LIMITS	GENERAL, TYPE OF OPER, MIN CREW, WEIGHT, CG LIMITATIONS	GEN LIMITS
	ENGINE, FUEL, LUBRICANTS, HYD & SYSTEM LIMITATIONS	ENG/APU SYST
	AVIONICS & FMS LIMITATIONS	AVIONICS FMS
	CHARTS & DIAGRAMS	CHARTS DIAGS
	MISCELLANEOUS KITS (if applicable)	
NORMAL PROCEDURES	GENERAL, FLIGHT PLANNING, EXTERNAL & INTERNAL CHECKS	EXT/INT CHECKS
	ENG PRE-START, ABORT START DRY MOTOR & ENG START (APU)	ENG START
	TAXIING, PRE TAKE-OFF, TAKE-OFF CAT A/B	TAXI T-O CAT A/B
	IN-FLIGHT PROCEDURES	IN FLIGHT
	APPROACH, LANDING CAT A/B	APPR LAND
	POST LANDING & SHUTDOWN APU	POST LD SHT DN
	SUPPLEMENTARY PROCEDURES	SUPP PROC
	FLIGHT MANAGEMENT SYSTEM OPERATION	FD/FMS OPER
	ECDU & MCDU MESSAGES	MSGS
	MISCELLANEOUS KITS (if applicable)	
	TBD	
PERF	Hd CHART, CONVS CHART, POWER ASSURANCE, CONTROL HOGE	Gen PAC Hvr Cont,
	HOVER CEILING, ROC, FUEL CONSUMP, WIND COMPONENT CHART	Hvr Roc FL Cons
		TOC, REC of REVS

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.

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 re-commended.
"**May**" has been used only when application of a procedure is optional.
"**Will**" has been used only to indicate future events, not 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.

LIMITATIONS

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LIMITATIONS

GENERAL

This QRH includes:

- Information from RFM Sections 1, 2, 3 and limited data from Section 4.
- Optional Supplement 1 - ECS, 2 - Forced Ventilation, 4 - CAT A, 6 - Ditching Configurations, 21 - Weight Extension 8600 kg, 22 - Extended Range and 24 - Automatic Search Modes, 53 - RNP APCH with LPV/LP Minima, 58 - GLS GAST-C Approaches.

TYPES OF OPERATION

CAT B and CAT A operations. CAT A Take Off and Landing can be carried out from the right or left hand seat.

See Basic Flight Manual for further information.

MINIMUM FLIGHT CREW

See Basic Flight Manual or appropriate Supplement.

When CAT A Take Off or Landing is carried out from left hand seat and for Offshore/Elevated Helideck operations minimum flight crew is 2 pilots.

NUMBER OF OCCUPANTS

The total number of occupants, including the crew, shall not exceed:

— Maximum number of occupants in cabin shall not exceed 19

— Each occupant must have a seat and seat belt.

— Refer to Basic RFM Section 5, appropriate Supplements, and Section 6, Weight and Balance, for Approved cabin layouts.

— Seats may be removed from the approved cabin configurations respecting the requirements found for each layout in Section 6 of the Basic RFM or appropriate Supplement.

— After any cabin layout change the new empty weight and C of G position must be determined.

WEIGHT AND CENTER OF GRAVITY LIMITATIONS

MAXIMUM WEIGHT

Maximum gross weight for towing .... 8600 kg

Maximum gross weight for taxiing .... 8650 kg

Maximum gross weight for CAT B Take-Off/Landing...................... 8600 kg

Refer to CAT B WAT Limits charts for HIGE Take-Off/Landing with zero wind: .... Figure 1-9 & Figure 1-10

Refer to CAT B WAT Limits charts for Rolling Take-Off with zero wind .... Figure 1-11 &Figure 1-12

Maximum gross weight for CAT B Take-Off/ Landing with crosswind refer HIGE Controllability... Figure 1-17 to Figure 1-20

Maximum gross weight for HOGE with Wind/Ground/ Airspeed Azimuth controllability as defined inFigure 1-29 .... Figure 1-21 to Figure 1-28

MAXIMUM WEIGHT FOR CABIN CONFIGS UP TO 9 PAX SEATS

Maximum gross weight for CAT B Take Off/Landing .... Figure 1-13 to Figure 1-16

CAT A WEIGHT LIMITATIONS

Vertical Take Off and Landing .... Figure 1-30 & Figure 1-31

Ground Heliport Shallow Landing......................... Figure 1-32 & Figure 1-33

Clear Area Take Off and Landing .... Figure 1-34 & Figure 1-35

Offshore/Elevated Helideck Take Off .... Figure 1-37 & Figure 1-38

Offshore/Elevated Helideck Landing.................... Figure 1-39 & Figure 1-40

CAT A 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.

