecting the FMS as Primary NAV source.**
**- Notify ATC loss of RNAV/RNP capability.**

All other operations.

**- Use Radio Navigation procedures.**

**SECTION END**

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# ELECTRICAL SYSTEM

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## SINGLE DC GENERATOR FAILURE

**1(2) DC GEN FAIL**

Associated DC generator failure

**- Affected generator: RESET and confirm ON.**

*IF* caution clears:
**- Continue flight.**

*IF* **1(2) DC GEN FAIL** remains

**- Switch OFF affected generator.**
**- Monitor GEN load on MFD. Reduce electrical load if limit exceeded.**

*IF* **BUS TIE OPEN** illuminates

**- BUS TIE selection: RESET.**
(on EDCU ELEC page).

*IF* **BUS TIE CLOSED** illuminates

**- Continue flight.**

Power is supplied by remaining generator.
all NON ESS BUS are lost.
See Note 2 on next page.

*IF* **BUS TIE OPEN** remains

**- Continue flight.**

Power is supplied by remaining generator.
Affected generator MAIN BUS are lost, and all NON ESS BUS are lost.
See Notes on next page.

**CAUTION**

IF subsequent **MAIN BATT OFF** illuminates

**- Land as soon as possible.**

***CONTINUED NEXT PAGE***

## SINGLE DC GENERATOR FAILURE CONTINUED

*CONTINUATION FROM PREVIOUS PAGE*

**Note 1**

See page 15 for services lost when bus is not available.
If 1 DC GEN FAIL MAIN BUS 1 and 3 are lost.
If 2 DC GEN FAIL MAIN BUS 2 and 4 are lost.

**Note 2**

If required NON ESS busbars can be restored via EDCU ELEC page:

- set NON ESS L to OVRD, to restore NON ESS BUS 1 and 3;
- set NON ESS R to OVRD, to restore NON ESS BUS 2 and 4.

See page 16 for services lost when bus is not available.

**END**

## DC GENERATOR OVERHEAT

**1(2) DC GEN HOT**

Affected DC generator overheated.

On affected DC generator:
**- Switch OFF generator.**
**- Continue flight.**

Power is supplied by remaining generator.
ALL NON ESS BUS lost (See Note below).
**- Monitor operating generator load on MFD.**
**- Reduce electrical load if limit is exceeded.**

**Note**

See page 15 for services lost when bus is not available.

**END**

## DC GENERATOR OVERLOAD

**1(2) DC GEN OVLD**

Affected DC generator overloaded (above 100% for more than 45 sec. or above 75% for more than 10 minutes).

**- BUS TIE selection: OVRD**
(on EDCU ELEC page).

Electrical load is shared between the two DC generators.

IF caution clears

**- Continue flight.**

*IF* **1(2) DC GEN OVLD** remains

**- Reduce associated DC generator load to the green range.**
**- Continue flight.**

**END**

ELEC

## EMERGENCY BUS 1 FAILURE

**1 EMER BUS FAIL**

EMER BUS 1 services lost.

**- Reduce speed and continue flight attentive.**

The following services are lost:

| | |
|---|---|
| Pilot clock (see Note 1) | Engine 1 fire detection |
| VHF 1 | Engine 1 fire extinguisher |
| ESIS | AFCS force trim release |

**Note 1**

Only if digital clock option not integrated.

**Note 2**

See page 14 for circuit breakers details and services lost.

**END**

## EMERGENCY BUS 2 FAILURE

**2 EMER BUS FAIL**

EMER BUS 2 services lost.

**- Reduce speed and continue flight attentive.**

The following services are lost:

| | |
|---|---|
| Pilot EDCU | Engine 2 fire detection |
| Pilot PFD (refer to page 167) | Engine 2 fire extinguisher |
| Pilot MWL and MCL | NAV 2 |
| Pilot landing light | GPS 2 |
| RAD ALT 2 | XPDR (see Note 1) |

**Note 1**

Only if XPDR/TCAS integrated equipment not installed.

**Note 2**

See page 14 for circuit breakers details and services lost.

**END**



## MAIN BATTERY OFF

**MAIN BATT OFF**

Failure of MAIN battery
to ESS BUS 1.

On EPGDS panel:
**- Confirm MAIN BATT switch ON.**

**- Continue flight.**
MAIN BATT is
NOT being charged and
NOT connected as power backup.

**END**

## AUXILIARY BATTERY OFF

**AUX BATT OFF**

Failure of AUX battery
to ESS BUS 2.

On EPGDS panel:
**- Confirm AUX BATT switch ON.**

**- Continue flight.**
AUX BATT is
NOT being charged and
NOT connected as power backup.

**END**

## BRUSHLESS CONTROL UNIT (BCU) OVERHEATING

**1(2) BCU HOT**

Associated DC Brushless
Control Unit overheating.

On associated DC generator:
**- Reduce electrical load**
**(based on mission profile).**
**- Wait for 5 minutes.**

*IF* caution remains:

**- BUS TIE selection: OVRD**
(on EDCU ELEC page).

**- Continue Flight.**

**CAUTION**

*If* **1(2) BCU HOT** caution is displayed on ground during start or crank phase, wait for at least 15 minutes before subsequent start attempt.

**END**

## MAIN BATTERY OVERHEAT

**MAIN BATT HOT**

Main battery temperature
exceeding limits.

On EPGDS panel:
**- MAIN BATT switch: OFF.**

**MAIN BATT OFF**

caution illuminates.

**- Continue flight.**
MAIN BATT is
NOT being charged and
NOT connected as power backup.

**END**

## AUXILIARY BATTERY OVERHEAT



**AUX BATT HOT**

Auxiliary battery temperature
exceeding limits.

On EPGDS panel:
**- BATT AUX switch: OFF.**

**AUX BATT OFF**

caution illuminates.

**- Continue flight.**
AUX BATT is
NOT being charged and
NOT connected as power backup.

**END**

**BUS TIE OPEN**

BUS TIE has been requested to close (automatically due to a DC GEN failure) but BUS TIE remained OPEN.

On EDCU:
**- Reset BUS TIE and set to OVRD.**

*IF* caution remains, connection of MAIN BUS BARS not functioning.

*IF* 1DC GEN is failed, MAIN BUS 1 and 3 are lost.
*IF* 2DC GEN is failed, MAIN BUS 2 and 4 are lost.
All NON ESS BUS are lost.

**- Continue flight.**

**Note**

See page 15 for services lost when bus not available.

**Note**

If required NON ESS busbars can be restored via EDCU ELEC page:
- set NON ESS L to OVRD, to restore NON ESS BUS 1 and 3;
- set NON ESS R to OVRD, to restore NON ESS BUS 2 and 4.

**SECTION END**

ELEC

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# ENGINE,
# ENGINE RESTART IN FLIGHT

## ENGINE MALFUNCTION

### COMPRESSOR STALL PROCEDURE

In case a compressor stall is present:
**- Reduce power demand.**

*IF* affected engine responds normally *AND* all engine parameters return within limits:

**- Continue flight.**

*IF* compressor stall indications persist *AND* other abnormal indications clear:

**- Achieve safe OEI flight.**

**- ENG MODE knob,** on stalled engine, **select IDLE.**

*IF* stall does not clear *AND* ITT continues to rise:

On affected engine:

**- Carry out** ENGINE SHUT-DOWN IN EMERGENCY **procedure.** **See page 35.**

**- Land as soon as practicable.**

*IF* ITT decreases, NG stabilizes:
**- ENG MODE knob: select FLT.**

*IF* engine responds abnormally:

**- Carry out** ENGINE SHUT-DOWN IN EMERGENCY **procedure.** **See page 35.**

**- Land as soon as practicable.**

*IF* engine responds normally:

**- Continue flight.**

**END**

## UNUSUAL ENGINE NOISE

Compressor damage as a result of FOD may increase the engine noise level and is detectable by a high-pitched whining sound. The noise level of the high pitched whine should vary with NG (monitored on MFD PWR PLANT page) and should be significantly higher than the usual engine noise.

*If* an unusual noise is detected and FOD damage suspected:

1. Achieve safe OEI flight;
2. Attempt to establish which engine has problems by monitoring ITT, NG, Engine Oil Pressure, Engine Oil Temperature;
3. Switch ENG MODE knob to IDLE sequentially to determine the affected engine;
4. On affected engine carry out ENGINE SHUTDOWN IN EMERGENCY procedure. See page 35;
5. Land as soon as practicable.

**END**

## ENGINE LIMIT EXPIRE

**1(2) ENG LIM EXPIRE**

**On ground**

Less than 3 pulls of 2.5min rating power is available or single excursion time expired at least once.

- **Shutdown aircraft.**

**In flight**

Associated engine is approaching OEI 2.5 minute time rating.

- **Reduce power below** the OEI 2.5 minute rating:
  140%PI on PFD
  140% TQ, 941 °C ITT, 98.9% NG on MFD PWR PLANT page.

*IF* caution clears

- **Continue flight observing engine ratings.**
  Subsequent application of 2.5 min power allowed.

*IF* **1(2) ENG LIM EXPIRE** remains

Engine cumulative excursion time is expired

- **Continue flight observing engine ratings.**
  Subsequent application of 2.5 min power should be avoided.

**END**

## ENGINE OIL TEMPERATURE

**1(2) ENG OIL TEMP**

Associated engine oil temperature high (greater than 130 °C).

On affected engine:
**- Confirm oil temperature on PFD/MFD.**

*IF* oil temperature within limit:

*IF* oil temperature between 130° C and 135° C:

*IF* oil temperature greater than 135° C:

**- Slowly reduce power.**

*IF* oil temperature reduces below 130°C within 1 min.

*IF* oil temperature remains high:

**- Continue flight monitoring engine oil pressure and temperature.**

**- Achieve safe OEI flight.**

On affected engine:
**- Shut down engine using** ENGINE SHUTDOWN IN EMERGENCY **procedure.**
**See page 35.**

**- Land as soon as practicable.**

**Note**

This caution may illuminate in case of rapid power reduction from high power. It should clear within 1 min.

**END**

## ENGINE OIL LEVEL LOW

**1(2) ENG OIL LOW**

Engine oil level low.
(Caution active for limited time on ground after Engine shutdown).

**Shutdown aircraft.**

**END**

## ENGINE OIL FILTER

**1(2) ENG OIL FILTER**

Associated engine oil filter clogged and in bypass.

**- Check oil temperature and pressure on PFD/MFD.**

*IF* oil temperature and pressure indications normal:

**- Continue flight.**

*IF* oil temperature *and* pressure changes or **1(2) ENG OIL CHIP** caution illuminates:

**- Achieve safe OEI flight.**

**- Shut down engine using ENGINE SHUTDOWN IN EMERGENCY procedure.** **See page 35.**

**- Land as soon as practicable.**

**END**

ENG
APU

## ENGINE OIL CHIP DETECTOR

**1(2) ENG OIL CHIP**

**- Achieve SAFE OEI flight.**

**- CHIP BURN: activate**
(BEZEL key at bottom of MFD ENGINE synoptic page or on EDCU, MISC page).
It is permitted to activate the CHIP BURN up to 6 times to clear a chip.

*IF* CHIP caution clears:

**- Continue flight.**

*IF* CHIP caution remains after 6 activations of CHIP BURN.

**1(2) ENG LARGE CHIP**

caution will illuminate

*IF* engine indication stable:

**- Continue flight monitoring affected engine parameters and shutdown affected engine immediately after landing.**

*IF* any of the following occurs:

- engine speed starts to decrease;
- engine vibration increases;
- engine oil pressure/temperature changes significantly.

On affected engine:

**- Carry out** ENGINE SHUTDOWN IN EMERGENCY **procedure.**
**See page 35.**

**- Land as soon as practicable.**

**END**

ENG
APU

## ENGINE OIL CHIP DETECTOR FAIL

**1(2) ENG CHIP FAIL**

Associated engine chip sensor failed.

On ground:

**- Shut down aircraft.**

In flight:

**- Monitor associated engine parameters.**

**- Land as soon as practicable.**

**END**

## ENGINE FIRE DETECTOR SYSTEM

**1(2) FIRE SYS DET**

Associated engine fire detect system not operational.

On affected engine:

**- Monitor engine parameters for abnormal indications and check for signs of fire.**

*IF* all parameters normal:

**- Continue flight monitoring parameters.**

*IF* fire suspected:

**- Achieve safe OEI flight.**

**- Refer to** BAGGAGE BAY FIRE (GROUND). **See page 41.**

**END**

## ENGINE FIRE BOTTLE LOW PRESSURE

**1(2) FIRE BTL LOW P**

Associated engines fire bottle pressure low.

On ground

**- Shut down aircraft.**

In flight

**- Land as soon as practicable.**

**END**

## ENGINE OPERATION DEGRADED

**1(2) ENG DEGR**

Associated engine operation degraded.
Possible limited or fixed engine power and/or response.
Torque sharing not operational.

**- Check in ENGINE synoptic page the type of malfunction, on affected engine.**

*IF* **1(2) ENG DEGR** for any of the following

| | |
|---|---|
| | |
| | |
| | |
| SHTDOWN or NO START | START |

In case of SHTDOWN message it may not be possible to shutdown the affected engine using associated ENG MODE knob.
After landing pilot should use:
Associated ENG MODE knob and FUEL SOV to shutdown affected engine.
*IF* not succesfull use:

**- ENG FIRE/ARM pushbutton to close the FUEL SOV.**

In other cases engine starting capacity impaired:
**- Land as soon as practicable.**

*IF* **1(2) ENG DEGR** for any of the following

| | |
|---|---|
| LIMITING | XTLK FAIL |
| HANDLING | MATCHING |
| DISPLAY | SRGE PROT |
| | |

**- Achieve safe OEI flight.**

**- Do not perform abrupt manoeuvres.**
**- Monitor affected engine parameters.**

**- Land as soon as practicable.**

***CONTINUED NEXT PAGE***

ENG
APU

## ENGINE OPERATION DEGRADED CONTINUED

*CONTINUATION FROM PREVIOUS PAGE*

**1(2) ENG DEGR caution associated messages**

| | |
|---|---|
| LIMITING | The ability to limit (TQ, Ng or ITT limiting) may be affected or unavailable due to EECU detected fault(s). Pilot to closely monitor engine parameters |
| HANDLING | The engine operability or response may be compromised due to EECU detected fault(s). Pilot to avoid abrupt power changes |
| DISPLAY | Loss of one or more engine parameters for cockpit display due to EECU detected fault(s Pilot to avoid abrupt power changes. |
| MATCHING | Loss of torque and/or ITT matching due to EECU detected fault(s). TQ/ITT split may develop as engine power may be different. |
| SRGE PROT | Engine may have reduced Surge protection due to EECU detected fault(s). Pilot to avoid abrupt power changes. |
| NO START | Engine starting is not possible due to EECU detected fault(s). |
| XTALK FAIL | Cross-engine communication is not available. Pilot to avoid abrupt power changes. |
| START | Engine start control/authority may be compromised due to EECU detected fault(s). Engine control panel fault or power supply under-voltage. |
| SHTDOWN | A PMS shutdown may not be available due to EECU detected fault(s). To shutdown the engine it may be necessary to ARM then ENG FIRE ARM pushbutton. |

**END**



## ENGINE CHANNEL FAIL

**1(2) ENG CH FAIL**

Automatic engine reversion to the other channel.

**Check in ENGINE synoptic page which channel is failed.**

**Continue flight monitoring affected engine parameters.**

**END**

## ENGINE HOT START

**1(2) HOT START**

Engine automatically shutdown because associated EECU detected excessive ITT rise.

Only effective during start on ground

On affected engine:

**- ENG MODE knob: OFF.**
**- ENG FUEL SOV: CLOSED.**

**- Carry out MOTORING PROCEDURE.**
**See page 137**.

**END**

## ENGINE FUEL FILTER BLOCKAGE

**1(2) FUEL FLTR DEGR**

Associated engine fuel filter impending blockage

On affected engine:
**- Monitor engine for possible reduction in available power.**

*IF* **1(2) FUEL FLTR BLOCK** caution DOES NOT illuminate

**- Continue flight.**

*IF* **1(2) FUEL FLTR BLOCK** caution illuminates

**- Achieve safe OEI flight.**

**- Be prepared for possible.**

**1(2) ENG OUT** warning

**- Land as soon as practicable.**

**END**

ENG
APU

ENGINE FUEL PRESSURE LOW

**1(2) ENG FUEL PRESS**

Fuel pressure below limit.

**- Achieve safe OEI flight.**

On affected engine:
**- Monitor indications.**

*IF* engine indications stable:

**- Continue to monitor engine indications and continue flight.**

*IF* engine indications fluctuating:

**- Carry out** ENGINE SHUTDOWN IN EMERGENCY **procedure.**
**See page 35.**
**- Land as soon as practicable.**

ENG
APU

**END**

## ENGINE START MALFUNCTIONS AND RESTART IN FLIGHT PROCEDURE

If an engine flames out/or is shutdown during flight and if there is no indication of a mechanical malfunction or engine fire, the engine may be restarted.

In flight, should an engine re-starting be needed, only one attempt is available.

### ABORTED ENGINE RESTART PROCEDURE

**CAUTION**

Failure to follow the aborted engine restart procedure may cause damage to the engine.

Engine starting malfunctions are most likely to occur during the engine acceleration cycle to IDLE speed. The list below details the cockpit indications associated with malfunctions and the recommended aborted engine restart procedure. It is important that flight crews be thoroughly familiar with these procedures.

Monitor engine start and if any of the following occurs:

— no light up within 10 seconds of ENG MODE knob to IDLE;

— ITT increases beyond engine limits;

— ITT goes invalid (shows X or blank);

— engine hangs (NG stagnation below 60%);

— if engine starter fails to disengage by 54% NG.

Shut down engine as follows:

1. ENG MODE knob — OFF.
2. FUEL ENG SOV (EDCU, FUEL page) — CLOSE.

DELETED

ENG
APU

## RESTARTING PROCEDURE

**CAUTION**

In flight, should an engine re-starting be needed, ONLY ONE attempt is available.

**CAUTION**

During engine restart in flight, **HOT START** caution and automatic start abort function are not available.
ITT limiting function still available.

**Note**

If any AFCS collective mode is active, **PWR LOSS** will be temporarily displayed on top left of attitude indicator on PFD with chime.

1. Airspeed — Less than 120 KIAS.
2. FUEL ENG SOV (EDCU FUEL page) — OPEN.
3. MFD display — Confirm PWR PLANT page.

**Note**

During start NG correct limit cyan bar could temporarily appear on NG scale of MDF P-PLANT page.

4. ENG MODE knob — Select IDLE when NG at 0%.

**Note**

It is recommended to start the engine to IDLE; if necessary, it is possible to start to FLIGHT by setting the ENG MODE knob directly to FLT.

5. Gas Producer — Note increasing and START legend displayed.
6. Engine temperature (ITT) — Note increasing and IGN legend displayed. Maximum ITT for starting 750 °C.
7. Engine oil pressure — Confirm rising.
8. Engine starter — Disengaged by 54% NG.
9. Engine power turbine speed (NF) — Confirm stabilized at approximately 70%.

**Note**

If the engine was started directly to FLT the NF will stabilize at a value according to the AVSR law.

10. Engine temperature (ITT) — Lower than 868 °C.
11. ENG MODE knob — FLT.
12. Engine parameters — Confirm within limits and matched with other engine.
13. Associated DC GEN — Confirm on line.

**END**

## APU MALFUNCTIONS

### APU MODE FAIL

**APU MODE FAIL**

APU mode not available due to faults with actuator position or motion.

**- Cycle ENG 1 ACC/MAIN switch.**

*IF* the caution remains:

**- Shut down engine 1 first and then engine 2.**

**- Shut down aircraft.**

**END**

**APU-MAIN INHIBIT**

Engine operating conditions do not allow transition to ACC mode or to MAIN mode.

**- Restore required engine operating mode.**

**Note**

To disengage the No. 1 engine from the main rotor and enter the ACCESSORY mode, the two engines must be in one of the two following states.

| State | No. 1 engine | No. 2 engine |
|---|---|---|
| State **1** | ENG 1 MODE knob: OFF | ENG 2 MODE knob: OFF or IDLE or FLT |
| State **2** | ENG 1 MODE knob: IDLE/APU | ENG 2 MODE knob: FLT |

To engage the No. 1 engine to the rotor and enter the MAIN mode, the two engines must be in one of the following two states. It is not possible to re-clutch the No. 1 engine to the main rotor with both engines OFF. This is prevented by the control system design as it will affect the operational life of the actuator.

| State | No. 1 engine | No. 2 engine |
|---|---|---|
| State **1** | ENG 1 MODE knob: IDLE/APU | ENG 2 MODE knob: FLT |
| State **2** | ENG 1 MODE knob: OFF | ENG 2 MODE knob: IDLE or FLT |

**END**

**APU-PMS IN FLIGHT**

ENG 1 MODE knob selected to FLT in ACC MODE.

**- Return ENG 1 MODE knob to IDLE/APU.**

**END**

**ENGINE 2 TRANSITION INHIBITED**

**2 ENG TRNST INHBT**

ENG 2 MODE knob selected to IDLE during accessory actuator movement. ENG 2 remained FLT condition.

**- Return ENG 2 MODE knob to FLT or wait for accessory actuator movement completion.**

**SECTION END**

# FUEL SYSTEM

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# FUEL SYSTEM

## ABNORMAL FUEL CONSUMPTION

Monitor fuel quantity. If an abnormal fuel consumption is confirmed, a fuel leakage may be present. Therefore, depending on remaining fuel quantity:

**Land as soon as possible.**

*OR*

**Land as soon as practicable.**

**Note**

In case of **1(2) FUEL LOW** 10 minutes endurance may NOT be available.

**END**

## FUEL LOW

**1(2) FUEL LOW**

On affected tank usable fuel quantity in level attitude below 51 kg.

**- Check fuel contents.**

**Land as soon as possible.**
(approximately 10 minutes with engine at MCP rating)

**WARNING**

Avoid hovering in cross wind or unbalanced flight.
Avoid abrupt aircraft manoeuvres and sustained high attitude manoeuvres.

**CAUTION**

In AEO, FUEL XFER between tanks is automatically stopped when **1(2) FUEL LOW** caution is active on the side where fuel is transferred FROM.

**END**

## FUEL LOW SYSTEM FAILURE

**1(2) FUEL LOW FAIL**

Associated fuel low system failure.

**Note**

**1(2) FUEL LOW** may not be displayed.

On affected system low level caution could be inoperative.
**- Monitor fuel quantity.**

*IF* indicated fuel quantity in affected tank above 51 kg:

**Continue flight.**

*IF* indicated fuel quantity in affected tank below 51 kg:

**Land as soon as possible.** (approximately 10 minutes with engine at MCP rating)

**Note**

*IF* subsequent **1(2) FUEL LOW** refer to FUEL LOW procedure on page 137.

**END**

## FUEL PROBE FAILURE

**1(2) FUEL PROBE**

Associated fuel probe failure and degradation of fuel contents indication.

**- Continue flight.**

*IF* **1 FUEL PROBE**

*IF* FUEL 2 below 160 kg:

**- Monitor for 1 FUEL LOW caution when remainin fuel will be 51 kg.**

*IF* FUEL 2 above 160 kg:

**- FUEL 1 level can be considered as equal to FUEL 2 level in level attitude.**

*IF* **2 FUEL PROBE**

*IF* FUEL 1 below 160 kg:

**- Monitor for 2 FUEL LOW caution when remainin fuel will be 51 kg.**

*IF* FUEL 1 above 160 kg:

**- FUEL 2 level can be considered as equal to FUEL 1 level in level attitude.**

**SECTION END**

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# HYDRAULIC SYSTEM

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HYD

## HYDRAULIC SYSTEM

### HYDRAULIC 1 PRESSURE LOW

**1 HYD OIL PRESS** + *AND* **1 HYD SERVO**

**1 AP OFF**

**1 AP MRA FAIL**

+ Aural Message
'AUTOPILOT AUTOPILOT'

Loss of pressure in associated hydraulic system (less than 163 bar).

**- Check hydraulic pressure indication on PFD/MFD.**

**- Reduce speed to 120 KIAS.**

**- Continue flight attentive.**

**- The following AFCS Upper Modes may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS.**

**-- Land as soon as practicable**

**END**

## HYDRAULIC 2 PRESSURE LOW

**2 HYD OIL PRESS** + *AND* **2 HYD SERVO**

**2 AP OFF** + **1-2 AP Y FAIL**

**2 AP MRA FAIL**

+ Aural Message
'AUTOPILOT AUTOPILOT'

Loss of pressure in associated
hydraulic system (less than 163bar).

**- Check hydraulic pressure indication on PFD/MFD.**

**- Fly with feet on pedals.**

**- Reduce speed to 120 KIAS.**
**- Continue flight attentive.**
**- The following AFCS Upper Modes may be used: HOV, TDH, TU and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS.**

**-- Land as soon as practicable**

**END**

## HYDRAULIC FLUID OVERHEATING

**1(2) HYD OIL TEMP**

Associated hydraulic system
overheat (greater than 134 °C).

**- Check hydraulic temperature indicationon PFD/MFD.**

**- On EDCU HYD page, select affected system SOV to CLOSE.**

**- Refer to associated** HYDRAULIC 1 PRESSURE LOW **procedure.**
**See page 143 or 144.**

**-- Land as soon as practicable**

**Note**

With one hydraulic system SOV shut off, a subsequent drop of pressure in the other system will over-ride the SOV selection and reinstate pressure to the servo’s. In these conditions the SOV switch will not be automatically reset, therefore a discrepancy caution legend will appearby the affected SOV selection on the EDCU HYD page.

**END**

## HYDRAULIC FLUID LEVEL LOW

**1(2) HYD MIN**

Associated system low hydraulic fluid level.

**- Confirm fluid level (HYDRAULIC synoptic page).**

**- On EDCU HYD page, select affected system SOV to CLOSE.**

**- Refer to associated** HYDRAULIC 1 PRESSURE LOW **procedure.**
**See page 143 or 144.**

**- Land as soon as practicable.**

**Note**

Loss of hydraulic fluid in system No1 will automatically close the Tail Rotor Shut Off Valve (TRSOV). This will be indicated by illumination of **1HYD SERVO** caution and by the yellow box relevant to TRA HYD 1 on the hydraulic synoptic page. Once the TRSOV has operated the SOV No2 is inhibited.

**HYD**

**END**

MAIN VALVE SEIZURE IN MAIN OR ROTOR SERVO

**1(2) HYD SERVO**

Main control valve seizure in one (or more) servo jacks.

**- Land as soon as practicable.**

**WARNING**

Do **NOT** switch SOV to CLOSE on the **UNAFFECTED** system since this will cause loss of control in the affected servo jack.

**Note**

Loss of hydraulic fluid in system No1 will automatically close the Tail Rotor Shut Off Valve (TRSOV). This will be indicated by illumination of **1HYD SERVO** caution and by the yellow box relevant to TRA HYD 1 on the hydraulic synoptic page. Once the TRSOV has operated the SOV No2 is inhibited.

**END**

**PARK BRK ON**

Park brake system pressurised.

**- Confirm PARK BRAKE handle in fully down position.**

*IF* caution still remains:

**- Continue flight.**

**CAUTION**

Do not carry out run on landing or taxi as park brake system is pressurized.

**END**

## PARK BRAKE MALFUNCTION

**PARK BRK PRESS**

No pressure in park brake system
with PARK BRAKE lever in ON position.

*IF* park brake not required:

**- Release park brake lever.**

*IF* park brake required:

**- Pressurize system by 'pumping' pedal brakes.**

*IF* caution remains:
**- Continue flight,**
being aware park brake may not
hold aircraft when on ground.

**Note**
Differential braking may not be available.

**SECTION END**

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HYD

# LANDING GEAR, MISCELLANEOUS

# LANDING GEAR

## LANDING GEAR RETRACTED

**LANDING GEAR** + Voice Warning.

Landing gear retracted when aircraft height is less than 200 ft AGL/ASL.

**- Landing gear as required.**

**END**

## NOSE WHEEL UNLOCKED (IN FLIGHT)

**NOSE WHL UNLK**

Nose wheel not locked in fore and aft direction.

**- Cycle NOSE WHEEL CENTER LOCK pushbutton on LDG GEAR panel.**

*IF* caution remains:

**- Do not raise the landing gear.**

**- Continue flight.**

**- Avoid run-on landing.**

**Note**

Landing gear retraction is inhibited with **NOSE WHL UNLK** caution illuminated.

**Note**

Fuel consumption will be increased with landing gear down.

**END**

## LANDING GEAR EMERGENCY DOWN

**LDG EMER DOWN**

The Landing gear has been extended using EMER DOWN pushbutton.
Subsequent retraction is not possible.

**END**

## LANDING GEAR CONTROL FAIL

**LDG CTR FAIL**

Landing gear control module not available.

*IF* landing gear is retracted:
- **EMERG DOWN pushbutton: Lift guard and press, allowing enough time for the landing gear to lock Down.**
- **Select landing gear lever DOWN.**

*IF* landing gear is locked down:
- **Do not retract landing gear.**



**Note**

Fuel consumption will be increased with landing gear down.

**END**

**EMER LDG FAIL**

Landing gear emergency extension failure.

*IF* landing gear is retracted:

**- Select landing gear lever DOWN.**

*IF* landing gear is locked down:

**- Do not retract landing gear.**

**Note**

Fuel consumption will be increased with landing gear down.

**END**

## MISCELLANEOUS SYSTEM

### PITOT HEATER OFF

**1(2) PITOT HEAT OFF**

Associated pitot heating system off or failed with OAT less than 4 °C.

**On ground**

*IF* required:

- **Select PITOT 1(2) HTR ON** (on EDCU MISC page)

**In flight**

- **Select PITOT 1(2) HTR ON** (on EDCU MISC page)

*IF* caution remains illuminated associated PITOT HEATER failure:

Avoid flight in visible moisture with OAT 4 °C or below.

**Note**

When PITOT HEAT selected to ON the pitot is heated continously in flight and on ground. Ensure AUTO selected on ground if PITOT HEAT not required.



**END**

## AIRCRAFT NEVER EXCEED SPEED

Voice warning 'AIRSPEED AIRSPEED' and airspeed indication RED.

**- Confirm airspeed.**

**- Reduce/maintain speed below Vne.**

**END**

## WEIGHT ON WHEELS SWITCH FAILURE

**1(2) WOW FAIL**

Associated WOW switch failure.

On ground.

**- Shutdown aircraft.**

In flight.

**- Continue flight,** being aware of system limitations as noted below:

**1 WOW FAIL:**

Copilot DU maintenance page not inhibited in flight and copilot clock flight time incorrect

**2 WOW FAIL:**

Pilot DU maintenance page not inhibited in flight and pilot clock flight time incorrect.

**Note**

Illumination of the **1(2) WOW FAIL** caution in flight, when the LDG GEAR is DOWN, will cause the LDG GEAR lever to be locked in the down position so subsequent retraction of the landing gear is not possible.

**Note**

**1(2) WOW FAIL** may be displayed in case light-on-wheel condition is hold for longer than 30 seconds.

**END**

LDG GR
MISC

## SENSOR DORMANT FAILURE

**SNSR DORMANT FAIL**

Failure of at least one transmission and/or hydraulic system monitoring sensors (caution only active on ground with both engines OFF).

**- Shutdown aircraft.**

**END**

## COCKPIT DOOR OPEN

**COCKPIT DOOR**

A cockpit door not closed.

- Confirm which cockpit door not secure.

On ground.

**- Close cockpit door before flight.**

In flight.

**- Close and lock cockpit door, if possible.**

*IF* not possible to close door.

**- Reduce speed to 80 KIAS.**
**- Land as soon as possible and secure door.**

**END**

LDG GR
MISC

## CABIN DOOR OPEN

**CABIN DOOR**

A cabin door not closed.

On ground.

- **Close cabin door before flight.**

In flight.

- **Reduce speed below 60 KIAS.**
- **Confirm which cabin door is not secured.**
- **Close and lock cabin door, if possible.**

*IF* not possible to close door.

- **Land as soon as practicable and secure door.**

**CAUTION**

When opening or closing cabin door in flight hold door handle until door is at full travel and locked.

**END**

## BAGGAGE BAY DOOR OPEN

**BAG DOOR**

Baggage bay door not closed.

On ground.

- **Close baggage bay door before flight.**

In flight.

- **Reduce speed below 80 KIAS.**
- **Land as soon as possible and secure door.**

**END**

## EXTERNAL POWER SOCKET DOOR OPEN

**DC EXT PWR DOOR**

DC external power socket door not closed.

On ground.

- **Close DC external power socket door before flight.**

In flight.

- **Reduce speed below 100 KIAS.**
- **Land as soon as practicable and secure door.**

**END**

## COCKPIT VENT FAN FAILURE

**CKPT VENT FAIL**

Failure of the cockpit vent fan.

- **Increase cockpit ventilation by opening pilot DV windows.**

**END**

## CABIN VENT FAN FAILURE

**CB VENT FAIL**

Failure of the cabin vent fan.

- **Adjust COCKPIT ventilation speed, as required.** (on EDCU ECS page) to control fans speed and recirculation.

**END**

## COCKPIT AND CABIN VENT FAN FAILURE

**VENT FAIL**

Failure of both cockpit and cabin vent fans.

**- Increase cockpit ventilation by opening pilot DV windows.**

**END**

## ECS FAIL

**ECS FAIL**

Failure of automatic management of ventilation.

**- Select BACKUP mode.**
(on EDCU ECS page)

**- Manually select COCKPIT/CABIN FANS and/or RECIRCULATION mode as required.**

**END**

## AUDIO SYSTEM FAILURE

Loss of Pilot or Copilot intercom and radio comunications.

On ground.

- **Shutdown aircraft.**

In flight.

- **On Pilot or copilot audio control panel select BK-UP** (**ICS BKUP/EMER MODE** advisory illuminates).

*IF* audio communication recovered:

- **Continue flight using BK-UP mode** (See Note 1).

*IF* audio communication NOT recovered:

- **On Pilot or copilot audio control panel select BK-UP (ICS BKUP/EMER MODE advisory illuminates).**

*IF* audio comms NOT recovered:

- **Follow radio failure procedures.**

*IF* audio comms recovered:

- **Continue flight using EMER mode** (See Note 2).

**Note 1**

In BK-UP mode the PLT and CPLT maintain all audio functionalities (including PA) except for ICS Cabin crew communication. The communication between cockpit and passengers (connected to the PIA system) is still available.

**Note 2**

In EMER mode, the crew has access to VHF1, NAV1 (on copilot side), VHF2, NAV2 (on pilot side) and AWG/TCAS audio alarms. Be aware that in EMER mode the audio panels will not be operative (volumes are at a fixed level) and pilot/copilot intercom will only be operative with the PTT switch first detent.

**SECTION END**

# PFD/MFD MESSAGES

## PFD AND MFD MESSAGES

### LOSS OF PFD FOR PILOT IN CONTROL

Loss of PFD in control will automatically configure MFD to PFD format.

- **Continue flight and adjust the baro setting to the desired value on the re-configured MFD.**
- **Check AFCS upper mode status.**

*IF* failed screen becomes intermittent it can be powered down by

- **Switching MFD knob to either PLT (right Pilot in control or to CPLT (left Pilot in control) on Reconfiguration Control Panel.**

Subsequent loss central display as PFD.

*IF* RH pilot is in control:

- **Continue flight using standby display or give the control to LH pilot.**
- **Do not exceed 100 KIAS**

*IF* LH pilot is in control:

- **Assume control to RH pilot with the PFD operating properly.**

**Land as soon as practicable.**

**END**

## LOSS OF PFD PILOT NOT IN CONTROL

Loss of PFD NOT in control will NOT affect MFD format.

**- Continue flight.**

**END**

## LOSS OF MULTI FUNCTION DISPLAY

Loss of MFD will automatically configure PFD in control to REV format

**- Continue flight.**

**END**

## EDCU OVERTEMPERATURE

**1(2) EDCU OVERTEMP**

EDCU over temperature.

**- Reduce cockpit ambient temperature if possible.**

IF caution remains permanently displayed

**- Be aware that relevant EDCU may automatically switch off.**

**END**

## ATTITUDE DISPLAY FAILURE


ICN-69-A-153000-G-00003-01174-A-02-1

**ATT FAIL**

loss of attitude, slip skid indicator and vertical speed data on associated attitude display.

**- On RCP move AHRS knob to non failed AHRS.**

**AHRS**

illuminates on attitude indicators to highlight both attitude indicators are using the same source data.

**+**

**1(2) AHRS FAIL**

**AVIONIC FAULT**

**1(2) AP OFF**

**AP AHRS 1(2) FAIL**

+ Aural message "AUTOPILOT AUTOPILOT".

**- Monitor PFD attitude with ESIS.**

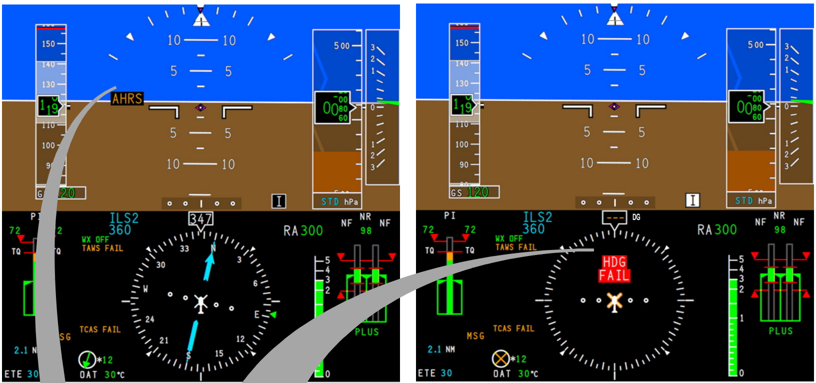
**PFD/MFD MSGs**

**Note**

Fuel quantity indication accuracy degraded.

**END**

## HEADING DISPLAY FAILURE




ICN-69-A-153000-G-00003-01175-A-03-1

**HDG FAIL** — loss of heading data on associated HSI display

**- On RCP move AHRS knob to non failed AHRS.**

**AHRS** — illuminates on attitude indicators to highlight both attitude indicators are using the same source data.

**+**

**1(2) AHRS FAIL**

**AVIONIC FAULT**

**1(2) AP OFF** — + Aural message “AUTOPILOT AUTOPILOT”.

**AP AHRS 1(2) FAIL**

**- Monitor PFD attitude with ESIS.**

**PFD/MFD MSGs**

**END**

## MAG DEGR CAPTION


ICN-69-A-153000-G-A0126-01234-A-01-1

**MAG DEGR**

BEFORE TAKE-OFF

MAG DEGR annunciation may be displayed if Abnormal Magnetic Area is present and AHRS DG mode is not available yet (i.e. 1(2) DG MODE or 1-2 DG MODE not displayed on CAS).

**NOTE**

AHRS DG mode will be available in approximately 5 minutes.

When AHRS DG mode is available (i.e. 1(2) DG MODE AVAIL or 1-2 DG MODE AVAIL momentarily displayed on CAS), automatic switch from “MAG” to “DG” will occur.

- **Pilot shall verify the correct HDG readout using external ground reference points.**

- **Normal Take-Off procedure: execute.**

**Note**

DG mode heading may be affected by a drift which increases over time.

- **To nullify the drift, perform a 360° turn at a minimum GS of 80 kts or a series of turns using at least rate-one angle of bank to achieve a total change of at least 360 degrees at a minimum GS of 100 kts.**

A heading difference between AHRS 1 and AHRS 2 greater than 10° will be annunciated by **HDG** on PFD.

IN FLIGHT

*CONTINUED NEXT PAGE*

**PFD/MFD MSGs**

**MAG DEGR CAPTION CONTINUED**

***CONTINUATION FROM PREVIOUS PAGE***

Loss of heading computation by AHRS on associated HSI display. Heading digit shows - - - .

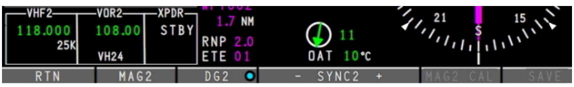
**Note**

The following AP upper modes may be degraded or unavailable: HDG, HOV.

***If* possible**

- **To restore a valid HDG value fly in a normal magnetic environment until AHRS DG mode is available:**
  - 1(2) DG MODE AVAIL or 1-2 DG MODE AVAIL momentarily displayed on CAS

    or
  - Verify on PFD menu 2/2 “AHRS 1-2” bezel key “DG” is enabled (see figure below)
- **Restore normal navigation. Further entrance in an abnormal magnetic field will cause automatic switch to “DG” mode i.e.:**
  - status message 1(2) DG MODE or 1-2 DG MODE is displayed on CAS;
  - “DG” caption is displayed on PFD.




ICN-69-A-153000-G-A0126-01235-A-01-1

**Note**

Availability of the following AP upper modes will be restored: HDG, HOV.

**Note**

DG mode heading may be affected by a drift which increases over time.

- **To nullify the drift, perform a 360° turn at a minimum GS of 80 kts or a series of turns using at least rate-one angle of bank to achieve a total change of at least 360 degrees at a minimum GS of 100 kts.**

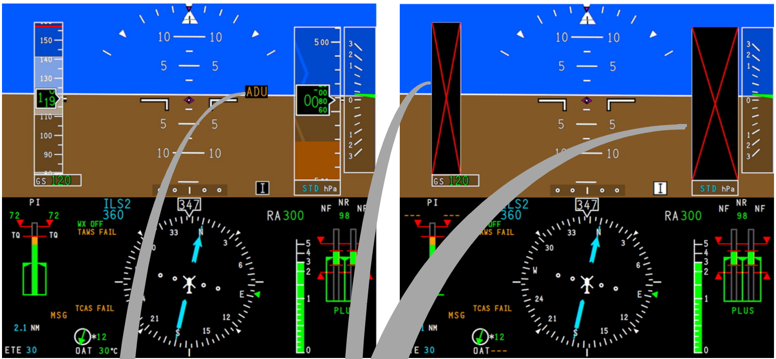
A heading difference between AHRS 1 and AHRS 2 greater than 10° will be annunciated by **HDG** on PFD.

***If* unable**

- **Revert to GPS navigation for en-route and approach phases (GPS/ILS).**

**END**

## ADS FAILURE




ICN-69-A-153000-G-00003-01177-A-01-1

on affected indicators and loss of data on:

- Airspeed;
- Altitude;
- OAT;
- display on PFD;
- DU MON message displays on PFD and MFD.

Failure of ADS system.

**- On RCP move ADS switch non failed ADS.**

**ADU** illuminates on attitude indicators to highlight both air data indicators are using the same source data.

**- Monitor PFD data with ESIS.**

**END**

## DOUBLE RAD ALT FAILURE


ICN-69-A-153000-G-00003-01188-A-01-1

**RA** and loss of both RAD ALT information on PFD.

Failure of both RAD ALT systems RHT modes, if engaged, disegages with chime.

- Continue flight being aware that RAD ALT functioning is lost, DH message is inactive, RHT, ALVL, TD, TDH, TU modes and LOW HT protection are not available ( **HT LOSS** message on top left of attitude indicator).

**CAUTION**

When both RAD ALTs fails, the 150ft aural warning message does not function and the **LANDING GEAR** caution will be displayed, if the landing gear is retracted regardless of height.

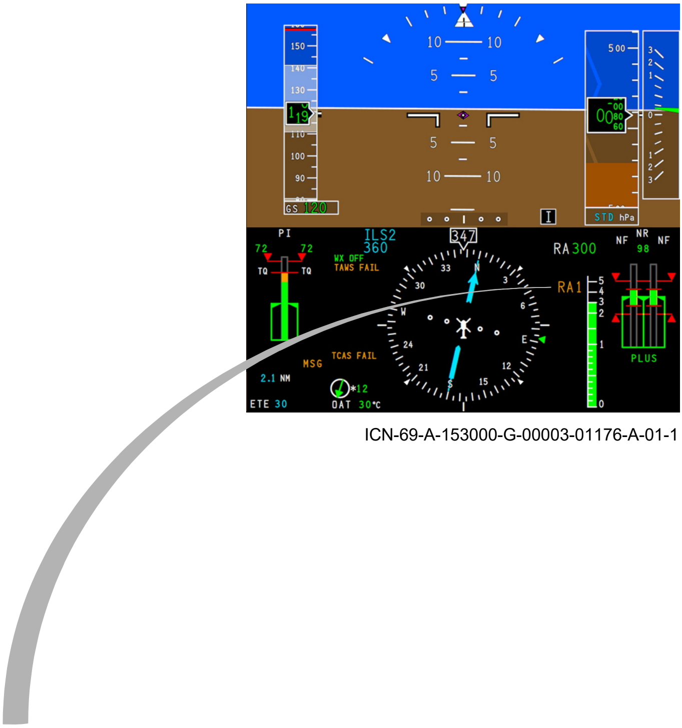
**Note**

If RHT mode engaged ALT mode will automatically engage after RHT disengages.

**END**

PFD/MFD MSGs

## SINGLE RAD ALT FAILURE




ICN-69-A-153000-G-00003-01176-A-01-1

**RA1(2)** Radio Altimiter 2 (1) failed. Automatic reconfiguration message illuminates besides Rad Alt display, on both PFD's, to highlight both Rad Alt indicators are using the same source.

- **If RHT Upper Mode engaged, the RAD ALT must be cross-checked with barometric altitute indications and external cues.**

**CAUTION**

When either RAD ALT fails, the **LANDING GEAR** caution and associated audio message activate erroneously when the aircraft is above 200 ft AGL and the landing gear is retracted.

**END**

PFD/MFD MSGs

## OAT SENSOR FAILURE

**OAT ----- °C**

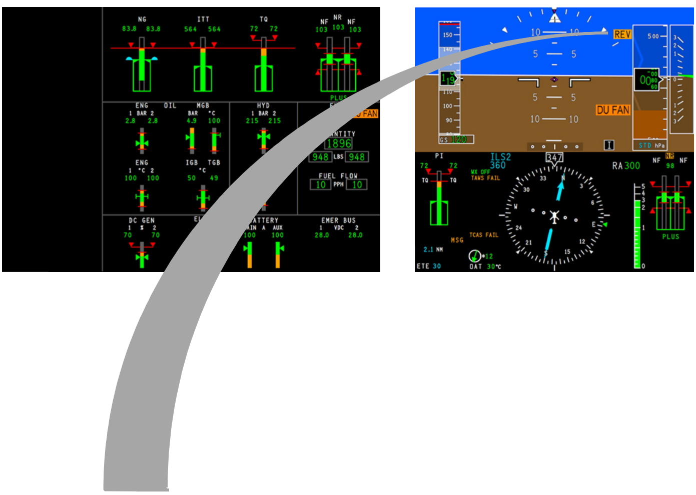
OAT digits displayed in amber on PFD.

Loss of On-Side Outside Air Temperature.

**- Continue flight**
Use OAT standby instrument or, on RCP or select alternative ADS.

**END**

## DISPLAY UNIT MESSAGES “REV”



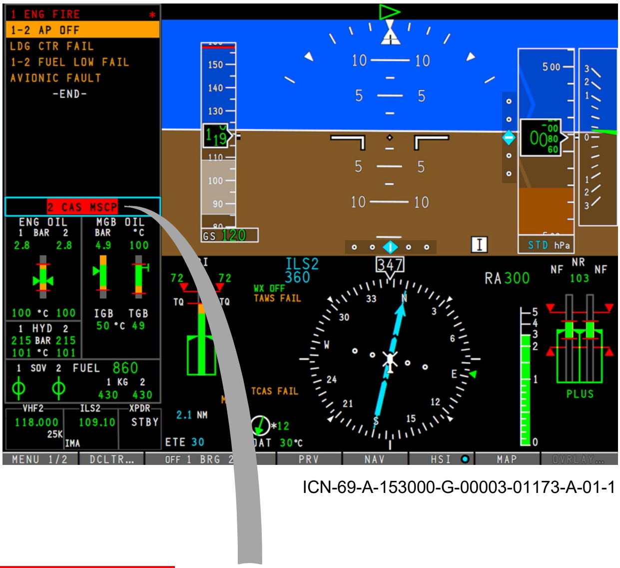

ICN-69-A-153000-G-00003-01181-A-01-1

**REV**

Display unit in reversion mode (other display switched OFF).

**END**

## CAS WARNING MESSAGE LIST DISCREPANCY




ICN-69-A-153000-G-00003-01173-A-01-1

**1(2) CAS MSCP** on CAS message status line.

AMMC 1 (2) CAS Warning message list has discrepancies.

- **On CCD, press ‘enter’ to display the other AMMC. CAS warning message list.** Confirm the CAS Warnings which have caused the miscompare message.

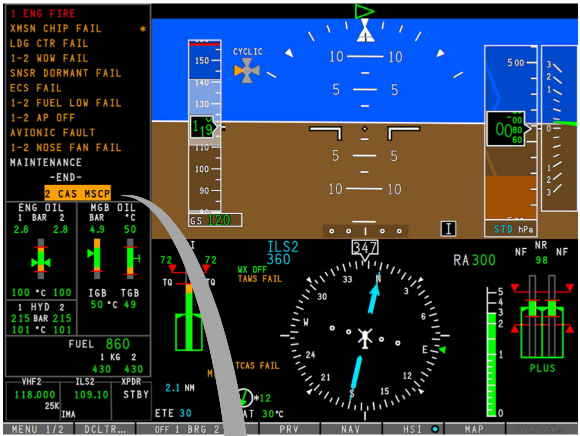
- **Change AMMC Master if necessary** on EDCU AVIONICS page.

**Note**

The discrepancy is highlighted with an asterisk on one or more CAS Warnings.

**END**

## CAS CAUTION MESSAGE LIST DISCREPANCY




ICN-69-A-153000-G-00003-01183-A-01-1

**1(2) CAS MSCP** on CAS message status line.

AMMC 1 (2) CAS Caution message list has discrepancies.

- **On CCD, press ‘enter’ to display the other AMMC CAS caution message list.** Confirm the CAS Cautions which have caused the miscompare.

- **Change AMMC Master if necessary** on EDCU SETTING page.

**Note**

The discrepancy is highlighted with an asterisk on one or more CAS Cautions.

**END**

**DISPLAY UNIT MONITORING "DU MON" MESSAGE ON PFD ONLY**


ICN-69-A-153000-G-00003-01178-A-01-1

**DU MON** Permanently displayed on PFD.

Sensor monitoring cross checking for at least one parameter does not function.

**- Cross monitor the following parameters with relevant stby instruments:**

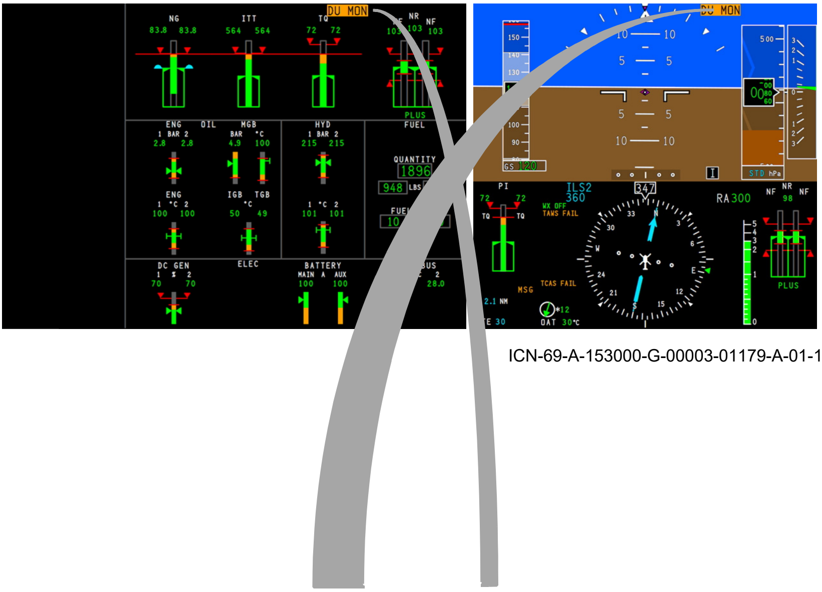
- **Attitude, Vertical speed, Airspeed and Baro Altitude on ESIS;**
- **OAT on Stand-alone OAT Sensor;**
- **Heading on Stand-alone Mag Compass.**

**- Continue flight.**

PFD/MFD MSGs

**END**

## DISPLAY UNIT MONITORING “DU MON” ON PFD AND MFD



ICN-69-A-153000-G-00003-01179-A-01-1

**DU MON** On PFD and MFD.

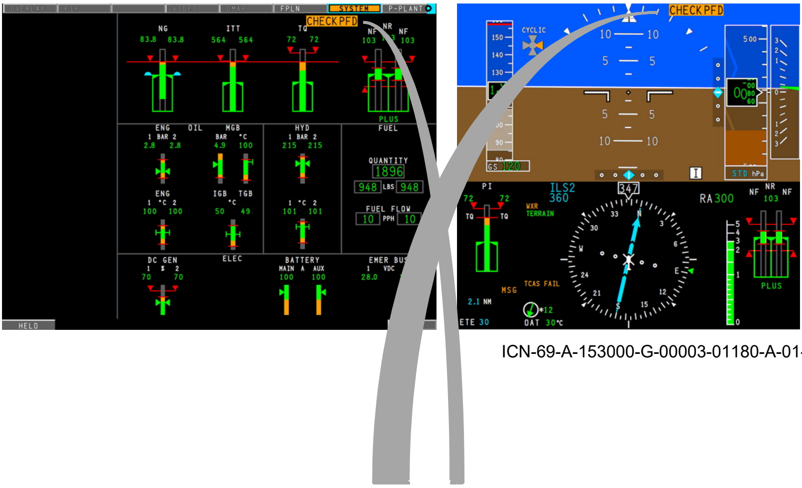
Display unit cross checking for at least one parameter does not function.

- **Select MFD P-PLANT page and cross monitor PFD parameters with MFD and relevant stby instruments:**
  - **"Attitude, Vertical speed, Airspeed, Baro Altitude and Heading on ESIS;**
  - **"OAT on Stand-alone OAT Sensor;**
  - **"NR, ENG1&2 OIL PRESS, ENG1&2 OIL TEMP and TANK 1 and TANK2 Fuel Quantity on MFD P-PLANT page.**

- **Continue flight.**

**END**

## DISPLAY UNIT MESSAGES ‘CHECK PFD’




ICN-69-A-153000-G-00003-01180-A-01-1

**CHECK PFD**

Display unit cross checking has detected at least one parameter discrepancy.

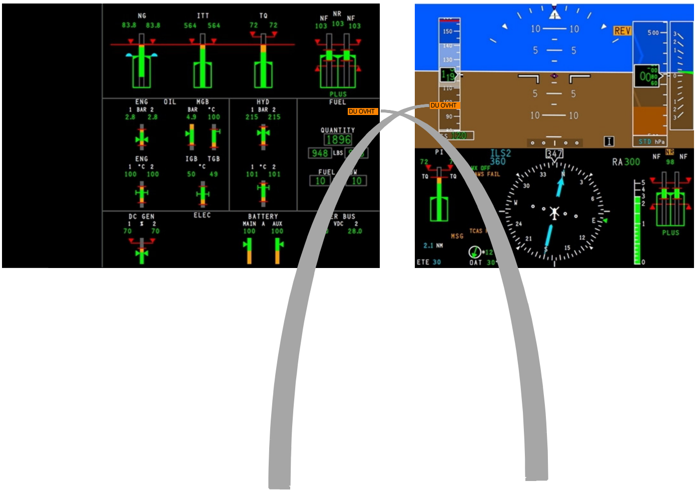
*IF* message remains, set RCP knob to PFD in command.

**- Continue flight.**

**END**

PFD/MFD MSGs

## DISPLAY UNIT MESSAGES “DU OVHT”



ICN-69-A-153000-G-A0126-01228-A-02-1

**DU OVHT** on PFD attitude indicator or MFD.

Associated display unit in overheat condition.

- Possible subsequent display failure or data corruption. Switch associated RCP switch to functioning DU.

**END**

## MAGNETIC VARIATION INVALID


MAG displayed in amber beside heading.

TRU selectioned on EDCU and invalid MAGnetic VARiation from AMMS.

**- Select MAG on EDCU.**

**- Continue flight.**

**END**

## 2.5 MINUTE MESSAGE FOR OEI CONDITIONS

**2.5 m** displayed on side of PI digital value and
- between NG and ITT indicators for engine limits
- on side of TQ indicator for transmission limits.

Within OEI 2.5 minute engine and/or transmission rating.

**2.5 m** blinking inverse video on side of PI and:
- between NG and ITT indicators for engine limits
- on side of TQ indicator for transmission limits.

\+

**1(2) ENG LIM EXPIRE** on CAS.

Within 10 seconds of exceeding OEI 2.5 minute engine and/or transmission rating.

**2.5 m** steady inverse video on side of PI and:
- between NG and ITT indicators for engine limits.
- on side of TQ indicator for transmission limits.

\+

**1(2) ENG LIM EXPIRE** on CAS.

OEI 2.5 minute engine and/or transmission time rating exceeded.

Continue flight respecting engine and transmission ratings.

**END**

## 5 MINUTE MESSAGE FOR AEO CONDITIONS

**5 m** displayed on side of PI digital value and
- between NG and ITT indicators for engine limits
- on side of TQ indicator for transmission limits.

PI within 5 min of exceeding:
AEO 30 min rating

**5 m** blinking inverse video on side of PI and:
- between NG and ITT indicators for engine limits
- on side of TQ indicator for transmission limits.

PI within 10 seconds of exceeding:
AEO 30 min rating

**5 m** steady inverse video on side of PI and:
- between NG and ITT indicators for engine limits.
- on side of TQ indicator for transmission limits.

PI has exceeded:
AEO 30 min rating

Continue flight respecting engine and transmission ratings.

**END**

## ENGINE STATE INDICATION ON PFD AND MFD

**OEI** on side of PI, TQ ITT and NG indicators of failed engine.

Associated engine failed.

**- Fly aircraft in accordance with OEI operational techniques.**

**END**

## NR MISCOMPARE MESSAGE

ICN-69-A-153000-G-00003-01182-A-01-1

**NR** on NR/NF scale.

NR data miscompare (difference greater than ±3% between EECU 1 and 2 values).

**- Confirm correct value selecting analogue back up parameter on MFD P-PLANT page.**

**END**

## AHRS MISCOMPARE

**PITCH** *AND/OR* **ROLL** *AND/OR* **VS**

on attitude indicator. on VS tape.

Miscompare between AHRS 1 and 2 information (±5° Pitch, ±5° Roll,± 200 ft/min for VS).

- **By comparison with ESIS Standby establish which AHRS is providing correct data and switch to this on RCP.**

**END**

## ADS MISCOMPARE

**ALT** *AND/OR* **IAS** *AND/OR* **VNE**

on altitude tape. on airspeed tape.

Miscompare between ADS 1 and 2 information

- **Select the correct ADS by comparison with navigational equipment other than the ESIS and select on the RCP the ADS source only in case of clear unmistakable identification. For other cases fly to the most conservative ADS.**

**Note**

AVSR FAIL may be displayed in case of ALT or IAS miscompare with AVSR transitioning to BACKUP mode.

**END**

AHRS MISCOMPARE

**HDG**

on HSI.

Miscompare between AHRS 1 and 2 heading information (±10° Heading).

*If* during HDG navigation

HDG mode will disengage.

- **By comparison with Standby magnetic compass, vote which AHRS is providing correct data and select on RCP.**

**Note**

Pilot may consider replacing HDG navigation with FMS navigation.

*If* during ATT mode

- **By comparison with Standby magnetic compass, vote which AHRS is providing correct data and select on RCP.**

PFD/MFD MSGs

**END**

## RAD ALT MISCOMPARE

**RA** on RAD ALT display
RHT disengages
with chime, if active.

Miscompare between
RAD ALT 1 & 2 information.

**- Compare the Pilot and Copilot RAD ALT indications or outside visual references to establish the correct data.**

**- Continue flight**
RHT, ALVL, TD, TDH,
TU modes not available.

**Note**

If RHT mode engaged ALT mode will automatically engage after RHT disengages.

**Note**

If any AFCS collective mode is active, **HT LOSS** (loss of low height protection) will be displayed on top left of attitude indicator on PFD with chime.

**END**

## DECISION HEIGHT CAPTION

DH On lower right of
attitude indicator on PFD.

RAD ALT height equal or lower
to selected decision height (DH).

**- Actions according to operational situation.**

**END**

## LOW HEIGHT PROTECTION

**LOW HT** — On top left of attitude indicator on PFD with chime.

AFCS Low height protection active.

*IF* flight condition not stable.

**- Fly manually to safe height.**

**END**

## HEIGHT LOSS

**HT LOSS** — On top left of attitude indicator on PFD with chime.

AFCS Low height protection not functioning.

**- Continue Flight.**
Be attentive for operation near terrain.

**Note**

RA OR RA may display on RAD ALT display with chime.

**END**

## POWER LIMIT

**PWR LIM** On upper left of attitude indicator on PFD with chime.

AFCS Power Limit/Autorotation protection active.

**- Fly attentive or reduce/increase power required accordingly to keep power margin.**

**END**

## UNCOUPLED (UCPL) MESSAGE

**UCPL** On upper left of attitude indicator on PFD with chime.

AFCS Collective mode uncoupled automatically due to transition to OEI and power above COEI.

**- Achieve safe OEI flight**
**- Fly aircraft in accordance with OEI operational techniques.**

Reducing power within COEI automatically re-couples collective mode when pilot releases collective.

**END**

## POWER LOSS

**PWR LOSS** On upper left of attitude indicator on PFD with chime.

AFCS Power Limit/Autorotation protection not functioning.

**- Continue Flight**
Monitor PI.

**END**

## OAT SENSOR MISCOMPARE

**OAT** ## °C — OAT displayed in amber on PFD.

Miscompare between the two Outside Air Temperature probes.

- **Continue flight.**
  Use OAT standby instrument.

**Note**

AVSR FAIL may be displayed with AVSR transitioning to BACKUP mode.

**END**

## LOC/GS MISCOMPARE

**LOC** on PFD HSI display.

*AND/OR*

**GS** on PFD attitude indicator display.

Miscompare between LOC Lateral and/or Glideslope vertical deviation (±0.75 dot).

*If* during IMC approach carry out published Missed Approach Procedure.

**END**

## LG/VG MISCOMPARE

**LG** on PFD HSI display.

*AND/OR*

**VG** on PFD attitude indicator display.

Miscompare between FMS 1 & FMS 2 Lateral Guidance and/or Vertical Guidance (±1 dot) in any FMS approach (NPA, RNAV, LP/LPV)

- **If FMS Approach, Discontinue approach.**
- **Revert to Radio Navigation, deselecting the FMS as Primary NAV source**
- **Notify ATC loss of RNAV/RNP capability.**

**END**

## LOSS OF RADIONAV OR FMS LATERAL AND/OR VERTICAL DEVIATIONS

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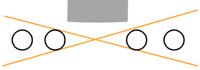
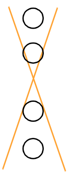


on lateral deviation scale.

Loss of lateral deviation data.



on vertical deviation scale.

Loss of valid vertical data.

**- Select alternate NAV source.**

**END**

## LOSS OF VOR DATA

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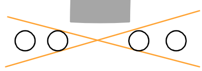


on VOR lateral deviation scale.

Loss of lateral deviation data.

**- On EDCU confirm alternate NAV source frequency.**
**- Select alternate NAV source.**

**END**

## LOSS OF AFCS COMMUNICATION TO PFD

FCS LINK FAIL

Loss of AFCS modes annunciation and reference.

- **Continue flight**
  Engage ATT or use AFCS panel for indications of modes engaged.

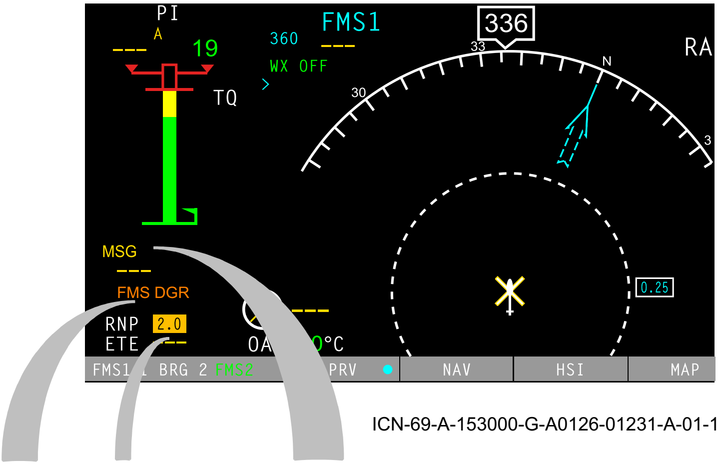
**END**

PFD/MFD MSGs

## FMS MESSAGES ON PFD

### FMS DGR + RNP + MSG

FMS DGR is the main alerting (amber) message on the PFD for on-board Performance Monitoring and Alerting System. FMS DGR is displayed when the on-board Performance Monitoring and Alerting detects that the FMS cannot guarantee, with sufficient integrity, the navigation performance required in the navigation specification, in terms of the required position Accuracy (TSE/FTE (Total System Error/Flight Tecnical Error) monitoring) and/or horizontal/vertical Integrity (NSE ((Navigation System Error) monitoring), for the present phase of flight.
The FMS DGR alert indicates the FMS loss of capability to validate the position data provided by NAV sensors (e.g. GNSS receivers).




ICN-69-A-153000-G-A0126-01231-A-01-1

FMS DGR + RNP value (amber) + MSG (“UNABLE RNP” Alert Message on EDCU)

FMS 1 & 2 in a degraded condition.
FMS 1-2 not usable for navigation.

FMS navigation or RNAV(GNSS) approach or RNP procedures

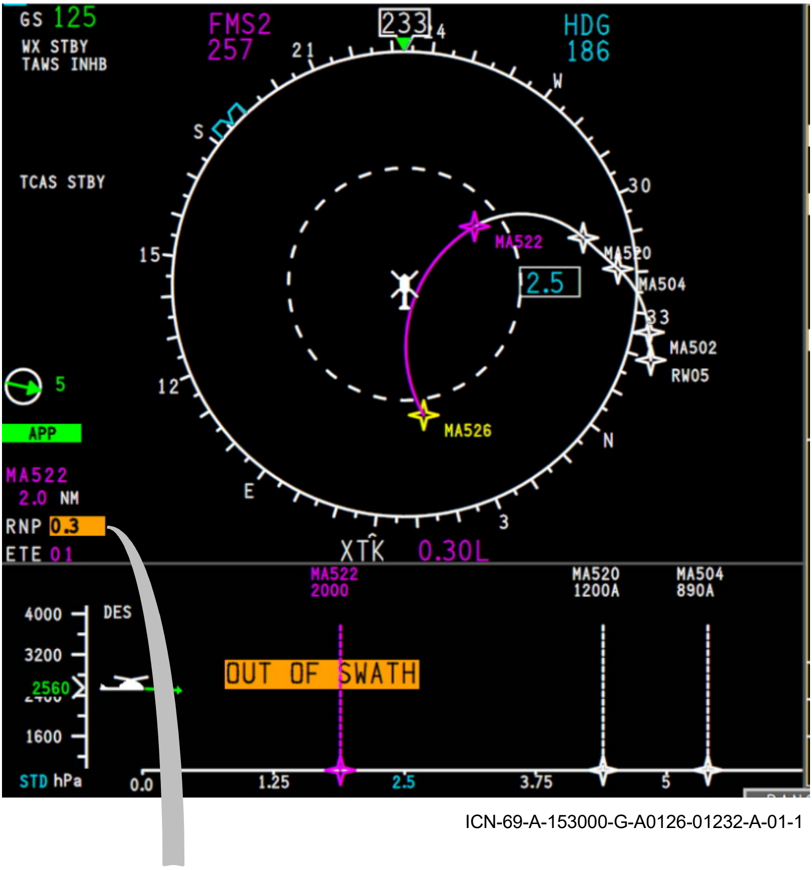
- **If FMS Approach, Discontinue approach.**
- **Revert to Radio Navigation, deselecting the FMS as Primary NAV source.**
- **Notify ATC loss of RNAV/RNP capability.**

All other operations.

- **Use Radio Navigation. procedures.**

PFD/MFD
MSGs

FMS MESSAGES ON PFD (CONT)




ICN-69-A-153000-G-A0126-01232-A-01-1

RNP value (amber) + VOICE MESSAGE “RNP RNP” WHEN XTK >0.3

Cross Track error exceeds RNP.
If vertical Situation Display (VSD) is selected on MFD, an ‘OUT OF SWATH’ message is displayed.

PFD/MFD
MSGs

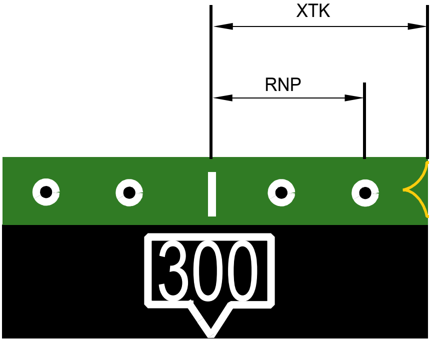
## Lateral Deviation Pointer with Winglets on Approach

During the approach phase (“APP green annunciation on PFD) or during the RNP 0.3 procedure the FMS displays a linear lateral deviation pointer with winglets below the attitude. The winglets’ size are equal to the current EPU value but they are displayed besides the pointer only if the EPU > 20% of RNP.

The lateral deviation pointer, and winglets, when appropriate, are displayed in the cyan (uncoupled)/magenta (coupled) colour with the AFCS Lateral NAPP or NAV mode while they are displayed in amber colour for conditions of:

1. XTK (FTE) > RNP, or
2. EPU > RNP, or
3. EPU + XTK > RNP

### *1. Procedure when XTK > RNP*




ICN-69-A-153000-G-A0126-01223-A-02-1

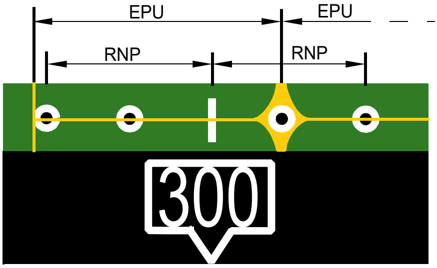
Cross Track Error greater than required RNP.

Steer aircraft towards the centerline to ensure the aircraft remains within the RNP bounds defined by the procedure (continue until lateral deviation pointer and RNP digital read-out returns cyan/ magenta).

*CONTINUED NEXT PAGE*

2. *Procedure when EPU > RNP*

***CONTINUATION FROM PREVIOUS PAGE***




ICN-69-A-153000-G-A0126-01224-A-02-1

Estimate Position Uncertainty greater than required RNP.

Runway visual references required to continue approach are NOT in sight.

- **If FMS Approach, Discontinue approach.**
- **Revert to Radio Navigation, deselecting the FMS as Primary NAV source**
- **Notify ATC loss of RNAV/RNP capability.**

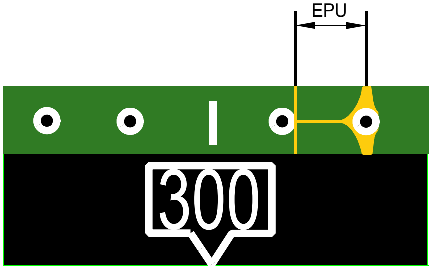
Runway visual references required to continue approach are in sight.

- **Continue approach.**

***CONTINUED NEXT PAGE***

3. *Procedure when EPU + XTR > RNP*

*CONTINUATION FROM PREVIOUS PAGE*




ICN-69-A-153000-G-A0126-01229-A-01-1

Estimate Position Uncertainty + Cross Track Error greater than required RNP.

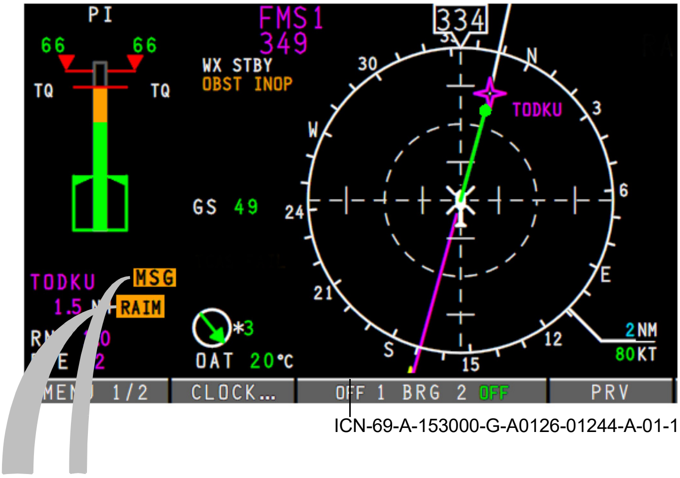
Steer aircraft towards the centerline to ensure the aircraft remains within the RNP bounds defined by the procedure (continue until lateral deviation pointer and RNP digital read-out returns cyan/magenta).

**END**

## RAIM MESSAGE ON PFD

The RNP Monitoring Performance and Alerting Function monitor the GNSS receivers RAIM detection data for Integrity Algorithm. In case of failure or insufficient integrity (RAIM algorithm detects a failure), the FMS displays RAIM amber annunciation and an amber MSG on PFD to indicate to the pilot to interrogate the EDCU MSG Page for additional information about the integrity failure to decide the action to be taken.

**RAIM + GNSS RAIM UNAVAILABLE on EDCU**

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RAIM + MSG (“GNSS RAIM UNAVAILABLE” Alert Message on EDCU)

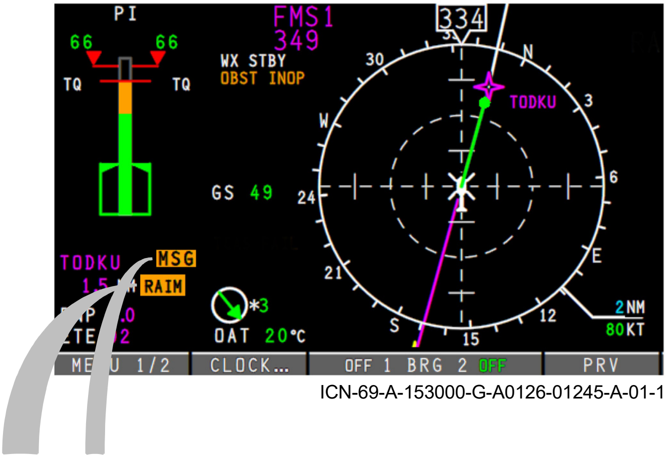
Dual GNSS sensor with RAIM or SBAS Integrity in Failure

**- Discontinue RNP operation.**
**- Notify ATC loss of RNAV/RNP capability.**

PFD/MFD MSGs

**END**

## RAIM + RAIM WILL EXCEED LIMIT on EDCU (DURING RNP (AR) APCH/ RNAV APP or RNP 0.3 All Phases of Flight)

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RAIM + MSG (“RAIM WILL EXCEED LIMIT” Alert Message on EDCU)

GNSS sensor in use with RAIM or SBAS Integrity in Failure

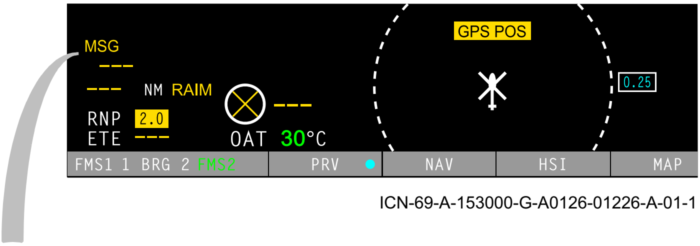
GNSS sensor in use may not guarantee, in the next five minutes, the horizontal Integrity required during the final approach segment of RNP (AR) APCH/ RNAV APP or RNP 0.3 All Phases of Flight. FMS navigation may lose RNP capability during final approach segment of RNP (AR) APCH / RNAV APP or during RNP 0.3 All Phases of Flight.

- **Be prepared to discontinue RNP operation in case of GPS DGR or FMS DGR.**

**PFD/MFD MSGs**

**END**

**MSG ON PFD + GNSS RAIM ABOVE LIMIT on EDCU**

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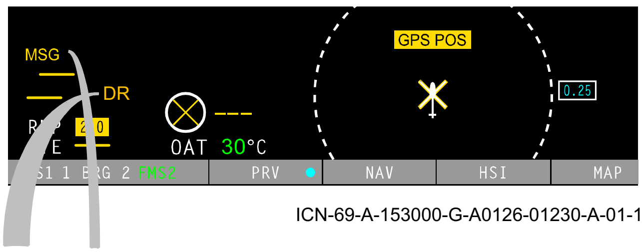
MSG (“1(2) GNSS RAIM ABOVE LIMIT” Alert Message on EDCU)

1(2) GNSS affected by
RAIM Integrity Failure
Loss of GNSS reduandancy

- Continue Approach

**END**

**DR ON PFD + UNABLE GNSS RNP ON EDCU**




ICN-69-A-153000-G-A0126-01230-A-01-1

DR + MSG (“UNABLE GNSS RNP” Alert Message on EDCU)

Dual GNSS sensor is degraded
condition for FMS as Navigation Source

*If* FMS navigation or
RNAV(GNSS) approach
or RNP procedures

- **If FMS Approach, Discontinue approach.**
- **Revert to Radio Navigation, deselecting the FMS as Primary NAV source.**
- **Notify ATC loss of RNAV/RNP capability.**

*All other operations*

- **Revert to Radio Navigation.**

**SECTION END**

PFD/MFD MSGs

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PFD/MFD MSGs

# ROTOR & TRANSMISSION

# ROTOR AND TRANSMISSION

## ROTOR BRAKE FAIL

**ROTOR BRK FAIL**

Rotor brake system failure.

On ground

*IF* braking:

**- Select RTR BRK switch to OFF.**

*IF* caution clears:

**- Select RTR BRK switch to ON again.**

*IF* not braking:

**- Shutdown aircraft.**

In flight

**- Monitor BRAKE TEMP** on XMSN synoptic page.

*IF* temperature within limit:

On landing rotor brake not available.

*IF* temperature above limit:

**- Land as soon as possible** Rotor brake not available.

**WARNING**

*If* temperature is rising rapidly and/or **ROTOR BRK HOT** caution illuminates, **LAND IMMEDIATELY**.

**END**

## ROTOR BRAKE INHIBIT

**ROTOR BRK INHB**

Criteria for rotor brake application not met.

**- Select RTR BRK switch to OFF.**

**END**

## ROTOR BRAKE OVERHEAT (ON GROUND)

**ROTOR BRK HOT**

Rotor brake system overheated.

**- Check BRAKE TEMP**
on XMSN synoptic page.

**- Confirm RTR BRK
to OFF.**

**- Shutdown aircraft.**

**END**

## MAIN GEARBOX OVERTORQUE

**XMSN OVTQ**

Transmission TQ limits exceeded:

- AEO: total torque (TQ1 + TQ2) above 222% for more than one second.

**- Check TQ indication on PFD/MFD.**

*IF* due to excessive power demand:

**- Reduce collective until torque within limits, as soon as operational conditions permit.**

*IF* one engine in overtorque condition:

**- Reduce collective until caption extinguishes.**
**- LOAD SHARE switch: TQ.**

**END**

## MAIN GEARBOX OIL LOW

**MGB OIL LOW**

Main gearbox oil level low (caution only active with aircraft shut down and NR below 5%).

**- Replenish MGB oil before flight.**

**END**

## TRANSMISSION CHIP DETECTOR

**XMSN CHIP**

Transmission chip detected in MGB *AND/OR* IGB *AND/OR* TGB.

**- Select XMSN synoptic page to identify chip position.**

**- Activate CHIP BURN**
(BEZEL key at bottom of MFD XMSN synoptic page or on EDCU, MISC page).
It is permitted to activate the CHIP BURN up to 3 times to clear a **XMSN CHIP** caution.

*IF* CHIP caution clears:

**- Continue flight.**

IF CHIP caution remains after 3 activation of CHIP BURN

**XMSN LARGE CHIP** caution will illuminate

**- Reduce power as soon as conditions permit.**

**- Land as soon as practicable.**

**CAUTION**

A maximum of 3 MGB and/or 3 IGB and/or 3 TGB **XMSN CHIP** cautions can be cleared in one flight.
On 4th **XMSN CHIP** caution the **XMSN LARGE CHIP** caution is displayed. Chip counter resets at next electrical power up.

**CAUTION**

*IF* **XMSN CHIP** caution illuminates when **MGB OIL PRESS** warning is illuminated, the CHIP BURN must not be activated.

**END**

GEARBOX CHIP SENSOR FAILURE

XMSN CHIP FAIL

Chip sensor failure.

On ground:

- **Shut down aircraft.**

In flight:

- **Monitor transmission system parameters.**
- **Land as soon as practicable.**

**END**

ROTOR
XMSN

MAIN GEARBOX INPUT OIL PRESSURE

**1(2) MGB OIL PRESS**

Associated MGB engine input oil pressure low, possible blockage in oil duct to MGB engine input.

**- Achieve safe OEI flight.**

**- Check MGB pressure indication on PFD/MFD.**

**- Reduce power as soon as operational conditions permit.**

**- Land as soon as practicable monitoring pressures and temperatures.**

*IF* **1(2) BRG TEMP** associated to the same 1(2) MGB OIL PRESS input stage illuminates.

On affected engine:

**- Shut down using** ENGINE SHUT-DOWN IN EMERGENCY **procedure.** **See page 35.**

**- Land as soon as practicable.**

ROTOR
XMSN

**END**

## MAIN GEARBOX INPUT BEARING TEMPERATURE

**1(2) BRG TEMP**

Associated MGB engine input bearing over temperature (above 180 °C).

**- Achieve safe OEI flight.**

**- Check bearing temperature indication on XMSN synoptic page.**

**- Reduce power as soon as operational conditions permit.**

**- Land as soon as practicable monitoring pressures and temperatures.**

*IF* **1(2) MGB OIL PRESS** associated to the same 1(2) BRG TEMP input stage illuminates.

On affected engine:

**- Shut down using** ENGINE SHUT-DOWN IN EMERGENCY **procedure.** **See page 35.**

**- Land as soon as practicable.**

**END**

## INTERMEDIATE GEARBOX OIL TEMPERATURE HIGH

**IGB OIL TEMP**

IGB oil temperature above limit (greater than 115 °C).

- **Check IGB oil temperature indication on PFD/MFD.**

*IF* oil temperature normal:

- **Continue flight monitoring oil temperature.**

*IF* oil temperature high or invalid:

- **Reduce power as soon as operational conditions permit.**
- **Land as soon as possible.**

**END**

## TAIL ROTOR GEARBOX OIL TEMPERATURE

**TGB OIL TEMP**

TGB oil temperature above limit (greater than 115 °C).

**- Check TGB oil temperature indication on PFD/MFD.**

*IF* oil temperature normal:

**- Continue flight monitoring oil temperature.**

*IF* oil temperature high or invalid:

**- Reduce power as soon as operational conditions permit.**

**- Land as soon as possible.**

**END**

## AVSR FAIL

**AVSR FAIL**

NR control automatically selected to fix value of 103%.

**- Continue Flight.**

**END**

## AVSR OSCILLATORY MALFUNCTION

NR/NF oscillatory indications on PFD/MFD

**- Disengage AFCS upper mode.**
**- Select ADS2 on RCP.**

*IF* oscillation remains.

**- Select ADS1 on RCP.**

**- Continue flight.**

**END**

## GEARBOX CHIP DETECT UNIT MALFUNCTION

**CHIP DET UNIT**

Chip detect system malfunction.

On ground:

**- Shut down aircraft.**

In flight:

**- Monitor transmission system parameters.**

**- Land as soon as practicable.**

**SECTION END**

# OEI FLIGHT PROCEDURES, CAT A TAKE-OFF LANDING OEI PROCEDURES

## SINGLE ENGINE PROCEDURE

The following procedure intends to indicate the procedures to follow, in OEI conditions, following a emergeny or malfunction procedure which has caused an engine failure or an intentional shutdown.
After an engine shutdown, the indication of fuel quantity on PFD and on MFD ENGINE synoptic page will change as follows:

— if the fuel quantity associated to the failed engine is greater than 160 kg, the quantity exceeding 160 kg is added to the quantity of the operative engine and the Total Fuel Quantity coincides with it. The Fuel Quantity of the failed engine is displayed in grey inverse video as 160 kg.

— if the fuel quantity associated to the failed engine is lower than 160 kg, the Total Fuel Quantity coincides with the fuel quantity indication of the operative engine. The Fuel Quantity readout associated to the failed engine turns to grey inverse video.

**Note**

Consider increased unusable fuel affecting flight duration.

When conditions permit confirm the following:

1. Carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35.

**IS ENGINE DAMAGE SUSPECTED**?

**NO** Refer page 129

**YES**

DO NOT attempt engine re-light continue as follows:

**Note**

FUEL XFER (if installed): Select as required on EDCU FUEL page.

OEI PROC
CAT A

## SINGLE ENGINE DESCENT CHECKS

1. Landing elevation — Check and set
2. Fuel quantity — Monitor
3. HTAWS (if fitted) — Check
4. Weather radar (if fitted) — Check and set
5. NAV AIDS — Set
6. RAD ALT/DH — Set as required
7. CAS — Review

## SINGLE ENGINE APPROACH AND LANDING

1. Fuel quantity — Monitor
2. Electrical loads — Monitor and shed

## SINGLE ENGINE BEFORE LANDING CHECKS

1. Landing gear — DOWN; three green lights on LDG control panel
2. LH LDG LT & RH LDG LT — ON
3. NOSEWHEEL steering — LOCK
4. PARK BRAKE handle — As required, check CAS
5. EMERG LT switch (Light panel) — ON
6. Pitot Heater (EDCU MISC page) — As reqiured
7. Fast seatbelt indicators (EDCU, LIGHTS page) — ON.

**Note**

Any time the FASTEN SEATBELTS is selected ON, the cabin occupants must also be informed using internal PA system.

8. CAS — Check
9. Cabin — Secure

Carry out OEI landing in accordance with the appropriate procedures.

**END**

# CAT A - GROUND AND ELEVATED HELIPORT / HELIDECK VERTICAL TAKE-OFF

## EMERGENCY PROCEDURE FOR SINGLE ENGINE FAILURE DURING TAKE-OFF

### SINGLE ENGINE FAILURE RECOGNIZED IN HOVER (6 ft (1,8 m) ATS)

1. Collective — Maintain collective setting or lower collective slightly, if required, to land.
2. Touchdown — Increase collective to cushion landing as touchdown becomes imminent. Maximum permitted GS at touchdown 5 kts (9 km/h).
3. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG.
4. Engine — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35.
5. PARK BRAKE — As required.

### OEI REJECTED TAKE-OFF PROCEDURE

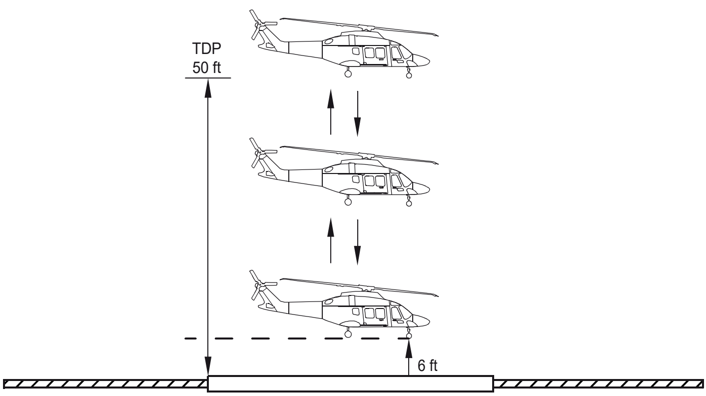


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Figure EM 3: G&E H/H Vertical Rejected Take-Off Procedure - Engine Failure before/at TDP

OEI PROC
CAT A

1. Initial action — Adjust collective to stop climb and establish a descent.
   Maintain the rotor speed close to 100% NR.

2. Cyclic — Maintain the centre of the helipad in sight between yaw pedals as the aircraft descends.

3. Touchdown — At approximately 10 ft to 5 ft (3 to 1,8 m) ATS increase collective to cushion the landing.
   Maximum allowed GS at touchdown 5 kts (9 km/h).

4. Landing — After touchdown, centralize cyclic and lower collective to MPOG.

5. Engine — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35.

6. Consider EMERGENCY GROUND EGRESS procedure, refer page 36.

**OEI CONTINUED TAKE-OFF PROCEDURE**

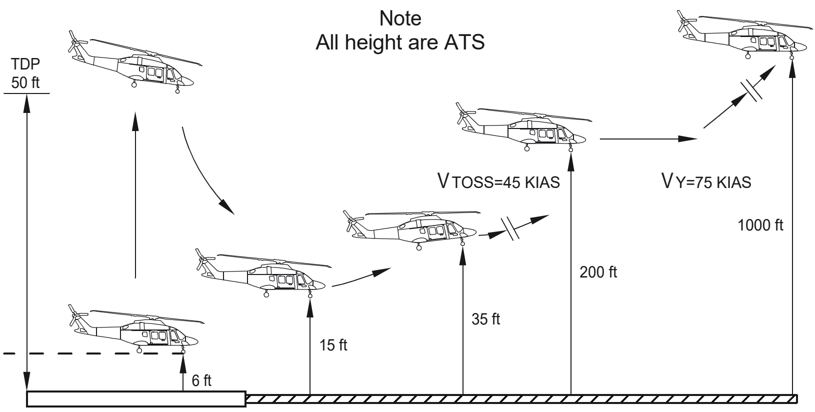


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Figure EM 4: G&E H/H Vertical Continued Take-Off Procedure - Engine Failure at/after TDP

| | | |
|---|---|---|
| 1. | Collective/Cyclic | — Rotate pitch down to -15°. Maintain this attitude until airspeed indication starts to increase, then rotate nose-up to level attitude and maintain for 1 second. After 1 second continue rotation to 5° nose up and maintain to accelerate to $V_{TOSS}$ (45 KIAS). Adjust collective to maintain NR close to 93%. |
| 2. | Climb | — When the aircraft achieves $V_{TOSS}$ (45 KIAS) adjust pitch attitude to maintain speed. When a positive rate of climb is achieved lower collective to recover NR to 101%. Continue climb to 200 ft (60 m) ATS, using 2.5 min power rating. |
| 3. | At 200 ft (60 m) ATS | — Accelerate to $V_Y$ using 2.5 min power rating. At $V_Y$ adjust cyclic to maintain speed to continue climb to 1000 ft (300 ft) ATS reducing power to OEI continuous rating (140% PI), when convenient before expiry of the 2.5 min power rating. |
| 4. | Landing gear | — Select UP, when reaching $V_Y$. |
| 5. | At 1000 ft (300 m) ATS | — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35. |
| 6. | PARK BRAKE | — Release. Confirm PARK BRK ON advisory not illuminated on CAS. |
| 7. | AFTER TAKE-OFF checks. See page 167. | — Complete. |

8. Refer SINGLE ENGINE PROCEDURE, refer page 217.

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# EMERGENCY PROCEDURES FOR SINGLE ENGINE FAILURE DURING LANDING APPROACH

## OEI BALKED LANDING PROCEDURE

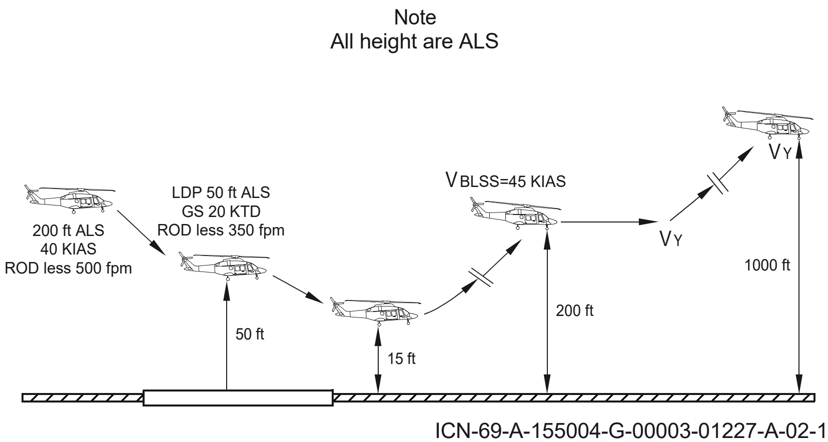


Figure EM 5: G&E H/H Engine Failure before LDP

| | | |
|---|---|---|
| 1. | Collective/Cyclic Control | — Apply collective to set 2.5 minutes power setting and to maintain NR close to 93%.<br>Adjust pitch attitude to accelerate to $V_{BLSS}$ (45 KIAS). |
| 2. | Climb | — When the aircraft achieves $V_{BLSS}$ (45 KIAS) and a positive rate of climb, lower collective to recover 101% NR.<br>Continue climb to 200 ft (60 m) ALS using 2.5 min power. |
| 3. | At 200 ft (60 m) ALS | — Accelerate to $V_Y$ using 2.5min power rating.<br>At $V_Y$ adjust cyclic to maintain speed and to continue climb to 1000 ft (300 m) ATS reducing power to continuous OEI power (140% PI) when convenient before expiry of the 2.5 min power. |
| 4. | Landing gear | — Up (when reaching $V_Y$). |
| 5. | At 1000 ft (300 m) ALS | — On failed engine carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35. |

6. PARK BRAKE — Release.
   Confirm PARK BRK ON advisory not illuminated on CAS.

7. AFTER TAKE-OFF checks. See page 167. — Complete.

8. Refer SINGLE ENGINE PROCEDURE, refer page 217.

## OEI LANDING PROCEDURE

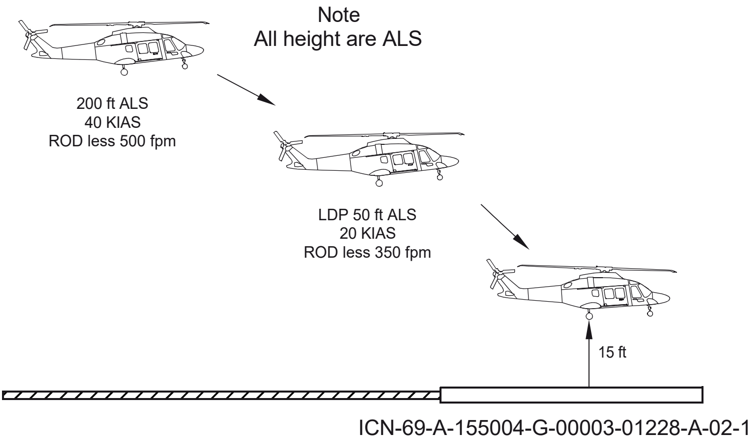


Figure EM 6: G&E H/H OEI Landing Profile

1. Collective/Cyclic Control — Adjust collective to continue the descent while reducing the rate of descent.
   Adjust pitch attitude as required to reduce speed.
2. Touchdown — At approximately 15-10 ft ATS increase collective to cushion the landing.
   Maximum nose up attitude at touch-down 15°.
3. Landing — After touchdown centralize cyclic and lower collective to MPOG.
4. Engine — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35
5. PARK BRAKE — As required.
6. Consider ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 36.

# CAT A - CLEAR AREA TAKE-OFF PROCEDURES

## EMERGENCY PROCEDURE FOR SINGLE ENGINE FAILURE DURING TAKE-OFF

### OEI REJECTED TAKE-OFF PROCEDURE

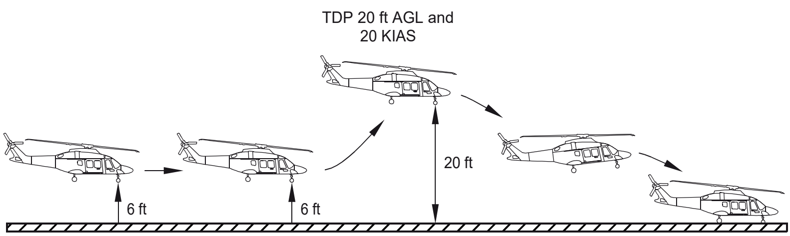


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Figure EM 7: Clear Area Engine Failure before TDP

1. Collective/Cyclic Control — Adjust collective to stop climb and establish a descent.
   Adjust pitch attitude as required to reduce speed.
2. Touchdown — Perform a running landing increasing collective to cushion the landing. Maximum nose up attitude at touchdown 15°.
3. Landing — After touchdown centralize cyclic and lower collective to MPOG.
4. Braking — Apply wheel brakes as required.
5. Engine — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, page 35.
6. Consider EMERGENCY GROUND EGRESS procedure, refer page 36.

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## OEI CONTINUED TAKE-OFF PROCEDURE

Note
All height are ATS

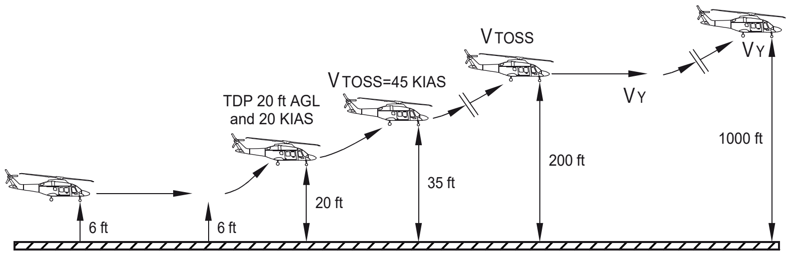


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Figure EM 8: Clear Area Engine Failure at/after TDP

1. Collective/Cyclic Control — Continue to accelerate using collective to maintain NR close to 93%. Accelerate to VTOSS (45KIAS) and start climb.

2. Climb — When the aircraft achieves $V_{TOSS}$ (45 KIAS) adjust pitch attitude to maintain speed.
When a positive rate of climb is achieved lower collective to recover NR to 101%.
Continue climb to 200 ft (60 m) ATS, using 2.5 min power rating.

3. At 200 ft (60 m) ATS — Accelerate to $V_Y$ using 2.5 min power rating.
At $V_Y$ adjust cyclic to maintain speed to continue climb to 1000 ft (300 ft) ATS reducing power to OEI continuous rating (140% PI), when convenient before expiry of the 2.5 min power rating.

4. Landing gear — Select UP, when reaching $V_Y$.

5. At 1000 ft (300 m) ATS — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35.

6. AFTER TAKE-OFF checks. See page 167. — Complete.

7. Refer SINGLE ENGINE PROCEDURE, refer page 217.

# EMERGENCY PROCEDURES FOR SINGLE ENGINE FAILURE DURING LANDING APPROACH

## OEI BALKED LANDING PROCEDURE

Note
All height are ALS

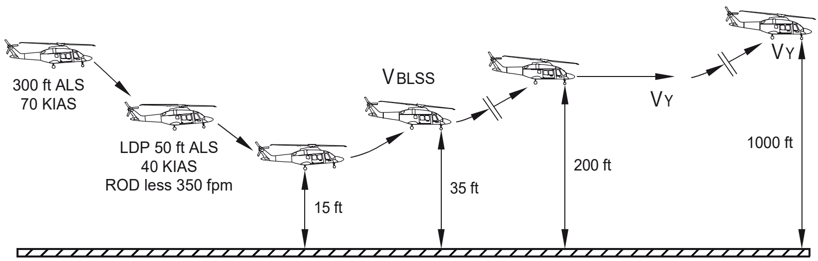


Figure EM 9: Clear Area Engine Failure Prior to LDP

| | | |
|---|---|---|
| 1. | Collective/Cyclic Control | — Apply collective to set 2.5 minutes power setting and to maintain NR close to 93%. Adjust pitch attitude to accelerate to $V_{BLSS}$ (45 KIAS). |
| 2. | Climb | — When the aircraft achieves $V_{BLSS}$ (45 KIAS) and a positive rate of climb, lower collective to recover 101% NR. Continue climb to 200 ft (60 m) ALS using 2.5 min power. |
| 3. | At 200 ft (60 m) ALS | — Accelerate to $V_Y$ using 2.5 min power rating. At $V_Y$ adjust cyclic to maintain speed and to continue climb to 1000 ft (300 m) ATS reducing to continuous OEI power (140% PI) when convenient before expiry of the 2.5 min power. |
| 4. | Landing gear | — Up (when reaching $V_Y$ but not below 200 ft ATS). |
| 5. | At 1000 ft (300 m) ALS | — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35. |
| 6. | AFTER TAKE-OFF checks. See page 167 | — Complete |

7. Refer SINGLE ENGINE PROCEDURE, page 217.

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## OEI LANDING PROCEDURE

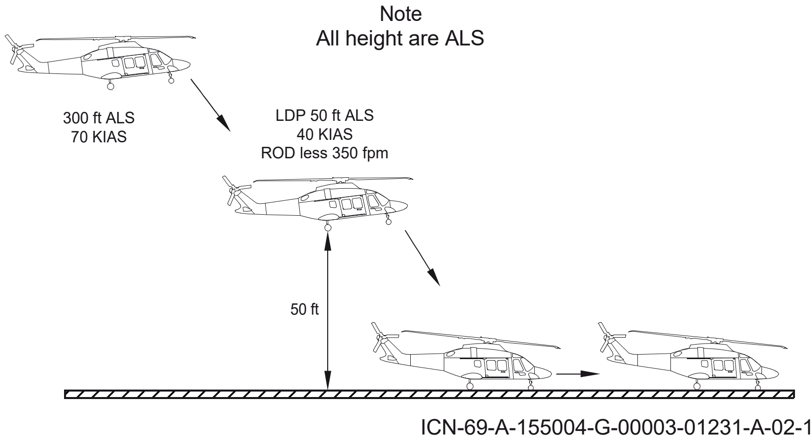


Figure EM 10: Clear Area Engine Failure at/after LDP

1. Collective/Cyclic Control — Adjust collective to continue the descent.
   Adjust pitch attitude as required to reduce speed.
2. Touchdown — Perform a running landing increasing collective to cushion the landing.
   Maximum nose up attitude at touchdown 15°.
3. Landing — After touchdown centralize cyclic and lower collective to MPOG.
4. Engine — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35.
5. PARK BRAKE — As required.
6. POST LANDING CHECKS. See page 187. — Complete.
7. Consider EMERGENCY GROUND EGRESS procedure, refer page 36.

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# CAT A - GROUND AND ELEVATED HELIPORT / HELIDECK VARIABLE TDP/LDP

## EMERGENCY PROCEDURE FOR SINGLE ENGINE FAILURE DURING TAKE-OFF

### SINGLE ENGINE FAILURE RECOGNIZED IN HOVER (6 ft (1,8 m) ATS)

| | | |
|---|---|---|
| 1. | Collective | — Maintain collective setting or lower collective slightly, if required, to land. |
| 2. | Touchdown | — Increase collective to cushion landing as touchdown becomes imminent. Maximum permitted GS at touchdown 5 kts (9 km/h). |
| 3. | Landing | — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. |
| 4. | Engine | — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35. |
| 5. | PARK BRAKE | — As required. |

## OEI REJECTED TAKE-OFF PROCEDURE

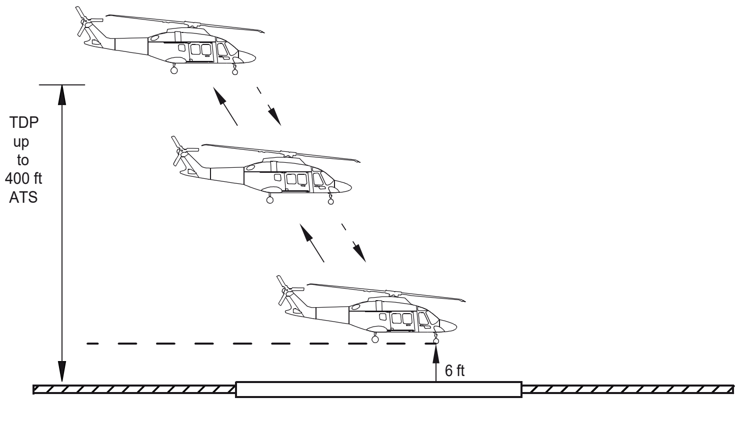


Figure EM 11: G&E H/H Variable TDP Rejected Take-Off Procedure - Engine Failure before/at TDP

1. Initial action — Adjust collective to stop climb and establish a descent.
   Maintain the rotor speed close to 100% NR.
2. Cyclic — Maintain the centre of the helipad in sight between yaw pedals as the aircraft descends.
3. Touchdown — At approximately 10 ft to 5 ft (3 to 1,8 m) ATS increase collective to cushion the landing.
   Maximum allowed GS at touchdown 5 kts (9 km/h).
4. Landing — After touchdown, centralize cyclic and lower collective to MPOG.
5. Engine — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35.
6. PARK BRAKE — As required.
7. Consider EMERGENCY GROUND EGRESS procedure, refer page 36.

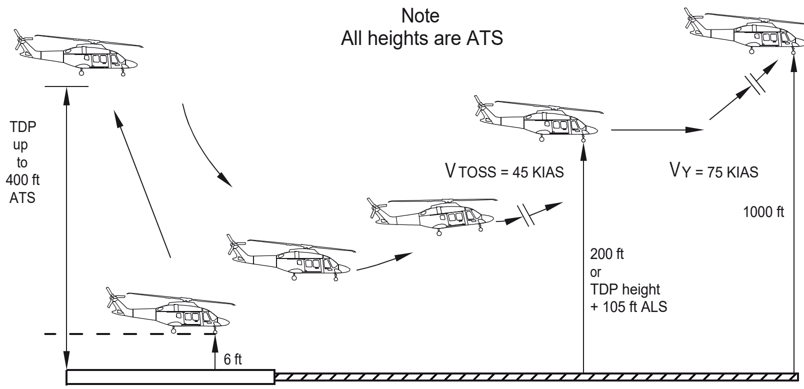


Figure EM 12: G&E H/H Variable TDP Continued Take-Off Procedure - Engine Failure at/after TDP

1. Collective/Cyclic — Rotate pitch down to an attitude -15°.
   Maintain this attitude until airspeed indication starts to increase, then rotate nose-up to level attitude and maintain for 1 second. After 1 second continue rotation to 5° nose up and maintain to accelerate to VTOSS (45 KIAS).
   Adjust collective to maintain NR close to 93%.

2. Climb — When the aircraft reaches VTOSS (45 KIAS) adjust pitch attitude to maintain speed.
   When a positive rate of climb is achieved lower collective to recover NR to 101%.
   Continue climb to 200 ft (60 m) or TDP height +105 ft ATS, using 2.5 min power rating.

3. At 200 ft (60 m) or TDP height +105 ft ATS whichever is higher — Accelerate to $V_Y$ using 2.5 min power rating.
   At $V_Y$ adjust cyclic to maintain speed to continue climb to 1000 ft (300 ft) ATS reducing power to OEI continuous rating (140% PI), when convenient before expiry of the 2.5 min power rating.

4. Landing gear — Select UP, when reaching $V_Y$.

5. At 1000 ft (300 m) ATS — On failed engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35.

6. PARK BRAKE — Release. Confirm PARK BRK ON advisory not illuminated on CAS.

7. AFTER TAKE-OFF checks. See page 167. — Complete.

8. Refer SINGLE ENGINE PROCEDURE, refer page 217.

# EMERGENCY PROCEDURES FOR SINGLE ENGINE FAILURE DURING LANDING APPROACH

## OEI BALKED LANDING PROCEDURE

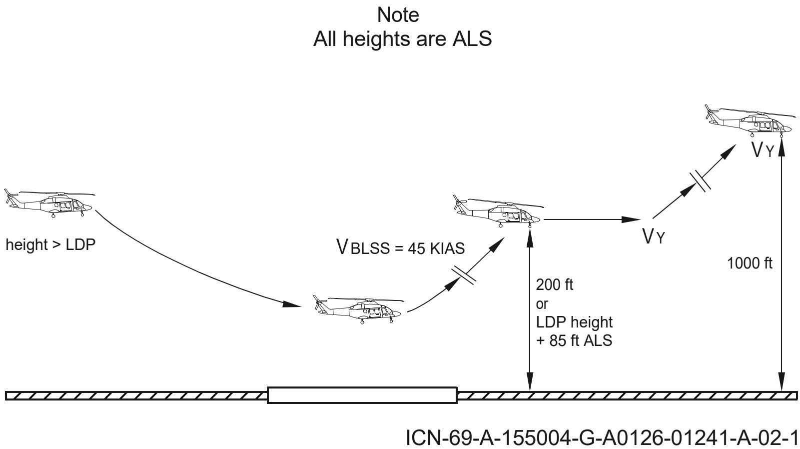


Figure EM 13: G&E H/H Engine Failure before LDP

1. Collective/Cyclic Control — Rotate pitch down to an attitude of -15°.
   — Maintain this attitude until airspeed indication starts to increase, then rotate nose up to level attitude and maintain for 1 second. After 1 second continue rotation to 5° nose up and maintain to accelerate to $V_{BLSS}$ (45 KIAS). Adjust collective to maintain NR close to 93%.
2. Climb — When the aircraft reaches $V_{BLSS}$ (45 KIAS) adjust pitch attitude to maintain airspeed.
   — When a positive rate of climb is achieved lower collective to recover NR to 101%.
   — Continue climb to 200 ft (60 m) or LDP height +85 ft ALS using 2.5 min min power rating.
3. At 200 ft (60 m) or LDP height +85 ft ALS whichever is higher — Accelerate to $V_Y$ using 2.5 min power rating.
   At $V_Y$ adjust cyclic to maintain speed and to continue climb to 1000 ft (300 m) ATS reducing power to continuous OEI power (140% PI) when convenient before expiry of the 2.5 min power.

| | | |
|---|---|---|
| 4. | Landing gear | — Up (when reaching $V_Y$). |
| 5. | At 1000 ft (300 m) ALS | — On failed engine carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35. |
| 6. | PARK BRAKE | — Release. Confirm PARK BRK ON advisory not illuminated on CAS. |
| 7. | AFTER TAKE-OFF checks. See page 167. | — Complete. |

8. Refer SINGLE ENGINE PROCEDURE, refer page 217.

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## OEI LANDING PROCEDURE

Note
All heights are ALS

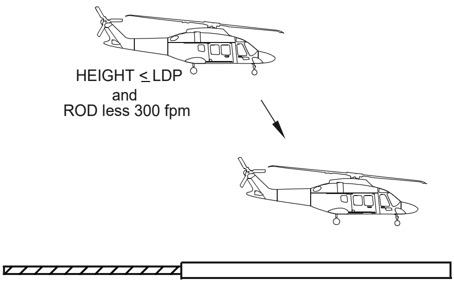


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Figure EM 14: G&E H/H OEI Landing Profile

1. Collective/Cyclic Control
   — Adjust collective to establish a descent, maintaining rotor speed close to 100% NR.
   — Adjust pitch attitude as required to maintain the centre of the helipad between the yaw padals.
2. Touchdown
   — At approximately 10-5 ft (3-1.4 m) ALS increase collective to cushion the landing allowing the rotor to droop. Maximum allowed GS at touchdown 5 kts (9 km/h).
3. Landing
   — After touchdown centralize cyclic and lower collective to MPOG.
4. Engine
   — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35
5. PARK BRAKE
   — As required.
6. Consider EMERGENCY GROUND EGRESS procedure, refer page 36.

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# CAT A - OFFSHORE AND ELEVATED HELIDECK TAKE-OFF PROCEDURES

## EMERGENCY PROCEDURE FOR SINGLE ENGINE FAILURE DURING TAKE-OFF

### SINGLE ENGINE FAILURE RECOGNIZED IN HOVER 5 FT (1.5 M) ATS

1. Collective — Maintain collective setting or lower collective slightly, if required, to land.
2. Touchdown — Increase collective to cushion landing as touchdown becomes imminent. Maximum permitted GS at touchdown 5 kts (9 km/hr).
3. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG.
4. Engine — On affected engine, ENGINE SHUT-DOWN IN EMERGENCY procedure, refer page 35.
5. Consider EMERGENCY GROUND EGRESS procedure, refer page 36.

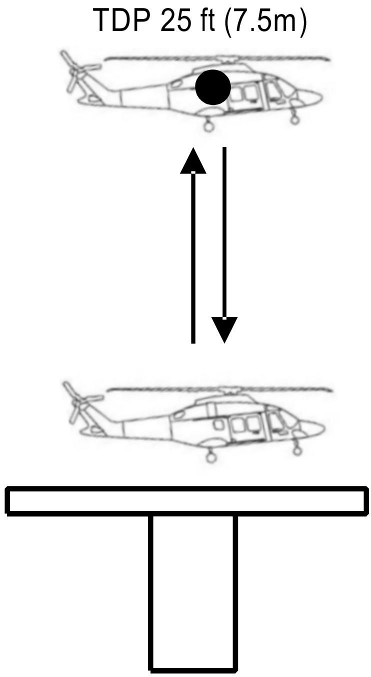


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Figure EM 15: Offshore / Elevated Helideck Procedure – Engine Failure Before TDP

1. Initial action — Adjust collective to establish a descent to maintain the rotor speed to approximately 100% NR.
2. Cyclic — Maintain aircraft position over the Take-Off point as the aircraft descends.
3. Touchdown — At approximately 10 to 5 ft (3 to 1.5 m) ATS increase collective to cushion landing. Maximum allowed GS at touchdown 5 kts (9 km/hr).
4. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG.
5. Engine — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35.
6. Consider EMERGENCY GROUND EGRESS procedure, refer page 36.

## OEI CONTINUED TAKE-OFF PROCEDURE

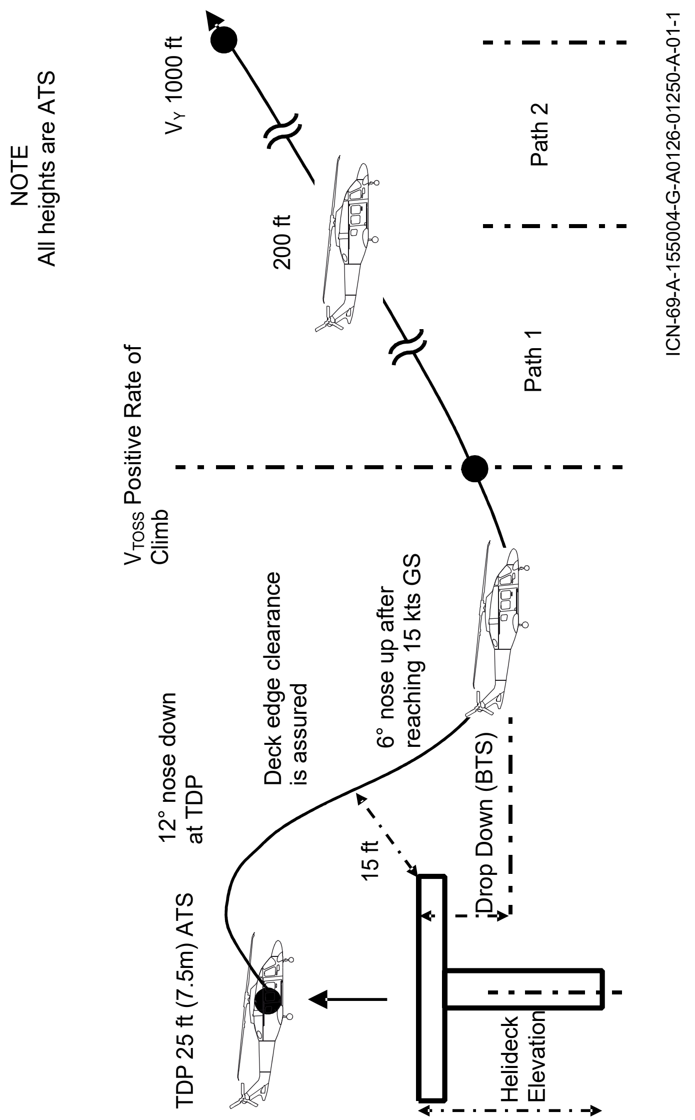


Figure EM 16: Offshore / Elevated Helideck Procedure – Engine Failure at or after TDP

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| | | | |
|---|---|---|---|
| 1. | Collective/Cyclic | — | Continue rotation to 12° nose down to achieve 15 kts GS using collective to maintain NR close to 93%. |
| 2. | Acceleration/climb | — | Increase attitude to 6° nose up and continue acceleration up to $V_{TOSS}$. When a positive rate of climb is achieved lower collective to recover NR to 101%. |
| 3. | Climb | — | When the aircraft achieves VTOSS (45 KIAS) adjust pitch attitude to maintain speed. Continue climb to 200 ft (60 m) ATS, using OEI 2.5 min power rating. |
| 4. | At 200 ft (60 m) ATS | — | Landing Gear UP while accelerating to $V_Y$ using OEI 2.5 min power rating. At $V_Y$ adjust cyclic to maintain speed to continue climb to 1000 ft (300 m) ATS or cruise level whichever comes first, reducing power to OEI continuous rating (140% PI), when convenient before expiry of the OEI 2.5 min power rating. |
| 5. | PARK BRAKE | — | Release. Confirm **PARK BRK ON** advisory extinguishes on CAS. |
| 6. | At 1000 ft (300 m) ATS | — | On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35. |
| 7. | AFTER TAKE-OFF checks. See page 167. | — | Complete. |
| 8. | PFD menu | — | Select MAG as required. |

9. Refer SINGLE ENGINE PROCEDURE, refer page 217.

# CAT A - OFFSHORE AND ELEVATED HELIDECK LANDING PROCEDURES

## EMERGENCY PROCEDURE FOR SINGLE ENGINE FAILURE DURING LANDING APPROACH

### OEI BALKED LANDING PROCEDURE

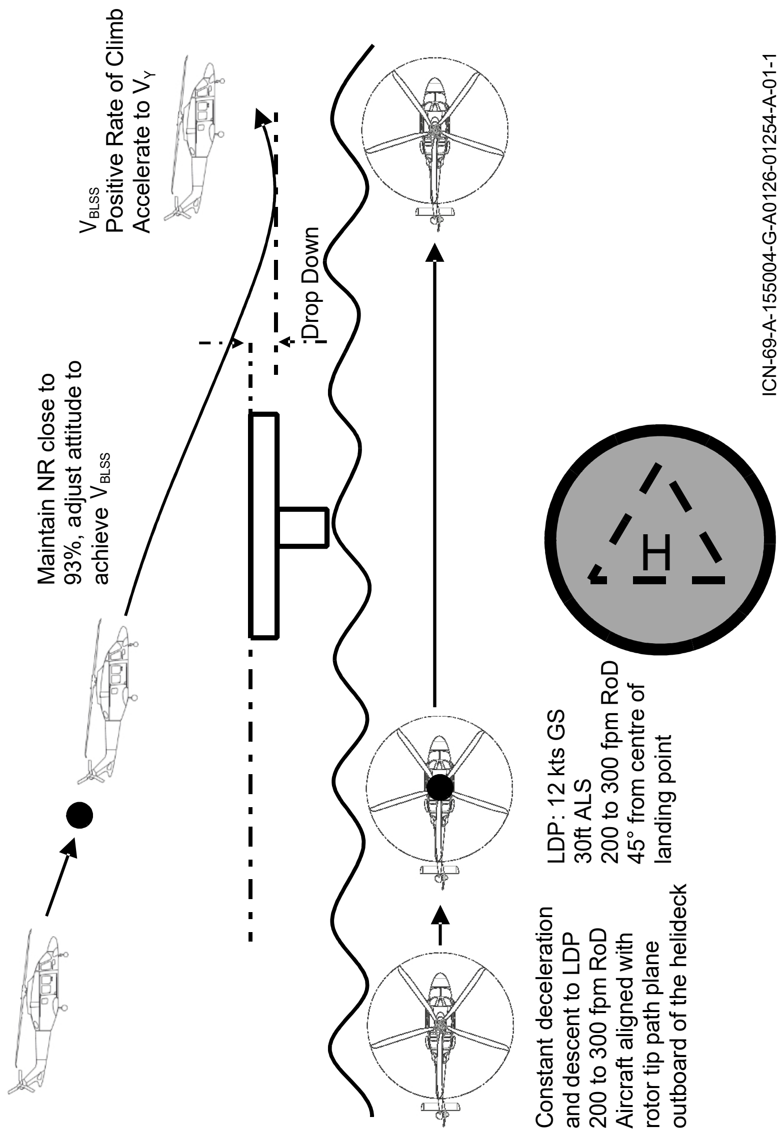


Figure EM 17: Offshore / Elevated Helideck – Engine Failure Before LDP

| | | |
|---|---|---|
| 1. | Collective/Cyclic Control | — Apply collective to set OEI 2.5 min power setting and to maintain NR close to 93%. Set pitch attitude to 10° nose down with respect to present attitude to accelerate to $V_{BLSS}$ (45 KIAS). |
| 2. | Climb | — When the aircraft achieves VBLSS (45 KIAS) and a positive rate of climb, lower collective to recover 101% NR. Continue climb to 200 ft (60 m) ALS using OEI 2.5 min power. |
| 3. | At 200 ft (60 m) ALS | — Landing Gear UP while accelerating to $V_Y$ using OEI 2.5 min power rating. At $V_Y$ adjust cyclic to maintain speed and to continue climb to 1000 ft (300 m) ATS or cruise level whichever comes first, reducing power to continuous OEI power (140% PI) when convenient before expiry of the OEI 2.5 min power. |
| 4. | PARK BRAKE | — Release. Confirm PARK BRK ON advisory extinguishes on CAS. |
| 5. | At 1000 ft (300 m) ALS | — On failed engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35 |
| 6. | AFTER TAKE-OFF checks. See page 167. | — Complete. |
| 7. | PFD menu | — Select MAG as required. |

8. Refer SINGLE ENGINE PROCEDURE, refer page 217.

## OEI LANDING PROCEDURE

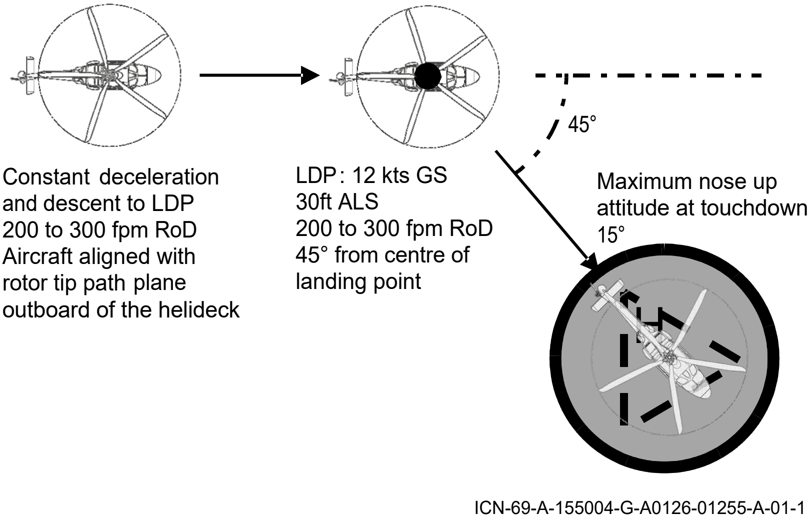


Figure EM 18: Offshore / Elevated Helideck – Engine Failure At or After LDP

1. Collective/Cyclic Control — Adjust collective to continue the descent while reducing the rate of descent. Adjust pitch attitude as required to reduce speed.
2. Touchdown — At approximately 15-10 ft ATS increase collective to cushion the landing. Maximum nose up attitude at touchdown 15°. Maximum GS at touchdown 5 kts (9 km/h).
3. Landing — After touch down centralize cyclic, reduce collective to MPOG.
4. PARK BRAKE — As required.
5. Engine — On affected engine, carry out ENGINE SHUTDOWN IN EMERGENCY procedure, refer page 35.
6. Consider EMERGENCY GROUND EGRESS procedure, refer page 36.

**SECTION END**

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| | |
|---|---|
| LIMITS | GENERAL, TYPE OF OPER, MIN CREW, CG LIMITATIONS |
| | ENGINE, FUEL, LUBRICANTS, HYD & SYSTEM LIMITATIONS |
| | AVIONICS & FMS LIMITATIONS |
| | CHARTS & DIAGRAMS |
| | RESERVED |
| NORMAL PROCEDURE | GENERAL, FLIGHT PLANNING, EXTERNAL & INTERNAL CHECKS |
| | ENG PRE-START, ABORT START, DRY MOTOR & ENG START |
| | TAXIING, PRE-TAKE OFF, TAKE-OFF CAT A/B |
| | IN FLIGHT PROCEDURES |
| | APPROACH, LANDING CAT A/B |
| | POST-LANDING & SHUTDOWN CHECKS |
| | FLIGHT MANAGEMENT SYSTEM OPERATION |
| | ADVISORY CAPTIONS, PFD MESSAGES |
| | RESERVED |
| | RESERVED |
| PERF | DENSITY/ALTITUDE, CONVERSION CHART, HOVER PAC |
| | CONTROLLABILITY & H/V |
| | HOVER CEILING, RATE OF CLIMB, WIND COMPONENT CHART |

## WARNINGS, CAUTIONS AND NOTES

Warnings, Cautions and Notes are used throughout this manual to emphasize important and critical instructions and are used as follows:

**WARNING**

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

**CAUTION**

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

**Note**

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

## USE OF PROCEDURAL WORDS

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

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

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

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

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

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

"**Secure**" has been used to determine if the item under examination is correctly locked, referring to doors and disconnectable items, or correctly positioned and installed.

## DEFINITIONS

The level of alertness required by the pilots is a function of the flight regime. The following definitions are used in the manual;

**Fly Attentive** - Pilot to maintain close control of the flight path using hands/feet on when required.

**Fly Manually** - Pilot to control directly the flight path using hands/feet on.

**QFE** - Atmospheric pressure at aerodrome elevation (or runway threshold).

**QNH** - Altimeter subscale setting to obtain elevation when on the ground.

**PRESSURE ALTITUDE** - Obtained by setting barometer pressure to 1013 hPa or STD or 29.92"Hg.

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# List Of Figures

# GENERAL,
# TYPE OF OPERATION,
# MINIMUM FLIGHT CREW,
# CG LIMITATIONS

# LIMITATIONS

## TYPES OF OPERATION

The rotorcraft is certified in Category A and B and is eligible for the following kinds of operation when the appropriate instruments and equipment required by the airworthines and/or operating rules are installed and approved and are operable in condition:

— Day and Night VFR;

— Day and Night IFR;

— Category A operation;

— Operations with more than 9 passenger seats.

CAT A operations are approved under Day/Night.

### CATEGORY A TAKE-OFF

Weather conditions must be such that external visual references exist in the FATO area and in the Take-Off distance.

### CATEGORY A LANDING

Weather conditions must be such that approach to LDP is carried out with visual reference in the FATO area and in the balked landing distance.

## MINIMUM FLIGHT CREW

Visual Flight Rules (VFR) Day/Night and IFR - One pilot unless otherwise required by operating rules. Single pilot operation not permitted from left seat.

### CAT A - CREW LIMITATIONS

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

When Take-Off or Landing is carried out from the left hand seat minimum flight crew is 2 pilots.

## NUMBER OF OCCUPANTS

The maximum number of occupants, including the crew, shall not exceed 10 for basic approved configurations. For the maximum number of occupants for other approved configurations refer to appropriate Supplements of Section 5 of RFM.

Each occupant must have a seat with seat belt and shoulder harness.

For all approved cabin configurations refer to appropriate Supplements of Section 5 and Section 6, Weight and Balance.

It is permissible to reduce the number of seats installed in the cabin respecting the requirements found for each layout in Section 6 of the Basic RFM or appropriate Supplement.

After any configuration change the new empty weight and CG position must be determined and entered into Section 6 to ensure CG limits are not exceeded.

# WEIGHT AND CENTER OF GRAVITY LIMITATIONS

## MAXIMUM WEIGHT

Maximum gross weight for towing or taxi ............................................4650 kg

Maximum gross weight for CAT B Take-Off/landing.............................4600 kg

## MINIMUM WEIGHT

Minimum flight/rotor running gross weight ..........................................3300 kg

(See also page 112, Figure Lim 72 for increased minimum weight in low temperature)

## CENTER OF GRAVITY

Longitudinal limits ............... page 35, Figure Lim 1 and page 37, Figure Lim 3

Lateral limits ....................... page 36, Figure Lim 2 and page 38, Figure Lim 4

Refer to Section 6 of RFM for loading instructions.

## CATEGORY B OPERATION LIMITATIONS (UP TO 9 PASSENGER SEATS)

The CAT B WMAT Limit charts, Figure Lim 5 thru Figure Lim 34 define the maximum HIGE Take-Off and Landing weight for:

- the given ambient conditions (OAT, Hp);
- Electrical load: 75% means that an electrical load of 75% on each DC generator has been included;
- Electrical load: 25% means that an electrical load of 25% on each DC generator has been included;
- Figure Lim 5 thru Figure Lim 34 will be used if the wind and Take-Off / Landing directions do not differ more than 10°.

**Note**

When wind and Take-Off directions differ more than 10°, Figure Perf 7 shows wind envelope and azimuth.
The associated Take-Off and landing weight is found in Section 4 WAT for HIGE CONTROLLABILITY - AEO TOP charts (see Figure Perf 8 thru Figure Perf 30).

## CATEGORY B OPERATION LIMITATIONS (MORE THAN 9 PASSENGER SEATS)

Accounting for internal arrangements with more than 9 passengers, CAT B WAT charts are defined taking into account also OEI climb capability requirements. Therefore CAT B WAT Limit charts shown in Figure Lim 5 thru Figure Lim 34 are replaced by Figure Lim 35 and Figure Lim 36 with the same wind envelope define in Figure Perf 7.

In case one or more seats are removed from the approved configuration and total passenger seats return up to 9, Cat B WAT charts Figure Lim 5 thru Figure Lim 34 may be used and the following Height-Velocity limitations paragraph does not apply.

CAT B Take-Off and Landing with tail wind is prohibited.

The CAT B WAT Limit charts, Figure Lim 35 and Figure Lim 36 is used to define the maximum Take-Off and Landing weight for:

- the given ambient conditions (OAT, Hp);
- Electrical load: 75% means that an electrical load of 75% on each DC generator has been included
- Electrical load: 25% means that an electrical load of 25% on each DC generator has been included.

**CAUTION**

Supplement 30 configuration required for operations above 4600 kg.

**Note**

The weights specified from Figure Lim 35 and Figure Lim 36 above refer to the clean aircraft configuration. When kits, impacting external profile, are fitted, refer to PERFORMANCE CORRECTION AFTER KIT INSTALLATION section 4 of supplement 29 of basic RFM.

The Height-Velocity envelope has been split between the high hover conditions and the Take-Off corridor. The procedures defined in Emergency Procedures and associated weights defined in Figure Perf 52 thru Figure Perf 61 guarantee a SafeVertical Reject or Flyways can always be carried out in a safe manner from hover out of ground effect following a single engine failure.

A safe vertical reject can always be carried out from HIGE condition as follows:

— up to 15 ft for weight up to 4600 kg

— up to 15 ft up to 5000 ft for weight in excess of 4600 kg up to 4800 kg

— up to 10 ft up to 10000 ft for weight in excess of 4600 kg up to 4800 kg

Cat B Take-Off and Landing procedure, included in Normal Procedures and WAT charts, included in CHARTS DIAGS, ensures the aircraft is within the Take-Off corridor of the H-V envelope.

A safe Take-Off reject or OEI landing can always be carried out in a corridor defined by:

— 15 ft from Hover to 10 KIAS and 30 ft at 20 KIAS for weight up to 4600 kg.

— 15 ft from hover to 10 KIAS and 30 ft at 20 KIAS up to 5000 ft for weight in excess of 4600 kg up to 4800 kg.

— 10 ft from Hover to 10 KIAS and 30 ft at 20 KIAS above 5000 ft up to 10000 ft for weight in excess of 4600 kg up to 4800 kg.

**CAT A OPERATIONS - WAT LIMITATIONS**

Ground and Elevated Heliport / Helideck Vertical
Take-Off / Landing ........................................................ page 73 thru page 79, Figure Lim 37 thru Figure Lim 49

Clear Area Take-Off / Landing .................................... page 81 thru page 82, Figure Lim 44 thru Figure Lim 45

Ground and Elevated Heliport / Helideck Variable TDP
Take-Off / Landing ........................................................ page 84 thru page 87, Figure Lim 46 thru Figure Lim 49

Wind/Ground/Airspeed Azimuth Envelope
for Hover IGE Controllability................................. See page 239, Figure Lim 7

**HEADWIND BENEFIT**

Unless otherwise authorized by the operating regulations, the pilot is not authorized to credit more than 50 percent of the performance increase resulting from the actual headwind component.

## AIRSPEED LIMITATIONS

Vne (Power ON, OEI/Power OFF) ....................... See page 111, Figure Lim 71

Maximum airspeed in AEO with TQ above 100% ............................... 90 KIAS

Maximum landing gear operation airspeed (Vlo) applicable when either SB169-150 or landing gear P/N 6F3200F00413 (or subsequent) has been installed.................... 130 KIAS

Maximum landing gear operation airspeed (Vlo) applicable when NEITHER SB169-150 NOR landing gear P/N 6F3200F00413 (or subsequent) has been installed..................... 80 KIAS

Maximum landing gear extended airspeed (Vle)............................Vne -8 KIAS

Minimum airspeed for flight under IFR (Vmini).................................... 50 KIAS

Maximum airspeed for IFR approach........................... 130 KIAS up to 5000 ft then reduce 2 kts every 1000 ft

Maximum airspeed with one AP failed ............................................ 120 KIAS

Maximum airspeed for operation of windscreen wipers ..................... 140 KIAS

Minimum airspeed in autorotation ...................................................... 50 KIAS

## CABIN SLIDING DOOR OPEN LIMITATIONS

**Note**

To open the door(s) the KIT DOOR LOCK PASSENGER DOORS P/N 6F5213F00111 must be installed.

Maximum airspeed with one door locked open .................................... 80 KIAS
Maximum airspeed with both doors locked open .............................. 100 KIAS
Maximum airspeed for opening/closing door ...................................... 80 KIAS

**CAUTION**

When opening/closing door(s) due consideration must be given to the effect of airspeed/windspeed on the door(s).

Opening/closing door(s) in flight must be carried out by a person trained for this task.

## GROUND SPEED LIMITATIONS

### ON PAVED SURFACES

Maximum taxi speed ............................................................40 knots GS
above 10 knots (18 km/h) nose wheel must be LOCK

Maximum speed for rolling Take-Off or running landing.................60 knots GS

Maximum speed for emergency landing ......................................60 knots GS

### ON PREPARED GRASS SURFACES

Maximum taxi speed ............................................................20 knots GS
above 10 knots (18 km/h) nose wheel must be LOCK

Maximum speed for rolling Take-Off or running landing.................30 knots GS

Maximum for emergency landing speed ......................................50 knots GS

### CAT A - GROUND AND ELEVATED HELIPORT / HELIDECK VERTICAL TAKE-OFF / LANDING

Maximum speed with PARK BRAKE ON .......................................5 knots GS

### SPEED LIMITATIONS FOR ENGINE AND ROTOR STARTING / STOPPING

Maximum wind speed ....................................... See page 117, Figure Lim 77

**CAUTION**

If forecast wind velocity exceeds 50 knots, the helicopter must be parked in a sheltered area or in a hangar.

## ALTITUDE LIMITATIONS

Maximum operating altitude .............................. See page 112, Figure Lim 72

Minimum operating altitude ............................... See page 112, Figure Lim 72

Maximum Take-Off and landing altitude............. See page 112, Figure Lim 72

Maximum operating altitude for GW above
4600 kg up to 4800 kg...................................... See page 113, Figure Lim 73

CAT A Take-Off and landing altitude .................. See page 114, Figure Lim 74

## OUTSIDE AIR TEMPERATURE LIMITATIONS (OAT)

Maximum ouside air temperature....................... See page 112, Figure Lim 72

Minimum outside air temperature....................... See page 112, Figure Lim 72

Maximum outside air temperatur
for GW above 4600 kg up to 4800 kg ................. See page 113, Figure Lim 73

CAT A temperature limits .................................. See page 114, Figure Lim 74

## COLD TEMPERATURE LIMITATIONS

With hydraulic fluid temperature below +20 °C the pilot must fly attentive.

## PITOT HEATING LIMITATIONS

Pitot heating must be selected to **AUTO** or **ON** for indicated OAT of +4 °C or less.
Pitot heating must be selected to **AUTO** or **OFF** at indicated OAT of +5 °C or more.

## ICING LIMITATIONS

Flight into known icing conditions is prohibited.
Flight into freezing rain and freezing fog is prohibited.

## CATEGORY A OPERATION - WIND LIMITATIONS

Maximum cross wind component ............. must not exceed 20 knots (10 m/s)

Take-Off with tail wind component is prohibited.

## MANOEUVRING LIMITATIONS

Aerobatic manoeuvres are prohibited.

## AUTOROTATION LIMITATIONS

Practice autorotative landings are prohibited.

During autorotation the ENG MODE switches must NOT be selected from FLIGHT to IDLE except in an emergency.

## OEI ENGINE OPERATION

Selection of either ENG MODE switch to IDLE/OFF for training is prohibited.

## SLOPE LIMITATIONS

Sloped Take Off and Landing are limited to the following:

Nose up ........................................................................................ 10°

Nose Down.......................................................................................... 7°

Left Wing Low ................................................................................ 10°

Right Wing Low .............................................................................. 10°

## BAGGAGE COMPARTMENT LIMITATIONS

Maximum baggage compartment load .................................... 250 kg (550 lb)

Load in the baggage compartment is allowed provided that:

— baggage liners are installed;

— all cargo must be secured with approved net or other approved means.

Maximum unit load ..................................................... 450 kg/m$^2$ (92 lb/sq.ft)

Cargo height not to exceed ....................................................... 600 mm (2 ft)

Carriage of dangerous goods is prohibited.

If the Baggage Compartment Extension (P/N 6F2580F01111) is installed, the following limitations apply:

No load is allowed on the baggage cabin extension floor.
Total weight of long objects protruding in the baggage extension area must not exceed 50 kg (110 lbs).

Long objects must be secured to the main baggage floor.

## CABIN COMPARTMENT LIMITATIONS

Cargo transport in the cabin is prohibited unless an approved cabin configuration is installed for which cargo transport is allowed.

# ENGINE, FUEL, LUBRICANTS, HYDRAULICS & SYSTEM LIMITATIONS

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## ENGINE AND TRANSMISSION DIGITAL LIMITATIONS

The following represent the digital values for PFD and MFD limitations indicated by colours:

| | NR % |
|---|---|
| **Power Off** | |
| Minimum Transient | **85** |
| Minimum Continuous | **90** |
| Maximum Continuous | **110** |
| Maximum Transient | **115** |

| | ITT °C |
|---|---|
| **Engine Starting** | |
| Maximum | **750 (86,4%)** |
| Transient | **825 (2 sec) (95% (2 sec))** |

| | PI & TQ | Ng % | ITT °C | Nf % | NR % |
|---|---|---|---|---|---|
| **All Engines Operating** | | | | | |
| Minimum Transient | | | | **90 (20 sec)** | **90** |
| Minimum Continuous | | | | **94** | |
| Maximum Continuous | **100** | **96.5** | **868 (100%)** | **105** | |
| Max Take-Off (30 min) (5 min with EAPS kit) equal or less than 90 KIAS | **111** | **98.2** | **930 (107,1%)** | | |
| Maximum Transient | **125 (10 sec)** | **98,9 (20 sec)** | **941 (20 sec) (108,4% (20 sec))** | **107 (20 sec)** | **107** |
| **One Engine Inoperative** | | | | | |
| Minimum Transient | | | | **85** | **85** |
| Minimum Cautionary | | | | **90** | **90** |
| Minimum Continuous | | | | **101** | **101** |
| Maximum Continuous | **140** | **98.9** | **941(108,4%)** | **105** | **105** |
| Maximum 2.5 min OEI | **174** | **100.7** | **1020 (117,5%)** | | |
| Maximum Transient | **192 (10 sec)** | **101,2 (5 sec)** | **1031 (5 sec) (118,8% (5 sec))** | **107 (20 sec)** | **107** |

| | EOT °C | EOP BAR | MGBOT °C | MGBOP ACC MODE BAR | MGBOP MAIN MODE | IGBOT °C | TGBOT °C | HYDOT °C | HYDOP BAR |
|---|---|---|---|---|---|---|---|---|---|
| Minimum | -40 | 2.6 | -40 | 1.6 | 2.3 | -40 | -40 | -40 | 163 |
| Cautionary Range | -40 to 39 | 2.6 to 5.1 | -40 to -1 | 1.6 to 1.8 | 2.3 to 3.0 | -40 to -1 | -40 to -1 | -40 to -21 | 163 to 184 |
| Normal Operation | 40 to 130 | 5.2 to 15.5 | 0 to 115 | 1.9 to 6.0 | 3.1 to 6.0 | 0 to 115 | 0 to 115 | -20 to 119 | 185 to 227 |
| Cautionary Range | 131 to 135 (1 min) | 15.6 to 18.1 (20 sec) | | | 6.1 to 10.0 | | | 120 to 134 | 228 to 235 |
| Maximum | 135 | 18.1 | 115 | 6.0 | | 115 | 115 | 135 | 235 |

| | BATTERY LOAD AMPS |
|---|---|
| Maximum Battery | -200 |
| Minimum Battery Charge | 200 |

| | DC GEN LOAD % |
|---|---|
| Max Normal | 75 |
| Cautionary range (10 min maximum) | 75 to 100 |
| Maximum Transient | 150 |

| | EMER BUS VOLTAGE |
|---|---|
| Min Normal Operation | 22 |
| Max Normal Operation | 30 |

## STARTER DUTY CYCLE



### ENGINE STARTING

After 1st start attempt wait 30 seconds;

After 2nd start attempt wait 30 seconds;

After 3rd start attempt wait 30 minutes.

### ENGINE MOTORING

Choose one of the following three cycles

| No | Cycle |
|---|---|
| 1 | 45 seconds on, 10 minutes off |
| 2 | 30 seconds on, 5 minutes off |
| 3 | 15 seconds on, 2 minutes off |

The chosen cycle can be repeated 3 times. If further motoring is required, a 30 minutes rest time is necessary.

## POWER ASSURANCE CHECK

CATEGORY A operations are prohibited if the engines do not meet the power check requirements. Refer to Engine Power Check procedure in **Gen PAC Hvr Cont** tab.

## ROTOR BRAKE LIMITATIONS

Rotor brake can only be applied ON GROUND with the following engine logic:

Engine 1 OFF or in ACCESSORY mode and engine 2 OFF:

Maximum rotor speed for normal brake application .................................. 40%
Application with NR above 40% can be done only in emergency.

Rapid turnaround rotor braking applications ............................... 4 in one hour
(minimum time between applications 15 minutes)

### ROTOR BRAKE TEMPERATURES (°C)

Maximum on ground ............................................................................. 449

Maximum in flight .................................................................................. 199

## WHEEL BRAKE LIMITATIONS

Maximum running speed for wheel brake application .......................... 40 knots

Parking on dry and paved slopes up to 12° is permitted for a maximum of 20 hours.

# FUEL SYSTEM LIMITATIONS

## FUEL CAPACITIES

Total capacity (1° pitch/0° roll)........................................................ 1130 litres

Usable capacity (1° pitch/0° roll) .........1110 litres (888 kg indicated, calculated with a fuel density of 0,8 kg/litre)

## UNUSABLE FUEL

In coordinated (ball centered) flight.............. 0 kg indicated (10 litres per tank)

With **1(2) FUEL LOW** caution illuminated, avoid hovering in cross winds or unbalanced flight. Avoid abrupt aircraft manoeuvres.

Unusable OEI: the fuel associated to the inoperative engine is unusable when the quantity level is below 200 litres (160 kg indicated, calculated with a fuel density of 0,8 kg/litre).

With FUEL XFER SYSTEM installed and used (refer to Supplement 39 of RFM):

Unusable fuel in the tank associated to the failed engine (OEI) is unusable when the quantity level is below 10 litres (0 kg indicated, calculated with a fuel density of 0,8 kg/litre.

## FUEL FLOW INDICATION

Engine fuel flow shall not be used for fuel planning as the indication is estimated.

## AUTHORIZED FUEL TYPES

The fuel types shown in the table below have been authorized for use with the P&WC 210A engines:

**AUTHORIZED FUELS**

| Fuel Type | Applicable Specification |
|---|---|
| JET A<br>JET A-1 | ASTM D1655<br>ASTM D1655<br>DEF STAN 91-91 AVTUR<br>NATO Code F-35 |
| JP-8<br><br><br>JP-8+100 | DEF STAN 91-87-2002 AVTUR/FSII<br>MIL-DTL-83133<br>NATO Code F-34<br>MIL-DTL-83133<br>NATO Code F-37 |
| No. 3 Jet Fuel | GB 6537-2006 |

**Note**

Any mixture of authorized fuels may be used. Additives are not required and not authorised

.

**Fuel Temperature Limitations**

| Fuel | Min Temp Limit |
|---|---|
| JET A | -29°C (-20ºF) (see Note) |
| JET A-1 | -29°C (-20ºF) (see Note) |
| JP-8, JP-8+100 | -29°C (-20ºF) (see Note) |
| No. 3 Jet Fuel | -29°C (-20ºF) (see Note) |
| **Note** Starts at fuel temperature below -29 °C may be attempted providing other specified engine limitations are observed. | |

# LUBRICANT LIMITATIONS

ENG SYST

## AUTHORIZED ENGINE OILS

The oils shown in the table below have been authorized for use with the P&WC 210A engines. Any brand approved under the applicable specification may be used.

**AUTHORIZED ENGINE OILS**

| Oil Type | Applicable Specification | Brand Names (For reference only) |
|---|---|---|
| Type II<br>(5cs) | D50TF1 (GE Spec)<br>MIL-PRF-23699 | Aero-Shell Turbine Oil 500<br>Aero-Shell Turbine Oil 560<br>Castrol 500<br>Mobil Jet Oil II<br>Exxon Turbo Oil 2380<br>Eastman Turbo Oil 2380<br>TurboNycoil TN 600 |

**Note**

Mixing of oils by type is acceptable but not recommended.

## AUTHORIZED TRANSMISSION OIL

**AUTHORIZED TRANSMISSION OIL**

| Applicable Specification | Brand Names |
|---|---|
| DOD-L-85734 | ATO555 |

## AUTHORIZED HYDRAULICS FLUIDS

The hydraulic fluids shown in the table below have been authorized for use in all hydraulic components. Any brand approved under the applicable specifications may be used.

**AUTHORIZED HYDRAULIC FLUIDS**

| Applicable Specification | Brand Names (For reference only) |
|---|---|
| MIL-PRF-83282 | AEROSHELL FLUID 31 |
| Alternative:<br>MIL-PRF-87257 | AEROSHELL FLUID 51 |

**CAUTION**

Mixing of hydraulic fluid, by specification or brand name, is prohibited.

# AVIONICS & FMS LIMITATIONS

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# AVIONIC LIMITATIONS

## AFCS LIMITATIONS

Intentional P/R - C/Y trim de-clutching (in EDCU TRIM page) flight is prohibited.

AFCS upper modes must be disengaged, except HOV, TDH, TU, and coupled approach modes VAPP, LOC/GS, NAPP, NLOC/NGS, if any of the following conditions apply:

— after one AP has failed, ("1(2) AP OFF" or "1(2) AP FAIL" message displayed);

— after one AHRS has failed ("AP AHRS 1(2) FAIL" or "1(2) AHRS FAIL" message displayed);

— after ADI-STDBY has failed ("AP DEGR" message displayed);

— after main rotor series actuator has failed "1(2) AP MRA FAIL" message displayed);

— after tail rotor series actuator has failed ("1(2) AP Y FAIL" message displayed);

— after loss of CAS messages and audio attention getter (“AP CAS FAIL” essage displayed);

— in case of AFCS oscillatory malfunction.

**CAUTION**

In flight conditions which cause PWR LIM caption to be displayed,
fly attentive or
reduce/increase power accordingly to keep power margin.

## AFCS MODE LIMITATIONS

The following modes may only be engaged over flat surfaces which are clear of obstructions: RHT, TU, TDH.

The following controls on AFCS Control Panel are inoperative: VNAV, MOT, WTR; "FUNCTION UNAVL" will be displayed on PFD if operated.
"FUNCTION UNAVL" will also be displayed on PFD if TD/TDH/TU modes are operated when their own option file for their use has not been enabled.

AVIONICS
FMS

## AFCS MODES - ENVELOPE OF ENGAGEMENT AND MINIMUM USE HEIGHT (MUH)

| AFCS Mode | Engagement Range | MUH | Note |
|---|---|---|---|
| **ALT** | 0 KIAS to Vne | 200 ft AGL in cruise<br>50 ft AGL in hover / low speed | - |
| **ALTA*** | 40 KIAS to Vne | 200 ft AGL. | Maximum selectable VS range datum is -1500 to 2000 fpm; engagement beyond these limits will result in the mode returning the aircraft to the maximum VS envelope. |
| **VS*** | 40 KIAS to Vne | 200 ft AGL<br>(in descent). | Maximum selectable VS range datum is -1500 to 2000 fpm; engagement beyond these limits will result in the mode returning the aircraft to the maximum VS envelope. |
| **RHT** | 0 KIAS to Vne.<br>15 ft to 2050 ft AGL. | 150 ft AGL in cruise<br>30 ft AGL in hover / low speed | Maximum selectable height range datum is 30 to 2000 ft; engagement beyond these limits will result in the mode returning the aircraft to the maximum height envelope. |
| **GA** | 0 KIAS to 130 KIAS (up to 5000 ft, then reduce 2 kts every 1000 ft). | 150 ft AGL in cruise<br>30 ft AGL in hover / low speed<br>160 ft AGL during approach. | - |
| **TD*** | 40 KIAS to Vne Above 200 ft | 150 ft AGL. | - |
| | 75 KIAS to Vne<br>150 ft to 200 ft | | |
| **TDH** | 0 KIAS to 75 KIAS<br>150 ft to 200 ft. | 30 ft AGL | - |
| | 0 KIAS to 85 KIAS<br>30 ft to 150 ft | | |
| **TU** | 0 KIAS to 80 KIAS<br>10 ft to 200 ft AGL | 30 ft AGL | - |

| AFCS Mode | Engagement Range | MUH | Note |
|---|---|---|---|
| **IAS*** | 40 KIAS to Vne | 150 ft AGL.in cruise<br>160 ft AGL during approach. | Maximum selectable airspeed range datum is 45 to Vne less 5 KIAS; engagement beyond these limits will result in the mode returning the aircraft to the maximum airspeed envelope. |
| **GSPD** | 30 kts to 220 kts Groundspeed.<br>40 KIAS to Vne | 150 ft AGL.<br>160 ft AGL during approach. | If Groundspeed datum control results in airspeed below 50 KIAS (Vmini) or above Vne less 5 KIAS, Airspeed Envelope Protection (AEP) logic will intervene. |
| **DCL** | 85 KIAS to Vne. | 230 ft AGL. | - |
| **HOV** | Groundspeed<br>- less than 60 kts forward;<br>- less than 40 kts lateral or aft;<br>with airspeed less than 80 KIAS. | 30 ft AGL. | - |
| **HDG*** | 0 KIAS to Vne. | 150 ft AGL in cruise<br>30 ft AGL in hover / low speed<br>160 ft AGL during approach. | - |
| **NAV* (NAV, VOR)** | 40 KIAS to Vne | 150 ft AGL<br>160 ft AGL during approach. | - |
| **APP* (VAPP, LOC, BC, GS, NLOC, NGS, NAPP, NDCL)** | 40 KIAS to 130 KIAS (up to 5000 ft, then reduce 2 kts every 1000 ft). | 160 ft AGL. | - |

**Note***

- Hover / low speed condition is defined by airspeed below 55 KIAS (+/- 2 Kts) or HOV/TDH mode engaged.
- Cruise condition is defined by airspeed above 55 KIAS (+/- 2 Kts) and HOV/TDH mode NOT engaged.
- Automatic disengagement of these modes below 35 KIAS.

**AFCS APPROACH MODES LIMITATIONS**

Maximum ROD ........................................................................ 900 fpm

Maximum airspeed for AFCS coupled approach .......... 130 KIAS up to 5000 ft
then reduce 2 kts every 1000 ft

In case of approach uncoupled on pitch axis below 50 KIAS, IAS mode must be engaged.
The helicopter is certified to carry out CAT I ILS approaches up to 7 degrees glideslope.

**TRANSPONDER (XPDR) LIMITATIONS**

The Mode S system installed satisfies the data requirements of ICAO Doc 7030/4.

The installation of the ADS-B Out system has been shown to meet the equipment requirements of 14CFR §91.227 and AMC 20-24.

Pilot and Co-pilot shall not change the Transponder codes at the same time using different means (i.e. EDCU and PFD/RFI).

**FMS LIMITATIONS**

1. The pilot must verify the currency of the Navigation Data Base (NAV DB) on-board and the coherence of the FMS with the procedure to be flown.
2. The aircraft must have approved radio navigation equipment installed and operating appropriate to the route of flight.
3. The FMS is not Multi-Sensor Approved for navigation, therefore manual FMS reversion to DME/DME or VOR/DME as FMS navigation sensors source is prohibited. In case dual GNSS failure or GNSS outage occur with automatic FMS reversion to DME/DME or VOR/DME as FMS navigation sensors source, the FMS must not be used for Navigation. The pilot must revert to Radio Navigation.
4. When out of SBAS coverage or in case of SBAS outage, Predictive RAIM request on Destination waypoint has to be checked on GPS PRED-RAIM EDCU Page.
5. Maximum ROD during coupled FMS Approaches ........................ 800 fpm

## HEADSET / HELMET LIMITATIONS

Headset/Helmet type used in the aircraft must be of the same electrical characteristics and authorised by Aircraft Manufacturer.

# CHARTS & DIAGRAMS

CHARTS
DIAGS

CHARTS
DIAGS

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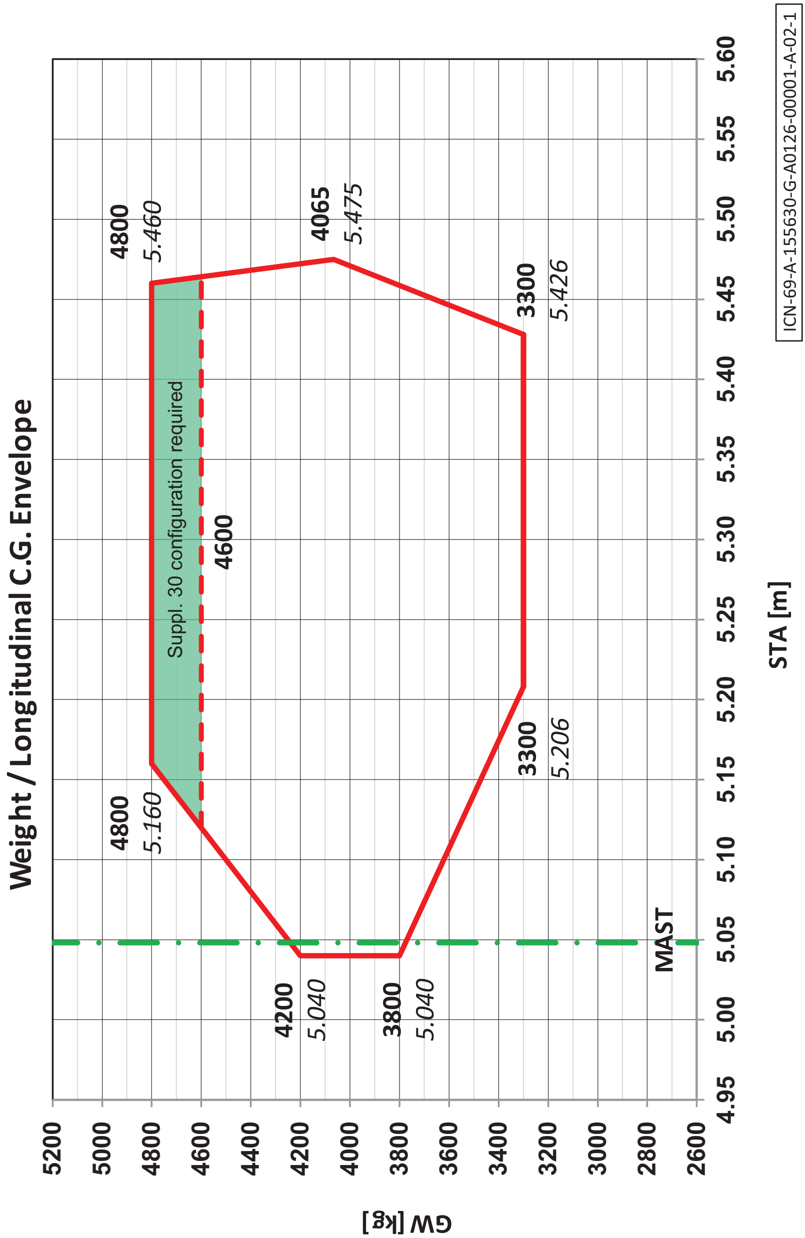


Figure Lim 1: Weight and Longitudinal CG Limitations (Metric Units)

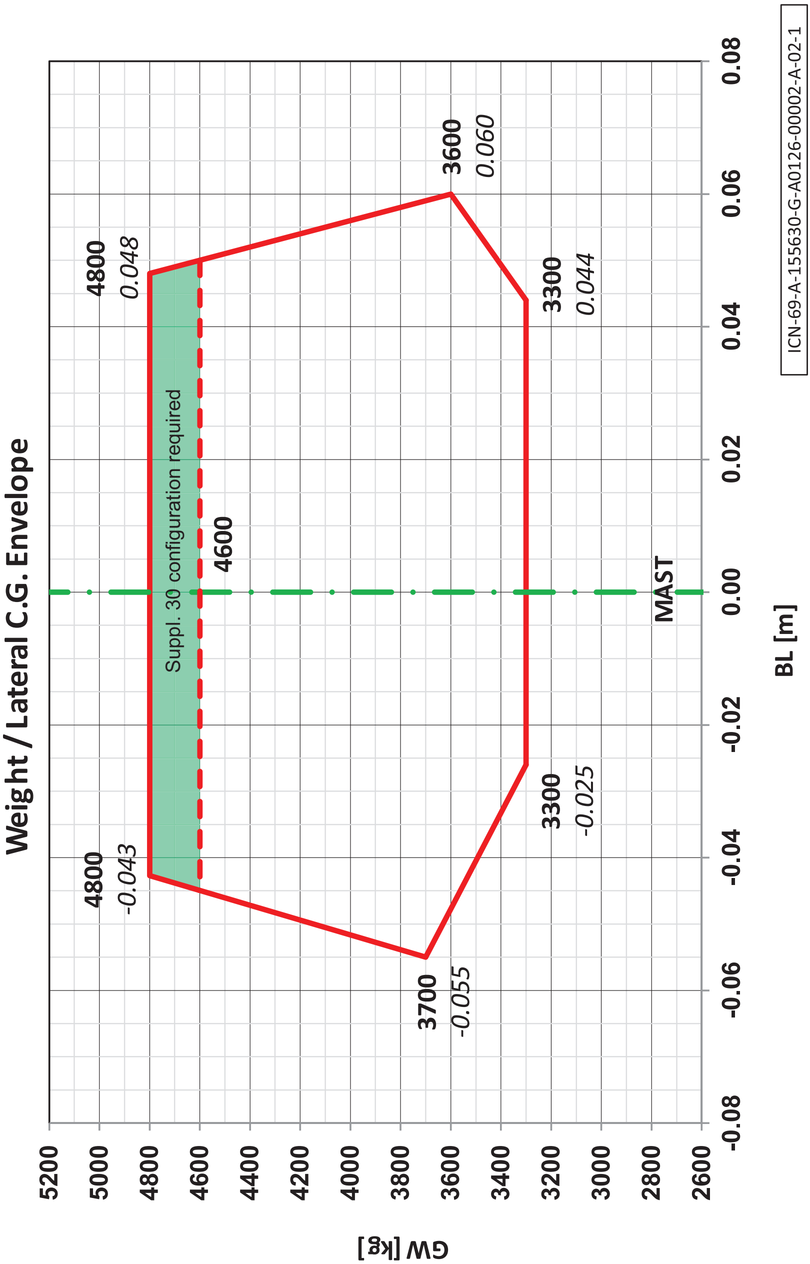


Figure Lim 2: Weight and Lateral CG Limitations (Metric Units)

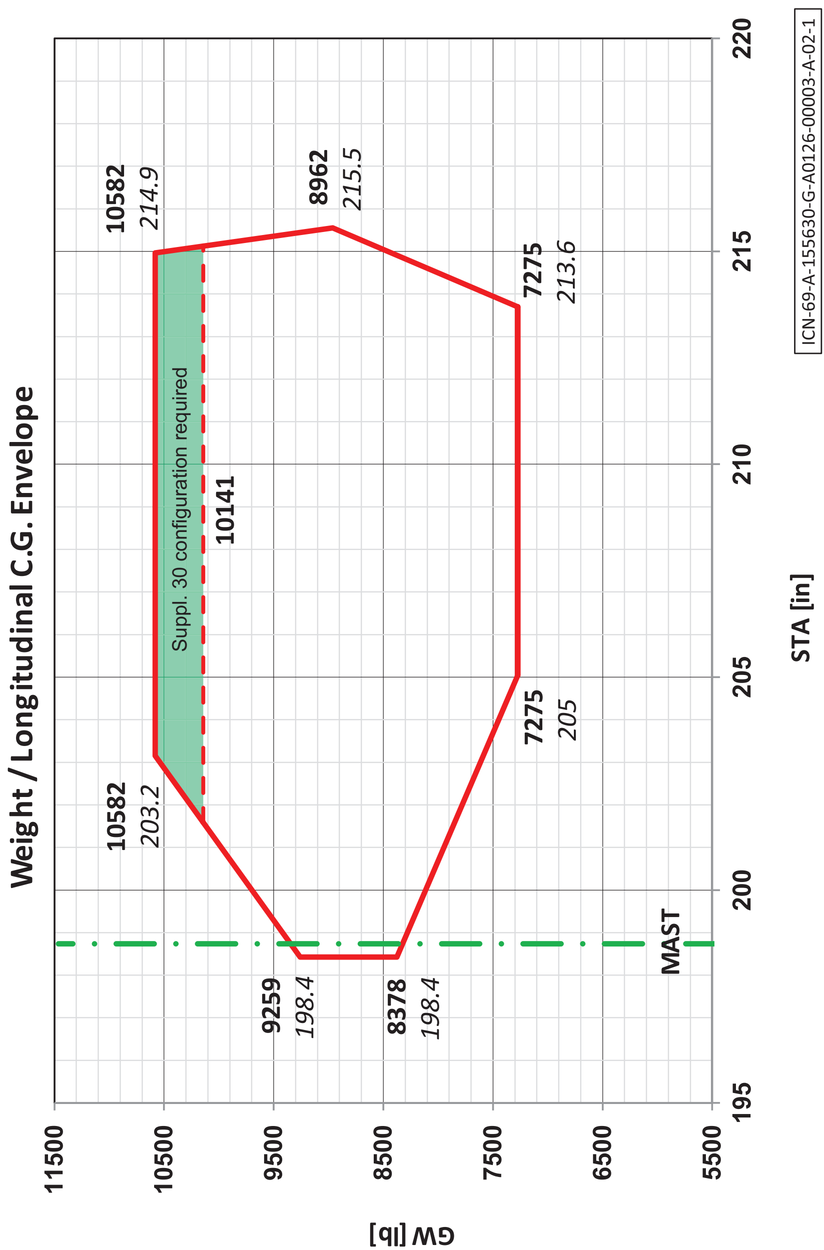


Figure Lim 3: Weight and Longitudinal CG Limitations (Imperial Units)

CHARTS
DIAGS

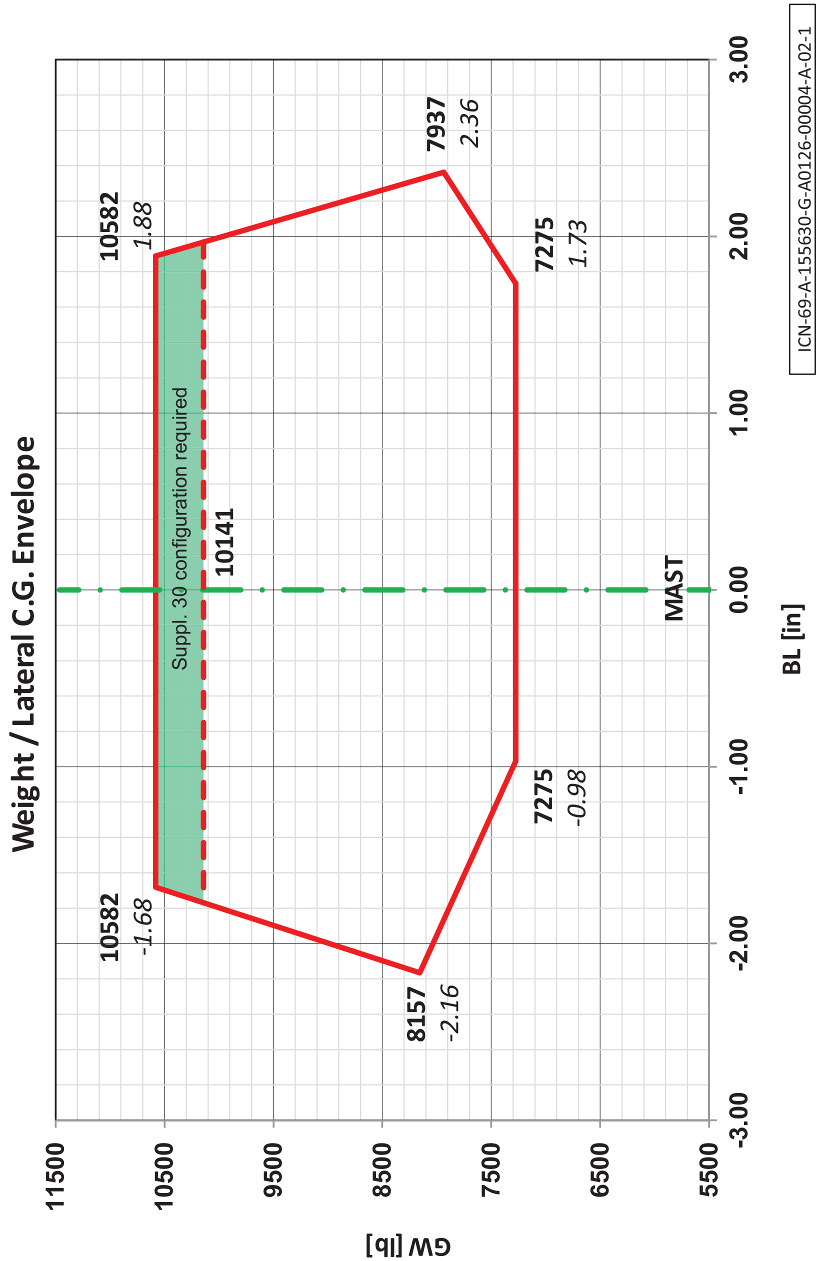


Figure Lim 4: Weight and Lateral CG Limitations (Imperial Units)

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
**AEO TOP**

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft

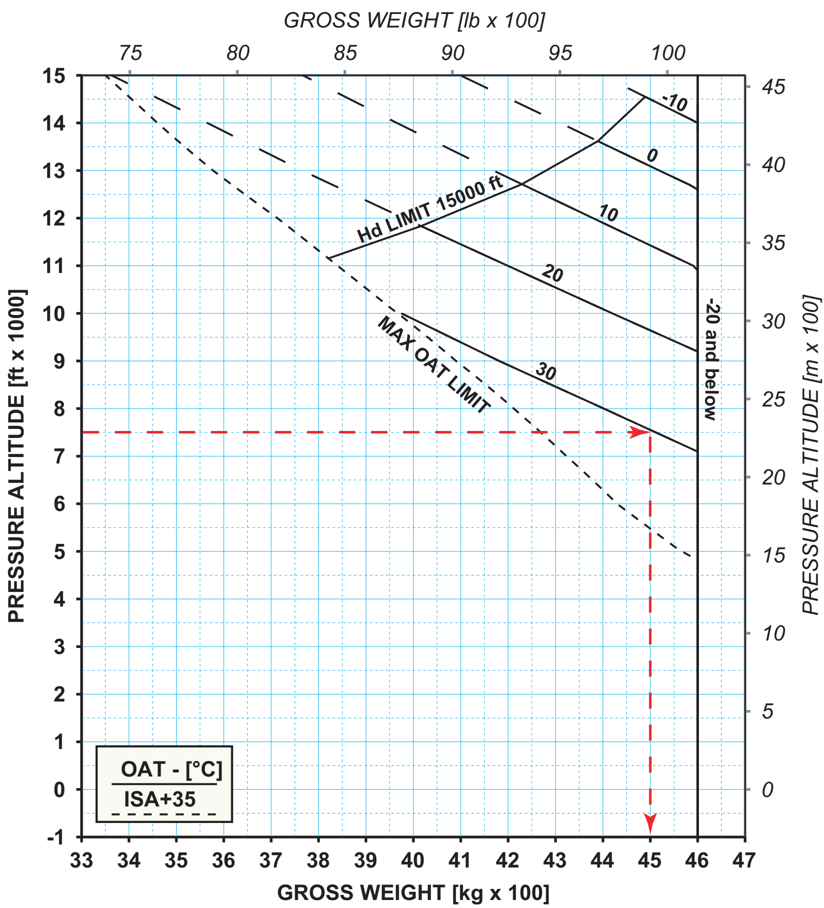


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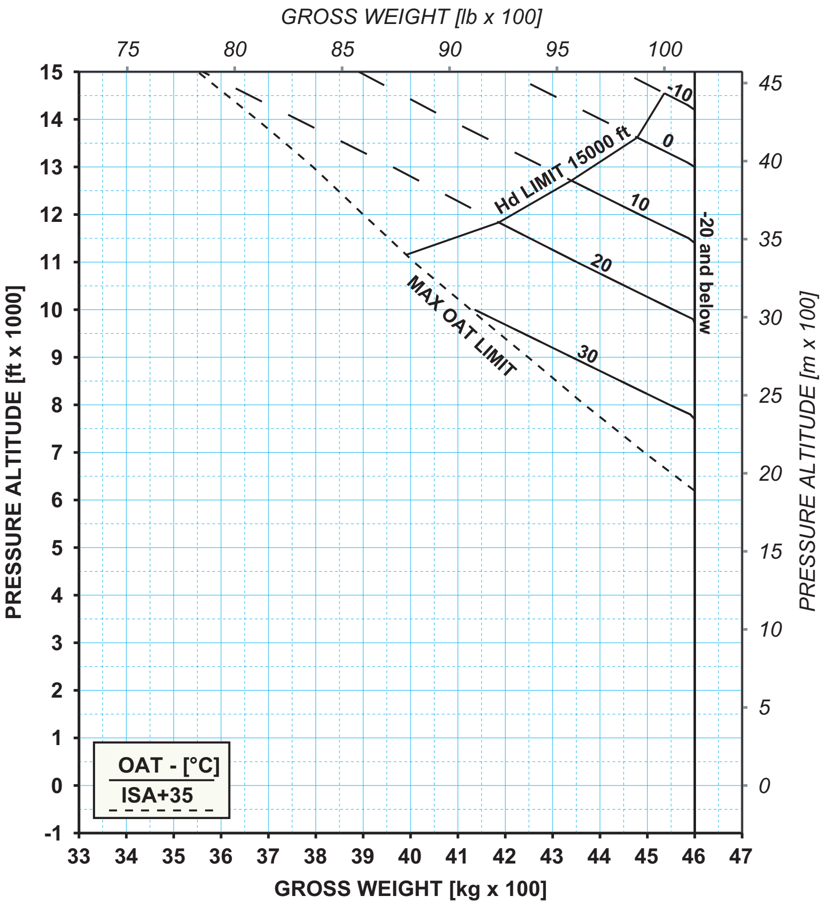
Figure Lim 5: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - Up to 4600 kg

CHARTS
DIAGS

## WAT FOR TAKE OFF AND LANDING
## ZERO WIND OR HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 25%
WHEEL HEIGHT: 6 ft




169F1560A001 Issue H

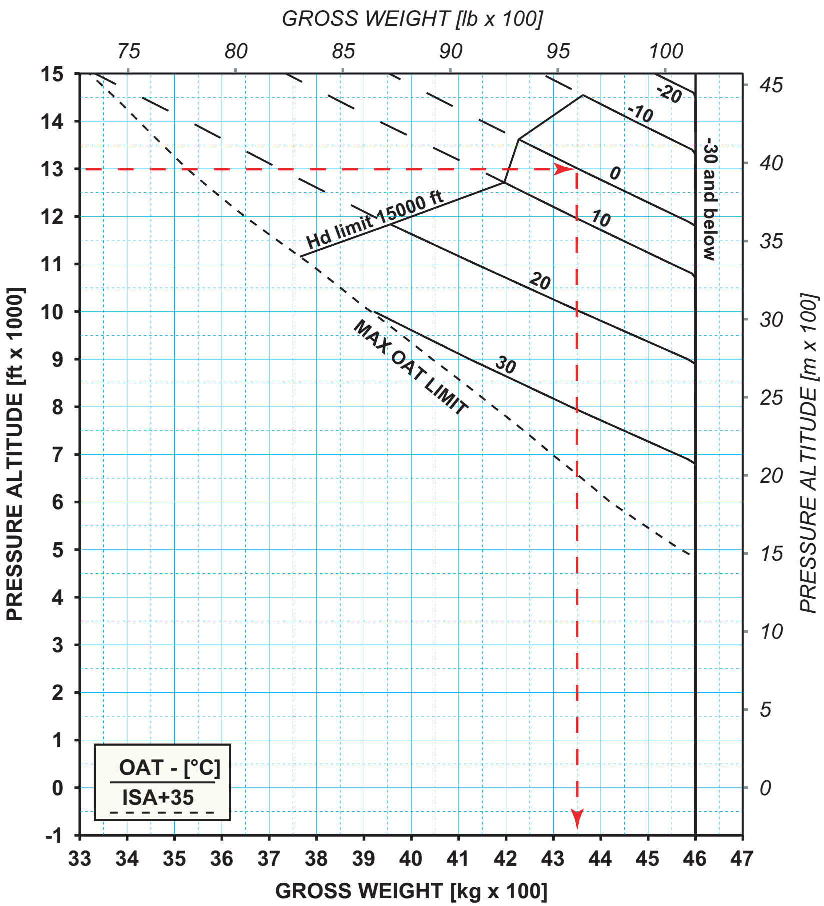
ICN-69-A-154100-G-A0126-00014-A-04-1

Figure Lim 6: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - Up to 4600 kg

WAT FOR TAKE OFF AND LANDING
ZERO WIND OR HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6 ft

ELECTRICAL LOAD: 75%
HEATER ON



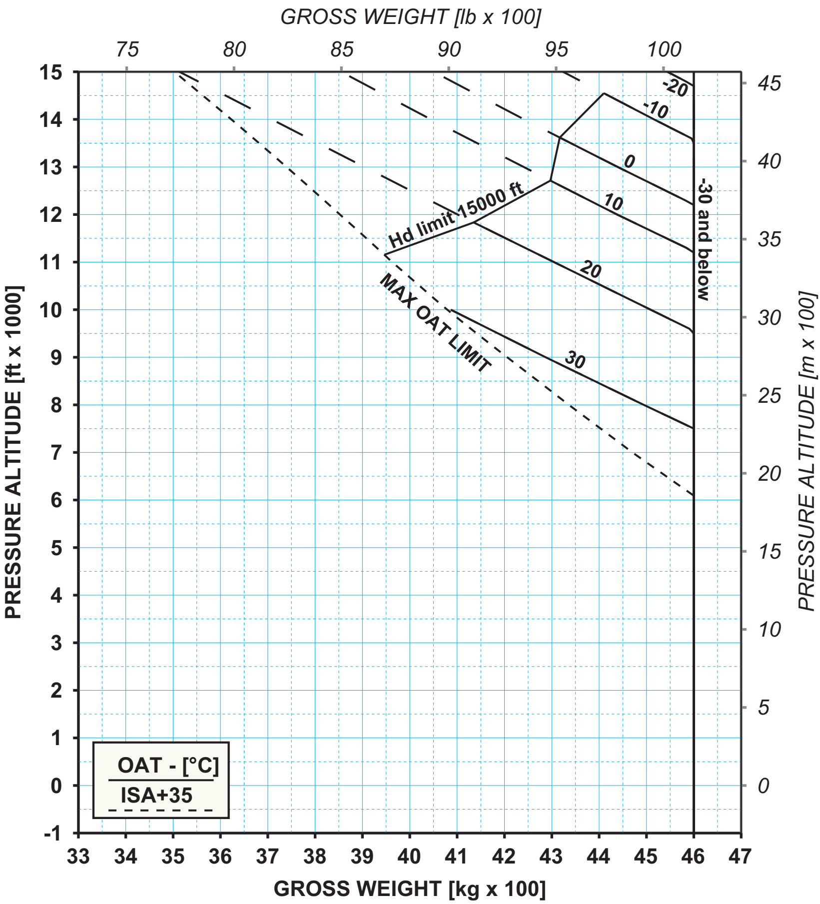

169F1580A003 Issue F

ICN-69-A-154101-G-A0126-00013-A-05-1

Figure Lim 7: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - Heater ON - Up to 4600 kg

## WAT FOR TAKE OFF AND LANDING
## ZERO WIND OR HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6 ft
ELECTRICAL LOAD: 25%
HEATER ON




169F1580A003 Issue F

ICN-69-A-154101-G-A0126-00014-A-05-1

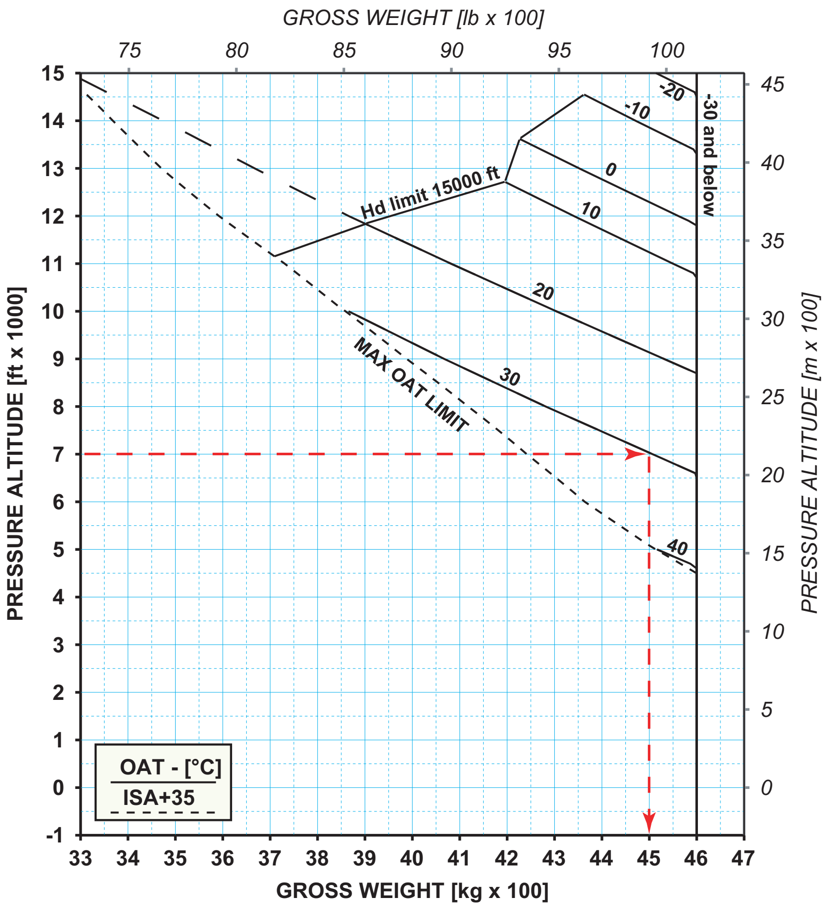
Figure Lim 8: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - Heater ON - Up to 4600 kg

CHARTS
DIAGS

## WAT FOR TAKE OFF AND LANDING
## ZERO WIND OR HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6 ft

ELECTRICAL LOAD: 75%
ECS ON




169F1580A003 Issue F

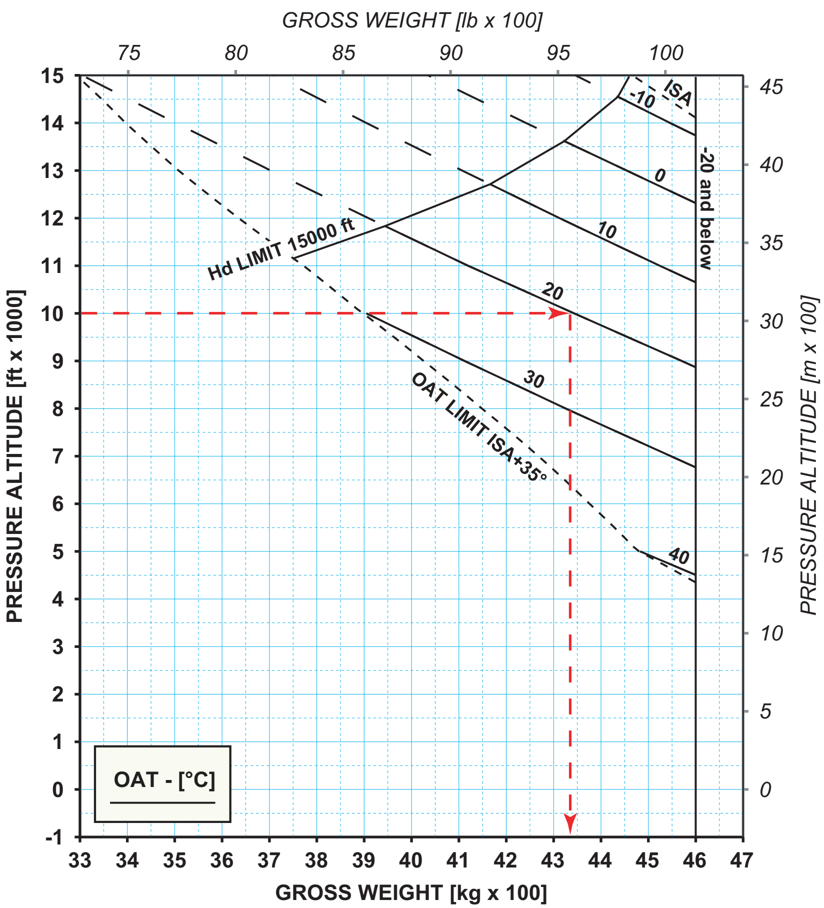
ICN-69-A-154102-G-A0126-00013-A-05-1

Figure Lim 9: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - ECS ON - Up to 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft




169F1580A004 Issue D

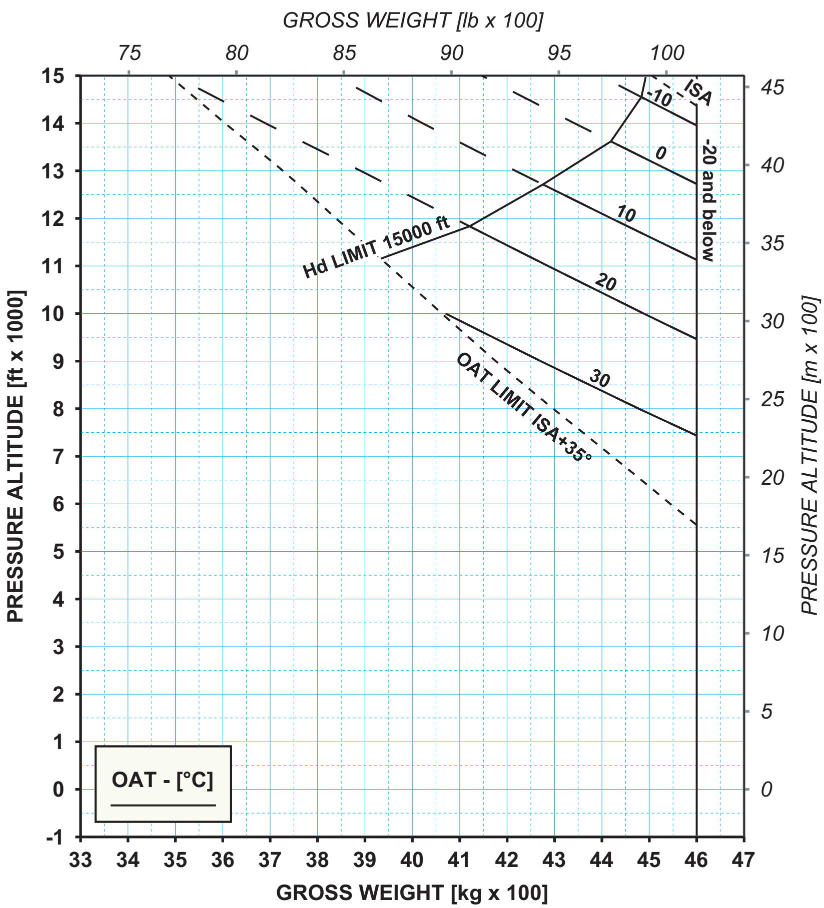
ICN-69-A-155203-G-A0126-00026-A-04-1

Figure Lim 10: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - EAPS OFF - Up to 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 25%
WHEEL HEIGHT: 6 ft




169F1580A004 Issue D

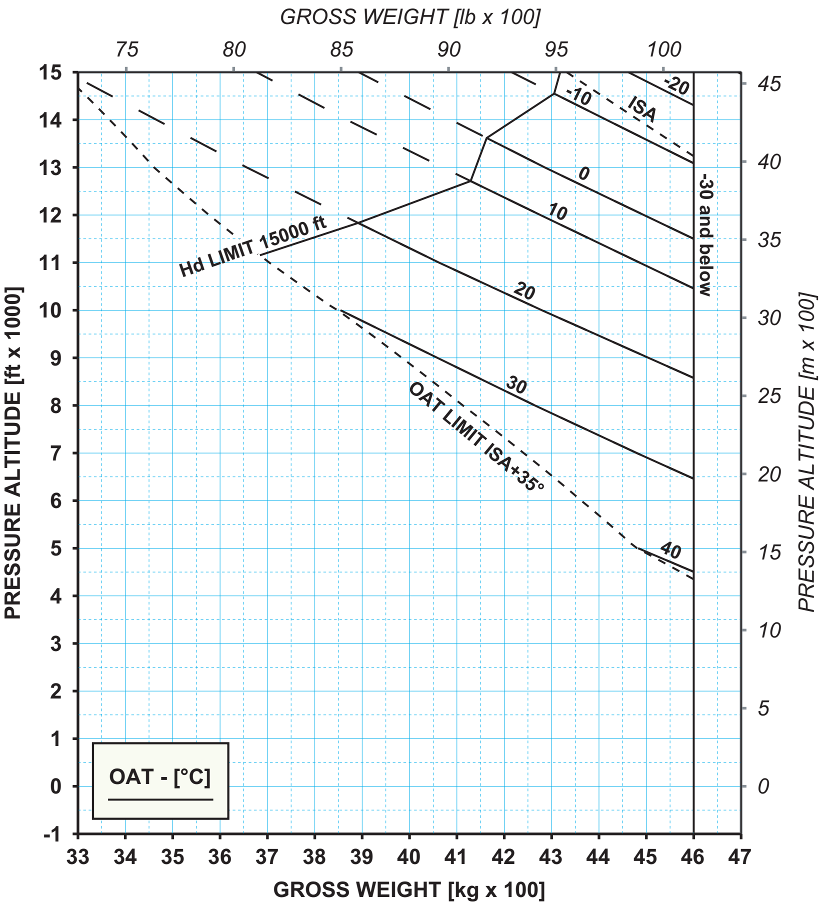
ICN-69-A-155203-G-A0126-00029-A-03-1

Figure Lim 11: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - EAPS OFF - Up to 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft
HEATER ON




169F1580A004 Issue D

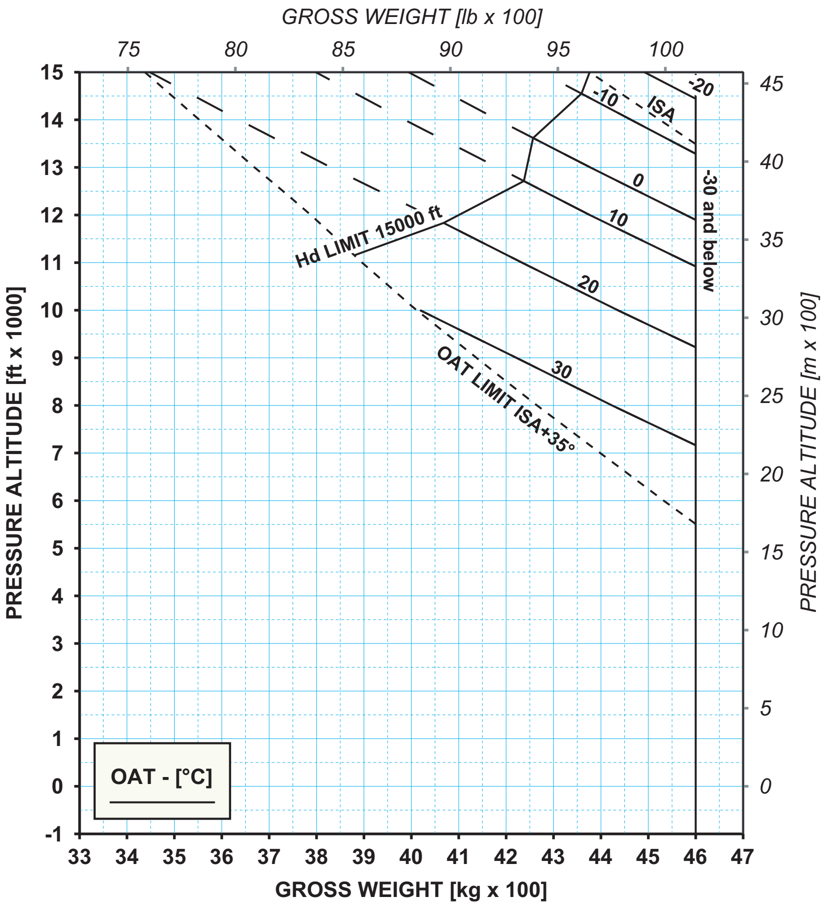
ICN-69-A-155203-G-A0126-00027-A-04-1

Figure Lim 12: WAT for Take-Off and Landing Zero Wind or Headwind - AE TOP - EAPS OFF - Heater ON - Up to 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 25%
WHEEL HEIGHT: 6 ft
HEATER ON




169F1580A004 Issue D

ICN-69-A-155203-G-A0126-00030-A-03-1

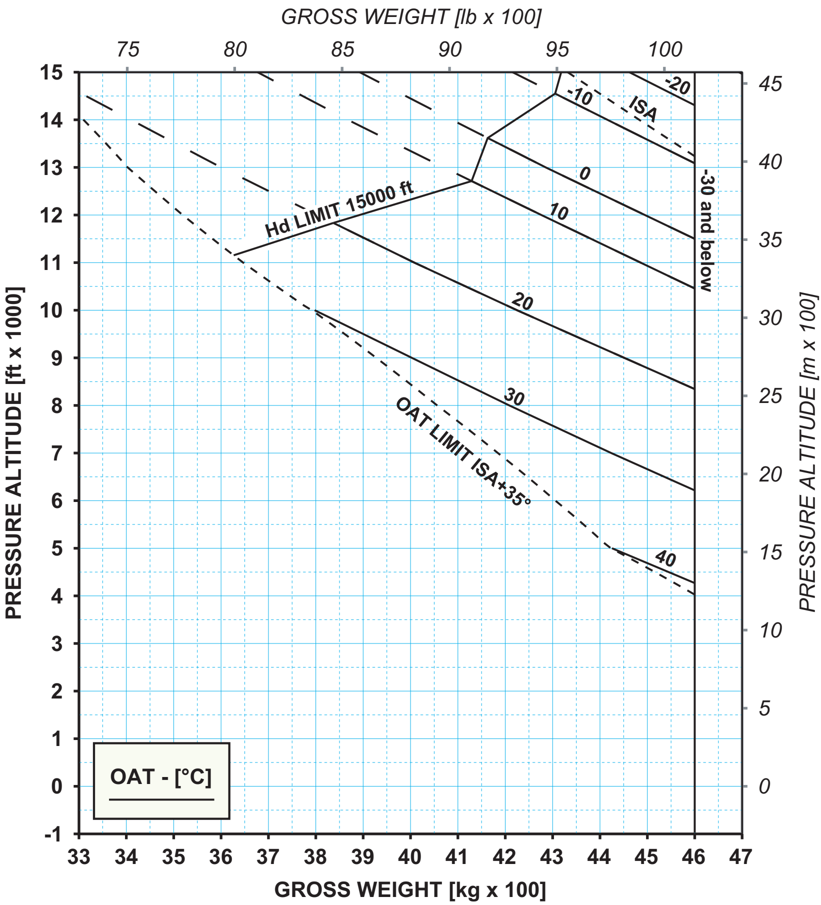
Figure Lim 13: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - EAPS OFF - Heater ON - Up to 4600 kg

CHARTS
DIAGS

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF
ECS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft




169F1580A004 Issue D

ICN-69-A-155203-G-A0126-00028-A-04-1

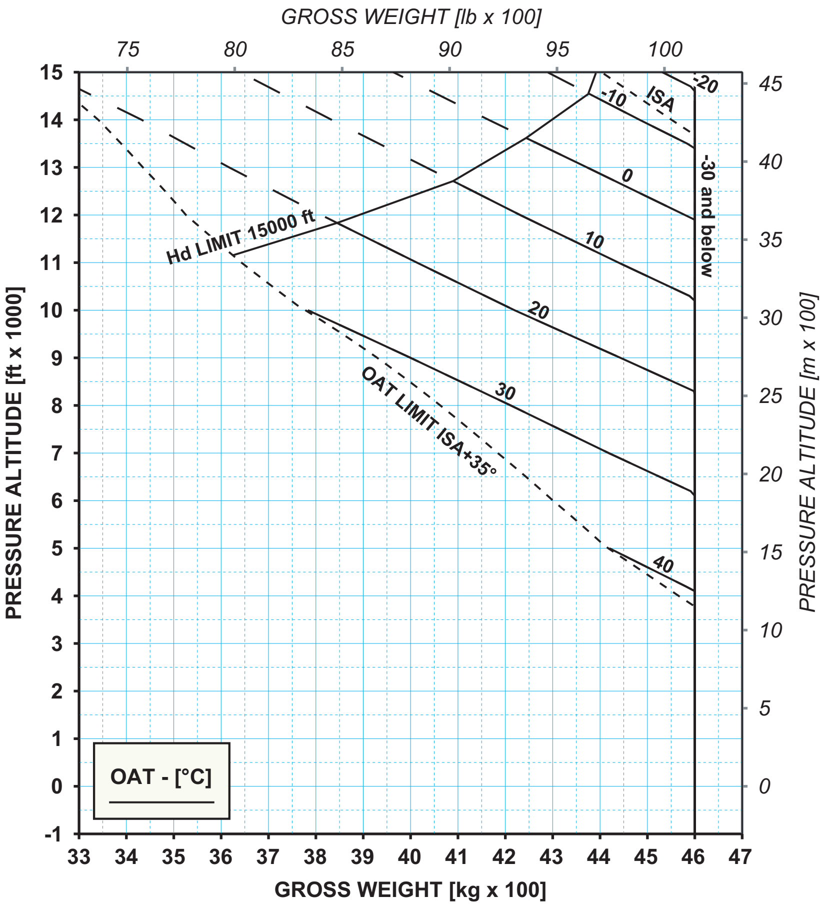
Figure Lim 14: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - EAPS OFF - ECS ON - Up to 4600 kg

CHARTS
DIAGS

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft




169F1580A004 Issue D

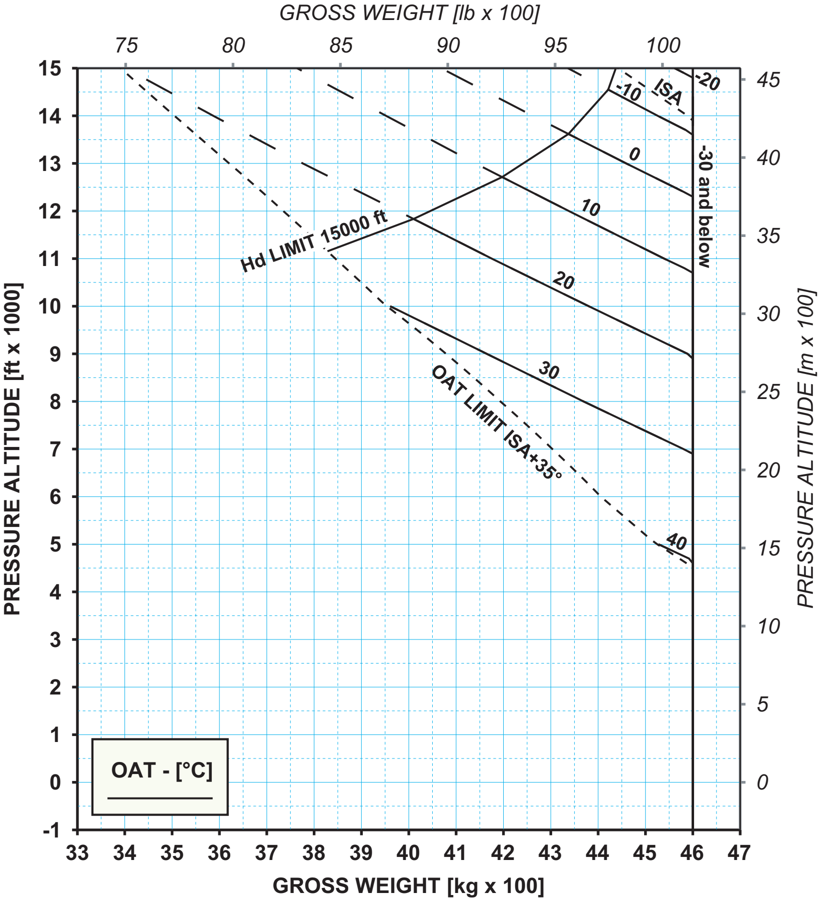
ICN-69-A-155203-G-A0126-00031-A-04-1

Figure Lim 15: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - EAPS ON - Up to 4600 kg

## WAT FOR TAKE OFF AND LANDING
## ZERO WIND OR HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 25%
WHEEL HEIGHT: 6 ft




169F1580A004 Issue D

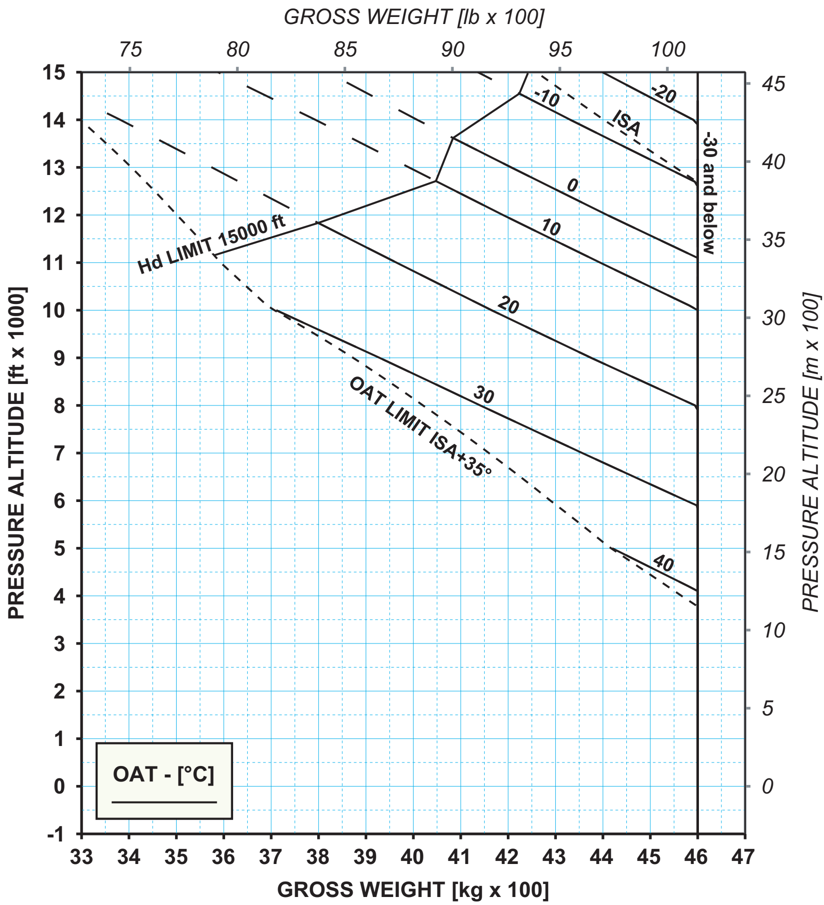
ICN-69-A-155203-G-A0126-00034-A-03-1

Figure Lim 16: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - EAPS ON - Up to 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft
HEATER ON




169F1580A004 Issue D

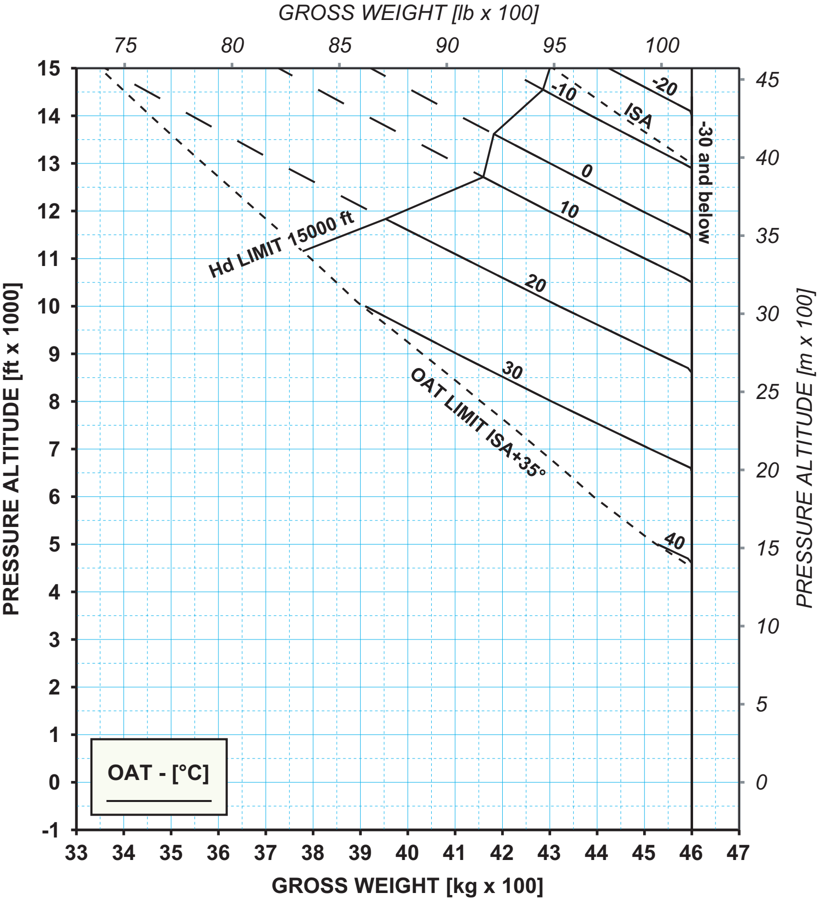
ICN-69-A-155203-G-A0126-00032-A-04-1

Figure Lim 17: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - EAPS ON - Heater ON - Up to 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 25%
WHEEL HEIGHT: 6 ft
HEATER ON




169F1580A004 Issue D

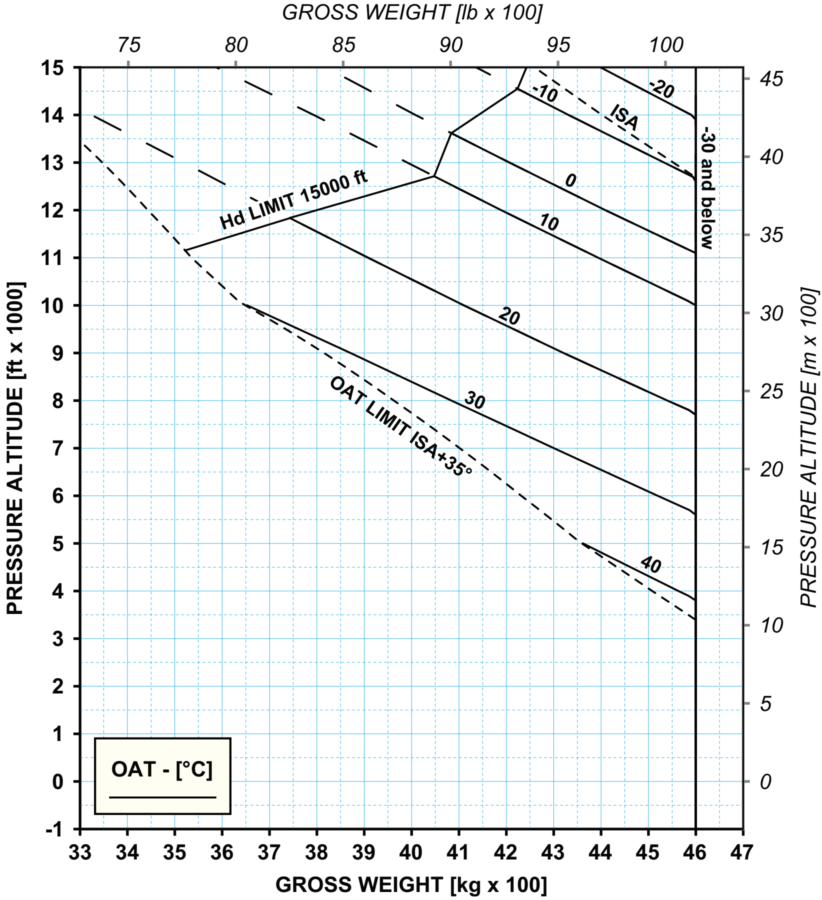
ICN-69-A-155203-G-A0126-00035-A-03-1

Figure Lim 18: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - EAPS ON - Heater ON - Up to 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON
ECS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft




169F1580A004 Issue D

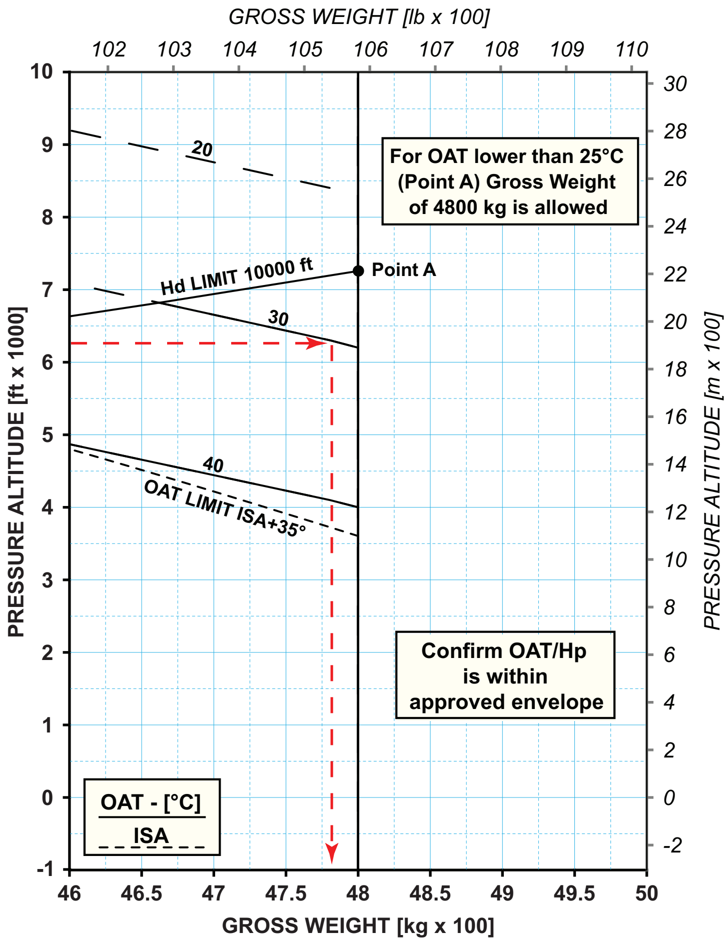
ICN-69-A-155203-G-A0126-00033-A-04-1

Figure Lim 19: WAT for Take-Off and Landing Zero Wind or Headwind - AEO TOP - EAPS ON - ECS ON - Up to 4600 kg