MINIMUM WEIGHT

Minimum flight/rotor running gross weight .... 5400 kg

Minimum flight weight for Hd less than -5000 ft .... 6000 kg

CENTER OF GRAVITY

Longitudinal limits .... See Figure 1-1

Lateral limits .... See Figure 1-2

AIRSPEED LIMITATIONS

Vne (Power ON, OEI/Power OFF) .... See Figure 1-7, Figure 1-8

Maximum airspeed with PI (TQ) above 100% .... 90 KIAS

Maximum airspeed in sideward or rearward flight .... See Figure 1-29

Maximum allowable tailwind and crosswind........................ See Figure 1-29

Maximum landing gear operating airspeed (Vlo) .... 150 KIAS or Vne if less

Maximum landing gear extended airspeed (Vle) .... 150 KIAS or Vne if less

Minimum airspeed for flight under IFR (Vmini) .... 50 KIAS

Maximum airspeed for IFR approach .... 150 KIAS

Maximum airspeed with one AP failed .... 110 KIAS

Maximum airspeed for operation of windscreen wipers .... 140 KIAS

Minimum airspeed in autorotation .... 60 KIAS

CABIN DOOR OPEN LIMITATIONS

Maximum airspeed for opening/closing cabin doors .... 50 KIAS

Maximum lateral windspeed for opening/closing cabin doors ....20 knots

Maximum wind/ground/airspeed with one or both cabin doors locked open .... 50 KIAS

If Kit Stop Passenger Door P/N 8G5212F00211 fitted:

Maximum airspeed for opening doors or with one or both doors locked open .... 80 KIAS

Maximum airspeed for closing doors.................................... 60 KIAS

GROUND SPEED LIMITATIONS

Maximum GS with PARK BRAKE ON .... 5 kts (9 km/h)

ON PAVED SURFACES

Maximum taxi speed .... 40 knots

Maximum speed for emergency landing .... 60 knots

ON PREPARED GRASS SURFACES

Maximum taxi speed (above 10 knots (18 km/hr) nose wheel must be locked fore and aft) ....20 knots

Maximum speed for emergency landing (nose wheel locked fore and aft) .... 20 knots

WHEEL BRAKE LIMITATIONS

Maximum running speed for brake application................................60 knots

Parking on slopes up to 10° is permitted for a maximum of 8 hours.

ROTOR LIMITATIONS

WINDSPEED LIMITATIONS FOR ROTOR STARTING AND STOPPING

Maximum wind speed for rotor starting and stopping..................... 50 knots

ROTOR BRAKE LIMITATIONS

Maximum rotor speed for brake application 40%

Maximum pressure when in BRAKE position ....62.5 BAR

Minimum pressure for lever in BRAKE position ....40 BAR

ALTITUDE AND AMBIENT OAT LIMITATIONS

Minimum temperature for ground starting .... -40° C

Maximum Altitude at 8300 kg .... 10000 ft Hp or Hd

Maximum Altitude from 8300 kg to 8600 kg .... 6000 ft Hp or Hd

Max and Min operating altitude and air temperature .... SeeFigure 1-3, Figure 1-5

Maximum take-off and landing altitude................. SeeFigure 1-3, Figure 1-5

Maximum take-off and landing altitude for cabin configurations up to 9 pax seats............................. Figure 1-6A, Figure 1-6B

PITOT HEATING LIMITATIONS

Selected to **AUTO** or **ON** for indicated OAT of +4° C or less.

Selected to **AUTO** or **OFF** at indicated OAT of +5° C or more.

ICING LIMITATIONS

Flight into known icing conditions is prohibited unless an appropriate Icing Kit is installed and functioning. Refer to limitation section of applicable kit.

Flight into freezing rain and freezing fog is prohibited.

MANOEUVRING LIMITATIONS

Aerobatic manoeuvres are prohibited.

AUTOROTATION LIMITATIONS

Practice autorotative landings are prohibited.

During autorotation the ENG MODE select switch must not be retarded 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 is limited to 10° in all directions.

CATEGORY B OPERATION LIMITATIONS

CAT B Take - Off and Landing with tail wind must be avoided.