WAT FOR TAKE OFF AND LANDING
ZERO WIND OR HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6ft




169F1580A007 Issue F

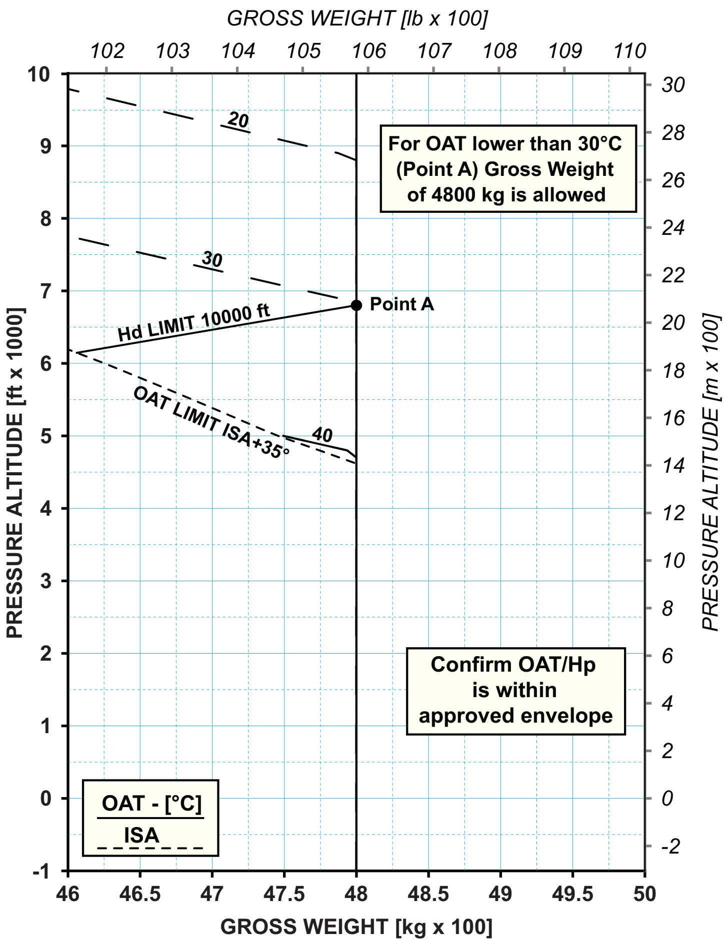
ICN-69-A-155030-G-A0126-00010-A-02-1

Figure Lim 20: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - Above 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
**AEO TOP**

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 25%
WHEEL HEIGHT: 6 ft




169F1580A007 Issue F

ICN-69-A-155030-G-A0126-00011-A-02-1

Figure Lim 21: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - Above 4600 kg

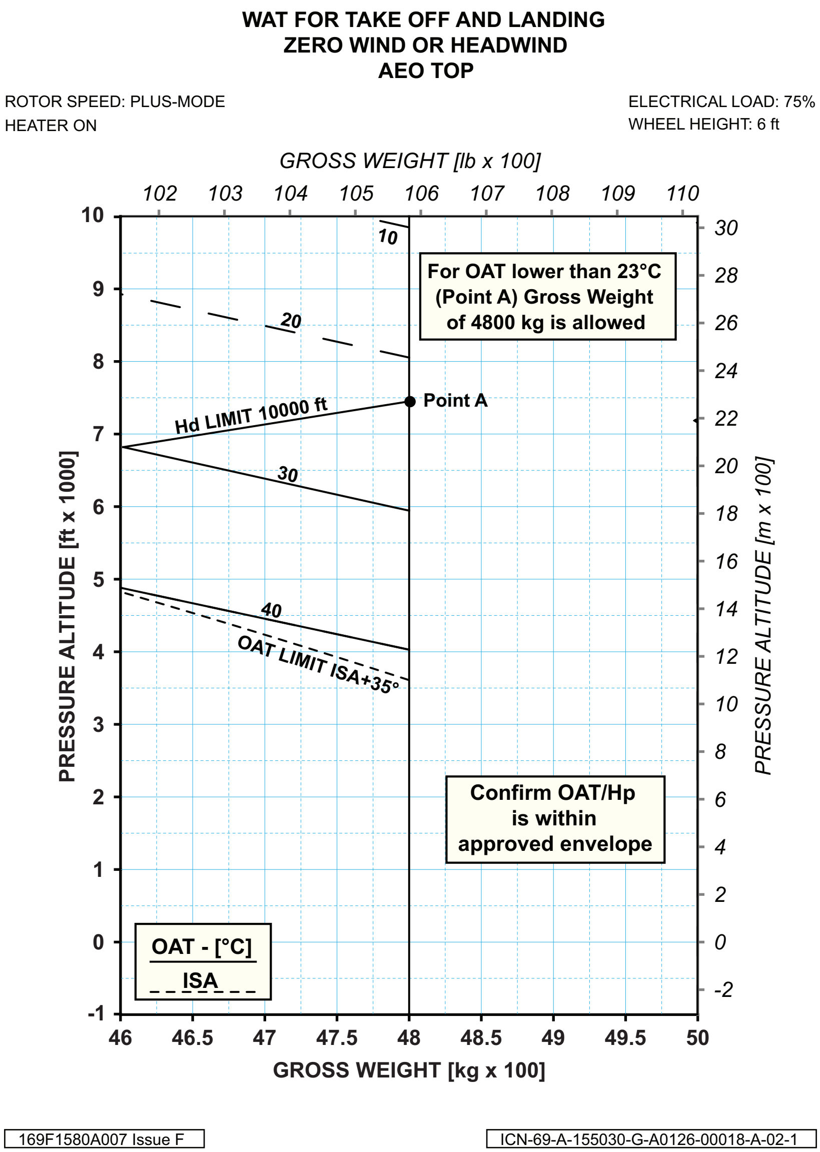



Figure Lim 22: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - Heater ON - Above 4600 kg

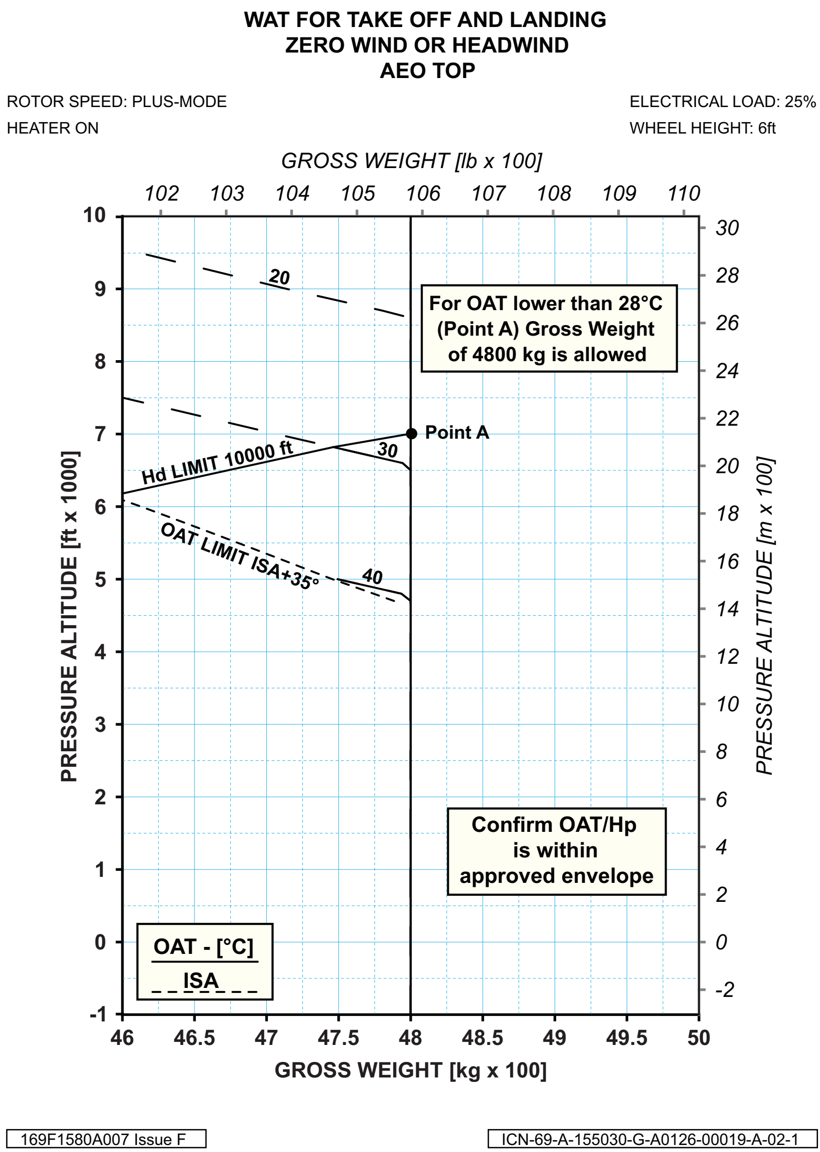
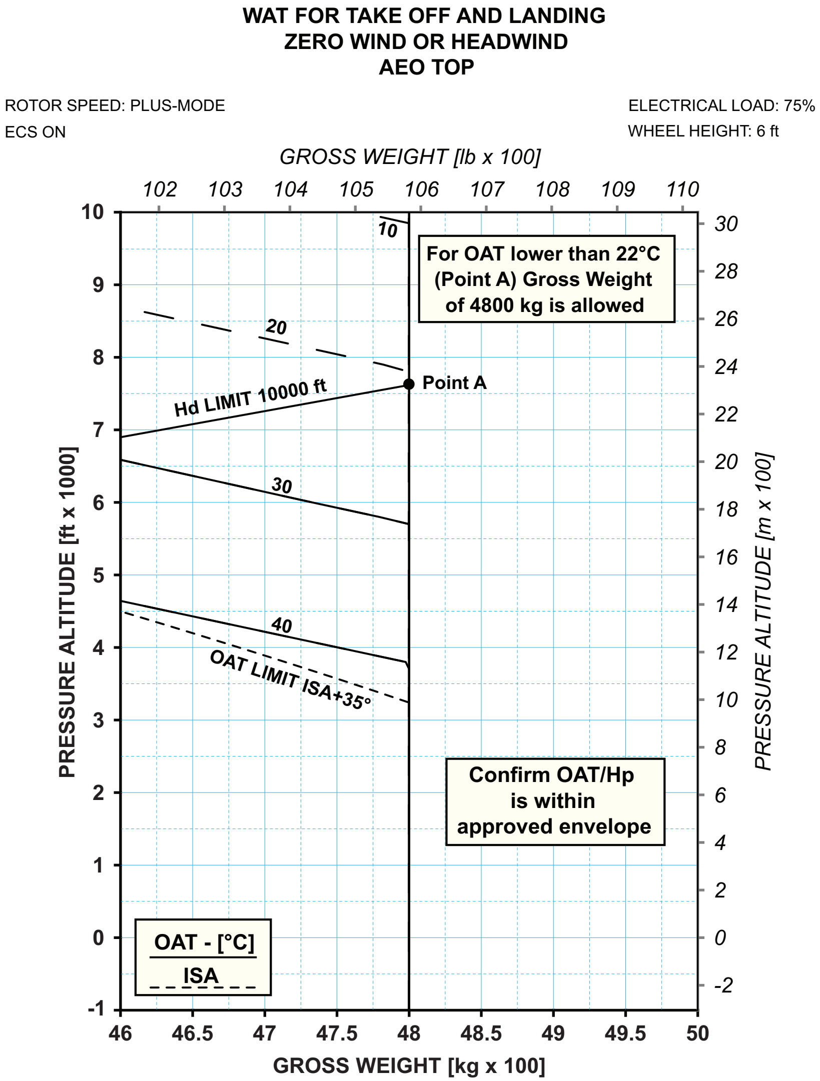



Figure Lim 23: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - Heater ON - Above 4600 kg




169F1580A007 Issue F

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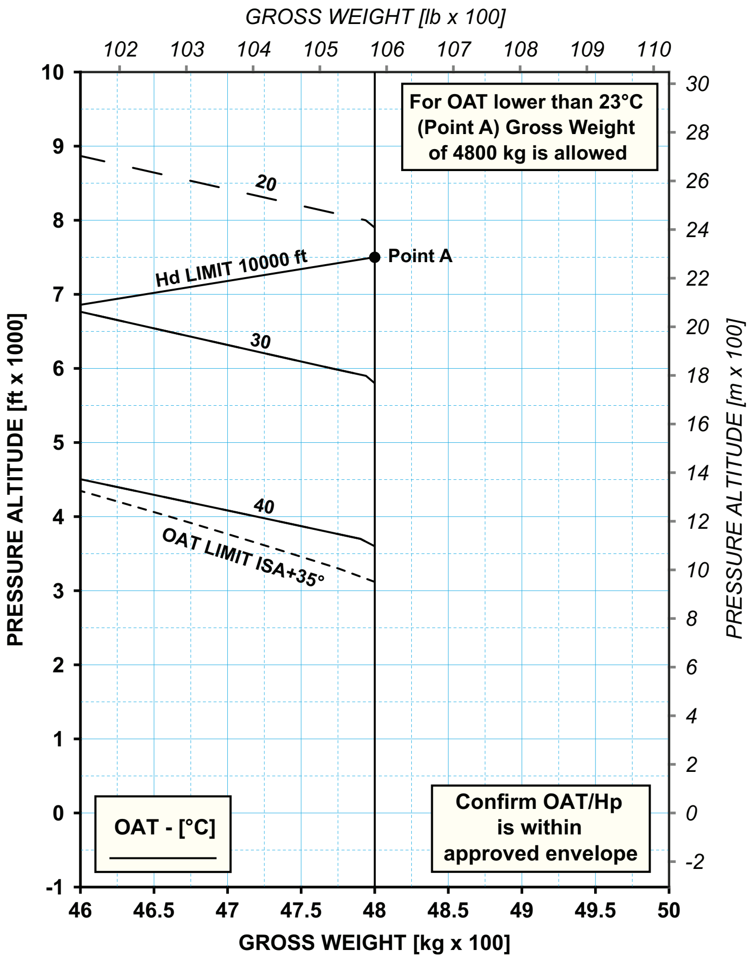
Figure Lim 24: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - ECS ON - Above 4600 kg

## WAT FOR TAKE OFF AND LANDING
## ZERO WIND OR HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft




169F1580A007 Issue F

ICN-69-A-155030-G-A0126-00061-A-03-1

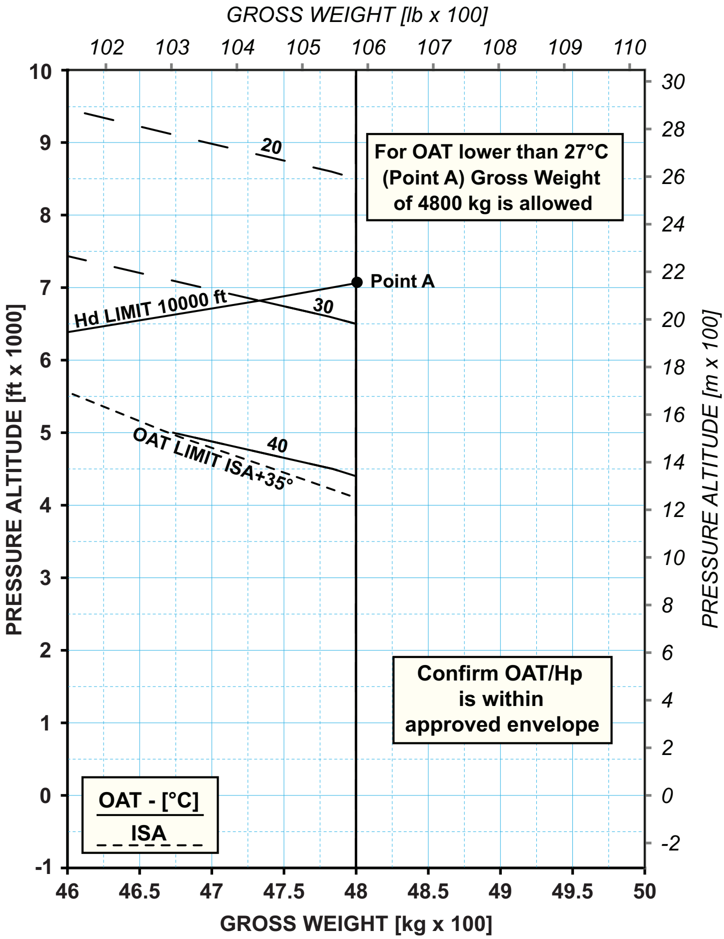
Figure Lim 25: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - EAPS OFF - Above 4600 kg

CHARTS
DIAGS

## WAT FOR TAKE OFF AND LANDING
## ZERO WIND OR HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 25%
WHEEL HEIGHT: 6 ft




169F1580A007 Issue F

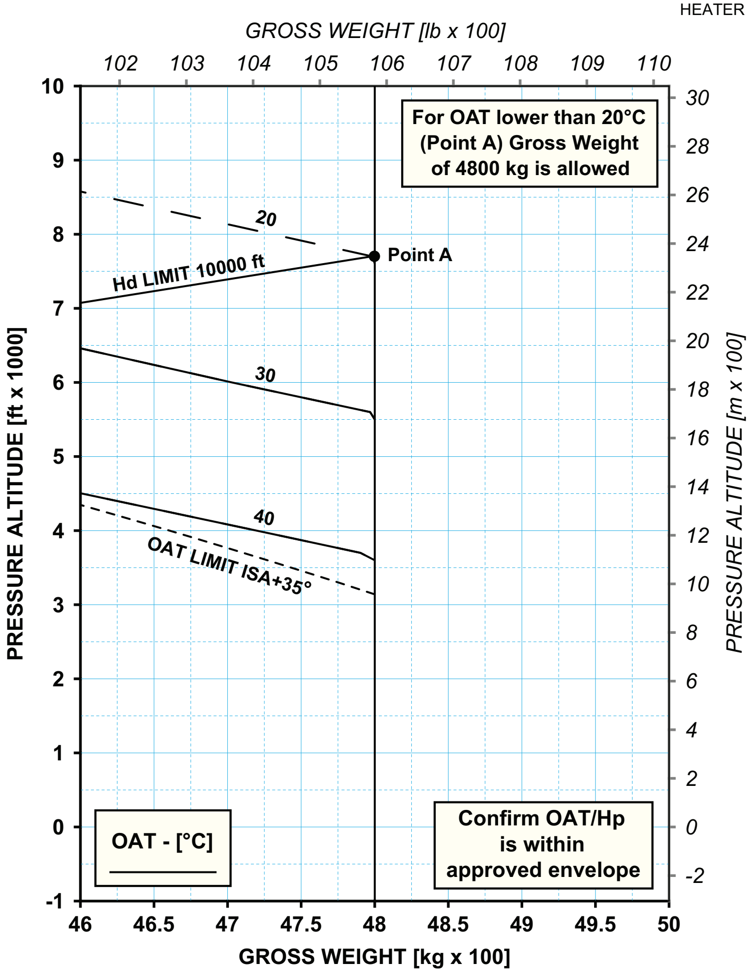
ICN-69-A-155030-G-A0126-00067-A-02-1

Figure Lim 26: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - EAPS OFF - Above 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft
HEATER ON




169F1580A007 Issue F

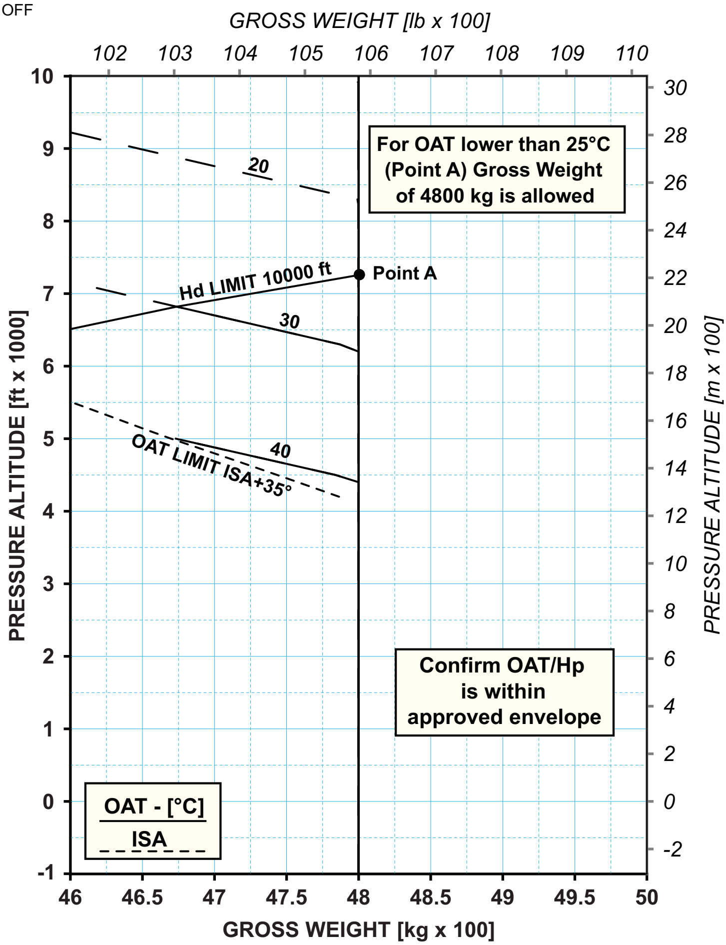
ICN-69-A-155030-G-A0126-00062-A-03-1

Figure Lim 27: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - EAPS OFF - Heater ON - Above 4600 kg

WAT FOR TAKE OFF AND LANDING
ZERO WIND OR HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
HEATER ON
EAPS OFF

ELECTRICAL LOAD: 25%
WHEEL HEIGHT: 6 ft




169F1580A007 Issue F

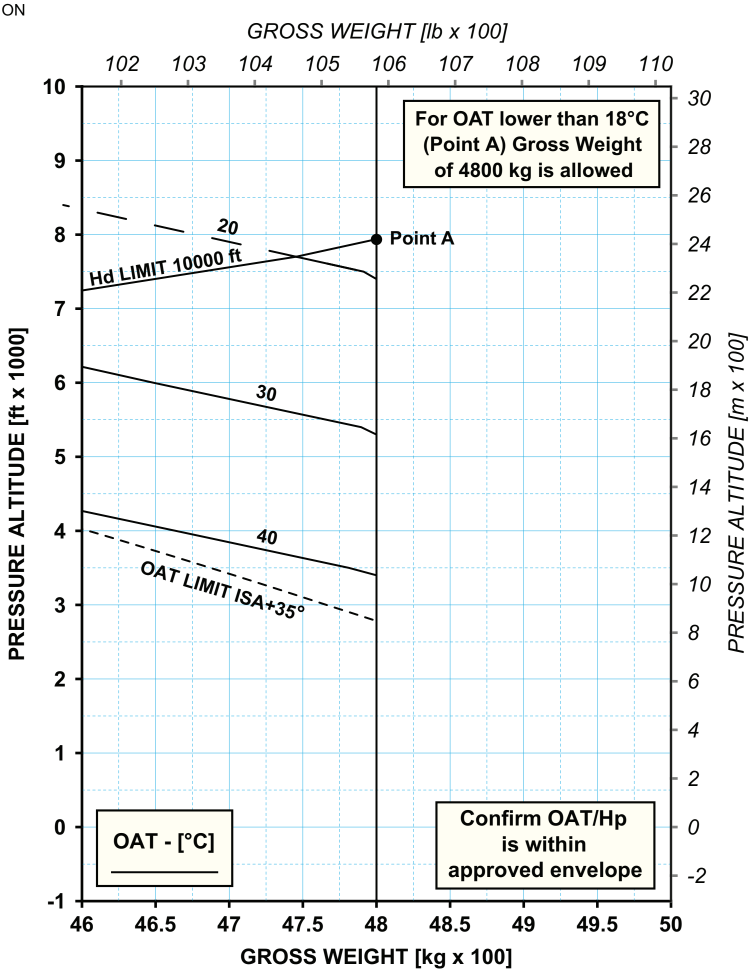
ICN-69-A-155030-G-A0126-00068-A-02-1

Figure Lim 28: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - EAPS OFF - Heater ON - Above 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF
ECS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft




169F1580A007 Issue F

ICN-69-A-155030-G-A0126-00063-A-03-1

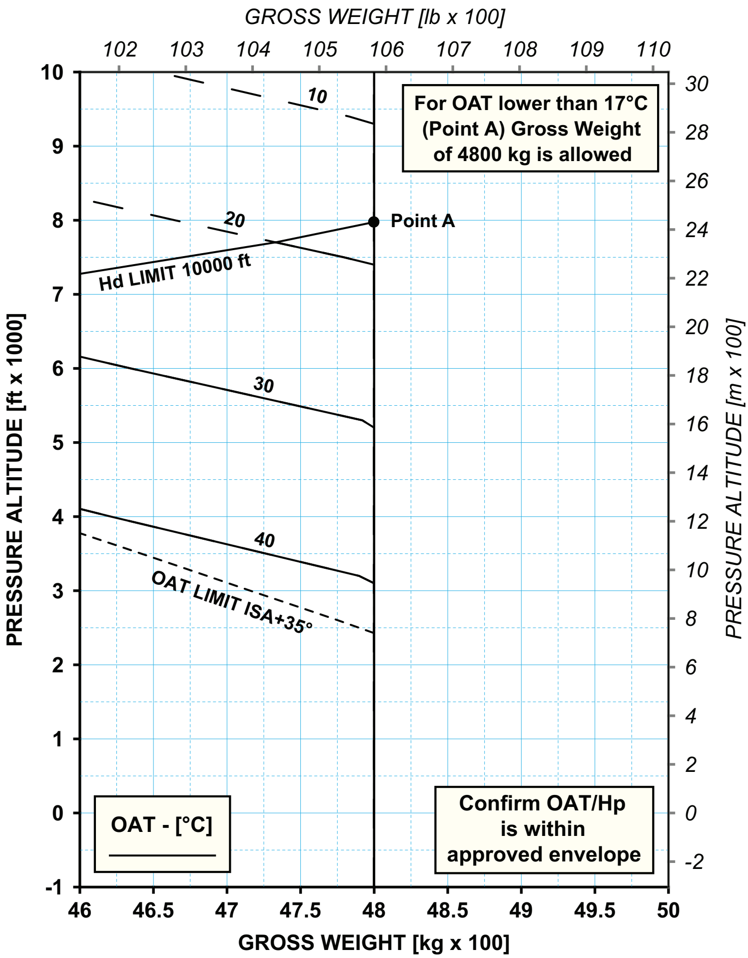
Figure Lim 29: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - EAPS OFF - ECS ON - Above 4600 kg

CHARTS
DIAGS

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft




169F1580A007 Issue F

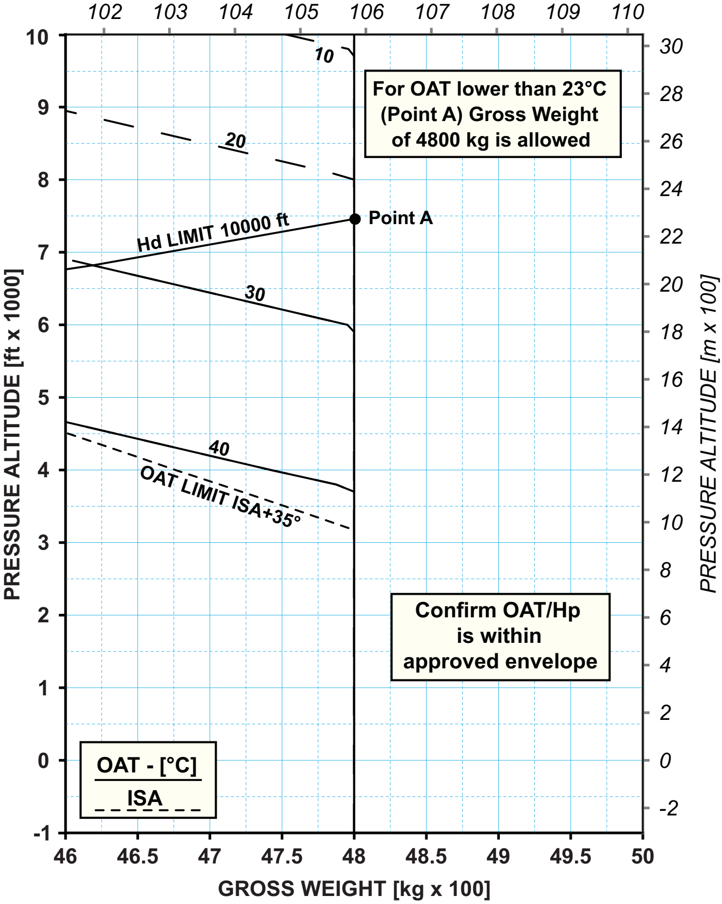
ICN-69-A-155030-G-A0126-00064-A-03-1

Figure Lim 30: WAT for Take-off and Landing Zero Wind or Headwind AEO TOP - EAPS ON - Above 4600 kg

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
**AEO TOP**

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 25%
WHEEL HEIGHT: 6 ft




169F1580A007 Issue F

ICN-69-A-155030-G-A0126-00069-A-02-1

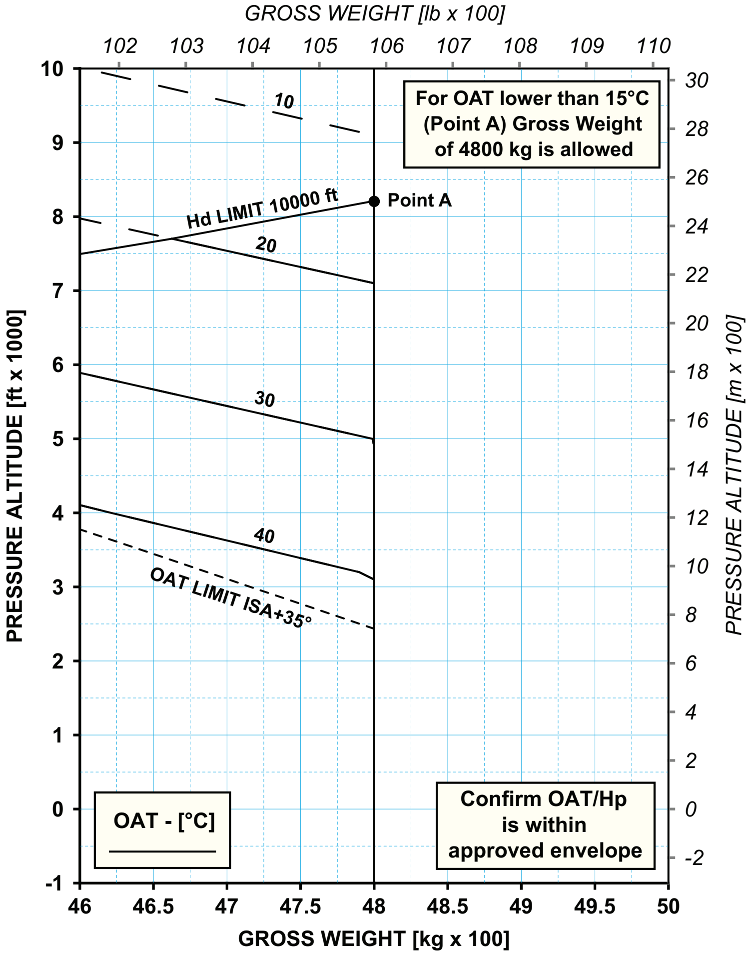
Figure Lim 31: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - EAPS ON - Above 4600 kg

CHARTS DIAGS

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

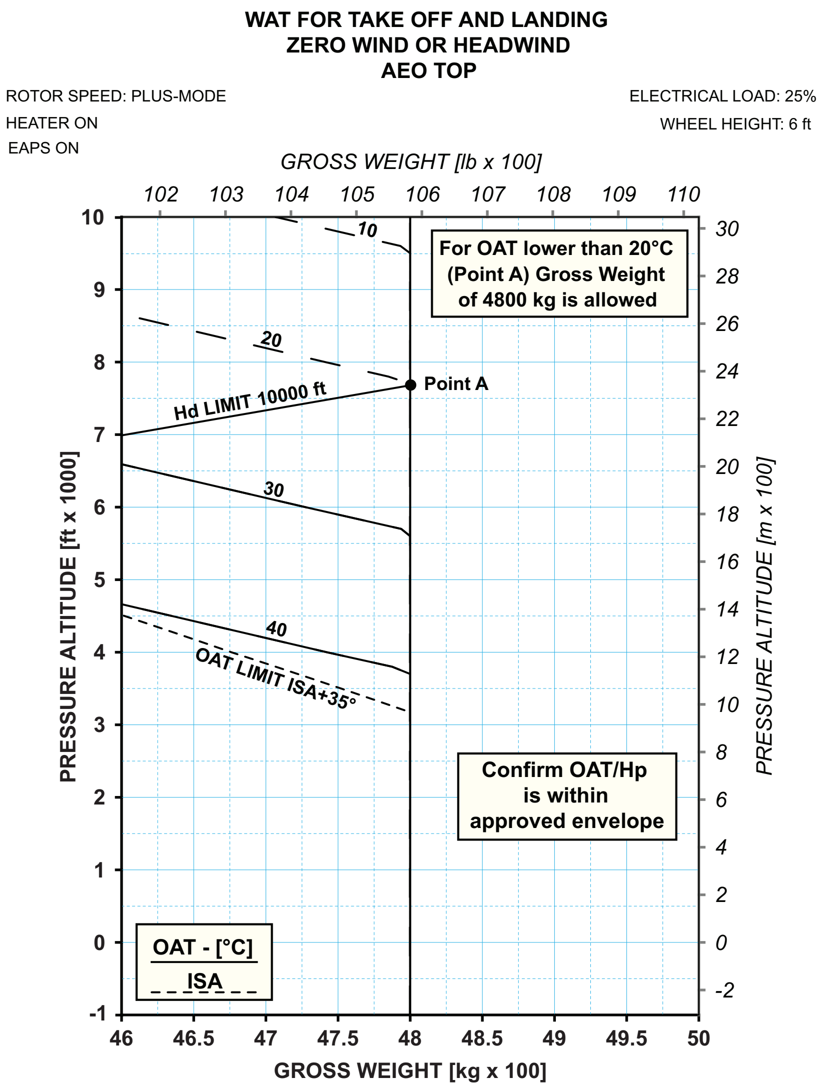
ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft
HEATER ON




169F1580A007 Issue F

ICN-69-A-155030-G-A0126-00065-A-03-1

Figure Lim 32: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - EAPS ON - Heater ON - Above 4600 kg




169F1580A007 Issue F

ICN-69-A-155030-G-A0126-00070-A-02-1

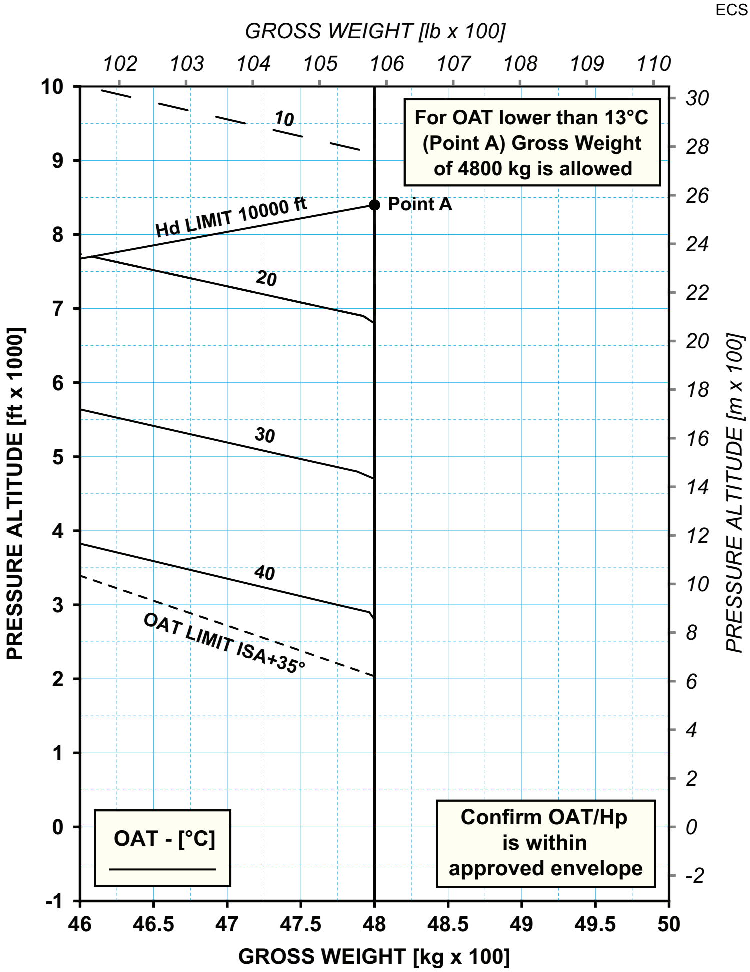
Figure Lim 33: WAT Limitations HIGE with Headwind AEO TOP - EAPS ON - Heater ON - Above 4600 kg

CHARTS
DIAGS

**WAT FOR TAKE OFF AND LANDING**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft
ECS ON




169F1580A007 Issue F

ICN-69-A-155030-G-A0126-00066-A-03-1

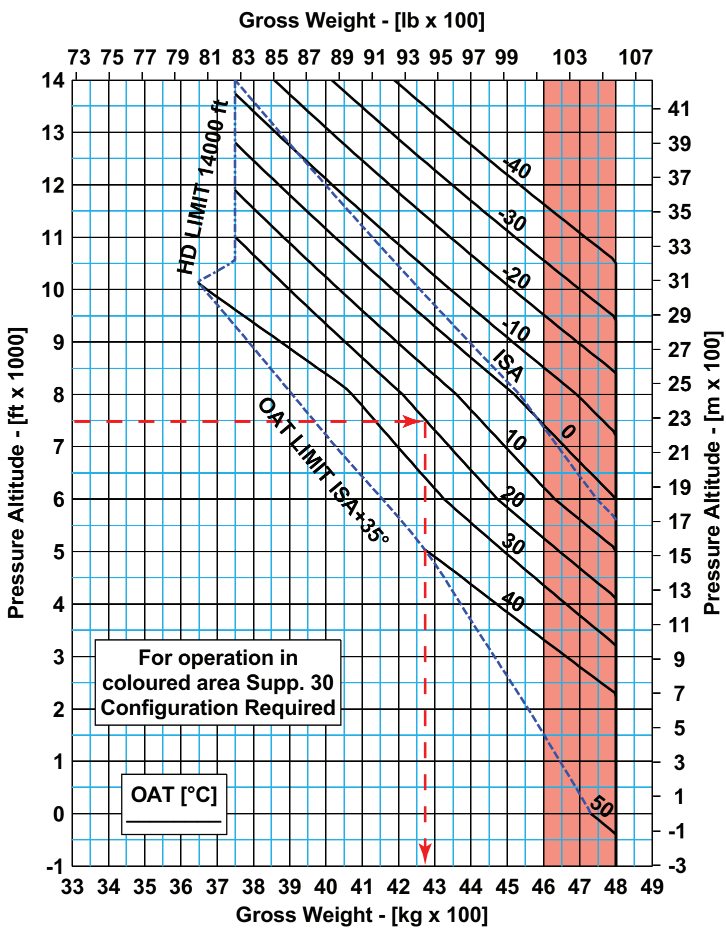
Figure Lim 34: WAT for Take-off and Landing Zero Wind or Headwind - AEO TOP - EAPS ON - ECS ON - Above 4600 kg

## SUMMARY TABLE FOR CATEGORY B TAKE-OFF PROCEDURE

| | ENGINE INTAKE CONFIG | WAT FIGURE for Take-Off | Take-Off distance (to 50 ft ATS) | OEI Landing Distance (from 50 ft ALS - braking distance 60 m) |
|---|---|---|---|---|
| Heater OFF/ON | CLEAN | Figure Lim 35 | 250 metres | 370 metres |
| ECS OFF/ON | CLEAN | Figure Lim 35 | 250 metres | 370 metres |
| Heater OFF/ON | EAPS OFF | Figure Lim 36 | 250 metres | 370 metres |
| ECS OFF/ON | EAPS OFF | Figure Lim 36 | 250 metres | 370 metres |
| Heater OFF/ON | EAPS ON | Figure Lim 36 | 250 metres | 370 metres |
| ECS OFF/ON | EAPS ON | Figure Lim 36 | 250 metres | 370 metres |

## WAT FOR TAKE OFF AND LANDING
## (10 PASSENGER SEATS)

PLUS MODE



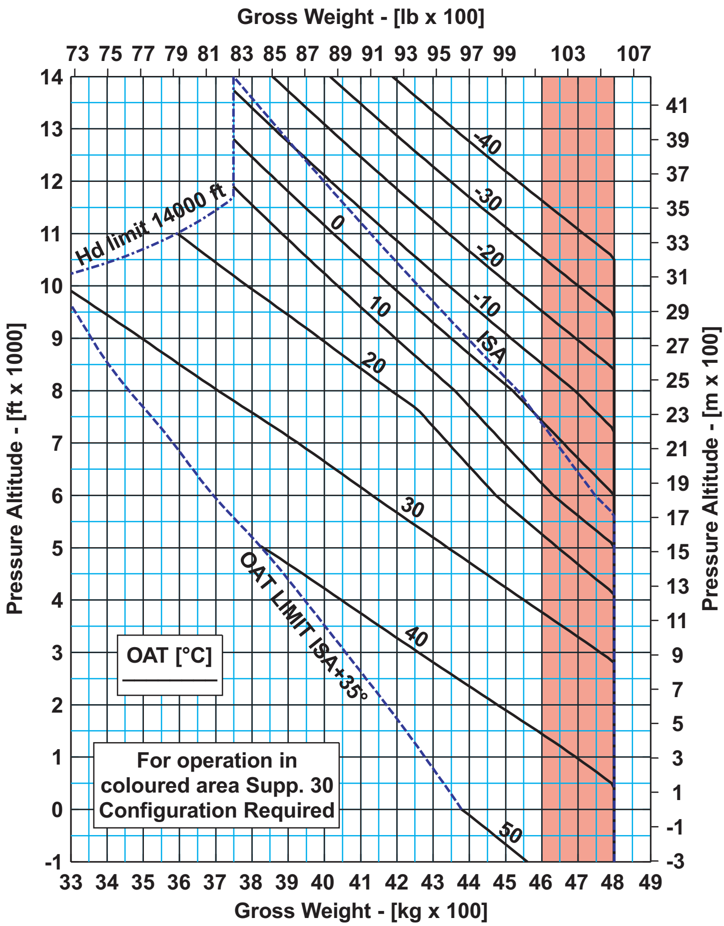

169F1580A007 Rev.F

ICN-69-A-155030-G-A0126-00029-A-06-1

Figure Lim 35: WAT for Take-off and Landing (10 passenger seats) at Take-Off Power

## WAT FOR TAKE OFF AND LANDING (10 PASSENGER SEATS)

PLUS MODE
ELECTRICAL LOAD 75%
EAPS OFF/ON




169F1580A004 Issue C

ICN-69-A-155030-G-A0126-00091-A-04-1

Figure Lim 36: WAT for Take-off and Landing (10 passenger seats) at Take-Off Power - EAPS OFF/ON

## SUMMARY TABLE FOR G&E HELIPAD/HELIDECK CATEGORY A TAKE-OFF PROCEDURE

| TDP: 50 ft ATS | ENGINE INTAKE CONFIG | WAT FIGURES for Take-Off |
|---|---|---|
| Heater OFF/ON | CLEAN | Figure Lim 37 |
| ECS OFF | CLEAN | Figure Lim 37 |
| ECS ON | CLEAN | Figure Lim 37 |
| Heater OFF/ON | EAPS OFF | Figure Lim 39 |
| ECS OFF | EAPS OFF | Figure Lim 39 |
| ECS ON | EAPS OFF | Figure Lim 40 |
| Heater OFF | EAPS ON | Figure Lim 40 |
| Heater ON | EAPS ON | Figure Lim 42 |
| ECS OFF | EAPS ON | Figure Lim 40 |
| ECS ON | EAPS ON | Figure Lim 43 |

## WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A
## G/E & H/H VERTICAL PROCEDURE

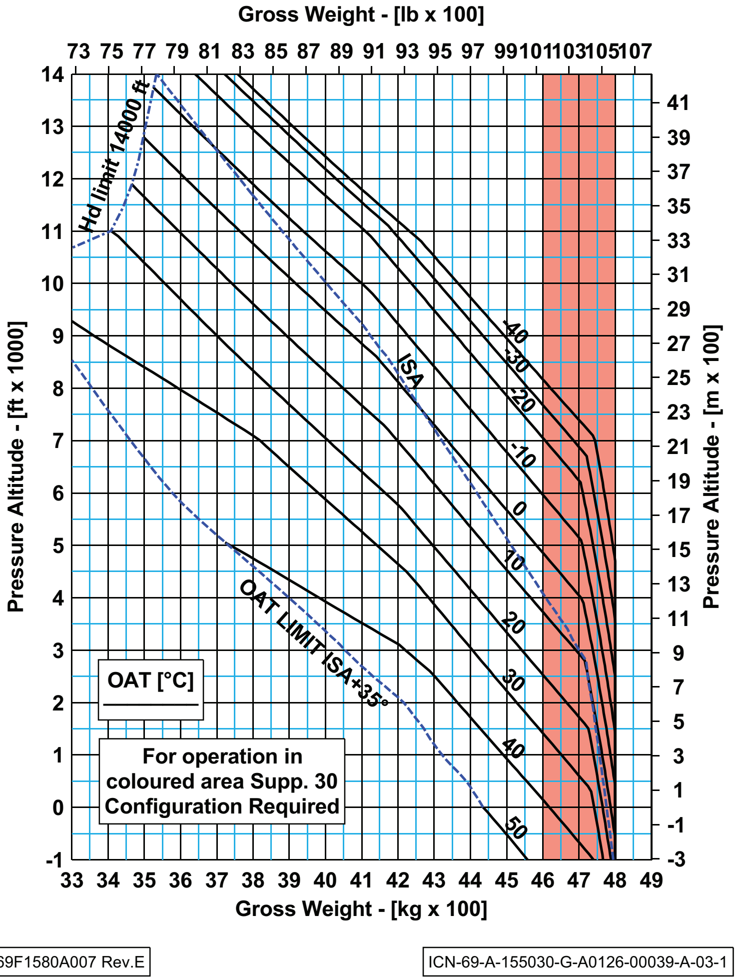
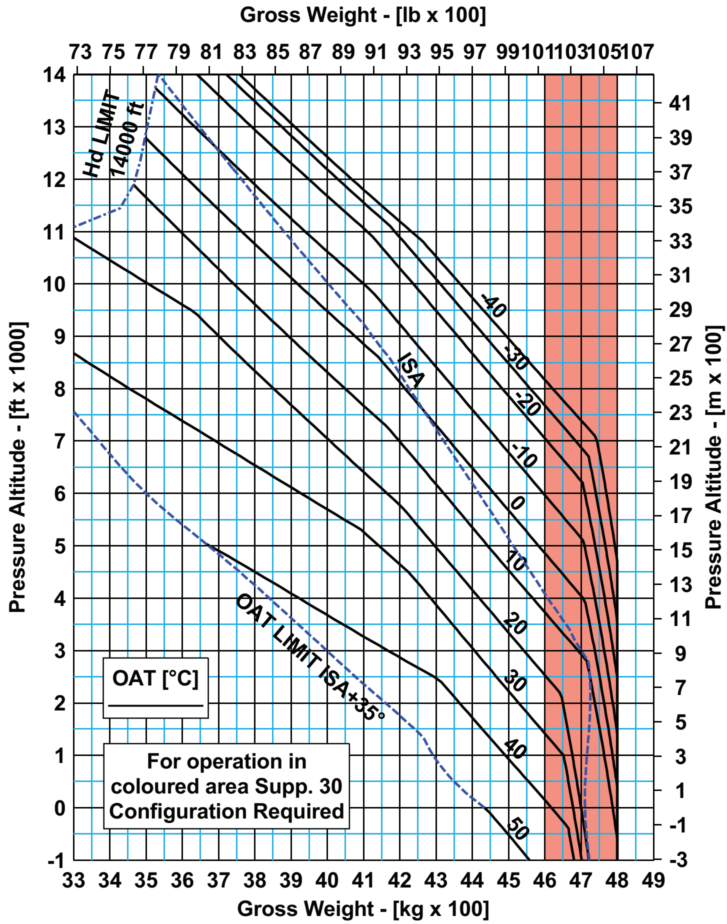



Figure Lim 37: G&E H/H Vertical Take-Off Procedure - Weight Limitations

CHARTS
DIAGS

## WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A
## G/E & H/H VERTICAL PROCEDURE

ECS ON



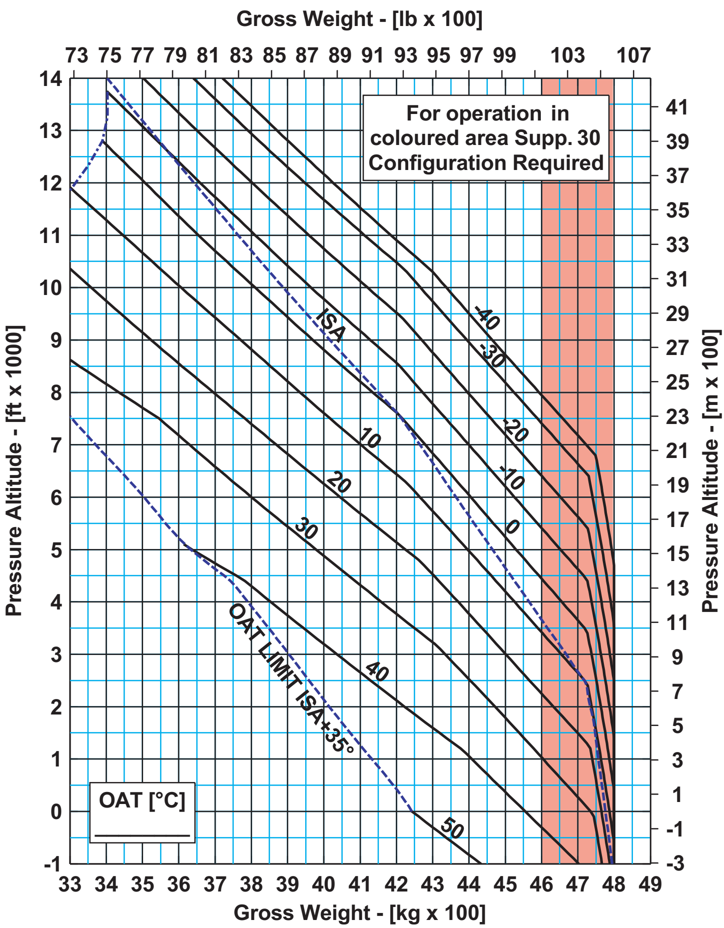

169F1580A007 Rev.E

ICN-69-A-155030-G-A0126-00035-A-03-1

Figure Lim 38: G&E H/H Vertical Take-Off Procedure -
Weight Limitations - ECS ON

## WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A
## G/E & H/H VERTICAL PROCEDURE

EAPS OFF




169F1580A007 Rev.D

ICN-69-A-155030-G-A0126-00104-A-02-1

Figure Lim 39: G&E H/H Vertical Take-Off Procedure - Weight Limitations - EAPS OFF

## WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A
## G/E & H/H VERTICAL PROCEDURE

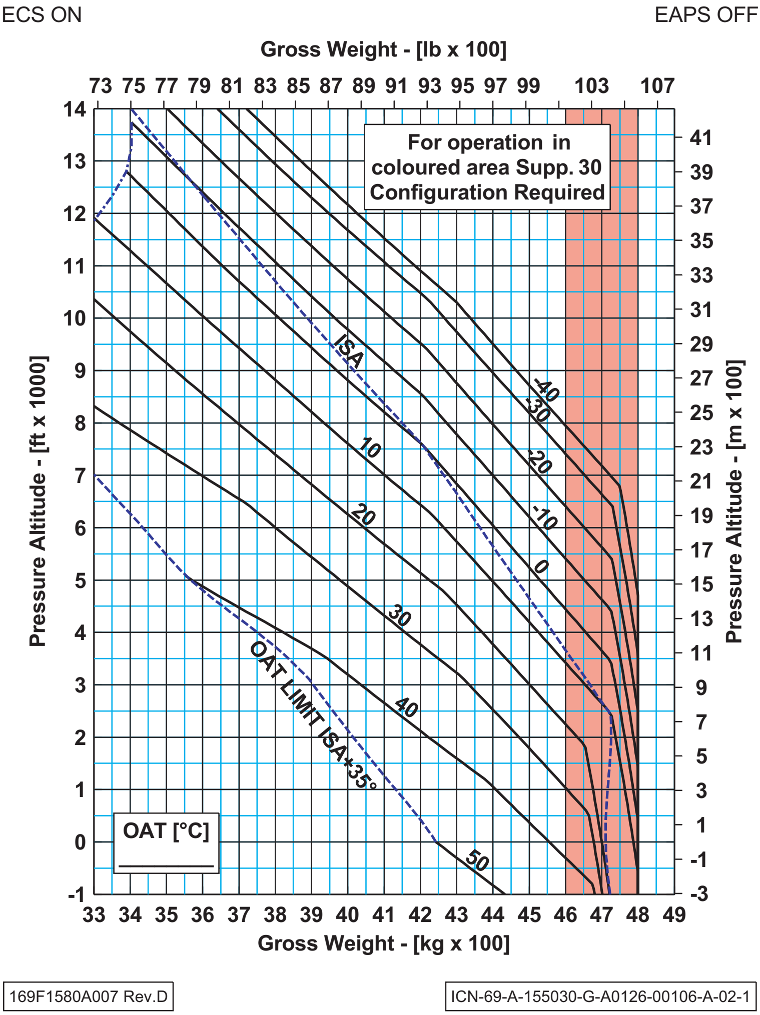



Figure Lim 40: G&E H/H Vertical Take-Off Procedure - Weight Limitations - EAPS OFF

# WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A
## G/E & H/H VERTICAL PROCEDURE

EAPS ON

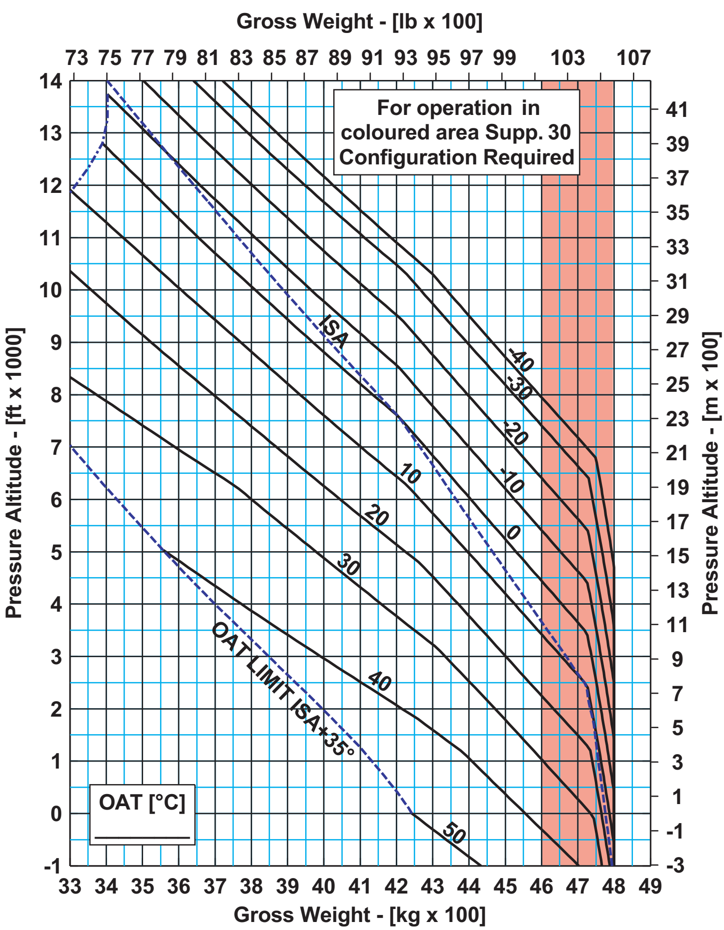



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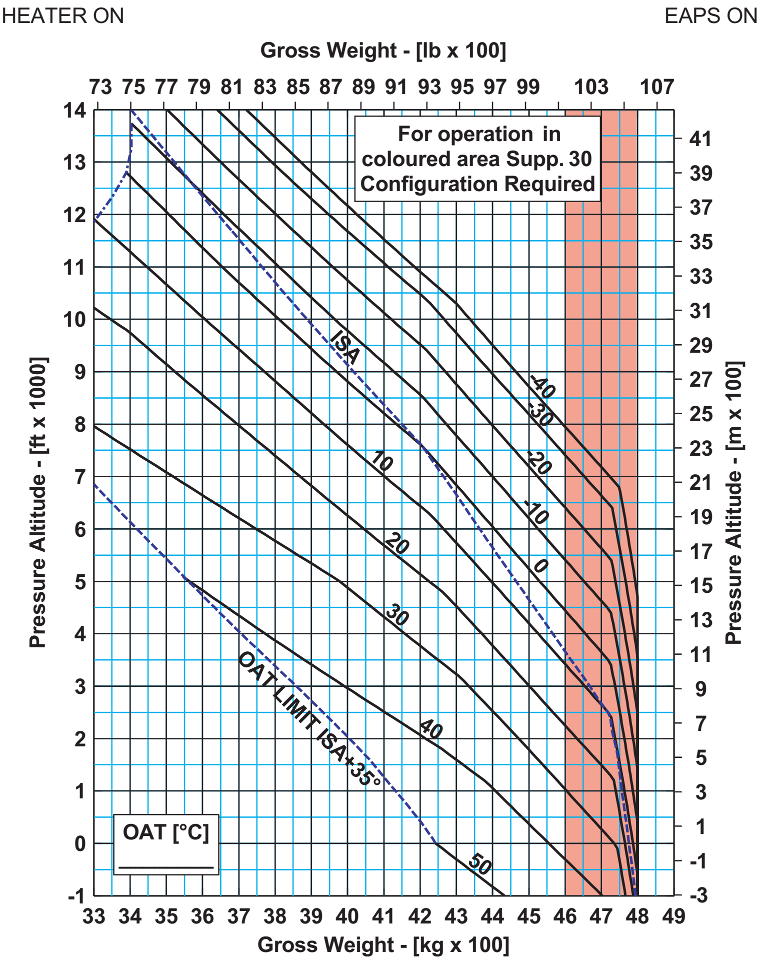
Figure Lim 41: G&E H/H Vertical Take-Off Procedure - Weight Limitations - EAPS ON

CHARTS
DIAGS

# WEIGHT-ALTITUDE-TEMPERATURE
# Cat.A
# G/E & H/H VERTICAL PROCEDURE




169F1580A007 Rev.D

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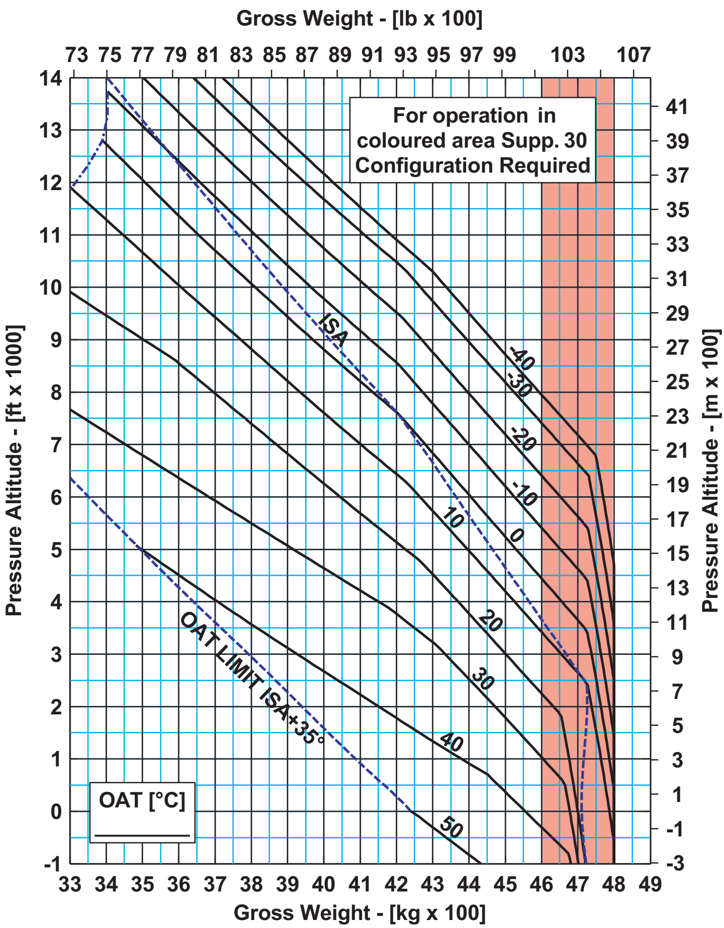
Figure Lim 42: G&E H/H Vertical Take-Off Procedure - Weight Limitations - EAPS ON - Heater ON

## WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A
## G/E & H/H VERTICAL PROCEDURE

ECS ON

EAPS ON




169F1580A007 Rev.D

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Figure Lim 43: G&E H/H Vertical Take-Off Procedure - Weight Limitations - EAPS ON - ECS ON

## SUMMARY TABLE FOR CLEAR AREA CATEGORY A TAKE-OFF PROCEDURE



| TDP: 20 ft ALS 20 KIAS | ENGINE INTAKE CONFIG | WAT FIGURES for Take-Off |
|---|---|---|
| Heater/ECS OFF/ON | CLEAN | Figure Lim 44 |
| Heater/ECS OFF/ON | EAPS OFF | Figure Lim 45 |
| Heater/ECS OFF/ON | EAPS ON | Figure Lim 45 |

## WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A
## CLEAR AREA PROCEDURE

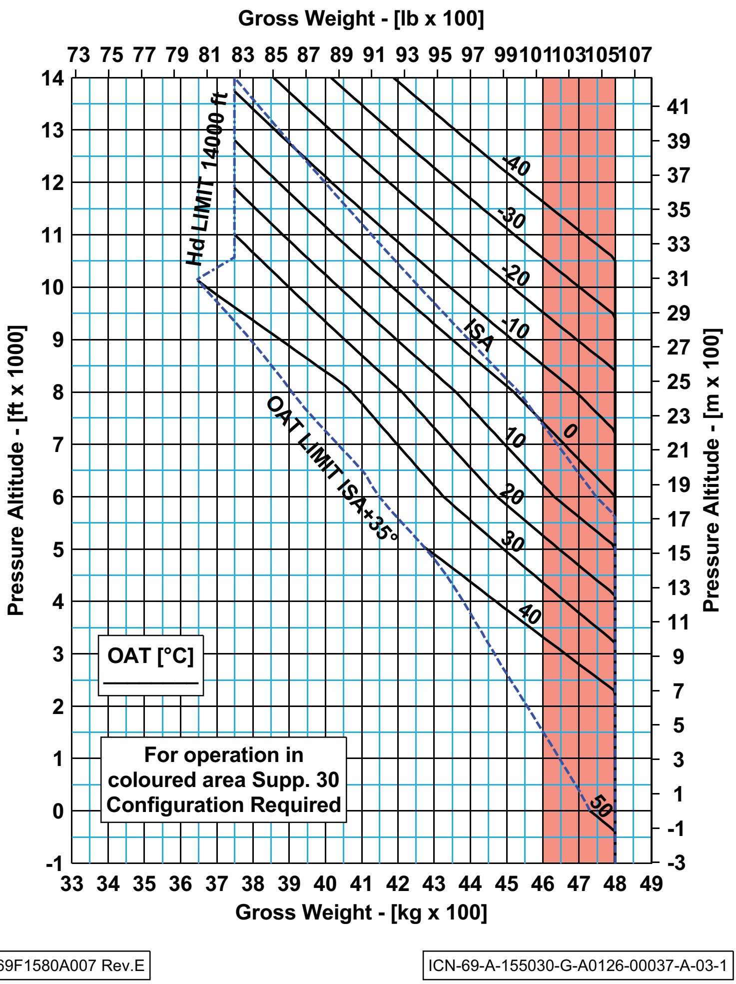


Figure Lim 44: Clear Area Take-Off Procedure - Weight Limitations - Heater OFF/ON

CHARTS
DIAGS

## WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A
## CLEAR AREA PROCEDURE

EAPS OFF/ON

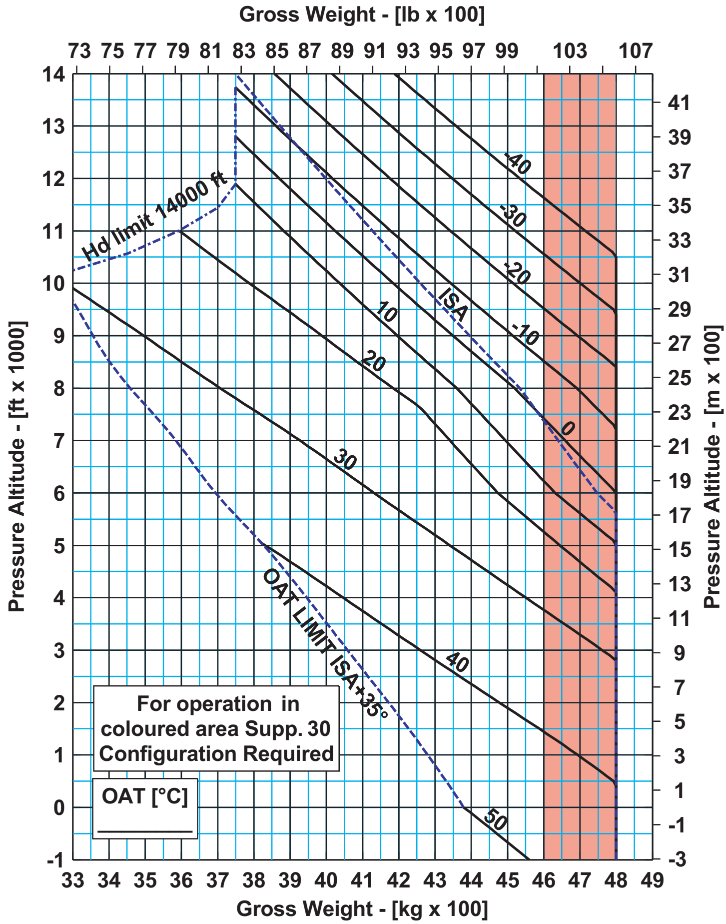


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Figure Lim 45: Clear Area Take-Off Procedure -
Weight Limitations - EAPS OFF/ON - Heater/ECS OFF/ON

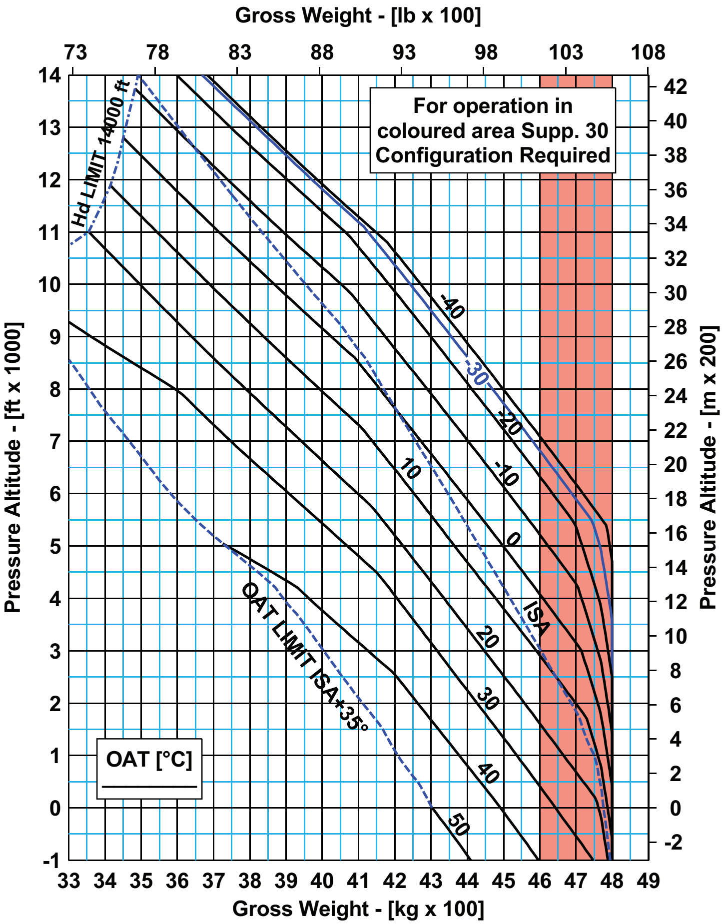
## SUMMARY TABLE FOR VARIABLE TDP CATEGORY A TAKE-OFF PROCEDURE

| TDP: 95 to 400 ft ATS | ENGINE INTAKE CONFIG | WAT FIGURES for Take-Off |
|---|---|---|
| Heater OFF/ON | CLEAN | Figure Lim 46 |
| ECS OFF | CLEAN | Figure Lim 46 |
| ECS ON | CLEAN | Figure Lim 47 |
| Heater ECS OFF | EAPS OFF | Figure Lim 48 |
| Heater ECS OFF | EAPS ON | Figure Lim 48 |
| Heater ON | EAPS OFF | Figure Lim 48 |
| Heater ON | EAPS ON | Figure Lim 48 |
| ECS ON | EAPS OFF | Figure Lim 49 |
| ECS ON | EAPS ON | Figure Lim 49 |

CHARTS
DIAGS

## WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A VARIABLE TDP

PLUS MODE
Max TDP\LDP Height: 400 ft ALS



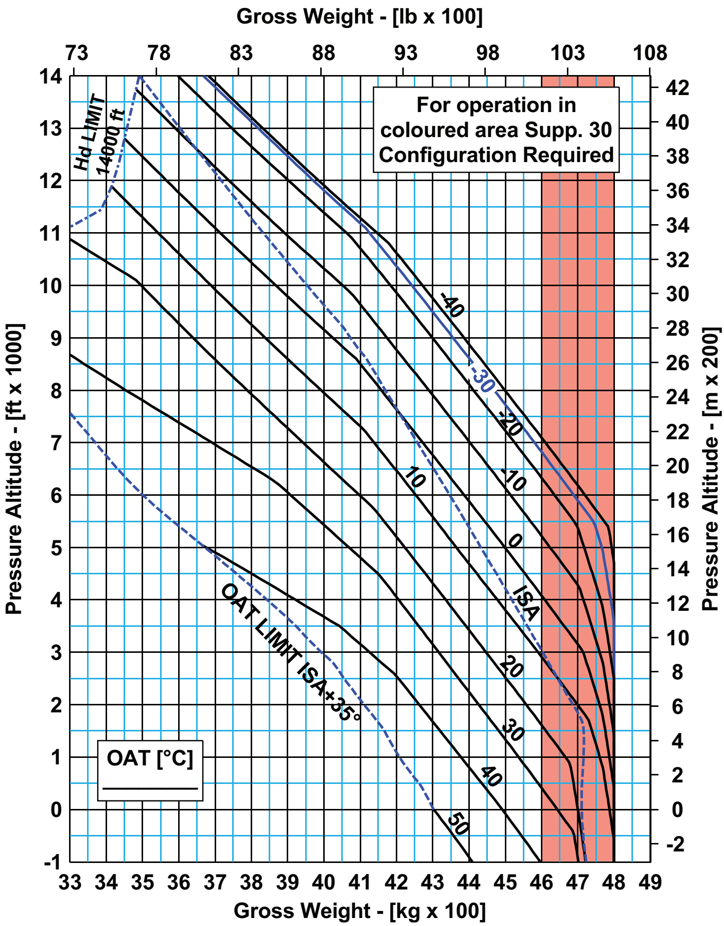

169F1580A007 Rev.E

ICN-69-A-155030-G-A0126-00041-A-04-1

Figure Lim 46: G&E H/H Variable TDP - Weight Limitations

## WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A VARIABLE TDP

PLUS MODE
Max TDP\LDP Height: 400 ft ALS
ECS ON




169F1580A007 Rev.E

ICN-69-A-155030-G-A0126-00043-A-03-1

Figure Lim 47: G&E H/H Variable TDP - Weight Limitations - ECS ON

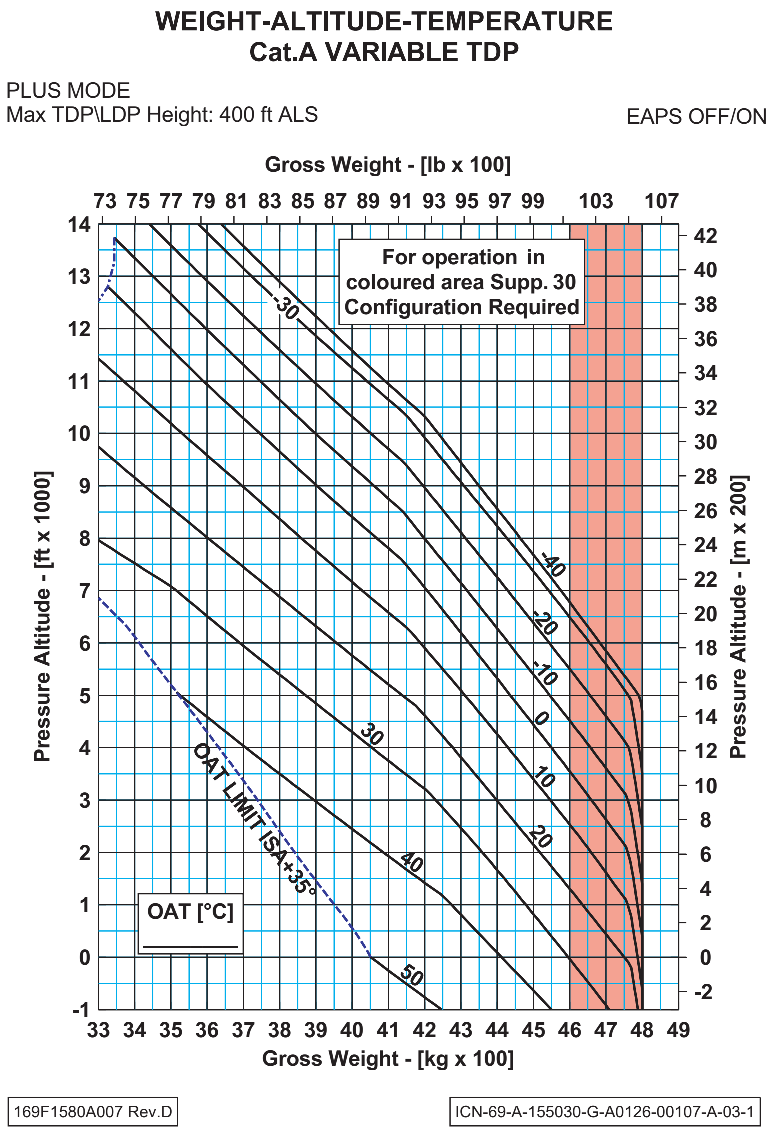
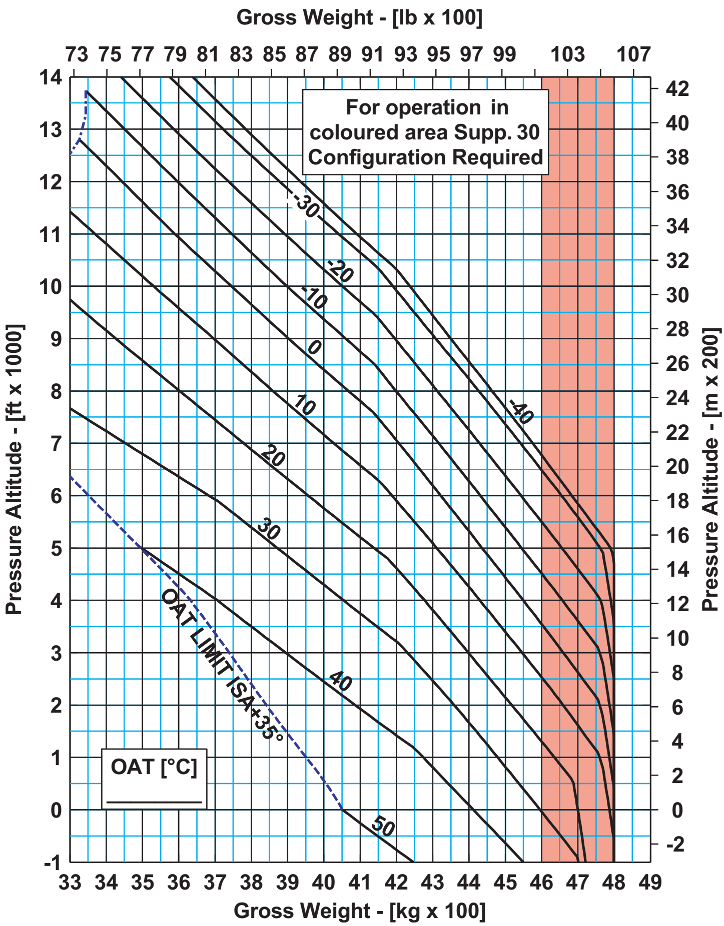



Figure Lim 48: G&E H/H Variable TDP - Weight Limitations
- EAPS OFF/ON - Heater OFF/ON

## WEIGHT-ALTITUDE-TEMPERATURE
## Cat.A VARIABLE TDP

PLUS MODE
Max TDP\LDP Height: 400 ft ALS
ECS ON

EAPS OFF




169F1580A007 Rev.D

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Figure Lim 49: G&E H/H Variable TDP- Weight Limitations - EAPS OFF/ON - ECS ON

CHARTS
DIAGS

| OBSTACLE DISTANCE below Rearward TO profile | | | |
|---|---|---|---|
| Obstacle Heigth | | Minimum Distance from center of helipad | |
| ft | m | ft | m |
| 0 | 0 | -59 | -18 |
| 10 | 3 | -70 | -21 |
| 20 | 6 | -80 | -24 |
| 30 | 9 | -91 | -28 |
| 40 | 12 | -102 | -31 |
| 50 | 15 | -112 | -34 |
| 60 | 18 | -123 | -37 |
| 70 | 21 | -134 | -41 |
| 80 | 24 | -142 | -43 |
| 90 | 27 | -151 | -46 |
| 100 | 30 | -159 | -49 |
| 110 | 34 | -168 | -51 |
| 120 | 37 | -176 | -54 |
| 130 | 40 | -185 | -56 |
| 140 | 43 | -193 | -59 |
| 160 | 49 | -210 | -64 |
| 180 | 55 | -227 | -69 |
| 200 | 61 | -244 | -75 |
| 220 | 67 | -261 | -80 |
| 240 | 73 | -279 | -85 |
| 260 | 79 | -296 | -90 |
| 280 | 85 | -313 | -95 |
| 300 | 91 | -330 | -101 |
| 320 | 98 | -347 | -106 |
| 340 | 104 | -364 | -111 |
| 360 | 110 | -381 | -116 |
| 380 | 116 | -398 | -121 |
| 400 | 122 | -415 | -127 |

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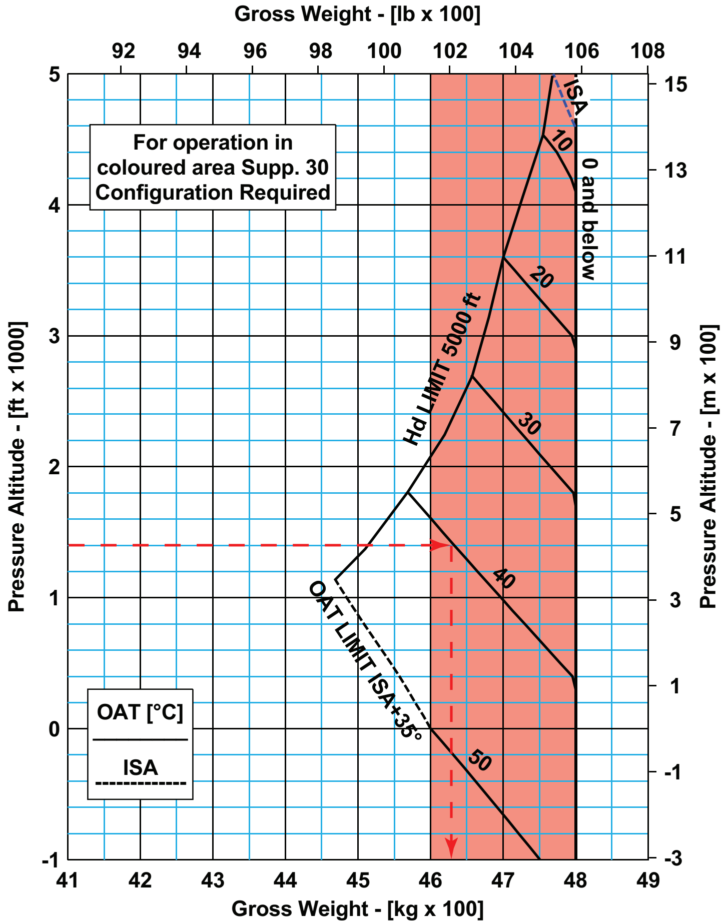
ICN-69-A-155204-G-A0126-00016-A-03-1

Figure Lim 50: Obstacle Distance below Rearward TO Profile

## SUMMARY TABLE FOR OS&E HELIDECK CATEGORY A TAKE-OFF PROCEDURE

| TDP: 25 ft ATS | ENGINE INTAKE CONFIG | WAT FIGURE for Take-Off | Drop down FIGURES |
|---|---|---|---|
| Heater OFF/ON | CLEAN | Figure Lim 51 | Figure Lim 53 thru Figure Lim 60 |
| ECS OFF/ON | CLEAN | Figure Lim 51 | Figure Lim 53 thru Figure Lim 60 |
| Heater OFF/ON | EAPS OFF | Figure Lim 52 | Figure Lim 62 thru Figure Lim 68 |
| ECS OFF/ON | EAPS OFF | Figure Lim 52 | Figure Lim 62 thru Figure Lim 68 |
| Heater OFF/ON | EAPS ON | Figure Lim 52 | Figure Lim 62 thru Figure Lim 68 |
| ECS OFF/ON | EAPS ON | Figure Lim 52 | Figure Lim 62 thru Figure Lim 68 |

## WEIGHT-ALTITUDE-TEMPERATURE OFF-SHORE TAKE OFF PROCEDURE



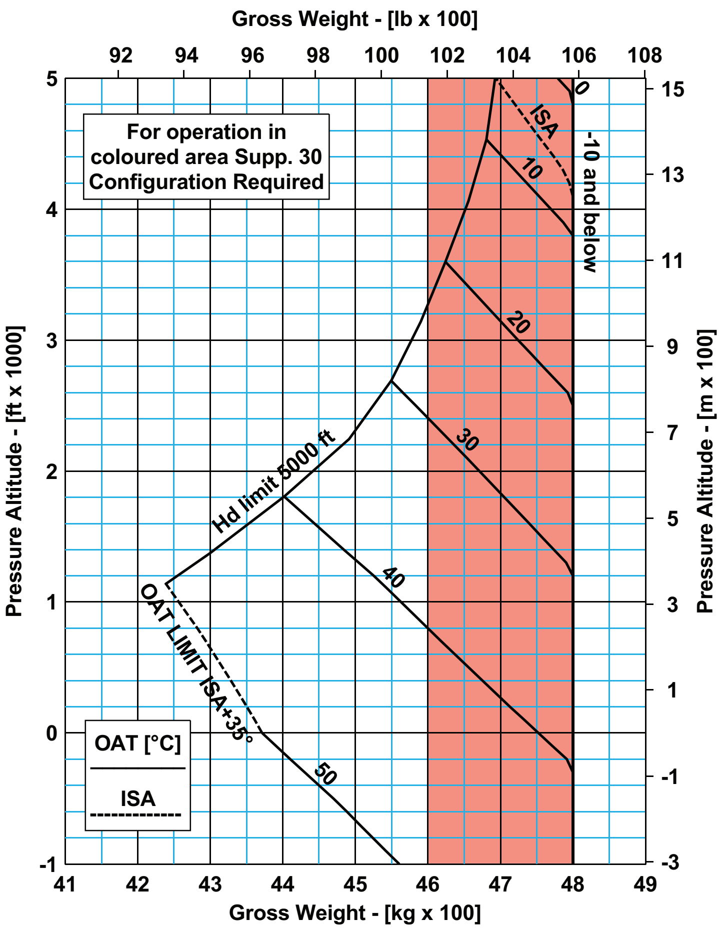

169F1580A001 Rev.I

ICN-69-A-155104-G-A0126-00082-A-03-1

Figure Lim 51: Offshore/Elevated Helideck Procedure Weight Limitations

## WEIGHT-ALTITUDE-TEMPERATURE OFFSHORE/ELEVATED HELIDECK TAKE-OFF PROCEDURE

EAPS OFF/ON




169F1580A001 Rev.H

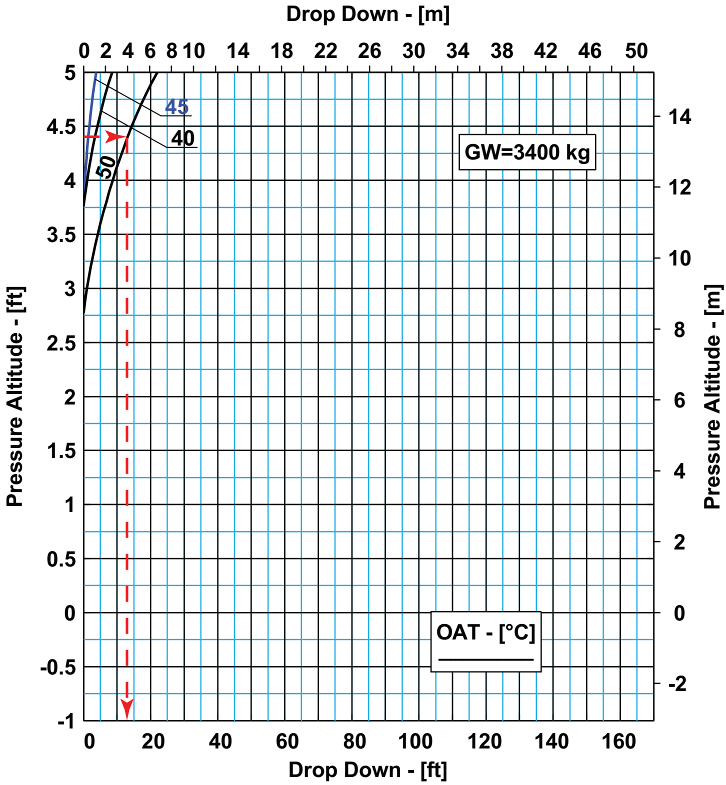
ICN-69-A-155104-G-A0126-00085-A-02-1

Figure Lim 52: Offshore/Elevated Helideck Procedure Weight Limitations - EAPS OFF/ON

CHARTS
DIAGS

# DROP DOWN
# OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| benefit [m] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

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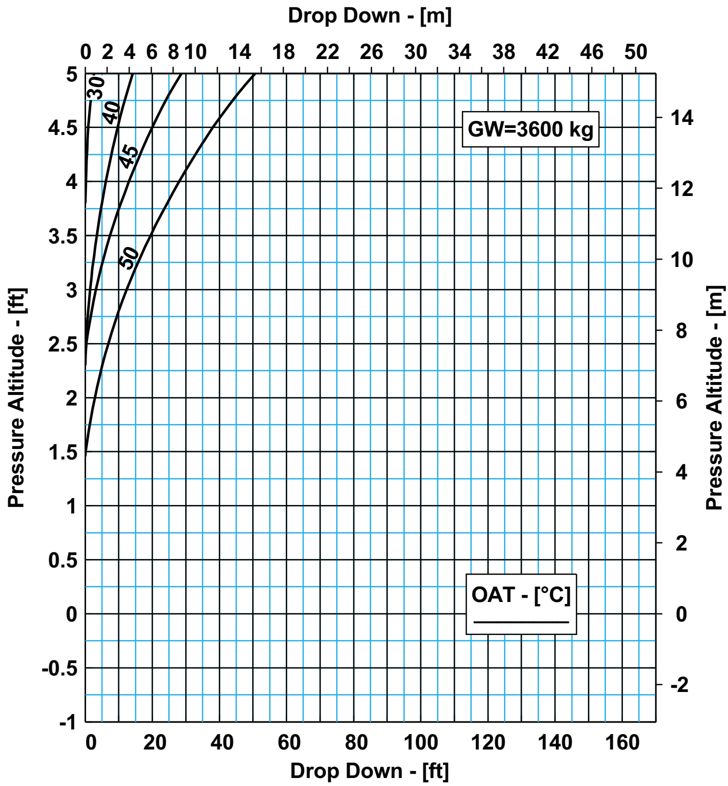
Figure Lim 53: Drop Down Offshore Procedure - Clean Air Intake - 3400 kg

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 0 | 1 | 1 | 2 | 4 | 5 | 7 | 9 | 11 | 13 |
| benefit [m] | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 |

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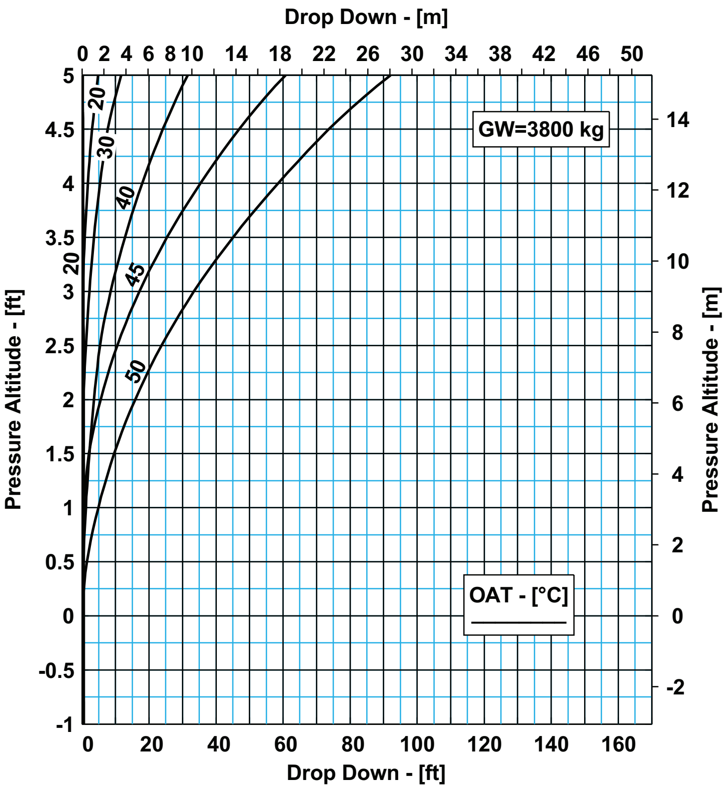
Figure Lim 54: Drop Down Offshore Procedure - Clean Air Intake - 3600 kg

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 1 | 3 | 5 | 7 | 10 | 12 | 15 | 18 | 21 | 24 |
| benefit [m] | 0 | 1 | 2 | 2 | 3 | 4 | 5 | 5 | 6 | 7 |

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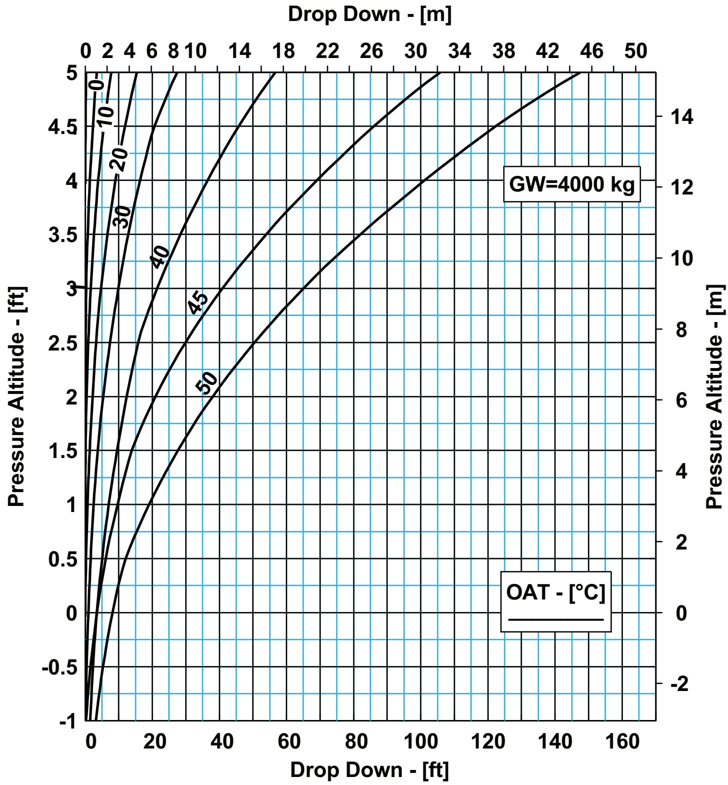
Figure Lim 55: Drop Down Offshore Procedure - Clean Air Intake - 3800 kg

# DROP DOWN
# OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 2 | 5 | 9 | 12 | 16 | 20 | 23 | 27 | 31 | 35 |
| benefit [m] | 0 | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 11 |

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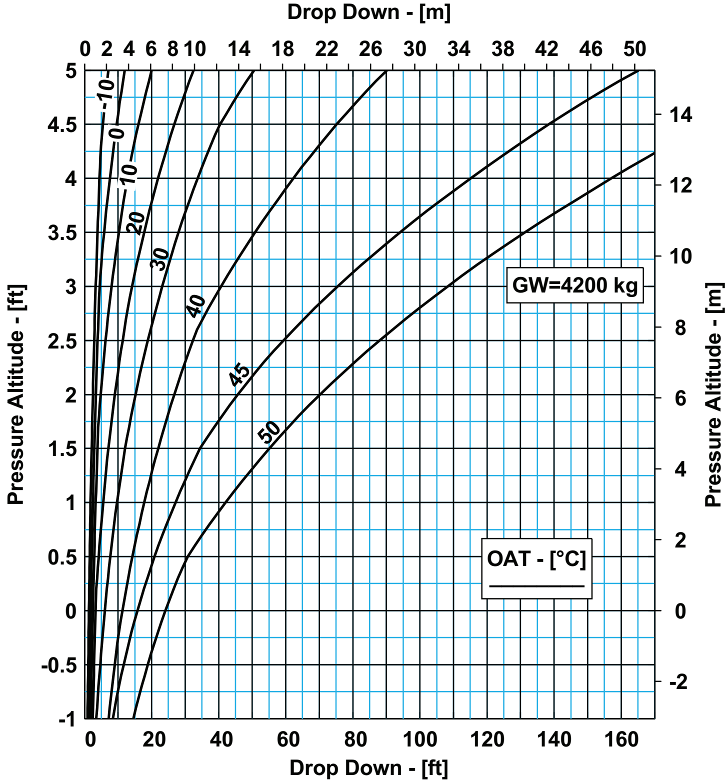
ICN-69-A-155204-G-A0126-00103-A-03-1

Figure Lim 56: Drop Down Offshore Procedure - Clean Air Intake - 4000 kg

CHARTS
DIAGS

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| benefit [ft] | 2 | 7 | 12 | 17 | 22 | 27 | 32 | 37 | 42 | 47 |
| benefit [m] | 1 | 2 | 4 | 5 | 7 | 8 | 10 | 11 | 13 | 14 |

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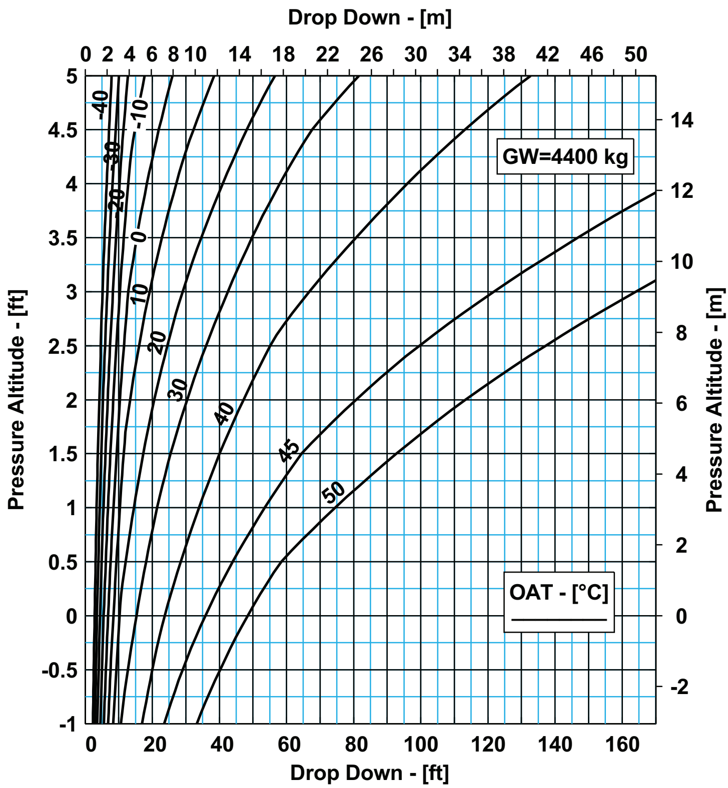
Figure Lim 57: Drop Down Offshore Procedure - Clean Air Intake - 4200 kg

CHARTS
DIAGS

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 3 | 9 | 16 | 22 | 29 | 35 | 41 | 47 | 53 | 59 |
| benefit [m] | 1 | 3 | 5 | 7 | 9 | 11 | 12 | 14 | 16 | 18 |

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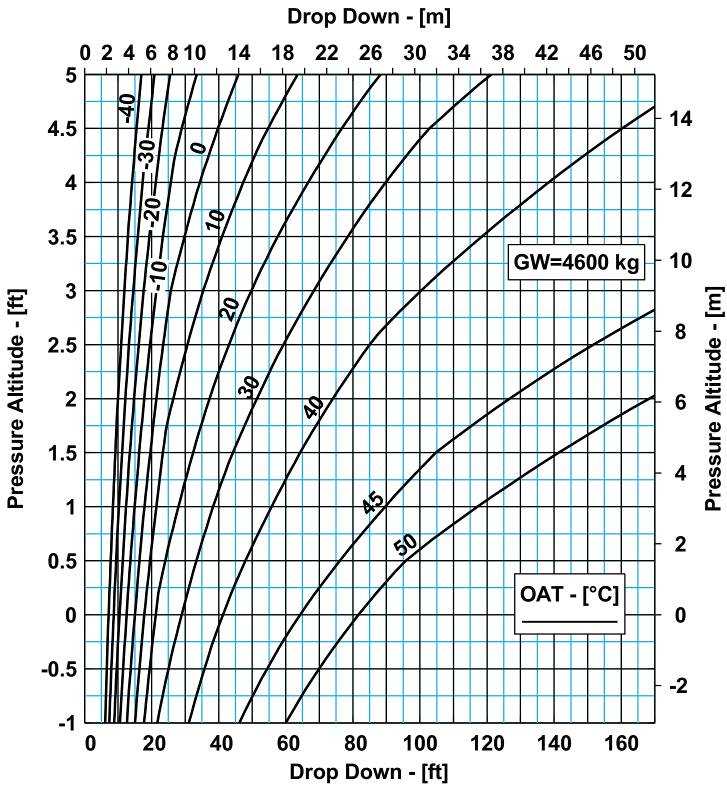
Figure Lim 58: Drop Down Offshore Procedure - Clean Air Intake - 4400 kg

# DROP DOWN
# OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| benefit [ft] | 4 | 12 | 20 | 27 | 35 | 43 | 50 | 57 | 64 | 71 |
| benefit [m] | 1 | 4 | 6 | 8 | 11 | 13 | 15 | 17 | 20 | 22 |

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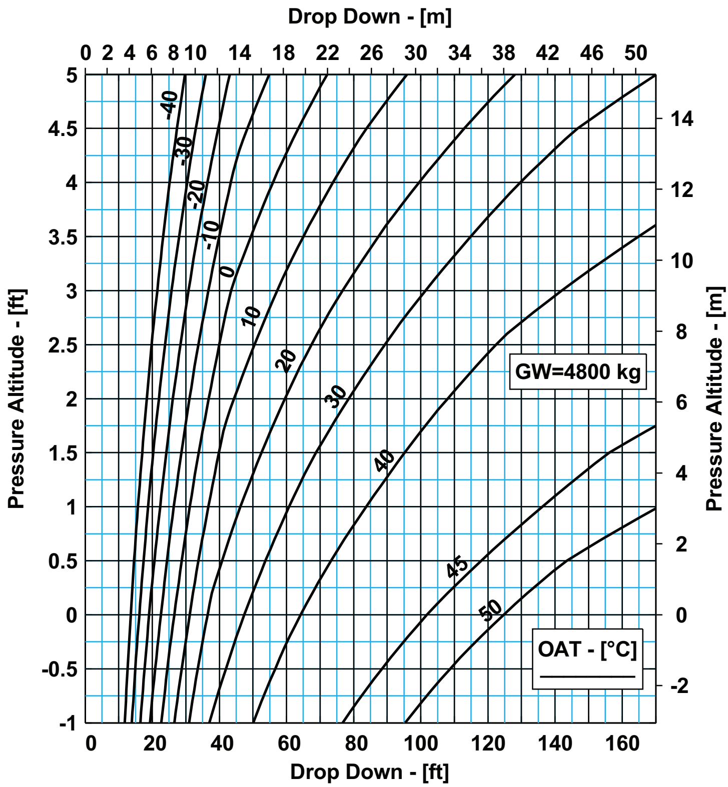
ICN-69-A-155204-G-A0126-00106-A-03-1

Figure Lim 59: Drop Down Offshore Procedure - Clean Air Intake - 4600 kg

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Headwind | [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| benefit | [ft] | 5 | 14 | 25 | 33 | 42 | 51 | 59 | 68 | 76 | 84 |
| benefit | [m] | 1 | 4 | 7 | 10 | 13 | 16 | 18 | 21 | 23 | 26 |