CATEGORY A OPERATION LIMITATIONS

CAT A Take Off and Landing Altitude and Temperature Limits .... Figure 1-4

CAT A Clear Area and Landing Altitude and Temperature limits for weight above 8300 kg................................ Figure 1-6

GROUND/ELEVATED HELIPORT/DECK TAKE OFF AND LANDING

Minimum demonstrated heliport size .... 20 m x 20 m (65 ftx65 ft)
or Diameter 20 m (65 ft)

Take Off and Landing Weight Limitations .... Figure 1-30 & Figure 1-31

GROUND HELIPORT LANDING

Minimum demonstrated heliport size .... 20 m x 20 m (65 ftx65 ft)
or Diameter 20 m (65 ft)

Landing Weight Limitations .... Figure 1-32 & Figure 1-33

CLEAR AREA RUNWAY LENGTH

Minimum demonstrated RTO runway length .... 900 m (2950 ft)

Minimum demonstrated landing runway length .... 700 m (2950 ft)

Take Off and Landing Weight Limits..................... Figure 1-34 & Figure 1-35

CAT A WIND LIMITATIONS

Maximum cross wind component for CAT A .... 20 kts (10 m/s)

Maximum cross wind component for CAT A Clear Area .... 30 kts (15 m/s)

Take-Off with tail wind component is prohibited.

OFFSHORE/ELEVATED HELIDECK LIMITATIONS

Minimum demonstrated helideck size .... 15 m x 15 m (50 ftx50 ft)
or Diameter 15 m (50 ft)

Minimum demonstrated helideck size for weight less than 7800 kg .... 12 m x 12 m (39 ftx39 ft)
or Diameter 12 m (39 ft)

Offshore/Elevated Helideck Wind Limitations .... Figure 1-36

DITCHING CONFIGURATION LIMITATIONS (IF FITTED)

Take-Off after ditching is prohibited.

Emergency Flotation system shall only be used for ditching.

Flotation bags must not be inflated in flight.

BAGGAGE COMPARTMENT LIMITATIONS

Maximum baggage compartment load .... 300 kg (660 lb)

All cargo must be secured with restraint net P/N 3G2550A00231 or other approved means.

Maximum unit load .... 550 kg/m^2 (110 lb/sq.ft)

Maximum load height ....600 mm (2 ft)

After installation of P/N 8G2550F00311 Kit Vertical Cargo Net and the Cargo Net P/N 8G2550V00131 the baggage limitations become:

Maximum baggage compartment load........................ 360 kg (793 lb)

Maximum unit load .... 550 kg/m^2 (110 lb/sq.ft)

Maximum load height.. 700 mm (2 ft 3 in)

After baggage loading Cargo net must be tensioned correctly.

CABIN COMPARTMENT CONFIGURATIONS

Cargo configurations for transport of cargo must be approved.

ENGINE AND TRANSMISSION DIGITAL LIMITATIONS

The following represent the digital values for PFD and MFD limitations indicated by colours:

	PI & TQ %	Ng %	ITT °C	Nf %	NR %
All Engines Operating					
Minimum Transient				95	95
Minimum Continuous				100	100
Maximum Continuous	100	102.7	942	104	104
Max Take Off (30min TQ / 5 min Eng) below 90 KIAS above 90 KIAS	 116 (100)	102.7	968		
Maximum Transient (12 secs)	123*	103.2	974	105	105**
One Engine Inoperative					
Minimum Transient				85	85
Minimum Cautionary				90	90
Minimum Continuous				98	98
Maximum Continuous	142	102.7	968	104	104
Maximum 2.5 min OEI	172	105.0	1078		
One 30 sec excursion above 164%					
Maximum Transient (12 secs)	180*		1081	105	105**

* 5 sec transient ** 10 sec transient

	NR %
Power Off	
Minimum Transient	90
Minimum Continuous	95
Maximum Continuous	110
Maximum Transient	113

	ITT °C
Engine Starting	
Maximum Unlimited	963

Note

The Automatic Power Reduction will reduce the torque available to 164% after 30 seconds of cumulative time above 164% TQ is achieved.

ENG/APU /SYST

	EOT °C	EOP BAR	MGBOT °C	MGBOP BAR	IGBOT °C	TGBOT °C	HYDOT °C	HYDOP BAR
Minimum for (Starting/GI Cautionary)	-40	+1.4(<1sec)	-40	+2.3	-40	-40	-40	162
Minimum Normal Operation	+38	+2.2	+1	+3.1	+1	+1	-20	+180
Maximum Cautionary for Starting		+8.3						
Maximum Cautionary							+134	+250
Maximum for Engine Start & GI (5 min)		+13.8						
Maximum Transient (15 min)	+149							

	ENG	APU
Fuel Press Max Cautionary (BAR)	0.2	0.6
Fuel Press Max Normal (BAR)	1.8	1.8

	AC GEN LOAD %	APU AC GEN LOAD %	TRU LOAD %	APU TRU LOAD %
Maximum Normal Operation	100	100	100	100
Cautionary Operation	150	155	150	155

	BATTERY LOAD AMPS
Maximum Battery Discharge	-200
Maximum Battery Charge	+200

	EMER BUS VOLTAGE
Minimum Normal Operation	22
Maximum Normal Operation	30

EMGINE/APU LIMITATIONS

ENGINE STARTER DUTY CYCLE

45 seconds on, 1 minute off

45 seconds on, 1 minute off

45 seconds on, 1 minute off

45 seconds on, 30 minutes off

POWER MARGIN TREND MONITORING

Every 50 flight hours record engine power assurance check values for engine power margin trend monitoring purposes.