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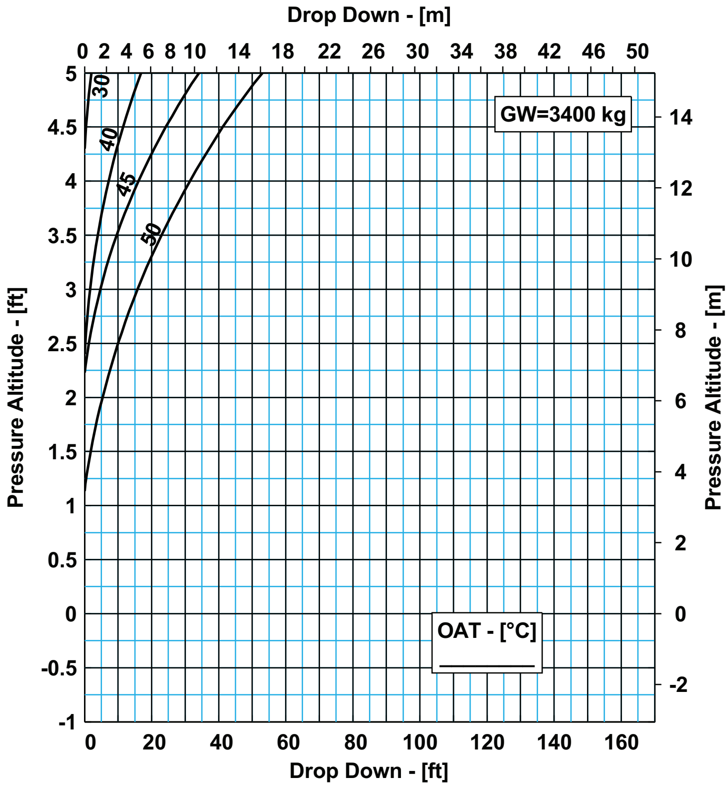
Figure Lim 60: Drop Down Offshore Procedure -
Clean Air Intake - 4800 kg

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE

EAPS OFF/ON




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 4 | 5 | 7 |
| benefit [m] | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |

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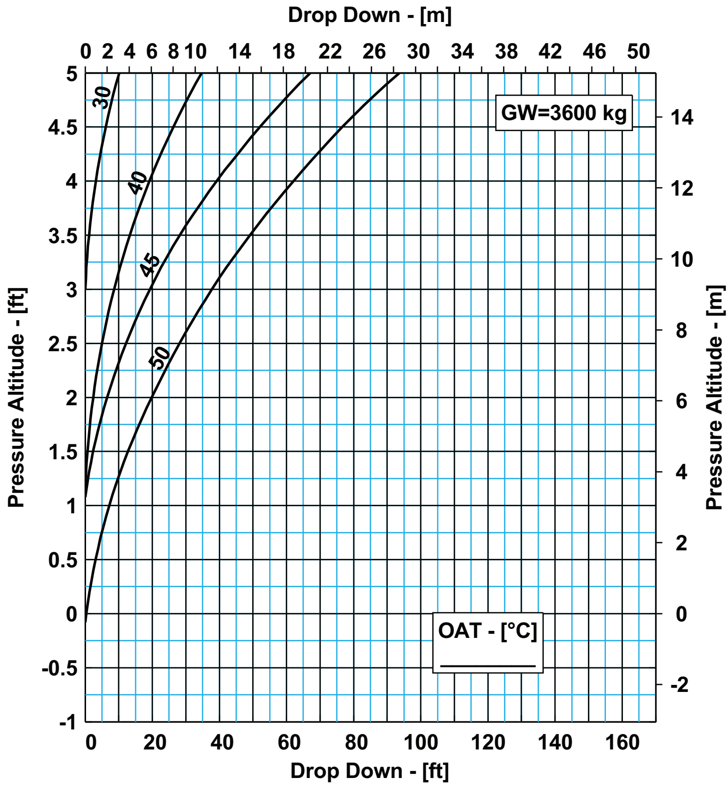
ICN-69-A-155204-G-A0126-00108-A-02-1

Figure Lim 61: Drop Down Offshore Procedure - EAPS OFF/ON - 3400 kg

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE

EAPS OFF/ON




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 0 | 1 | 3 | 4 | 6 | 8 | 10 | 12 | 15 | 17 |
| benefit [m] | 0 | 0 | 1 | 1 | 2 | 3 | 3 | 4 | 4 | 5 |

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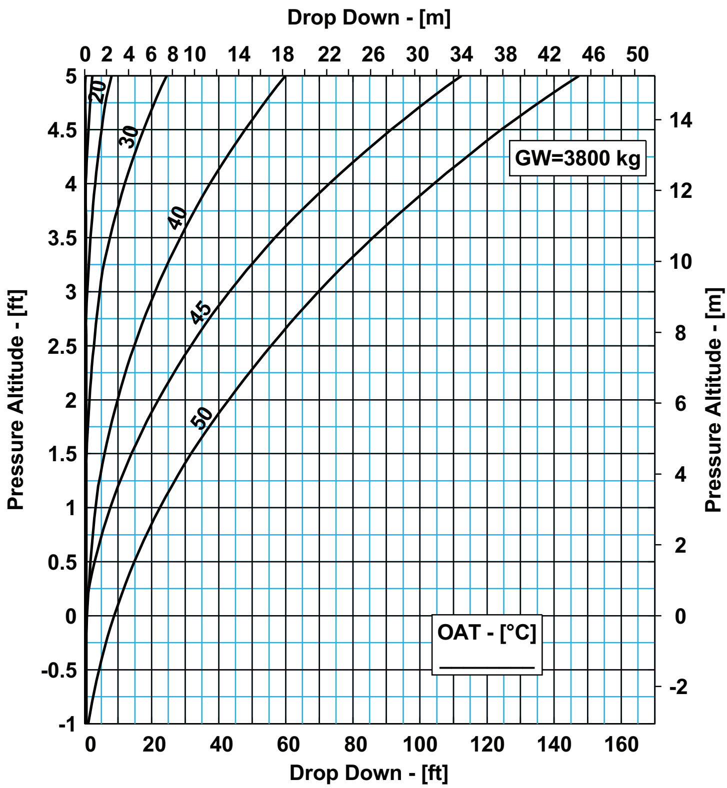
Figure Lim 62: Drop Down Offshore Procedure - EAPS OFF/ON - 3600 kg

CHARTS
DIAGS

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE

EAPS OFF/ON




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 1 | 3 | 6 | 9 | 12 | 15 | 18 | 22 | 25 | 28 |
| benefit [m] | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

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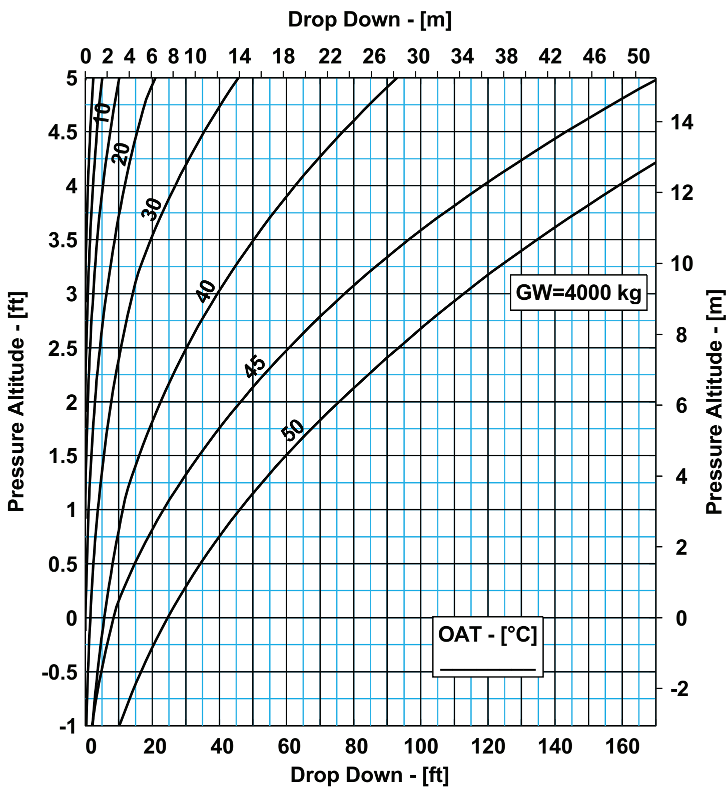
Figure Lim 63: Drop Down Offshore Procedure - EAPS OFF/ON - 3800 kg

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE

EAPS OFF/ON




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 2 | 6 | 10 | 14 | 18 | 23 | 27 | 31 | 35 | 39 |
| benefit [m] | 1 | 2 | 3 | 4 | 6 | 7 | 8 | 9 | 11 | 12 |

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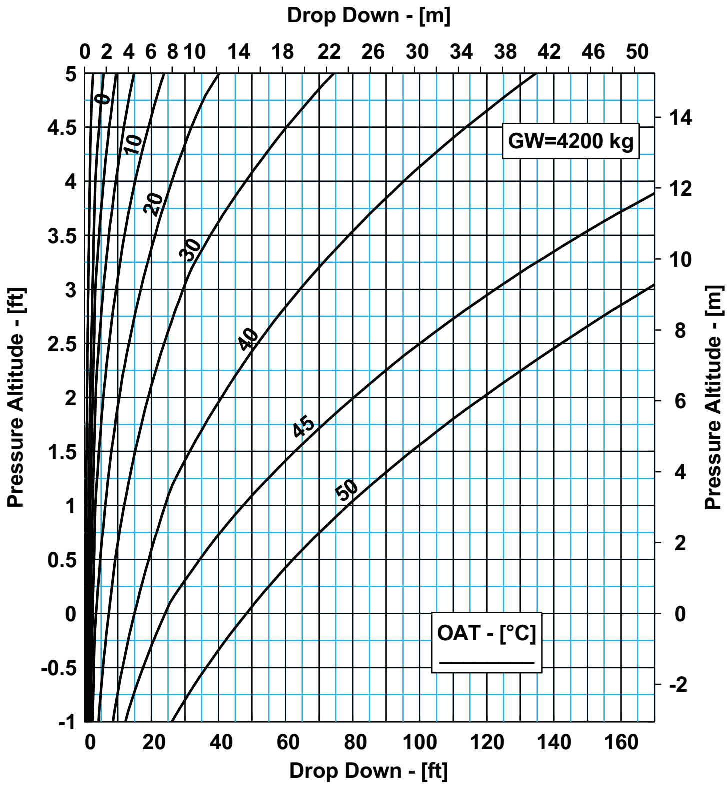
Figure Lim 64: Drop Down Offshore Procedure - EAPS OFF/ON - 4000 kg

CHARTS
DIAGS

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE

EAPS OFF/ON




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 3 | 8 | 14 | 19 | 24 | 30 | 35 | 41 | 46 | 51 |
| benefit [m] | 1 | 2 | 4 | 6 | 7 | 9 | 11 | 12 | 14 | 16 |

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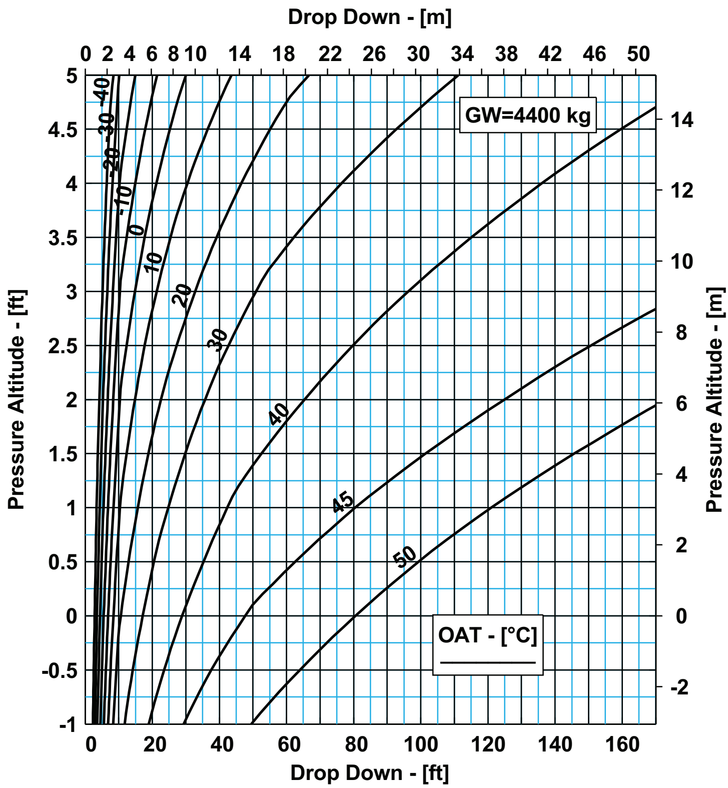
Figure Lim 65: Drop Down Offshore Procedure -
EAPS OFF/ON - 4200 kg

CHARTS
DIAGS

# DROP DOWN
# OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE EAPS OFF/ON




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| benefit [ft] | 3 | 10 | 18 | 24 | 31 | 38 | 44 | 50 | 57 | 63 |
| benefit [m] | 1 | 3 | 5 | 7 | 9 | 12 | 13 | 15 | 17 | 19 |

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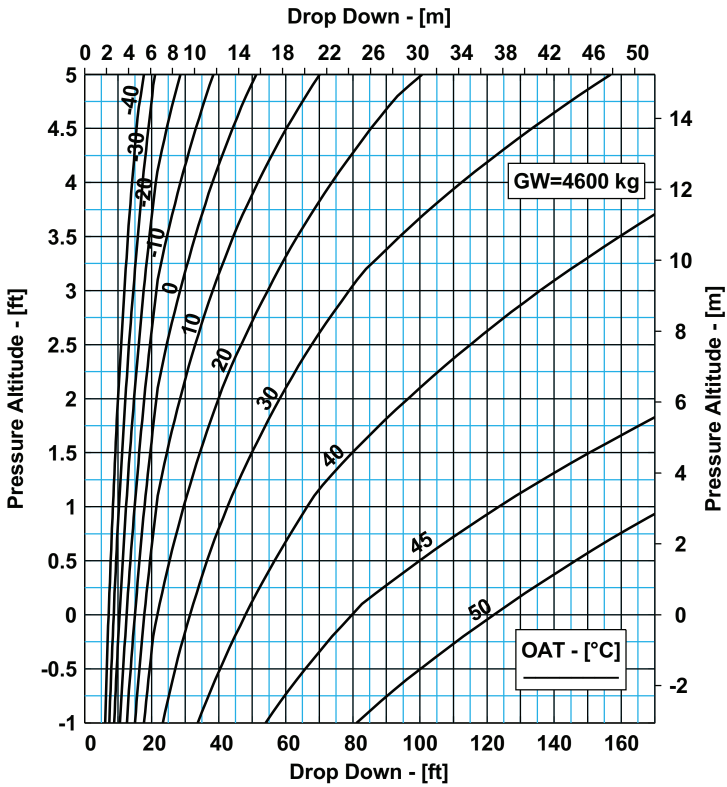
Figure Lim 66: Drop Down Offshore Procedure - EAPS OFF/ON - 4400 kg

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE

EAPS OFF/ON




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 4 | 13 | 22 | 29 | 37 | 46 | 53 | 61 | 68 | 75 |
| benefit [m] | 1 | 4 | 7 | 9 | 11 | 14 | 16 | 18 | 21 | 23 |

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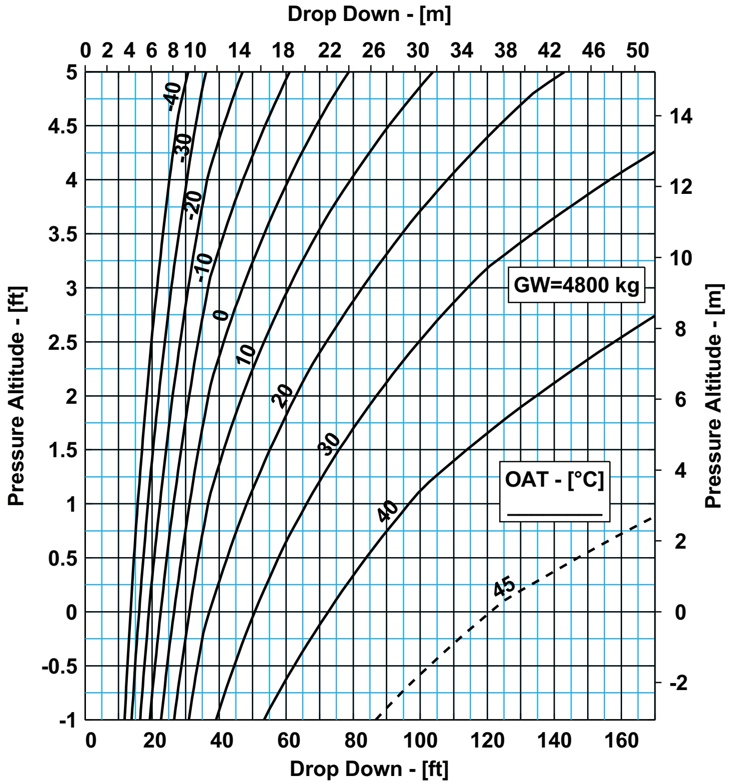
ICN-69-A-155204-G-A0126-00114-A-02-1

Figure Lim 67: Drop Down Offshore Procedure -
EAPS OFF/ON - 4600 kg

## DROP DOWN
## OFFSHORE / ELEVATED HELIDECK PROCEDURE

PLUS MODE

EAPS OFF/ON




| Headwind [kt] | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| benefit [ft] | 5 | 15 | 26 | 35 | 44 | 54 | 63 | 71 | 80 | 88 |
| benefit [m] | 2 | 5 | 8 | 11 | 14 | 16 | 19 | 22 | 24 | 27 |

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ICN-69-A-155204-G-A0126-00115-A-02-1

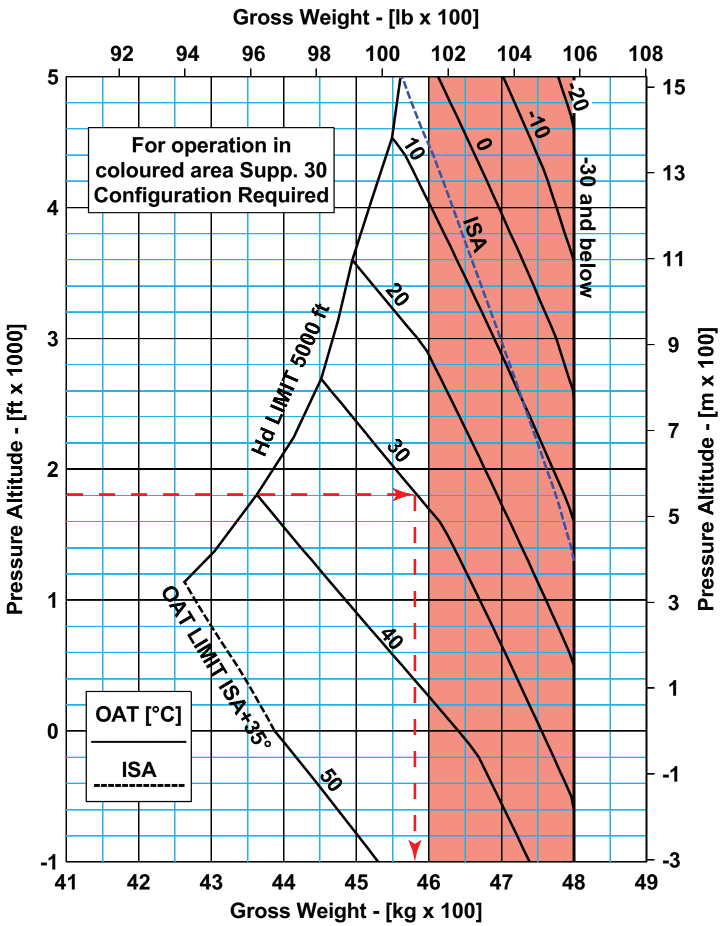
Figure Lim 68: Drop Down Offshore Procedure - EAPS OFF/ON - 4800 kg

CHARTS DIAGS

## SUMMARY TABLE FOR OS&E HELIDECK CATEGORY A LANDING PROCEDURE

| LDP: 30 ft ALS 12kts GS | ENGINE INTAKE CONFIG | WAT FIGURE for landing | Drop down FIGURES |
|---|---|---|---|
| Heater OFF/ON | CLEAN | Figure Lim 69 | Figure Lim 53 thru Figure Lim 60 |
| ECS OFF/ON | CLEAN | Figure Lim 69 | Figure Lim 53 thru Figure Lim 60 |
| Heater OFF/ON | EAPS OFF | Figure Lim 70 | Figure Lim 62 thru Figure Lim 68 |
| ECS OFF/ON | EAPS OFF | Figure Lim 70 | Figure Lim 62 thru Figure Lim 68 |
| Heater OFF/ON | EAPS ON | Figure Lim 70 | Figure Lim 62 thru Figure Lim 68 |
| ECS OFF/ON | EAPS ON | Figure Lim 70 | Figure Lim 62 thru Figure Lim 68 |

## WEIGHT-ALTITUDE-TEMPERATURE
## OFF-SHORE LANDING PROCEDURE




169F1580A001 Rev.I

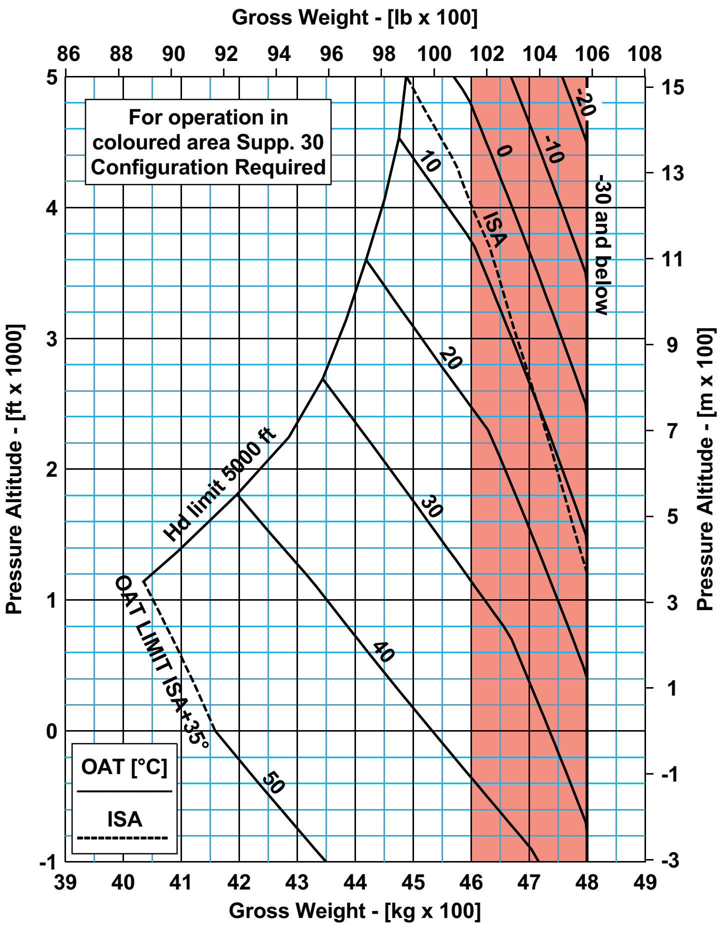
ICN-69-A-155104-G-A0126-00091-A-03-1

Figure Lim 69: WAT OEI Landing Offshore Procedure

CHARTS
DIAGS

## WEIGHT-ALTITUDE-TEMPERATURE
## OFFSHORE/ELEVATED HELIDECK
## LANDING PROCEDURE

EAPS OFF/ON




169F1580A001 Rev.H

ICN-69-A-155104-G-A0126-00094-A-02-1

Figure Lim 70: WAT OEI Landing Offshore Procedure EAPS OFF/ON

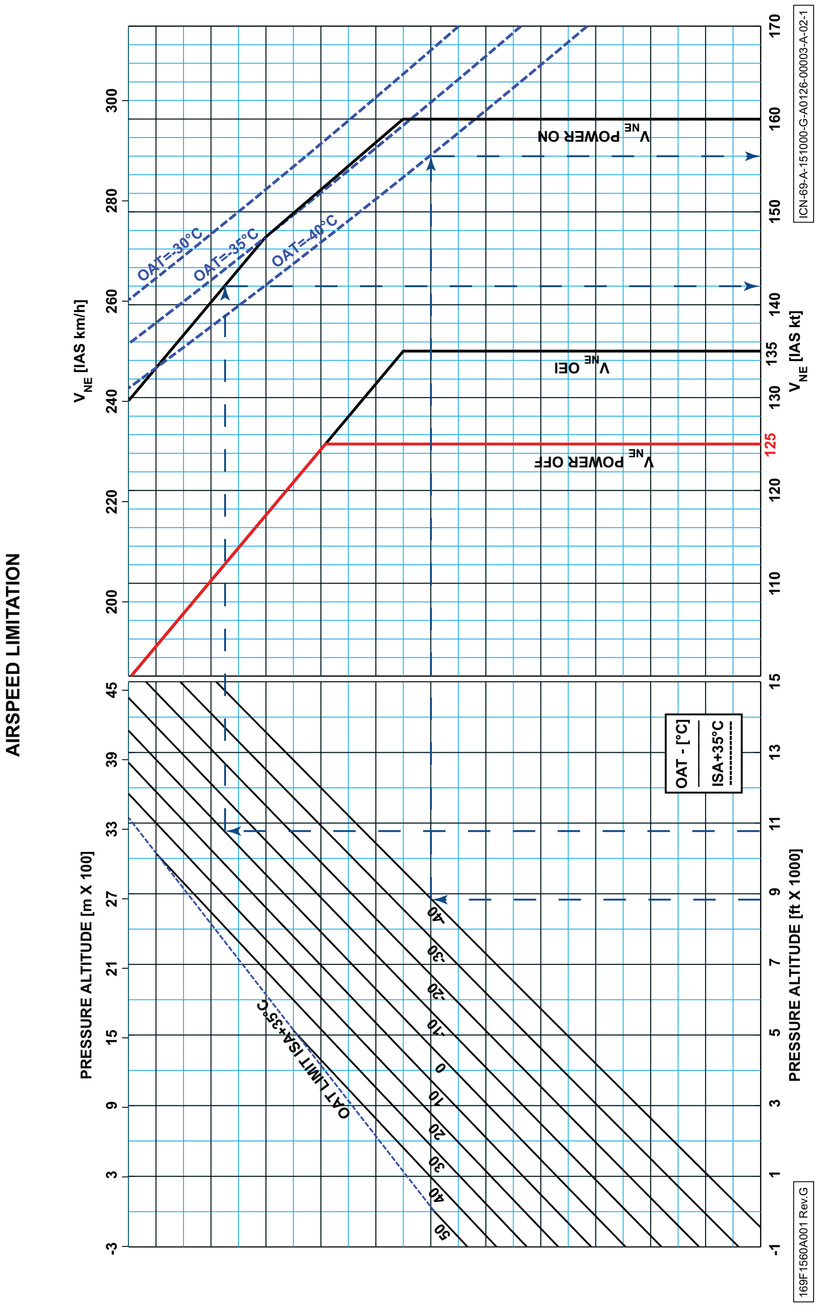



Figure Lim 71: Airspeed Envelope (Vne - Power ON, OEI/Power OFF)

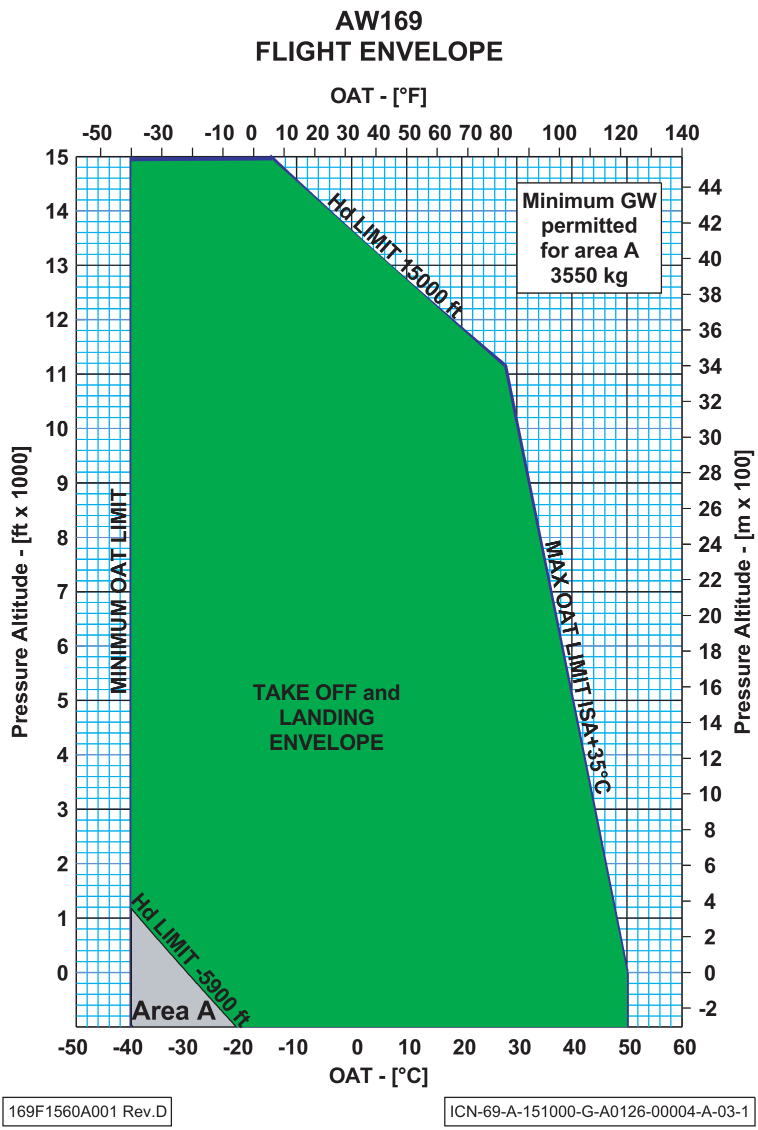



Figure Lim 72: Altitude and OAT Limitations - Up to 4600 kg

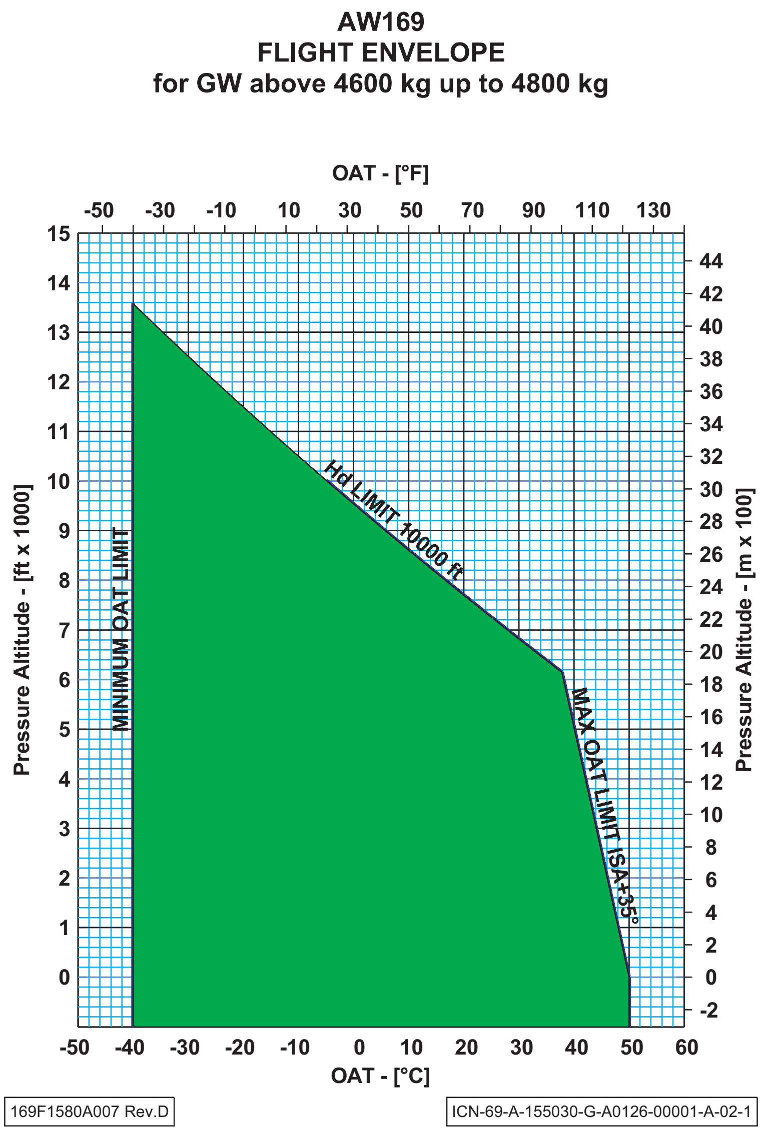



Figure Lim 73: Altitude and OAT Limitations - Above 4600 kg

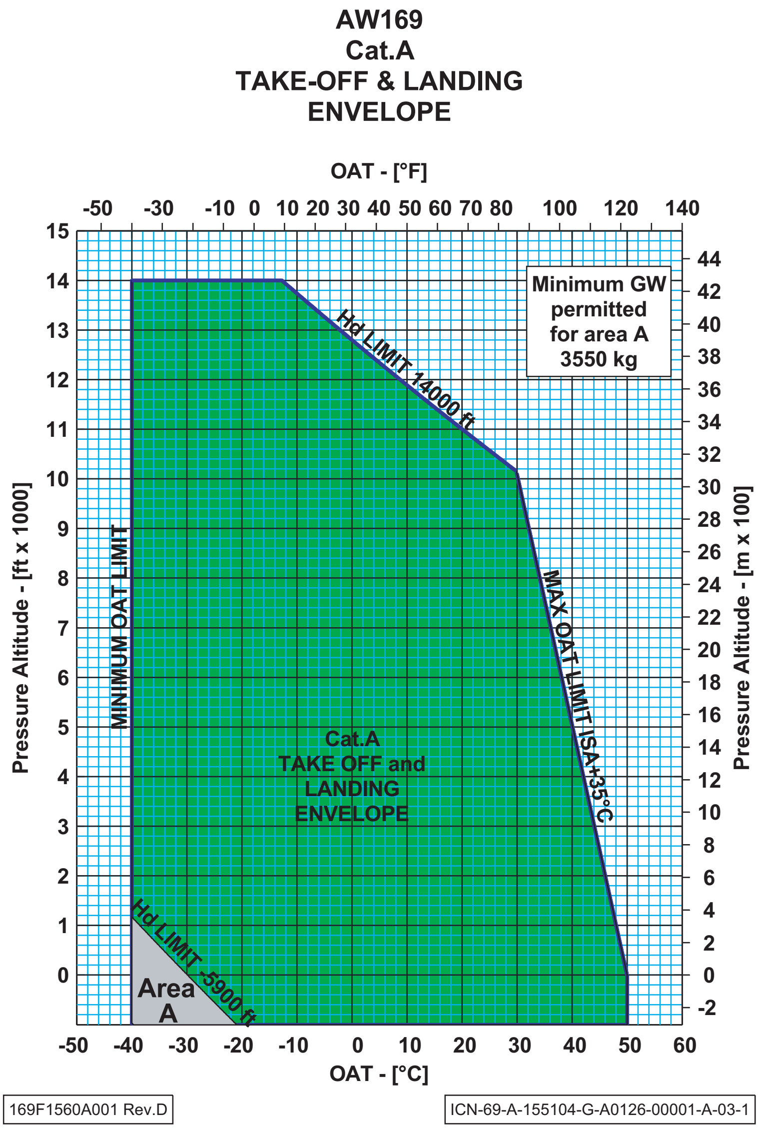
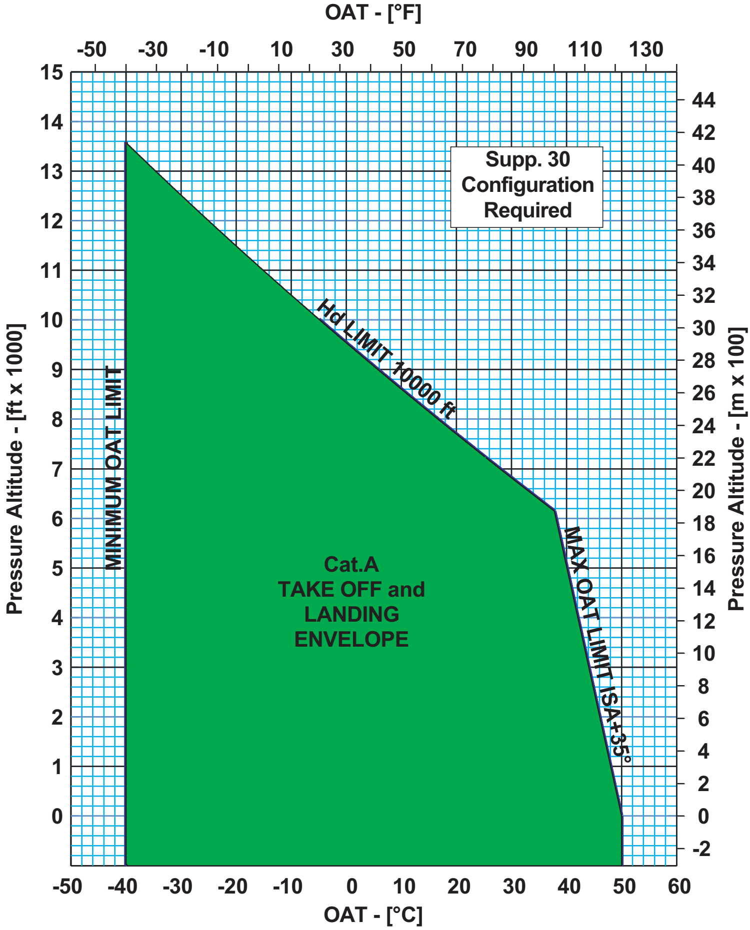



Figure Lim 74: CAT A and CAT B 10 Pax seats - Take-Off and landing envelope up to 4600 kg

AW169
Cat.A
TAKE-OFF & LANDING ENVELOPE
for GW above 4600 kg up to 4800 kg




169F1580A007 Rev.D

ICN-69-A-155030-G-A0126-00036 -A-02-1

Figure Lim 75: CAT A Temperature and Altitude Limitations
for weight above 4600 kg

CHARTS
DIAGS

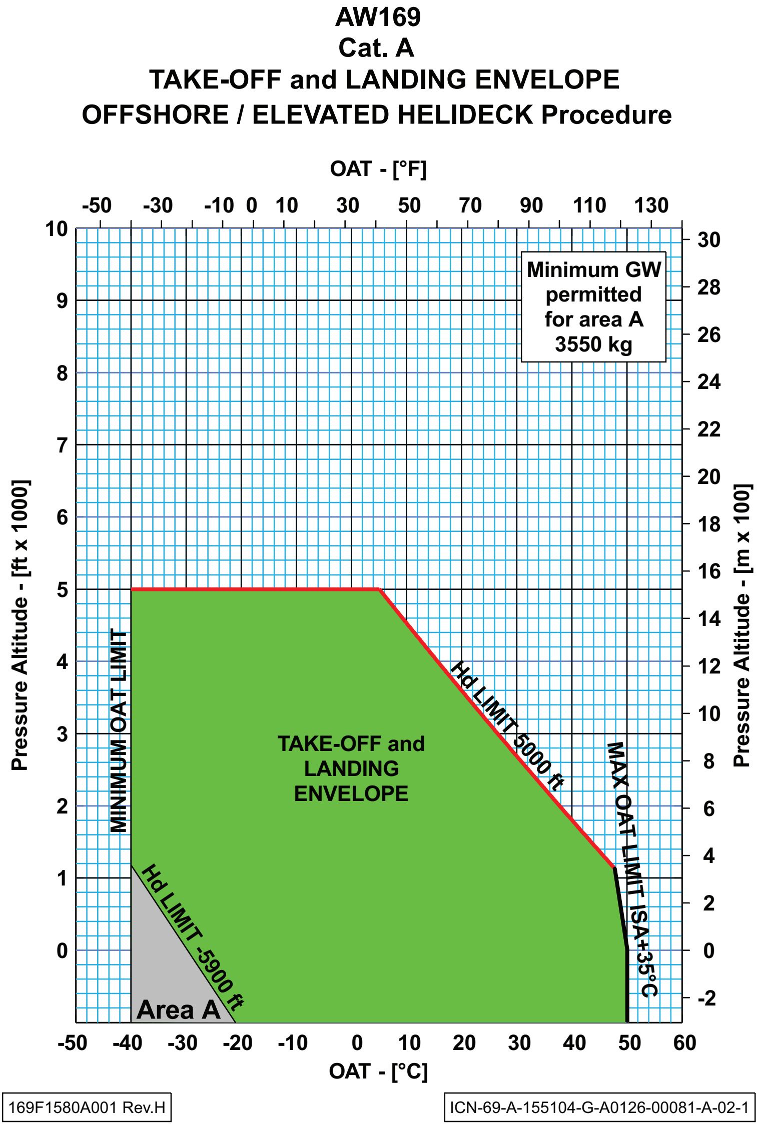
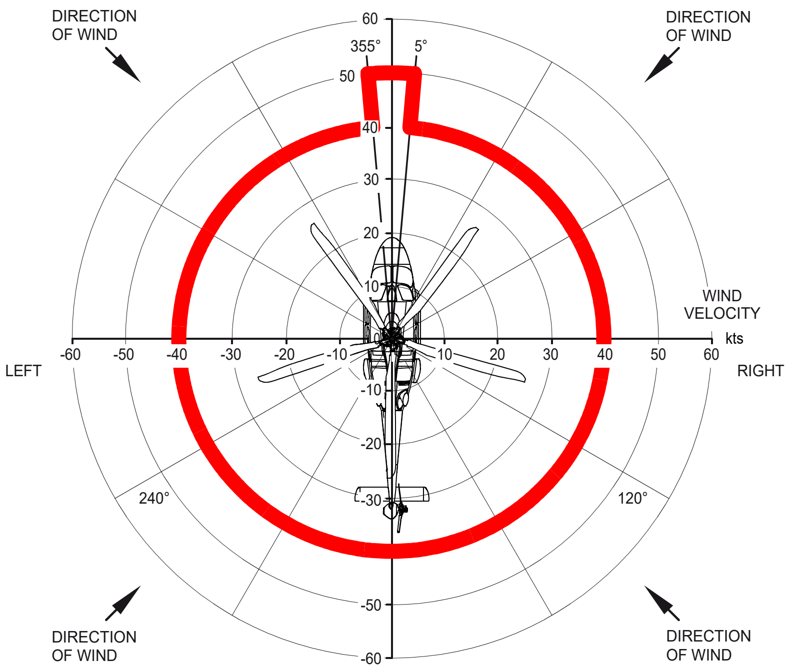



Figure Lim 76: Offshore/Elevated Helideck Altitude and OAT Limitations




ICN-69-A-151000-G-00003-01261-A-02-1

Figure Lim 77: Windspeed Limitations for engine and rotor starting / stopping

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# GENERAL, FLIGHT PLANNING, EXTERNAL & INTERNAL CHECKS

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# NORMAL PROCEDURES

## GENERAL

The normal procedures detailed hereafter are the result of extensive flight tests and experience with the AW169 aircraft. They are fundamental to ensure that the level of safety required by the design and certification process is achieved.

**Note**

Throughout this Section, checks marked with a large ➡ are required once every 24 hour period. All other checks are to be carried out before each flight.

Normal and standard conditions are assumed in these procedures. Pertinent data in other sections is referenced where applicable.

Capital letters are used in the procedures to indicate the labeling of switches, selections to be made or caution/warning messages.

The minimum and maximum limits, and the normal and cautionary operating ranges are indicated on the PFD and MFD displays, Refer to Section 1 for details on operating limitations.

Each time an operating limitation is exceeded, an appropriate entry must be made in the log book (helicopter, engine, etc.). The entry shall state which limit was exceeded, duration, the extreme value attained, and any additional information essential in determining the maintenance action required.

### CATEGORY B WEIGHT DETERMINATION

In order to determine maximum weight for Category B HIGE Take-Off and Landing refer to Figure Lim 5 and Figure Lim 6 as indicated in CATEGORY B OPERATION LIMITATIONS (UP TO 9 PASSENGER SEATS).

## GROSS WEIGHT AND CENTER OF GRAVITY

Determine both the Take-Off and estimated landing Gross Weight, Center of Gravity and verify that they are within approved envelope limits. The Weight and Balance, Section 6 of RFM, and appropriate performance charts, Section 4 of RFM, must be used to obtain the weight and balance data as follows:

— Consult Section 6 of RFM Weight and Balance;

— Ascertain weight of fuel, oil, payload etc.;

— Compute Take-Off and anticipated gross landing weight (RFM Section 4);

— Check helicopter centre of gravity (CG) position;

— Confirm that the weight and CG limitations at page 6 are not exceeded.

# COLD WEATHER OPERATION

Extremely low temperatures can produce adverse effects on the aircraft. These effects can include cracking and/or deterioration of non-metallic materials such as plexiglass, rubber, synthetic rubber and plastics.

**CAUTION**

If the aircraft has been parked outside in snow or icing conditions, ensure that the deicing procedure detailed in the Maintenance Manual has been completed and that ice and snow have not re-accumulated since its completion.

Very cold temperatures can cause low engine and high transmission oil pressures during the starting sequence.

If the helicopter is to remain parked outside with an OAT at or below -20 °C both Main and Auxiliary batteries must be removed and stored in a heated room.

As general indication if the aicraft has been exposed to OAT not below -10 °C for any time duration or between -10 °C to -20 C for less than 2 hours or between - 20 °C to -40 °C for less than 30 minutes, it can be considered NOT COLD SOAKED.

It is recommended to use DC EXT PWR to start engines after cold soak as automatic abort engine start might occur with **HOT START** caution illumination when using aircraft batteries.

When the aircraft has been subject to cold soak the NORMAL PROCEDURES need to be supplemented.

The SUPPLEMENTARY PROCEDURES FOR POST-COLD SOAK START are given in this paragraph with references, where necessary, to the NORMAL PROCEDURES in this Section.

## SUPPLEMENTARY PROCEDURES FOR POST-COLD SOAK START

1. Remove all blanks and covers.
2. Re-install batteries in accordance with the procedure of the Aircraft Maintenance Manual.
3. Complete PRE-FLIGHT CHECKS, special attention should be focused on components such as landing gear shock absorbers, tires, seals, etc., to ensure that these components are in airworthy condition prior to departure.
4. Complete COCKPIT SAFETY CHECKS.
5. Complete ENGINE PRE-START CHECKS.
6. Carry out ENGINE START procedure up to step 22., (Engine 1 start in Accessory mode).

When MGB oil is very cold, pressure indication is slow to rise but then it may exceed the normal range. The MGB oil pressure is regulated in order to optimize the operative conditions. During cold starting operations the MGB oil pressure could temporary reach values up to 6.7 bar (0.7 bar above the normal range).
This is normal since the oil pressure decreases as oil temperature rises.
The pressure could still be in the cautionary range when the ENG MODE knob is moved from IDLE to FLT.
Do not apply power until the MGB oil pressure and temperature are in the normal range.

**2 MGB OIL PRESS** caution may temporarily display, when starting post cold soak in Accessory mode.



7. Carry out cyclic, collective and yaw pedals full and free using the following procedure.
   — Exercise the flight controls progressively and slowly.
   — Set collective to approximately 50% and exercise cyclic alternatively fore/aft and left/right progressively increasing the stroke until full displacement. Repeat full displacement 3 times.
   — Set cyclic centered and exercise collective progressively increasing the stroke until full displacement. Repeat full displacement 3 times.
   — Exercise yaw pedals progressively increasing the stroke until full displacement. Repeat full displacement 3 times.
8. Centralize yaw pedals and set collective to MPOG.
   Centralize cyclic control by moving in the direction indicated by the yellow arrows to obtain the central circle green, using the control position indicator, on PFD.
9. Carry out ENGINE START procedure from step 24. to step 46.
10. Engage AP 1 and AP 2 monitoring HYD 1 and HYD 2 temperatures.
11. Make small cyclic, collective and pedals movements.
12. Check HYD 1 and HYD 2 temperatures first dropping and then rising.
13. Dis-engage AP 1 and AP 2.
14. Select TEST on AFCS control panel, when HYD 1 and HYD 2 temperatures reach 10 °C.
15. Carry out AFTER ENGINE START CHECKS, see page 144.

## PRE-FLIGHT CHECKS

The inspection commences at the nose and continues clockwise around the helicopter. During the inspection, check that there are no leaks from overboard drains, that all vents, air intakes, air outlets and fire access points are clear of obstructions, and all access panels and antennas are secure.

### DAILY PRE-FLIGHT CHECK TO BE DONE BEFORE REFUELLING

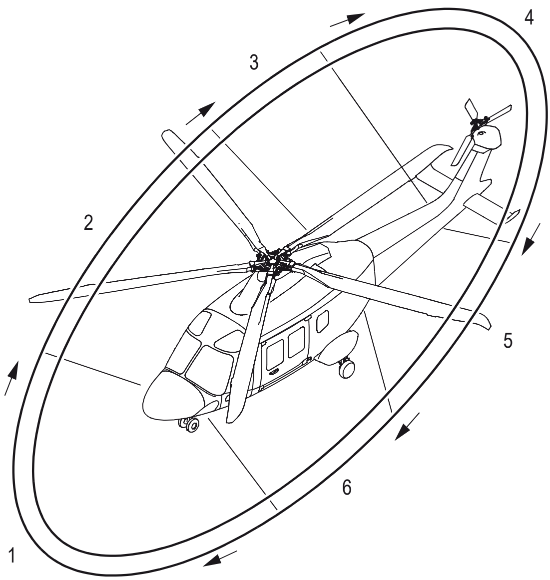
Fuel tank water bleeding has to be done before the first flight of the day by a trained person before moving the aircraft. Drain shall take about 25 seconds for each tank sump.

The term "trained person" means a Mechanic or a pilot who has received sufficient training to perform these tasks.

EXT/INT CHECKS

## CHECKS

The following procedure outlines the pilot walk around and interior checks (Figure NP 1).




AREA N°1 : Helicopter nose
AREA N°2 : Fuselage - RH side
AREA N°3 : Tail boom - RH side
AREA N°4 : Fin, intermediate/tail gearbox, tail rotor
AREA N°5 : Tail boom LH side
AREA N°6 : Fuselage - LH side
AREA N°7 : Cabin and Cockpit interior

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Figure NP 1: Pre-flight Check Sequence

| | | |
|---|---|---|
| 1. | Main and tail rotor tie downs (if present) | — Removed. |

**AREA N°1 (Helicopter Nose)**

| | | |
|---|---|---|
| 2. | Nose exterior | — Condition. |
| 3. | Pitot-Static Probe (Left side) | — Cover removed, condition and un-obstructed. |
| 4. | Left side brake lines in brake pedal area (looking through bottom transparent panel) | — Condition/leaks. |
| 5. | Nose landing gear | — Condition, shock strut extension, leaks, tyre condition and pressure. |
| 6. | Ventilation air intakes (Underside of nose) | — Un-obstructed. |
| 7. | Nose compartment access door | — Condition and Secure. |
| 8. | Pitot-Static Probe (Right side) | — Cover removed, condition and un-obstructed. |
| 9. | Right side brake lines in brake pedal area (looking through bottom transparent panel) | — Condition/leaks. |

**AREA N°2 (Fuselage - RH Side)**

| | |
|---|---|
| 10. Windshield and roof transparent panel | — Condition, cleanliness. |
| 11. Windscreen wiper ➡ | — Condition. |
| 12. Fuselage exterior | — Condition. |
| 13. Pilot cockpit door | — Condition, cleanliness, window secure. |
| 14. Passenger cabin door | — Condition, cleanliness. |
| 15. Right side emergency exits ➡ | — Verify secure. |
| 16. Main landing gear | — Condition, shock strut extension, leaks, tyre condition and pressure. |
| 17. Fuel vent oulet grid | — Free of obstructions. |
| 18. Cowling and fairings ➡ | — Condition and latched. |
| 19. Main rotor dampers | — Condition, check for leaks. |
| 20. Main rotor components and blades | — General condition. |
| 21. Green navigation light on the sponson ➡ | — Condition. |
| 22. Drains and vent lines | — Free of obstructions, confirm no leaks. |
| 23. Fuel tank sump area (Right side) | — Confirm no leaks. |
| 24. Fuel filler cap (if fitted) | — Secure. |
| 25. Antennas | — Condition. |
| 26. Maintenance steps (if installed) | — Condition, closed. |
| 27. Engine air intake | — Cover removed, clear of damage and obstructions. |
| 28. Engine area | — Check for fuel and/or oil leaks. |
| 29. Vents and ports | — Clear and unobstructed. |
| 30. Engine cowling | — Secure. |
| 31. Engine exhaust | — Cover removed, condition. |
| 32. Engine fire bottle discharge indicator | — Green. |

**AREA N°3 (Tail Boom - RH Side)**

| | |
|---|---|
| 33. Tail rotor drive shaft cover | — Secure. |
| 34. Tail boom exterior | — Condition. |
| 35. Antennas ➡ | — Condition. |
| 36. Stabilizer | — Condition. |

**AREA N°4 (Fin, Intermediate and Tail Gearbox, Tail Rotor)**

| | |
|---|---|
| 37. Tail fin | — Condition. |
| 38. Intermediate gearbox | — Check for leaks. |
| 39. Vents and ports | — Clear and un-obstructed. |
| 40. Tail navigation and anticollision lights | — Condition. |
| 41. Tail rotor hub and blades | — Condition, cleanliness. |
| 42. Tail rotor pitch change mechanism ➡ | — Condition. |
| 43. Tail rotor gearbox | — Check for leaks. |

**AREA N°5 (Tail Boom LH Side)**

| | |
|---|---|
| 44. Stabilizer | — Condition. |
| 45. Tail boom exterior | — Condition. |
| 46. Tail rotor drive shaft cover | — Secure. |
| 47. Antennas ➡ | — Condition. |

## AREA N°6 (Fuselage LH Side)

| | |
|---|---|
| 48. Fuselage exterior | — Condition. |
| 49. Engine fire bottle discharge indicator | — Green. |
| 50. Engine exhaust | — Cover removed, condition. |
| 51. Baggage compartment, tie down/net | — Condition, cargo (if on board) correctly secure. |
| | — Confirm main and auxiliary batteries plugged in. |
| 52. Baggage door | — Latches fully engaged, door secure and key locked. |
| 53. Fuel filler cap | — Secure. |
| 54. Main rotor components and blades | — General condition. |
| 55. Main rotor dampers | — Condition, check for leaks. |
| 56. Engine area ➡ | — Check for fuel and/or oil leaks. |
| 57. Engine cowling | — Secure. |
| 58. Engine air intake screen | — Cover removed, clear of damage and obstructions. |
| 59. Air intakes | — Clear and unobstructed. |
| 60. Left side emergency exits ➡ | — Confirm secure. |
| 61. Drains and vent lines | — Free of obstructions, confirm no leaks. |
| 62. Fuel tank sump area (Left side) | — Confirm no leaks. |
| 63. Fuel vent oulet grid | — Free of obstructions. |
| 64. Main landing gear | — Condition, shock strut extension, leaks, tyre condition and pressure. |
| 65. Red navigation light on the sponson ➡ | — Condition. |
| 66. Passenger cabin door | — Secure. |
| 67. Cowling and fairings ➡ | — Condition and latched. |
| 68. Co-pilot cockpit door | — Condition, cleanliness, window secure. |
| 69. Windshield and roof transparent panel | — Condition and cleanliness. |
| 70. Windscreen wiper | — Condition. |

**AREA N°7 (Cabin and Cockpit Interior)**

| | | |
|---|---|---|
| 71. | Passenger Emergency exits | — Verify secure. |
| 72. | Cabin interior | — Equipment secure. |
| 73. | First Aid Kit ➡ | — On board. |
| 74. | Emergency equipment (if any) | — Check. |
| 75. | Cabin fire extinguisher ➡ | — Secure, charge. |
| 76. | Passenger seat belts & inertia reels | — Condition. |
| 77. | Passenger doors | — Secure. |
| 78. | Pilot and Copilot safety belt and inertia reel | — Condition. |
| 79. | Pilot and Copilot seats | — Secure. |
| 80. | Pilot and Copilot flight controls ➡ | — Condition and secure. |
| 81. | Lower and lateral transparent panels | — Integrity, cleanliness and no signs of brake fluid. |
| 82. | Pilot and Copilot doors | — Secure. |
| 83. | Instruments and panels | — Condition and legibility. |

## COCKPIT SAFETY CHECKS



1. Pedals and seats (pilot and copilot) — Adjust.
2. Seat belt and inertia reel (pilot and copilot) — Fasten and adjust.
3. Circuit breakers (overhead CB panel) — IN.
4. FIRE EXTING control panel (on instrument panel) — Normal and guarded.
5. ELT switch (instrument panel) — Confirm ARM.
6. EDCU pilot and copilot knobs — ON.
7. GEN 1 and GEN 2 switches (EPGDS control panel) — ON.
8. All other switches — OFF or closed.
9. Reconfiguration Control Panel knobs — NORM.
10. ICS panels — Set as required.
11. ENG 1 MODE and ENG 2 MODE knobs (engine control panel) — OFF.

**CAUTION**

On ground, do not actuate the EMER DOWN pushbutton.

12. Landing gear lever (LDG GEAR control panel) — Confirm DOWN.
    EMER DOWN switch guarded.
13. PARK BRAKE (LDG GEAR control panel) — As required.

# ENGINE PRE-START, ABORT START, DRY MOTOR & ENGINE START

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## ENGINE PRE-START CHECKS

| | | |
|---|---|---|
| 1. | Master Cut-Off Switch (EPGDS control panel) | — NORM, guard closed. |
| 2. | EXT PWR switch (EPGDS control panel) | — ON, if external power is connected. |
| 3. | MAIN BATT switch (EPGDS control panel) | — ON. |
| 4. | AUX BATT switch (EPGDS control panel) | — ON. |
| 5. | MODE switch (on LTG PNL) | — DAY/NIGHT as required. |
| 6. | EMERG switch (on LTG PNL) | — ON, confirm lights functioning.<br>— Set to ARM. Confirm Electrical Emergency Exit Markings (EEEM) remain illuminated, if installed. |



**Note**

Any time the FASTEN SEATBELTS is selected ON, the cabin occupants must also be informed using internal PA system.

| | | |
|---|---|---|
| 7. | MFD | — Set P-PLANT page. Check for consistent indications and configuration setting. |
| 8. | CAS messages | — Check. |

**Note**

At aircraft power up, MAG DEGR annunciation will be displayed. Annunciation will clear after a valid HDG value will be computed.

**Note**

At aircraft power up, AVSR FAIL caution and BACKUP mode legend at bottom of NF/NR scale will remain displayed for approximately 3 minutes after both AP1 and 2 are electrically powered.
Engine start and normal procedures can be carried out with the precaution NOT to select BOTH ENG MODE knobs to FLT. Should both ENG MODE knobs be inadvertently selected to FLT before AVSR FAIL caution cleared, the caution will remain latched and PLUS mode will NOT be available.
Complete aircraft shutdown is necessary to recover.

| | | |
|---|---|---|
| 9. | PITOT HEATERS (EDCU MISC page) | — AUTO |
| 10. | FORCE TRIM P/R and C/Y switches (EDCU) | — Clutched. |

| | |
|---|---|
| 11. FIRE TEST pushbutton (EDCU, TEST page) | — Press and check the illumination of MWL and of FIRE lights:<br>- on Engine Control panel;<br>- on FIRE EXTING control panel;<br>- on MFD. |
| | — **1(2) ENG FIRE** warning CAS message show and ENGINE ONE (TWO) FIRE audio message activate. |
| | — **BAG FIRE** warning CAS message shows and WARNING audio message activate. |
| 12. AWG SHORT TEST pushbutton (EDCU,TEST page) | — Press and verify that the AURAL SYSTEM TEST aural message is generated. |
| | — MWL and MCL Illuminate. |
| 13. XMSN OIL TEST pushbutton (EDCU, TEST page) | — Momentarily press and confirm CAS caution (wait about 7 seconds):<br>- MGB OIL LOW and MCL illuminates. |
| 14. LAMP TEST pushbutton (EDCU TEST page) | — Press and confirm the following illuminate:<br>- MWL and MCL Illuminate.<br>- ENG 1 & 2 FIRE/ARM and FIRE EXTING panel.<br>- FIRE lights on ENG CONTROL panel.<br>- NOSE/LH/RH yellow and green lamps, NOSE.<br>- WHEEL UNLK/LOCK lamps on LDG GEAR panel.<br>- All green indications on the AFCS control panel.<br>- All green lights on DCP. |

# ENGINE STARTING

## ABORTED ENGINE START PROCEDURE

**CAUTION**

Failure to follow the aborted engine start procedure may cause damage to the engine.

Engine starting malfunctions are most likely to occur during the engine acceleration cycle to IDLE speed. The list below details the cockpit indications associated with malfunctions and the recommended aborted engine start procedure. It is important for flight crews to be thoroughly familiar with these procedures.

Monitor engine start and if any of the following occurs:

— no light up within 10 seconds of ENG MODE knob to IDLE;

— ITT increases beyond engine limits (**HOT START** caution illuminated);

— ITT goes invalid (shows X or blank);

— engine hangs (NG stagnation below 60%);

— if engine starter fails to disengage by 54% NG.

Shut down engine as follows:

1. ENG MODE knob — OFF.
2. FUEL ENG SOV (EDCU, FUEL page) — CLOSE.

**CAUTION**

On ground, should an engine starting procedure be aborted, electrical power must be switched off completely before motoring or re-starting operations.

## MOTORING PROCEDURE

Following an aborted start shutdown, perform the following procedure to clear internally trapped fuel and vapor.

Choose one of the following three cycles:

| No | Cycle |
|---|---|
| 1 | 45 seconds on, 10 minutes off |
| 2 | 30 seconds on, 5 minutes off |
| 3 | 15 seconds on, 2 minutes off |

The chosen cycle can be repeated 3 times. If further motoring is requested, 30 minutes rest time is necessary.

1. ENG MODE knob - OFF.

2. FUEL ENG SOV (EDCU FUEL page) - CLOSE.

3. Engine CRANK switch - Select 1 or 2, as required and release when sufficient ITT decrease is noted.

4. Gas generator (NG) - Note increasing when cranking.

**CAUTION**

Should motoring procedure carried out in battery power, it is necessary to wait at least 30 seconds before restarting operations (to allow the power reset on the MAIN BUSES from PDU).

**ENG START**

**ENGINES START**

**Note**

To disengage the No. 1 engine from the main rotor and enter the ACCESSORY mode, the two engines must be in one of the two following states.

| State | No. 1 engine | No. 2 engine |
|---|---|---|
| State **1** | ENG 1 MODE knob: OFF | ENG 2 MODE knob: OFF or IDLE or FLT |
| State **2** | ENG 1 MODE knob: IDLE/APU | ENG 2 MODE knob: FLT |

1. ENG 1 ACC switch — Set to ACC.
2. PFD, CAS area — Check **ENG ACC TRAN** advisory shows and then clears when the **ENG ACCESSORY MODE** advisory shows.
3. MFD, ENGINE page — Check actuator position fully retracted.
4. LOAD SHARE switch — TQ.
5. TNG switch — Guarded.
6. CRANK switch — Center position.
7. POSITION lights (EDCU, LIGHTS page) — ON.
8. ENG 1 SOV (EDCU, FUEL page) — Select OPEN.
9. MFD display — Confirm P-PLANT page.

**Note**

The MGB oil pressure is regulated in order to optimize the operative conditions. During cold starting operations the MGB oil pressure could temporary reach values up to 6.7 bar (0.7 bar above normal range). This is normal since the oil pressure decreases as oil temperature rises.

| | |
|---|---|
| 10. ENG 1 MODE knob | — IDLE/APU. |

**Note**

If the START legend is NOT displayed close to NG1, set ENG 1 MODE knob to OFF and GEN 1 switch to RESET then to ON and resume ENGINES START procedure.

| | |
|---|---|
| 11. Gas Producer (NG1) | — Note increasing and START legend displayed. |
| 12. Engine 1 temperature (ITT1) | — Note increasing and IGN legend displayed. Maximum ITT for starting 750 °C. |
| 13. Engine 1 oil pressure | — Confirm rising. |
| 14. Engine 1 starter | — Disengaged by 54% NG. |
| 15. Engine 1 power turbine speed (NF1) | — Confirm progressively accelerates to 100%. |
| 16. Rotor speed (NR) | — Remains stationary. |
| 17. Engine 1 temperature (ITT1) | — Stabilize below 868 °C. |
| 18. Main hydraulic system 1 | — Confirm pressure rising. |

**Note**

If an engine is running at NG lower than 64%, the DC generator will not come On Line when selected ON.
Once On Line, the DC generator will remain On Line if the NG remains greater than 50%.

| | |
|---|---|
| 19. GEN 1 | — Confirm on line. |
| 20. Engine and transmission oil | — Check pressures and temperatures within limits. |
| 21. Fuel pressure | — Check **1 ENG FUEL PRESS** caution extinguished. |

| | |
|---|---|
| 22. Flight Controls | — Carry out cyclic, collective and yaw pedals full and free check using the following procedure.<br>- Exercise the flight controls progressively and slowly.<br>- Set collective to approximately 50% and exercise once cyclic to full displacement.<br>- Set cyclic centered and exercise once collective to full displacement.<br>- Exercise yaw pedals to full displacement. |
| 23. Flight Controls | — Centralize yaw pedals and set collective to MPOG.<br>— Centralize cyclic control by moving in the direction indicated by the yellow arrows to obtain the central circle green, using the control position indicator, on PFD. |

**Note**

Cyclic position indicator is presented on the PFD only when the aircraft is on the ground and the collective is near its down position (MPOG).

| | |
|---|---|
| 24. MFD display | — Confirm P-PLANT page. |
| 25. ANTI-COLL lights (EDCU, LIGHTS page) | — ON. |
| 26. Interior lights (EDCU, LIGHTS page) | — As required. |
| 27. Fast seatbelt indicators (EDCU, LIGHTS page) | — ON. |
| 28. Rotor brake switch | — OFF.<br>Check ROTOR BRK ON advisory clears. |
| 29. ENG 2 SOV (EDCU, FUEL page) | — Select OPEN. |
| 30. GEN 1 | — Check loadmeter in normal range. |

**Note**

It is recommended to start the engine2 to IDLE. If necessary, it is possible to start the engine to FLT by setting the ENG MODE knob directly to FLT. In this case spurius **2 ENG OUT** warning will transiently display with associated aural.

**Note**

The MGB oil pressure is regulated in order to optimize the operative conditions. During cold starting operations the MGB oil pressure could temporary reach values up to 6.7 bar (0.7 bar above normal range). This is normal since the oil pressure decreases as oil temperature rises. The pressure could still be in the cautionary range when the ENG MODE knob is moved from IDLE to FLT. Do not apply power until the MGB oil pressure and temperature are in the normal range.

**CAUTION**

When starting engine 2 or engine 1 in MAIN drive check associated NF and NR start raising within about 15 seconds with OAT above 0°C and within about 20 seconds with OAT equal or below 0°C.

31. ENG 2 MODE knob — IDLE.

**Note**

If the START legend is NOT displayed close to NG 2, set ENG 2 MODE knob to OFF and GEN 2 switch to RESET then to ON and resume ENGINES START procedure.

32. Gas Producer (NG2) — Note increasing and START legend displayed.
33. Engine 2 temperature (ITT2) — Note increasing and IGN legend displayed. Maximum ITT for starting 750 °C.
34. Engine 2 oil pressure — Confirm rising.
35. Engine 2 starter — Disengaged by 54% NG.
36. Engine 2 power turbine speed (NF2) and rotor speed (NR) — Confirm stabilized to IDLE speed of 70%.
37. Engine 2 temperature (ITT2) — Lower than 868 °C.
38. Main hydraulic system 2 — Confirm rise in pressure.

**Note**

If an engine is running at NG lower than 64%, the DC generator will not come On Line when selected ON.
Once On Line, the DC generator will remain On Line if the NG remains greater than 50%.

39. GEN 2 — Confirm on line.

40. EXT PWR switch (EPGDS control panel) (if external power is used) — OFF, DC EXT PWR ON advisory extinguishes and DC EXT PWR READY advisory shows.

**Note**

DC EXT PWR READY advisory shows until the external power is available at the aircraft plug.

41. External power receptacle door — Disconnect and close external power receptacle door, DC EXT PWR DOOR caution extinguished.

42. Fuel pressure — Check 2 ENG FUEL PRESS caution extinguished.



**Note**

The AFCS check described below shall be performed ON GROUND with Cyclic and Pedals centralized and the Collective trimmed down.

43. AFCS control panel ➡ — Press and release Collective FTR switch;
— Push TEST to start the testing sequence and follow instructions given on AFCS page of MFD. Confirm test completes successfully with no AP CAS messages. Check AP1-2 ON ATT mode.

44. ENG 2 MODE knob — FLT.

45. Engine and transmission parameters — Check within limits.

46. Rotor speed — Confirm 103%.

47. Clock — Set.

**Note**

To engage the No. 1 engine to the rotor and enter the MAIN mode, the two engines must be in one of the following two states. It is not possible to re-clutch the No. 1 engine to the main rotor with both engines OFF. This is prevented by the control system design as it will affect the operational life of the actuator.

| State | No. 1 engine | No. 2 engine |
|---|---|---|
| State **1** | ENG 1 MODE knob: IDLE/APU | ENG 2 MODE knob: FLT |

| State | No. 1 engine | No. 2 engine |
|---|---|---|
| State **2** | ENG 1 MODE knob: OFF | ENG 2 MODE knob: IDLE or FLT |

48. ENG 1 ACC switch — Set to MAIN.

49. PFD — When NF1 decreases below 98%, the ENG ACCESSORY MODE advisory clears and the ENG ENG ACC TRAN advisory shows.
    — Check NF1 reduces approximately to 75%.

50. MFD (ENGINE page) — When the ENG ACC TRAN advisory clears, confirm actuator position fully engaged.

51. PFD — Confirm PLUS mode green legend and AVSR FAIL caution clear.

52. ENG 1 MODE knob — FLT.

## AFTER ENGINE START CHECKS



1. MFD, P-PLANT page — Check all parameters within limits.
2. ENG 1 & 2 MODE knobs — FLT.
   — Confirm PLUS mode. NR/NF 103%.
3. MFD page — Select as required.
4. EDCU (TEST page) — Select TUNE TEST, then TEST ALL.
   — Confirm TEST is properly passed..
5. EDCU — Set COM and NAV as required.
6. EDCU (INIT page) — Set PILOT/COPILOT/CABIN/BAGGAGE weights.
7. ECS — Set as required.
8. ICS panels — Set as required.
   — Set BKUP volume as required.
9. Cockpit lights — Set as required.
10. Cabin lights — Set as required. Lights must be turned ON for at least one minute to guarantee the level of luminescence.
11. RAD ALT test (on Display Control Panel) — Select DH.
    — Press central knob and hold to read RA 1 and RA 2 50 ft (±10 ft).
    — Release the knob and confirm zero indication on RA 1 and RA 2. (±5 ft).
12. DH selector (on Display Control Panel) — Rotate as required.
13. Altimeters: Pilot, Standby and Copilot — Set and check.
14. LDG LT switch — As required.
15. CAS — Clear or as required.

# QUICK START PROCEDURE

## PREPARATION FOR QUICK START

The following procedure allows the operator to prepare the aircraft for quick start. The pilot will be able to start the engines and launch the rotor in a minimum amount of time. Prior to assuming a quick start status, the helicopter will be run-up (or flown) to include completion of the following checks, in the last 24 hours:

- **PRE-FLIGHT CHECKS** (including checks required by Optional Equipments);
- **SAFETY CHECKS;**
- **ENGINE PRE-START CHECKS** (including checks required by Optional Equipments);
- **ENGINE STARTING;**
- **AFTER ENGINE START CHECKS** (including checks required by Optional Equipments);
- **POST LANDING AND SHUTDOWN PROCEDURES;**
- **PRE-FLIGHT CHECKS** (to be repeated after each flight including checks required by Optional Equipments).

If the aircraft is shutdown using **ENGINES AND ROTOR SHUTDOWN (ENGINE 1 MAIN MODE)** the **QUICK START PROCEDURE** will be faster than using **ENGINES AND ROTOR SHUTDOWN (ENGINE 1 ACCESSORY MODE)**. However either one or the other procedure can be used.
Quick start status can also be achieved if a flight has already been completed in the last 24 hours and all the checks detailed above have been successfully carried out.
If the aircraft has been exposed for long time to cold temperature the duration of this procedure is affected as HYD and MGB oil warm up time will be longer.
The **QUICK START PROCEDURE**, that follows, may only be used:

— when no maintenance nor cowlings opening have been done after the **QUICK START PROCEDURE PREPARATION** has been completed and

— the aircraft has NOT been COLD SOAKED.
As general indication the aircraft can be considered NOT COLD SOAKED if it has been exposed to OAT:
- not below -10°C for any time duration or
- between -10°C to -20°C for less than 2 hours or
- between -20°C to -40°C for less than 30 minutes.

## QUICK START PROCEDURE

| | | |
|---|---|---|
| 1. | EXT PWR switch (EPGDS control panel | — Select ON, if external power is connected. |
| 2. | MAIN BATT switch (EPGDS control panel) | — Select ON. |

ENG START

3. AUX BATT switch (EPGDS control panel) — Select ON.

4. MFD/PFD/EDCU(pilot side only) — Wait for display availability (MFD P-PLANT).

5. ENG 1 ACC switch — Confirm MAIN.

**Note**

If ACC selected, this procedure is still allowed but it will take longer to complete. If MAIN selected either engine can be started first.

6. LAMP TEST pushbutton (EDCU TEST page) — Press and confirm the following illuminate:
   - MWL and MCL Illuminate;
   - ENG 1 & 2 FIRE/ARM and FIRE EXTING panel;
   - FIRE lights on ENG CONTROL panel;
   - NOSE/LH/RH yellow and green lamps, NOSE;
   - WHEEL UNLK/LOCK lamps on LDG GEAR panel;
   - All green indications on the AFCS control panel.
   - All green lights on DCP.

7. Rotor brake switch — OFF.

**Note**

If ANTI COLL option is set to ESS BAR, ANTICOLL lights can be switched ON. If ANTI COLL option is set to MAIN BAR and external power is NOT used, ANTICOLL lights can be switched ON before APU/ engine start by selecting:

GEN BUS switch (EDCU ELEC page) — OVRD

BUS TIE switch — OVRD

This selection powers all MAIN BUS and reduces the battery power for engine start.

8. ADI STBY BATT TEST switch (on Control Switch Annunciator - if installed)
   - Press and hold the switch into TEST position;
   - TEST illuminates;
   - Release the switch and set it to ARM position.

9. FUEL ENG SOV 1 and 2 (EDCU FUEL page) — Select OPEN.

**Note**

Before first engine start, confirm **1-2 AP FAIL** caution has been replaced by **1-2 AP OFF** caution.

10. ENG 1 MODE knob — Select IDLE/APU.
11. Engine 1 start — Monitor for correct start and STARTER disengagement.
12. Flight Controls — Cyclic and Pedals centralized and Collective trimmed down.
13. ANTICOLL lights (EDCU, LIGHTS page) — Select ON.
14. ENG 2 MODE knob — Select IDLE as soon as GEN 1 load-meter in amber range or below.
15. Engine 2 start — Monitor for correct start and STARTER disengagement.
16. EXT PWR switch (EPGDS control panel) — Select/Confirm OFF.
17. External power (if connected) — Disconnect.
18. ENG 2 MODE knob — Select FLT.
19. ENG 1 ACC switch — Confirm/Select MAIN. Wait for completion of actuator engagement if ENG 1 in ACC MODE.

**Note**

Confirm **AVSR FAIL** caution cleared and PLUS mode green legend at the bottom of NF/NR scale before next action.

20. ENG 1 MODE knob — Select FLT.
21. AFCS — Engage.
22. EDCU — Set COM and NAV as required.
23. EDCU (INIT page) — Set weights and check fuel quantity.

**Note**

If GEN BUS/ BUS TIE switches set to OVRD, reselect both to AUTO.

24. Altimeters: Pilot, Standby and Copilot — Set and check.
25. Cockpit , cabin and EXT lights — Set as required.

26. MFD, P-PLANT page — Check all parameters within limits.
27. CAS — Clear or as required.

# TAXIING, PRE-TAKE-OFF, TAKE-OFF CAT A/B

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## TAXIING

**Note**

To obtain best braking action the collective should be set to MPOG before applying pedal brakes.

**Note**

The nose wheel steering will self centre and lock as soon as the helicopter lifts off.

**Note**

Turning, whilst taxiing, should be carried out with collective at minimum pitch and cyclic central or as required to compensate for crosswind.

1. PARK BRAKE handle — Turn to release. Check PARK BRK ON advisory message clear.
2. LDG LT switch — If required, set to BOTH, then select AUTO-EXTD.
3. AFCS — Confirm engaged.
4. NOSE WHEEL CENTER LOCK (LDG GEAR control panel) — Press to UNLK.

**CAUTION**

Above 10 knots GS nose wheel must be locked.

**CAUTION**

Do not use aft cyclic to slow the aircraft. The use of large cyclic displacements in conjunction with low collective can cause main rotor hub and cowling damage.

5. Collective and cyclic — Increase collective slowly then move the cyclic stick forward moderately to start movement.
6. Pedal brakes — Check operation.
7. Pedal control — As required to select direction.
8. Collective and pedal brakes — To reduce speed and stop, lower collective and apply pedal brakes.
9. NOSE WHEEL CENTER LOCK — Set to LOCK.

## PRE TAKE-OFF CHECKS

**Note**

Prior to Take-Off and during flight in night condition the use of EMS patient light or the Cabin Management System Lights (CMS) kits (if installed) is allowed only if a lightproof separation (e.g. curtain, bulkhead, …) between the cockpit and the cabin is installed and properly shut..

1. PARK BRAKE — Released.
2. ENG MODE knobs — Both to FLT.
3. AEO LIM SEL pushbutton — Push, if required.

**Note**

With the AEO LIM SEL enabled the AEO engine total torque will be limited to a total torque (TQ1 + TQ2) value of 222% TQ and TQ LIM SEL advisory displays. OEI engine torque limit will remain at 174%TQ.



4. CAS — Clear/as required.
5. NR — Check PLUS.
6. ECS — Set as required.
7. Pre Take-Off checks — Complete.

## CATEGORY B TAKE-OFF

**Note**

Cat B Take-Off procedure, included in this Section,ensures the aircraft is within the Take-Off corridor of the H-V envelope.
A safe Take-Off reject can always be carried out in a corridor defined by:

— 15 ft from Hover to 10 KIAS and 30 ft at 20 KIAS for weight up to 4600 kg;
— 15 ft from hover to 10 KIAS and 30 ft at 20 KIAS up to 5000 ft for weight in excess of 4600 kg up to 4800 kg;
— 10 ft from Hover to 10 KIAS and 30 ft at 20 KIAS above 5000 ft up to 10000 ft for weight in excess of 4600 kg up to 4800 kg.

up to maximum weight as per Figure Lim 5 thru Figure Lim 34 up to 9 pax seats or Figure Lim 35 and Figure Lim 36 for more than 9 pax seats.

**Note**

During flight with hydraulic oil temperature below +20 °C, fly attentive.



### RECOMMENDED CATEGORY B TAKE-OFF PROCEDURE

1. Power checks — Carry out as required in accordance with ENGINE POWER CHECKS procedure in Section 4.
2. Hover IGE — Establish at 6 ft (1.8 m) ATS. If possible orientate the aircraft for a take-off into the prevailing wind. Respect the HOVER CEILING IGE WITH ZERO WIND OR HEADWIND or HOVER CEILING IGE WIND AS PER AS PER FIGURE PERF 7 for the prevailing wind condition.

**Note**

Take-off with a tailwind component is not recommended.

3. NOSE WHEEL CENTER LOCK — Confirm green LOCK light.

**Note**

The LOAD SHARE switch allows the pilot to maintain engine TQ or ITT matched, as required.
When PI is limited by ITT and a large split in ITT is noticed with TQ matching selected, use of ITT matching is suggested.

4. Engines/Rotor — Check TQ/ITT matching and NR.
5. CAS — Clear or as required.
6. MFD, P-PLANT page — Check all parameters within normal operating limits and confirm no engine matching abnormalities.

| | | |
|---|---|---|
| 7. | Flight controls | — Check correct functioning. |
| 8. | PI | — Note PI value in hover. |
| 9. | Attitude | — Note pitch attitude value in hover. |
| 10. | Collective/Cyclic Control | — Apply cyclic to rotate 10° nose down with respect to hover attitude and apply collective to increase hover PI by 5 to 10%. Maintain this attitude until 25 kts GS, then reduce pitch down by 5° to climb and accelerate. |
| 11. | Acceleration and climb | — Continue acceleration and climb to pass a point at 50 ft ATS, 50 KIAS. |
| 12. | Climb | — Continue acceleration to Vy and climb smoothly. |
| 13. | Power limits | — Observe PI limitations for Take-Off power rating. |

**CAUTION**

Once the landing gear is selected UP by means of the control lever, it is mandatory to wait until the action is concluded (lights on the LDG GEAR control panel all off) before reversing the command.

| | | |
|---|---|---|
| 14. | Landing gear | — Up (when reaching Vy but not below 200 ft ATS). |
| 15. | Power | — Adjust, as required, for cruise flight or continued climb. |

# CATEGORY A TAKE-OFF

**Note**

During flight with hydraulic oil temperature below +20°C, fly attentive.

## AIRSPEED DEFINITIONS

Take-Off Safety Speed ($V_{TOSS}$)........................................................ 45 KIAS

Best Rate of Climb Speed ($V_Y$) ........................................................ 75 KIAS

## GROUND AND ELEVATED HELIPORT / HELIDECK VERTICAL PROCEDURE

### Take-Off Decision Point Height (TDP)

TDP ........................................................................................ 50 ft (15 m) ATS

### Continued Take-Off Heights

Minimum height during CTO ............................................15 ft ATS (5 m ATS)

**Note**

Radar Altimeter heights are shown in the flight path profiles.
Refer to Barometric altimeter for Elevated Heliport/Helideck operations.

### Take-Off

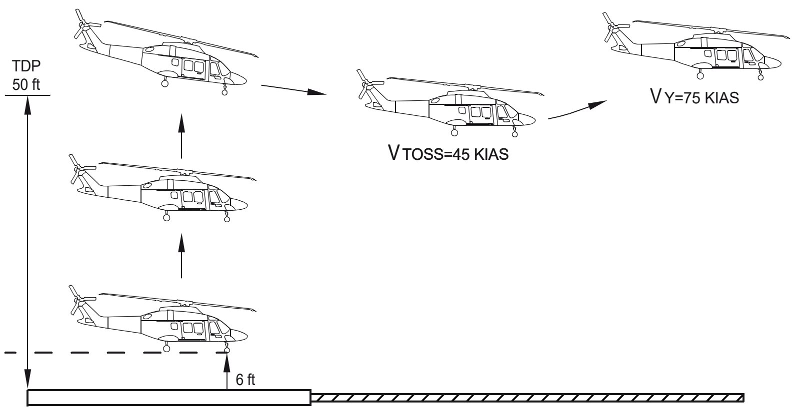


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Figure NP 2: Take-Off Profile Vertical Heliport Procedure

**CAUTION**

If this procedure is modified, it may not be possible, if an engine fails in the Take-Off path, to carry out a safe OEI landing or achieve the scheduled OEI performance.

TAXI T-O CAT A/B

1. Pilot Altimeter — Set 0 ft or nearest 1000 ft (300 m) setting to T-O altitude, with collective at MPOG.

2. Rad Alt — Check

3. Power checks — Carry out as required in accordance with ENGINE POWER CHECKS procedure in Basic RFM Section 4.

4. NOSEWHEEL lock — LOCK

5. PARK BRAKE — As required

6. Engine/Rotor — TQ/ITT matched as required and check NF/NR 103%.

7. MFD PWR PLANT page — Check all parameters within normal operating limits and cross check with PFD.

8. Warnings and Cautions — None/as required.

9. Flight controls — Check correct functioning.

10. Landing lights — For night operations set as follows: Flying pilot side set pointing down; Non flying pilot side set pointing forward.

11. Hover — Establish a 6 ft (1,8 m) ATS hover and note pitch attitude and PI. No winds from rear sectors (090° to 270°).

12. Collective/Cyclic Control — Increase PI by 20-25% in 2 sec. to climb to TDP (50 ft ATS) maintaining hover position.

13. Take-Off Decision Point (TDP) — Rotate in 2 sec. 15 deg. nose down with respect to hover attitude. Maintain this attitude until airspeed indications starts to increase, then reduce pitch down by 5 deg. to accelerate through $V_{TOSS}$ (45 KIAS). From $V_{TOSS}$ continue climb and accelerate to $V_Y$

14. Acceleration/Climb — Passing through $V_{TOSS}$ (45 KIAS) continue acceleration to $V_y$ and climb to 1000 ft (300 m) ATS.

15. Landing gear — UP (when reaching $V_y$ but not below 200 ft (60 m) ATS).

16. AFTER TAKE-OFF checks. See page 167. — Complete.

## CLEAR AREA TAKE-OFF PROCEDURE

### Take-Off Decision Point (TDP)

Height ............................................................................ 20 ft (6 m) ATS

Airspeed ............................................................................ 20 KIAS

**Note**

Radio altimeter heights are shown in the flight path profiles. Refer to Barometric altimeter when obstacles are present in the Take-Off flight path.

### Take-Off

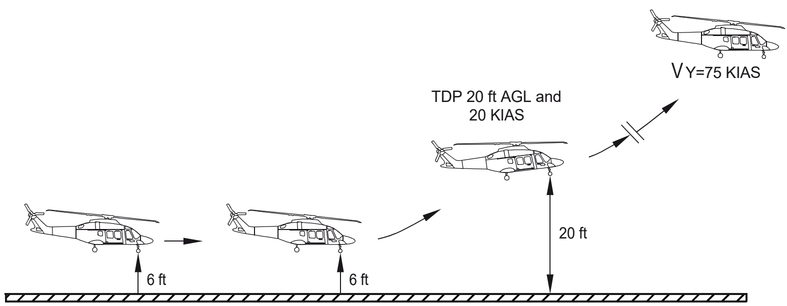


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Figure NP 3: Take-Off Profile Clear Area

**CAUTION**

If this procedure is modified, it may not be possible, if an engine fails in the Take-Off path, to carry out a safe OEI landing or achieve the scheduled OEI performance.

1. PARK BRAKE — Release. Confirm PARK BRK ON advisory not illuminated on CAS.

2. Pilot Altimeter — Set

3. Rad Alt — Check

| | | |
|---|---|---|
| 4. | Power checks | — Carry out as required in accordance with ENGINE POWER CHECKS procedure in Basic RFM Section 4. |
| 5. | NOSEWHEEL steering | — LOCK |
| 6. | Engine/Rotor | — TQ/ITT matched as required and check NF/NR 103%. |
| 7. | MFD PWR PLANT page | — Check all parameters within normal operating limits and cross check with PFD. |
| 8. | Warnings and Cautions | — None/as required |
| 9. | Flight controls | — Check correct functioning. |
| 10. | Hover | — Establish a 6 ft (1,8 m) ATS hover and note pitch attitude. No winds from rear sectors (090° to 270°). |
| 11. | PI/NR | — Note PI value and confirm NR in PLUS Mode. |
| 12. | Collective/Cyclic control | — Apply Cyclic to rotate 10° nose down with respect to hover attitude and apply collective to increase hover PI by 5-10% to maintain height.<br>Maintain pitch attitude until airspeed indication starts to increase then reduce pitch down by 5° to climb and start climb to TDP. |
| 13. | Take-Off Decision Point (TDP) | — At TDP continue climb and acceleration to $V_{TOSS}$ (45 KIAS).<br>From $V_{TOSS}$ continue climb and accelerate to $V_Y$. |
| 14. | Acceleration/Climb | — Passing through VTOSS (45 KIAS) continue acceleration to $V_Y$ and climb to 1000 ft (300 m) ATS. |
| 15. | Landing gear | — Up (when reaching $V_Y$ but not below 200 ft ATS). |
| 16. | AFTER TAKE-OFF checks. See page 167. | — Complete. |

## GROUND AND ELEVATED HELIPORT / HELIDECK VARIABLE TDP PROCEDURE

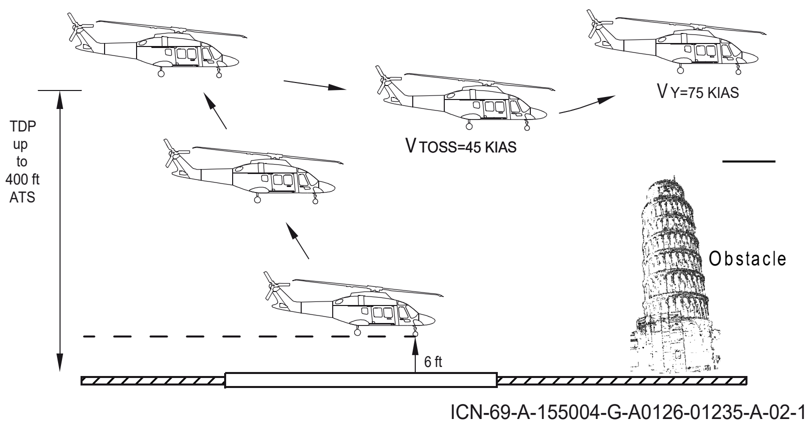


Figure NP 4: Take-Off Profile Variable TDP Procedure



**CAUTION**

If this procedure is modified, it may not be possible, if an engine fails in the Take-Off path, to carry out a safe OEI landing or achieve the scheduled OEI performance.

1. Pilot Altimeter — Set 0 ft or nearest 1000 ft (300 m) setting to T-O altitude, with collective at MPOG.
2. Rad Alt — Check
3. Power checks — Carry out as required in accordance with ENGINE POWER CHECKS procedure in Basic RFM Section 4.
4. NOSEWHEEL lock — LOCK
5. PARK BRAKE — As required
6. Engine/Rotor — TQ/ITT matched as required and check NF/NR 103%.
7. MFD PWR PLANT page — Check all parameters within normal operating limits and cross check with PFD.

8. Warnings and Cautions — None/as required.

9. Flight controls — Check correct functioning.

10. Landing lights — For night operations set as follows: Flying pilot side set pointing down; Non flying pilot side set pointing forward.

11. Hover — Establish a 6 ft (1,8 m) ATS hover and note pitch attitude and PI. No winds from rear sectors (090° to 270°).

12. Collective/Cyclic Control — Increase collective to start a slow climb (max 300 fpm) to TDP (max 400 ft) maintaining the centre of the helipad in sight between yaw pedals.

13. Take-Off Decision Point (TDP) — Rotate in 2 sec. 15 deg. nose down with respect to hover attitude using collective to maintain height. Maintain this attitude until airspeed indications starts to increase, then reduce pitch down by 5 deg. to accelerate through $V_{TOSS}$ (45 KIAS). From $V_{TOSS}$ continue climb and accelerate to $V_Y$

14. Acceleration/Climb — Passing through $V_{TOSS}$ (45 KIAS) continue acceleration to $V_y$ and climb to 1000 ft (300 m) ATS.

15. Landing gear — UP (when reaching $V_y$ but not below 200 ft (60 m) ATS).

16. AFTER TAKE-OFF checks. See page 167. — Complete.

**Wind limitations**

Wind Limitations Chart ........................................................ Figure Lim 5

Take-Off with tail wind component is prohibited.

**Note**

Unless otherwise authorized by operation regulations the pilot is not authorized to credit more than 50 percent of the performance increase resulting from the wind component presented in Figure Lim 5. For information on the use of the Wind Limitations Chart see Section 4 of paragraph WIND EFFECT LIMITATIONS CHART EXAMPLES.

**Take-Off Decision Point Height (TDP)**

Height..................................................................................25 ft ATS

TAXI T-O
CAT A/B

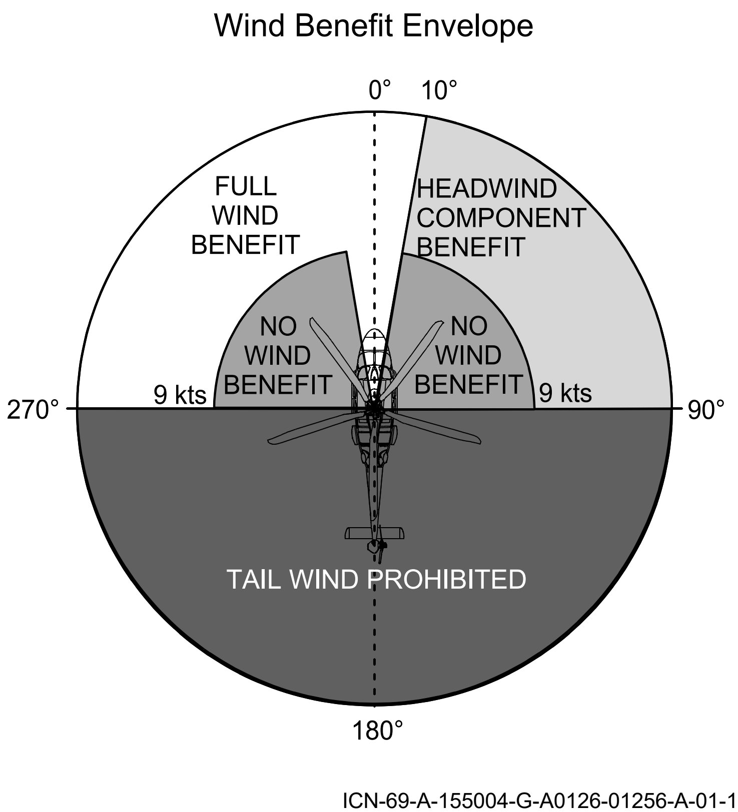


Figure NP 5: Wind limitations chart

## OFFSHORE / ELEVATED HELIDECK TAKE-OFF NORMAL PROCEDURE

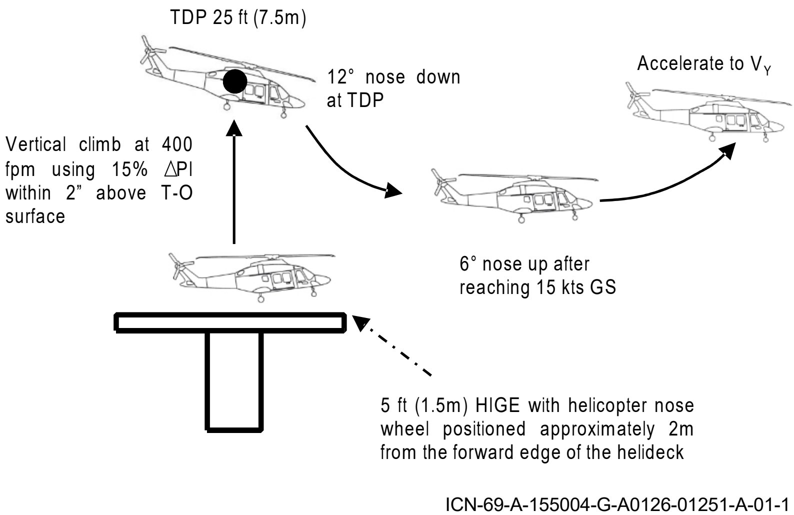


Figure NP 6: Offshore / Elevated Helideck – Normal Take-Off Profile



1. ECS — As required.
2. Pilot Altimeter — Set 0 ft or nearest 1000 ft (300 m) setting to T-O altitude, with collective at MPOG.
3. Rad Alt — Check.
4. Power checks — Carry out as required in accordance with ENGINE POWER CHECKS procedure in Basic RFM Section 4.
5. NOSEWHEEL lock — LOCK.
6. PARK BRAKE — Apply. Confirm pressure can be felt on brake pedals and PARK BRK ON advisory illuminated on CAS.
7. Engine/Rotor — Check TQ matched and NF/NR 103%.
8. MFD PWR PLANT page — Check all parameters within normal operating limits and cross check with PFD.
9. PFD menu — Select DG on Rig, Otherwise check heading and select as required.
10. Warnings and Cautions — None/as required.

11. Landing Lights — For night operations set as follows: Flying pilot side set pointing down Non flying pilot side set pointing forward.

12. Hover — Establish a 5 ft (1,5 m) ATS hover with the helicopter nose wheel approximately 2 m from the front edge of the helideck and note hovering PI.

**Note**

If wind is from right sector, it is recommended that the aircraft is oriented to minimize the crosswind.

13. Collective/Cyclic Control — Increase PI by 15% in approximately 2 sec. to climb vertically at 400 fpm or greater, maintaining hover position.

14. Take-Off Decision Point (TDP) — At 25 ft (7.5 m) ATS rotate nose to 12° nose down to achieve 15 kts GS then rotate to 6° nose up while continuing to accelerate to $V_Y$ (75 KIAS).

15. $V_y$ — Above 200 ft, Landing Gear UP.

16. PARK BRAKE — Release. Confirm PARK BRK ON advisory extinguishes on CAS.

17. PFD menu — Select MAG as required.

18. AFTER TAKE-OFF checks. See page 167 — Complete.

# IN FLIGHT PROCEDURES

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# IN-FLIGHT PROCEDURES

## AFTER TAKE-OFF

**Note**

It is highly recommended NOT to retract landing gear during aggressive manoeuvres.

| | | |
|---|---|---|
| 1. | LDG GEAR lever | — Confirm UP. |
| 2. | LDG LT selections | — Confirm OFF and STOWED or as required. |
| 3. | AEO LIM SEL pushbutton | — As required. |
| 4. | Engine and transmission parameters, temperatures and pressures | — Normal, temperatures and pressures within limits. |
| 5. | Altimeters | — Check QNH and cross-check. |
| 6. | LOAD-SHARE switch | — As required (TQ or ITT), confirm parameters matched. |

**Note**

The LOAD SHARE switch allows the pilot to maintain engine TQ or ITT matched, as required.

**Note**

When PI is limited by ITT and a large split in ITT is noticed with TQ matching selected, use of ITT matching is suggested.

| | | |
|---|---|---|
| 7. | CAS | — Clear/as required. |
| 8. | MFD | — As required. |
| 9. | ECS | — As required. |
| 10. | Radios/Navigation | — As required. |
| 11. | Autopilot mode | — As required. |
| 12. | After Take-Off checks | — Complete. |

IN FLIGHT

## CRUISE CHECKS

| | | |
|---|---|---|
| 1. | Engine and Transmission parameters, temperatures and pressures | — Normal, temperatures and pressures within limits. |
| 2. | Altimeters | — Check QNH and cross-check. |
| 3. | Compass | — Check all synchronized. |
| 4. | Radios/Navigation | — As required. |
| 5. | LOAD SHARE switch | — As required (TQ or ITT), confirm parameters matched. |

**Note**

Due to variable NR logic, during acceleration from 96% to 103% NR, temporary excursions above 100% PI may occur.

**Note**

The LOAD SHARE switch allows the pilot to maintain engine TQ or ITT matched, as required.

**Note**

When PI is limited by ITT and a large split in ITT is noticed with TQ matching selected, use of ITT matching is suggested.



| | | |
|---|---|---|
| 6. | FUEL | — Every 30 minutes check fuel quantity. |

**Note**

If fuel consumption is greater than expected see Abnormal Fuel Consumption procedure in Section 3.

| | | |
|---|---|---|
| 7. | Standby instrument | — Check airspeed, altimeter and artificial horizon against primary flight display. |
| 8. | CAS | — Check. |
| 9. | Cruise checks | — Complete. |

1. MFD — Select P-PLANT page.

**CAUTION**

Once the landing gear is selected DOWN by means of the control lever, it is mandatory to wait until the action is concluded (three green lights illuminated on the LDG GEAR control panel) before reversing the command.

2. LDG GEAR — DOWN; three green lights illuminated on LDG control panel.
3. LDG LT selection — As required.
4. NOSE WHEEL CENTER LOCK — LOCK.
5. PARK BRAKE handle — As required.
6. AEO LIM SEL pushbutton — As required.
7. DH knob — As required.
8. ECS — As required.
9. LOAD SHARE switch — As required (TQ or ITT), confirm parameters matched.
10. Engine and Transmission parameters, temperatures and pressures — Normal, temperatures and pressures within limits.
11. Altimeters — Check QNH and cross-check.
12. Fuel — Check quantity.
13. CAS — Clear/as required.
14. Cabin — Secure.

**Note**

- If an ILS approach is required select both NAV's to the same frequency. On STBY instrument (ESIS) select NAV ON and set the course to the final ILS course.
- Recommended airspeed: 120 KIAS
  Glideslope scale remains displayed while the aircraft is flying in the Back Course (BC) sector.

15. Pre-landing checks — Complete.

## FLIGHT HANDLING

The rotation of the main rotor is anti-clockwise when viewed from above.

Handling is conventional in normal forward, sideways and rearwards flight manoeuvres. Collective lever forces are light, but may be increased by applying friction.

### AUTOROTATIVE DESCENT

1. Smoothly reduce collective to enter autorotation.
2. Maximum NR 110%.

**CAUTION**

Rotor speed is sensitive in low power descent and autorotation and large NR changes are produced by changes in normal acceleration (G). Care is needed to avoid exceeding limits.

3. Adjust attitude to obtain approximately 75 KIAS.
4. To recover to powered flight, slowly increase collective pitch until freewheels are joined and at least 10% torque is indicated. Finally, increase power, gently, in not less than 3 seconds, to arrest the rate of descent.



## FLIGHT IN MODERATE OR SEVERE TURBULENCE

1. All occupants must be seated with seat belts fastened.
2. Slow aircraft airspeed as required.
3. Fly attentive.

# APPROACH,
# LANDING CAT A/B

APPR
LAND

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## CATEGORY B APPROACH AND LANDING

**Note**

RECOMMENDED CATEGORY B LANDING PROCEDURE, included in this Section, ensures the aircraft is within the landing corridor of the H-V envelope.
A safe OEI landing can always be carried out in a corridor defined by:

- 15 ft from Hover to 10 KIAS and 30 ft at 20 KIAS for weight up to 4600 kg;
- 15 ft from hover to 10 KIAS and 30 ft at 20 KIAS up to 5000 ft for weight in excess of 4600 kg up to 4800 kg;
- 10 ft from Hover to 10 KIAS and 30 ft at 20 KIAS above 5000 ft up to 10000 ft for weight in excess of 4600 kg up to 4800 kg.

up to maximum weight as per Figure Lim 5 thru Figure Lim 34 up to 9 pax seats or Figure Lim 35 and Figure Lim 36 for more than 9 pax seats.

### RECOMMENDED CATEGORY B LANDING PROCEDURE

1. Pre-landing checks — Complete.
2. NR — During approach, confirm self adjusting with airspeed.
3. AURAL INHIBIT pushbutton (EDCU MISC page) — NORMAL.

**Note**

If AURAL INHIBIT is set to LOW HT, “LANDING GEAR” aural and caution message are suppressed at IAS greater than 50 KIAS; “ONE FIFTY FEET” aural is suppressed as well.

4. Landing direction — If possible orientate the aircraft for an approach into the prevailing wind. Respect the HOVER CEILING IGE WITH ZERO WIND OR HEADWIND or HOVER CEILING IGE WIND AS PER AS PER FIGURE PERF 7 for the prevailing wind condition.

**Note**

Approach and landing with a tailwind component are not recommended.

5. LDG GEAR — Check three green lights illumanated on LDG control panel.
6. PARK BRAKE — OFF.

**Note**

If landing on slopes, pull and turn handle and press pedals until PARK BRK ON advisory illuminates on CAS.

APPR
LAND

| | | |
|---|---|---|
| 7. | Initial point | — Stabilize the aircraft on final approach course at 70 KIAS/300 ft ATS (94.1 m). |
| 8. | Descent | — At 300 ft initiate a descent and deceleration to pass at 50 ft 40 KIAS with a rate of descent of less than 350 fpm. |
| 9. | Collective/cyclic control | — At 50 ft initiate a flare rotating nose up to achieve a hover at 6 ft ATS or to perform a running landing. Maximum nose up attitude at touchdown 15°. |
| 10. | Landing | — After touchdown, centralize controls and reduce collective to MPOG. |
| 11. | Braking | — Apply wheel brakes as required. |
| 12. | NOSE WHEEL CENTER LOCK | — UNLK if ground taxiing is required. |

**Note**

Due to the landing gear oleos design, some residual roll angle may remain after landing. Normal roll attitude will be obtained with taxiing.