ENGINE TRAINING MODE LIMITATIONS

Selection of Engine Training Mode (OEI TNG) is only permitted when Software Phase 3.0, or later, is fitted. Refer to Supplement 33.

APU STARTER DUTY CYCLE

20 seconds delay between each attempted start,

20 minutes delay after 3 aborted starts

(If the above procedure is applied twice then a cool down period of 40 minutes is necessary and APU trouble shooting is required)

APU Heater Bleed Valve

The HEATER system may only be select to APU when the OAT is at or below 20 °C.

APU Air Conditioning System Limitation

Whenever the APU is running selection of both AIR COND systems (if fitted) is prohibited.

FUEL SYSTEM LIMITATIONS

FUEL CAPACITIES

Total Usable..1320 litres

Total Usable (Extended Range Configuration) ....2569 litres

Unusable ....24 litres

Unusable (Extended Range Configuration).......................................9 litres

UNUSABLE FUEL

In coordinated (ball centered) flight:
Unusable .... 0 kg (0 lb) indicated/
(9.6 kg(21 lb)/12 litres per tank actual)

Unusable (Extended Range Configuration..... 7kg(15 lb)/9 litres total actual)

Hovering in cross winds or sideways flight with sustained roll angles greater than ±15° is prohibited when fuel indication, in either tank, is less than 50 kg.

Cross feeding
(tank with pump off, not supplying engines)............Maximum 283 kg/625 lb

Note

During XFEED the unusable fuel level indication will change to grey to indicate the tank can no longer supply fuel.

ENG/APU
/SYST

FUEL FLOW INDICATION

Engine fuel flow shall not be used for fuel planning as the indication is not reliable.

AUTHORISED FUEL TYPES

The fuels and additives shown in the table below have been authorised for use with the GE CT7-2E1 engines and Safran Microturbo eAPU 60 APU:

Fuel Type	Applicable Specification	Fuel Type	Applicable Specification
JET A	ASTM D1655	JP8	DEF STAN 91-87-2002
JET A-1	ASTM D1655 DEF STAN 91-91 AVTUR NATO Code F-35 Refer RFM for approved additives	 JP8+100	AVTUR/FSII MIL -TDL-83133 NATO Code F-34 MIL-DTL-83133 NATO Code F-37
JP5	DEF STAN 91-86 AVCAT/FSII MIL -DTL-5624F NATO Code F-44	No. 3 Jet Fuel (Additives T1502 & T1602 are prohibited)	GB 6537-2018

For ambient temperatures below -15 °C fuel icing inhibitors are mandatory.

The use of JP5 (F44) fuel at ambient temperatures below -30 °C is prohibited.

Note

Any mixture of authorised fuels may be used.

LUBRICANT LIMITATIONS

AUTHORISED ENGINE/APU OILS

The oils shown in the table below have been authorised for use with the GEC7-2E1. Any brand approved under the applicable specification may be used.

Oil Type	Applicable Specification	Brand Names (For reference only)
Type I (3cs)	D50TF1 (GE Spec) MIL-PRF-7808	Exxon Turbo Oil 2389 Castrol 325 Eastman Turbo Oil 2389
Type II (5cs)	D50TF1 (GE Spec) MIL-PRF-23699	Aero-Shell Turbine Oil 500 Castrol 205 Castrol 500 Mobil Jet Oil II Royco Turbine Oil 500 Exxon Turbo Oil 2380 Stauffer Jet II Eastman Turbo Oil 2380
Mixing of oils by type is acceptable but not recommended		

AUTHORISED APU OILS

The oils shown in the table below have been authorised for use with the Safran Microturbo e-APU 60 APU. Any brand approved under the applicable specification may be used.

Oil Type	Applicable Specification	Brand Names (For reference only)
Type II (5cs)	MIL-PRF-23699	TURBO NYCOIL 600 BP Turbo Oil 2380 EASTMAN Turbo Oil 2380
Type I (3cs)	MIL-PRF-7808	TURBO NYCOIL 160 BP Turbo Oil 2389 EASTMAN Turbo Oil 2389
Type II is the preferred oil for temperatures between -20 °C and ISA + 40 °C. The minimum oil temperature for starting with Type II oil is -30°C and with Type I oil is -40°C.		

AUTHORISED TRANSMISSION OIL

Applicable Specification	Brand Names
DOD-L-85734	ATO555

AUTHORISED HYDRAULIC FLUIDS

The hydraulic fluids shown in the table below have been authorised for use in all hydraulic components. Any brand approved under the applicable specifications may be used.

Applicable Specification	**Brand Names (For reference only)**
MIL-PRF-83282	AEROSHELL FLUID 31
Alternative: MIL-PRF-5606 (see NOTE below)	AEROSHELL FLUID 41

Note

MIL-PRF-5606 can be used for enhanced performance of hydraulic system in low temperature environments below -20 °C.

CAUTION

Mixing of hydraulic fluid, specification or brand name, is prohibited.

ELECTRICAL HYDRAULIC PUMP

The electrical hydraulic pump is for ground operation only.

ENG/APU /SYST

ELECTRICAL LIMITATIONS

AC GENERATOR LOAD (%)

Normal Operation Range .... 0 to 100

Cautionary Range .... 101 to 150

Maximum Cautionary 150

APU AC GENERATOR LOAD (%)

Normal Operation Range .... 0 to 100

Cautionary Range .... 101 to 155

Maximum Cautionary 155

BATTERY LOAD (A)

Battery Discharge .... -200 to 0

Battery Charge .... 0 to 200

TRU LOAD (%)

Normal Operation Range .... 0 to 100

Cautionary Range .... 101 to 150

Maximum Cautionary 150

APU TRU LOAD (%)

Normal Operation Range .... 0 to 100

Cautionary Range .... 101 to 155

Maximum Cautionary 155

EMERGENCY BUS VOLTAGE (V)

Minimum Normal Operation 22

Normal Operation .... 22 to 30

Maximum Normal Operation 30

AVIONIC LIMITATIONS

AFCS LIMITATIONS

Intentional P/R - C/Y PTR de-clutching in flight is prohibited.

AFCS upper modes must be disengaged after one AP has failed except during ILS coupled approach.

AFCS MODE LIMITATION

- The following AFCS modes are inoperative on the AFCS Control Panel:

— GSPD — VNAV

- THE BC mode must not be used.
- The RHT modes may only be engaged over flat surfaces which are clear of obstructions.

AFCS MODES ENGAGED LIMITS AND MINIMUM USE HEIGHT (MUH)

Hold Mode	Engagement Range	MUH
IAS*	45 KIAS to Vne less 5 KIAS	150 ft AGL or 50 ft AGL during approach
HDG*	0 KIAS to Vne	150 ft AGL (airspeed greater than 55 KIAS) 30 ft AGL in HOV or airspeed less than 55 KIAS 50 ft AGL during approach
NAV*	40 KIAS to Vne	150 ft AGL
ALT	0 KIAS to Vne	200 ft AGL (airspeed greater than 55 KIAS) 50 ft AGL in HOV or airspeed less than 55 KIAS
VS*	40 KIAS to Vne within -1500 fpm and 2000 fpm	200 ft AGL (in descent)
APP*	40 KIAS to 150 KIAS	50 ft AGL
GA*†	40 KIAS to Vne 0 to 2000 ft AGL	N/A
ALTA*	40 KIAS to Vne	200 ft AGL
RHT*	0 KIAS to Vne 30 ft to 2500 ft AGL	150 ft AGL (airspeed greater than 55 KIAS) 30 ft AGL in HOV or airspeed less than 55 KIAS)
HOV	Groundspeed — less than 60 kts forward — less than 40 kts lateral or aft with IAS less than 75 KIAS	30 ft AGL

Hold Mode	Engagement Range	MUH
The following modes are available with SEARCH Modes installed		
TD	80 KIAS to Vne 150 ft to 2000 ft AGL 40 KIAS to 80 KIAS 210 ft to 2000 ft AGL	150 ft AGL
TDH	0 KIAS to 85 KIAS 30 ft to 210 ft AGL	50 ft AGL
TU	0 KIAS to 80 KIAS or 40 KIAS to Vne in HOV/ TDH/NPATH 10 ft to 2000 ft AGL	150 ft AGL (airspeed greater than 55 KIAS) 30 ft AGL in HOV/TDH/NPATH or airspeed less than 55 KIAS
MOT	40 KIAS to Vne 150 ft to 2000 ft AGL	NRHT - 150 ft AGL NPATH - 150 ft AGL (airspeed greater than 55 KIAS) NPATH - 50 ft AGL (airspeed less than 55 KIAS) NDCL - 50 ft AGL
WTR	HOV Mode engaged	30 ft AGL
NHPA (APP)	40 KIAS to Vne (or 150 kts GS) 230 ft AGL to 5000 ft MSL	50 ft

For operations on the sea the MUH must be increased by one half the maximum reported/observed wave height.