# CATEGORY A APPROACH AND LANDING

## AIRSPEED DEFINITIONS

Balked Landing Safety Speed ($V_{BLSS}$) ........ 45 KIAS

Best Rate of Climb Speed ($V_Y$) ........ 75 KIAS

## GROUND AND ELEVATED HELIPORT / HELIDECK

### Landing Decision Point (LDP)

Height ........ 50 ft (15 m) ALS

Ground speed ........ 20 knots

Rate of descent ........ less than 350 ft/min

**Note**

Radio altimeter heights are shown in the flight path profiles. Refer to Barometric altimeter when obstacles are present in the Landing flight path.

### Approach and Landing Procedure

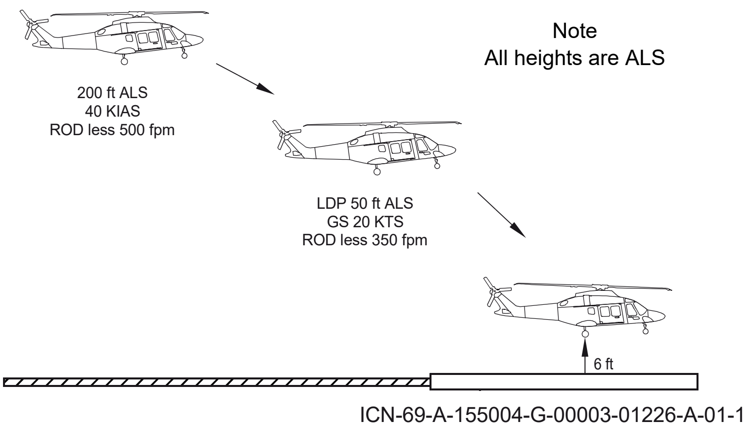


Figure NP 7: G&E H/H Landing Profile

**CAUTION**

If this procedure is modified, it may not be possible, if an engine fails in the landing path, to carry out a safe OEI landing or achieve the scheduled OEI performance.

1. Pre-landing checks — Complete.

2. Landing direction — If possible orientate the aircraft for an approach into the prevailing wind.

| | | |
|---|---|---|
| 3. | Landing lights | — For night operations set as follows: Flying pilot side set pointing down; Non flying pilot side set pointing forward. |
| 4. | EDCU, MISC, AURAL INHIBIT | — Select NORMAL or LOW HT as required. |

**Note**

When descending below 150 ft Rad Alt height a vocal message 'ONE FIFTY FEET' is activated regardless of the landing gear status. This message is suppressed if AWG is set to LOW HT.

| | | |
|---|---|---|
| 5. | Initial point | — Establish an approach to pass through 200 ft (60 m) ALS at 40 KIAS with a rate of descent of no more than 500 fpm.<br>At 200 ft initiate a deceleration to pass through LDP at 50ft (15m) ALS and 20 knots GS with rate of descent of less than 350 fpm. |
| 6. | Landing | — Continue the deceleration and descent to a 6 ft HIGE.<br>Maximum nose up attitude at touchdown 15°. |
| 7. | PARK BRAKE | — As required after landing. |
| 8. | POST LANDING CHECKS. See page 187. | — Complete |

### Landing Decision Point (LDP)

Height .......................................................................... 50 ft (15 m) ALS

Airspeed ......................................................................................... 40 KIAS

Rate of Descent ............................................................... Less than 350 ft/min

**Note**

Radio altimeter heights are shown in the flight path profiles. Refer to Barometric altimeter when obstacles are present in the Landing flight path.

### Approach and Landing Procedure

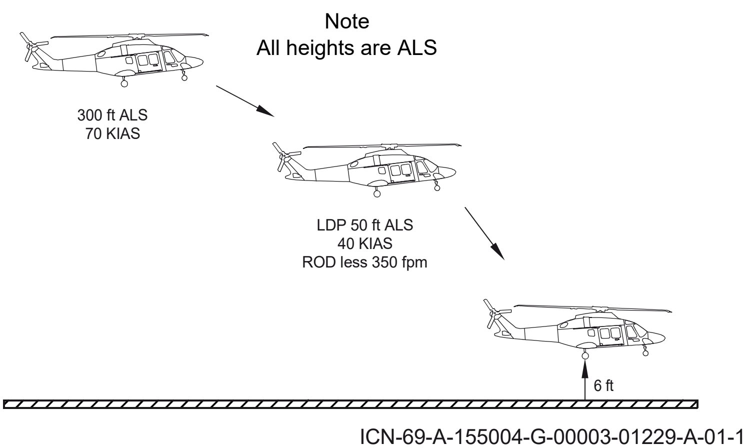


Figure NP 8: Clear Area Landing Profile

**CAUTION**

If this procedure is modified, it may not be possible, if an engine fails in the landing path, to carry out a safe OEI landing or achieve the scheduled OEI performance.

| | | |
|---|---|---|
| 1. | Pre-landing checks | — Complete |
| 2. | EDCU, MISC, AURAL INHIBIT | — Select NORMAL or LOW HT as required. |

**Note**

When descending below 150 ft Rad Alt height a vocal message 'ONE FIFTY FEET' is activated regardless of the landing gear status. This message is suppressed if AWG is set to LOW HT

| | | |
|---|---|---|
| 3. | PARK BRAKE | — Confirm released. |
| 4. | Initial point | — Stabilize the aircraft on final approach course at 300 ft (91.4m) ALS/70 KIAS |
| 5. | Descend | — At 300 ft initiate a descent and a deceleration to pass through LDP with a rate of descent of less than 350 fpm. |
| 6. | Collective/Cyclic Control | — At 50ft initiate a flare rotating nose up to achieve a hover at 6ft ALS or to perform a running landing. Maximum nose up attitude at touch-down 15°. |
| 7. | Landing | — After Touchdown, centralize controls and reduce collective to MPOG. |
| 8. | Braking | — Apply wheel brakes as required. |
| 9. | POST LANDING CHECKS. See page 187. | — Complete. |

## GROUND OR ELEVATED HELIPAD APPROACH AND LANDING VARIABLE LDP PROCEDURE

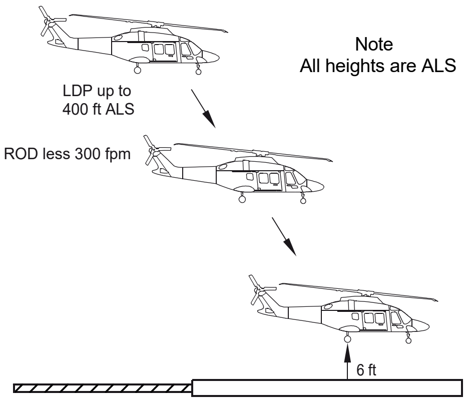


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Figure NP 9: G&E H/H Landing Profile

**CAUTION**

If this procedure is modified, it may not be possible, if an engine fails in the landing path, to carry out a safe OEI landing or achieve the scheduled OEI performance.



| | | |
|---|---|---|
| 1. | Pre-landing checks | — Complete. |
| 2. | Landing direction | — If possible orientate the aircraft for an approach into the prevailing wind. |
| 3. | Landing lights | — For night operations set as follows: Flying pilot side set pointing down; Non flying pilot side set pointing forward. |
| 4. | EDCU, MISC, AURAL INHIBIT | — Select NORMAL or LOW HT as required. |

**Note**

When descending below 150 ft Rad Alt height a vocal message ‘ONE FIFTY FEET’ is activated regardless of the landing gear status. This message is suppressed if AWG is set to LOW HT.

5. Initial point — Establish an approach at 20 kts GS and 50 ft higher than LDP height and slow down maintaining height to reach a hover with the centre of helipad in sight between the yaw pedals.

6. Descent to landing surface — Start descending with no more than 300 fpm maintaining the centre of helipad in sight between the yaw pedals to reach a 6 ft hover above landing surface.

7. Landing — After touchdown, centralize cyclic and reduce collective to MPOG.

8. PARK BRAKE — As required after landing.

9. POST LANDING CHECKS. See page 187 — Complete.

**Wind limitations**

Wind Limitations Chart ........................................................... Figure NP 6

Landing with tail wind component is prohibited.

**Note**

Unless otherwise authorized by operation regulations the pilot is not authorized to credit more than 50 percent of the performance increase resulting from the wind component presented in Figure NP 6. For information on the use of the Wind Limitations Chart see Section 4 of paragraph WIND EFFECT LIMITATIONS CHART EXAMPLES in Part D.

**Landing decision point (LDP)**

Height ............................................................................................ 30 ft ALS

Groundspeed ..................................................................................... 12 kts

**Note**

Radio altimeter heights are shown in the flight path profiles.

## OFFSHORE / ELEVATED HELIDECK APPROACH AND NORMAL LANDING PROCEDURE



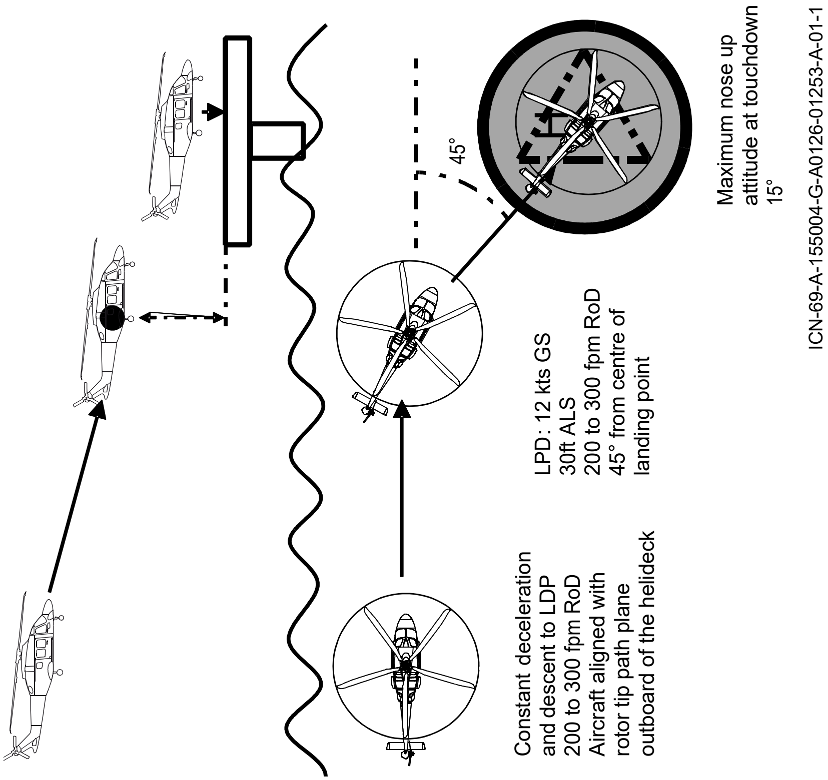


Figure NP 10: Offshore / Elevated Helideck – Normal Landing Profile

| | | |
|---|---|---|
| 1. | Pre-landing checks | — Complete. |
| 2. | Landing direction | — If possible carry out an approach into prevailing wind. |
| 3. | Landing lights | — For night operations set as follows: Flying pilot side set pointing down; Non flying pilot side set pointing forward. |
| 4. | EDCU, MISC, AURAL INHIBIT | — Select NORMAL or LOW HT as required. |

**Note**

When descending below 150 ft Rad Alt height a vocal message ‘ONE FIFTY FEET’ is activated regardless of the landing gear status. This message is suppressed if AWG is set to LOW HT.

| | | |
|---|---|---|
| 5. | PARK BRAKE | — Apply, Confirm pressure can be felt on brake pedals and PARK BRK ON advisory illuminated on CAS. |
| 6. | PFD menu | — Select DG as required. |
| 7. | Initial point | — Establish a constant descent with a ROD of 200 and 300 fpm and decelerate slowly towards the LDP (30 ft ALS at 12 kts GS and position the deck at 45°) maintaining the flight path to keep the rotor tip path plane outboard, but close to the edge of the helideck. |
| 8. | LDP | — The LDP is positioned with the aircraft approximately 45° from the centre of the helideck viewed through the lower part of the windscreen. |
| 9. | Landing | — When passing LDP fly directly to landing position, flare to reduce ROD and speed to achieve HIGE over landing position. |
| 10. | Touchdown | — When over the landing position descend vertically and use collective to cushion touchdown. Maximum nose up attitude at touchdown 15°. Maximum GS at touchdown 5 kts (9 km/hr). |
| 11. | PARK BRAKE | — As required after landing. |
| 12. | POST LANDING CHECKS See page 187. | — Complete. |

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# POST-LANDING & SHUTDOWN CHECKS

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# POST LANDING AND SHUTDOWN PROCEDURES

## POST LANDING CHECKS

| | | |
|---|---|---|
| 1. | LDG LT selection | — OFF and STOWED. |
| 2. | Systems | — OFF/STBY. |

## PRE-SHUTDOWN CHECKS

| | | |
|---|---|---|
| 1. | NOSE WHEEL CENTER LOCK | — LOCK, if required. |
| 2. | PARK BRAKE (LDG GEAR control panel) | — Pull and turn handle and press pedals until **PARK BRK ON** advisory illuminates on CAS. |
| 3. | Collective lever | — MPOG. |
| 4. | Cyclic stick | — Centralized, on PFD, cyclic indicator. |
| 5. | Pedals | — Centred. |
| 6. | AFCS | — OFF. |
| 7. | PITOT HTR (EDCU MISC page) | — OFF. |
| 8. | FD SEL button (on right DCP) | — Select and confirm green arrow pointing right (top PFD). |
| 9. | ECS | — As required. |
| 10. | External power (if available) | — If required, have the external power receptacle door open, **DC EXT PWR DOOR** caution illuminates; Have the external power connected, confirm **DC EXT PWR READY** advisory illuminated. EXT PWR switch set ON. |

POST LD SHT DN

## ENGINES AND ROTOR SHUTDOWN (ENGINE 1 MAIN MODE)

**CAUTION**

During shut down note that:

- NG speed decelerates freely without abnormal noise or rapid run down;
- ITT does not rise abnormally.

| | | |
|---|---|---|
| 1. | ENG 1 and 2 MODE switches | — IDLE and then OFF. |
| 2. | ENG 1 and 2 SOV (EDCU FUEL page) | — CLOSE (when NG is below 10%). |
| 3. | FUEL XFER (if installed) (EDCU FUEL page) | — Select OFF. |

**CAUTION**

If helicopter is on ice or other slippery or loose surface rotor brake application may cause the helicopter to rotate.

| | | |
|---|---|---|
| 4. | Rotor Brake | — Below 40% NR select rotor brake switch to BRAKE position, ROTOR BRK ON advisory illuminates. (Recommended between 20% and 40% NR). |
| 5. | EMERG LT switch (Light panel) | — OFF. |

**CAUTION**

Prior to switching electrical power OFF, ensure at least one minute is elapsed since ENG MODE knob have been set to OFF, and ITT is decreasing.

| | | |
|---|---|---|
| 6. | MAIN BATT and BATT AUX switches | — OFF. |
| 7. | EXT PWR switch (EPGDS control panel) | — OFF. |
| 8. | External power (if connected) | — Disconnect. |

## ENGINES AND ROTOR SHUTDOWN (ENGINE 1 ACCESSORY MODE)

1. MFD — Select ENGINE page.
2. ENG 1 MODE knob — Set to IDLE.

**Note**

Negative (amber) Main Battery reading may temporarily occur.

3. ENG 1 ACC switch — Set to ACC when NF1 is below 98%
4. PFD, CAS area — Check ENG ACC TRAN advisory shows and then clears when the ENG APU MODE advisory shows.

**CAUTION**

ENG 2 MODE switch can be moved from FLT position only after ENG APU MODE advisory is displayed.

**CAUTION**

During shut down note that:
- NG speed decelerates freely without abnormal noise or rapid run down;
- ITT does not rise abnormally.

5. ENG 2 MODE switch — IDLE and then OFF.
6. ENG 2 SOV (EDCU FUEL page) — CLOSE (when NG is below 10%).

**CAUTION**

If helicopter is on ice or other slippery or loose surface rotor brake application may cause the helicopter to rotate.

7. Rotor Brake — Below 40% NR select rotor brake switch to BRAKE position, ROTOR BRK ON advisory illuminates. (Recommended between 20% and 40% NR).
8. ENG 1 MODE knob — OFF.
9. ENG 1 SOV (EDCU FUEL page) — CLOSE (when NG is below 10%).
10. FUEL XFER (if installed) (EDCU FUEL page) — Select OFF.
11. EMERG LT switch (Light panel) — OFF.

POST LD
SHT DN

**CAUTION**

Prior to switching electrical power OFF, ensure at least one minute is elapsed since ENG MODE knob have been set to OFF, and ITT is decreasing.

12. MAIN BATT and BATT AUX switches — OFF.

13. EXT PWR switch (EPGDS control panel) — OFF.

14. External power (if connected) — Disconnect.

## POST-SHUTDOWN CHECKS

Before leaving the aircraft:

— Chock wheels if the helicopter is to be parked for prolonged periods (greater than 1 hour).

— Chock wheels as soon as possible if the helicopter is to be parked on sloping ground.

— Remove both Main and Auxiliary batteries and store in heated room if the helicopter is to remain outside with an OAT at or below -20 °C.

# FLIGHT MANAGEMENT SYSTEM OPERATION

# FLIGHT MANAGEMENT SYSTEM OPERATION

## PRE-DEPARTURE OPERATIONS

— On EDCU HOME page, press INIT to enter the weight data on WEIGHT & BALANCE EDCU page and the FMS performance data on PERF INIT 1/2 and 2/2 EDCU pages as required.

— Press CONFIRM on INIT EDCU page to have the computation of Progress Data and to allow the Baro-VNAV capability in arrival/approach.

— If P-RAIM for destination is required, due to out of SBAS coverage or during SBAS outage, press PROGRESS-POS SENSOR EDCU page and select the GPS unit to use. Press the PRED-RAIM button to perform the Predictive RAIM function on Destination waypoint. In the event of a predicted (P-RAIM) HIL above the required RNP for more than 5 minutes for any part of the RNP operation, the flight planning should be revised (e.g. delaying the departure or planning a different ATS route).

## IN-FLIGHT OPERATIONS

### General

The ACTIVE FLIGHT PLAN and PROGRESS EDCU pages are considered the primary pages of the FMS during flight providing the Distance, ETE, Altitude constrains, RNP and current EPU (Estimated Position Uncertainty also known as Actual Navigation Performance) of aircraft during Performancebased Navigation.

Once activated, the active flight plan may be flown coupled to AFCS through the NAV mode (Lateral Guidance) in Climb and Cruise phases while in Descent phase during the approach with APP (for Lateral and Vertical Guidance) and DCL (for Longitudinal Guidance) modes. The DCL (deceleration) mode provides the AFCS with longitudinal steering for automatic deceleration at the distances/speeds set on the FMS APPROACH SPEEDS EDCU page.

For Vertical control in Terminal and/or Approach (with exclusion of final approach segment of LPV approach) the FMS provides an “Approved Baro-VNAV” guidance using the Baro-corrected altitude to determine the helicopter position with respect to the VPATH.

When Active Flight Plan contains an Approach procedure, the BARO VNAV DATA EDCU page is also a primary page of FMS containing information relevant to the vertical profile computed by the FMS as TOD (Top of Descent) position, BOD (Bottom Of Descent) position, Vertical Track Error respect to computed glide-path and GPA (Glide Path Angle).

**Note**

For vertical profile computation in arrival and approach procedures, pilot must execute the PERF INIT function to allow the VNAV computation and steering to AFCS. During departure and en-route, VNAV function is not available.

The FMS is CDO (Continuous Descent Operation) capable if all Altitude constraints are satisfied by the continuous descent vertical profile computed by the FMS. Otherwise the FMS automatically computes a VPATH that follows the procedure's altitude constraints drawing a 'step-descent' vertical profile.

The FMS computes and displays the TOD position only if the VNAV phase is CRUISE and the aircraft is within the Terminal Area (range distance below 30 NM to Destination).

**Note**

The FMS manages maximum Glide Path Angle for approach up to 9.0 Degrees.

**Note**

The FMS allows entering in Active Flight Plan altitude and speed constraints on en-route waypoints but they are only displayed as reference information without any effect on en-route VNAV.

FLIGHT PROGRESS should be monitored for navigational reasonableness, by cross-checks with conventional NAVAIDs using the primary displays in conjunction with the RNAV Navigation data on PFD/MFD.

For the ILS and LOC approaches the FMS enables the loading of the procedure from NAV DB into the ACTIVE FLIGHT PLAN EDCU page in order to provide the Lateral guidance up to correct interception of the Localizer cone of ILS/LOC approach before the FAP.

The LOC preview PFD function has to be activated for the automatic transition from FMS to ILS navigation source to fly the FAS (Final Approach Segment) with LOC/GS modes. The pilot is not authorized to fly the FAS segment from FAP to MAP with NAV mode only. The FAS segment must be flown with APP mode (LOC/GS modes).

**Note**

If a Data Base Update (DBU) is required and executed by pressing AVIONICS and DBU START button during Cruise phase (CRUISE displayed con ACTIVE FLIGHT PLAN EDCU page) or on-ground, the pilot must repeat the PERF INIT with the previously inserted values.



**Departure, Climb**

Set CRUISE ALTITUDE in PERF INIT 2/2 EDCU page as Initial Cruise Altitude; set altitude selector (ALTA) at the same Initial Cruise reference altitude or above as cleared by ATC/ACC to achieve the CRUISE VNAV phase.

If required, activate the SID procedure of origin airport from NAV DB.

**Note**

The FMS automatically updates the CRUISE ALTITUDE in PERF INIT 2/2 EDCU page only if any of the following occurs:

- ALT mode engagement (synchronization with current baro altitude);
- Altitude/flight level change carried out with ALTA (synchronization with pre-selected baro altitude);
- Altitude/flight level change carried out with ALT (synchronization with current baro altitude datum);
- FMS approach activation on EDCU (synchronization with current baro altitude).

— Monitor the leg of active flight plan sequencing on MFD (FPLN pages: Rose, Arc, Plan) and/or on the EDCU display (ACTIVE FLIGHT PLAN pages).

— Monitor the Lateral Path Deviation with respect to the DTK of active leg on PFD and/or the XTK (Cross Track Error) value on MFD.

**Descent**

— If required, activate TEMPERATURE COMPENSATION function (refer to FMS AW169 Pilot's Guide for details).

— If DCL required, confirm/set the distances/speeds on the APPROACH SPEEDS EDCU page.

— In Terminal area adjust/verify the correct QNH setting on both PFDs.

**Note**

ALT cyan annunciation is displayed on the PFD for altitude mismatch of ±75 ft between the pilot and copilot altimeters.

— Within Terminal area verify the VGP (or VFR) annunciation displayed in armed mode (in white colour). Only if FMS approach with LPV or LP minima is loaded, verify in addition the LPV (or LP) annunciation displayed in armed mode (in white colour) above the VGP.

— Within the Terminal area, if one or more Altitude constraints (“AT”, “AT or ABOVE”, “AT or BELOW”) are defined in the active flight plan, and the TOD is located before the IAF (Initial Approach Fix), follow the VPATH and the Vertical deviation pointer on Vertical scale manually or with VS mode.

— Before the TOD waypoint in arrival and approach verify, on ACTIVE FLIGHT PLAN EDCU page, on MFD VSD (Vertical Situation Display) or on MFD FMW (Flight Management Window), the VNAV phase equal to CRUISE (CRZ on VSD).

— If VNAV phase is not CRUISE, set CRUISE ALTITUDE in PERF INIT 2/2 EDCU page and press CONFIRM button.

— If a fully coupled approach is required, arm the APP mode on AFCS Control Panel (and DCL for longitudinal axis, if required) to fly the VPATH of approach fully coupled on collective axis (and longitudinal axis) up to MAP waypoint. The APP mode for VPATH coupled operation (NAPP or NGS) engages only after passing the IAF waypoint.

— Confirm the FMS is in approach mode (“APP” green annunciation) on PFD/MFD within 2 NM prior to the FAF.

— Ensure that lateral deviation indicator scaling is suitable for approach segment (±0.3 NM for RNP (AR) APCH or ±0.5 NM for NPA or angular for final approach segment of LPV/LP approach).

**Note**

In accordance with PBN regulations, RNP procedures and RNP (AR) APCH approaches, including RF legs, are not allowed to be flown manually.

To guarantee the Approach feasibility in descent, the following table provides, as reference, the maximum Groundspeed (GS) as function of Glide Path Angle (GPA):

| GPA and GS combination | |
|---|---|
| **GPA (deg)** | **GROUNDSPEED (kts)** |
| 3 | 140 |
| 3.5 | 130 |
| 4 | 110 |
| 4.5 | 100 |
| 5 | 90 |
| 5.5 | 85 |
| 6 | 75 |
| 6.5 | 70 |
| 7 | 65 |
| 7.5 | 60 |
| 8 | 55 |
| 8.5 | 55 |
| 9 | 55 |

**Note**

For GPA >7.5 deg the GS accounts for 10 kts of tail wind component.

FD/FMS OPER

## COLLECTIVE MODES TRANSITIONS DURING FMS APPROACHES

The FMS BOD or MAP waypoint, for CDO, is the VPATH anchor point computed by the FMS.

During NPA/RNP APCH coupled on vertical axis (NAPP mode engaged) the FMS-AFCS system provides vertical guidance and control down to FMS BOD or MAP waypoint altitude displayed on the ACTIVE FLIGHT PLAN EDCU page.

Collective mode transitions to be expected are a function of FMS MAP crossing height, (see Figure NP 11 below).

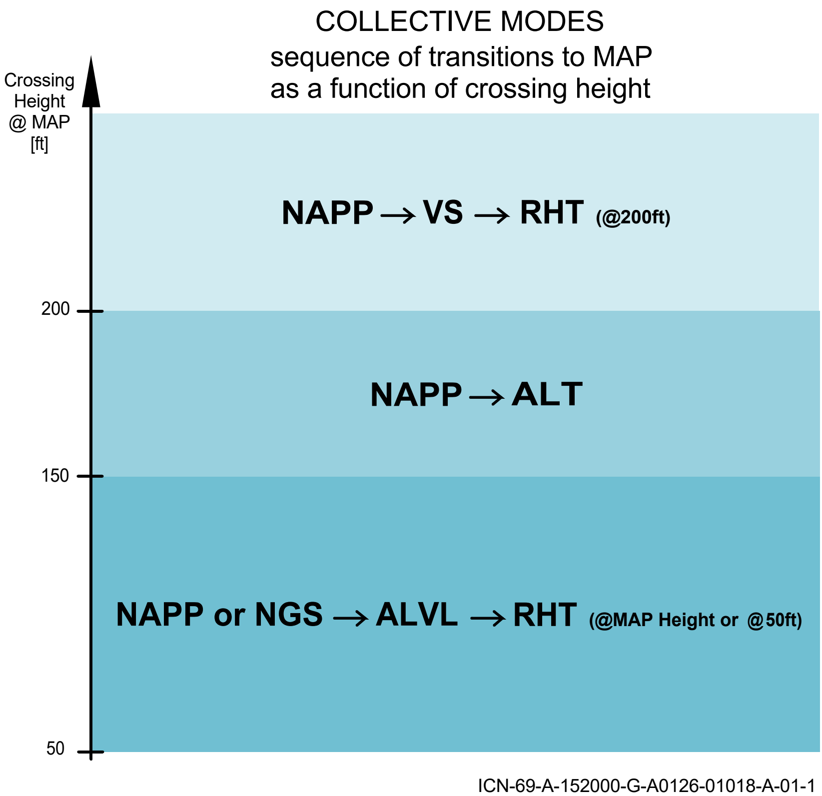


Figure NP 11: Collective Modes sequence of transitions to MAP



**Note**

If MAP is below 150 feet height, the NAPP or NGS mode on collective axis automatically revert to ALVL at 150 feet and RHT is then active at MAP crossing at the relative height or anyway with minimum of 50 feet.

### Go-Around or Missed Approach

Unless the pilot has in sight the visual references required to continue the approach, the procedure must be discontinued if any of the following conditions occurs:

— The navigation display is flagged invalid, or

— The integrity alerting function (“FMS DGR”) is activated before passing the FAF.

### VFR Approach

The FMS provides the capability to activate a customized approach procedure (VFR Approach) on the last waypoint of the ACTIVE FLIGHT PLAN (Destination Waypoint). The Destination Waypoint can be any USER waypoint or a waypoint belonging to the STD NAV DB, as airport or heliport. The availability of the VFR Approach requires only the following pre-requisites to be satisfied:

— On the Destination Waypoint an IFR Arrival (if any is available) has not been activated;

— On the Destination Waypoint is not associated or active any Holding pattern.

The VFR Approach is flexible and it can be customized in terms of the following main parameters: Approach Course, Glide Path Angle, Missed Approach Course and Altitude and MAP height.

The VFR approach function creates a Final Approach Segment consisting of a FAF point located 3 nm from the destination waypoint and a lead-in leg of variable length (as a function of selected GPA and waypoint altitude) providing lateral and vertical guidance to the Destination waypoint with the same performance of Non-Precision Approach and can be coupled to APP (+DCL) mode of the AFCS as for Non Precision Approaches.

To activate a VFR approach the following data has to be inserted on the approach definition EDCU page:

- Approach Course;
- Missed Approach Course;
- Glide Path Angle (3° to 9°);
- TDZE (Touch-Down Zone Elevation) or LDG SURF EL (Landing Surface Elevation);
- TCH (Threshold Crossing Height) or CROSS HGT (Crossing Height);
- Missed Approach Altitude.

The FMS defaults the VFR Approach parameters any time the Pilot enters the VFR page with the values as detailed below.

| Parameter | NDB | NAVAID | Standard Waypoint | User Waypoint | Heliport (Helipad selected) | Airport (Runway selected) |
|---|---|---|---|---|---|---|
| APP CRS | Desired Track to the Destination Waypoint | | | | | Runway Heading |
| GPA | 3.0 | | | | | |
| Missed Approach CRS | Desired Track to the Destination Waypoint | | | | | Runway Heading |
| TDZE or LDG SURF EL | Facility Elevation, if available in Nav DB | Facility Elevation, if available in Nav DB | [------] Invalid (dashed) * | [------] Invalid (dashed) * | Helipad Elevation, if available in Nav DB | Landing Elevation |
| TCH or CROSS HGT | 40 ft (300 ft for steep VFR APP)** | | | | | |
| Missed Approach Alt | (TDZ/LDG SURF EL) + (TCH/CROSS HGT) + 1500 ft | | | | | |

* Elevation value must be entered manually

** For VFR approaches with GPA greater than 7.5 deg, a default TCH/CROSS HGT is automatically set at 300 ft; this is the minimum value pilot can insert. For Approaches with GPA less than 7.5 deg, 40 ft is the minimum value that pilot can insert as TCH/ CROSS HGT.

The VFR Approach may be created on Heliport or Airport, provided that pilot selects via VFR EDCU page the desired Pad or Runway, if more than one is available within STD NAV DB. The FMS automatically selects and displays on VFR EDCU page the Pad or the Runway ID and position, if it is unique.

The VFR Approach provides a basic Missed Approach procedure which consists of a course-to-fix leg (3 nm length) and an holding on the MAHWP.

**Note**

During VFR Approach (MAP profile included) it is the pilot's responsibility to ensure that the aircraft flight path will be clear of obstacles.

## VSD (VERTICAL SITUATION DISPLAY)

The Vertical Situation Display (VSD) intended function is to enhance flight crew awareness of the vertical situation in Terminal area and during approach. Information is provided on MFD. The VSD represents a profile view of helicopter and the corresponding FMS VPATH in arrival/approach through the TOD (Top Of Descent) position, VPATH Predicted Altitudes and flight plan Altitude constraints along the current Track.

The VSD is the vertical counterpart to the horizontal map display. When A/C is out of track with a XTK exceeding the RNP value, the VSD information is removed and replaced by the OUT OF SWATH amber message.

The VSD is not intended to be used for VPATH control or for obstacle/ground separation which remains under pilot's responsibility.

The VSD is not displayed during the execution of the Discontinuity of the flight plan.

## FLIGHT MANAGEMENT WINDOW

The Flight Management Window (FMW) includes Active Flight Plan data and Real Time Performance data.

The Active Flight Plan data are displayed in the upper part of the FMW and replicates the ACTIVE FLIGHT PLAN EDCU page layout allowing the Pilot to check the active flight plan in primary field of view.

The Helicopter Real Time Performance data are displayed in the bottom part of the FMW. The data provided are computed based on chart and according to the current FMS phase of flight (i.e. Ground, Climb, Cruise, Hover).

**CAUTION**

Helicopter performance must be determined using the performance charts in relevant Sections of RFM. The Real Time Performance data displayed in Flight Management Window must be considered as advisory information only.

## AUTOPILOT COUPLED WITH FMS

To couple the FMS Lateral Guidance function (NAV) to AFCS:

— Select, on PFD NAV bezel's button FMS1 or FMS2 as Primary Navigation source for the aircraft.

— Press the NAV key on the AFCS control panel.

To couple the FMS Vertical Guidance function (NAPP) to AFCS during the approach:

— Select, on PFD NAV bezel's button FMS1 or FMS2 as Primary Navigation source for the aircraft.

— Press the APP key on the AFCS control panel.

To couple the FMS Longitudinal Guidance function (NDCL/NIAS) to AFCS during the approach (GPS approach only):

— Select, on PFD NAV bezel's button FMS1 or FMS2 as Primary Navigation source for the aircraft.

— Press the DCL key on the AFCS control panel. The arming of DCL mode also arms automatically the APP mode.

## FMS STEERING DATA DISPLAYED ON MFD/PFD

Lateral:

The Desired Track Pointer, lateral deviation bar within the HSI, lateral deviation pointer in approach and the FMS1/2 DTK source indicator on PFD will turn to magenta (from cyan).

Active leg on MAP page on PFD/MFD, numeric XTK, “TO” WPT, RNP value, ETE and DTG will turn to magenta (from cyan).

Vertical:

During the Approach the vertical deviation pointer or the altitude reference bug (for the level flight segment) on the PFD and active leg and “TO” waypoint on VSD will turn to magenta (from cyan).

Longitudinal:

During the Approach with DCL mode armed the IAS reference bug on PFD will be automatically managed in accordance with the airspeed values inserted in the FMS on the APPROACH SPEEDS EDCU page.

During the NDCL (NIAS) mode engaged the IAS reference datum either initial speed or final speed can be changed by the pilot run time by the APPROACH SPEEDS EDCU page.

# OPERATIONS IN ABNORMAL MAGNETIC ENVIRONMENT

When AHRS is exposed to abnormal magnetic environment (e.g. magnetic disturbances introduced by ships, oil rigs, iron mines, electrical power plants/lines, high latitude etc...) automatic switching from Magnetic (MAG) to Directional Gyro (DG) mode occurs. This is annunciated by the PFD CAS message 1(2) DG MODE or 1-2 DG MODE and by PFD HSI DG caption (see Figure NP 12). As a consequence, heading indication provided by the sensor operating in DG mode will differ from the indication provided by the sensor operating in MAG mode.

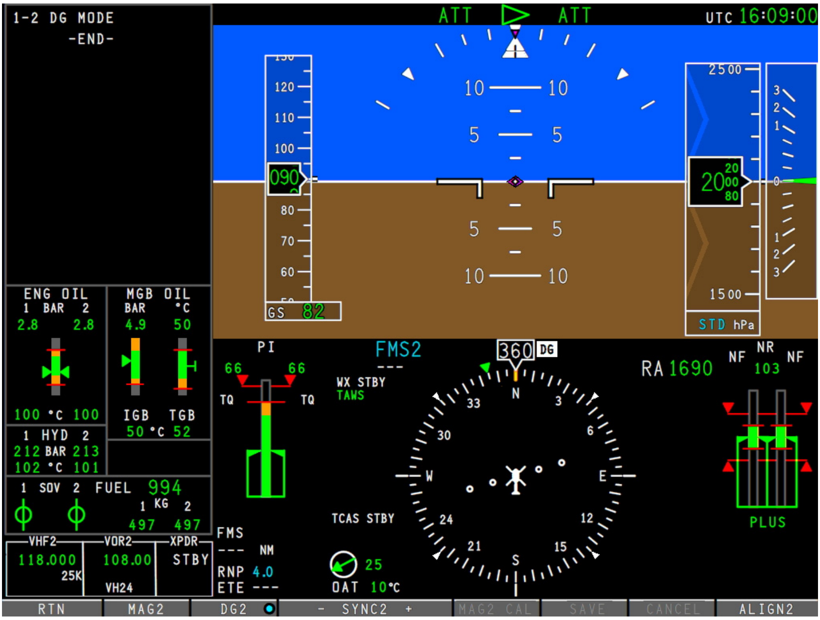


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Figure NP 12: PFD - DG caption and “1-2 DG MODE” CAS message

The resulting error (heading drift) will increase over time. In case a normal magnetic environment returns available, PFD CAS message 1(2) MAG MODE AVAIL or 1-2 MAG MODE AVAIL will be displayed (see Figure NP 13) and pilot shall manually set the affected sensor in MAG mode. The following procedure applies:

FD/FMS
OPER

***SENSOR SETTING IN MAG MODE***

- PFD CAS LIST: 1(2) MAG MODE AVAIL or 1-2 MAG MODE AVAIL present
- PFD menu 2/2 AHRS1(2) MAG1(2) : press
- PFD CAS LIST: 1(2) MAG MODE AVAIL or 1-2 MAG MODE AVAIL cleared
- PFD CAS LIST: 1(2) DG MODE or 1-2 DG MODE cleared
- PFD HSI: DG caption cleared

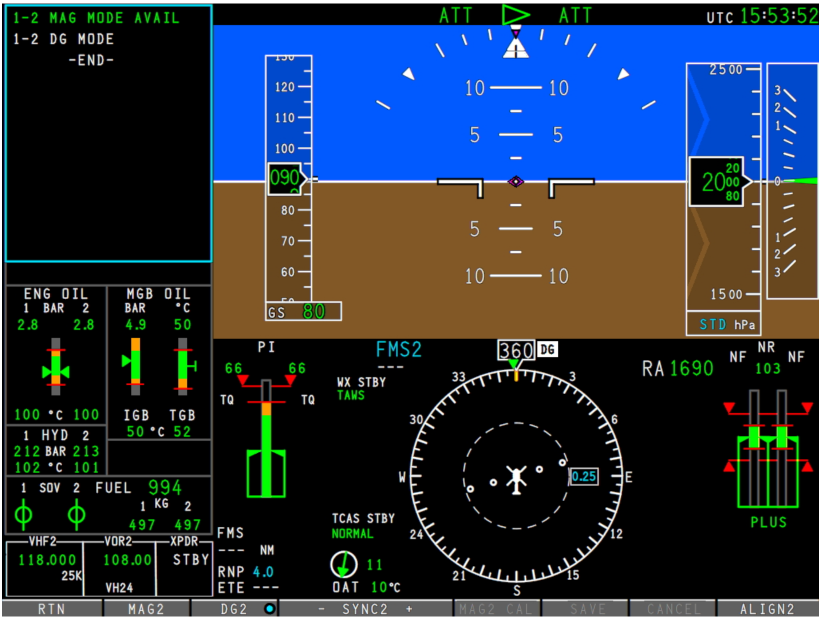


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Figure NP 13: PFD “1-2 MAG MODE AVAIL” CAS message and MAG2 function available

During helicopter operations in abnormal magnetic environment, AHRS1(2) may operate as indicated in the following table:.

| AHRS1 | AHRS2 |
|---|---|
| MAG | DG |
| DG | MAG |
| DG | DG |

FD/FMS OPER

## HEADING DRIFT EFFECTS

The heading drift will affect on board systems which will present erroneous indications as follows:

— MFD/PFD maps orientation;

— SVS and Flight Path Vector orientation;

— HSI orientation;

— Wind vector magnitude and orientation;

— Groundspeed vector orientation with respect to the helicopter longitudinal and lateral axes;

— DF and ADF (if installed) pointer's orientation.

In spite of heading drift the following indications and functions remain correct:

— Forward flight track information with respect to geographical reference system (North-East) even if HSI orientation is incorrect being affected by heading drift;

— Groundspeed vector magnitude;

— Groundspeed vector orientation with respect to geographical reference system (North-East) even if HSI orientation is incorrect being affected by heading drift;

— FMS1(2) and VOR1(2) navigation pointer's orientation with respect to geographical reference system (North-East) even if HSI orientation is incorrect being affected by heading drift;

— During approaches (LPV, NAPP, ILS, VOR) lateral and vertical deviation and Course Deviation Indicator selection are not affected by heading drift.

## TRANSITION IN ABNORMAL MAGNETIC ENVIRONMENT DURING SENSOR INITIALIZATION

When the helicopter is powered-up in an area subjected to localized magnetic disturbances, transition from nominal magnetic environment to abnormal magnetic environment may occur (e.g. during towing and taxing). If this transition occurs when the sensor is initialized in MAG mode but DG mode is not available yet (1(2) DG MODE or 1-2 DG MODE CAS message not yet temporarily displayed on PFD), **MAG DEGR** caption will be displayed and the heading readout will be set to --- (see Figure NP 14) to inform the pilot that the magnetic heading information is unreliable. The **MAG DEGR** caption will be cleared as soon as DG mode is available, in this case automatic transition to DG mode will occur and the system will no longer rely on magnetic information. To restore the correct heading value after the transition to DG mode, the pilot shall selected MAG mode as soon as 1(2) MAG MODE AVAIL advisory is displayed, or perform either ON GROUND ALIGNMENT PROCEDURE or IN FLIGHT ALIGNMENT PROCEDURES as applicable if MAG mode remains not available.


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Figure NP 14: PFD - **MAG DEGR** caption

FD/FMS OPER

## HEADING MISCOMPARE

As a consequence of the heading drift, in case heading discrepancy between AHRS1 and AHRS2 exceeds 10 degrees, the caption **HDG** will be shown on the HSI.

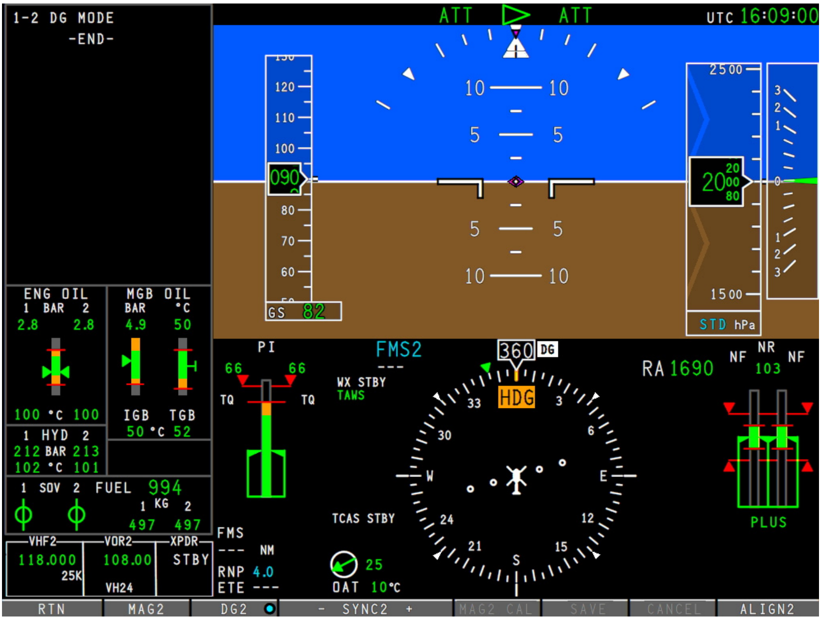


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Figure NP 15: PFD - **HDG** caption



## ALIGNMENT PROCEDURES

To nullify the effect of heading drift, a ground procedure and two types of forward flight alignment procedures are available to the pilot:

— ***ON GROUND ALIGNMENT PROCEDURE***

— ***IN FLIGHT ALIGNMENT PROCEDURES***

The execution of these procedures will reduce pilot workload restoring adequate AFCS performances and displaying all the correct and coherent information on cockpit displays allowing the nominal availability of AFCS modes. The following procedures apply:

### On ground alignment procedure

AHRS in DG mode: PFD menu 2/2 AHRS1(2) **- SYNC 1(2) +** : operate to align heading readout with runway heading or ground reference.

## In flight alignment procedures

- Groundspeed: acquire at least 80 kts/100 kts (see Figure NP 16).
- HDG mode: disengage if engaged.
- AHRS in DG mode: PFD menu 2/2 AHRS1(2) **- SYNC 1(2) +** : operate to set the track along helicopter longitudinal axis (track-on-the-nose) (see Figure NP 17).
- Perform a series of turns using at least rate-one angle of bank (the higher the angle of bank and groundspeed, the more effective the maneuver will be) to achieve a total heading change of at least 360 degrees (see Figure NP 16).
- AHRS1-AHRS2 heading difference: confirm within 3 degrees.

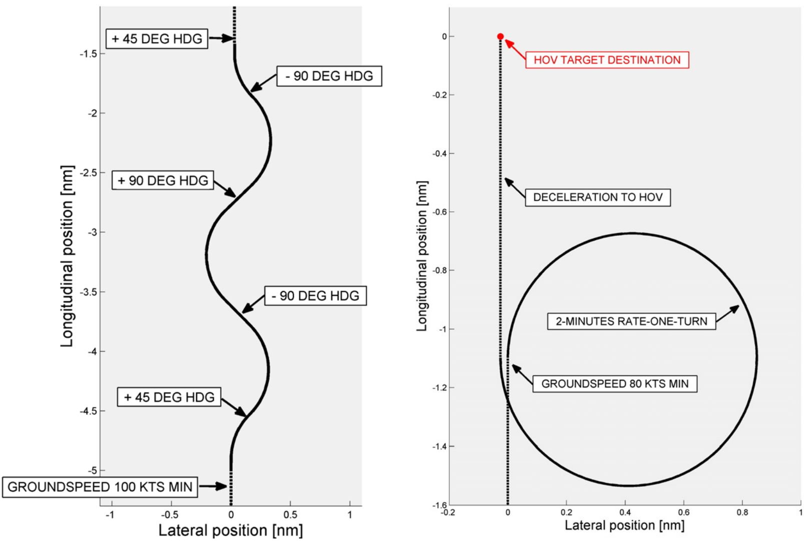


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Figure NP 16: In flight alignment procedures

**Note**

The direction of the initial turn may be either left or right.

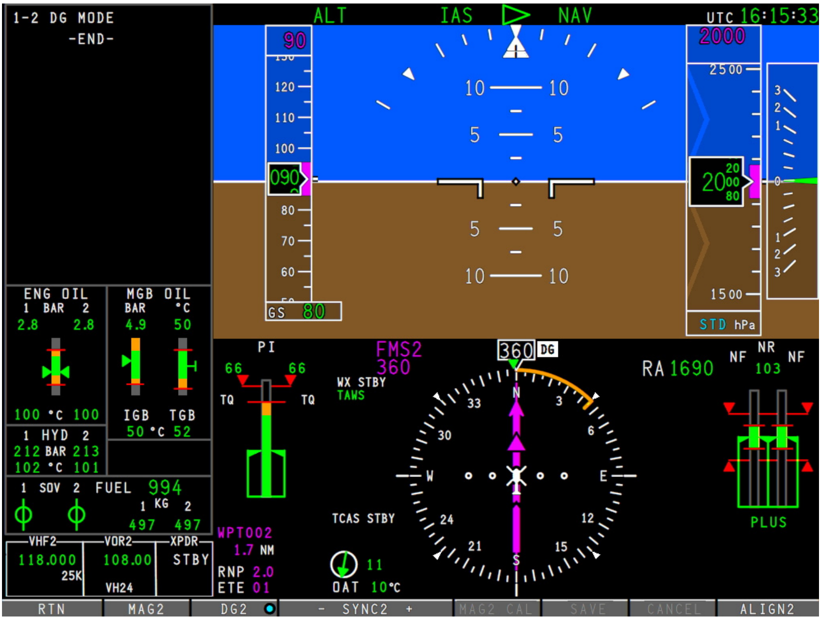


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Figure NP 17: PFD - - SYNC 1(2) + function and Track-On-The-Nose

## STARTUP OPERATIONS - GENERAL

Perform normal startup operation. Heading drift has no effect on the execution of the AFCS Pre-Flight test.

## STARTUP OPERATIONS - PROCEDURE

FD/FMS OPER

— Startup: At aircraft power up, MAG DEGR annunciation will be displayed. Annunciation will clear after a valid HDG value will be computed.
In case of abnormal magnetic environment verify that AHRS is declared "DG capable”:
- or momentarily displayed on CAS or
- On PFD menu 2/2 AHRS 1-2 bezel key "DG" is enabled.

— PFD CAS LIST 1(2) DG MODE or 1-2 DG MODE present: perform ON GROUND ALIGNMENT PROCEDURE

## AFCS MODES OPERATIONS - GENERAL

AFCS performances of cruise and approach modes are not impacted by heading drift.
In case any of the AHRS sensor is operating in DG mode, ATT heading hold function is replaced by ATT yaw rate hold function. Both Pilot and Copilot collective lateral beepers are not active except during operations with HDG mode active at low speed.

The execution of the proper ALIGNMENT PROCEDURE will reduce pilot workload and display all the correct and coherent information on cockpit displays allowing the nominal availability of AFCS modes. Performance of AFCS Cruise and Approach modes will be guaranteed independently from the heading drift.

**AFCS MODES OPERATIONS - PROCEDURES**

**HDG/NAV/VOR operations (SID, ENROUTE, STAR)**

- ON GROUND ALIGNMENT PROCEDURE: execute immediately before performing SID
- IN FLIGHT ALIGNMENT PROCEDURE: execute immediately before engaging NAV/HDG/VOR modes to reduce pilot workload and display all the correct and coherent information on cockpit displays
- NAV/HDG/VOR modes: operate normally

**Note**

**HDG** caption displayed on PFD implies a heading miscompare condition. HDG mode will disengage, if active, or will not be available.

**Approach operations**

- IN FLIGHT ALIGNMENT PROCEDURE: execute immediately before engaging APP modes to reduce pilot workload and display all the correct and coherent information on cockpit displays
- APP modes: operate normally
- APP modes: ILS or LOC or VOR or NDB approach procedures shall always be loaded in FMS even if the NAV source used is Radio NAV to allow FMS based missed approach procedure

Availability of AFCS cruise and approach modes is detailed in the following table, HMI degradation is detailed in Figure NP 18 thru Figure NP 24.

**Heading drift impact on display information and mode availability in Cruise and Approach**

| Mode | Impacted display information | Not Impacted display information | Mode availability |
|---|---|---|---|
| **HDG** | - HSI orientation | - Forward flight track w.r.t. geographical reference system (North-East) | Available if **HDG** caption is not displayed on HSI |
| **NAV** | - Maps orientation | - Forward flight track w.r.t. geographical reference system (North-East) | Available |
| **LOC**<br>**NLOC**<br>**VOR**<br>**VAPP**<br>**BC**<br>**NAPP** | - Maps orientation<br>- Orientation of horizontal approach profile<br>- HSI/CDI orientation with respect to helicopter longitudinal and lateral axes<br>- FMS1(2) and VOR1(2) navigation pointer's orientation with respect to helicopter longitudinal and lateral axes<br>- DF and ADF (if installed) pointer's orientation with respect to geographical reference | - Lateral deviation and Course Deviation Indicator selection are not affected by heading drift. | Available |

FD/FMS OPER

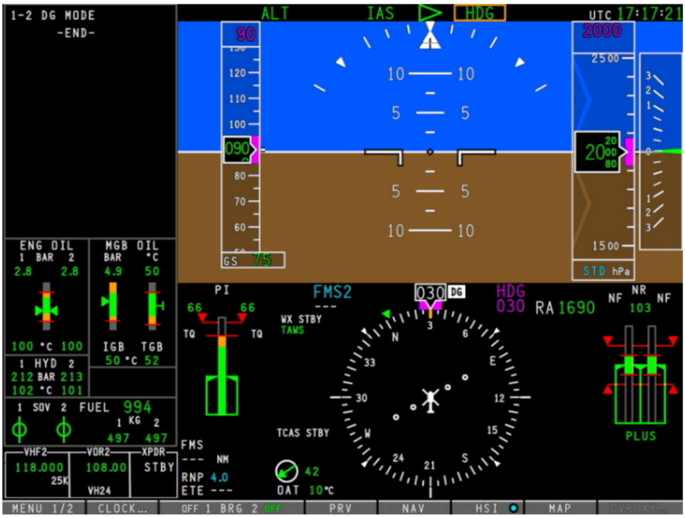

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Figure NP 18: PFD - HDG mode HMI degradation

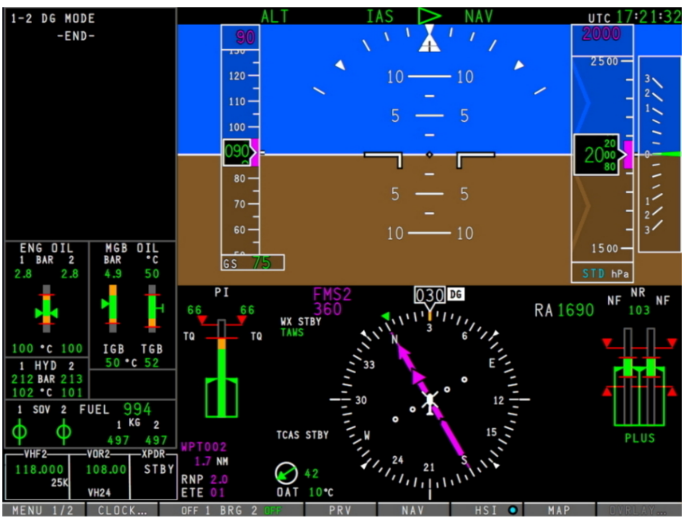

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Figure NP 19: PFD - NAV mode HMI presentation in DG mode

FD/FMS OPER

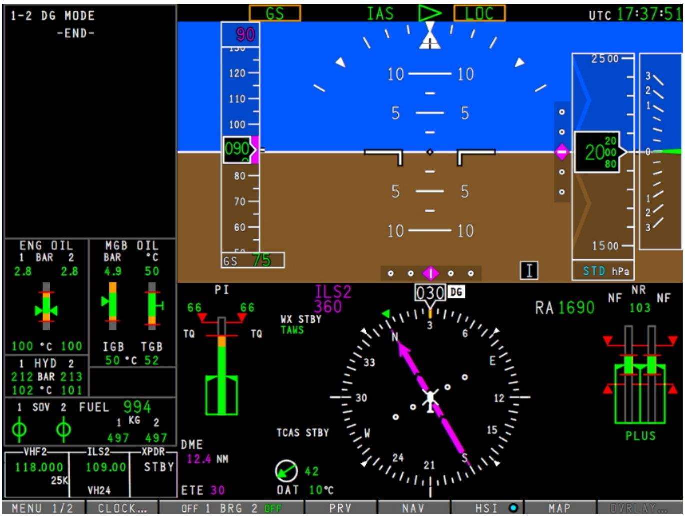


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Figure NP 20: PFD - LOC mode HMI degradation

FD/FMS
OPER

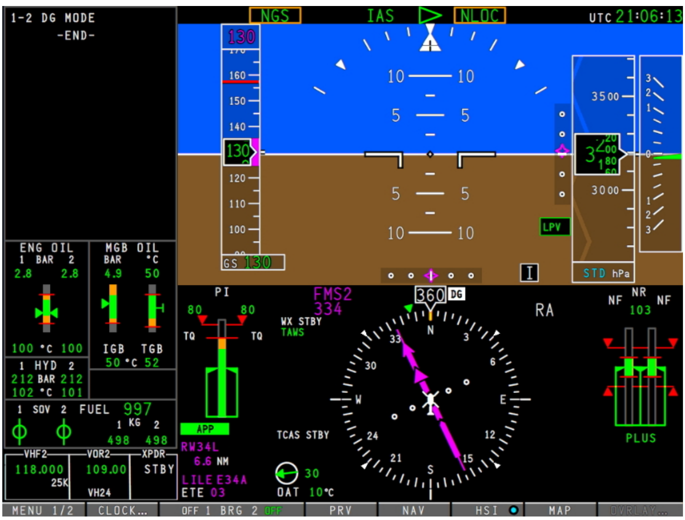


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Figure NP 21: PFD – NLOC mode HMI degradation

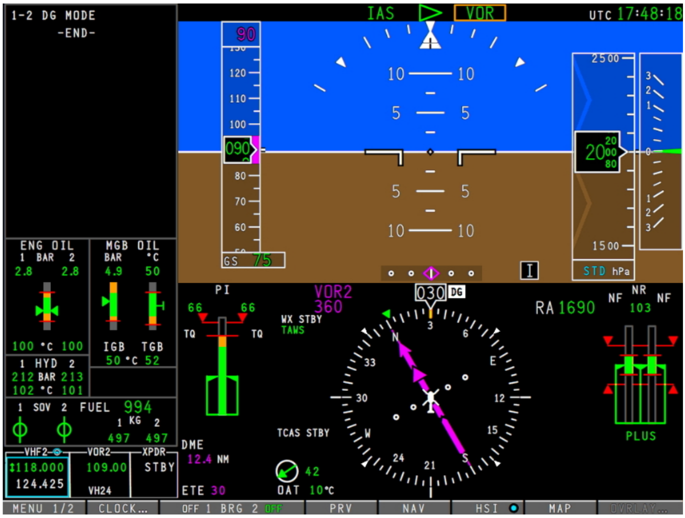


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Figure NP 22: PFD – VOR mode HMI degradation

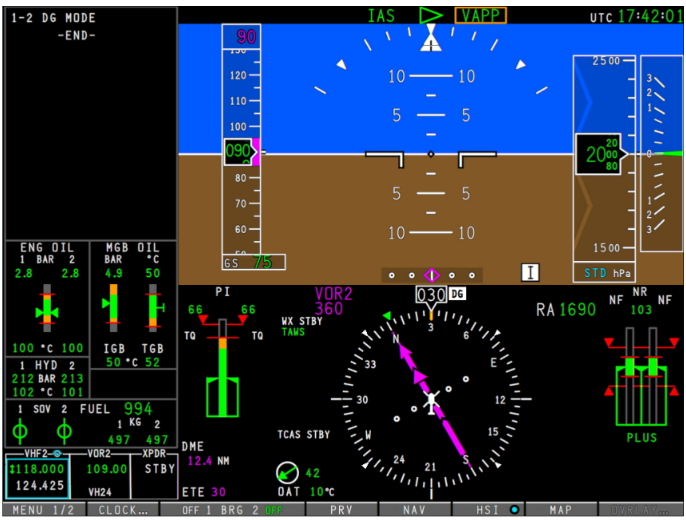


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Figure NP 23: PFD – VAPP mode HMI degradation

FD/FMS OPER

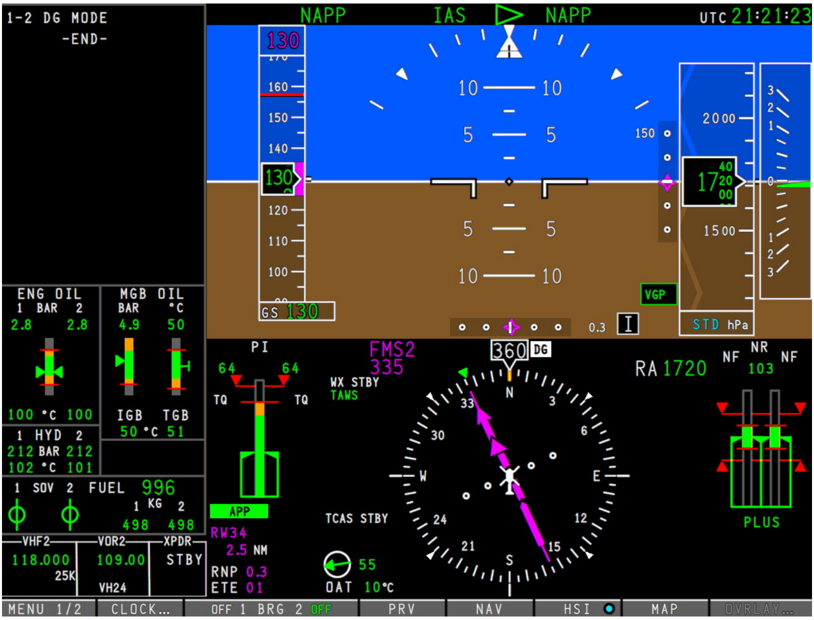


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Figure NP 24: PFD – NAPP mode HMI presentation in DG mode

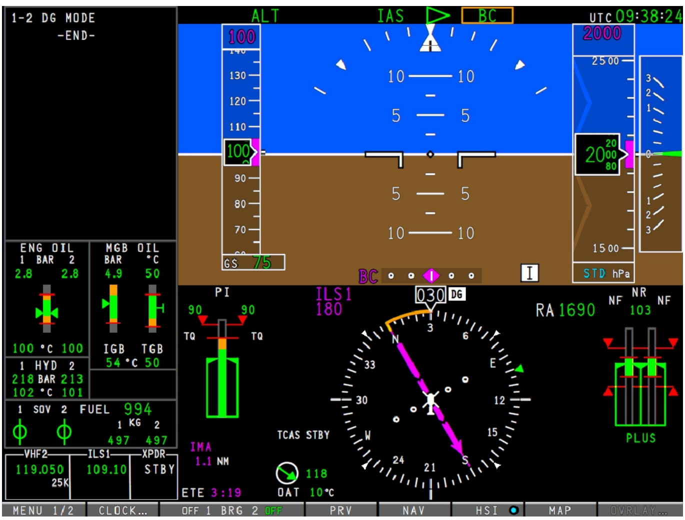


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Figure NP 25: PFD – BC mode HMI presentation in DG mode

### Auto HOV Protection (AHP) mechanism

An additional consequence of heading drift is the degradation of HOV ground-speed datum hold performance. This could result in degraded attitude hold performance up to the point where the Auto HOV Protection mechanism intervenes.

The AHP mechanism prevents degradation of attitude control, warning the pilots by means of EXCESSIVE DEVIATION chevrons displayed on PFD (see Figure NP 26) and by aural double chime and, in case of marginal stability, by HOV mode longitudinal and lateral axis disengagement and transition to ATT mode which will be characterized by nominal attitude hold performance. Vertical control axis remains engaged and operative.

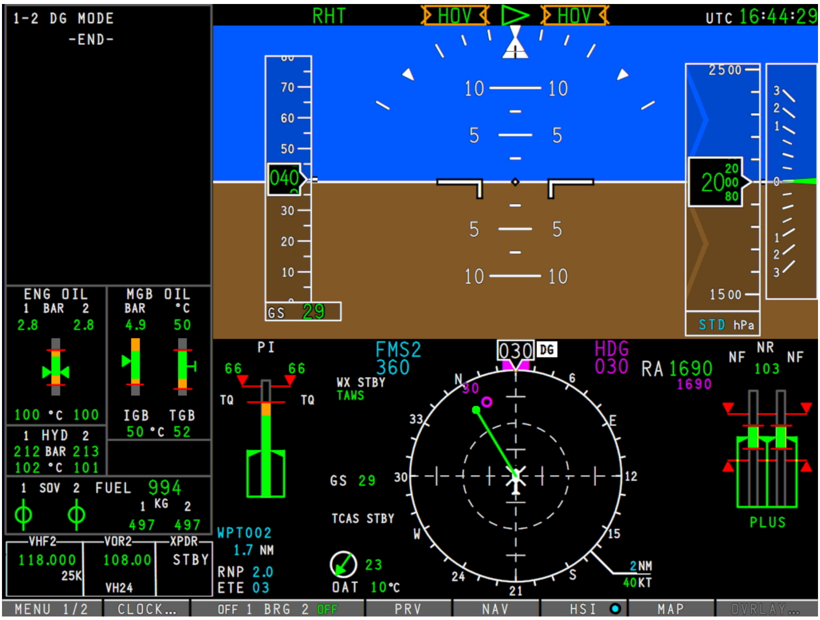


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Figure NP 26: PFD - Excessive deviation chevron

### Safety considerations

Auto HOV operations are safely achievable considering the availability to the pilot of two different “safety barriers”:

— ON GROUND/IN FLIGHT ALIGNMENT PROCEDURES

— Auto Hover Protection mechanism

Therefore in case of initial incipient degradation of Auto HOV performance the pilot shall perform the appropriate ALIGNMENT PROCEDURE to avoid the intervention of AHP protection.

## Auto HOV Operations - Procedures

— ON GROUND/IN FLIGHT ALIGNMENT PROCEDURE: execute immediately before entering into hover.

— HOV mode: engage and operate normally.

— PFDs HSI Hover format: monitor HOV groundspeed datum hold performance.

If during prolonged Auto HOV Operations the AHP mechanism activates (EXCESSIVE DEVIATION chevrons displayed on PFD) or

**HDG** caption on PFD display

fly-away and repeat IN FLIGHT ALIGNMENT PROCEDURE.

In case the pilot elects to fly-away using TU Mode, WLVL option is recommended (second press of TU pushbutton on collective grip).

Availability of AFCS Auto Hover mode is detailed in the following table, HMI degradation is detailed in Figure NP 27.

| Heading drift impact on display information and mode availability with TD, TDH, HOV and TU | | | |
|---|---|---|---|
| **AFCS Mode** | **Impacted display information** | **Not Impacted display information** | **Mode availability** |
| **TD** | - HSI orientation<br>- Maps orientation | - Forward flight track w.r.t. geographical reference system (North-East) | Available |
| **TDH** | - HSI orientation<br>- Groundspeed vector orientation with respect to helicopter longitudinal and lateral axes. | - Groundspeed vector orientation w.r.t. geographical reference system (North-East)<br>- Groundspeed vector magnitude. | Available if **HDG** caption is not displayed on HSI |
| **HOV** | - HSI orientation<br>- Groundspeed vector orientation with respect to helicopter longitudinal and lateral axes | - Groundspeed vector orientation w.r.t. geographical reference system (North-East)<br>- Groundspeed vector magnitude | Available if **HDG** caption is not displayed on HSI |
| **TU** | - HSI orientation<br>- Groundspeed vector orientation with respect to helicopter longitudinal and lateral axes. | - Groundspeed vector orientation w.r.t. geographical reference system (North-East).<br>- Groundspeed vector magnitude. | Available if **HDG** caption is not displayed on HSI |

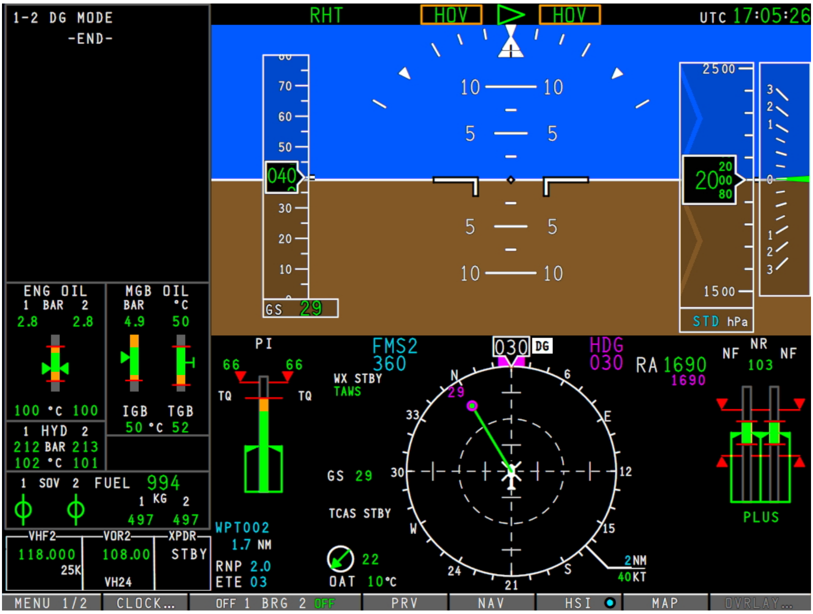


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Figure NP 27: PFD – HOV mode HMI degradation

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FD/FMS
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# ADVISORY CAPTIONS, PFD MESSAGES

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## ADVISORY CAPTIONS DEFINITION

| CAS Caption | System State |
|---|---|
| 1(2) AMMC DBU READY | AMMC 1 and 2 ready to be aligned. |
| C/Y TRIM OFF | Collective/Pedals force trim switched OFF. |
| DC EXT PWR ON | External power ON. |
| DC EXT PWR READY | External power connected. |
| ECS ON | ECS is selected AUTO. |
| ENG ACCESSORY MODE | Engine 1 Accessory Mode selected (engine 1 not running). |
| ENG ACC TRAN | Engine 1 transition to APU mode or to main mode. |
| ENG APU MODE | Engine 1 running in APU mode. |
| EXT LT COVERT MODE | Covert mode selected. |
| FUNCTION UNAVL | Function requested is not available. |
| ICS BKUP/EMER MODE | Audio control panel selected to BACKUP or EMERGENCY mode. |
| LH LDG LT ON | LH LDG LT switched ON. |
| 1(2) MAG MODE AVAIL | AHRS MAG mode available for selection |

| CAS Caption | System State |
|---|---|
| PARK BRK ON | Parking brake engaged. |
| 1(2) PITOT HEAT ON | 1 (2) Pitot heating ON. |
| P/R TRIM OFF | Cyclic force trim switched OFF. |
| RH LDG LT ON | RH LDG LT switched ON. |
| ROTOR BRK ON | Rotor brake engaged. |
| STROBE LT ON | Strobe light switched ON. |
| SVS NOT INSTALLED | Synthetic Vision not available. |
| TQ LIM SEL | Engine torque limiter ON. |
| VENT OFF | Both cockpit and cabin fans selected off. |

## STATE CAPTIONS DEFINITION

| CAS Caption | System State |
|---|---|
| AP OFF ARM | Message appears at first pressure of AP OFF pushbutton to inform crew that autopilot quick disconnection is armed. The message is displayed for 2 seconds and the autopilot is effectively disconnected only if a second pressure of AP OFF occurs on the same grip within this time window. |
| BUS TIE CLOSED | Bus tie contactor closed. |
| 1(2) DC GEN OFF | 1(2) DC Generator off line. |
| 1(2) DG MODE | AHRS DG mode selected. |
| 1(2) DG MODE AVAIL | AHRS DG mode is ready and will be automatically selected by AHRS. Caption is displayed transiently and automatically cleared. |
| ECS BACKUP | ECS BACKUP mode requested by the pilot. |
| LH LDG LT EXTD | Left Landing light extended but extinguished. |
| RH LDG LT EXTD | Right Landing light extended but extinguished. |
| MAINTENANCE | Informs maintenance crew to interrogate maintenance system. (Caption only active on ground). |
| ROTOR BRK INOP | Rotor Brake System not operative. |

# EDCU MESSAGE / SYMBOLOGY DEFINITIONS

Refer to EDCU User Manual latest issue for information.

The illumination of an amber MSG caption on the PFD (below the PI) indicates there are messages on the EDCU MSG page.
Refer to the relevant FMS Pilots Guide for list of EDCU Alert messages.

# DENSITY / ALTITUDE CHART, CONVERSION CHART, HOVER POWER ASSURANCE CHECK

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# PERFORMANCE

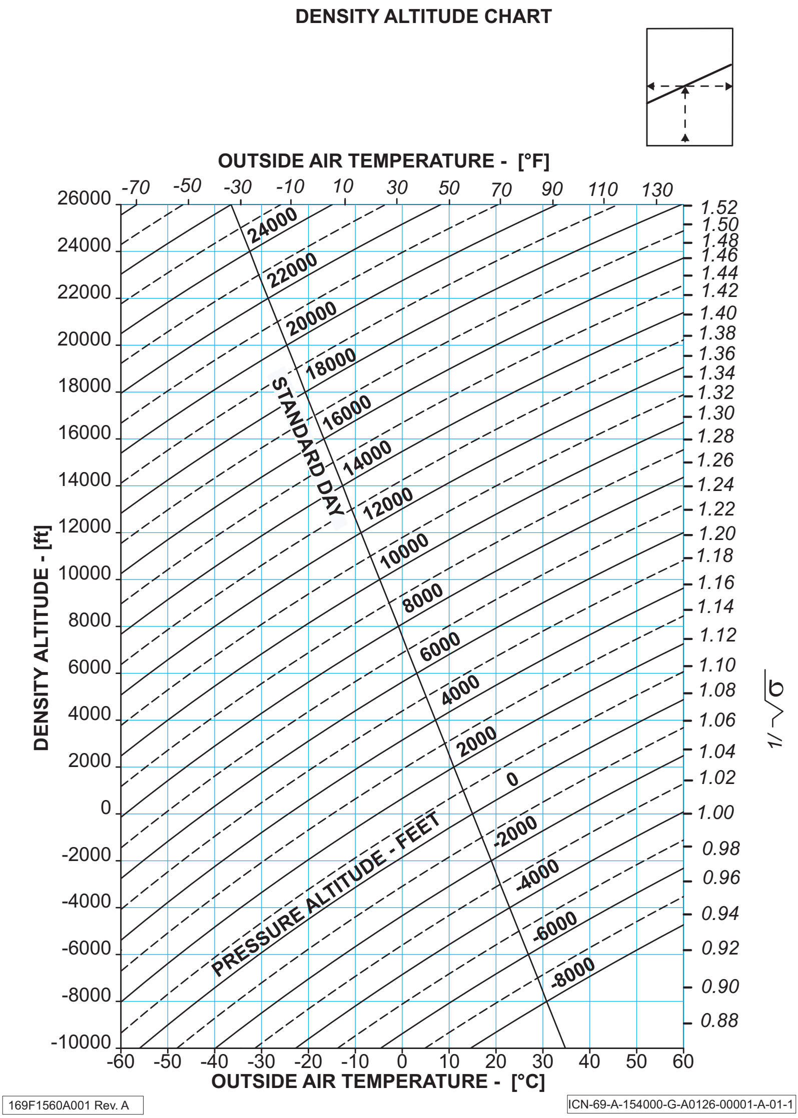



Figure Perf 1: Density/Altitude Chart (Imperial Units)

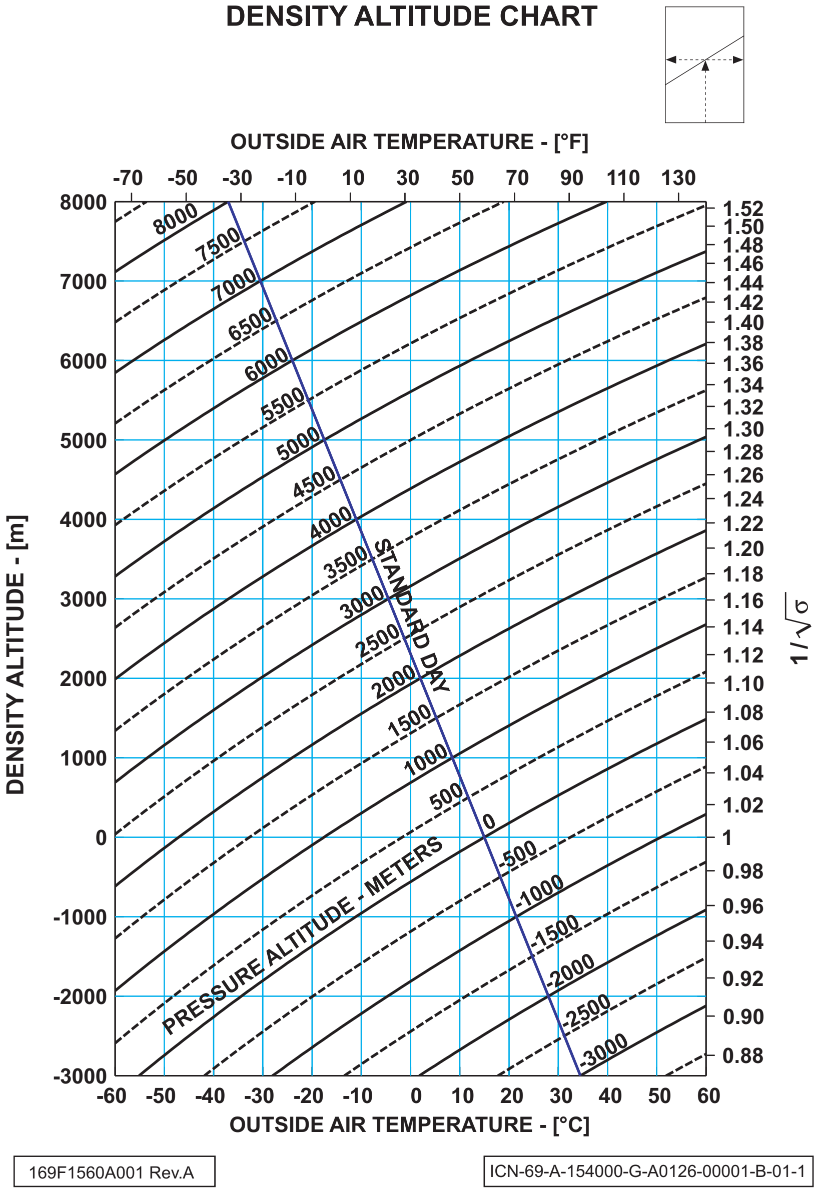
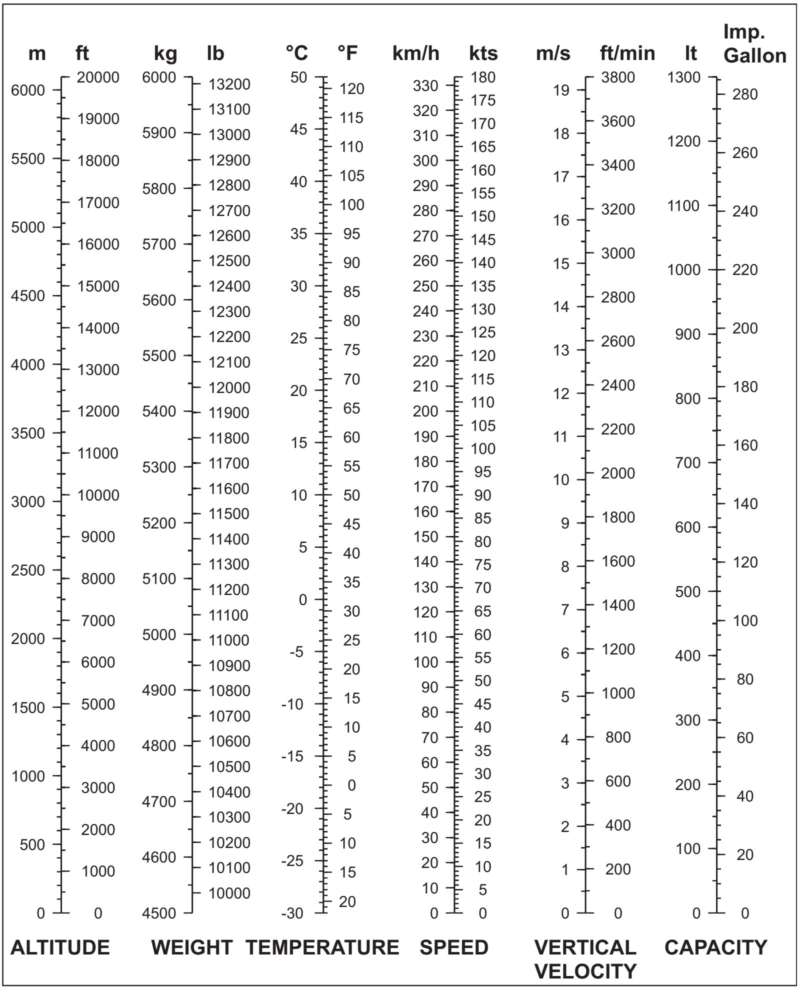



Figure Perf 2: Density/Altitude Chart (Metric Units)

GEN CHART

## CONVERSION CHART

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GEN CHART

Figure Perf 3: Conversion Chart

## POWER ASSURANCE CHECK IN HOVER

**POWER ASSURANCE CHECK in HOVER**

- ECS ONLY VENT
- SET NR PLUS MODE
- TEST ENGINE MODE SWITCH: FLIGHT
- OTHER ENGINE MODE SWITCH: IDLE
- GENERATOR LOAD BELOW 15%
- INCREASE COLLECTIVE UNTIL LIGHT ON WHEELS OR HOVERING AT 3 FEET, NOSE ON WIND. DO NOT EXCEED 930°C ITT OR 98.2% NG AND TQ IN THE RANGE SHOWN IN CHART BELOW
- STABILIZE POWER 1 MINUTE, THEN RECORD OAT, PRESSURE ALTITUDE, ENGINE TORQUE, ITT AND NG
- ENTER CHART AT INDICATED TQ, MOVE UP TO INTERSECT PRESSURE ALTITUDE, PROCEED TO THE RIGHT TO INTERSECT OAT, THEN MOVE DOWN TO READ VALUES FOR MAXIMUM ALLOWABLE ITT AND NG
- IF INDICATED ITT OR NG EXCEEDS OR EQUALS MAXIMUM ALLOWABLE, REPEAT CHECK STABILIZING POWER FOR 3 MINUTES THEN RECORD OAT, PRESSURE ALTITUDE, ENGINE TORQUE, ITT AND NG
- ENTER CHART AGAIN AND DETERMINE MAXIMUM ALLOWABLE ITT AND NG
- REPEAT CHECK USING OTHER ENGINE (STABILIZING FOR 1 MINUTE FIRST AND THEN IF NECESSARY FOR 3 MINUTES)
- IF EITHER ENGINE EXCEEDS ALLOWABLE ITT OR NG, PUBLISHED PERFORMANCE MAY NOT BE ACHIEVABLE. REFER TO MM

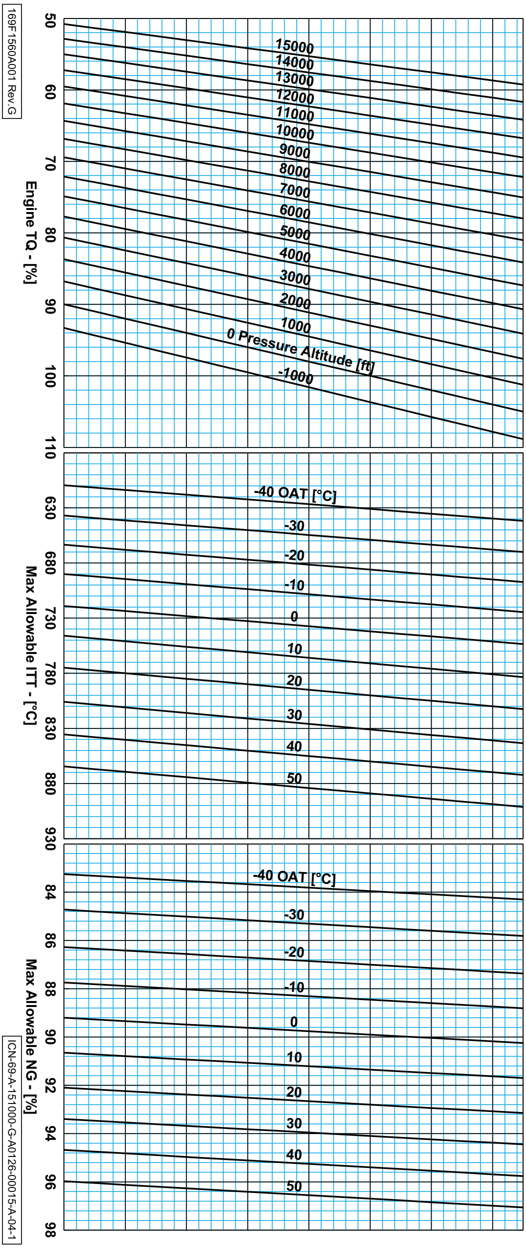



Figure Perf 4: P&WC 210A Hover Power Check Chart

GEN CHART

## POWER ASSURANCE CHECK in HOVER
## EAPS INSTALLED

EAPS ON
ECS: ONLY VENT
SET NR PLUS MODE
TEST ENGINE MODE SWITCH: FLIGHT
OTHER ENGINE MODE SWITCH: IDLE
GENERATOR LOAD BELOW 15%
INCREASE COLLECTIVE UNTIL LIGHT ON WHEELS OR HOVERING AT 3 FEET, NOSE ON WIND,
DO NOT EXCEED 930°C ITT OR 98.2% NG and TQ IN THE RANGE SHOWN in CHART BELOW
STABILIZE POWER 1 MINUTE, THEN RECORD OAT, PRESSURE ALTITUDE, ENGINE TORQUE, ITT AND NG
ENTER CHART AT INDICATED TQ, MOVE UP TO INTERSECT PRESSURE ALTITUDE, PROCEED TO THE RIGHT TO INTERSECT OAT,
THEN MOVE DOWN TO READ VALUES FOR MAXIMUM ALLOWABLE ITT AND NG
IF INDICATED ITT OR NG EXCEEDS OR EQUALS MAXIMUM ALLOWABLE, REPEAT CHECK STABILIZING POWER FOR 3 MINUTES,
THEN RECORD OAT, PRESSURE ALTITUDE, ENGINE TORQUE, ITT AND NG
ENTER CHART AGAIN AND DETERMINE MAXIMUM ALLOWABLE ITT AND NG
REPEAT CHECK USING OTHER ENGINE (STABILIZING FOR 1 MINUTE FIRST AND THEN IF NECESSARY FOR 3 MINUTES).
IF EITHER ENGINE EXCEEDS ALLOWABLE ITT OR NG, PUBLISHED PERFORMANCE MAY NOT BE ACHIEVABLE. REFER TO MM

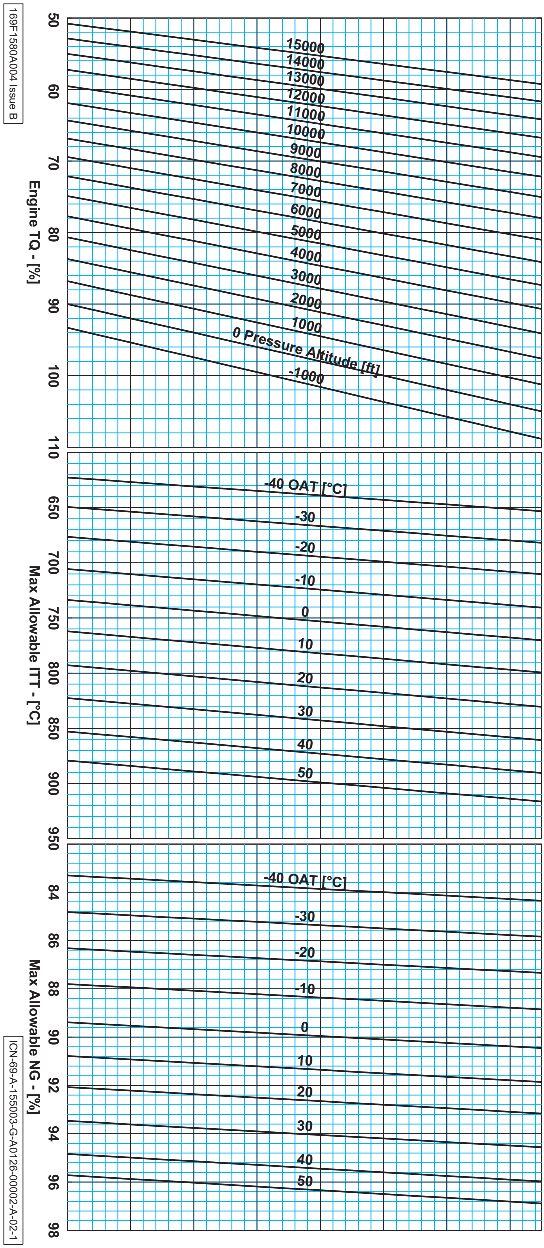
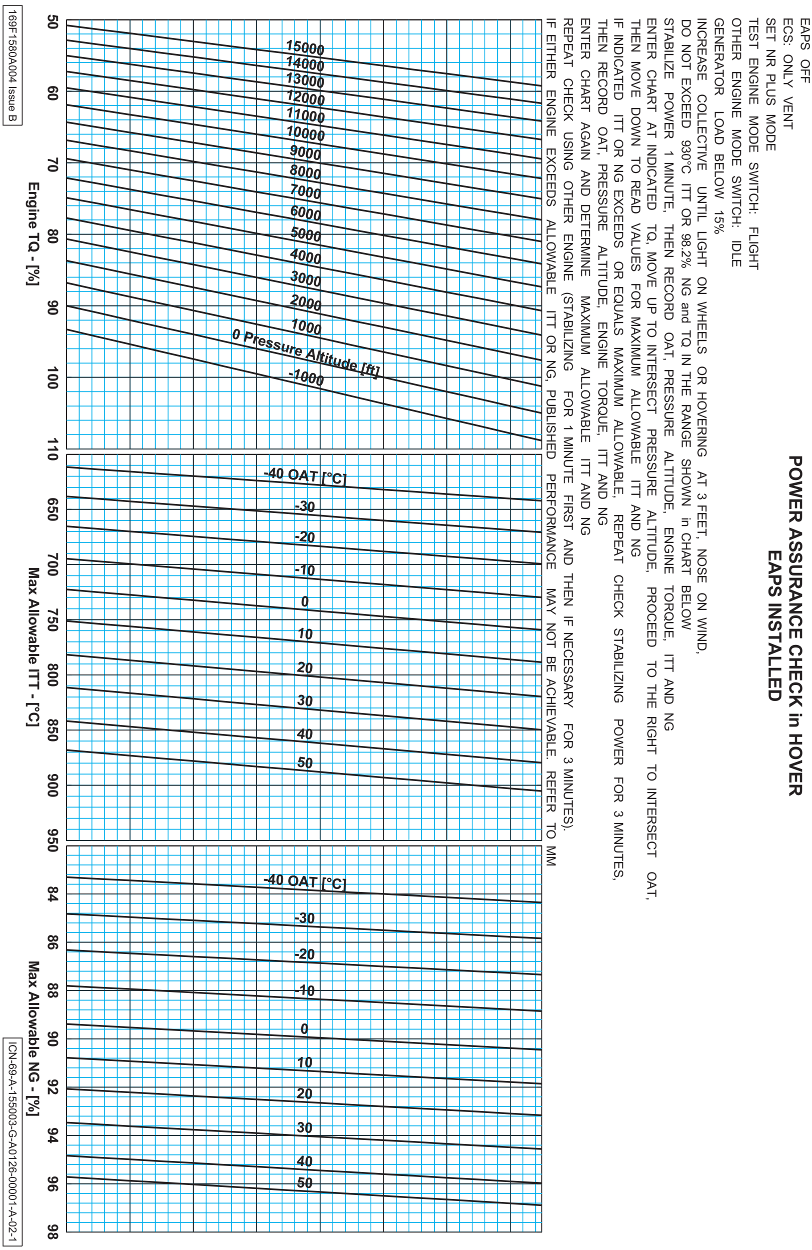



Figure Perf 5: P&WC 210A Hover Power Check Chart - EAPS ON

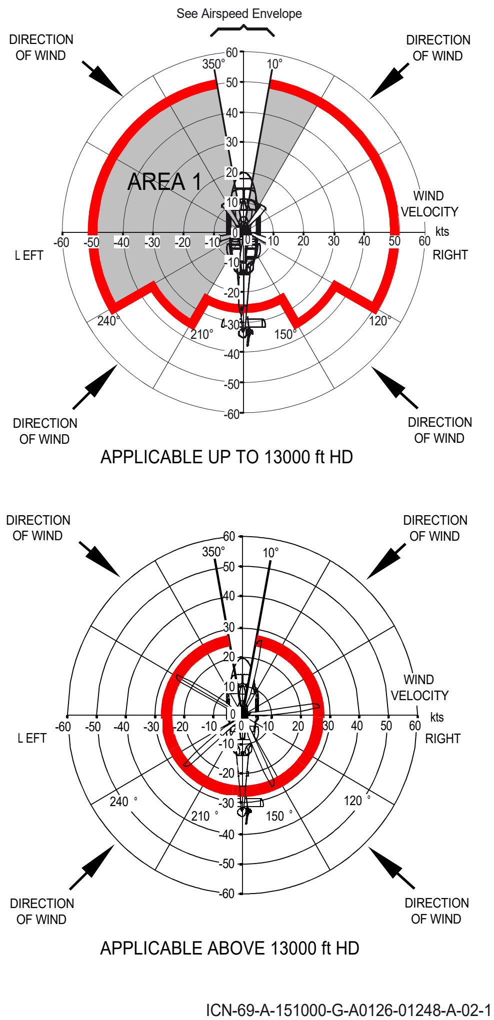
GEN CHART




GEN
CHART

Figure Perf 6: P&WC 210A Hover Power Check Chart - EAPS OFF

# CONTROLLABILITY & H/V



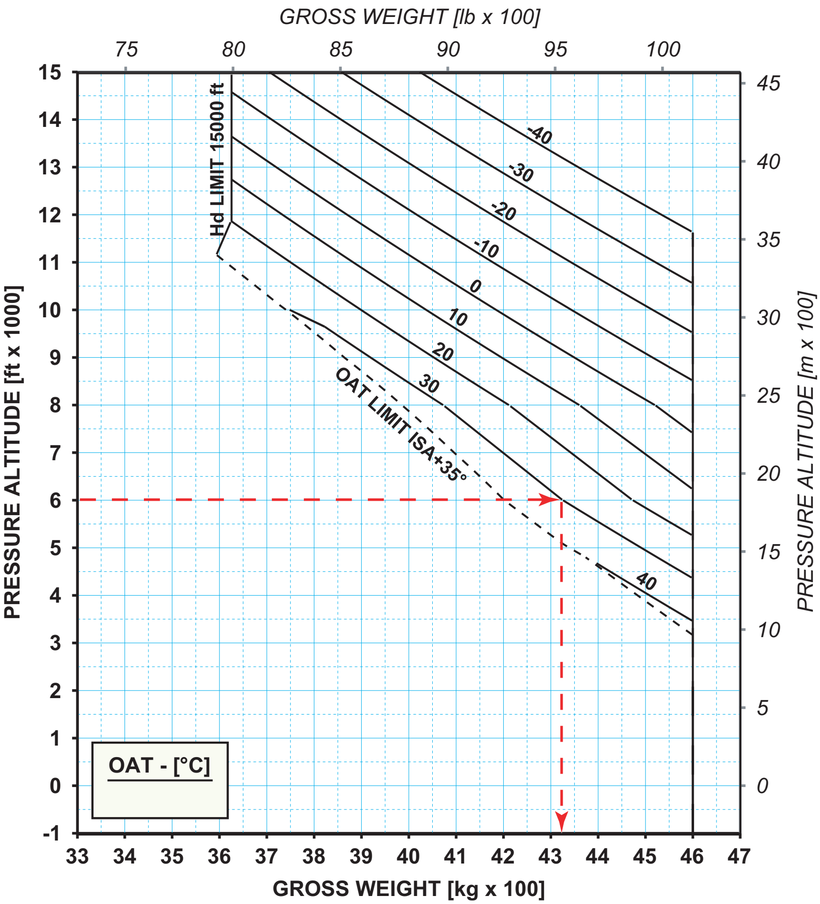

CONTR & H/V

Figure Perf 7: Wind/Ground/Airspeed Azimuth Envelope for Hover IGE and OGE Manoeuvres

## HOVER CEILING IN GROUND EFFECT
## WIND AS PER FIGURE 4-8
## AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft



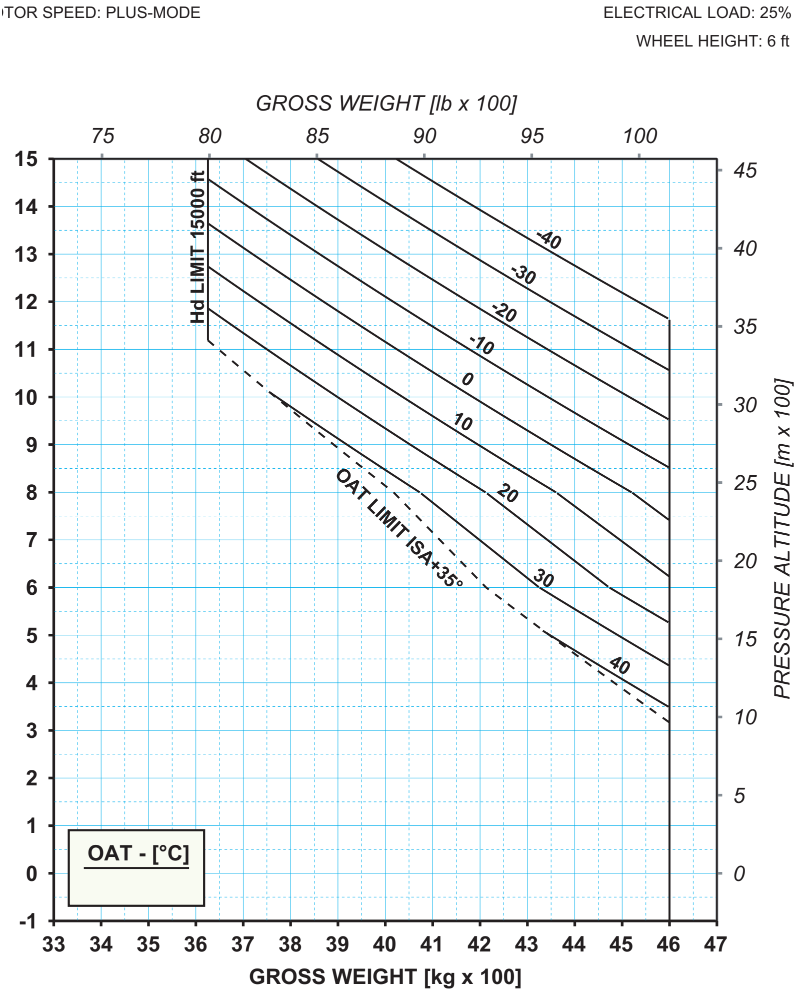

169F1560A001 Issue H

ICN-69-A-151000-G-A0126-00009-A-05-1

CONTR & H/V

Figure Perf 8: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - Up to 4600 kg

HOVER CEILING IN GROUND EFFECT
WIND AS PER FIGURE 4-8
AEO TOP




169F1560A001 Issue H

ICN-69-A-151000-G-A0126-00010-A-05-1

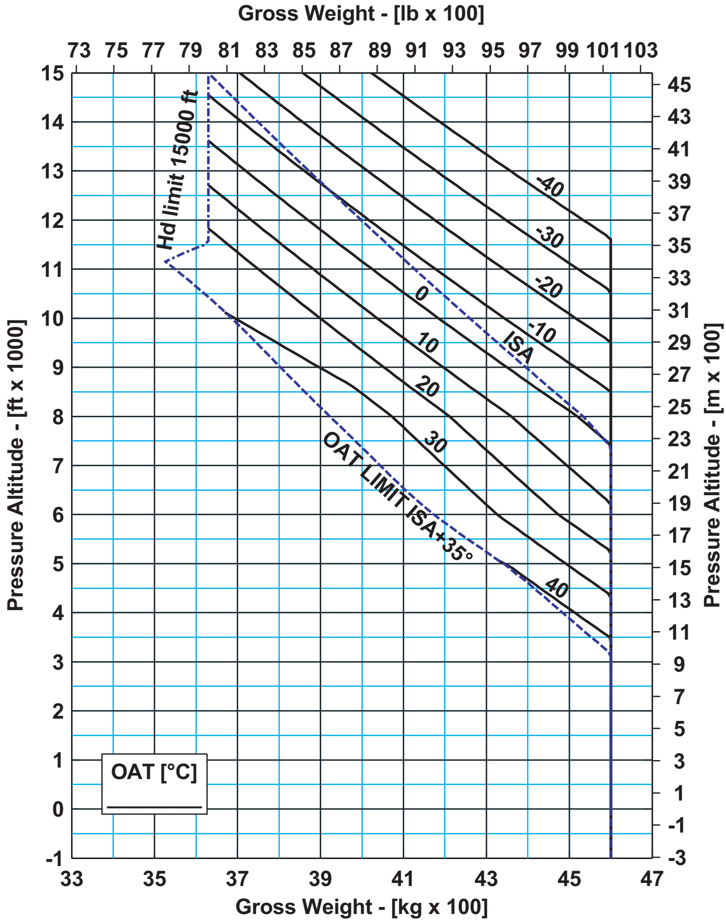
CONTR & H/V

Figure Perf 9: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - Up to 4600 kg

# HOVER CEILING IN GROUND EFFECT
# WIND AS PER FIGURE 4-8
# AEO TOP

PLUS MODE
WHEEL HEIGHT: 6ft
ELECTRICAL LOAD 75%

HEATER ON




169F1580A003 Issue F

ICN-69-A-151001-G-A0126-00003-A-05-1

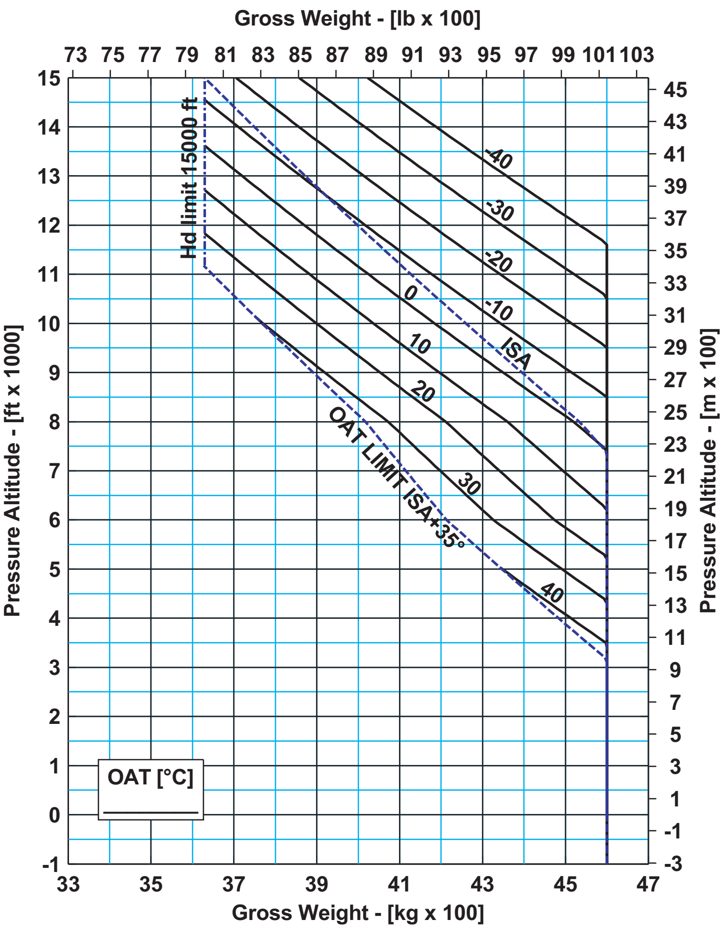
CONTR & H/V

Figure Perf 10: Hover Ceiling IGE Wind As Per Figure Perf 7 - AEO TOP - Heater ON - Up to 4600 kg