Note*

— Automatic disengagement of these modes below approximately 35 KIAS.
— VS engagement above 2000 fpm or below -1500 fpm will result in the mode returning the aircraft to the maximum rates quoted (2000 fpm or -1500 fpm).
— Recommended minimum IAS reference for TD,TDH,TU,MOT and APP(NHPA) Mode engagement 50 KIAS.

SEARCH MODE LIMITATIONS

- Flight below 50 KIAS (Vmini) in IMC is only permitted when coupled to a SAR mode.
- AFCS Search Modes must be disengaged after loss of one AP channel.
- The RHT, TD, TDH, TU, MOT, HPA (APP) can only be engaged over flat surfaces which are clear of obstructions

VOR LIMITATIONS

In case of invalid DME/FMS distance, select:

- VOR APP at ranges below 10 nm (18 km).

- VOR NAV at ranges greater than 10 nm (18 km).

COUPLED ILS APPROACH MODE LIMITATIONS

The helicopter is certified to carry out CAT I ILS approaches up to 4 deg glideslope.

Maximum recommended Localizer Intercept angle............................ 45 deg ranges greater than 10 nm (18 km)

Maximum recommended Localizer Intercept angle............................ 30 deg ranges less than 10 nm (18 km)

Maximum airspeed for glideslope up to 4 deg................................ 150 KIAS

Maximum airspeed for DA(H)....................................... 130 KIAS (see note)

Note

If the PWR LIM message illuminates reduce airspeed, as required to extinguish the message, before reaching DH.

In case of:

— invalid DME and FMS distance and both Rad Alt signals invalid

— invalid groundspeed and/or track angle

an ILS approach must be initiated at a distance of not less than 10 nm (18 km) and an intecept angle not greater than 30°.

COUPLED VOR APPROACH AND NAVIGATION MODE LIMITATIONS

Maximum recommended VOR radial Intercept angle .... 45 deg ranges greater than 10 nm (18 km)

Maximum recommended Localizer Intercept angle............................ 30 deg ranges less than 10 nm (18 km)

Maximum airspeed for glideslope up to 4 deg................................ 150 KIAS

TRANSPONDER (XPDR) LIMITATION

The Mode S system installed satisfies the data requirements of ICAO Doc 7030/4.

— Selected altitude

— Barometric pressure setting

HEADSET/HELMET LIMITATIONS

Headset/Helmet type used in the aircraft must be of the same electrical characteristics and authorised by Aircraft Manufacturer.

AVIONICS
FMS

MISCELLANEOUS LIMITATIONS

Pilot(s) must not use polarized type sun glasses.

FMS LIMITATIONS

1. The FMS is limited to operations where the carriage of RNAV/RNP Navigation Specification meets a containment value of B-RNAV/RNAV5, RNAV2, P-RNAV/RNAV1, RNP2 En-Route operation, RNP1 Terminal and En-Route, A-RNP (without LP/LPV approach), RNP APCH approach with LNAV minima, RNP APCH approach with LNAV/VNAV minima, PinS Approach with LNAV minima and PinS departure.
2. The **RNP 0.3 “All Phases of Flight”**, **RNP (AR) APCH** with **RNP minima operations** are **NOT** allowed.
3. IFR P-RNAV/RNAV1 En-route, RNP 1 En-route/Terminal procedures, Non Precision Approach (NPA - Precision Like Approach), GPS approach and RNP APCH with LNAV or LNAV/VNAV minima navigation are prohibited unless the pilot verifies the currency of the Navigation Data Base (NAV DB).
4. The aircraft must have other approved navigation equipment installed and operating appropriate to the route of flight.
5. In case of single AMMC reset in flight do NOT perform the DBU (DBU EXEC on MCDU) during SID, STAR Terminal procedure or during Approach.
6. Maximum ROD for Non-Precision Approach, RNP APCH approach with LNAV minima, RNP APCH approach with LNAV/VNAV minima, PinS Approach with LNAV minima, GPS Approach.............................1000 fpm

ADF Limitations

Do not select ON the landing or external flood lights when using the ADF (ADF indication is not reliable).

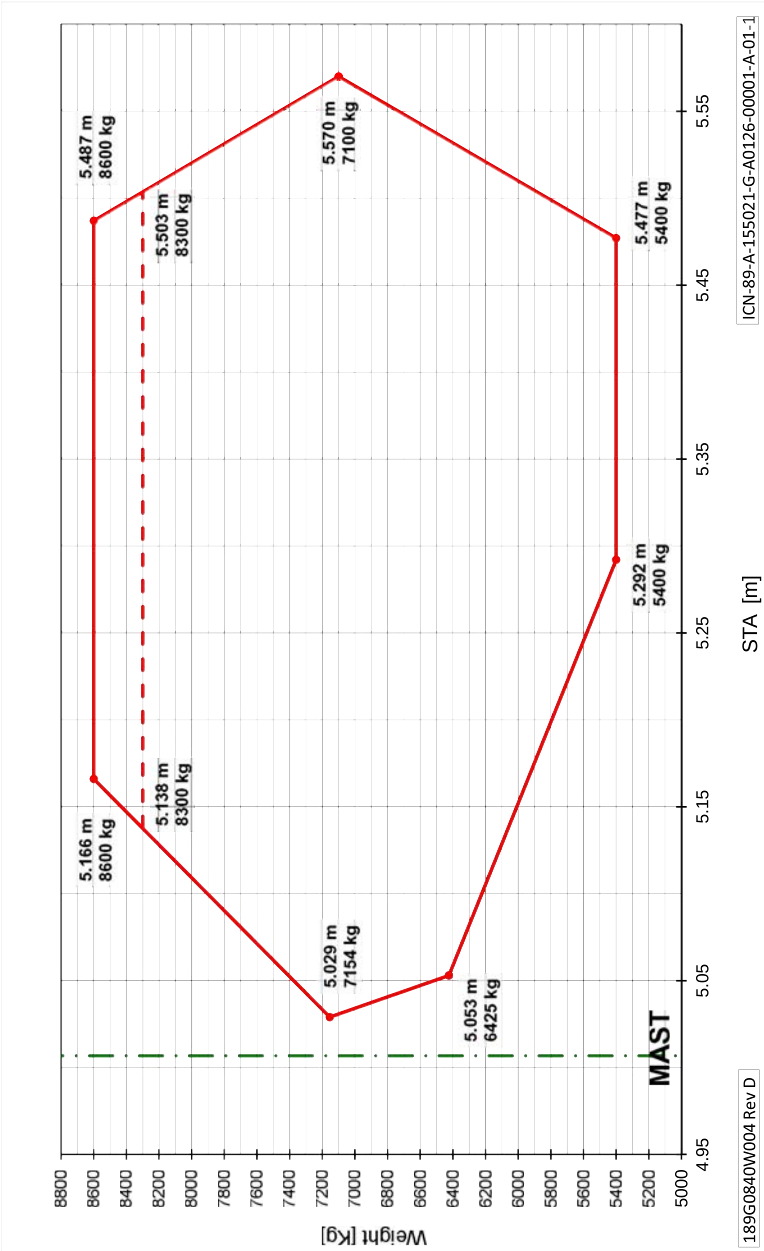

Figure 1-1 Weight and Longitudinal CG Envelope

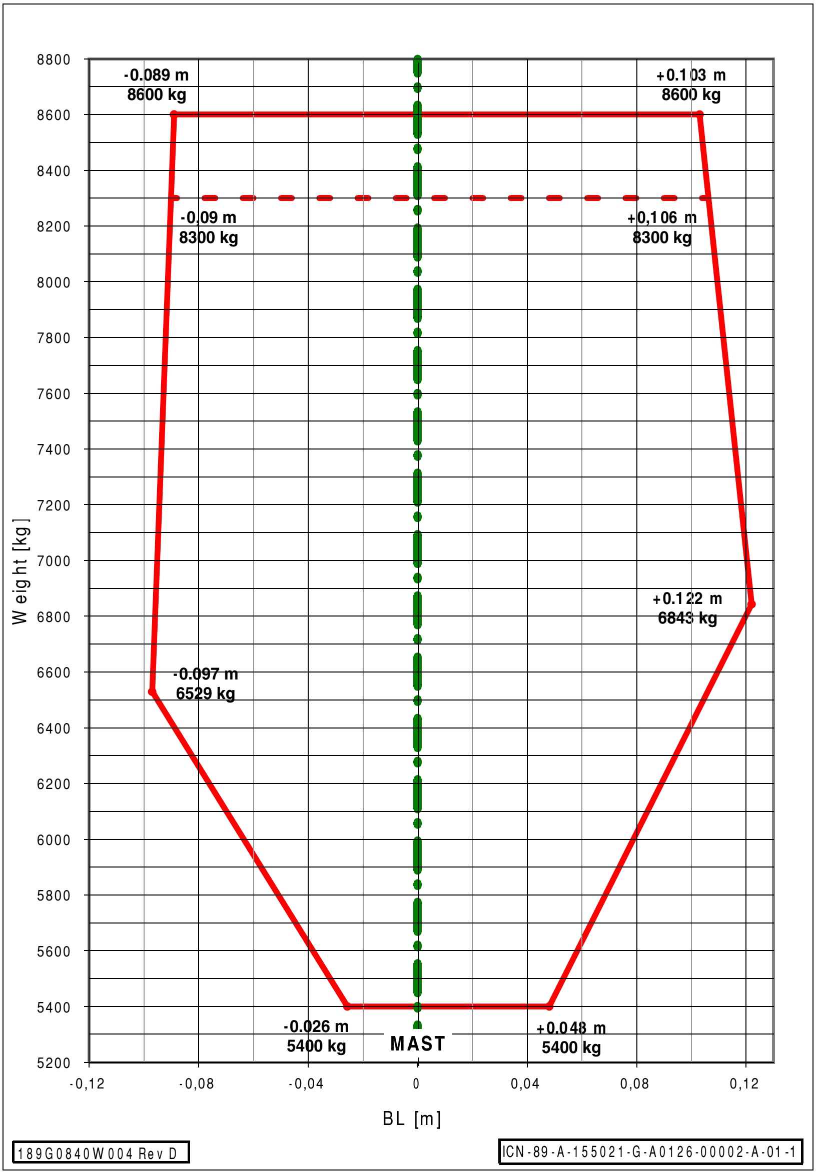