## HOVER CEILING IN GROUND EFFECT
## WIND AS PER FIGURE 4-8
## AEO TOP

PLUS MODE
WHEEL HEIGHT: 6ft
ELECTRICAL LOAD 25%

HEATER ON



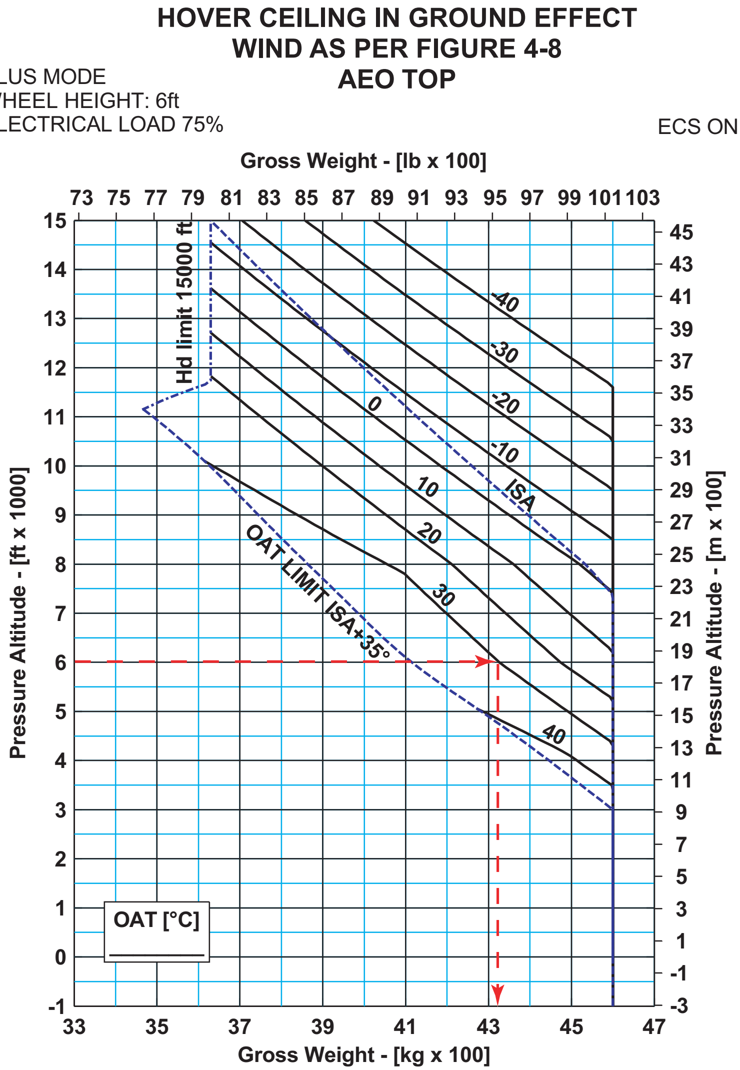

169F1580A003 Issue F

ICN-69-A-151001-G-A0126-00004-A-05-1

CONTR & H/V

Figure Perf 11: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - Heater ON - Up to 4600 kg

PLUS MODE
WHEEL HEIGHT: 6ft
ELECTRICAL LOAD 75%




169F1580A003 Issue F

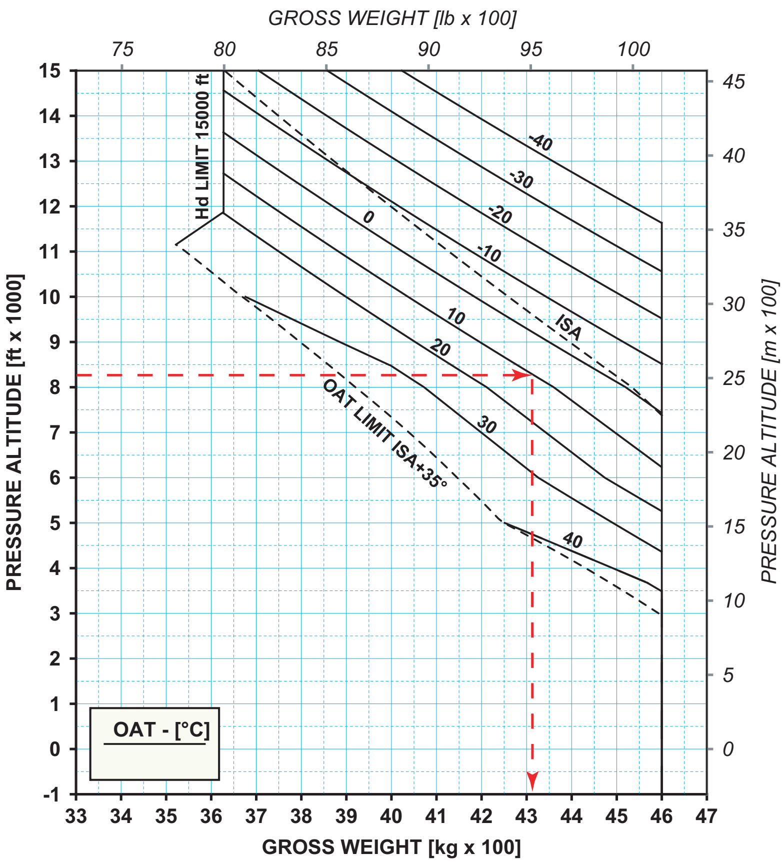
ICN-69-A-151002-G-A0126-00003-A-04-1

Figure Perf 12: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - ECS ON - Up to 4600 kg

WEIGHT-ALTITUDE-TEMPERATURE
for HIGE CONTROLLABILITY
AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6ft

ELECTRICAL LOAD: 75%
EAPS OFF




169F1580A004 ISSUE B

ICN-69-A-155103-G-A0126-00004-A-02-1

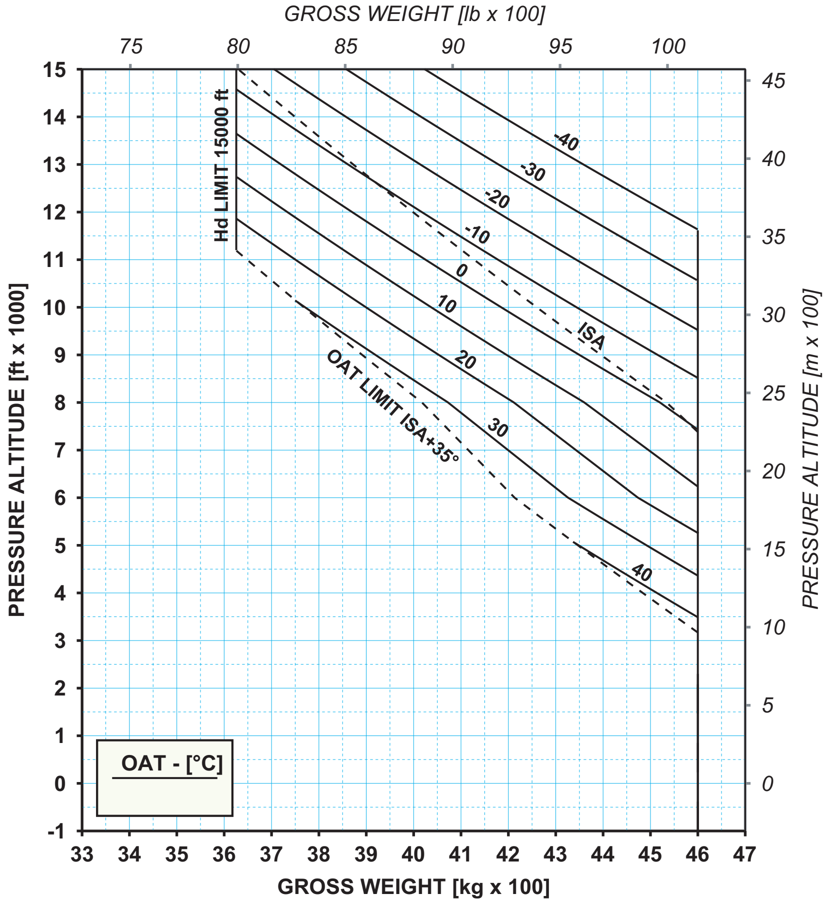
CONTR & H/V

Figure Perf 13: WAT for HIGE Controllability AEO TOP - EAPS OFF - Up to 4600 kg

**HOVER CEILING IN GROUND EFFECT**
**WIND AS PER FIGURE S3-14**
AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6ft

ELECTRICAL LOAD: 25%
EAPS OFF




169F1580A004 Issue D

ICN-69-A-155103-G-A0126-00007-A-03-1

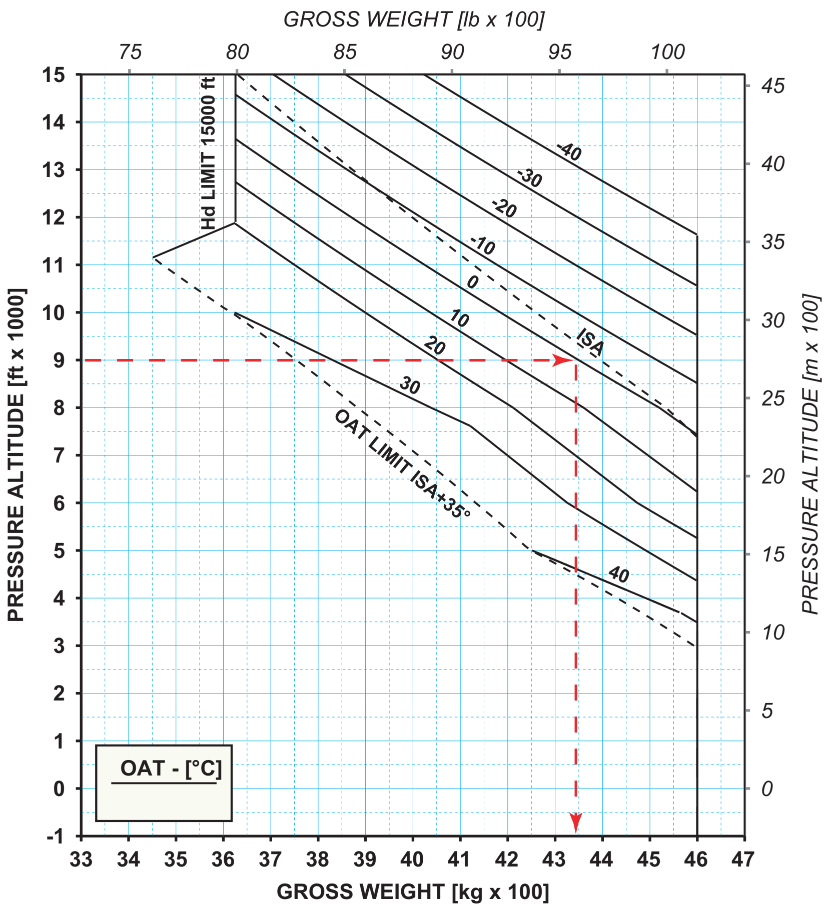
CONTR & H/V

Figure Perf 14: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS OFF - Up to 4600 kg

**HOVER CEILING IN GROUND EFFECT**
**WIND AS PER FIGURE S3-14**
AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6ft

ELECTRICAL LOAD: 75%
EAPS OFF
HEATER ON




169F1580A004 Issue D

ICN-69-A-155103-G-A0126-00005-A-04-1



Figure Perf 15: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS OFF - Heater ON - Up to 4600 kg

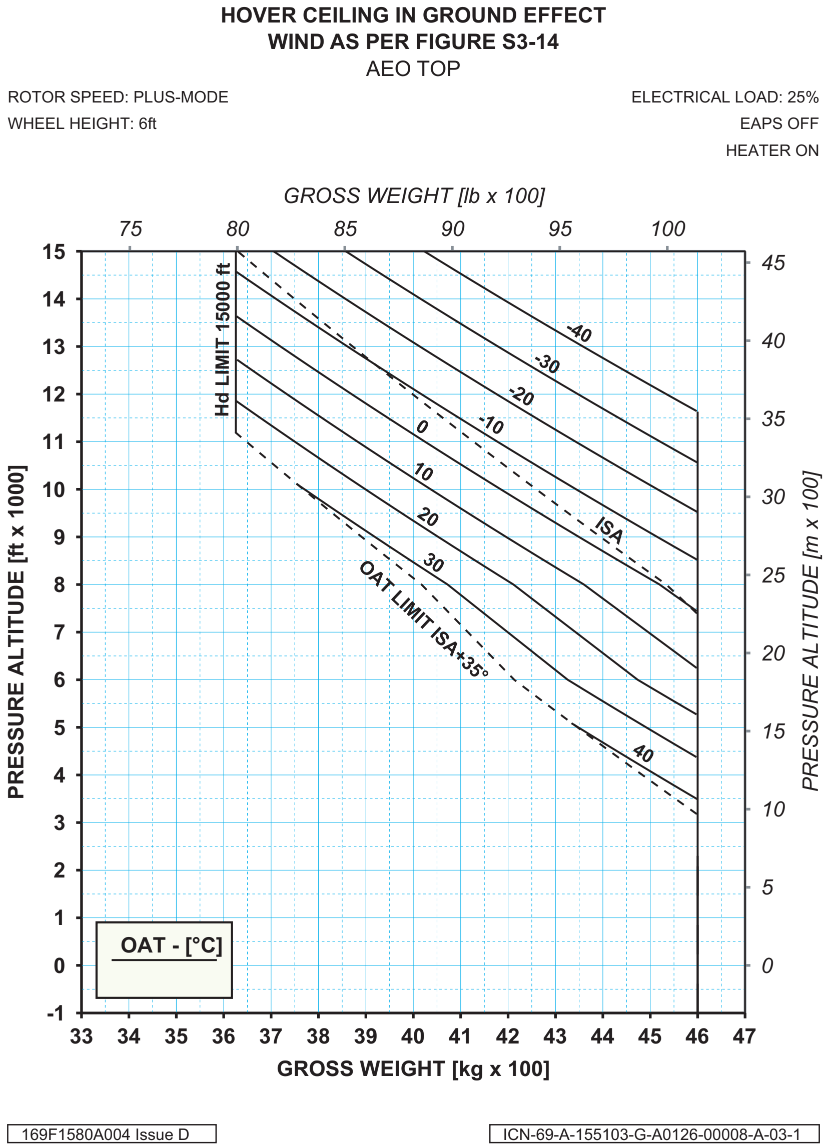


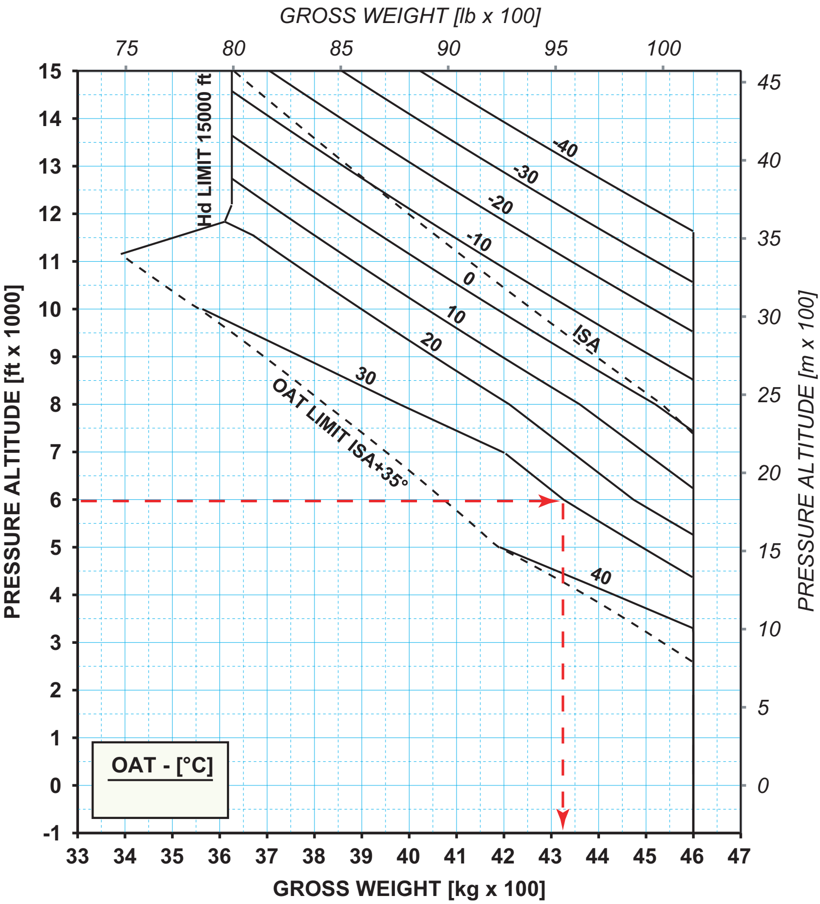



Figure Perf 16: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS OFF - Heater ON - Up to 4600 kg

HOVER CEILING IN GROUND EFFECT
WIND AS PER FIGURE S3-14
AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6ft

ELECTRICAL LOAD: 75%
EAPS OFF
ECS ON




169F1580A004 Issue D

ICN-69-A-155103-G-A0126-00006-A-04-1

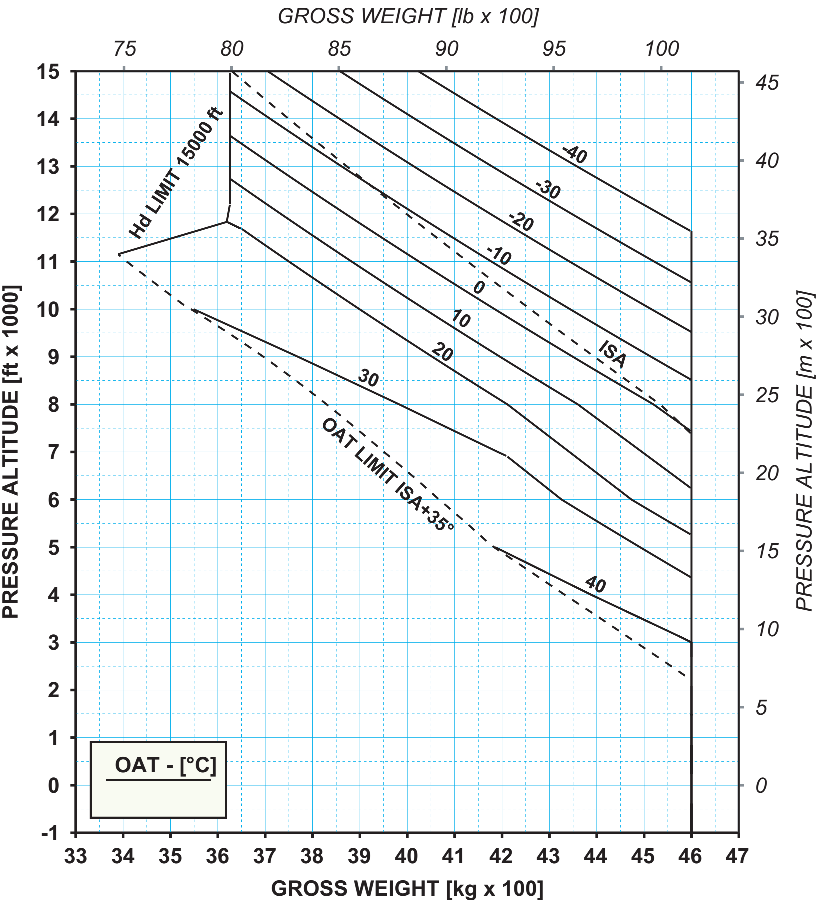
CONTR & H/V

Figure Perf 17: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS OFF - ECS ON - Up to 4600 kg

**HOVER CEILING IN GROUND EFFECT**
**WIND AS PER FIGURE S3-14**
AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6ft

ELECTRICAL LOAD: 75%
EAPS ON




169F1580A004 Issue D

ICN-69-A-155103-G-A0126-00019-A-04-1

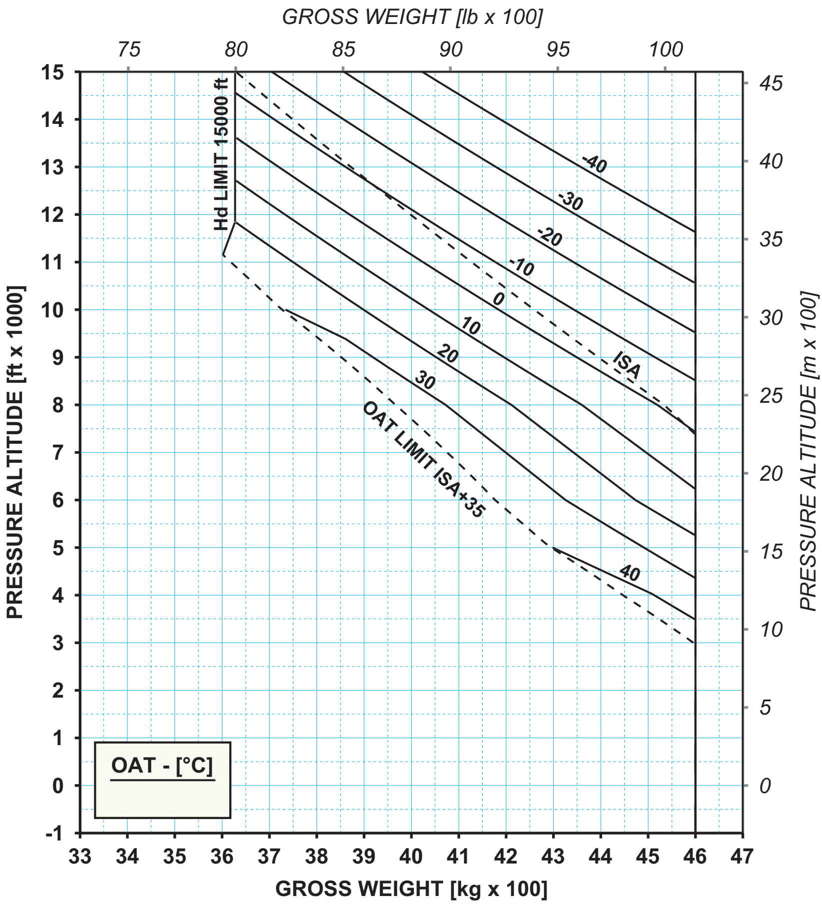
CONTR & H/V

Figure Perf 18: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - Up to 4600 kg

**HOVER CEILING IN GROUND EFFECT**
**WIND AS PER FIGURE S3-14**
AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6ft

ELECTRICAL LOAD: 25%
EAPS ON




169F1580A004 Issue D

ICN-69-A-155103-G-A0126-00022-A-03-1

CONTR & H/V

Figure Perf 19: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - Up to 4600 kg

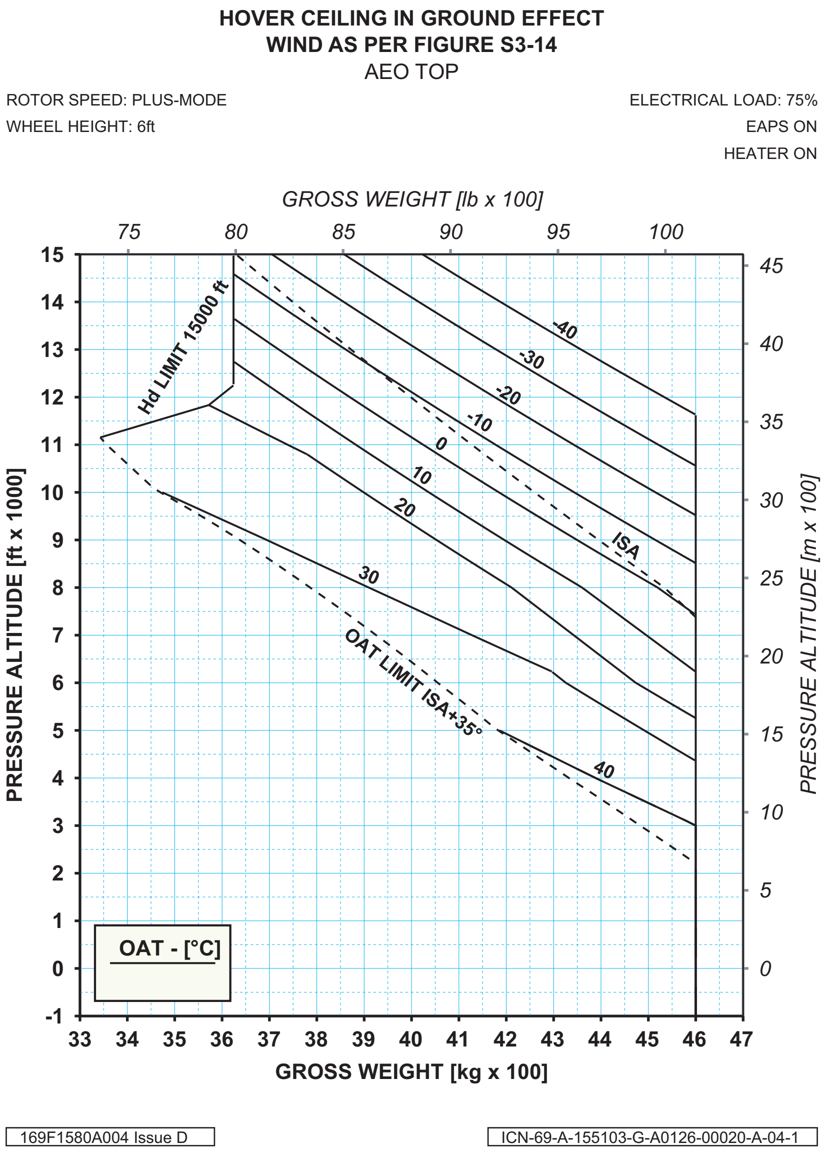
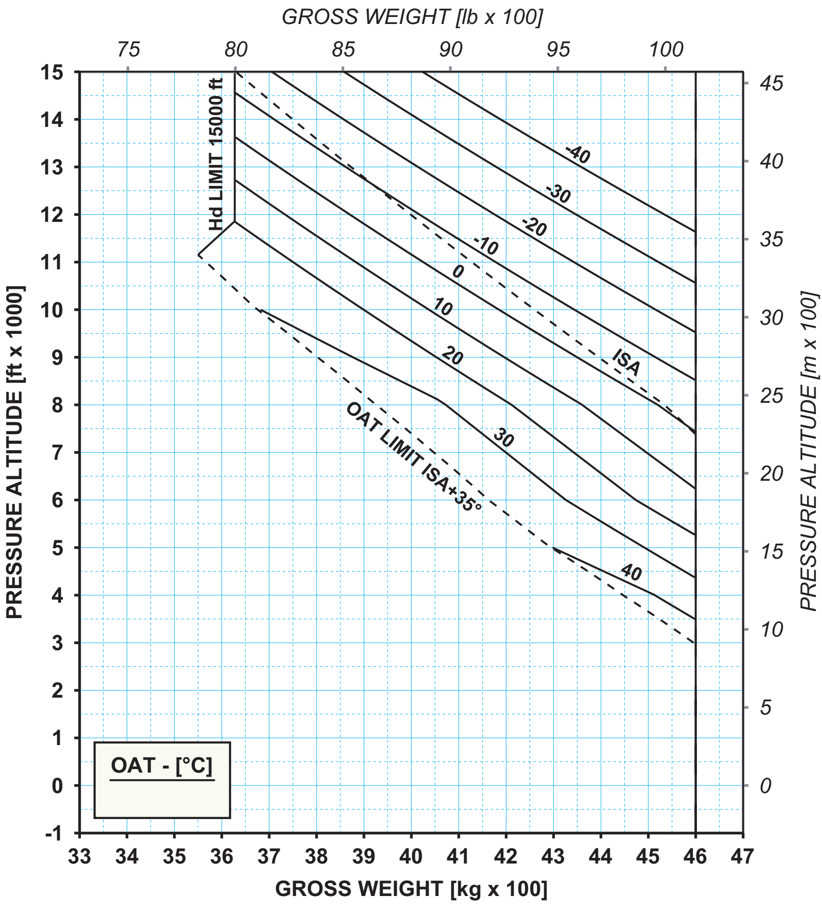



Figure Perf 20: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - Heater ON - Up to 4600 kg

**HOVER CEILING IN GROUND EFFECT**
**WIND AS PER FIGURE S3-14**
AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6ft

ELECTRICAL LOAD: 25%
EAPS ON
HEATER ON




169F1580A004 Issue D

ICN-69-A-155103-G-A0126-00023-A-03-1

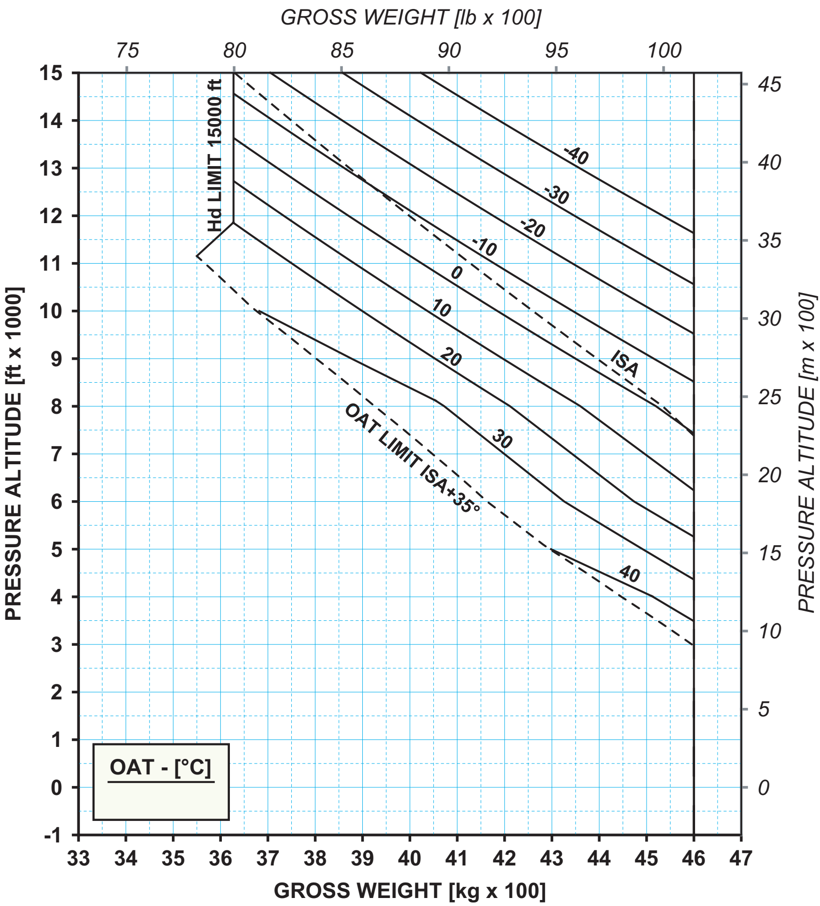
CONTR & H/V

Figure Perf 21: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - Heater ON - Up to 4600 kg

WEIGHT-ALTITUDE-TEMPERATURE
for HIGE CONTROLLABILITY
AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6ft

ELECTRICAL LOAD: 25%
EAPS ON
HEATER ON




169F1580A004 ISSUE B

ICN-69-A-155103-G-A0126-00023-A-02-1

CONTR
& H/V

Figure Perf 22: WAT for HIGE Controllability AEO TOP - EAPS ON - Heater ON - Up to 4600 kg

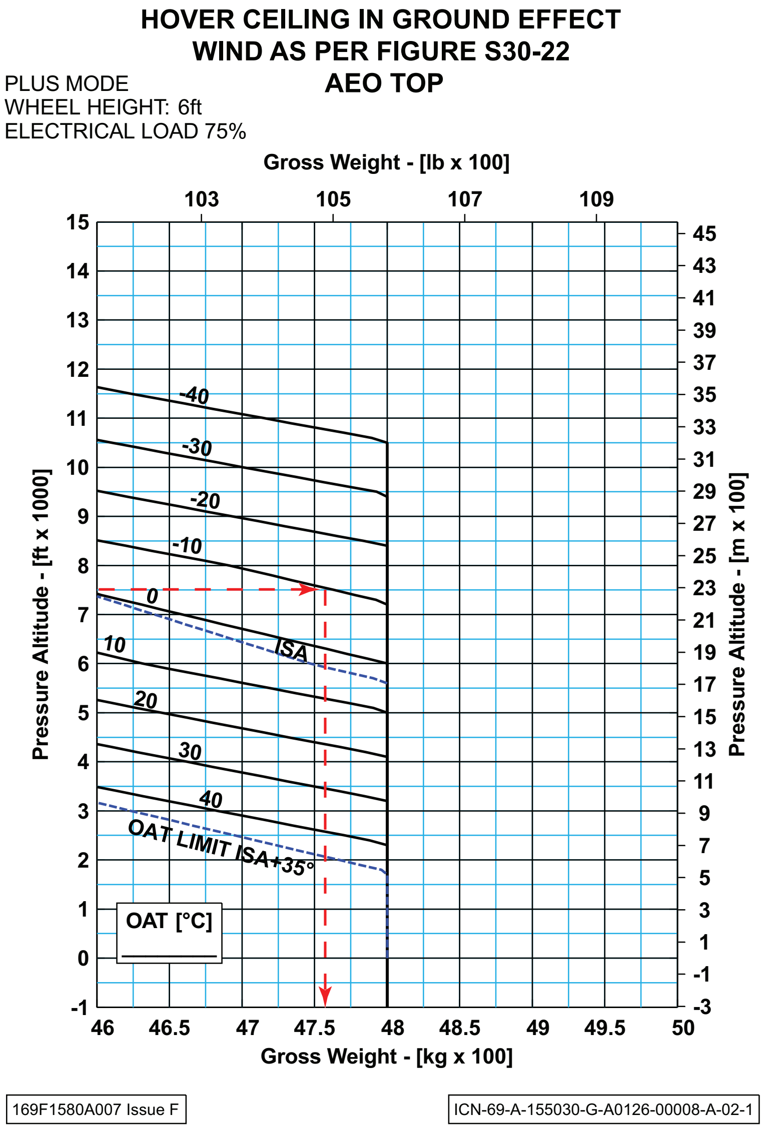
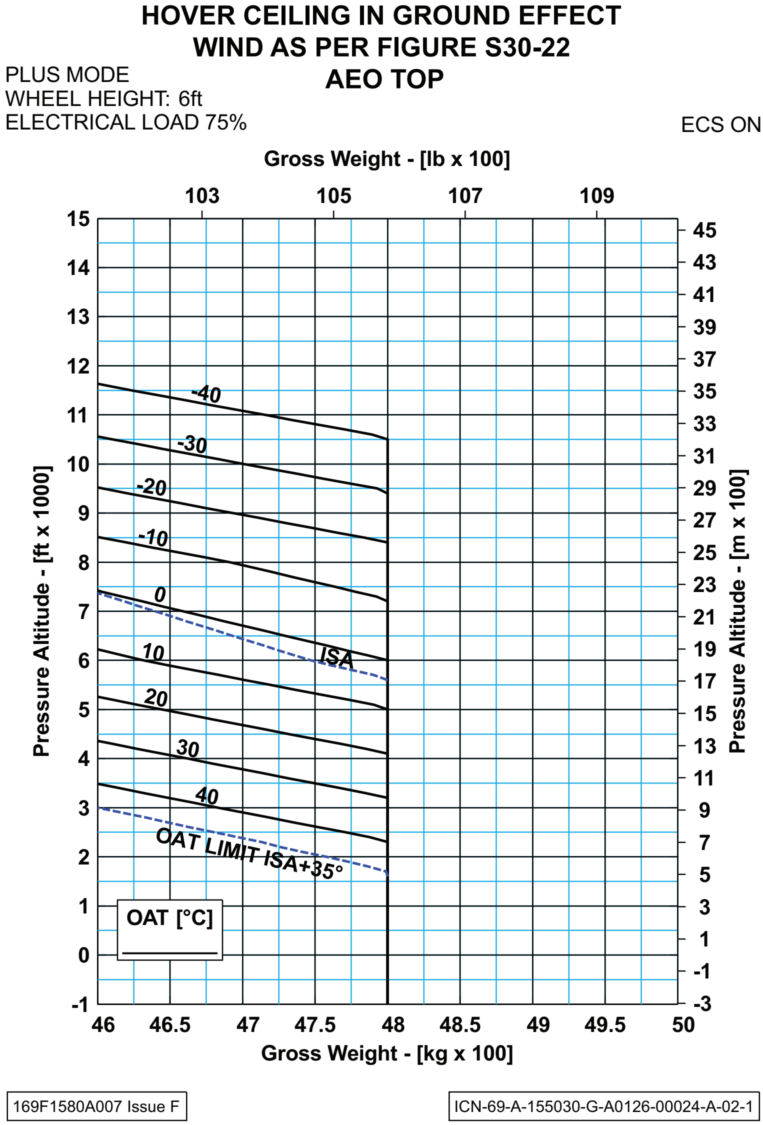


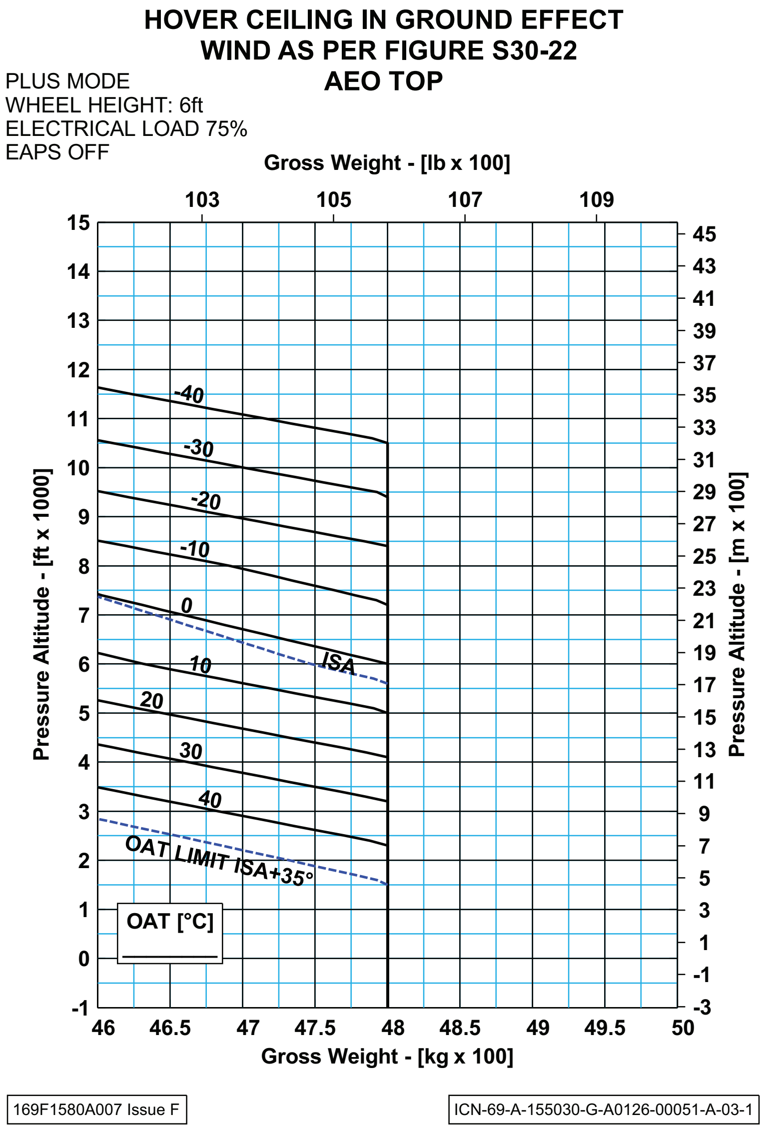

Figure Perf 23: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - Heater OFF/ON - Above 4600 kg

CONTR & H/V




CONTR & H/V

Figure Perf 24: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - ECS ON - Above 4600 kg

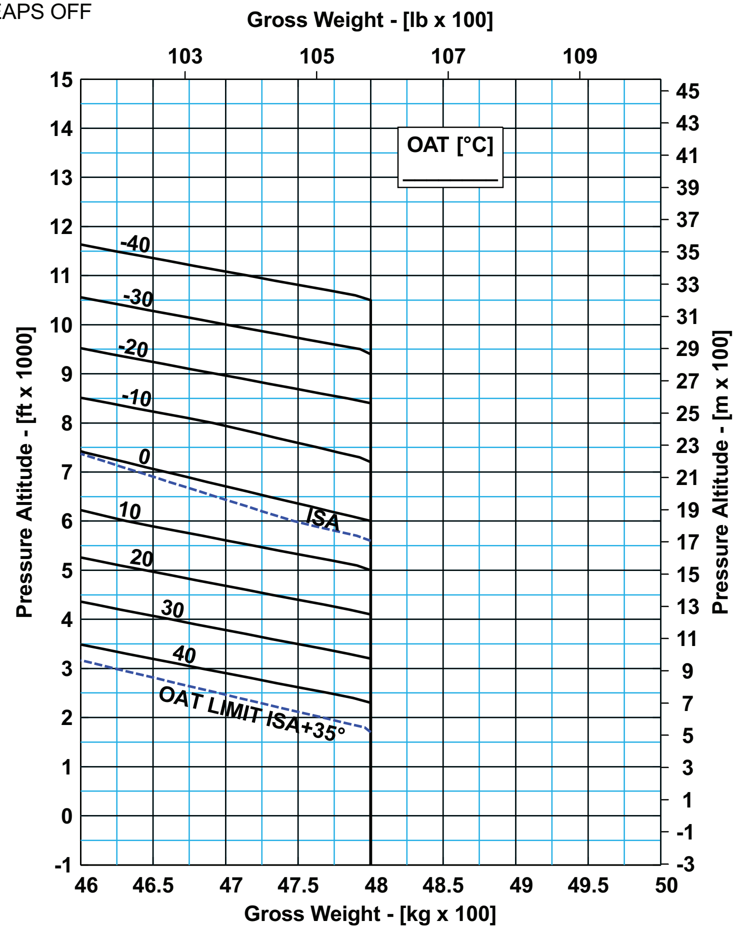



CONTR & H/V

Figure Perf 25: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS OFF - Heater OFF/ON - Above 4600 kg

HOVER CEILING IN GROUND EFFECT
WIND AS PER FIGURE S30-22
AEO TOP

PLUS MODE
WHEEL HEIGHT: 6ft
ELECTRICAL LOAD 25%
EAPS OFF




169F1580A007 Issue F

ICN-69-A-155030-G-A0126-00057-A-02-1

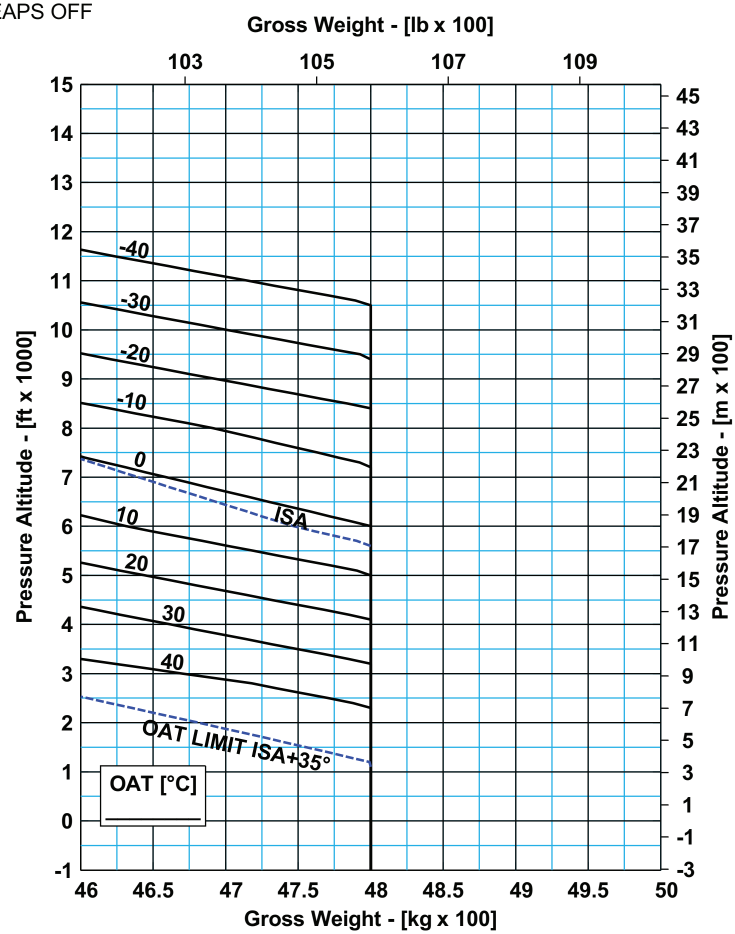
CONTR
& H/V

Figure Perf 26: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS OFF - Heater OFF/ON - Above 4600 kg

## HOVER CEILING IN GROUND EFFECT
## WIND AS PER FIGURE S30-22
## AEO TOP

PLUS MODE
WHEEL HEIGHT: 6ft
ELECTRICAL LOAD 75%
EAPS OFF

ECS ON




169F1580A007 Issue F

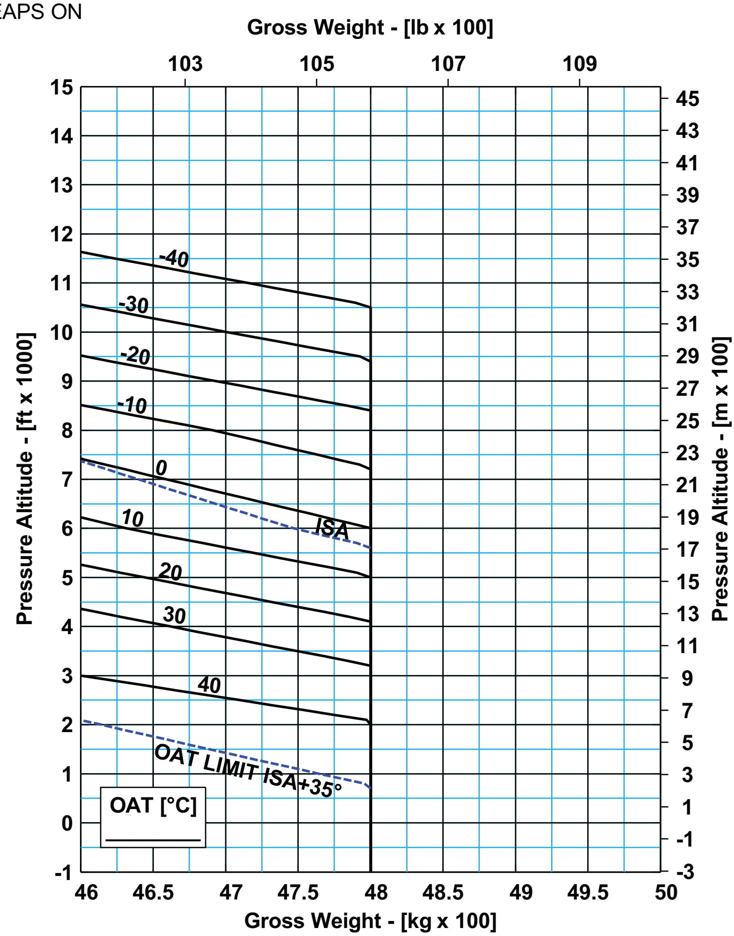
ICN-69-A-155030-G-A0126-00053-A-03-1

CONTR & H/V

Figure Perf 27: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS OFF - ECS ON - Above 4600 kg

# HOVER CEILING IN GROUND EFFECT
# WIND AS PER FIGURE S30-22
# AEO TOP

PLUS MODE
WHEEL HEIGHT: 6ft
ELECTRICAL LOAD 75%
EAPS ON




169F1580A007 Issue F

ICN-69-A-155030-G-A0126-00054-A-04-1

CONTR
& H/V

Figure Perf 28: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - Heater OFF/ON - Above 4600 kg

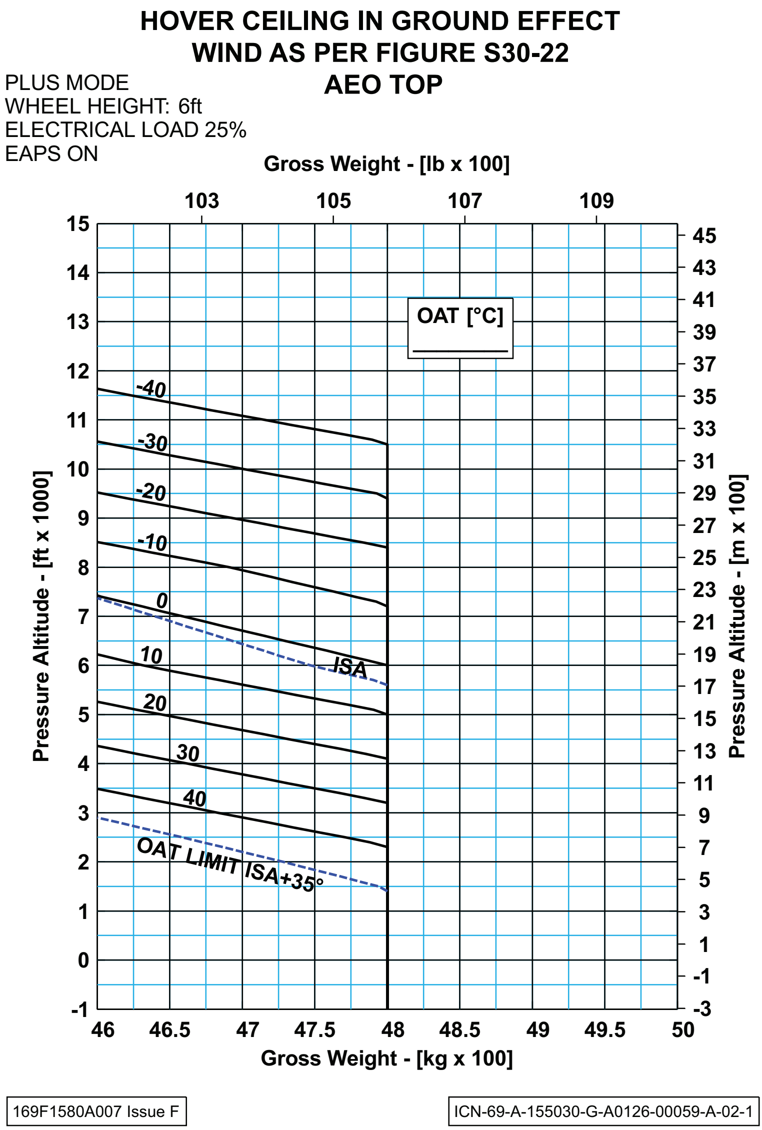



Figure Perf 29: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - Heater OFF/ON - Above 4600 kg

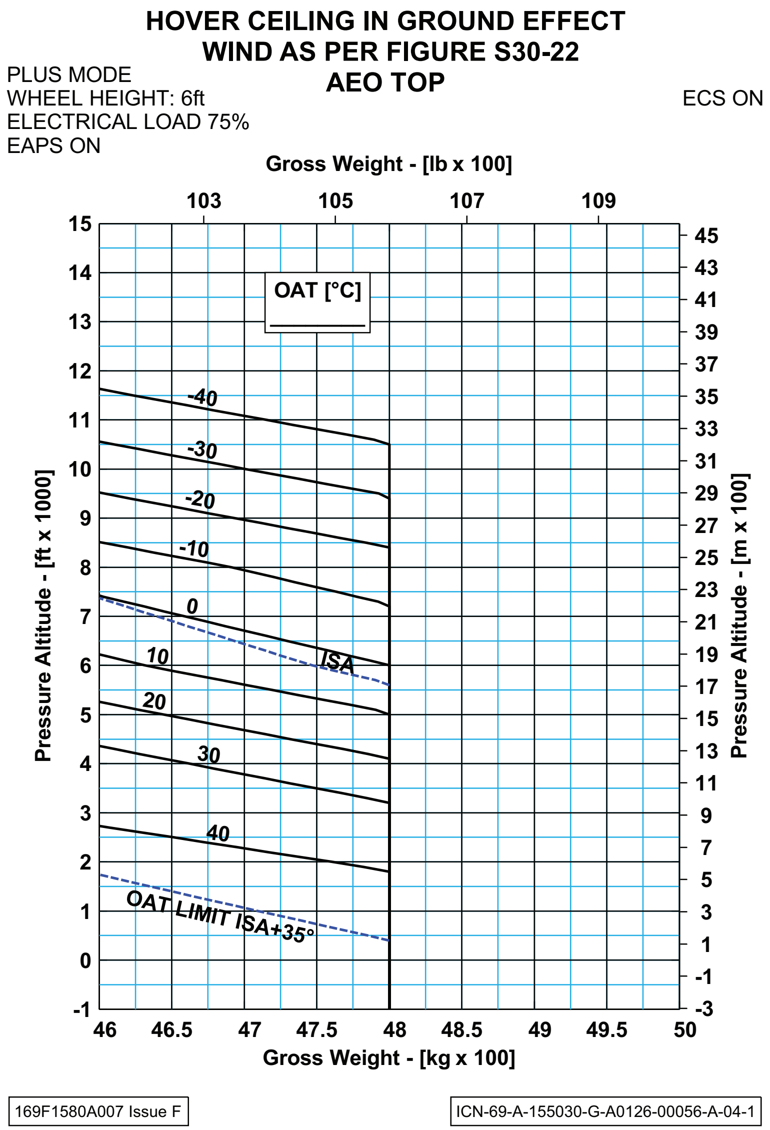


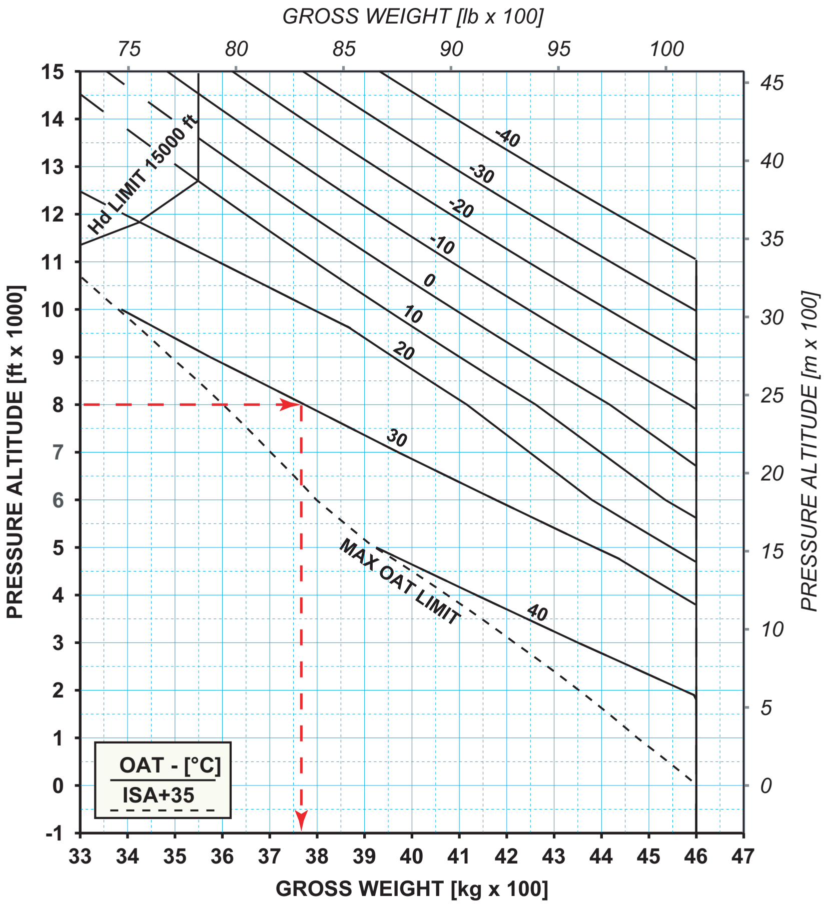



Figure Perf 30: Hover Ceiling IGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - ECS ON - Above 4600 kg

HOVER CEILING OUT OF GROUND EFFECT
WIND AS PER FIGURE 4-8
AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%




169F1560A001 Issue H

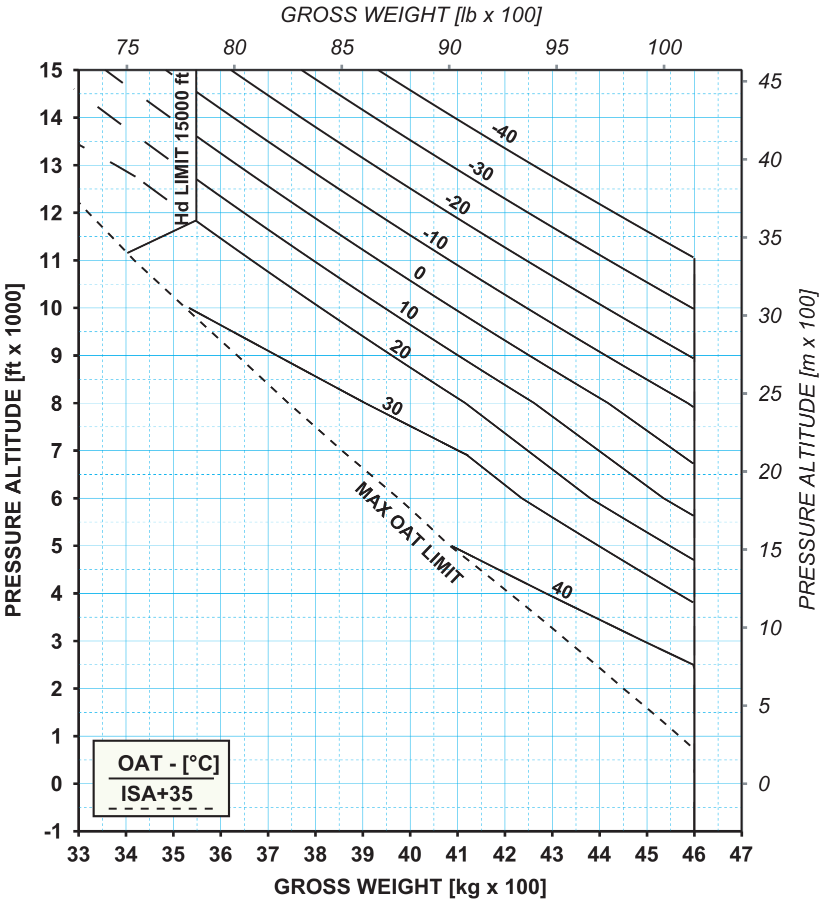
ICN-69-A-151000-G-A0126-00011-A-05-1

Figure Perf 31: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - Up to 4600 kg

HOVER CEILING OUT OF GROUND EFFECT
WIND AS PER FIGURE 4-8
AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 25%




169F1560A001 Issue H

ICN-69-A-151000-G-A0126-00013-A-04-1

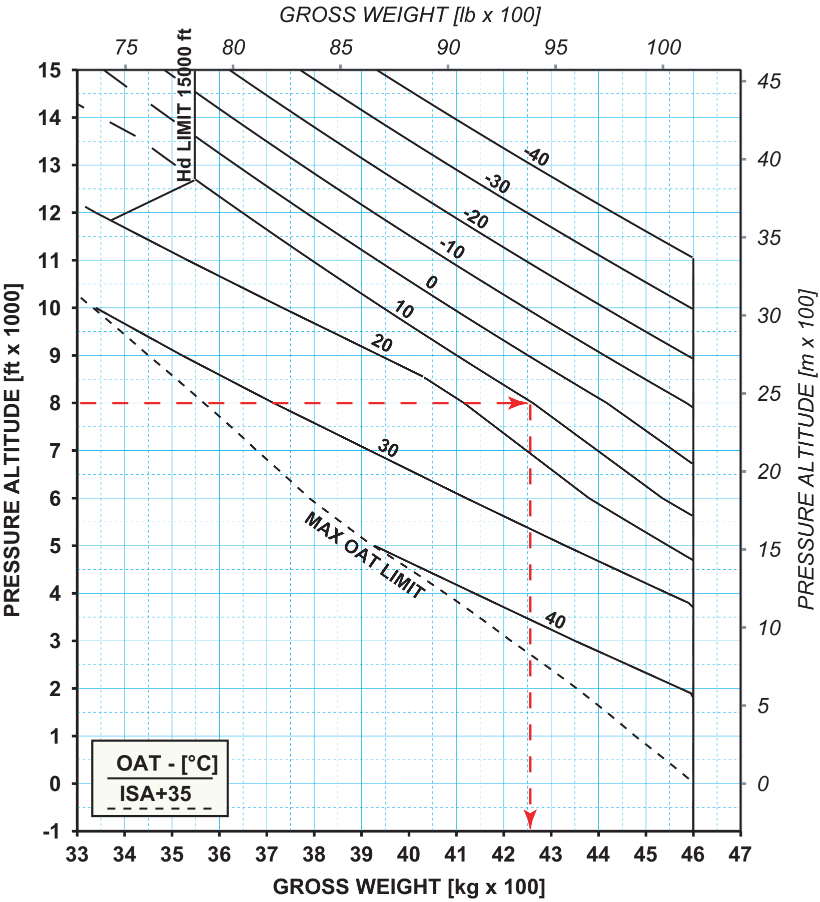
CONTR & H/V

Figure Perf 32: WHover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - Up to 4600 kg

**HOVER CEILING OUT OF GROUND EFFECT**
**WIND AS PER FIGURE 4-8**
**AEO TOP**

ROTOR SPEED: PLUS-MODE
ELECTRICAL LOAD: 75%

HEATER ON




169F1580A003 Issue F

ICN-69-A-151001-G-A0126-00005-A-04-1

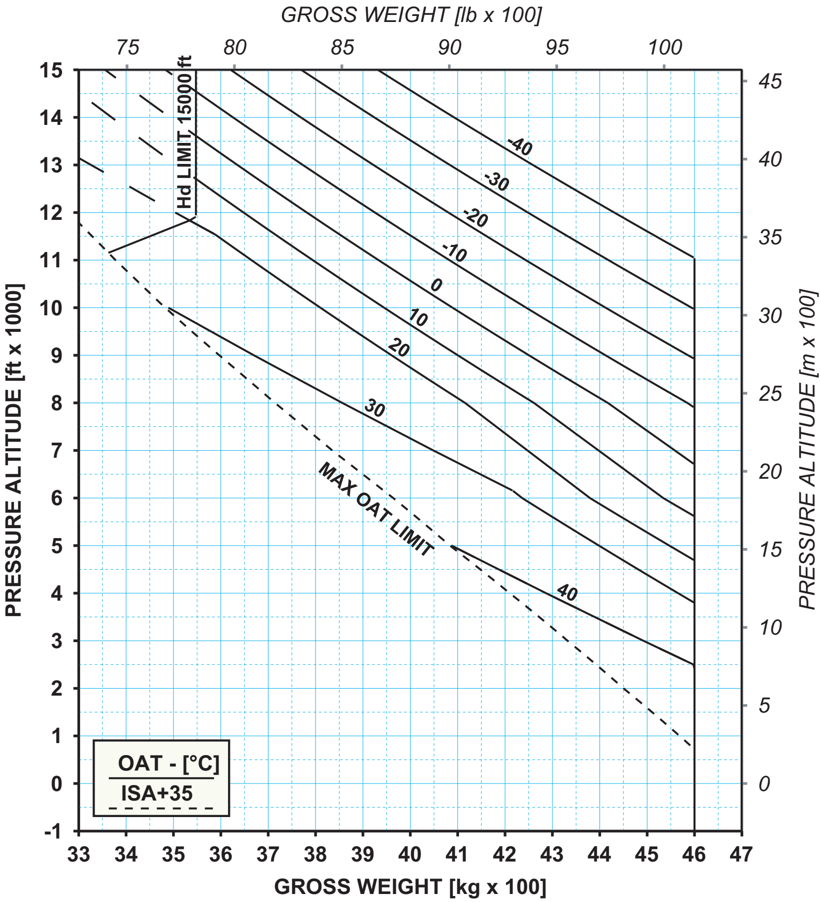
Figure Perf 33: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - Heater ON - Up to 4600 kg

CONTR & H/V

HOVER CEILING OUT OF GROUND EFFECT
WIND AS PER FIGURE 4-8
AEO TOP

ROTOR SPEED: PLUS-MODE
ELECTRICAL LOAD: 25%

HEATER ON




169F1580A003 Issue F

ICN-69-A-151001-G-A0126-00007-A-04-1

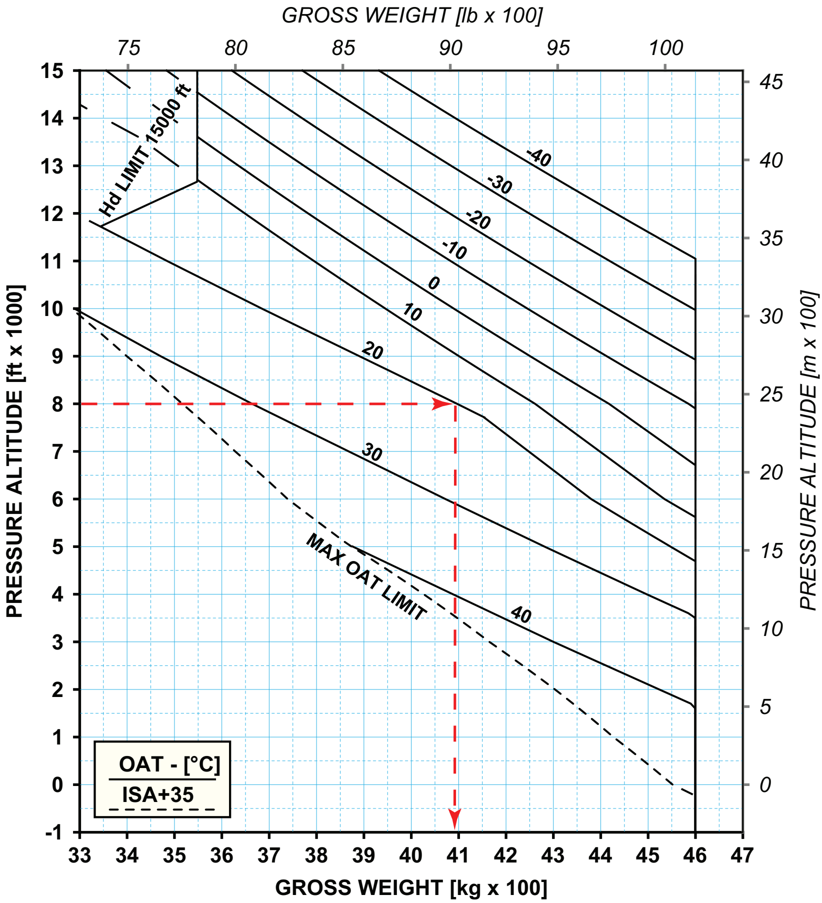
CONTR
& H/V

Figure Perf 34: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - Heater ON - Up to 4600 kg

HOVER CEILING OUT OF GROUND EFFECT
WIND AS PER FIGURE 4-8
AEO TOP

ROTOR SPEED: PLUS-MODE
ELECTRICAL LOAD: 75%

ECS ON




169F1580A003 Issue F

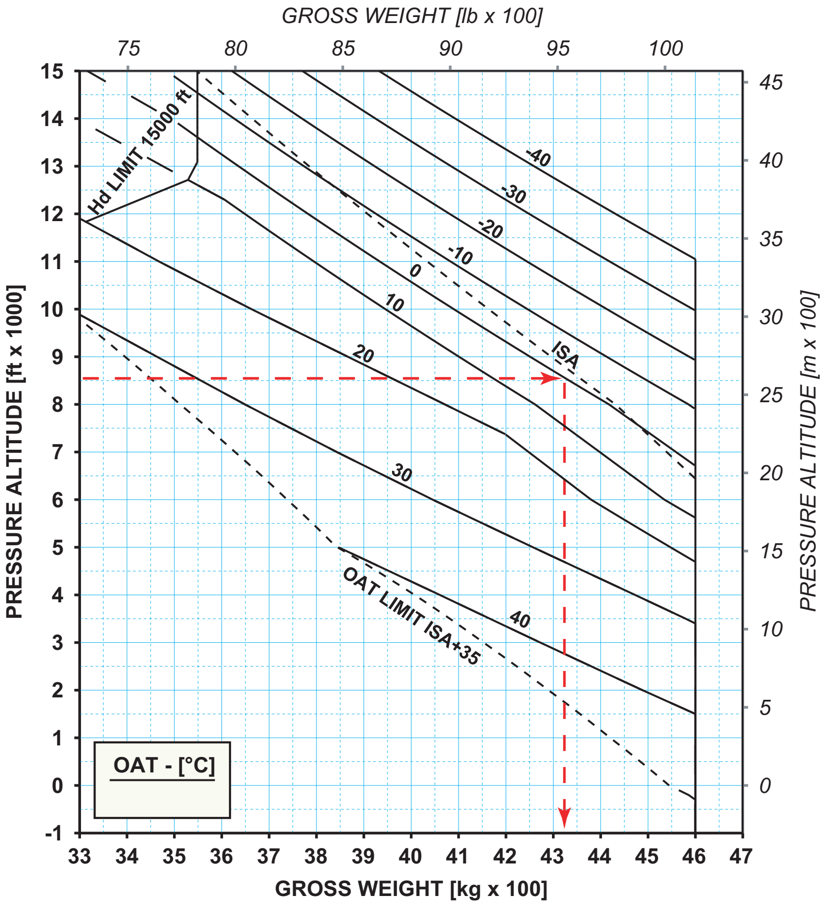
ICN-69-A-151002-G-A0126-00005-A-04-1

Figure Perf 35: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - ECS ON - Up to 4600 kg

**HOVER CEILING OUT OF GROUND EFFECT**
**WIND AS PER FIGURE S3-14**
AEO TOP

ROTOR SPEED: PLUS-MODE
HEATER ON

ELECTRICAL LOAD: 75%
EAPS OFF




169F1580A004 Issue D

ICN-69-A-155103-G-A0126-00010-A-03-1

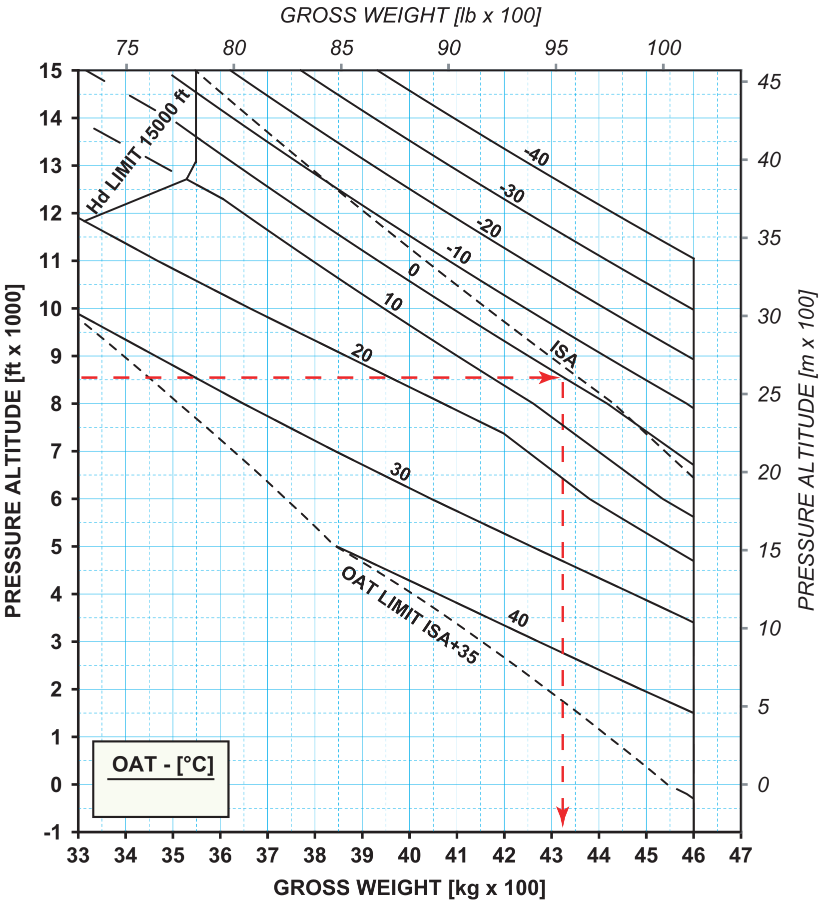
CONTR
& H/V

Figure Perf 36: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - EAPS OFF - Heater ON - Up to 4600 kg

**WEIGHT-ALTITUDE-TEMPERATURE**
**for**
**TOP AEO HOGE CONTROLLABILITY**

ROTOR SPEED: PLUS-MODE
HEATER ON

ELECTRICAL LOAD: 75%
EAPS OFF




169F1580A004 ISSUE A

ICN-69-A-155103-G-A0126-00010-A-01-1

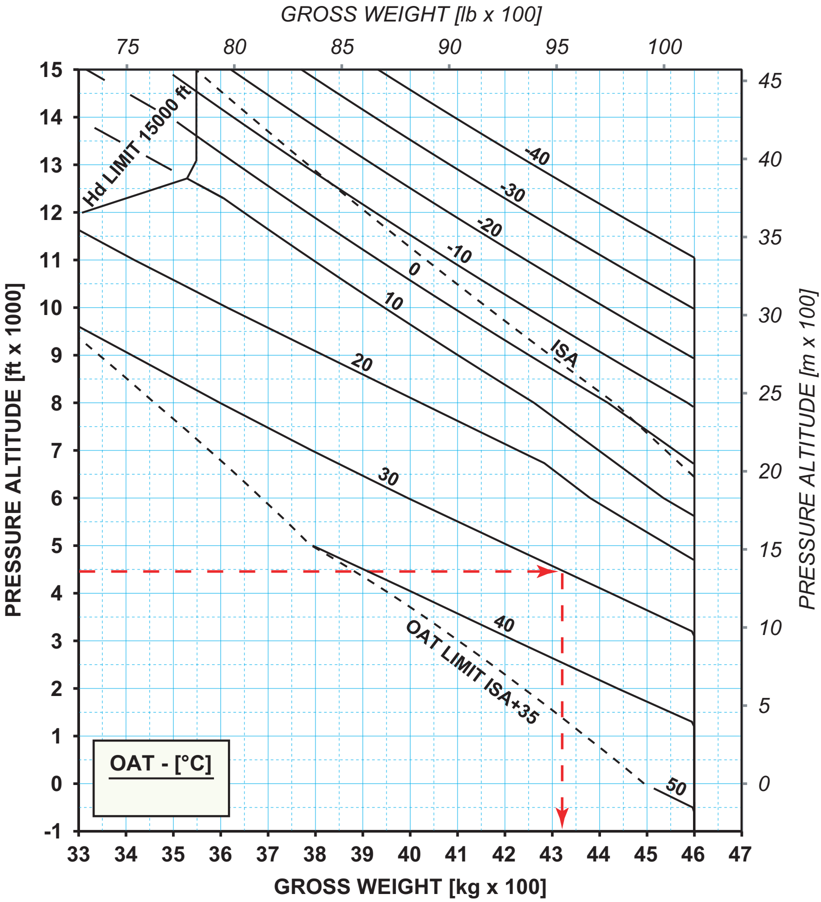
CONTR & H/V

Figure Perf 37: WAT for HOGE Controllability AEO - EAPS OFF - Heater ON - Up to 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT
## WIND AS PER FIGURE S3-14
AEO TOP

ROTOR SPEED: PLUS-MODE
ECS ON

ELECTRICAL LOAD: 75%
EAPS OFF




169F1580A004 Issue D

ICN-69-A-155103-G-A0126-00011-A-03-1

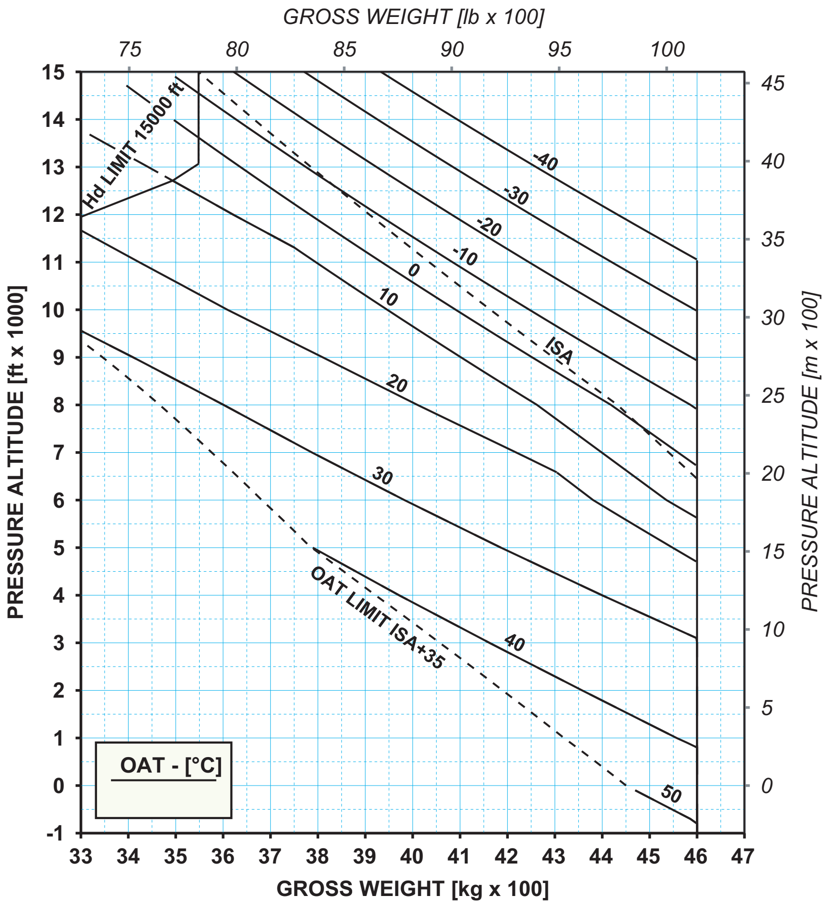


Figure Perf 38: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - EAPS OFF - ECS ON - Up to 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT
## WIND AS PER FIGURE S3-14
AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
EAPS ON

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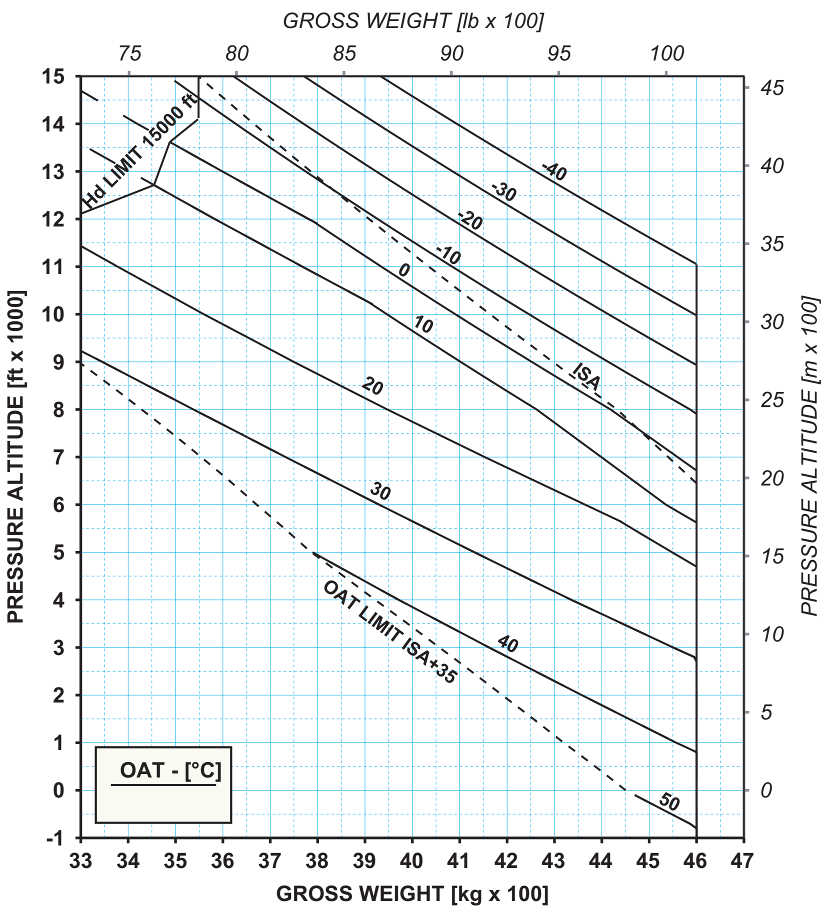
CONTR & H/V

Figure Perf 39: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - Up to 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT
## WIND AS PER FIGURE S3-14
AEO TOP

ROTOR SPEED: PLUS-MODE
HEATER ON

ELECTRICAL LOAD: 75%
EAPS ON

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CONTR & H/V

Figure Perf 40: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - Heater ON - Up to 4600 kg

HOVER CEILING OUT OF GROUND EFFECT
WIND AS PER FIGURE S3-14
AEO TOP

ROTOR SPEED: PLUS-MODE
ECS ON

ELECTRICAL LOAD: 75%
EAPS ON

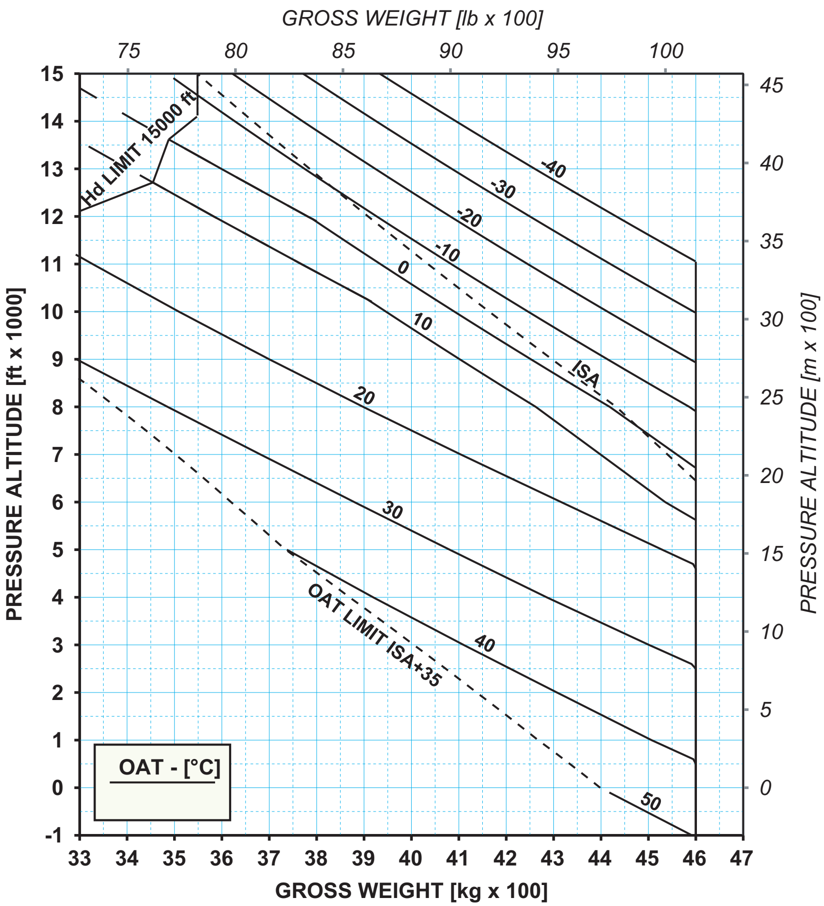


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Figure Perf 41: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - ECS ON - Up to 4600 kg

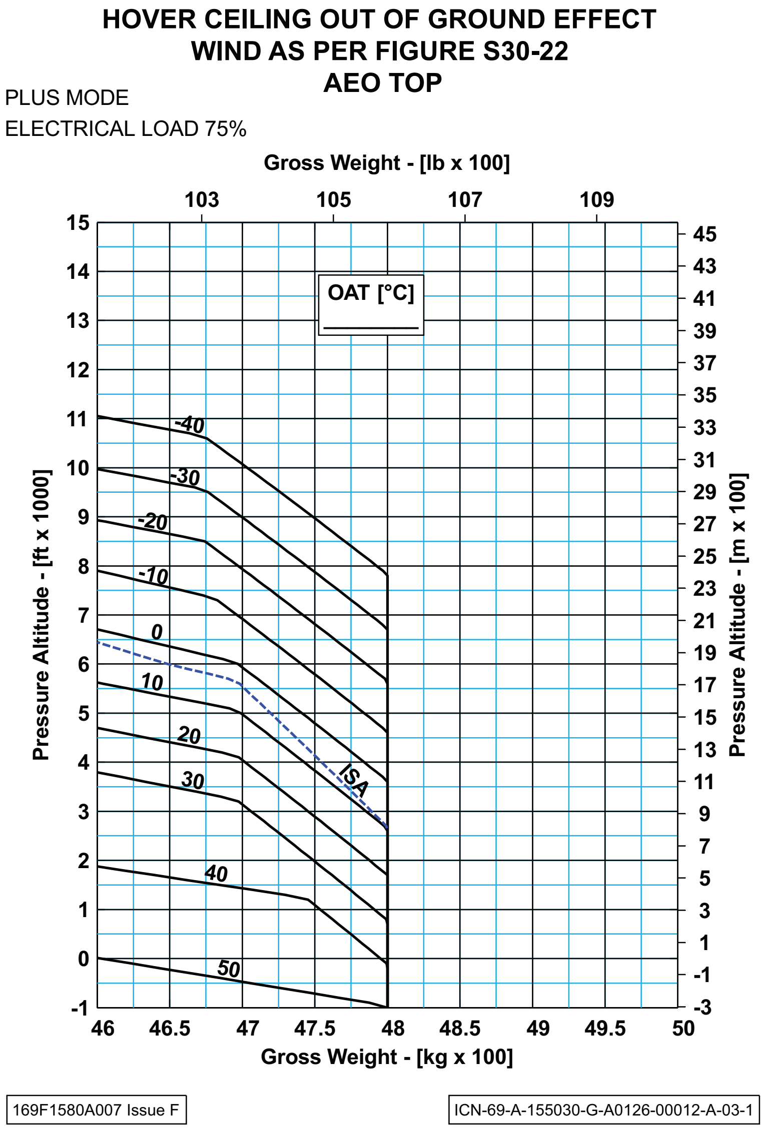


Figure Perf 42: Hover Ceiling OGE Wind as per Figure Perf 7 AEO TOP - Heater OFF/ON - Above 4600 kg

CONTR & H/V

# HOVER CEILING OUT OF GROUND EFFECT
# WIND AS PER FIGURE S30-22
# AEO TOP

PLUS MODE
ELECTRICAL LOAD 75%

ECS ON

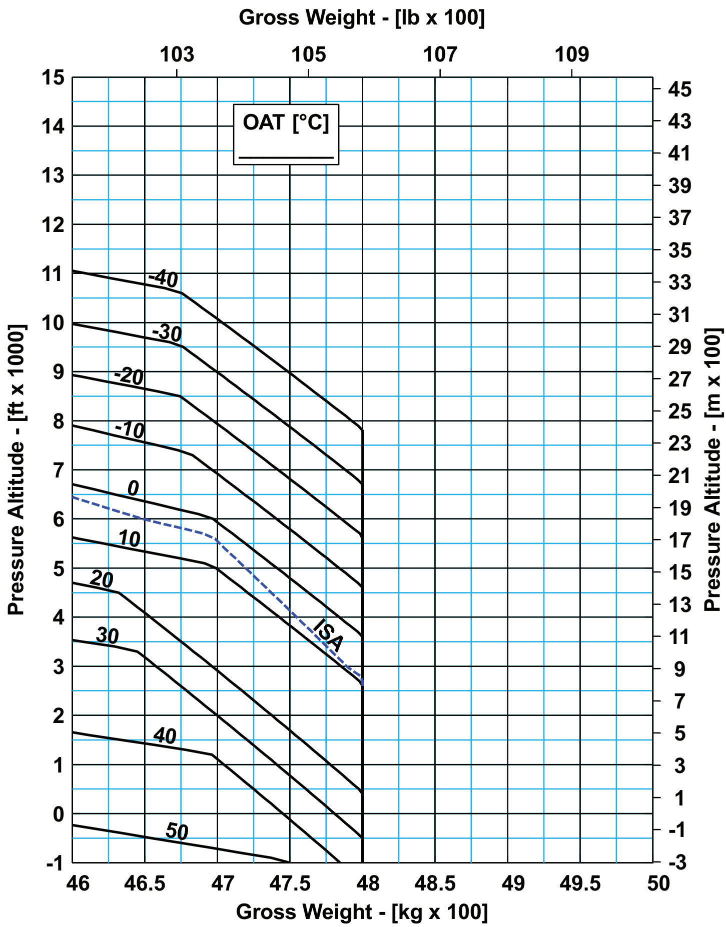


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Figure Perf 43: Hover Ceiling OGE Wind as per Figure Perf 7 AEO TOP - ECS ON - Above 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT
## WIND AS PER FIGURE S30-22
## AEO TOP

PLUS MODE
ELECTRICAL LOAD 75%
EAPS OFF

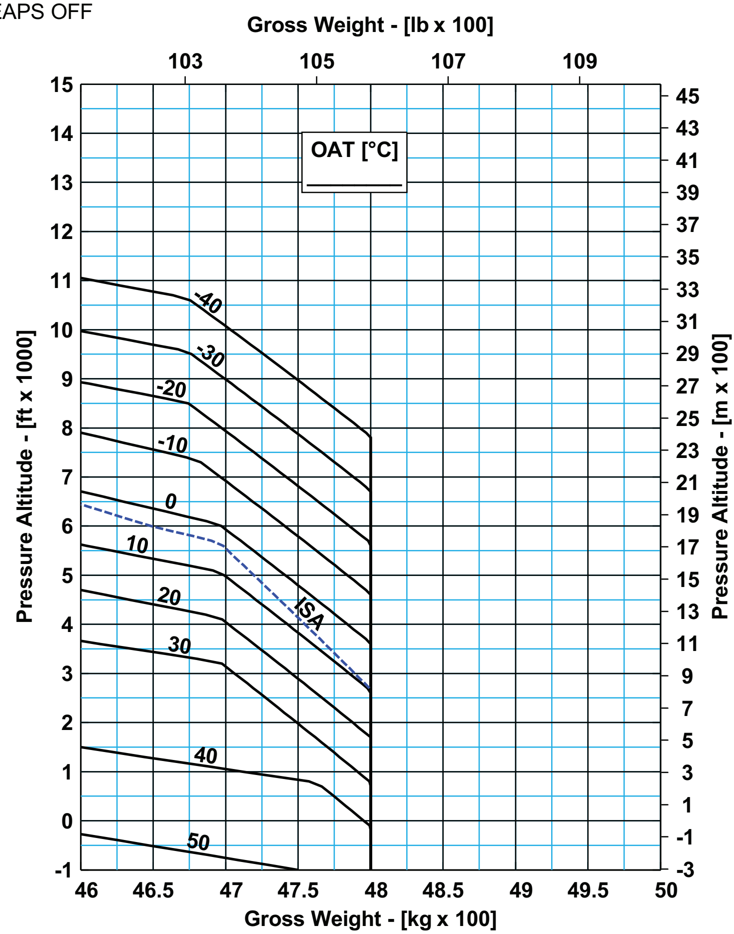


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Figure Perf 44: Hover Ceiling OGE Wind as per Figure Perf 7 AEO TOP - EAPS OFF - Above 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT
## WIND AS PER FIGURE S30-22
## AEO TOP

PLUS MODE
ELECTRICAL LOAD 75%
EAPS OFF

HEATER ON

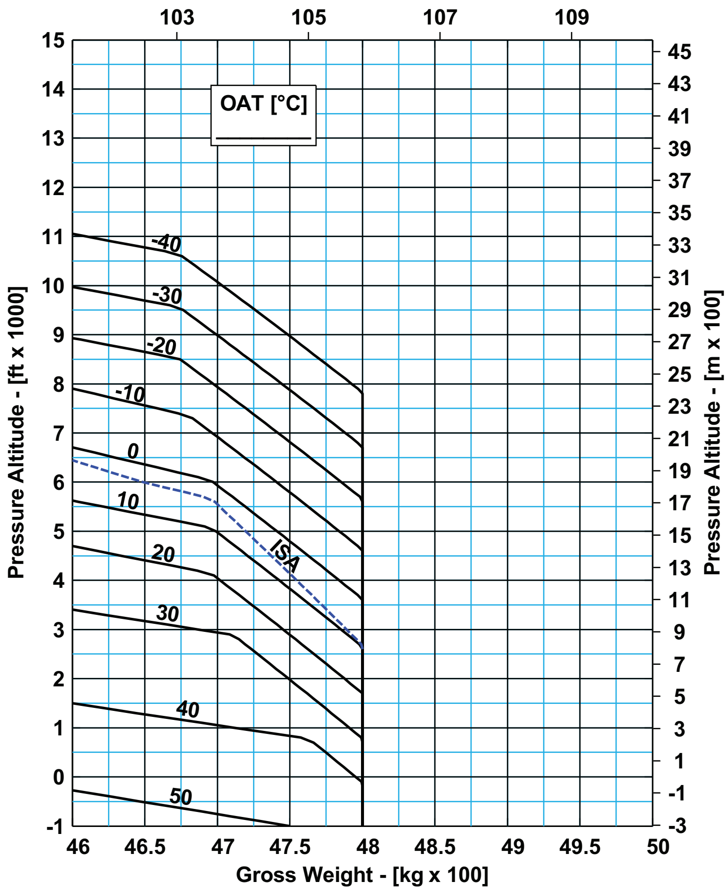


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Figure Perf 45: Hover Ceiling OGE Wind as per Figure Perf 7 AEO TOP - EAPS OFF - Heater ON - Above 4600 kg

HOVER CEILING OUT OF GROUND EFFECT
WIND AS PER FIGURE S30-22
AEO TOP

PLUS MODE
ELECTRICAL LOAD 75%
EAPS OFF

ECS ON

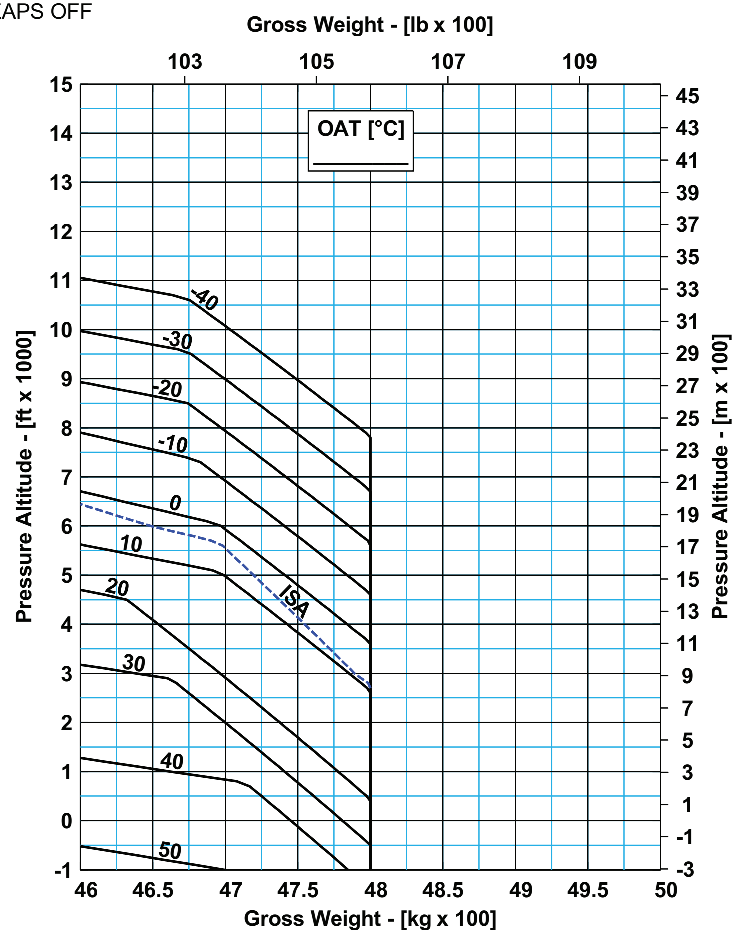


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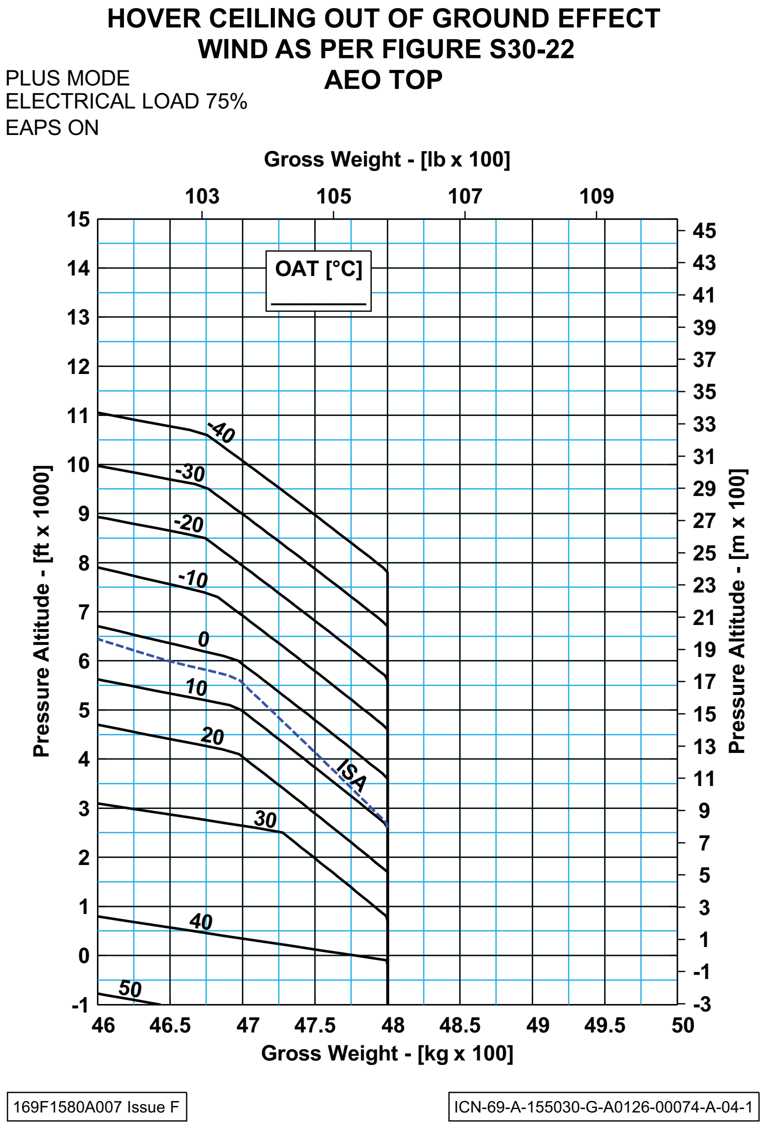
Figure Perf 46: Hover Ceiling OGE Wind as per Figure Perf 7 AEO TOP - EAPS OFF - ECS ON - Above 4600 kg




CONTR & H/V

Figure Perf 47: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - Above 4600 kg

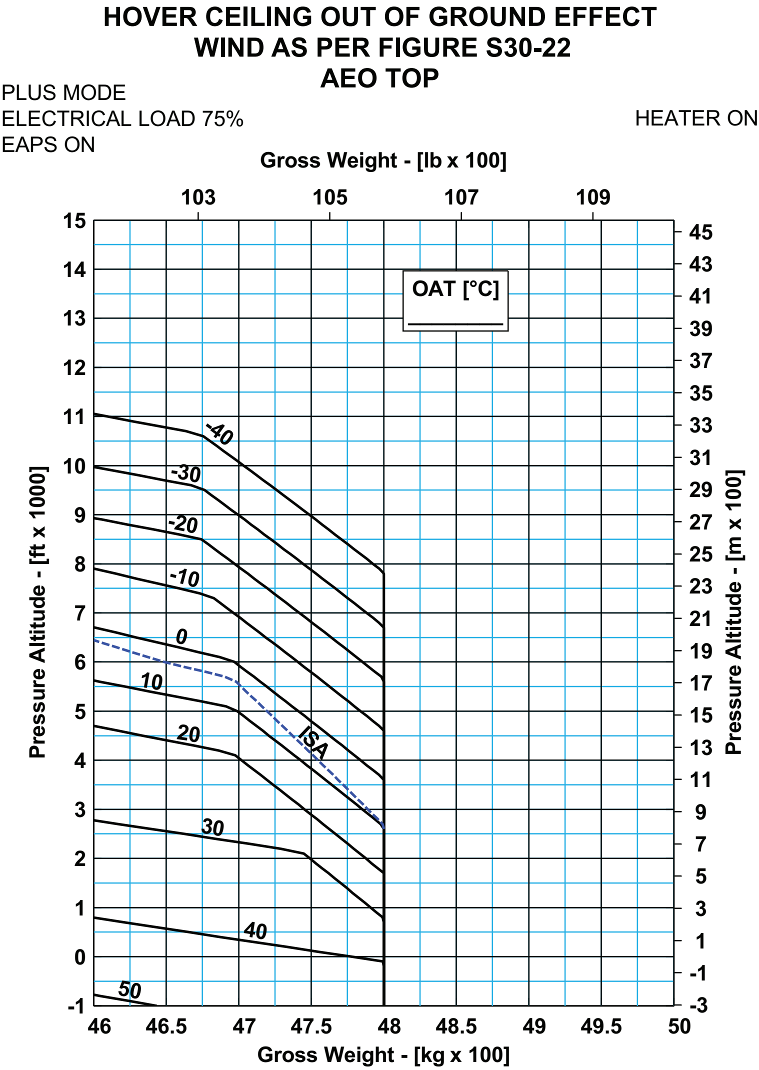



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Figure Perf 48: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - Heater ON - Above 4600 kg

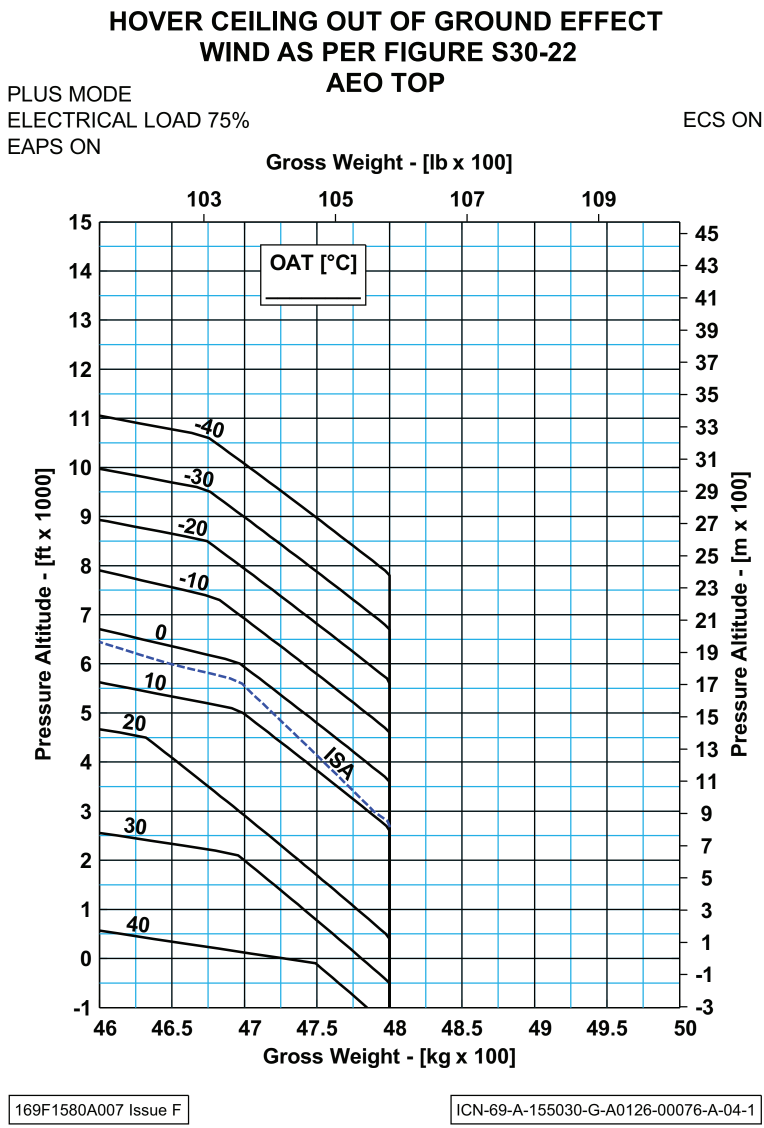


Figure Perf 49: Hover Ceiling OGE Wind as per Figure Perf 7 - AEO TOP - EAPS ON - ECS ON - Above 4600 kg

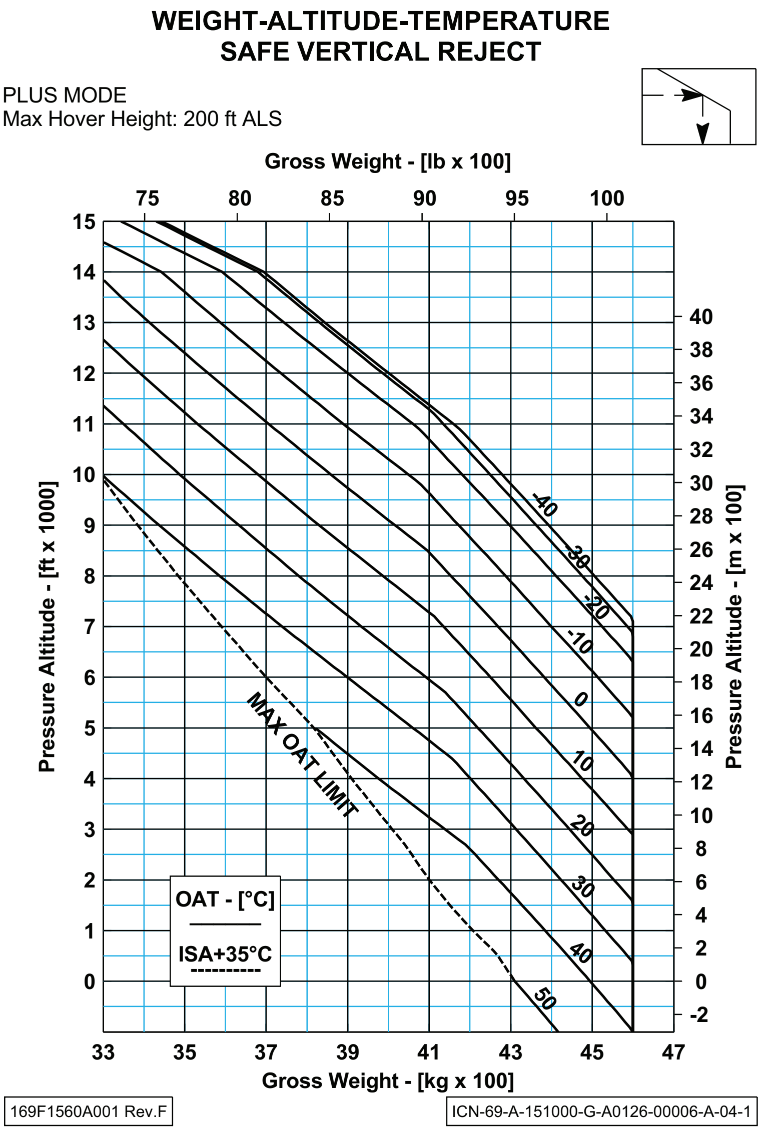


Figure Perf 50: WAT for Safe OEI Vertical Reject up to 4600 kg

## WEIGHT-ALTITUDE-TEMPERATURE
## SAFE VERTICAL REJECT

PLUS MODE
Max Hover Height: 200 ft ALS

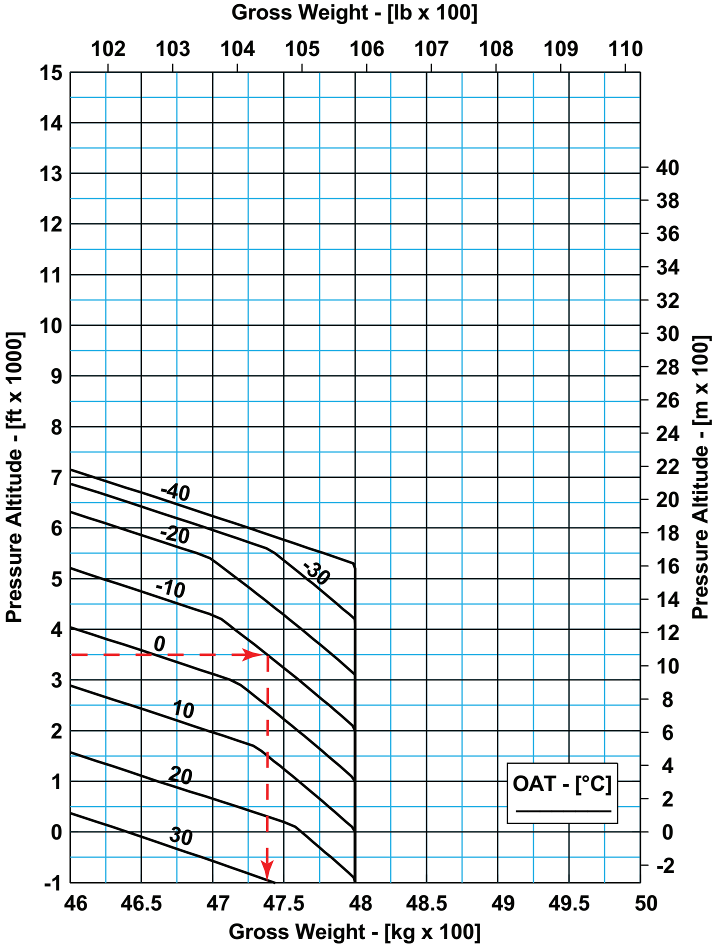


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Figure Perf 51: WAT for Safe OEI Vertical Reject above 4600 kg

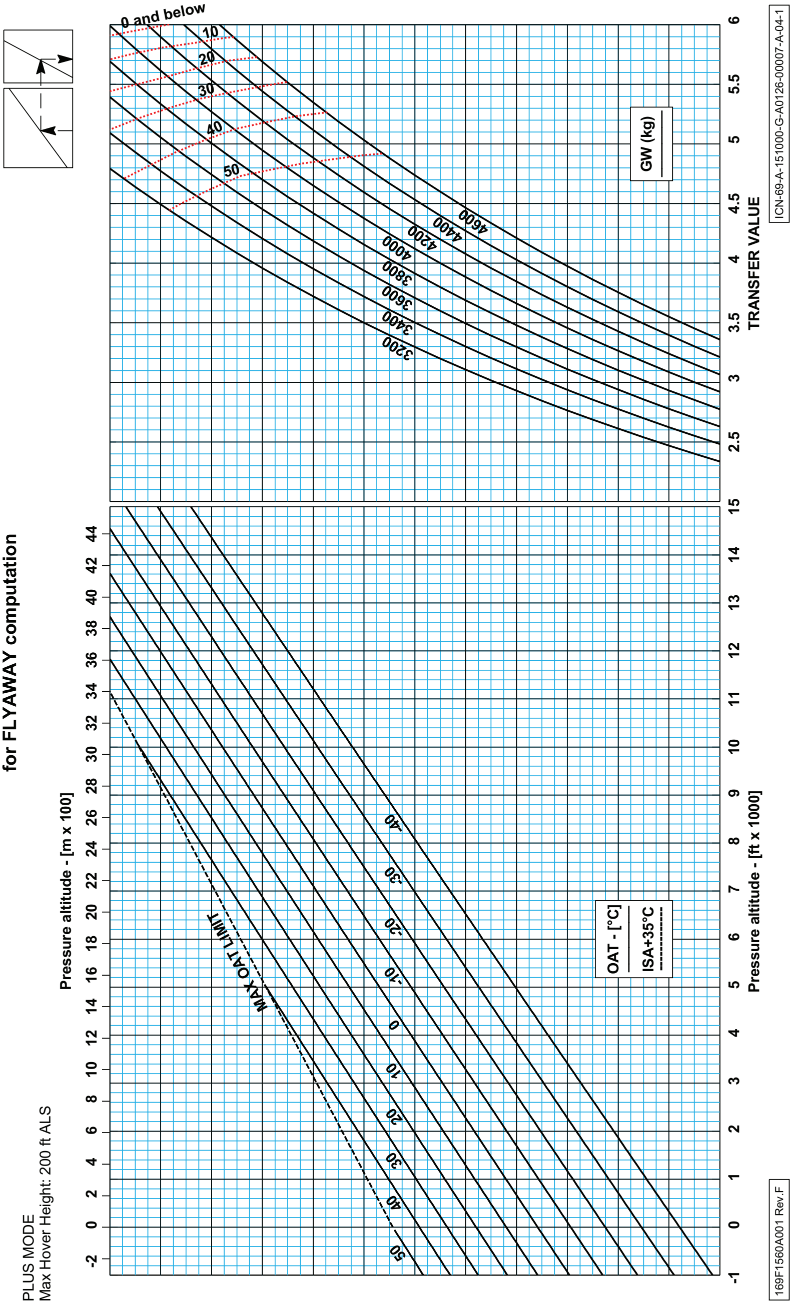



Figure Perf 52: Chart A - Flyaway Transfer Value up to 4600 kg

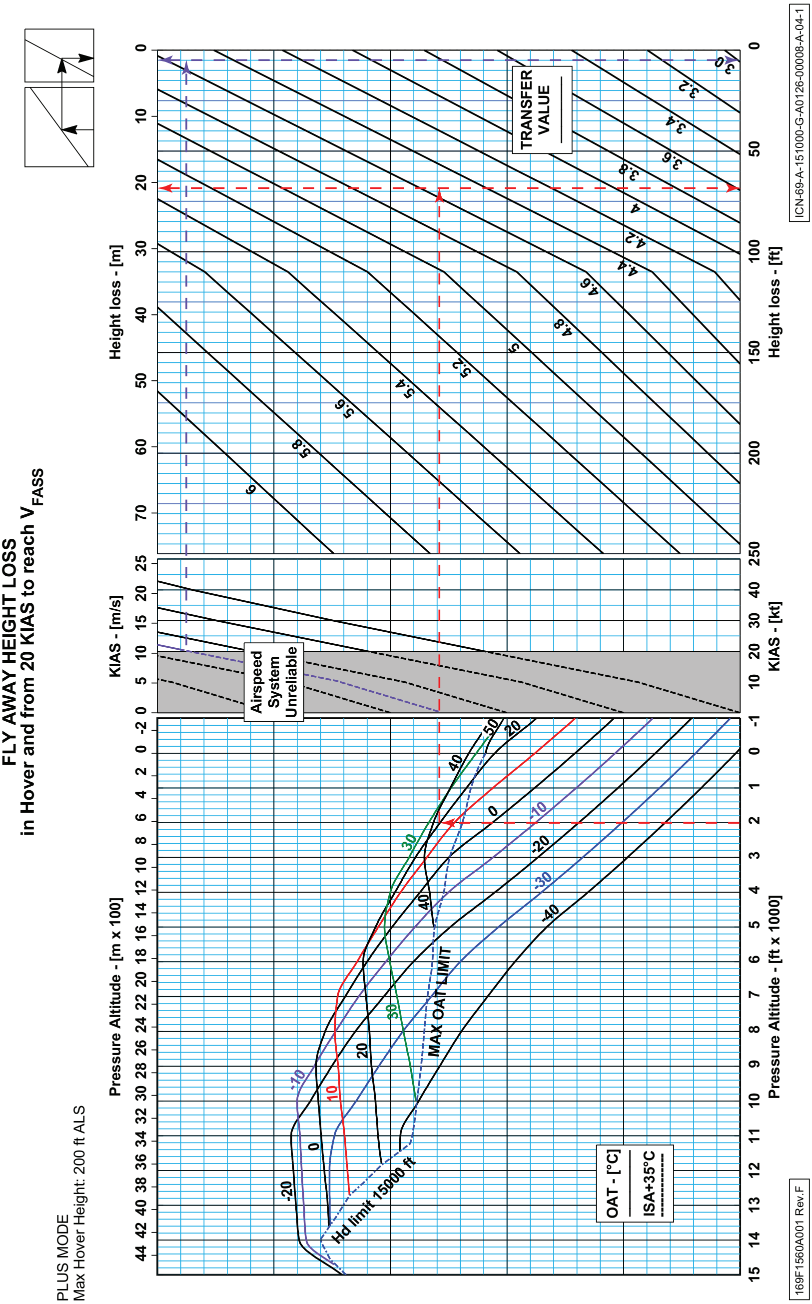



Figure Perf 53: Chart B - Height Loss During Flyaway up to 4600 kg

CONTR & H/V

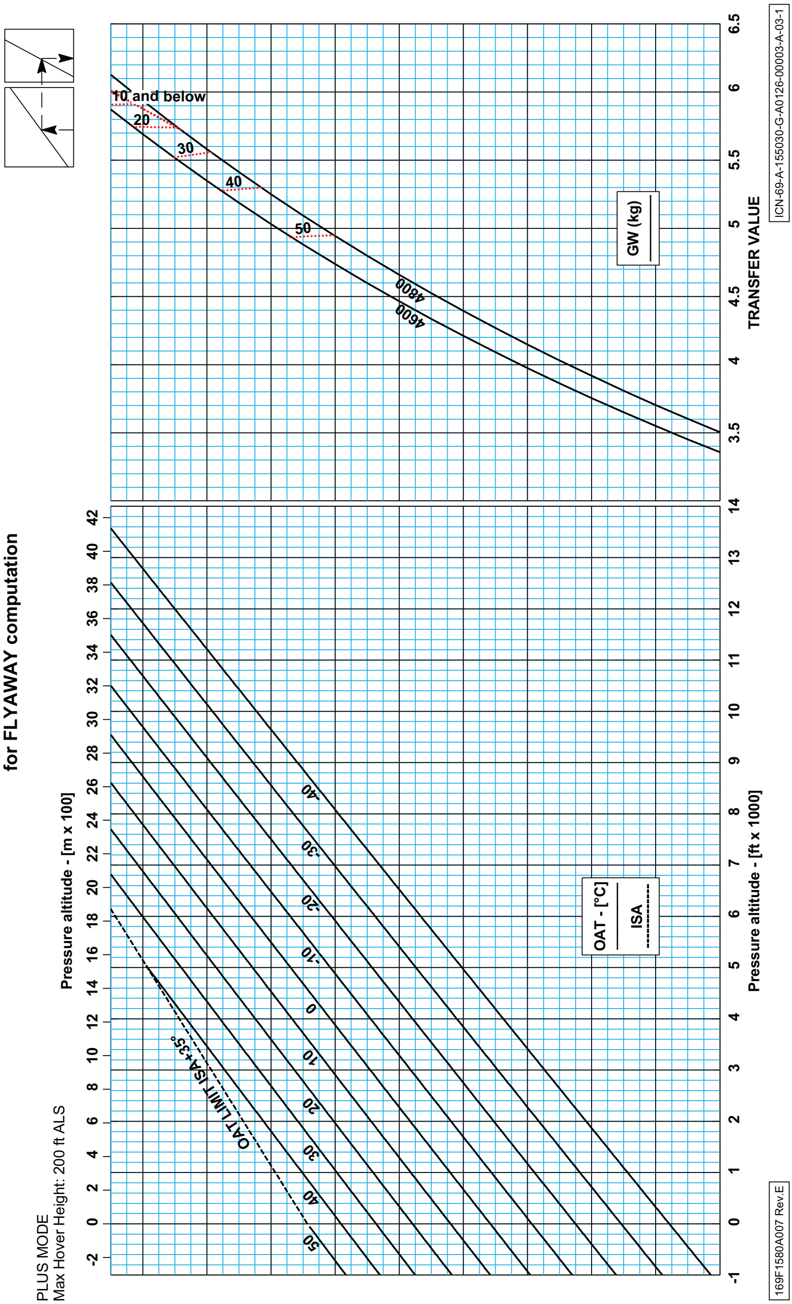



Figure Perf 54: Chart A - Flyaway Transfer Value above 4600 kg

CONTR & H/V

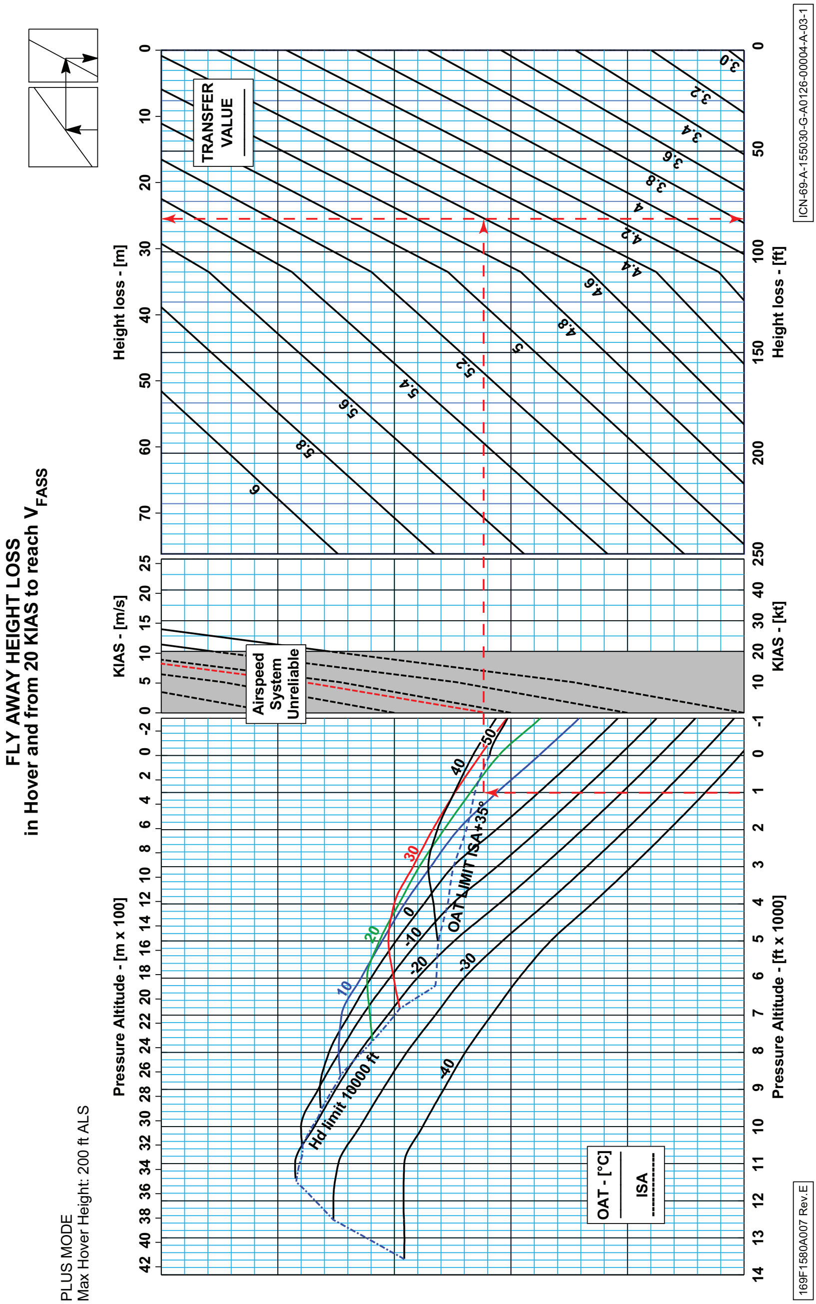
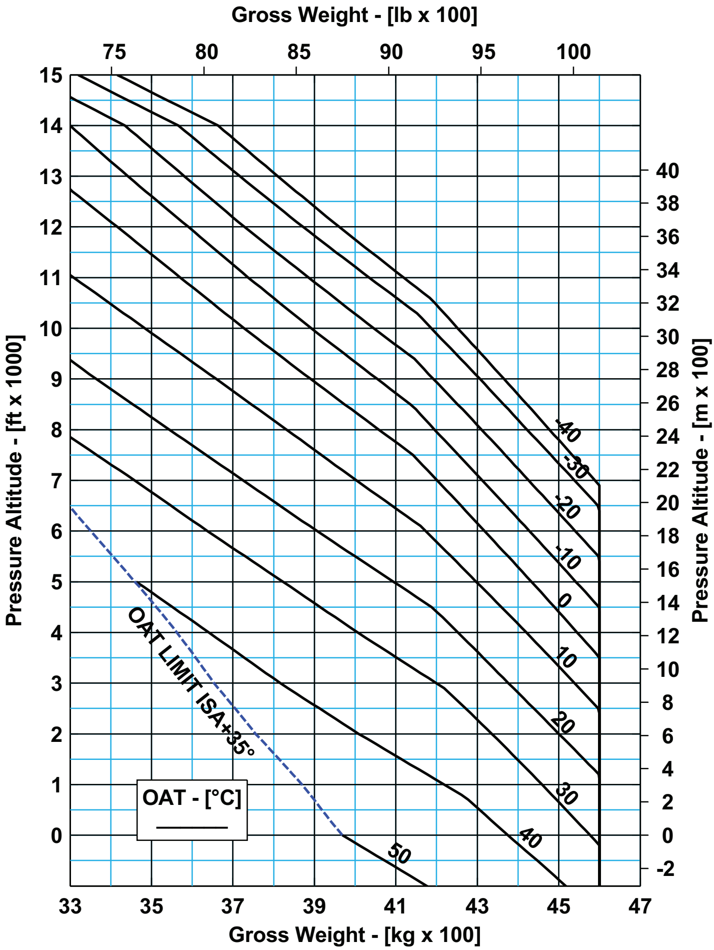



Figure Perf 55: Chart B - Height Loss During Flyaway above 4600 kg

CONTR & H/V

# WEIGHT-ALTITUDE-TEMPERATURE
# SAFE VERTICAL REJECT

PLUS MODE
Max Hover Height: 200 ft ALS
EAPS OFF/ON

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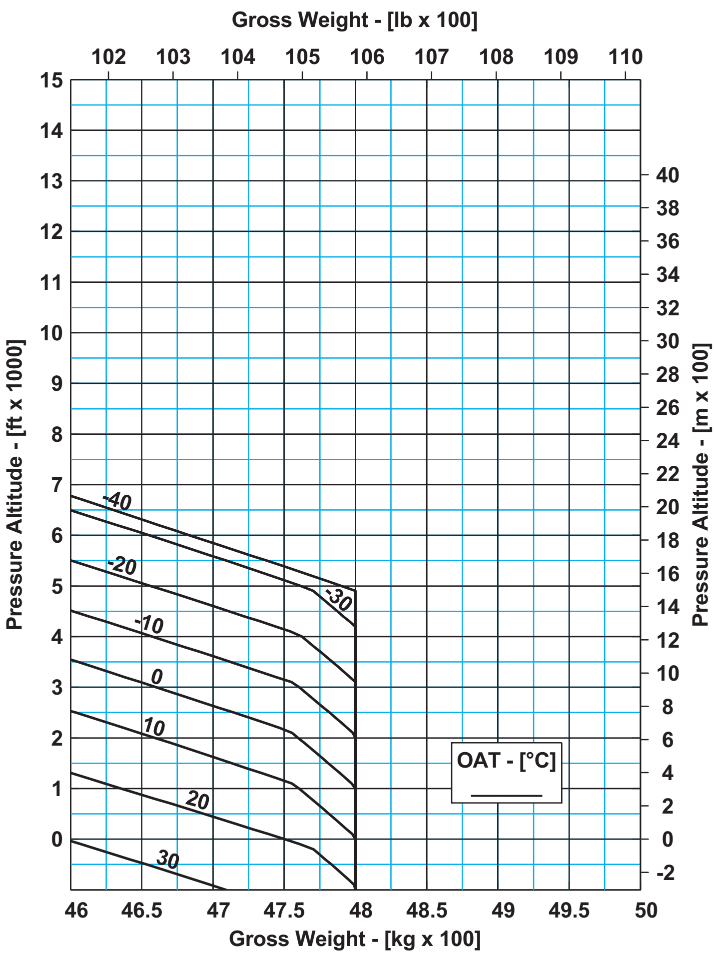
& H/V

Figure Perf 56: WAT for Safe OEI Vertical Reject – EAPS OFF/ON up to 4600 kg

## WEIGHT-ALTITUDE-TEMPERATURE SAFE VERTICAL REJECT

PLUS MODE
Max Hover Height: 200 ft ALS
EAPS OFF/ON

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CONTR & H/V

Figure Perf 57: WAT for Safe OEI Vertical Reject – EAPS OFF/ON above 4600 kg

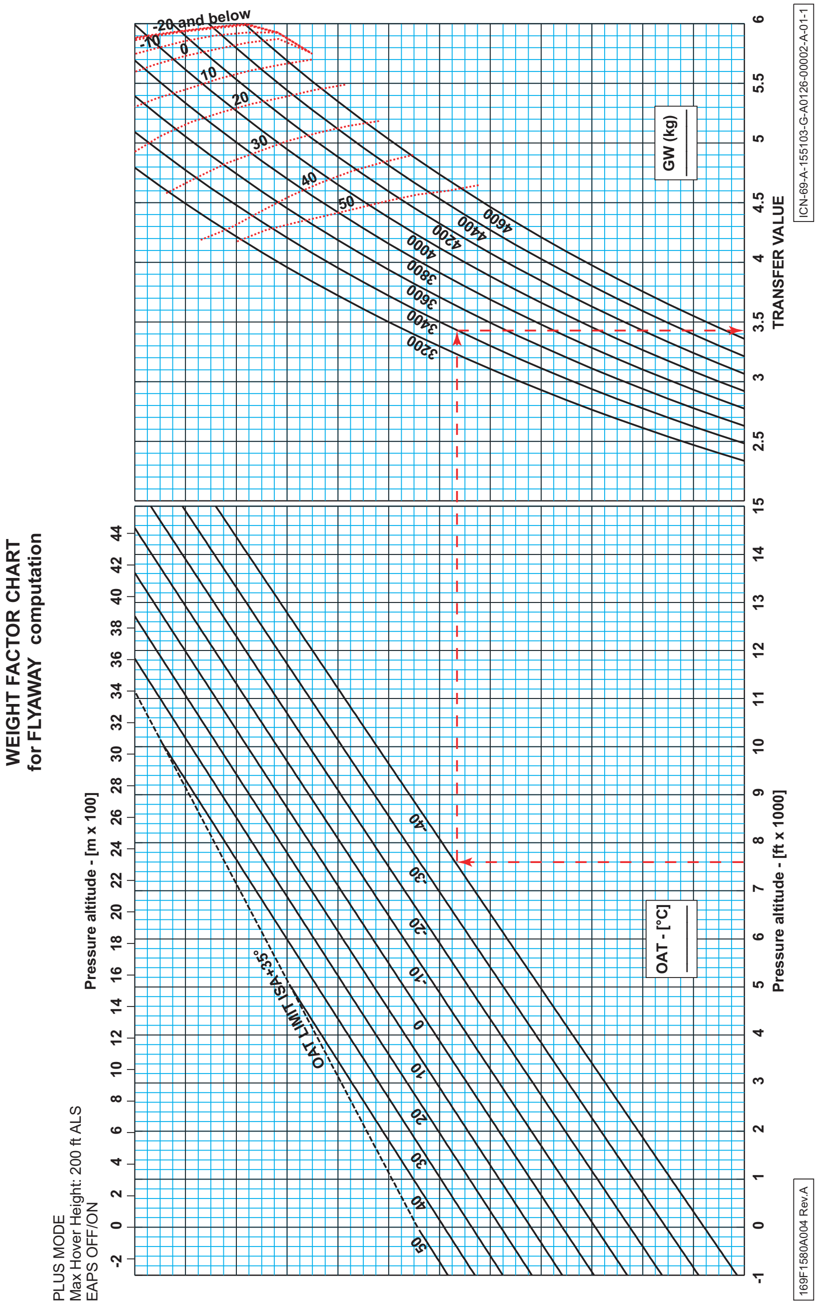


Figure Perf 58: Chart A - Flyaway Transfer Value – EAPS OFF/ON up to 4600 kg

CONTR & H/V

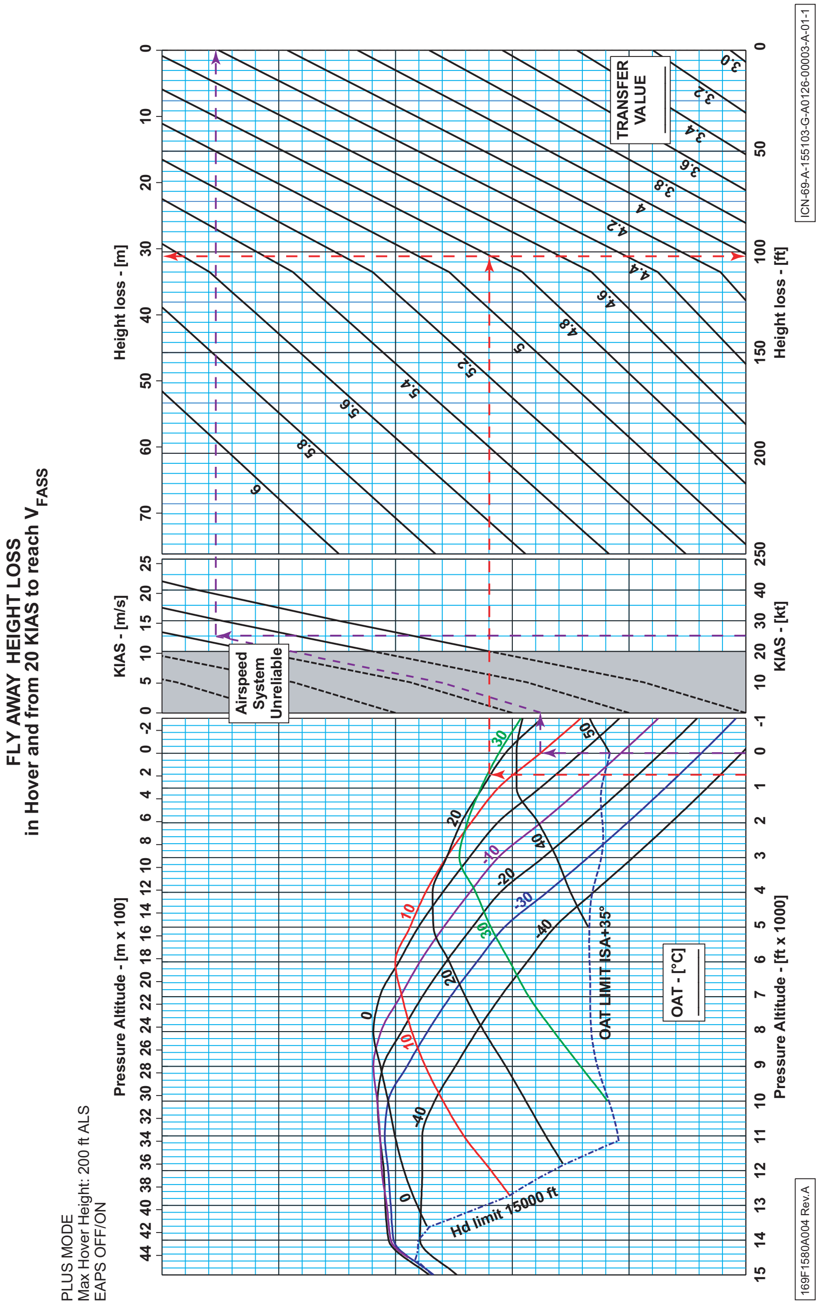


Figure Perf 59: Chart B – Height Loss During Flyaway – EAPS OFF/ON up to 4600 kg

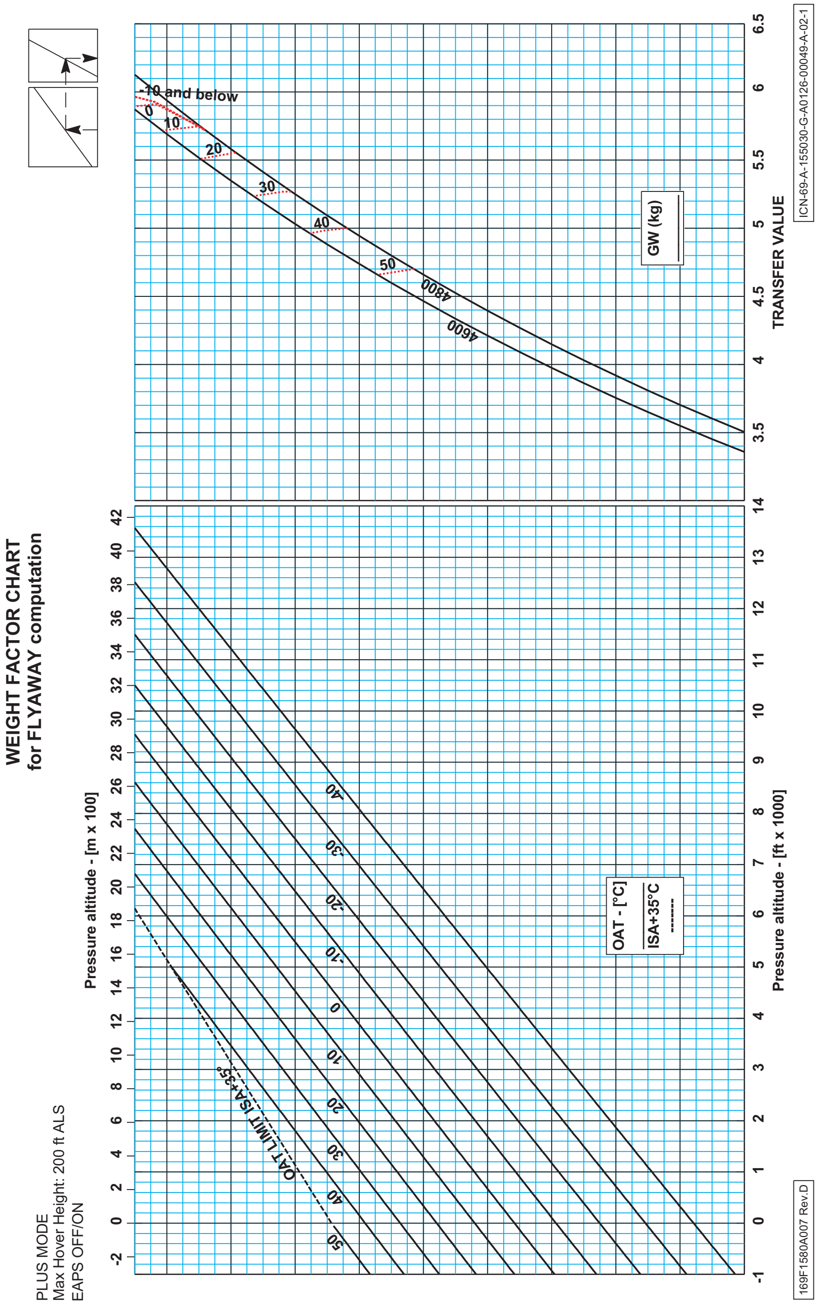


Figure Perf 60: Chart A - Flyaway Transfer Value – EAPS OFF/ON above 4600 kg

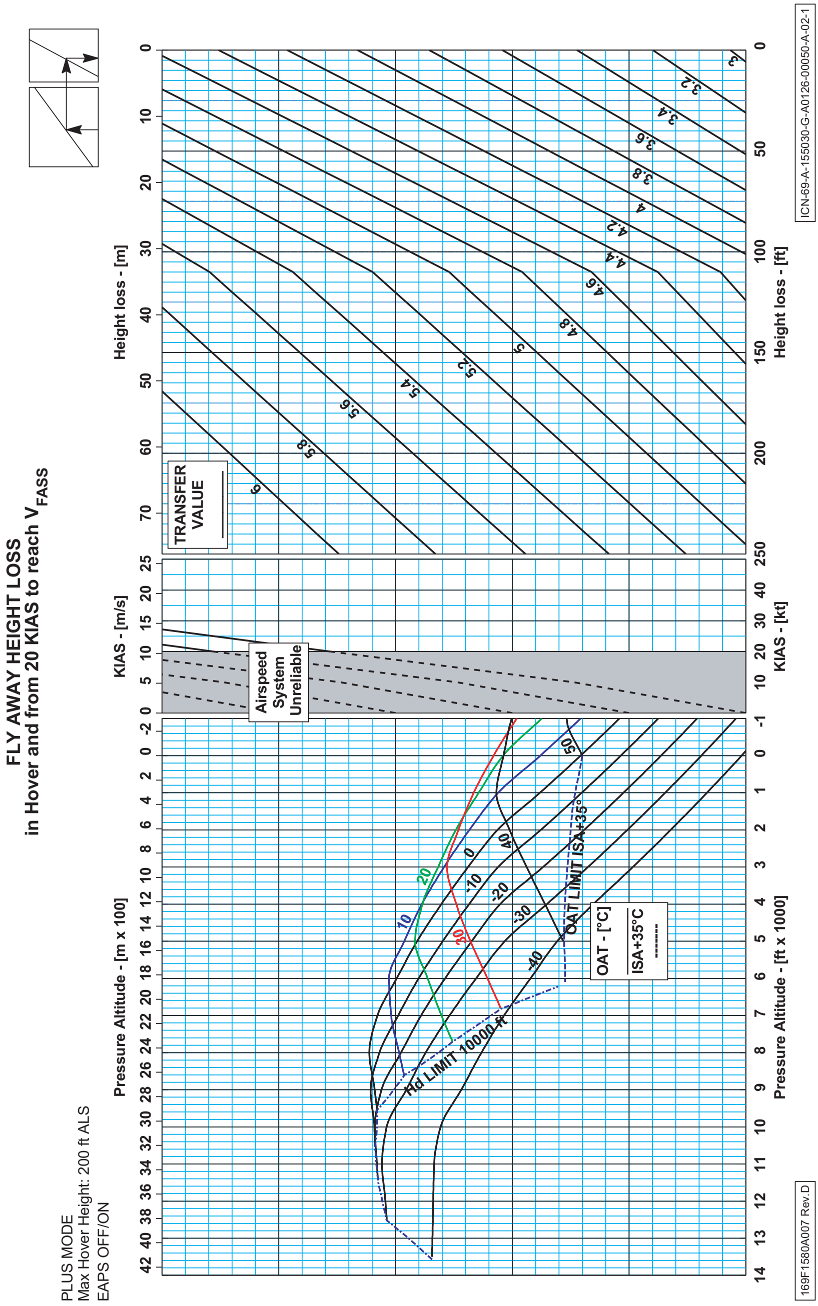


Figure Perf 61: Chart B - Height Loss During Flyaway - EAPS OFF/ON above 4600 kg

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# HIGE & HOGE, HOVER CEILING, RATE OF CLIMB, WIND COMPONENT CHART

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## HOVER CEILING

The Hover Ceiling charts define the maximum weights at which an IGE hover (at 6 ft (1.8 m) wheel height) or an OGE hover is possible for varying combinations of Pressure Altitude, and OAT with main rotor speed at 103%. The charts presented are for:

a) IGE with zero wind conditions.

b) IGE with wind controllability in excess of 17 kts (See Figure Perf 8 thru Figure Perf 11).

c) OGE with zero wind conditions.
The Unfactored Headwind Benefit table displays the full performance increase resulting from the actual headwind component.

d) OGE with wind controllability (See Figure Perf 31, Figure Perf 9, Figure Perf 14 and Figure Perf 16).

**Note**

Unless otherwise authorized by operating regulations, the pilot is not authorized to credit more than 50 percent of the performance increase resulting from the actual headwind component.

The charts for All Engines Operating AEO conditions are presented Take-Off Power (TOP) and Maximum Continuous Power (MCP) with two different level of electrical loads:

— Electrical load: 75% means that an electrical load of 75% on each DC generator has been included.

— Electrical load: 25% means that an electrical load of 25% on each DC generator has been included.

The charts for One Engine Inoperative (OEI) are presented for:

— OEI 2.5min rating with electrical load of 100% on remaining DC GEN included.

— OEI Continuous rating with electrical load of 75% on remaining DC GEN included.

At the bottom of HOVER OGE CEILING charts a table is given to allow the pilot to calculate an increase of the Hover weight by taking advantage of the headwind. The increase of Gross weight is unfactored and as specified in para HEADWIND BENEFIT, unless otherwise authorized by operating regulations only 50% of the performance increase resulting from the actual headwind component can be used.

## HOVER CEILING IN GROUND EFFECT (IGE)

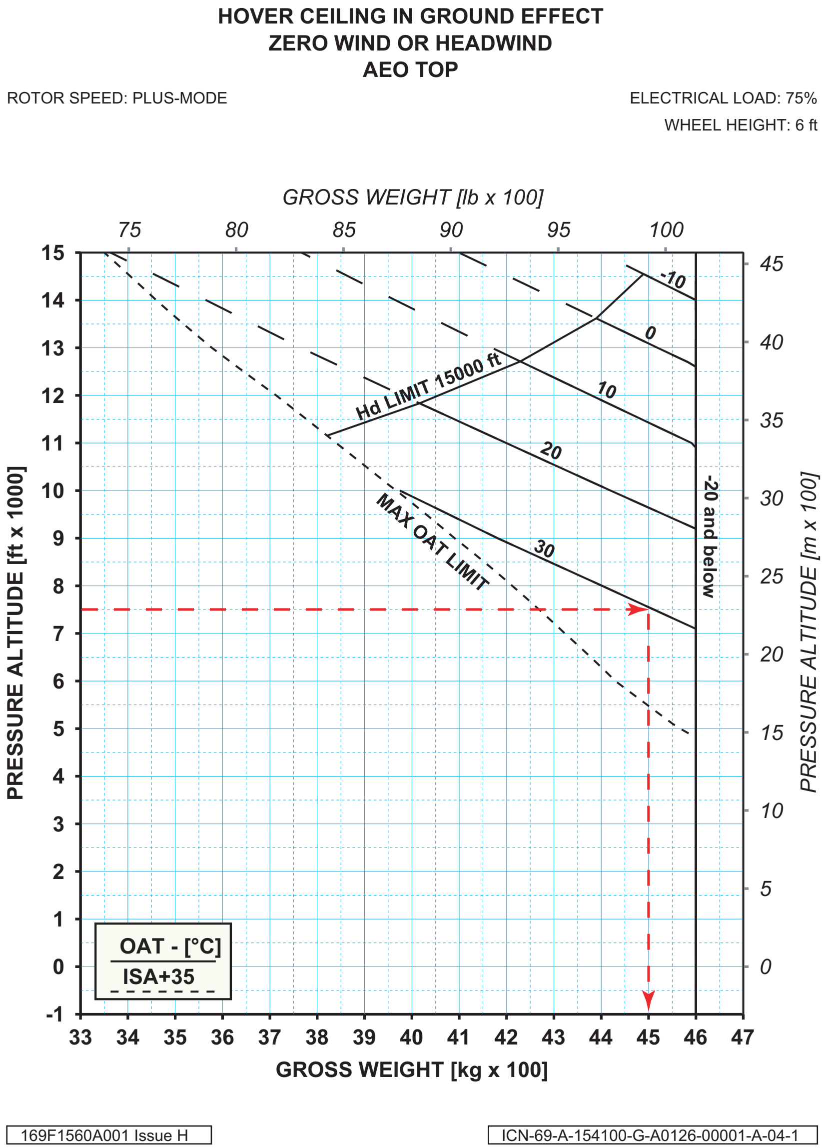


Figure Perf 62: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - Up to 4600 kg

## HOVER CEILING IN GROUND EFFECT
## ZERO WIND OR HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6 ft

ELECTRICAL LOAD: 75%
HEATER ON

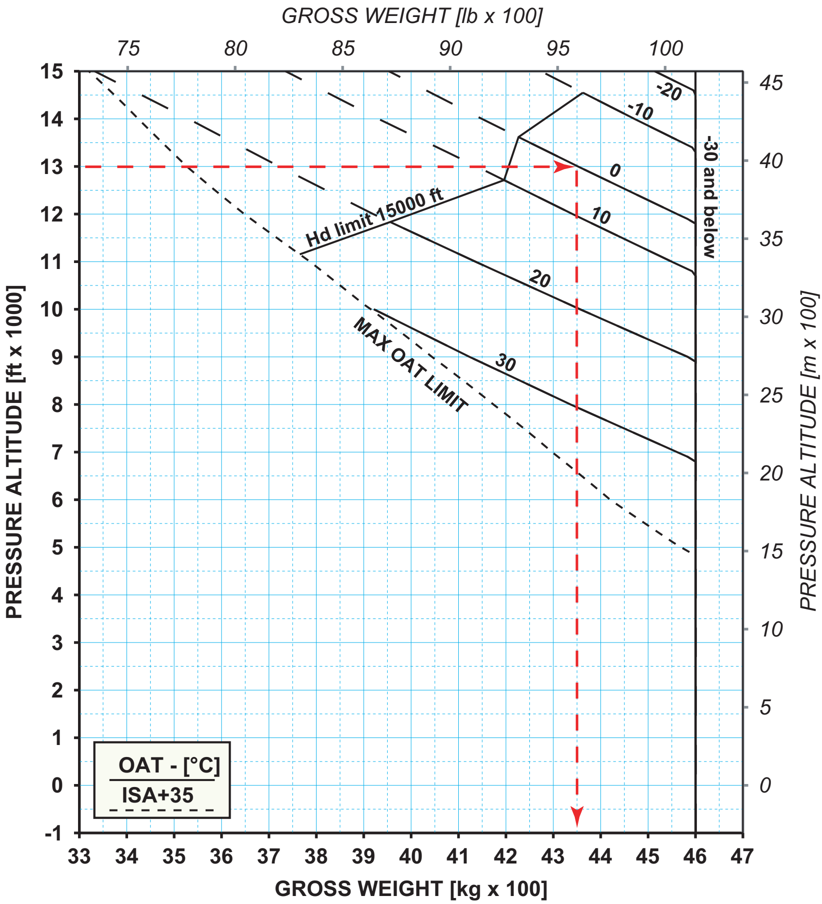


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Figure Perf 63: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - Heater ON - Up to 4600 kg

HVR ROC
PAC WIND

## HOVER CEILING IN GROUND EFFECT
## ZERO WIND OR HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE
WHEEL HEIGHT: 6 ft

ELECTRICAL LOAD: 75%
ECS ON

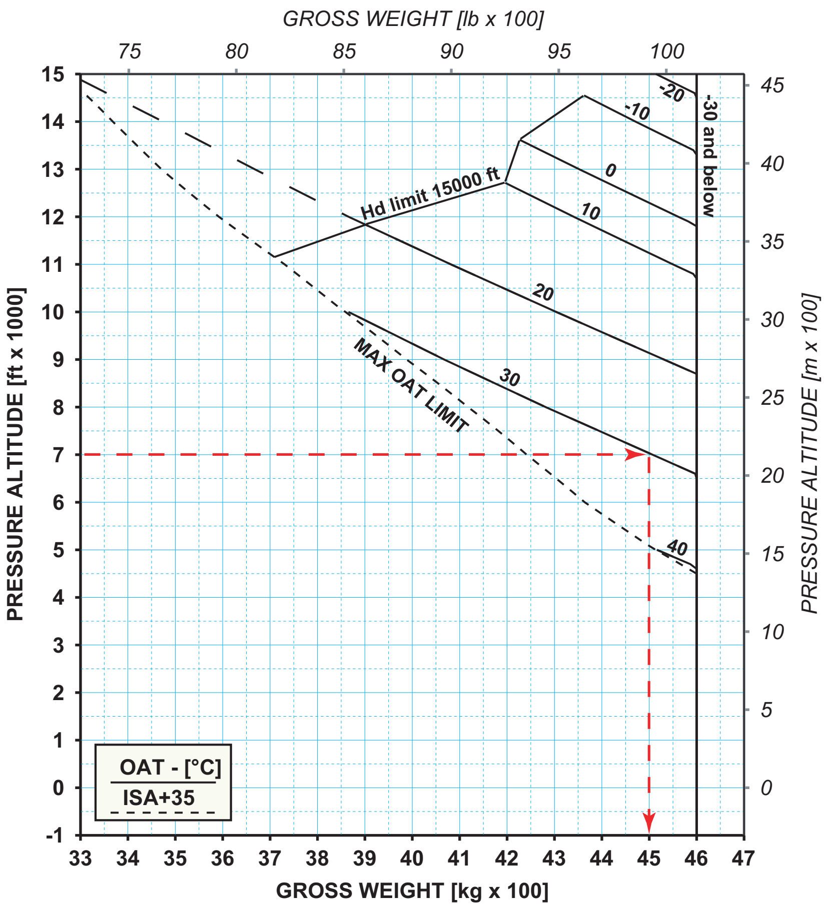


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Figure Perf 64: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - ECS ON - Up to 4600 kg



FOR TRAINING ONLY

## HOVER CEILING IN GROUND EFFECT
## ZERO WIND OR HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft

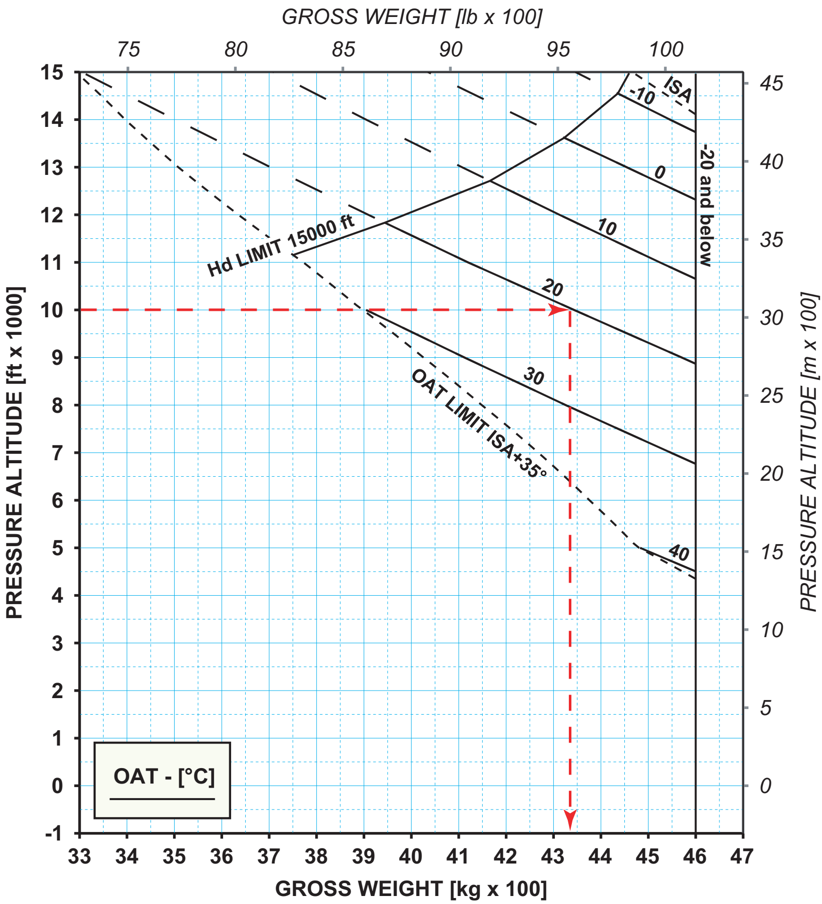


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Figure Perf 65: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS OFF - Up to 4600 kg

HVR ROC
PAC WIND

## HOVER CEILING IN GROUND EFFECT
## ZERO WIND OR HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft
HEATER ON

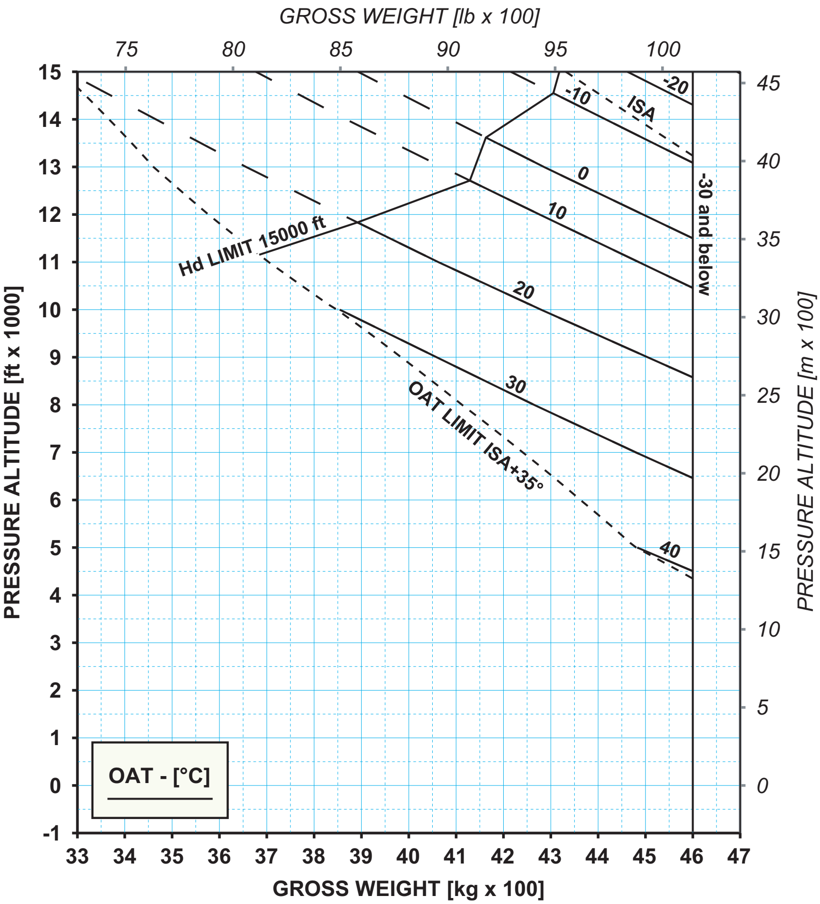


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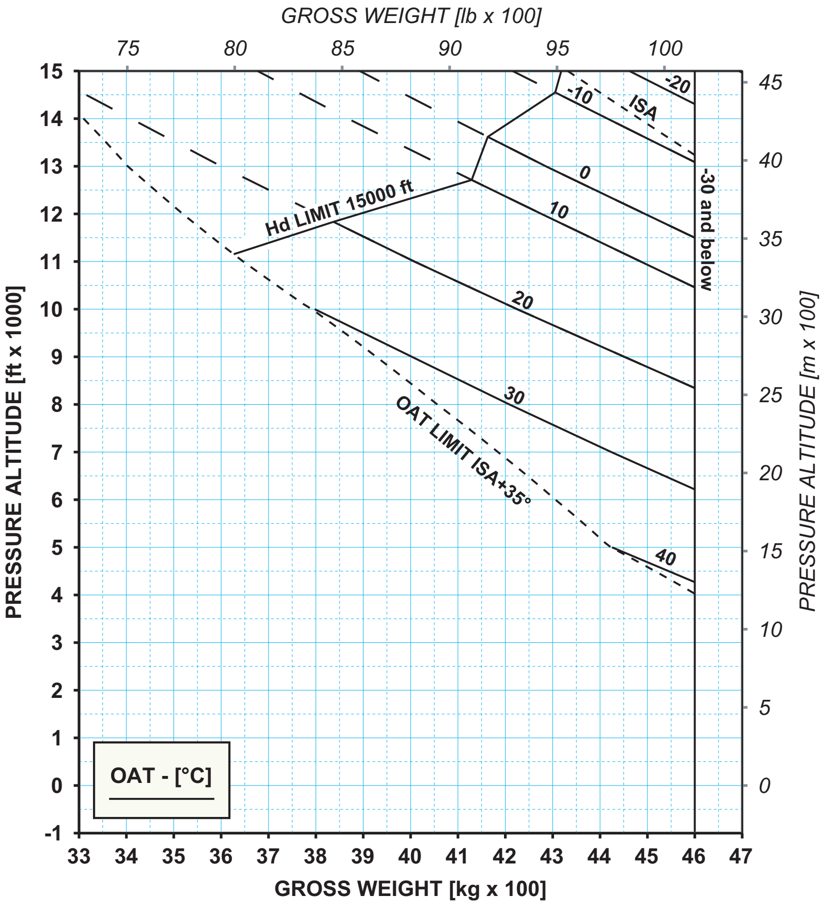
Figure Perf 66: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS OFF - Heater ON - Up to 4600 kg

HVR ROC
PAC WIND

**HOVER CEILING IN GROUND EFFECT**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF
ECS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft

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ICN-69-A-155203-G-A0126-00003-A-03-1

Figure Perf 67: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS OFF - ECS ON - Up to 4600 kg

**HOVER CEILING IN GROUND EFFECT**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft

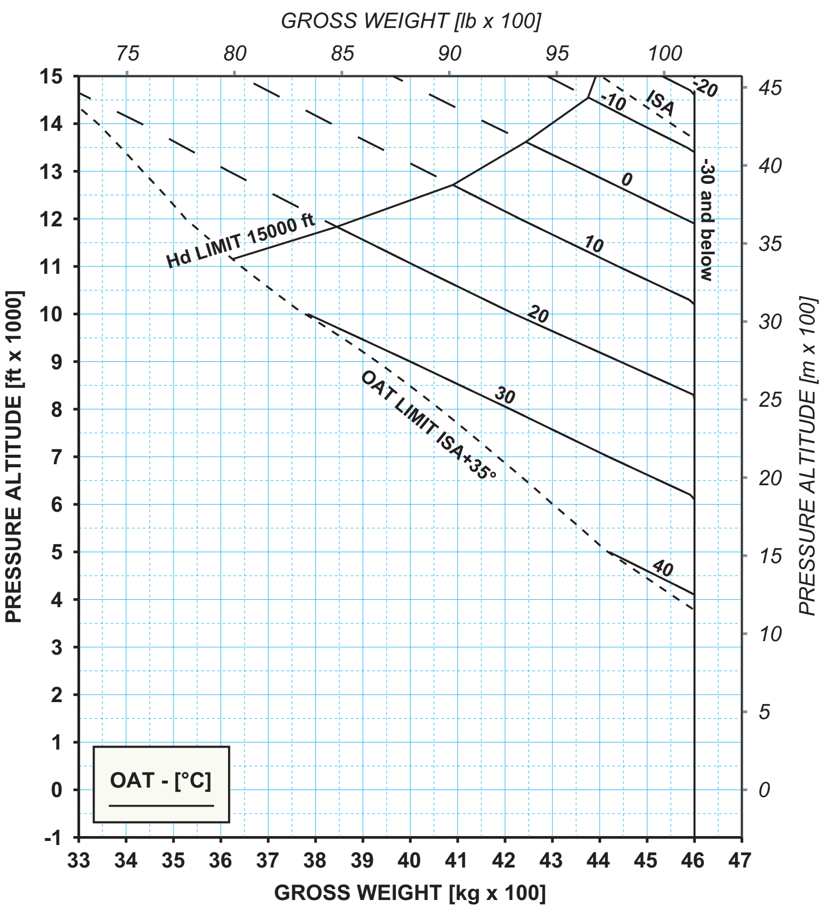


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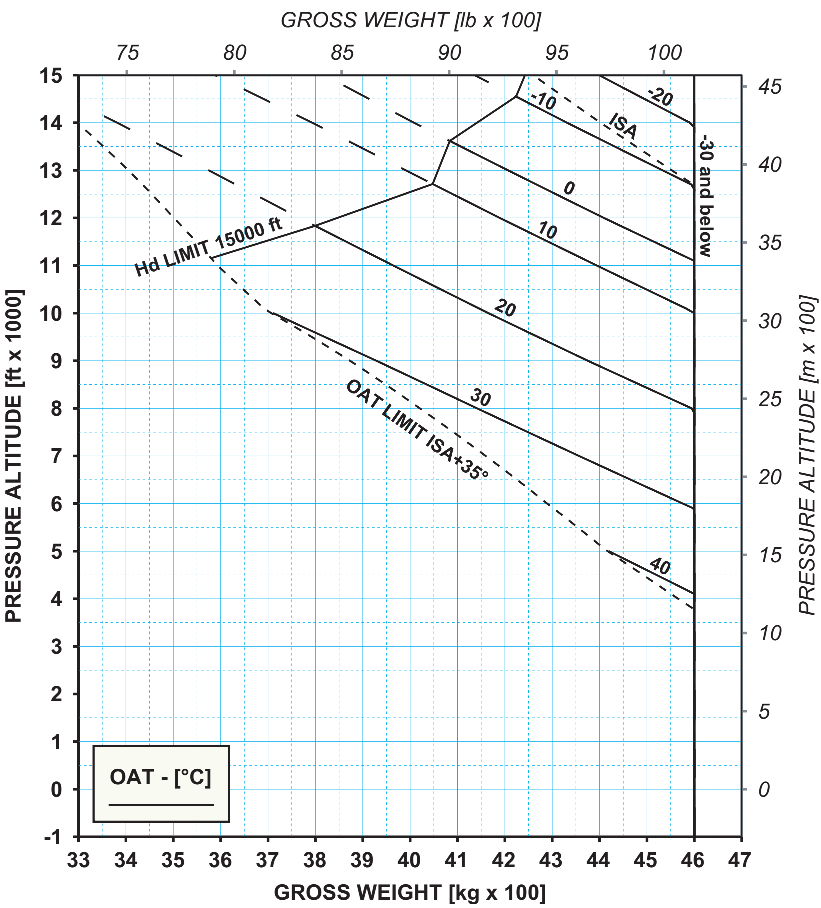
Figure Perf 68: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS ON - Up to 4600 kg

## HOVER CEILING IN GROUND EFFECT
## ZERO WIND OR HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft
HEATER ON

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ICN-69-A-155203-G-A0126-00015-A-03-1

Figure Perf 69: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS ON - Heater ON - Up to 4600 kg

**HOVER CEILING IN GROUND EFFECT**
**ZERO WIND OR HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON
ECS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft

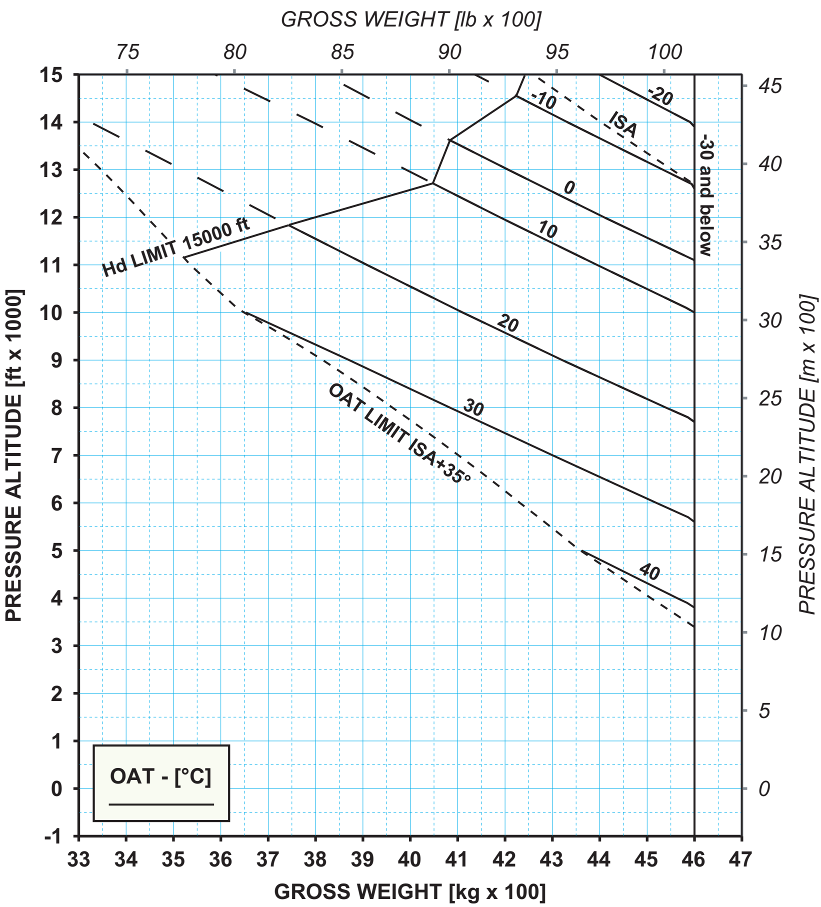


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Figure Perf 70: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS ON - ECS ON - Up to 4600 kg

HVR ROC
PAC WIND

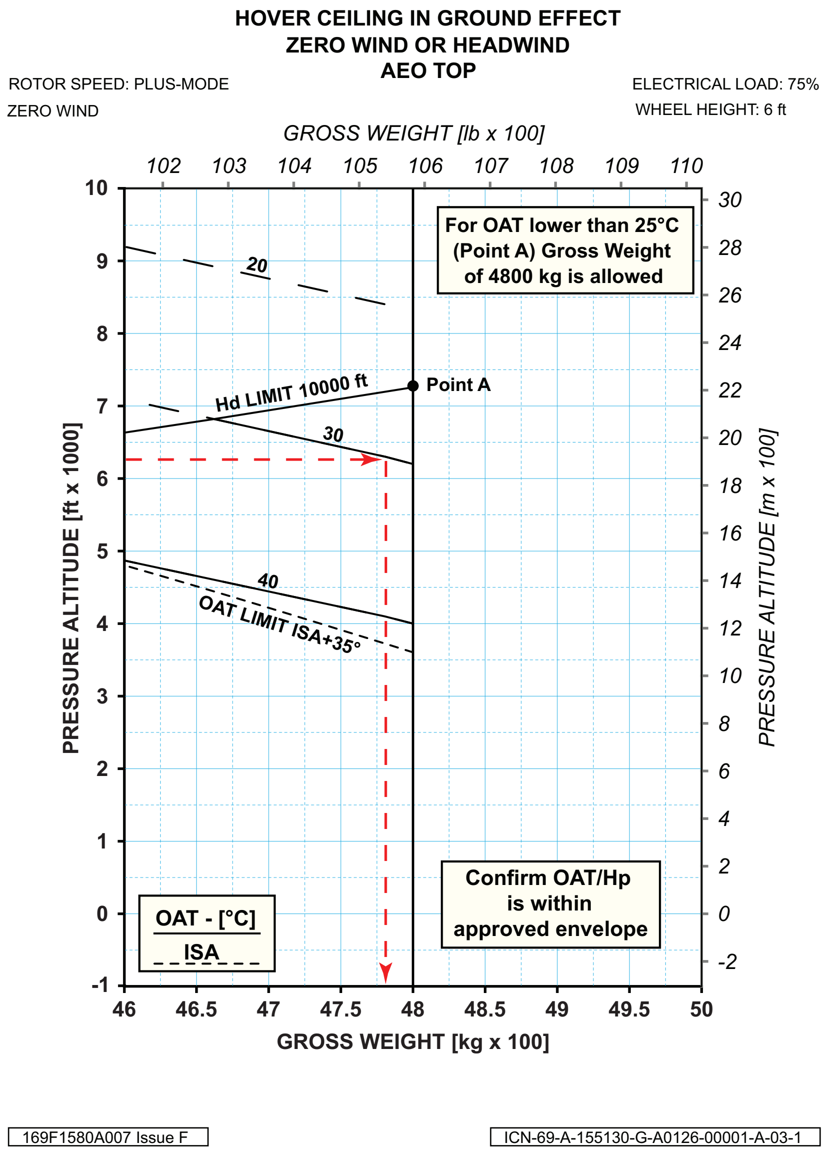
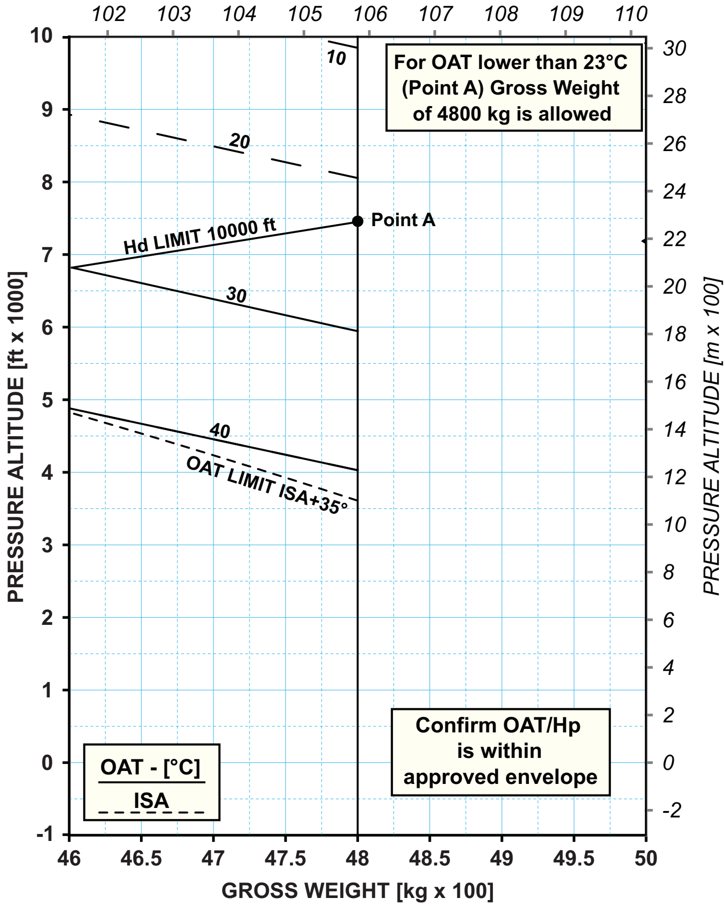



Figure Perf 71: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - Above 4600 kg

## HOVER CEILING IN GROUND EFFECT
## ZERO WIND OR HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE
ZERO WIND
HEATER ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft

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ICN-69-A-155130-G-A0126-00013-A-03-1

Figure Perf 72: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - Heater ON - Above 4600 kg

HVR ROC
PAC WIND

## HOVER CEILING IN GROUND EFFECT
## ZERO WIND OR HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE
ZERO WIND
ECS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft

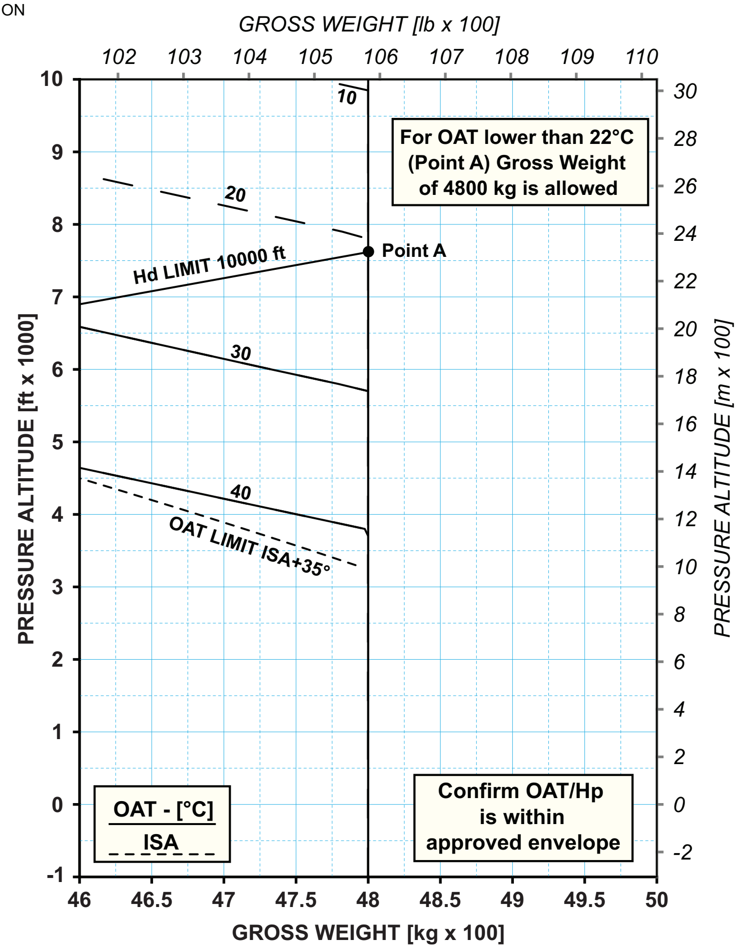


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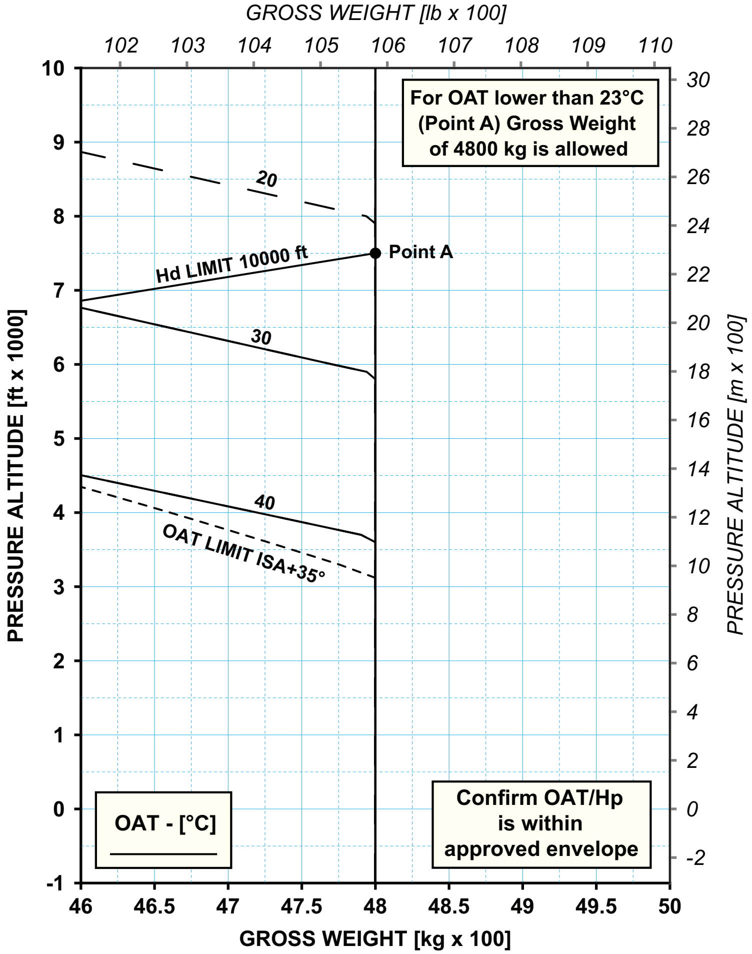
Figure Perf 73: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - ECS ON - Above 4600 kg

## HOVER CEILING IN GROUND EFFECT
## ZERO WIND OR HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft

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ICN-69-A-155130-G-A0126-00031-A-03-1

Figure Perf 74: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS OFF - Above 4600 kg

HOVER CEILING IN GROUND EFFECT
ZERO WIND OR HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft
HEATER ON

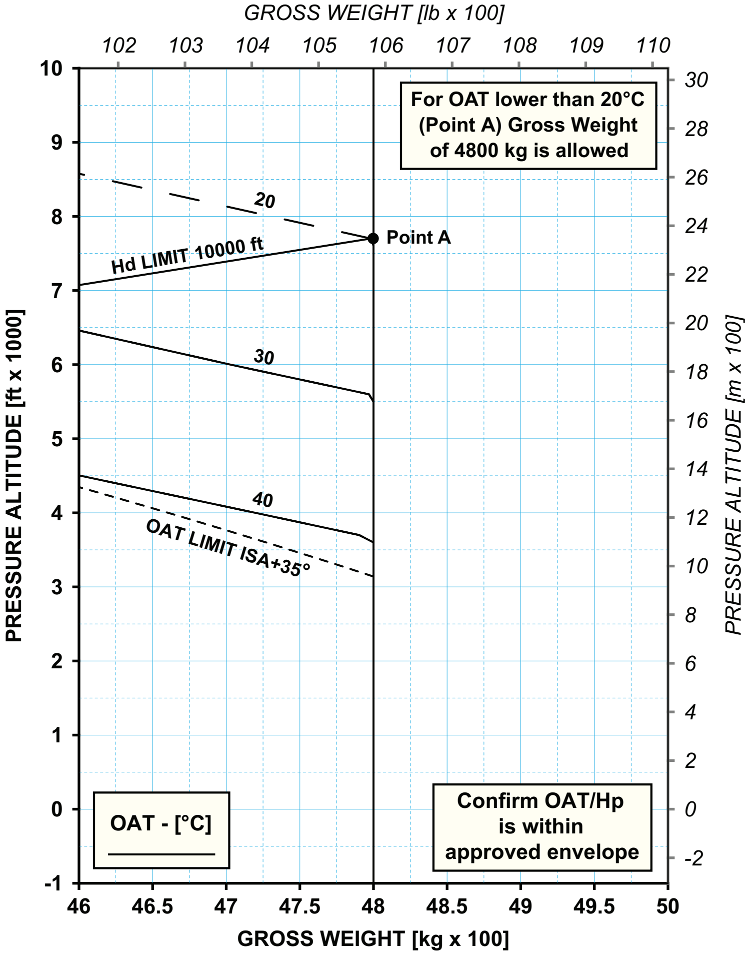


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Figure Perf 75: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS OFF - Heater ON - Above 4600 kg

HVR ROC
PAC WIND

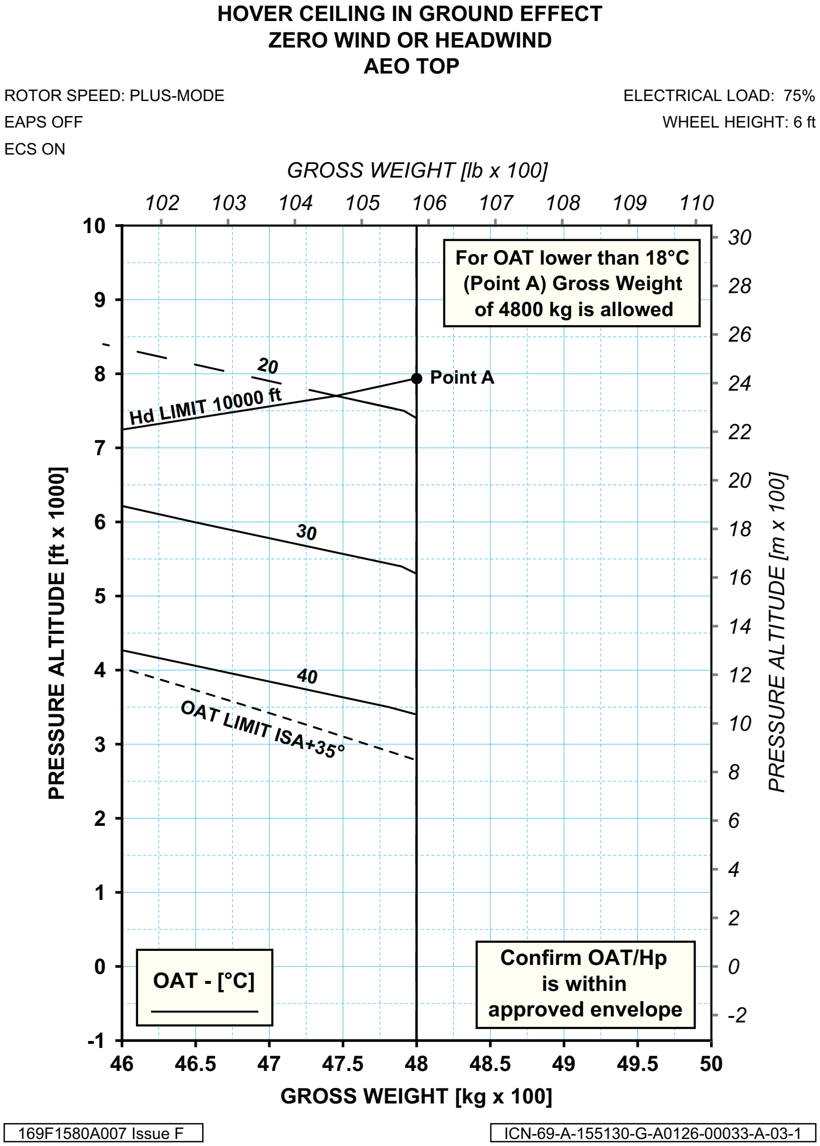
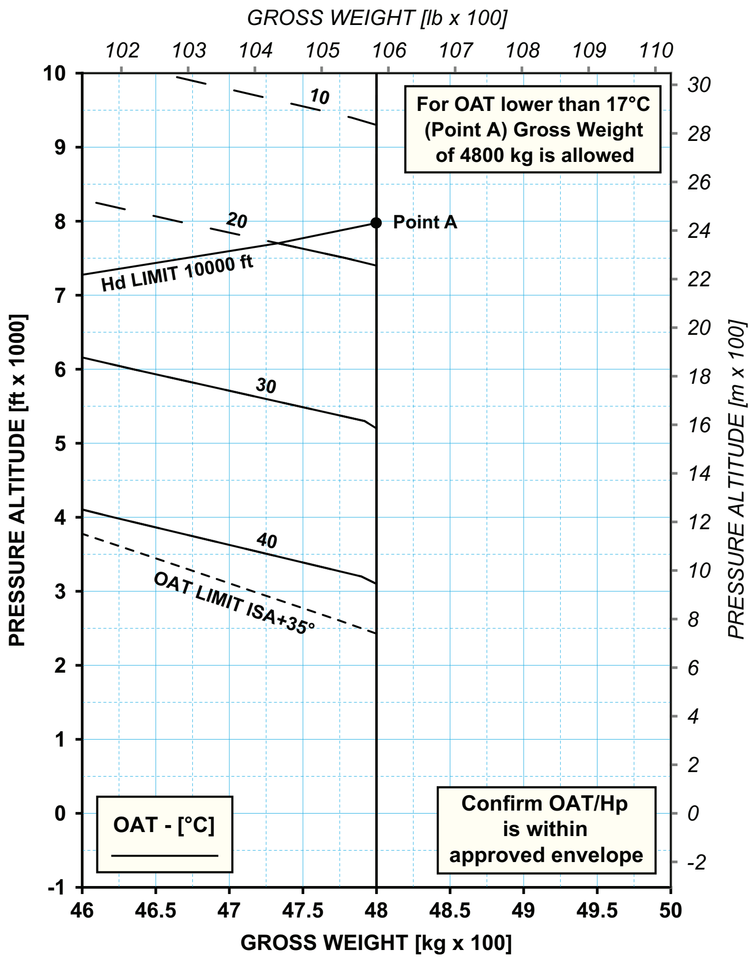



Figure Perf 76: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS OFF - ECS ON - Above 4600 kg

HOVER CEILING IN GROUND EFFECT
ZERO WIND OR HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft

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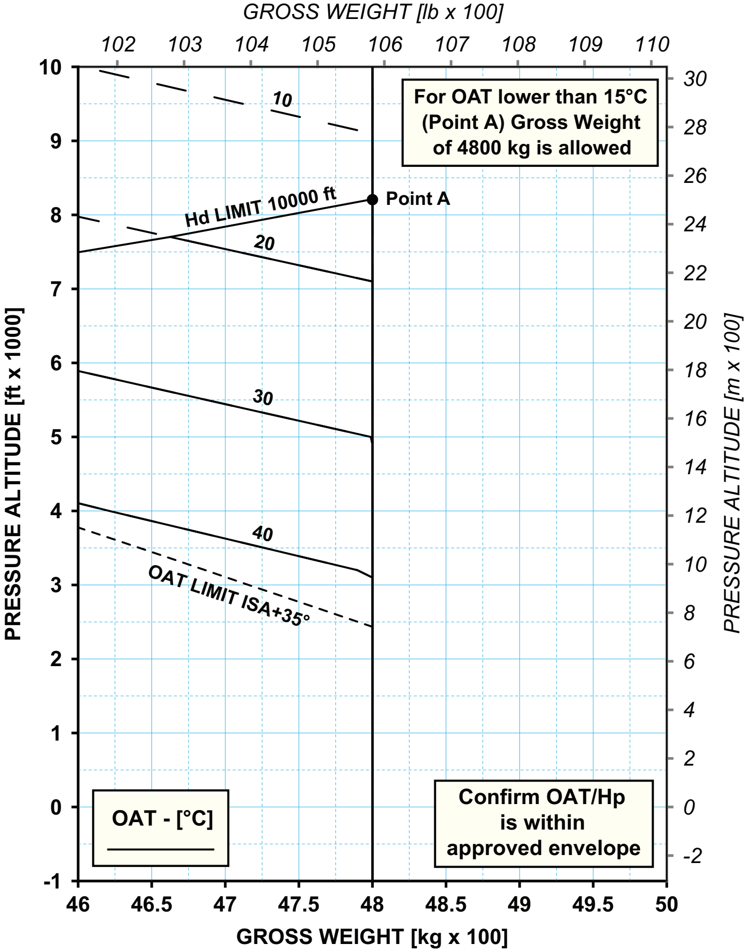
ICN-69-A-155130-G-A0126-00034-A-03-1

Figure Perf 77: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS ON - Above 4600 kg

## HOVER CEILING IN GROUND EFFECT
## ZERO WIND OR HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE
EAPS ON

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft
HEATER ON

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ICN-69-A-155130-G-A0126-00035-A-03-1

Figure Perf 78: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS ON - Heater ON - Above 4600 kg

HVR ROC
PAC WIND

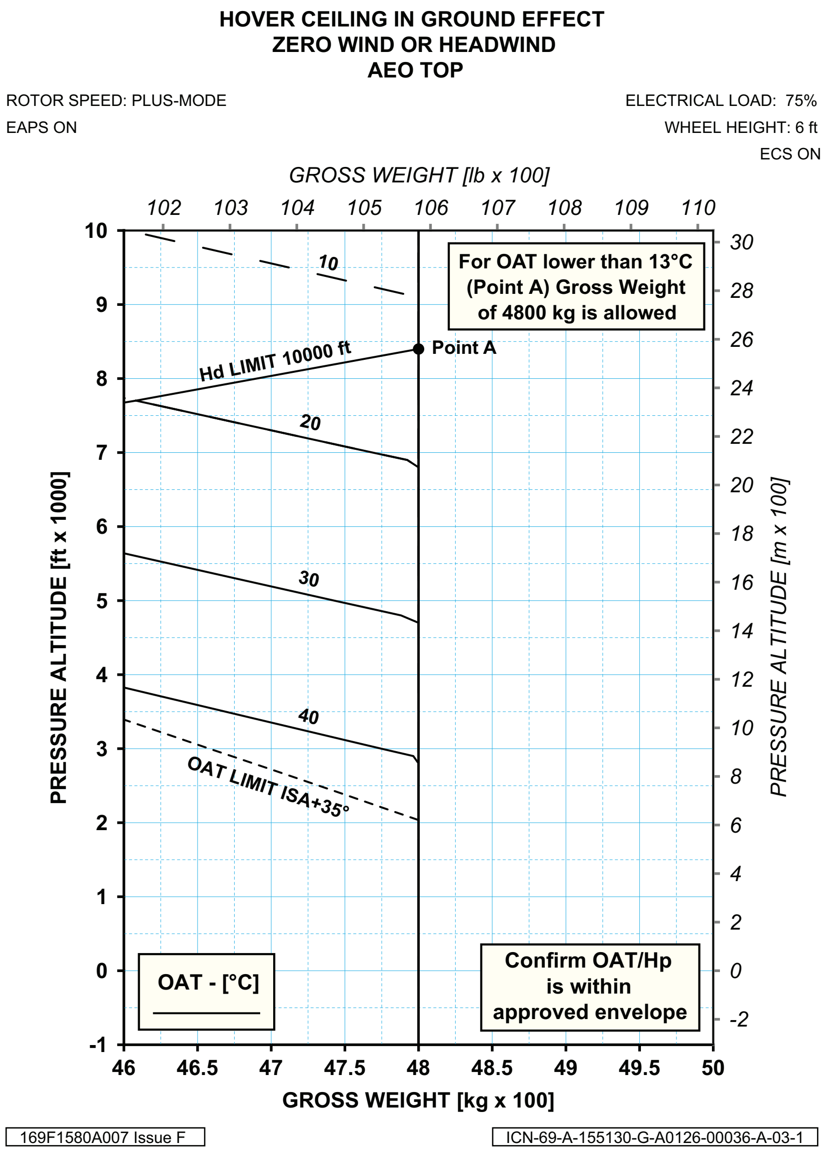
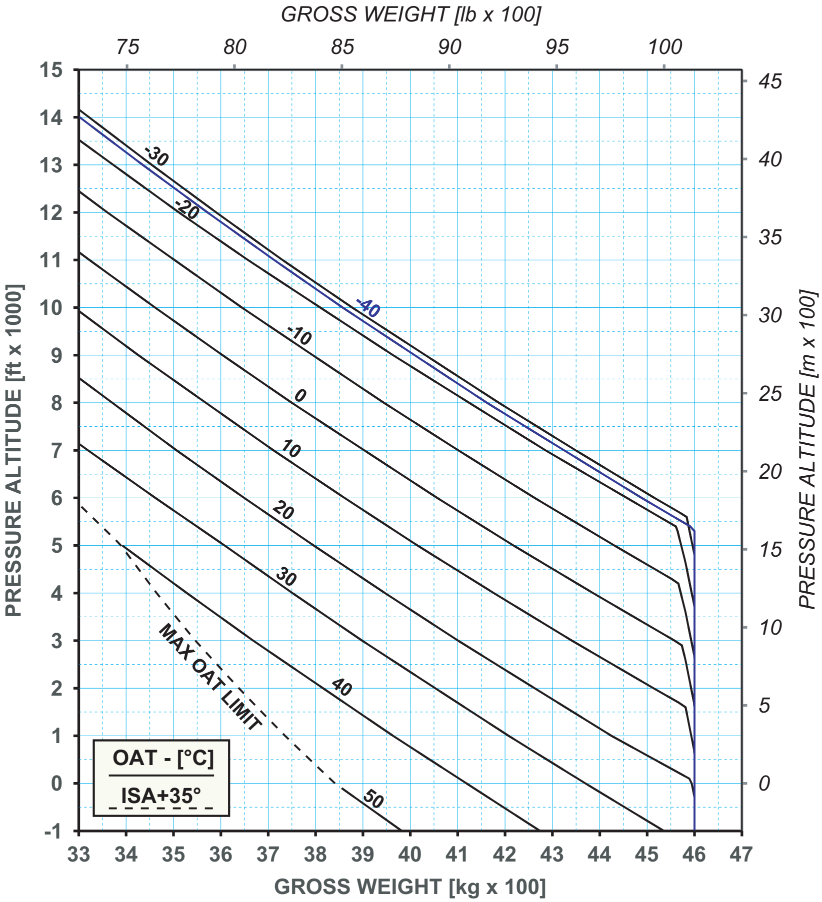



Figure Perf 79: Hover Ceiling IGE Zero Wind or Headwind - AEO TOP - EAPS ON - ECS ON- Above 4600 kg

HOVER CEILING IN GROUND EFFECT
ZERO WIND OR HEADWIND
OEI 2.5 min

ROTOR SPEED: PLUS MODE

ELECTRICAL LOAD: 100%
WHEEL HEIGHT: 6 ft

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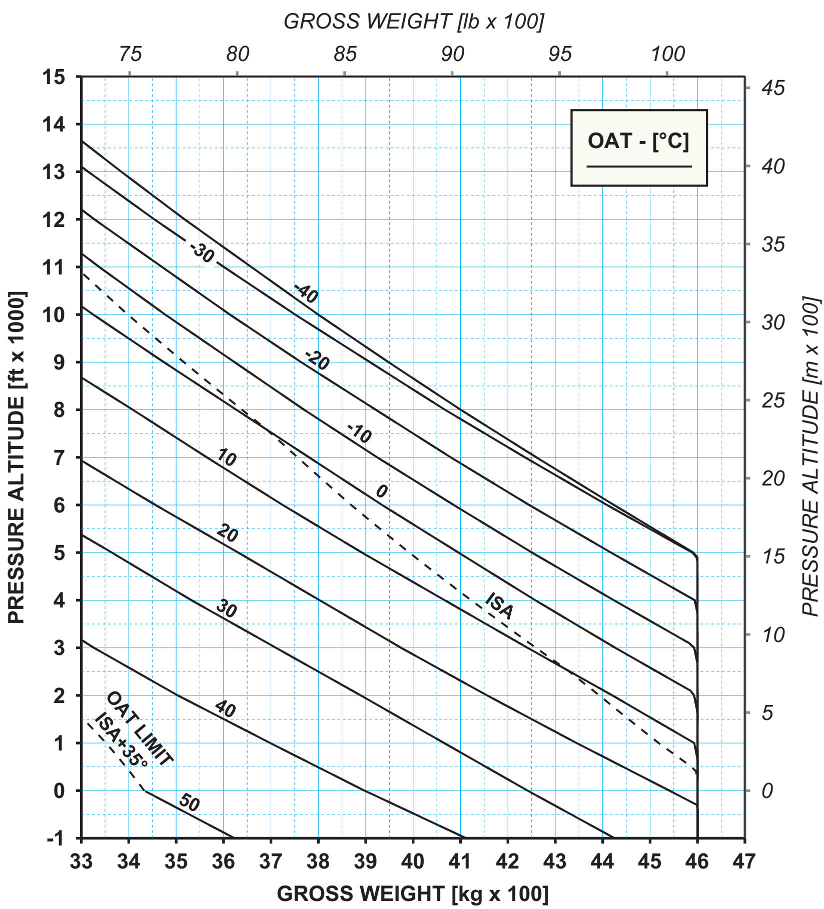
ICN-69-A-154100-G-A0126-00005-A-05-1

Figure Perf 80: Hover Ceiling IGE Zero Wind or Headwind - OEI 2.5 min - Up to 4600 kg

**HOVER CEILING IN GROUND EFFECT**
**ZERO WIND OR HEADWIND**
OEI 2.5 min

ROTOR SPEED: PLUS-MODE
EAPS OFF

ELECTRICAL LOAD: 100%
WHEEL HEIGHT: 6 ft

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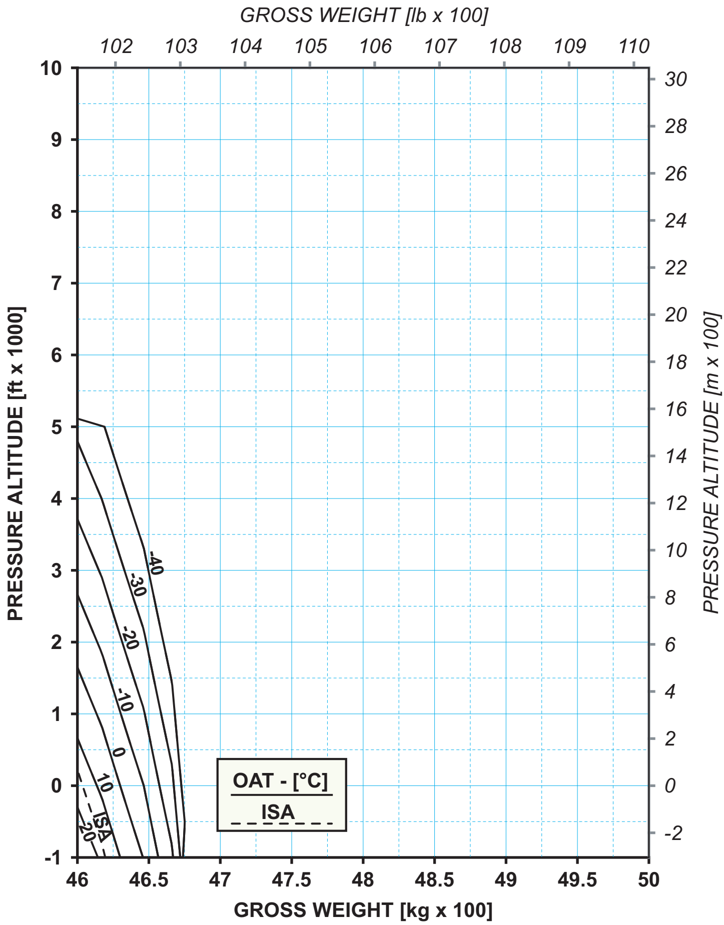
ICN-69-A-155203-G-A0126-00011-A-02-1

Figure Perf 81: Hover Ceiling IGE Zero Wind or Headwind - OEI 2.5 min - EAPS OFF - Up to 4600 kg

## HOVER CEILING IN GROUND EFFECT
## ZERO WIND OR HEADWIND
## OEI 2.5 min

ROTOR SPEED: PLUS-MODE
ZERO WIND

ELECTRICAL LOAD: 75%
WHEEL HEIGHT: 6 ft

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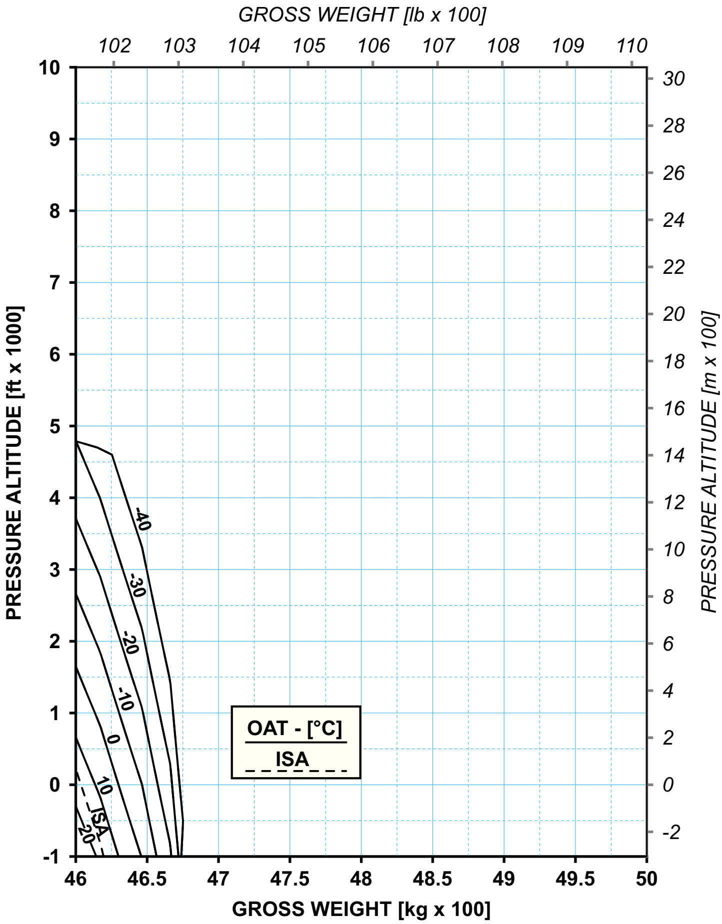
ICN-69-A-155130-G-A0126-00005-A-04-1

Figure Perf 82: Hover Ceiling IGE Zero Wind or Headwind - OEI 2.5 min - Above 4600 kg

**HOVER CEILING IN GROUND EFFECT**
**ZERO WIND OR HEADWIND**
**OEI 2.5 min**

ROTOR SPEED: PLUS-MODE
ZERO WIND
EAPS OFF

ELECTRICAL LOAD: 50%
WHEEL HEIGHT: 6 ft

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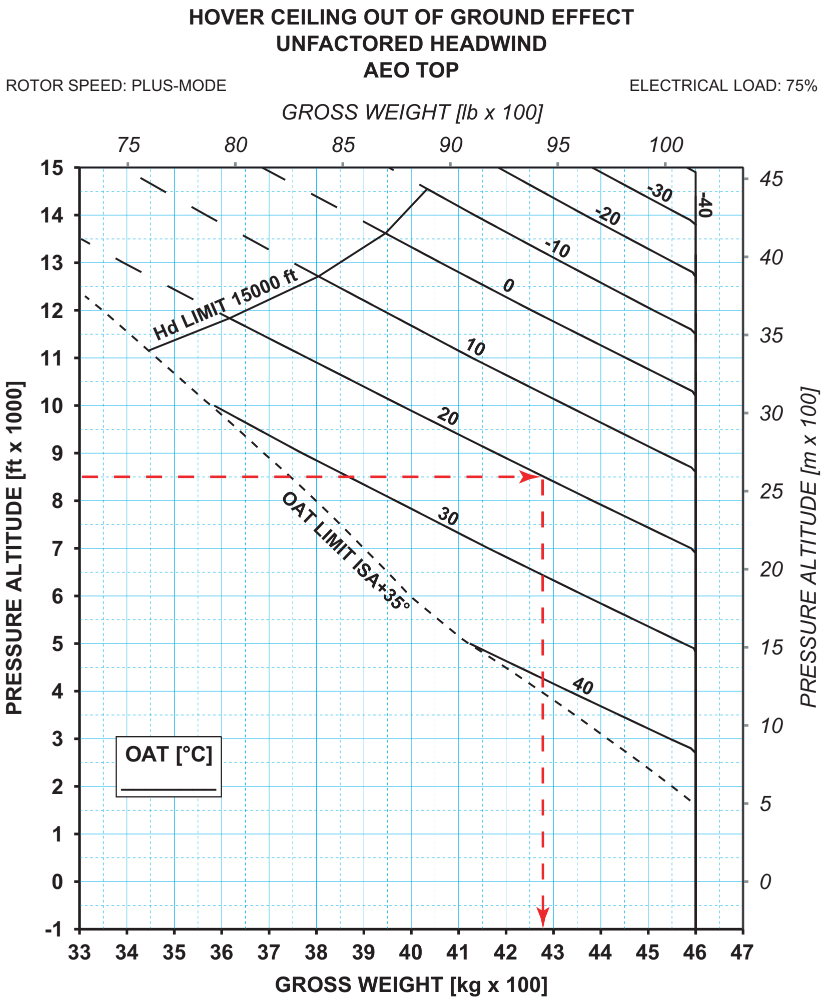
ICN-69-A-155130-G-A0126-00051-A-03-1

Figure Perf 83: Hover Ceiling IGE Zero Wind or Headwind - OEI 2.5 min - EAPS OFF - Above 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT (OGE)




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg[lb] for unfactored headwind [kts] | 81 [179] | 252 [555] | 484 [1067] | 741 [1633] | 995 [2193] | 1217 [2683] | 1435 [3164] | 1663 [3666] | 1858 [4096] | 2071 [4566] |

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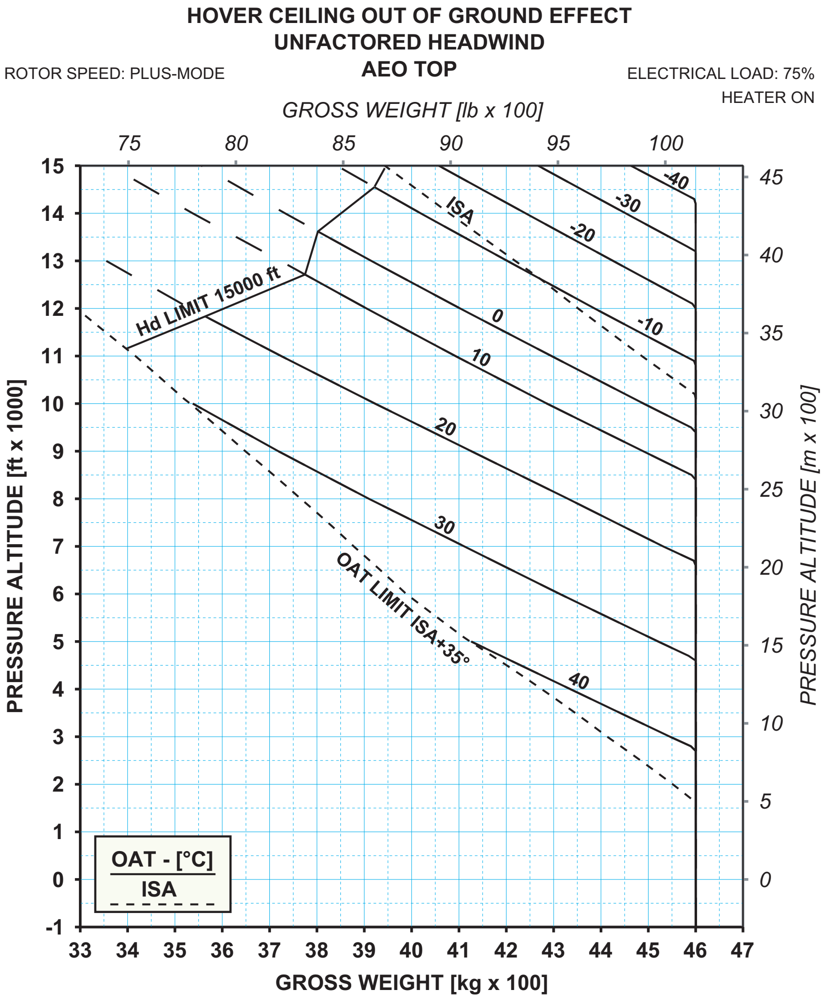
ICN-69-A-154100-G-A0126-00007-A-06-1

Figure Perf 84: Hover Ceiling OGE Unfactored Headwind - AEO TOP - Up to 4600 kg

HVR ROC
PAC WIND




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **81 [179]** | **252 [555]** | **484 [1067]** | **741 [1633]** | **995 [2193]** | **1217 [2683]** | **1435 [3165]** | **1663 [3666]** | **1858 [4096]** | **2071 [4566]** |

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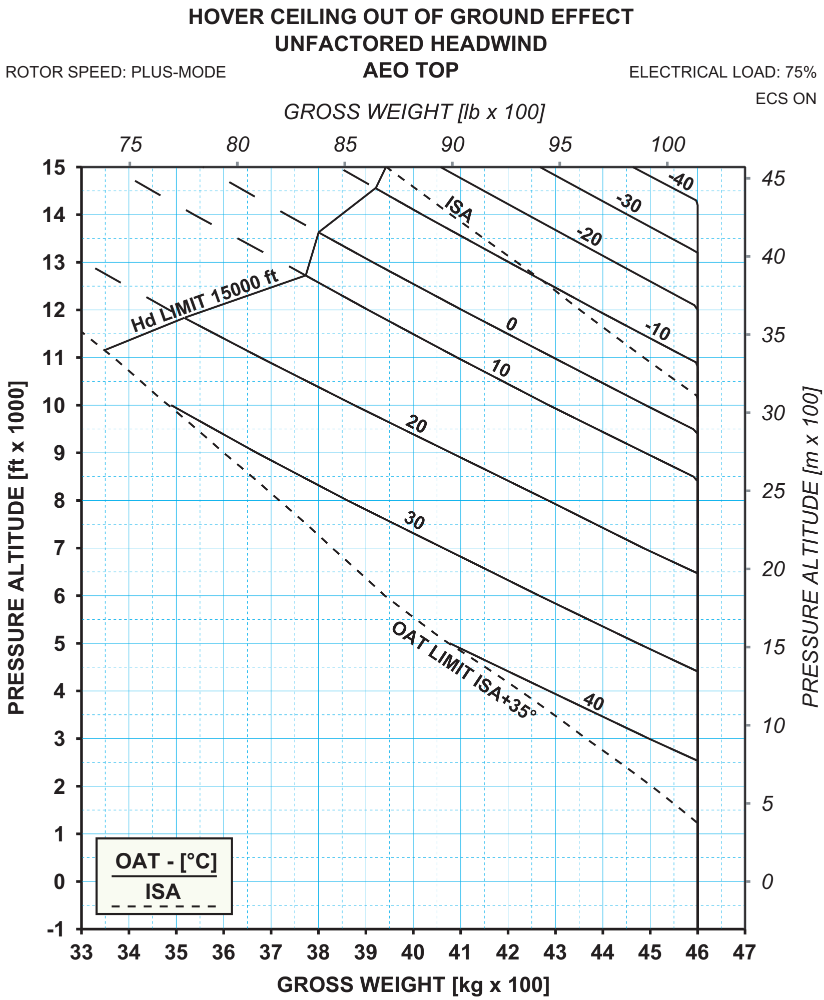
Figure Perf 85: Hover Ceiling OGE Unfactored Headwind - AEO TOP - Heater ON - Up to 4600 kg




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **79 [174]** | **248 [548]** | **479 [1055]** | **731 [1611]** | **993 [2189]** | **1215 [2678]** | **1431 [3155]** | **1657 [3653]** | **1850 [4079]** | **2061 [4543]** |

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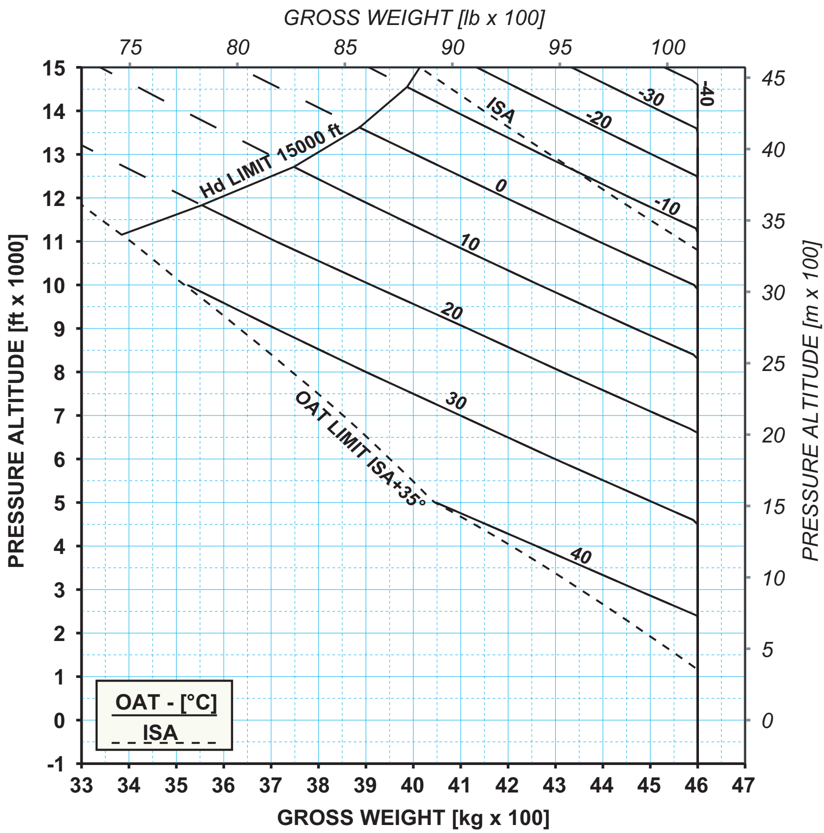
Figure Perf 86: Hover Ceiling OGE Unfactored Headwind - AEO TOP - ECS ON - Up to 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
EAPS OFF




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **79 [173]** | **248 [546]** | **477 [1053]** | **728 [1606]** | **993 [2189]** | **1214 [2677]** | **1430 [3153]** | **1656 [3651]** | **1848 [4075]** | **2058 [4538]** |

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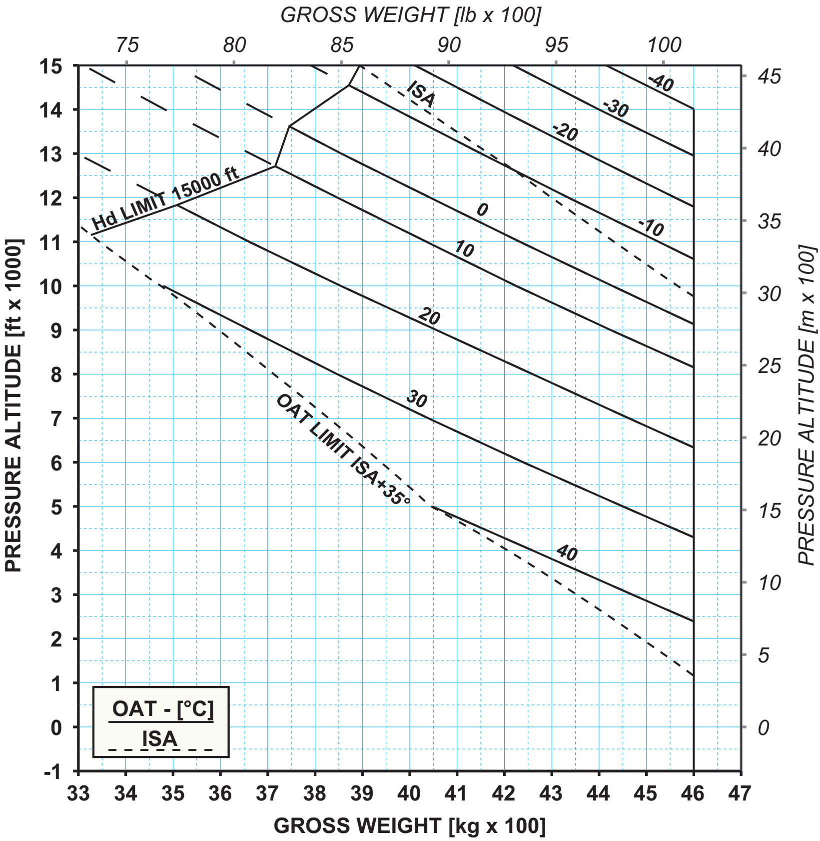
Figure Perf 87: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS OFF - Up to 4600 kg

HVR ROC
PAC WIND

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
HEATER ON

ELECTRICAL LOAD: 75%
EAPS OFF




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **79 [173]** | **248 [546]** | **477 [1053]** | **728 [1606]** | **993 [2189]** | **1214 [2677]** | **1430 [3153]** | **1656 [3651]** | **1848 [4075]** | **2058 [4538]** |

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ICN-69-A-155203-G-A0126-00042-A-04-1

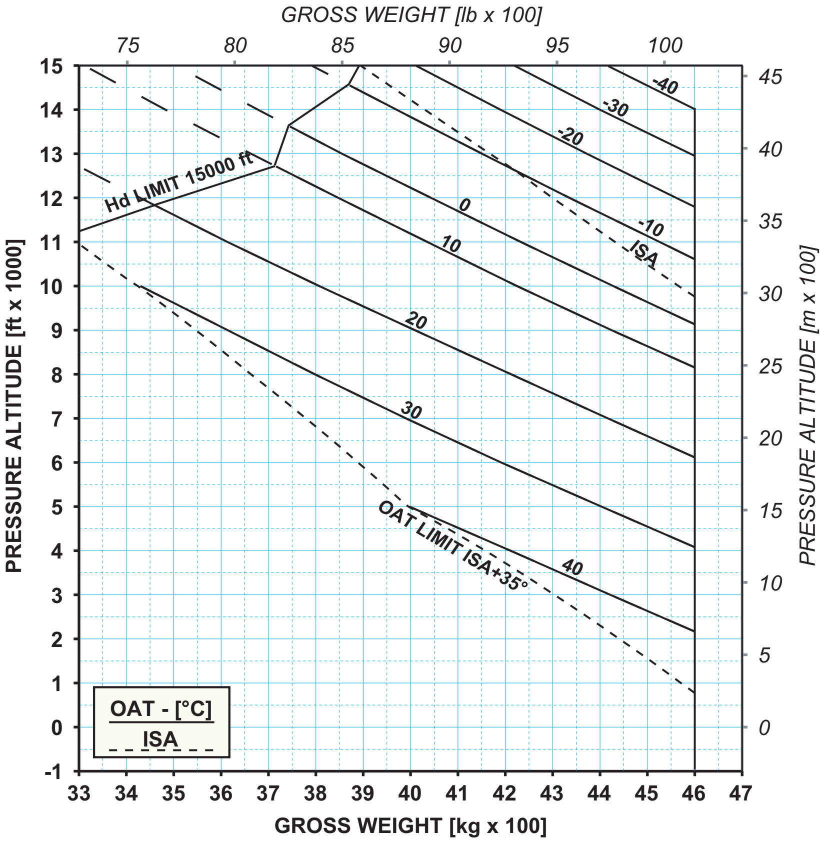
Figure Perf 88: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS OFF - Heater ON - Up to 4600 kg

HVR ROC
PAC WIND

**HOVER CEILING OUT OF GROUND EFFECT**
**UNFACTORED HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
ECS ON

ELECTRICAL LOAD: 75%
EAPS OFF




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **79 [175]** | **248 [546]** | **474 [1046]** | **721 [1591]** | **994 [2192]** | **1215 [2679]** | **1429 [3150]** | **1656 [3645]** | **1843 [4064]** | **2051 [4522]** |

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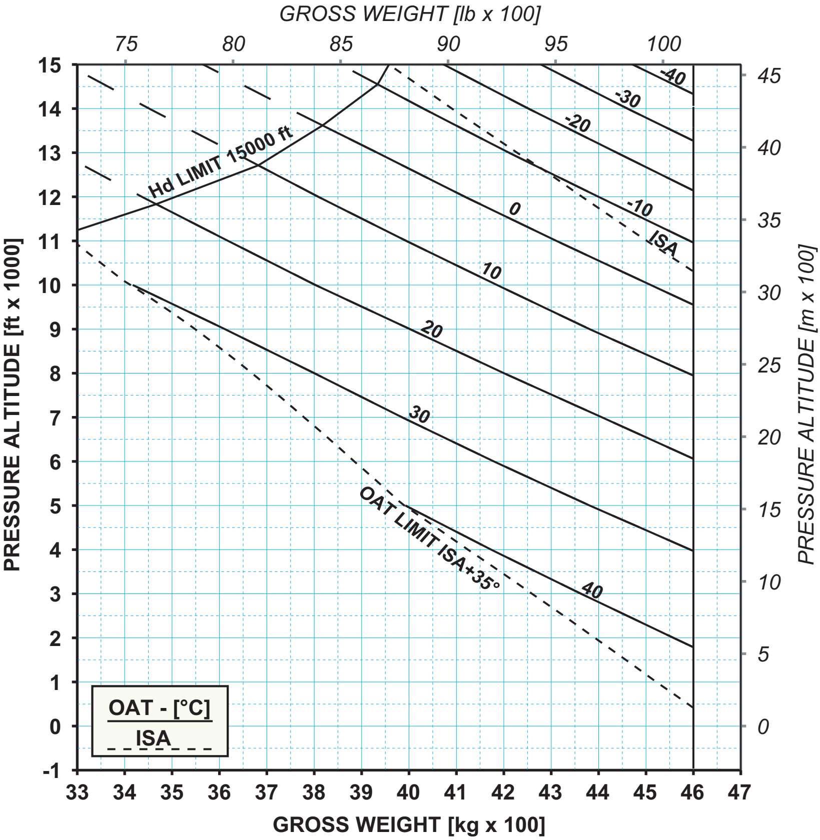
ICN-69-A-155203-G-A0126-00047-A-04-1

Figure Perf 89: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS OFF - ECS ON - Up to 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
EAPS ON




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **80 [177]** | **247 [545]** | **471 [1038]** | **713 [1573]** | **987 [2176]** | **1216 [2681]** | **1429 [3150]** | **1650 [3638]** | **1838 [4051]** | **2042 [4503]** |

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ICN-69-A-155203-G-A0126-00050-A-04-1

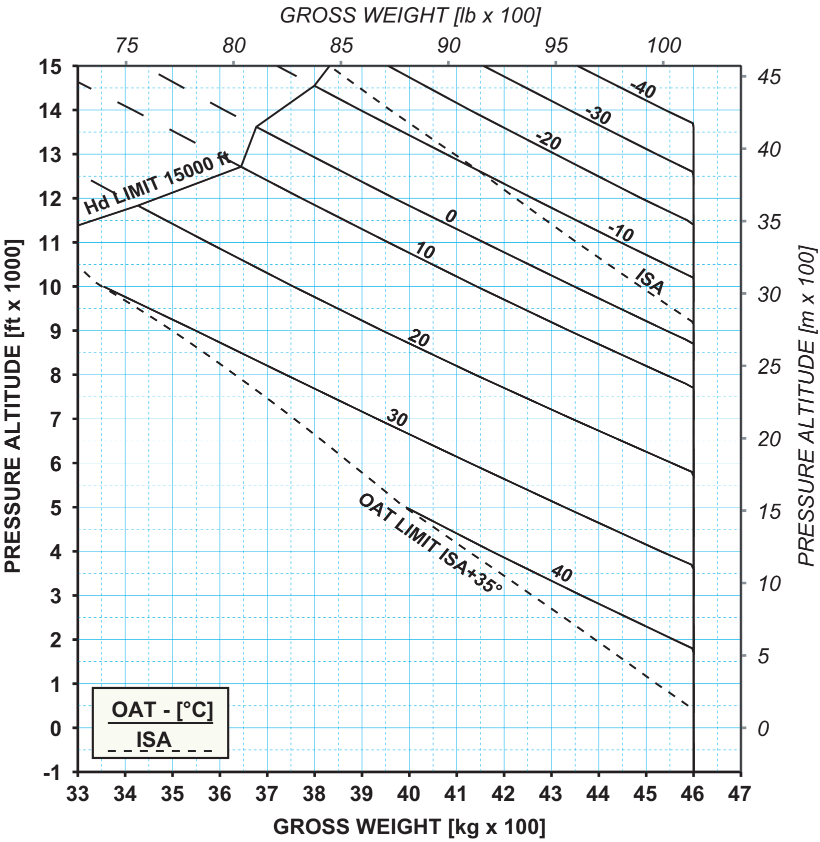
Figure Perf 90: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS ON - Up to 4600 kg

HVR ROC
PAC WIND

**HOVER CEILING OUT OF GROUND EFFECT**
**UNFACTORED HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
HEATER ON

ELECTRICAL LOAD: 75%
EAPS ON




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | 80 [177] | 247 [545] | 471 [1038] | 713 [1573] | 987 [2176] | 1216 [2681] | 1429 [3150] | 1650 [3638] | 1838 [4051] | 2042 [4503] |

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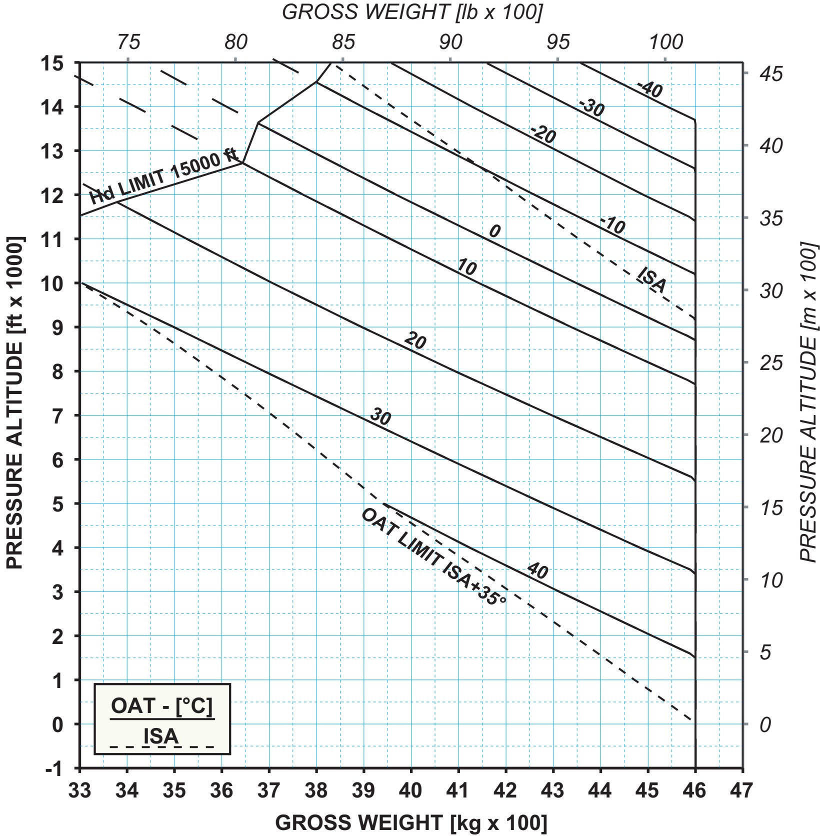
Figure Perf 91: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS ON - Heater ON - Up to 4600 kg

HOVER CEILING OUT OF GROUND EFFECT
UNFACTORED HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
ECS ON

ELECTRICAL LOAD: 75%
EAPS ON




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | 81 [178] | 247 [545] | 467 [1030] | 706 [1557] | 975 [2150] | 1217 [2683] | 1428 [3149] | 1647 [3632] | 1833 [4040] | 2035 [4487] |

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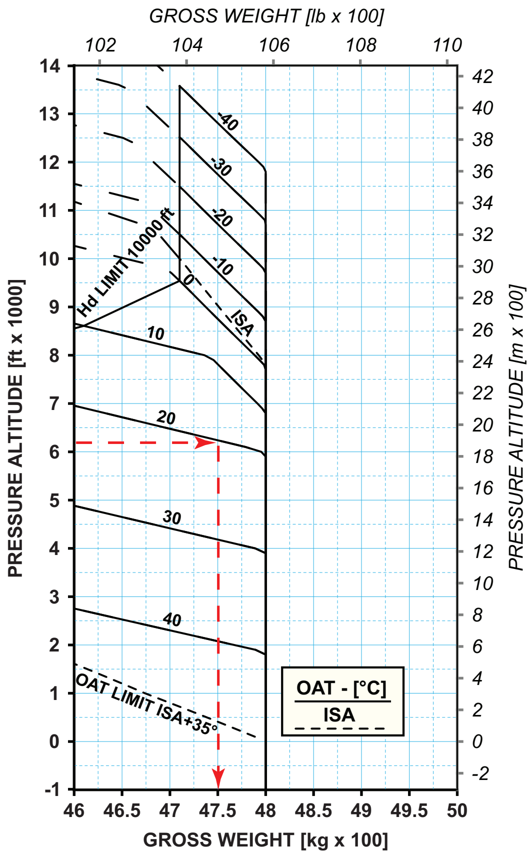
Figure Perf 92: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS ON - ECS ON - Up to 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **81 [179]** | **252 [555]** | **484 [1067]** | **741 [1633]** | **995 [2193]** | **1217 [2683]** | **1435 [3165]** | **1663 [3666]** | **1858 [4096]** | **2071 [4566]** |

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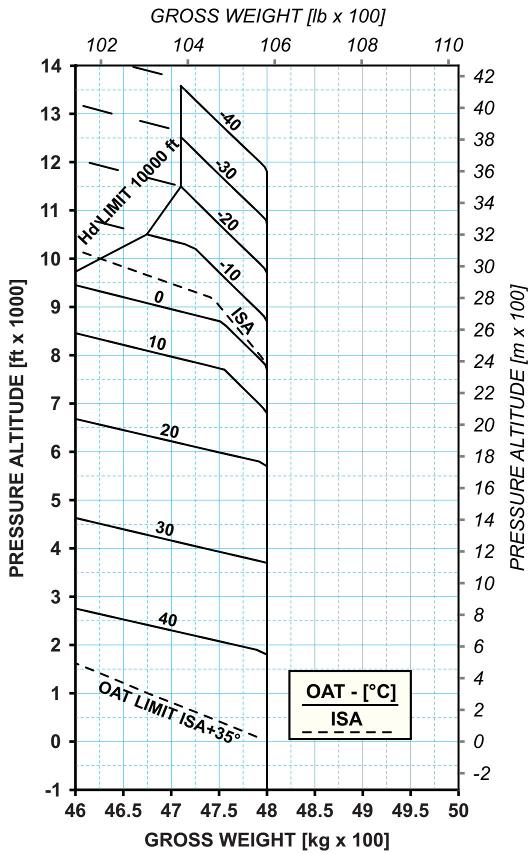
Figure Perf 93: Hover Ceiling OGE Unfactored Headwind - AEO TOP - Above 4600 kg

HVR ROC
PAC WIND

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
## AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
HEATER ON




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **81 [179]** | **252 [555]** | **484 [1067]** | **741 [1633]** | **995 [2193]** | **1217 [2683]** | **1435 [3165]** | **1663 [3666]** | **1858 [4096]** | **2071 [4566]** |

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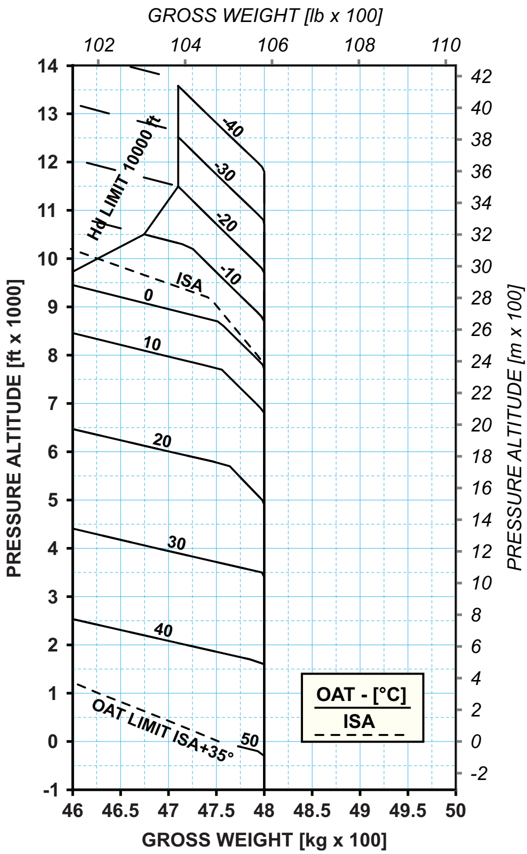
Figure Perf 94: Hover Ceiling OGE Unfactored Headwind - AEO TOP - Heater ON - Above 4600 kg

HVR ROC
PAC WIND

**HOVER CEILING OUT OF GROUND EFFECT**
**UNFACTORED HEADWIND**
**AEO TOP**

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
ECS ON




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **79** [174] | **248** [548] | **479** [1055] | **731** [1611] | **993** [2189] | **1215** [2678] | **1431** [3155] | **1657** [3653] | **1850** [4079] | **2061** [4543] |

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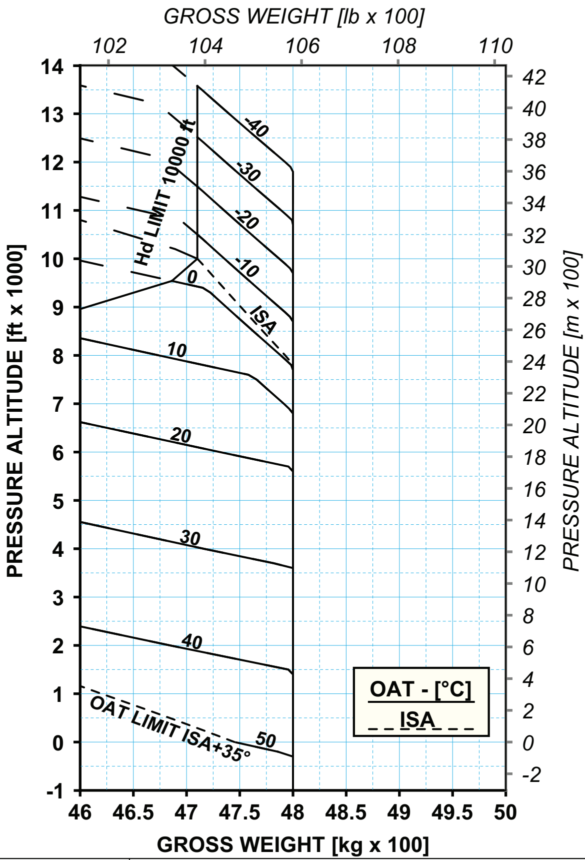
Figure Perf 95: Hover Ceiling OGE Unfactored Headwind - AEO TOP - ECS ON - Above 4600 kg

HVR ROC
PAC WIND

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
EAPS OFF




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **79 [173]** | **248 [546]** | **477 [1053]** | **728 [1606]** | **993 [2189]** | **1214 [2677]** | **1430 [3153]** | **1656 [3651]** | **1848 [4075]** | **2058 [4538]** |

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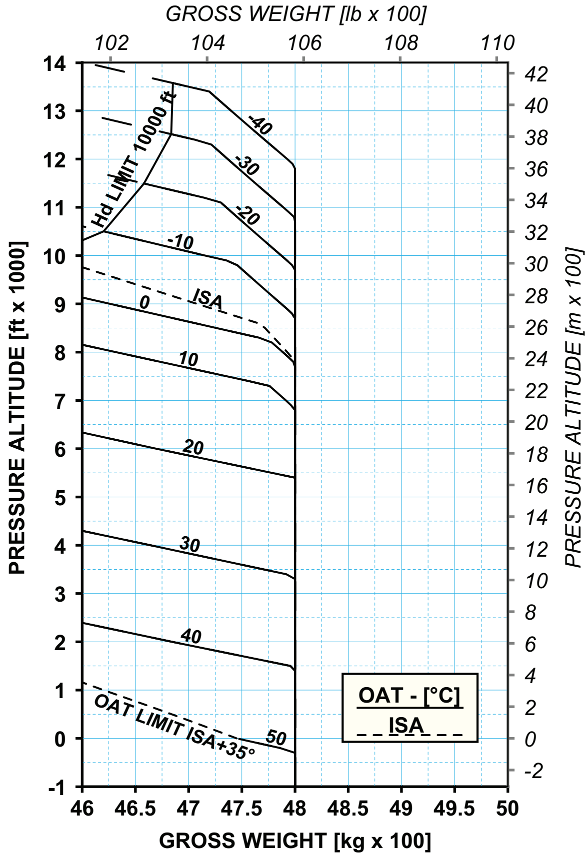
Figure Perf 96: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS OFF - Above 4600 kg

HVR ROC
PAC WIND

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
HEATER ON

ELECTRICAL LOAD: 75%
EAPS OFF




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **83 [183]** | **259 [571]** | **447 [986]** | **646 [1425]** | **863 [1903]** | **1102 [2430]** | **1363 [3005]** | **1630 [3593]** | **1792 [3951]** | **1970 [4343]** |

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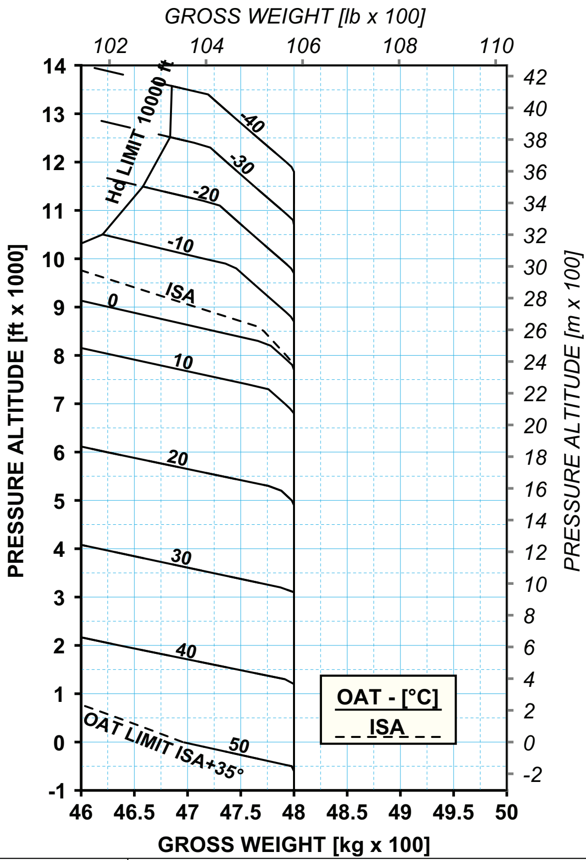
Figure Perf 97: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS OFF - Heater ON - Above 4600 kg

HVR ROC
PAC WIND

**HOVER CEILING OUT OF GROUND EFFECT**
**UNFACTORED HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE
ECS ON

ELECTRICAL LOAD: 75%
EAPS OFF




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **79 [175]** | **248 [546]** | **474 [1046]** | **721 [1591]** | **994 [2192]** | **1215 [2679]** | **1429 [3150]** | **1656 [3645]** | **1843 [4064]** | **2051 [4522]** |

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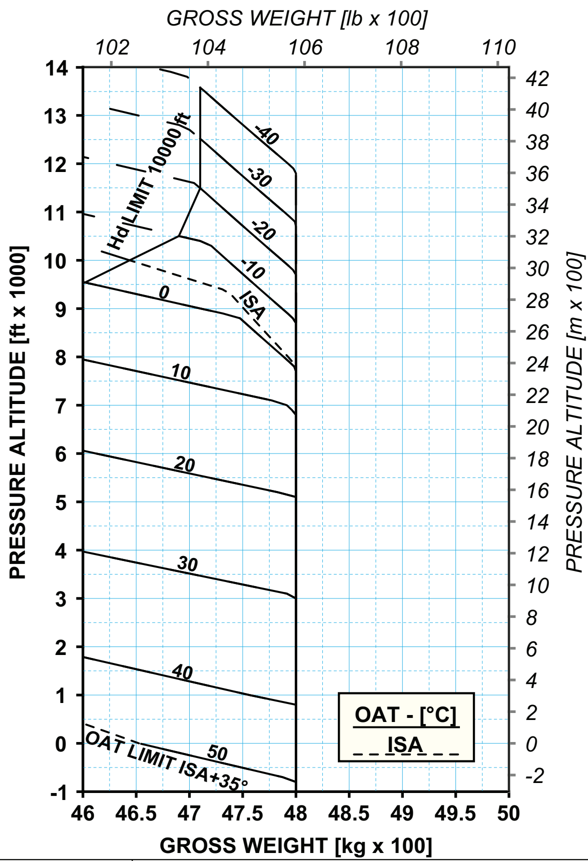
HVR ROC
PAC WIND

Figure Perf 98: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS OFF - ECS ON - Above 4600 kg

**HOVER CEILING OUT OF GROUND EFFECT**
**UNFACTORED HEADWIND**
AEO TOP

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
EAPS ON




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | 80 [177] | 247 [545] | 471 [1038] | 713 [1573] | 987 [2176] | 1216 [2681] | 1429 [3150] | 1650 [3638] | 1838 [4051] | 2042 [4503] |

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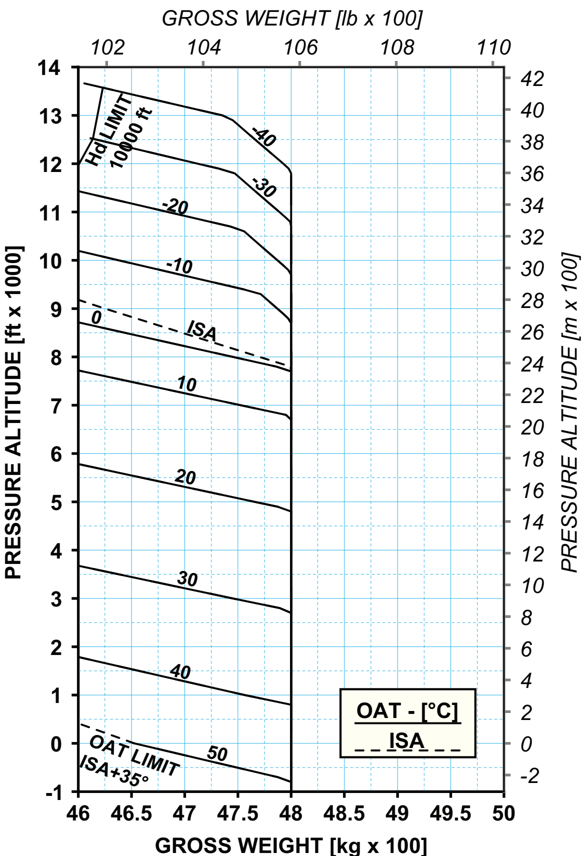
Figure Perf 99: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS ON - Above 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
HEATER ON

ELECTRICAL LOAD: 75%
EAPS ON




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **80 [177]** | **247 [545]** | **471 [1038]** | **713 [1573]** | **987 [2176]** | **1216 [2681]** | **1429 [3150]** | **1650 [3638]** | **1838 [4051]** | **2042 [4503]** |

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ICN-69-A-155130-G-A0126-00056-A-04-1

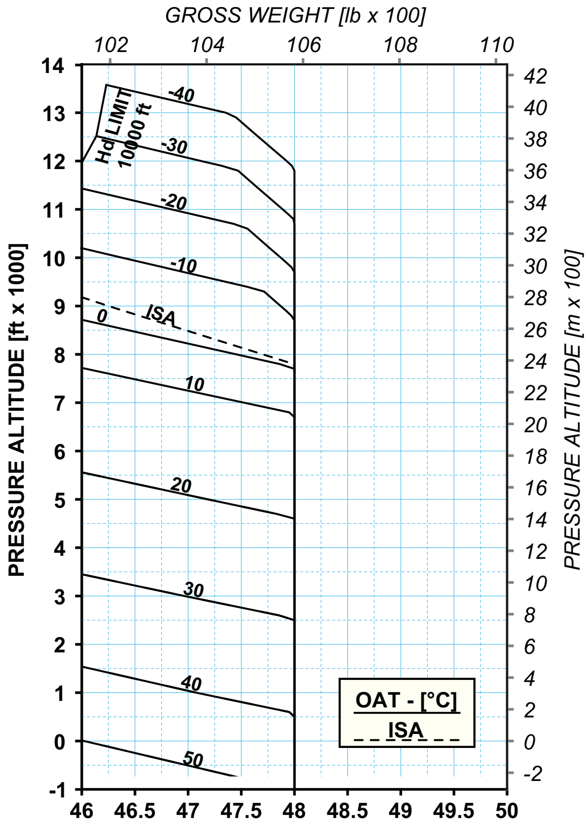
Figure Perf 100: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS ON - Heater ON - Above 4600 kg

HVR ROC
PAC WIND

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
ECS ON

ELECTRICAL LOAD: 75%
EAPS ON




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **81 [178]** | **247 [545]** | **467 [1030]** | **706 [1557]** | **975 [2150]** | **1217 [2683]** | **1428 [3149]** | **1647 [3632]** | **1833 [4040]** | **2035 [4487]** |

169F1580A007 Issue F

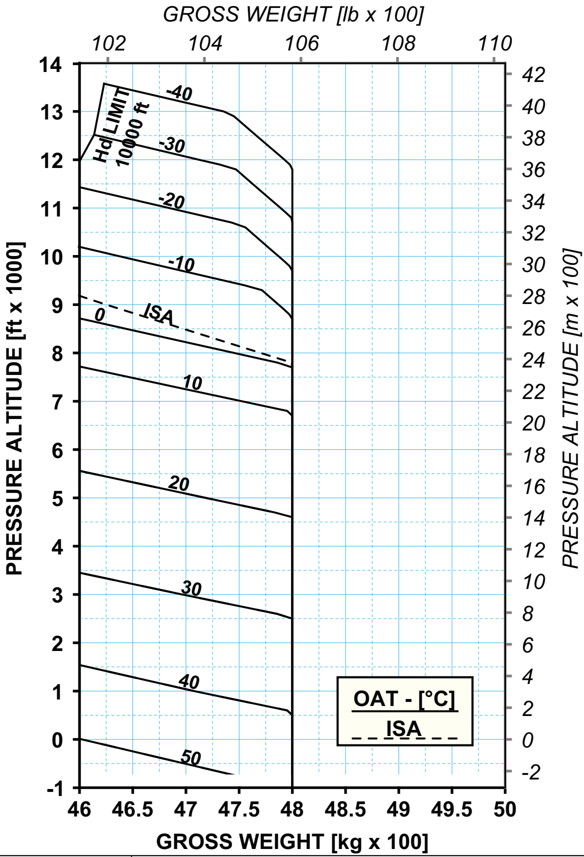
ICN-69-A-155130-G-A0126-00057-A-04-1

Figure Perf 101: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS ON - ECS ON - Above 4600 kg

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
AEO TOP

ROTOR SPEED: PLUS-MODE
ECS ON

ELECTRICAL LOAD: 75%
EAPS ON




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **81 [178]** | **247 [545]** | **467 [1030]** | **706 [1557]** | **975 [2150]** | **1217 [2683]** | **1428 [3149]** | **1647 [3632]** | **1833 [4040]** | **2035 [4487]** |

169F1580A007 Issue F

ICN-69-A-155130-G-A0126-00057-A-04-1

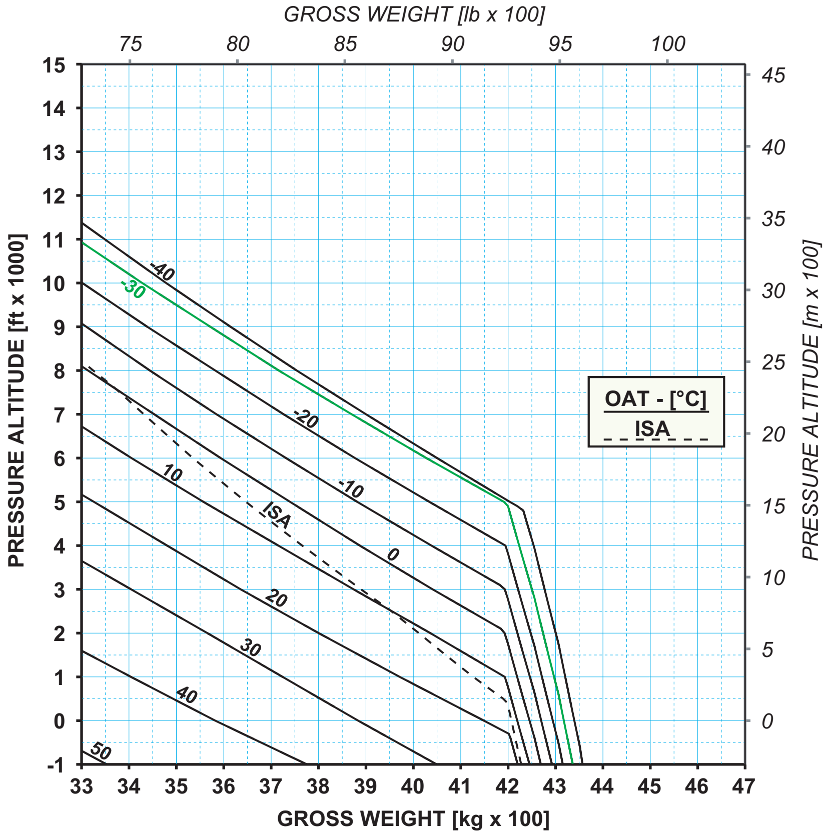
Figure Perf 102: Hover Ceiling OGE Unfactored Headwind - AEO TOP - EAPS ON - ECS ON

HVR ROC
PAC WIND

## HOVER CEILING OUT OF GROUND EFFECT
## UNFACTORED HEADWIND
OEI 2.5 min

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%
EAPS OFF




| | Unfactored headwind [kts] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| Unfactored increase of GROSS WEIGHT kg [lb] for unfactored headwind [kts] | **56 [123]** | **194 [427]** | **340 [749]** | **519 [1143]** | **717 [1582]** | **955 [2106]** | **1185 [2613]** | **1381 [3045]** | **1577 [3477]** | **1800 [3969]** |

169F1580A004 Issue D

ICN-69-A-155203-G-A0126-00038-A-04-1

Figure Perf 103: Hover Ceiling OGE Unfactored Headwind - OEI 2.5 min - EAPS OFF

HVR ROC
PAC WIND

## RATE OF CLIMB

The climb performance shown is based on flight test results and covers a range of gross weights from 3200 kg to the Maximum Gross Weight of 4600 kg. Rate of Climb performance is given at $V_Y$.

The charts for All Engines Operating AEO conditions are presented Take-Off Power (TOP) and Maximum Continuous Power (MCP) with two different level of electrical loads:

— Electrical load: 75% means that an electrical load of 75% on each DC generator has been included.

— Electrical load: 25% means that an electrical load of 25% on each DC generator has been included.

The charts for One Engine Inoperative (OEI) are presented for OEI 2.5 min power and OEI Continuous Power with two different electrical loads.

— Electrical load: 100% means that an electrical load of 100% on remaining DC generator has been included.

— Electrical load: 75% means that an electrical load of 75% on remaining DC generator has been included.

**Note**

Care should be taken, when using and interpolating between the OAT curves, that the correct curves are being used.

HVR ROC
PAC WIND

## RATE OF CLIMB ALL ENGINES OPERATIVE (AEO)

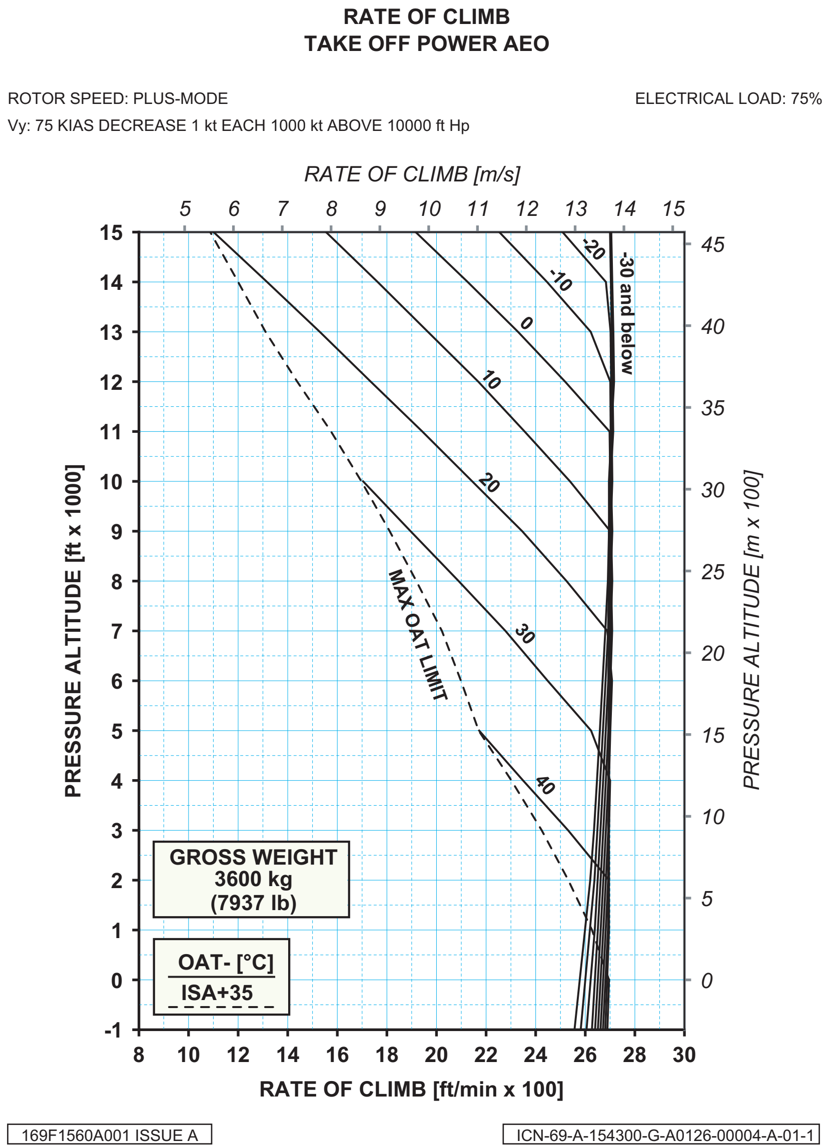
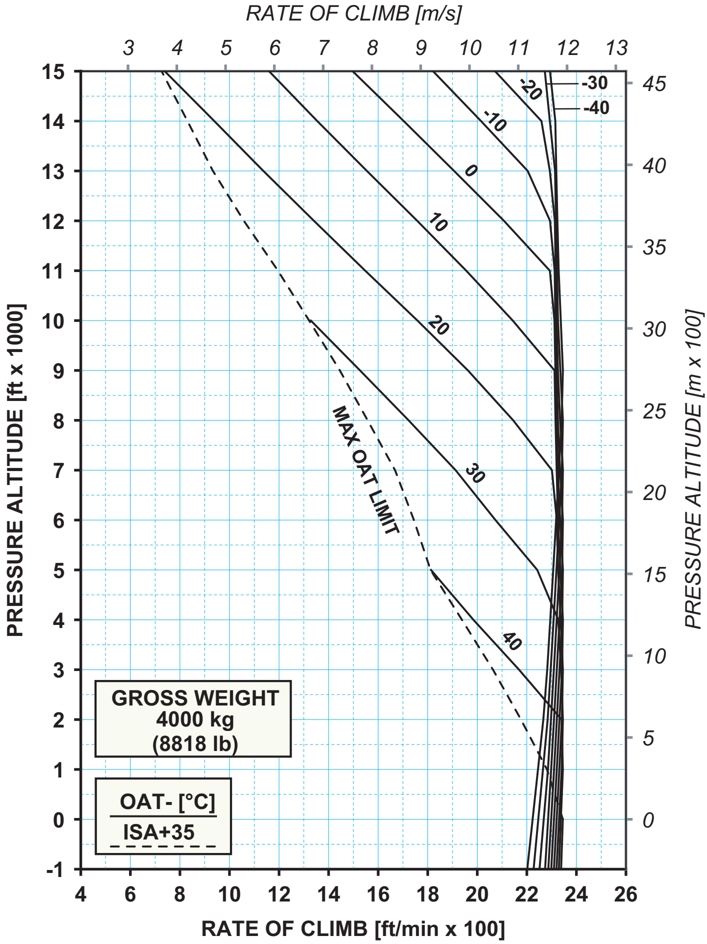



Figure Perf 104: ROC at AEO Take-Off Power - Gross Weight 3600 kg

**RATE OF CLIMB**
**TAKE OFF POWER AEO**

ROTOR SPEED: PLUS-MODE
ELECTRICAL LOAD: 75%
Vy: 75 KIAS DECREASE 1 kt EACH 1000 ft ABOVE 10000 ft Hp




169F1560A001 ISSUE A

ICN-69-A-154300-G-A0126-00006-A-01-1

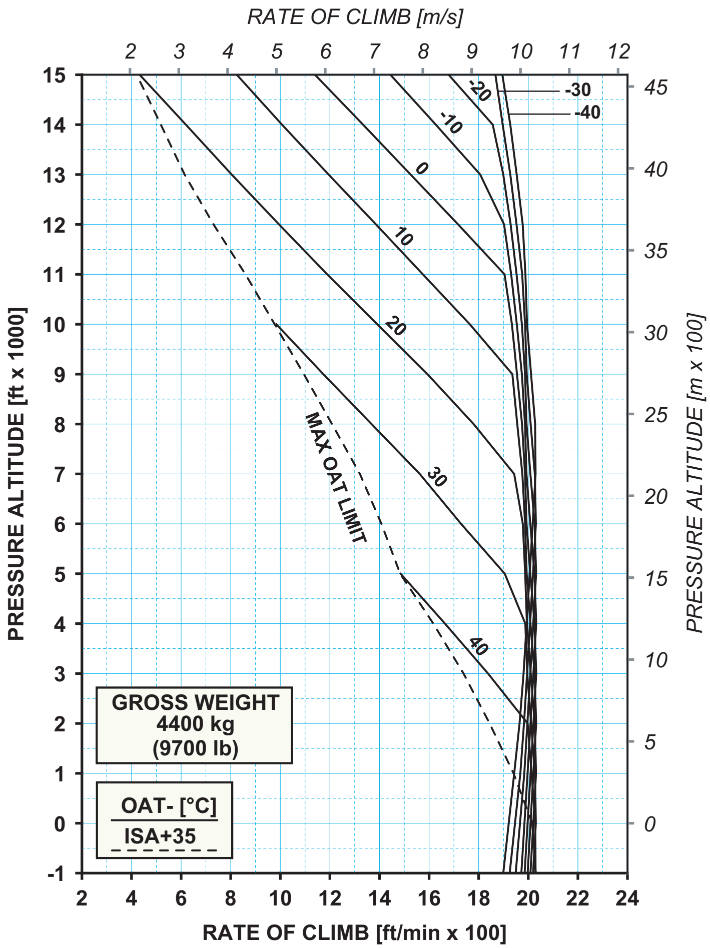
Figure Perf 105: ROC at AEO Take-Off Power - Gross Weight 4000 kg

## RATE OF CLIMB
## TAKE OFF POWER AEO

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%

Vy: 75 KIAS DECREASE 1 kt EACH 1000 ft ABOVE 10000 ft Hp




169F1560A001 ISSUE A

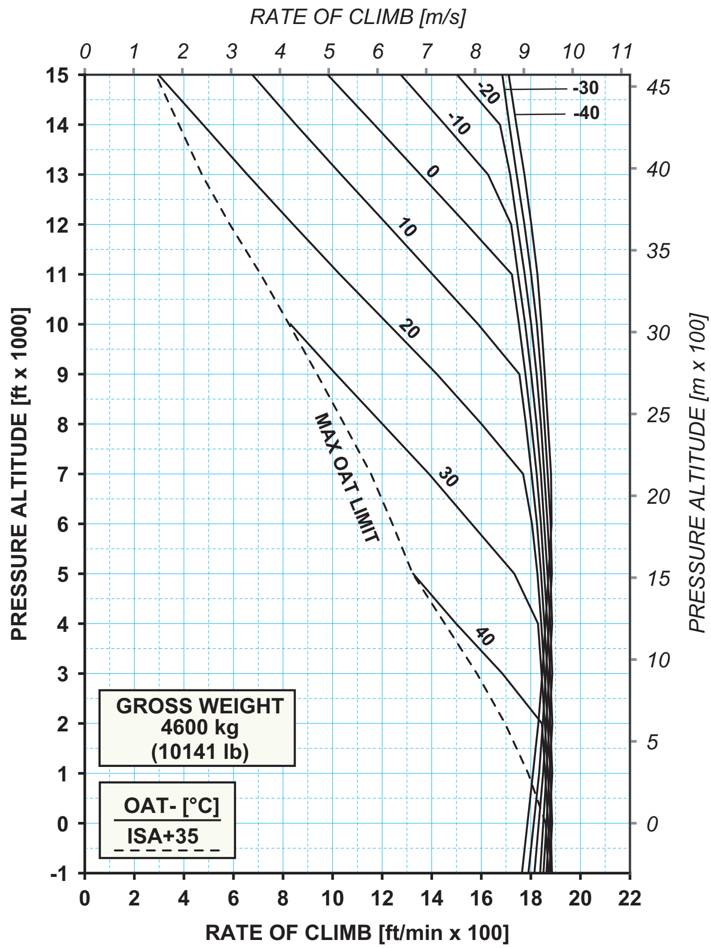
ICN-69-A-154300-G-A0126-00008-A-01-1

Figure Perf 106: ROC at AEO Take-Off Power - Gross Weight 4400 kg

HVR ROC
PAC WIND

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: PLUS-MODE
ELECTRICAL LOAD: 75%
Vy: 75 KIAS DECREASE 1 kt EACH 1000 ft ABOVE 10000 ft Hp




169F1560A001 ISSUE A

ICN-69-A-154300-G-A0126-00009-A-01-1

HVR ROC
PAC WIND

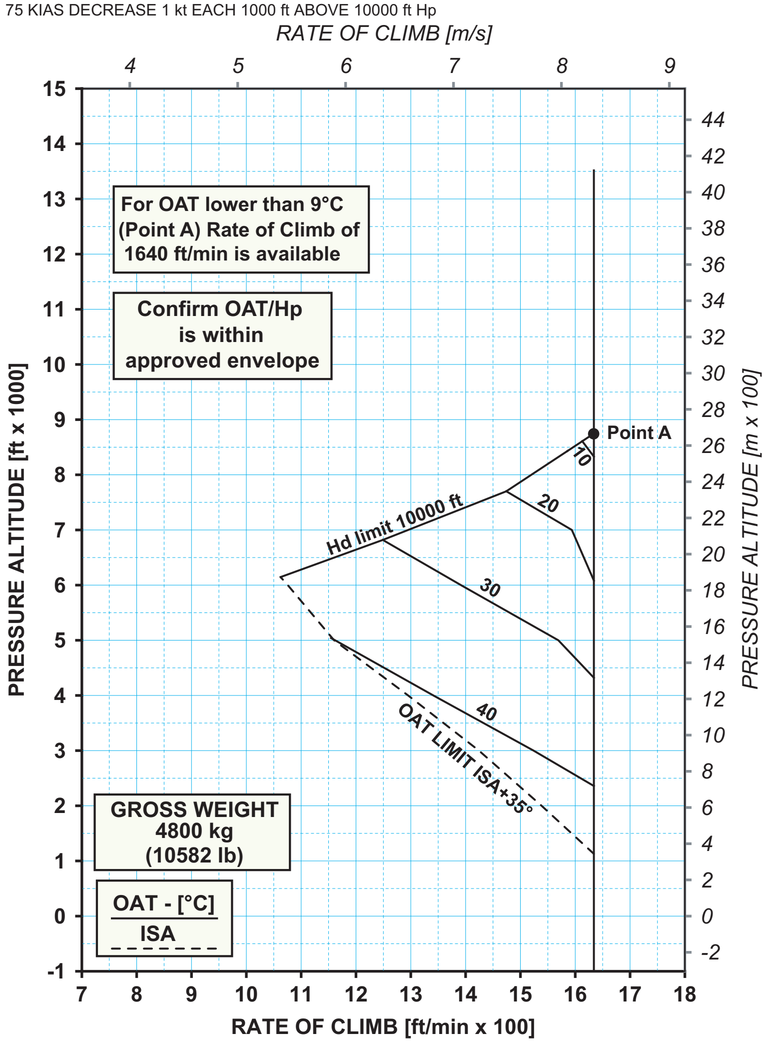
Figure Perf 107: ROC at AEO Take-Off Power - Gross Weight 4600 kg

RATE OF CLIMB
TAKE OFF POWER AEO

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%

Vy: 75 KIAS DECREASE 1 kt EACH 1000 ft ABOVE 10000 ft Hp



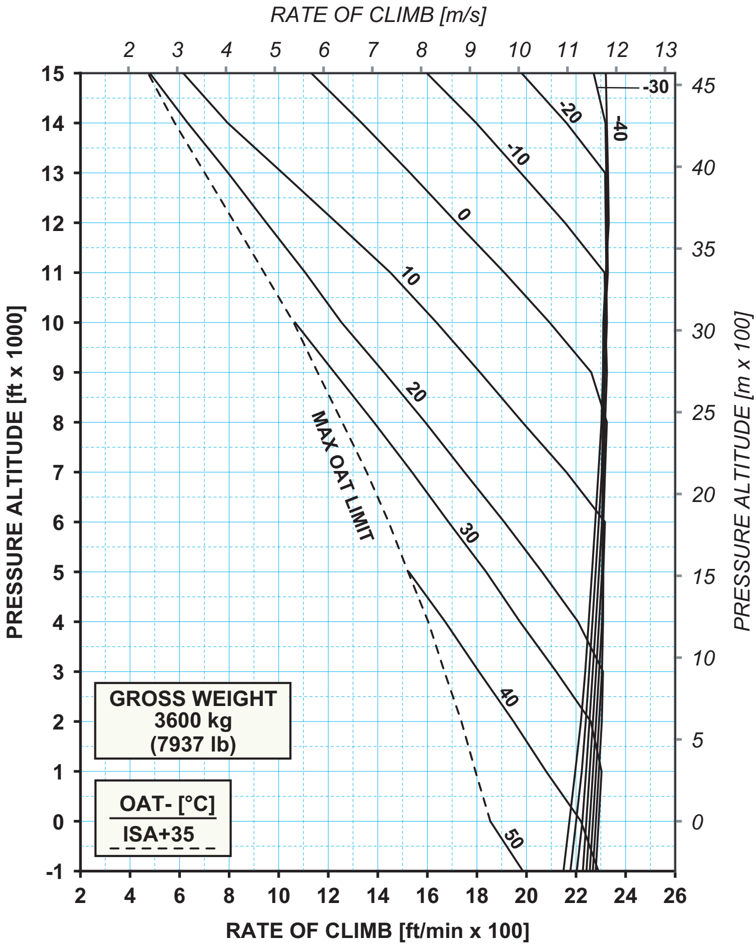

169F1580A007 Issue D

ICN-69-A-155330-G-A0126-00001-A-02-1

Figure Perf 108: ROC at AEO Take-Off Power - Gross Weight 4800 kg

**RATE OF CLIMB**
**MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: PLUS-MODE
ELECTRICAL LOAD: 75%
Vy: 75 KIAS DECREASE 1 kt EACH 1000 ft ABOVE 10000 ft Hp




169F1560A001 ISSUE A
ICN-69-A-154300-G-A0126-00013-A-01-1

Figure Perf 109: ROC at AEO Maximum Continuous Power - Gross Weight 3600 kg

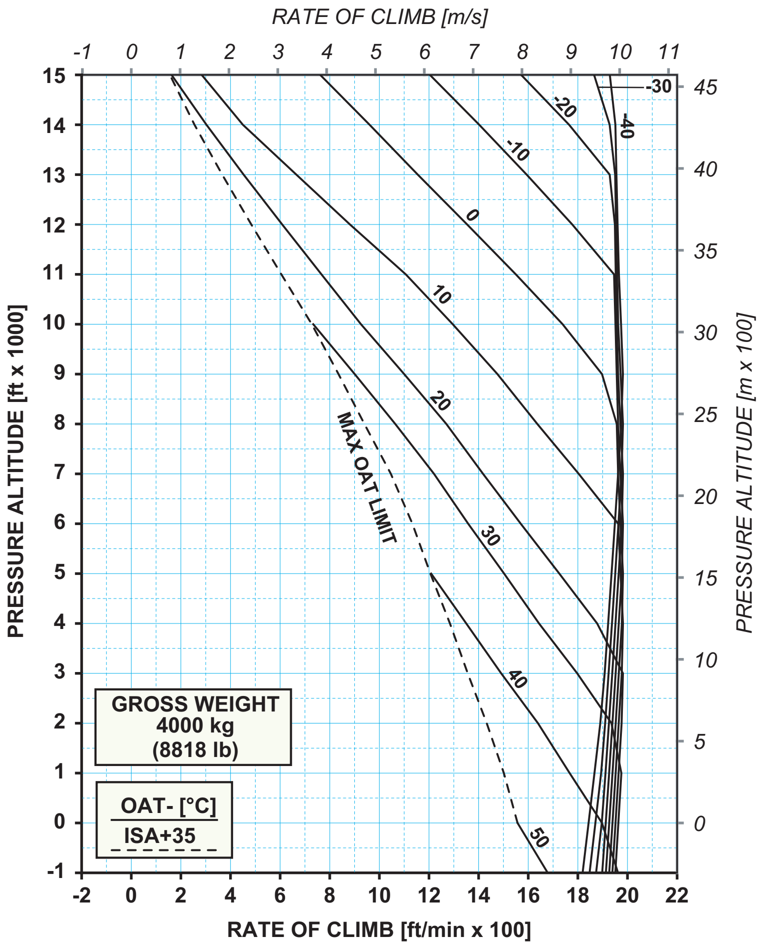
HVR ROC
PAC WIND

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%

Vy: 75 KIAS DECREASE 1 kt EACH 1000 ft ABOVE 10000 ft Hp



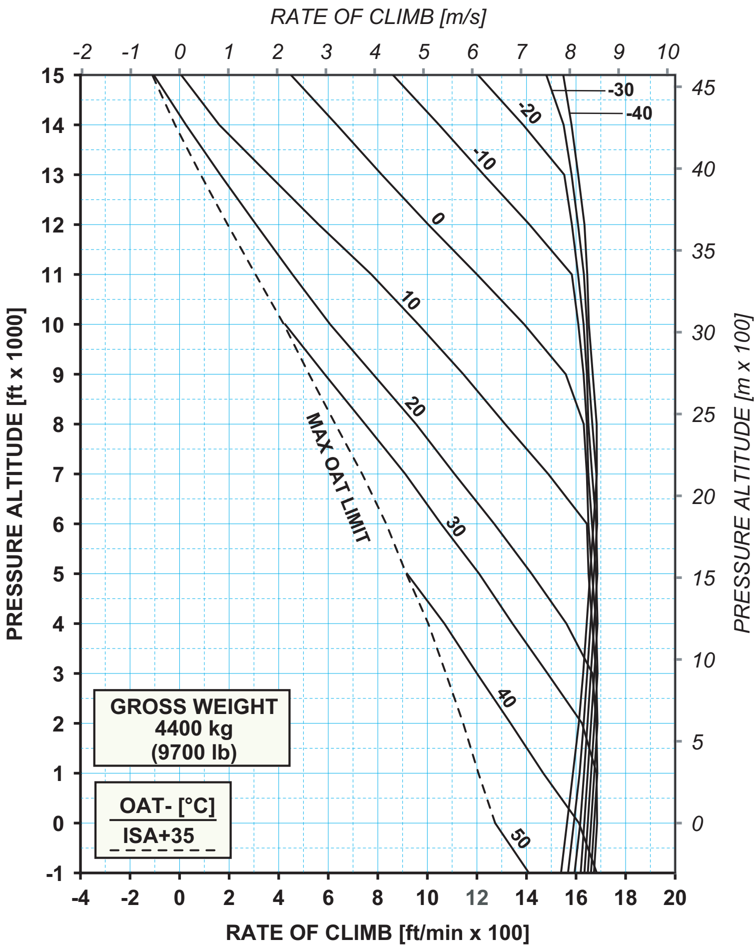

169F1560A001 ISSUE A

ICN-69-A-154300-G-A0126-00015-A-01-1

Figure Perf 110: ROC at AEO Maximum Continuous Power - Gross Weight 4000 kg

## RATE OF CLIMB
## MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: PLUS-MODE
ELECTRICAL LOAD: 75%
Vy: 75 KIAS DECREASE 1 kt EACH 1000 ft ABOVE 10000 ft Hp




169F1560A001 ISSUE A

ICN-69-A-154300-G-A0126-00017-A-01-1

Figure Perf 111: ROC at AEO Maximum Continuous Power - Gross Weight 4400 kg

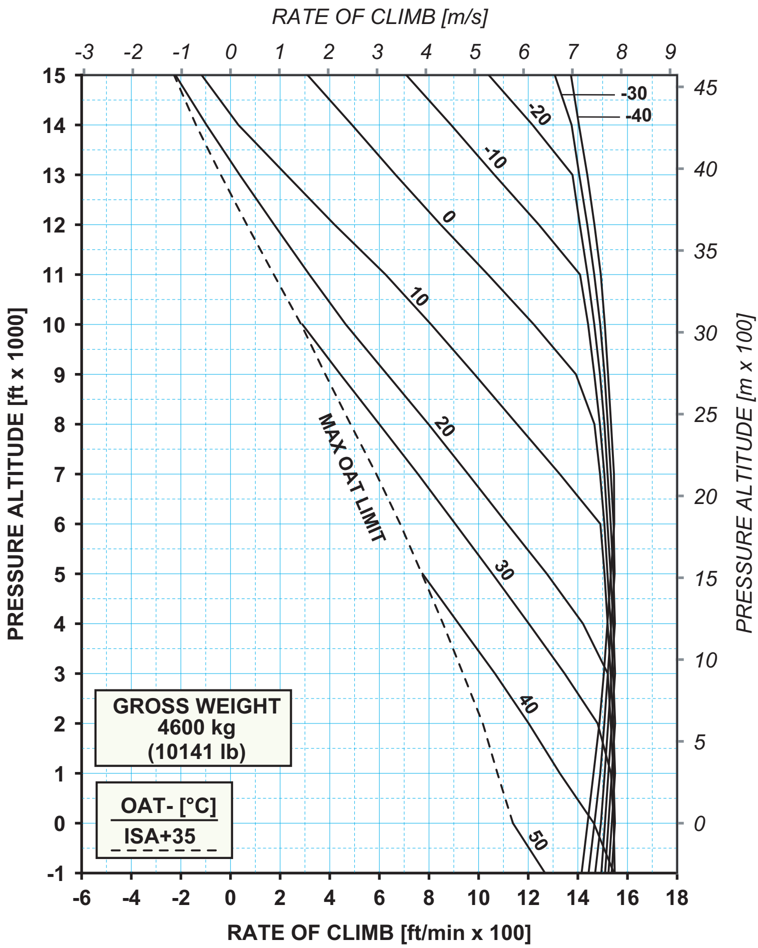
HVR ROC
PAC WIND

**RATE OF CLIMB**
**MAXIMUM CONTINUOUS POWER AEO**

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%

Vy: 75 KIAS DECREASE 1 kt EACH 1000 ft ABOVE 10000 ft Hp




169F1560A001 ISSUE A

ICN-69-A-154300-G-A0126-00018-A-01-1

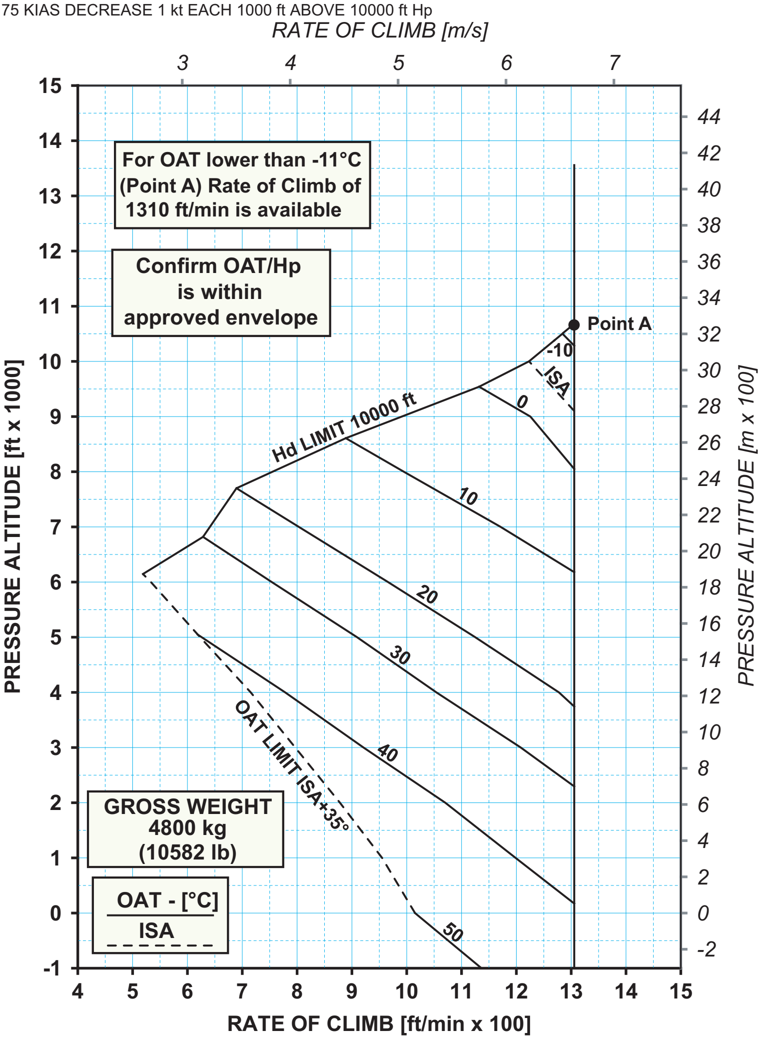
Figure Perf 112: ROC at AEO Maximum Continuous Power - Gross Weight 4600 kg

RATE OF CLIMB
MAXIMUM CONTINUOUS POWER AEO

ROTOR SPEED: PLUS-MODE

ELECTRICAL LOAD: 75%

Vy: 75 KIAS DECREASE 1 kt EACH 1000 ft ABOVE 10000 ft Hp




169F1580A007 Issue D

ICN-69-A-155330-G-A0126-00002-A-02-1

Figure Perf 113: ROC at AEO Maximum Continuous Power - Gross Weight 4800 kg

HVR ROC
PAC WIND

## RATE OF CLIMB ONE ENGINE INOPERATIVE (OEI)

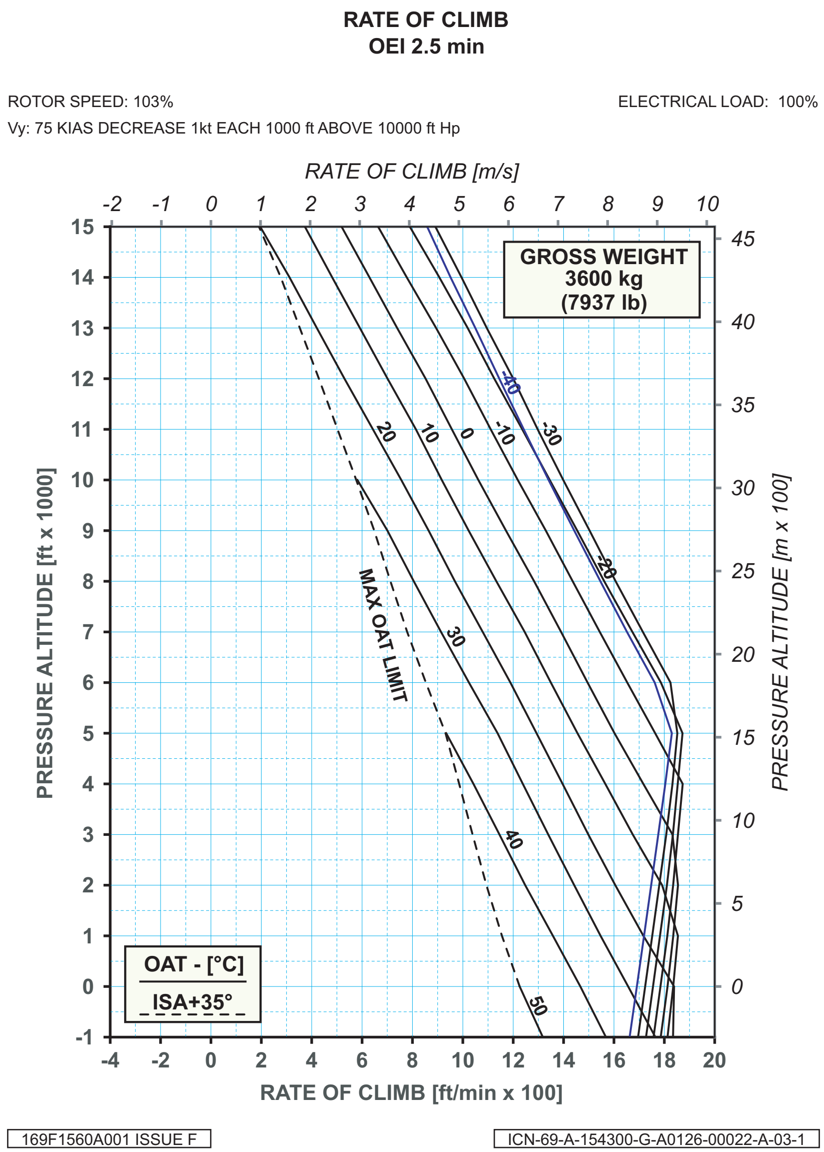
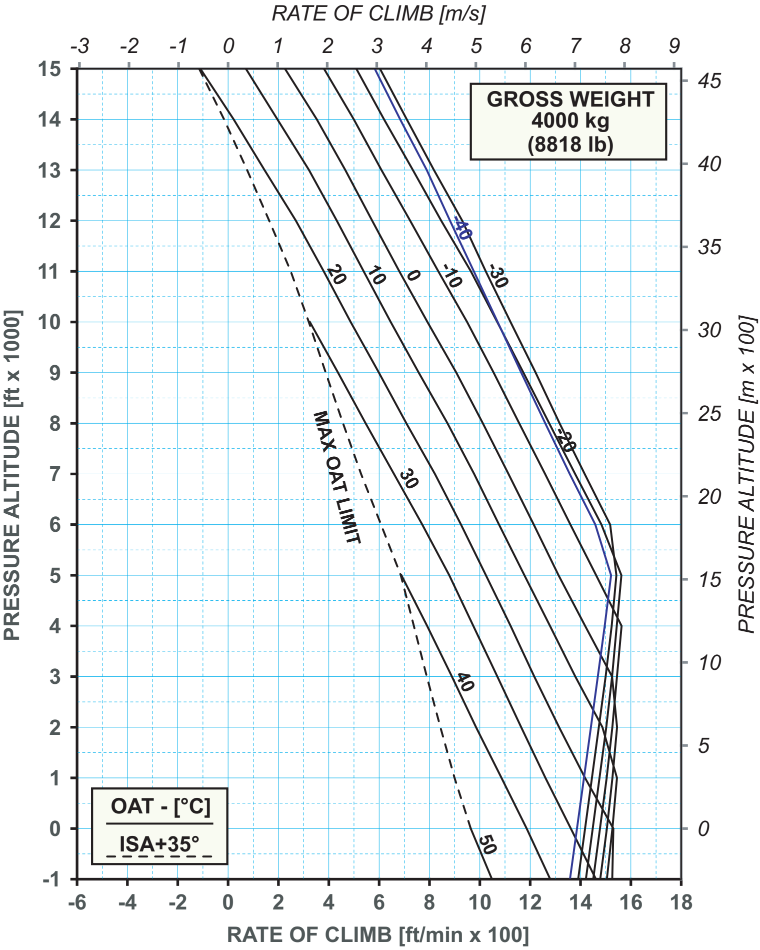



Figure Perf 114: ROC at 2.5 min OEI Power - Gross Weight 3600 kg

**RATE OF CLIMB**
**OEI 2.5 min**

ROTOR SPEED: 103%
ELECTRICAL LOAD: 100%
Vy: 75 KIAS DECREASE 1kt EACH 1000 ft ABOVE 10000 ft Hp

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ICN-69-A-154300-G-A0126-00024-A-03-1



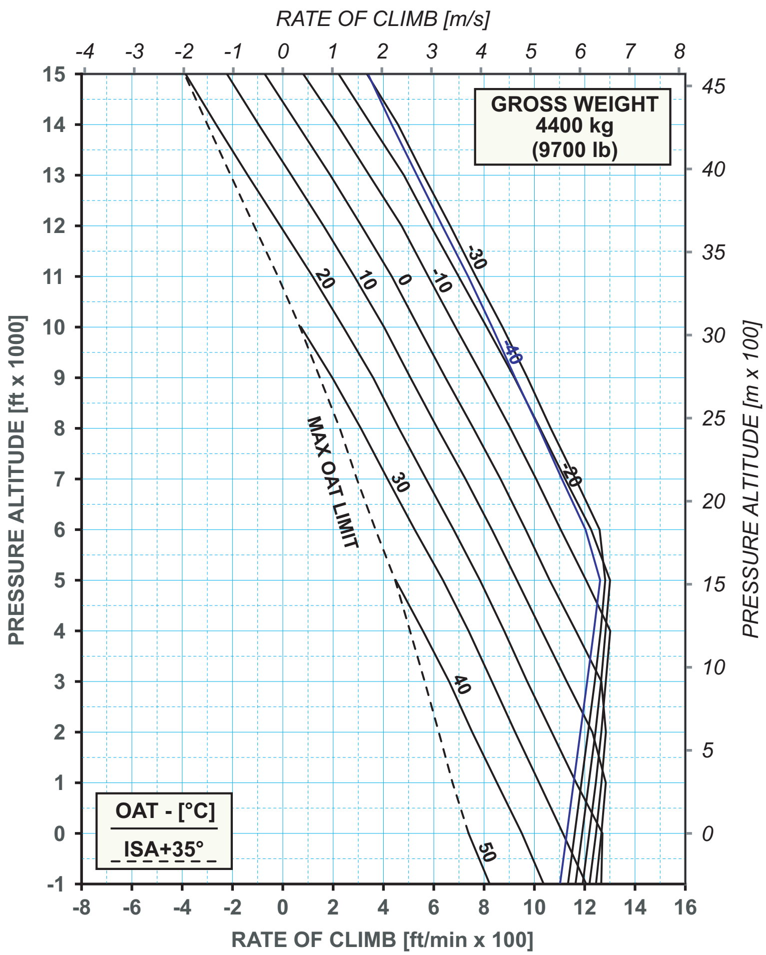
Figure Perf 115: ROC at 2.5 min OEI Power - Gross Weight 4000 kg

## RATE OF CLIMB
## OEI 2.5 min

ROTOR SPEED: 103%

ELECTRICAL LOAD: 100%

Vy: 75 KIAS DECREASE 1kt EACH 1000 ft ABOVE 10000 ft Hp




169F1560A001 ISSUE F

ICN-69-A-154300-G-A0126-00026-A-03-1

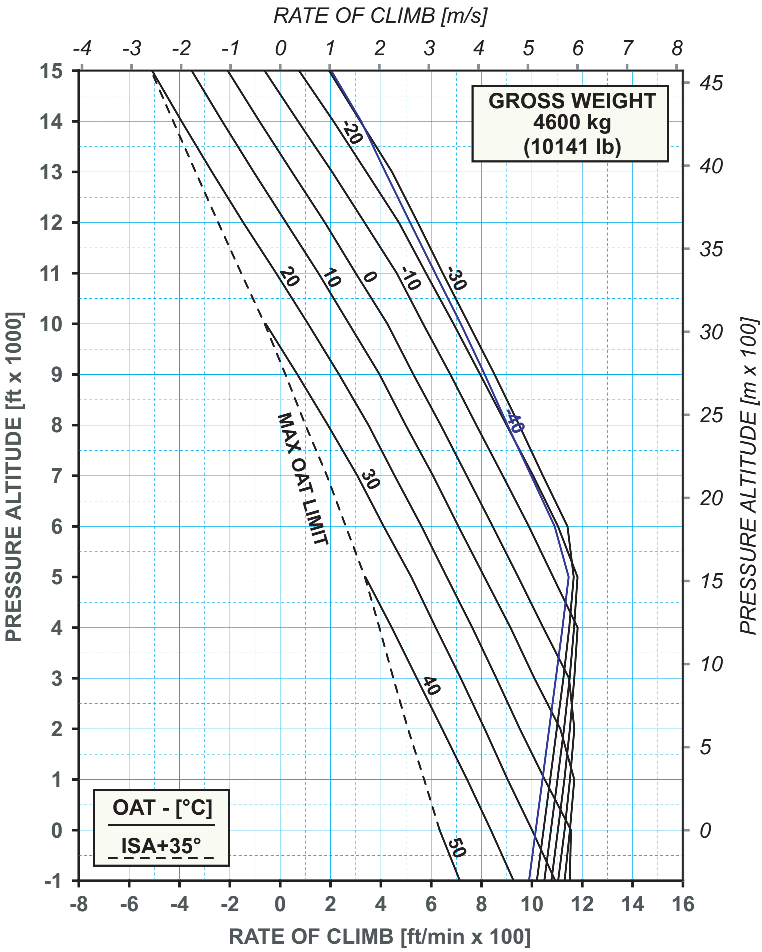
Figure Perf 116: ROC at 2.5 min OEI Power - Gross Weight 4400 kg

HVR ROC
PAC WIND

**RATE OF CLIMB**
**OEI 2.5 min**

ROTOR SPEED: 103%
Vy: 75 KIAS DECREASE 1kt EACH 1000 ft ABOVE 10000 ft Hp

ELECTRICAL LOAD: 100%




169F1560A001 ISSUE F

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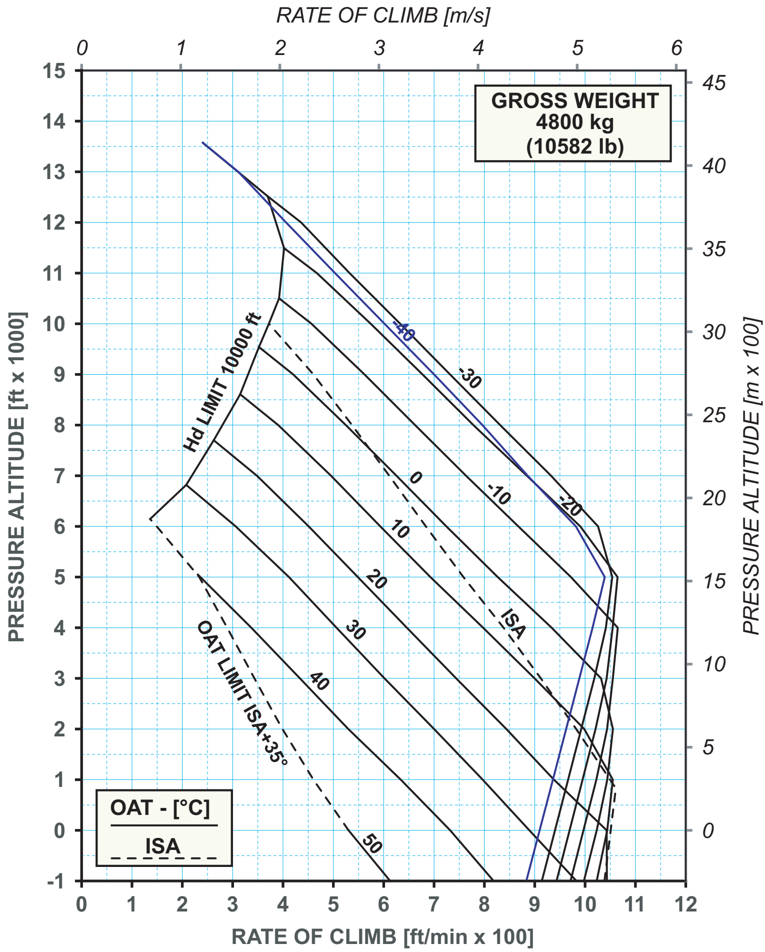
Figure Perf 117: ROC at 2.5 min OEI Power - Gross Weight 4600 kg

HVR ROC
PAC WIND

**RATE OF CLIMB**
**OEI 2.5 min**

ROTOR SPEED: 103%
ELECTRICAL LOAD: 100%
Vy: 75 KIAS DECREASE 1kt EACH 1000 ft ABOVE 10000 ft Hp




169F1580A007 ISSUE E

ICN-69-A-155330-G-A0126-00005-A-03-1

Figure Perf 118: ROC at 2.5 min OEI Power - Gross Weight 4800 kg

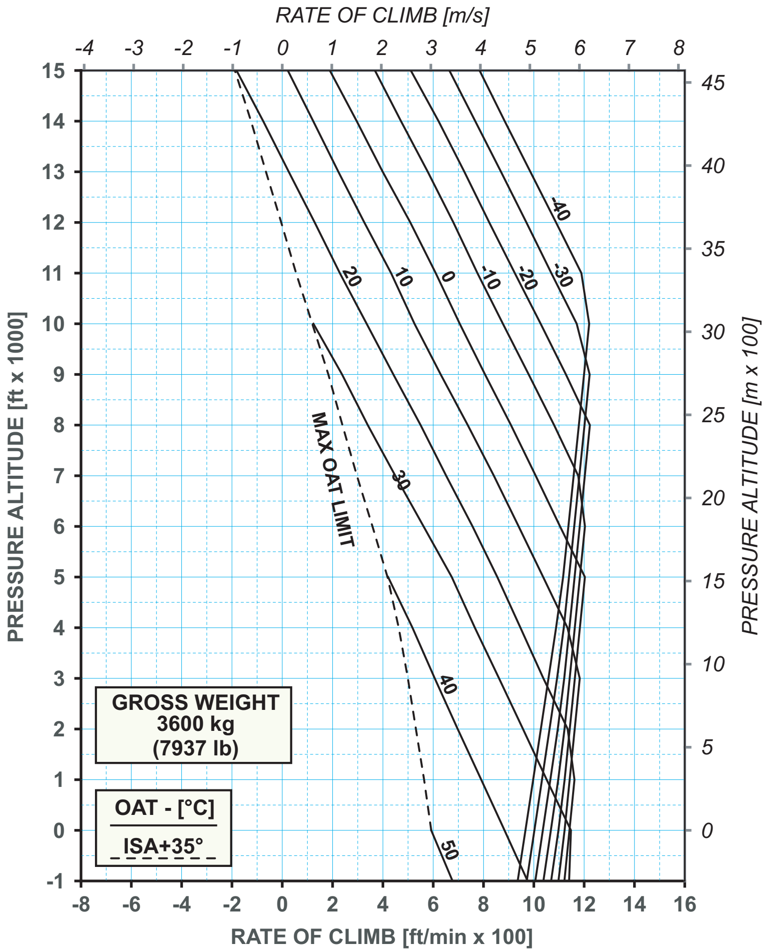
HVR ROC
PAC WIND

## RATE OF CLIMB
## OEI CONTINUOUS POWER

ROTOR SPEED: 103%

ELECTRICAL LOAD: 75%

Vy: 75 KIAS DECREASE 1kt EACH 1000 ft ABOVE 10000 ft Hp




169F1560A001 ISSUE F

ICN-69-A-154300-G-A0126-00049-A-03-1

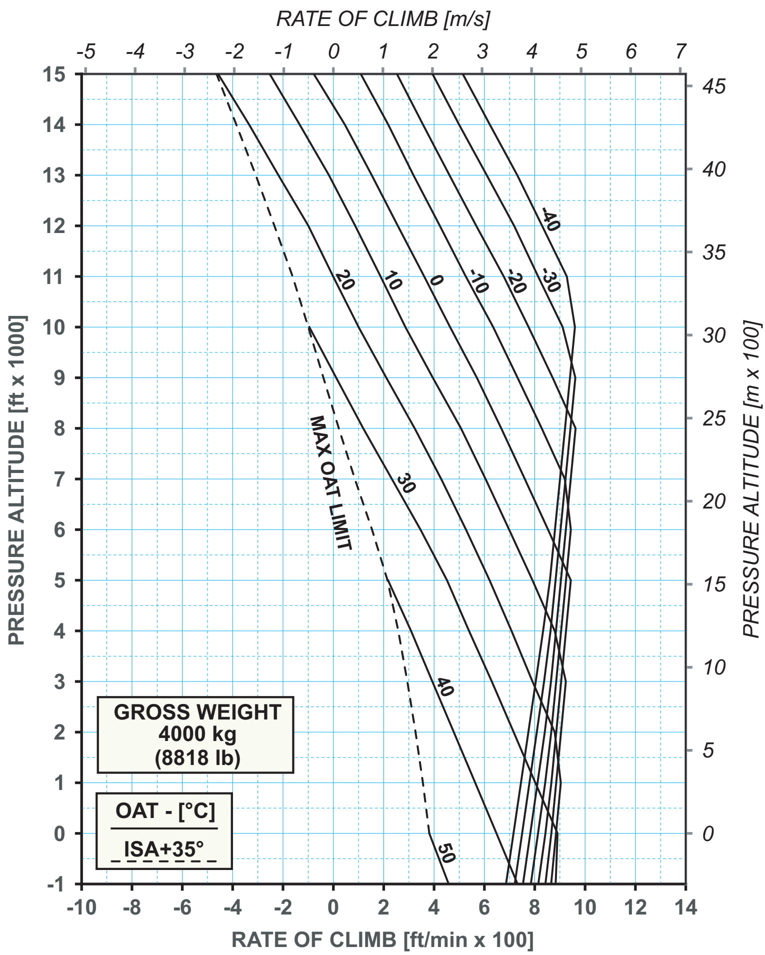
Figure Perf 119: ROC at Continuous OEI Power - Gross Weight 3600 kg

## RATE OF CLIMB
## OEI CONTINUOUS POWER

ROTOR SPEED: 103%

ELECTRICAL LOAD: 75%

Vy: 75 KIAS DECREASE 1kt EACH 1000 ft ABOVE 10000 ft Hp




169F1560A001 ISSUE F

ICN-69-A-154300-G-A0126-00051-A-03-1

Figure Perf 120: ROC at Continuous OEI Power - Gross Weight 4000 kg

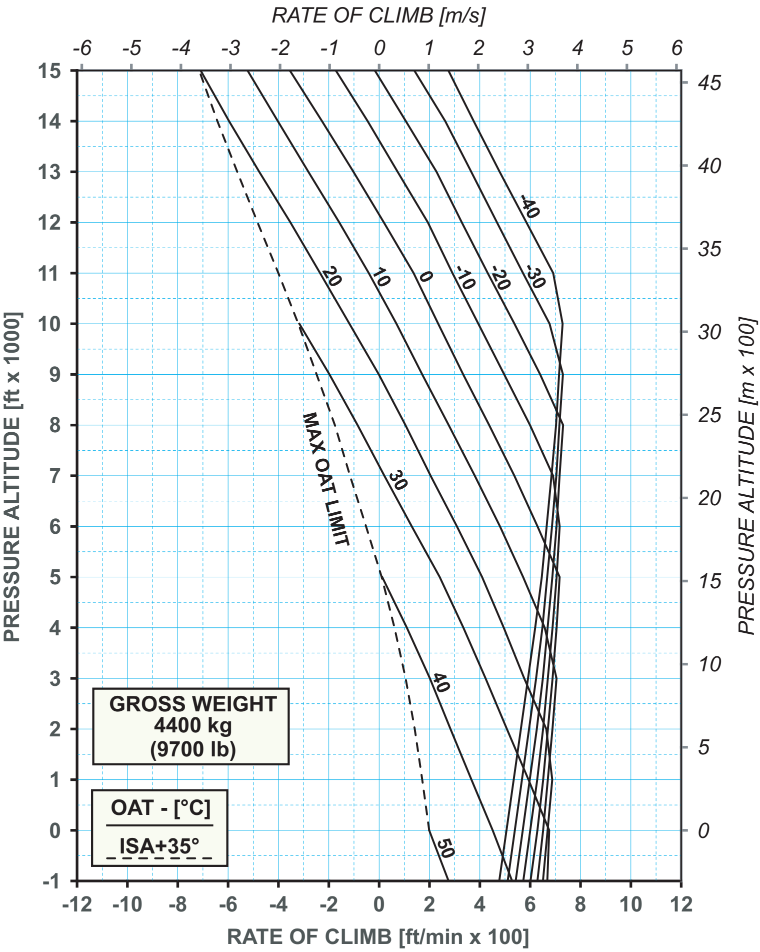
HVR ROC
PAC WIND

## RATE OF CLIMB
## OEI CONTINUOUS POWER

ROTOR SPEED: 103%

ELECTRICAL LOAD: 75%

Vy: 75 KIAS DECREASE 1kt EACH 1000 ft ABOVE 10000 ft Hp

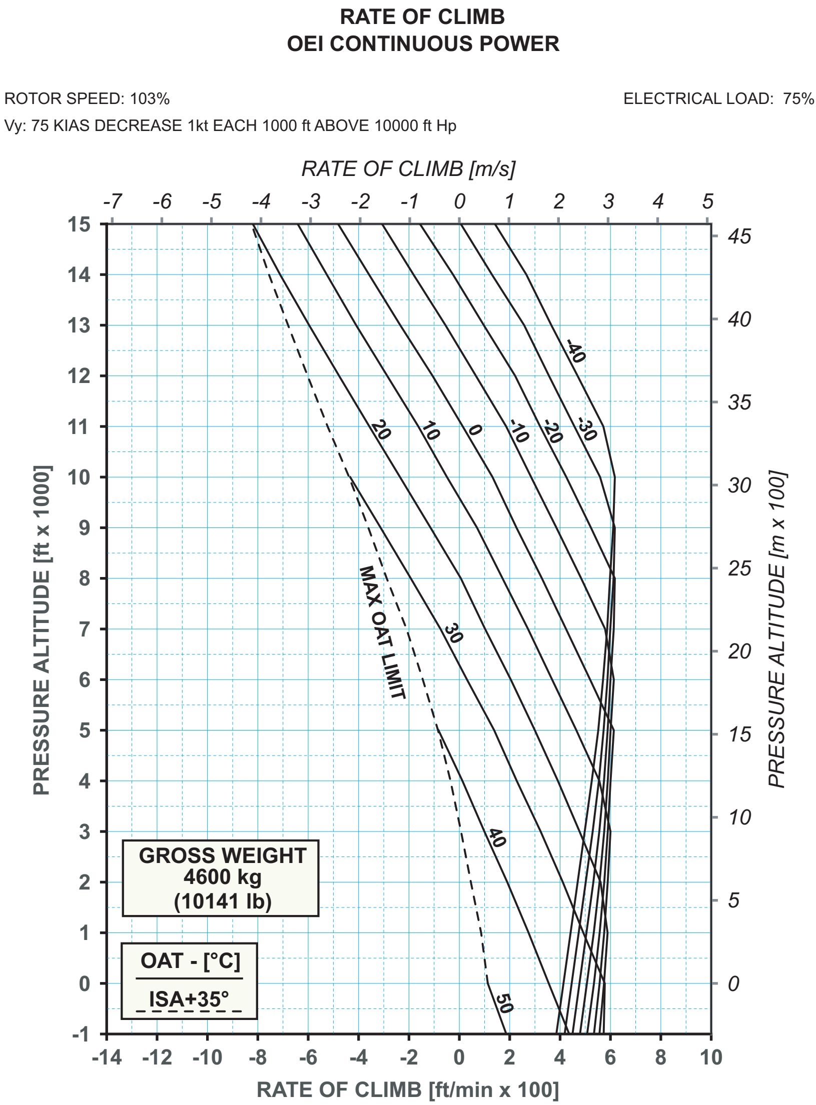



169F1560A001 ISSUE F

ICN-69-A-154300-G-A0126-00053-A-03-1



Figure Perf 121: ROC at Continuous OEI Power - Gross Weight 4400 kg



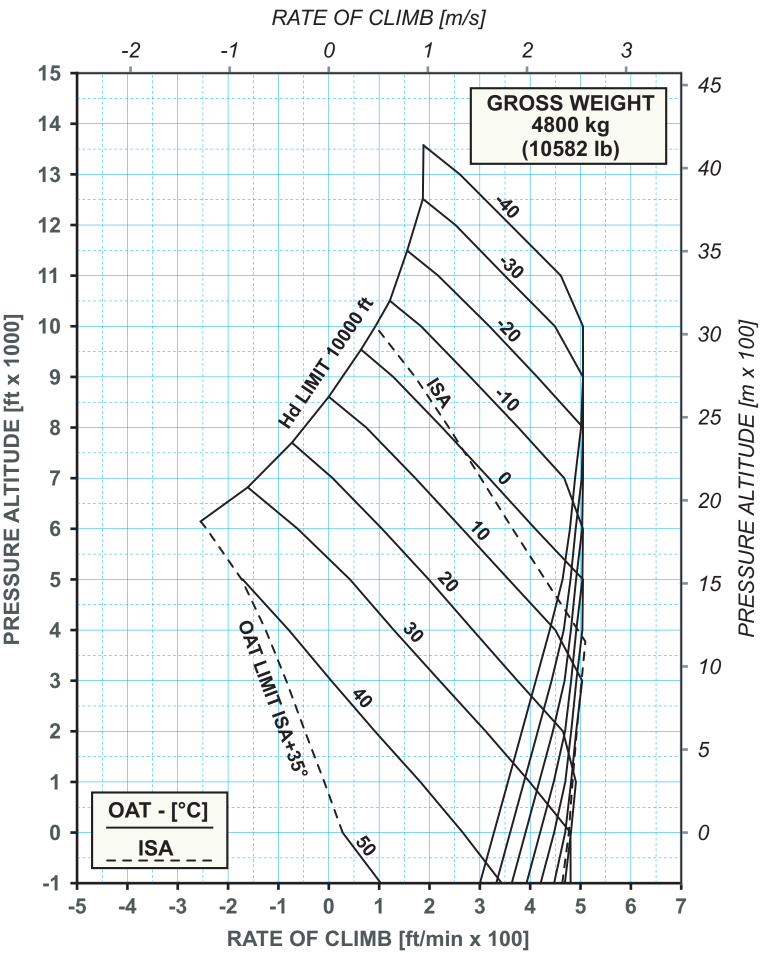

169F1560A001 ISSUE F

ICN-69-A-154300-G-A0126-00054-A-03-1

Figure Perf 122: ROC at Continuous OEI Power - Gross Weight 4600 kg

## RATE OF CLIMB
## OEI CONTINUOUS POWER

ROTOR SPEED: 103%
ELECTRICAL LOAD: 75%
Vy: 75 KIAS DECREASE 1kt EACH 1000 ft ABOVE 10000 ft Hp




169F1580A007 ISSUE E

ICN-69-A-155330-G-A0126-00006-A-03-1

Figure Perf 123: ROC at Continuous OEI Power- Gross Weight 4800 kg

# WIND COMPONENT CHART

## WIND COMPONENT CHART

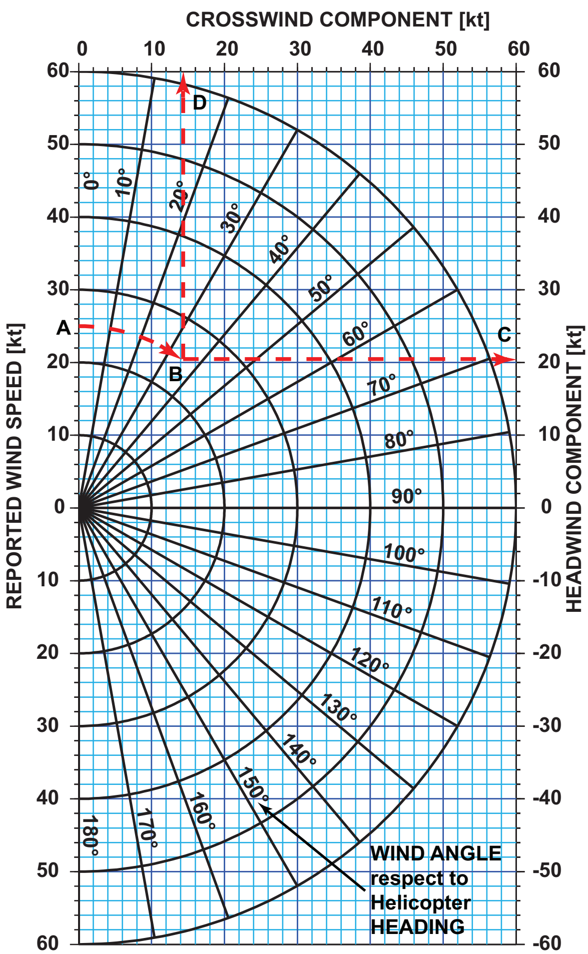



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Figure Perf 124: Wind Component Chart

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# QUICK REFERENCE HANDBOOK

## VOLUME AP8.0

**ISSUE 3 : 14 October 2021**
**Rev. 1: 30 June 2022**

**Source Document :**

RFM Document No. 169F0290X001
ISSUE 3 **:** 19 July 2021 - Rev. 1: 30 June 2022

**QRH Volume AP8.0 is for aircraft fitted with Avionic Software Phase 8.0 only.**
**For aircraft fitted with Avionic Software Phase 4.0 refer to Volume AP4.0.**
**For aircraft fitted with Avionic Software Phase 5.0 refer to Volume AP5.0.**
**For aircraft fitted with Avionic Software Phase 6.0 refer to Volume AP6.0.**

**Continuing airworthiness criteria for the AW169 is developed and maintained by Leonardo S.p.A., who is the holder of the type certificate in the state of design.**

Leonardo S.p.A. Helicopters
Customer Support & Services - Italy
Via Giovanni Agusta, 520
21017 Cascina Costa di Samarate (VA) - Italy
Tel.: (+39) 0331 225.036 - Fax.: (+39) 0331 225.988
e-mail: gestpubs@leonardo.com

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# RECORD OF REVISIONS

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| Rev. 1 | 30-06-2022 | AW169-RFM Issue 3 Rev. 1 | - |
| | | | |

**Note**

For revisions of the RFM which do not affect the QRH no revision of the QRH is carried out.

# RECORD OF EFFECTIVE PAGES

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| LOF-1 thru LOF-14 | 1 |
| 3 and 4 | 0 |
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| 167 thru 186 | 0 |
| 187 | 1 |
| 188 and 189 | 0 |
| 190 thru 192 | 1 |
| 193 thru 200 | 0 |
| 201 and 202 | 1 |
| 203 thru 214 | 0 |
| 215 and 216 | 1 |
| 217 thru 242 | 0 |

# QRH GENERAL INFORMATION

## CONTENT

The QRH consists of 4 sections which have been grouped into two parts. The first part combines Limitations, Normal Procedures and Performance Data. The second part contains Emergency/Malfunction Procedures. The two parts are mounted back-to-back to allow quick access to either.

The various sections/systems are colour tabbed for ease and quickness of locating the page required.

A Index of Content is included at the start of each of the two parts.

## FLIGHT MANUAL

The QRH does not replace the RFM, however, all information contained in the QRH is based on the RFM. To operate the aircraft safely and efficiently, the RFM must be read and thoroughly understood.

If any conflict should exist between this QRH and the Approved RFM the RFM shall take precedence.

## QRH LIMITATIONS

The limitations have been copied from the RFM, however any conflict between the QRH and Approved RFM Limitations the Limitations in the RFM take precedence.

## QRH NORMAL PROCEDURES

The normal procedures have been copied simplified from the RFM, CAT A and CAT B procedures have been included.

## QRH PERFORMANCE

The performance data includes Hd. Conversion Table and Power Assurance Charts.

## QRH EMERGENCY AND MALFUNCTION PROCEDURE

The procedures have been copied from the RFM and grouped into systems. The systems are then highlighted with RED tabs for Emergency Procedures, AMBER tabs for Malfunction Procedures, which have been placed in alphabetical order.

Additionally a table of Warning and Caution messages and the appropriate page number for the procedure is included at the start of each section (Emergency/Malfunction) to aid in rapid location of the correct page.

## TEMPORARY REVISIONS

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

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