Figure 1-2 Weight and Lateral CG Envelope

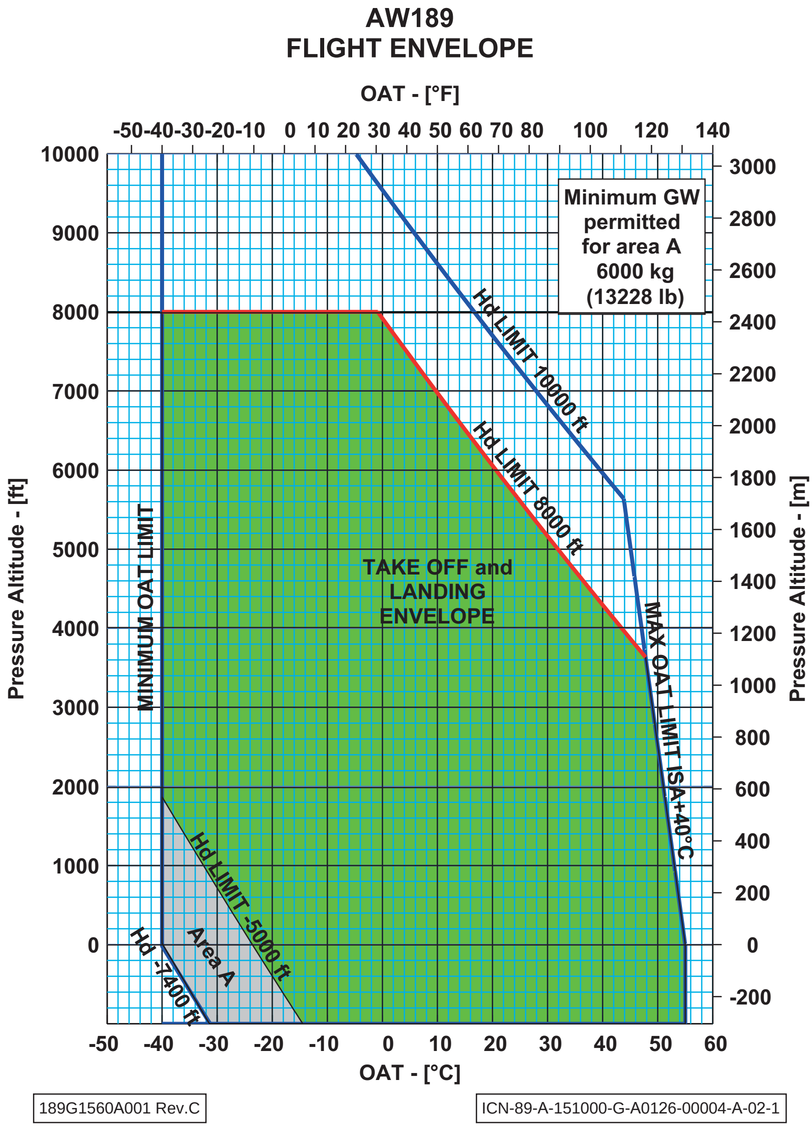

Figure 1-3 Altitude and OAT Limitations 8300 kg

CHARTS
DIAGS

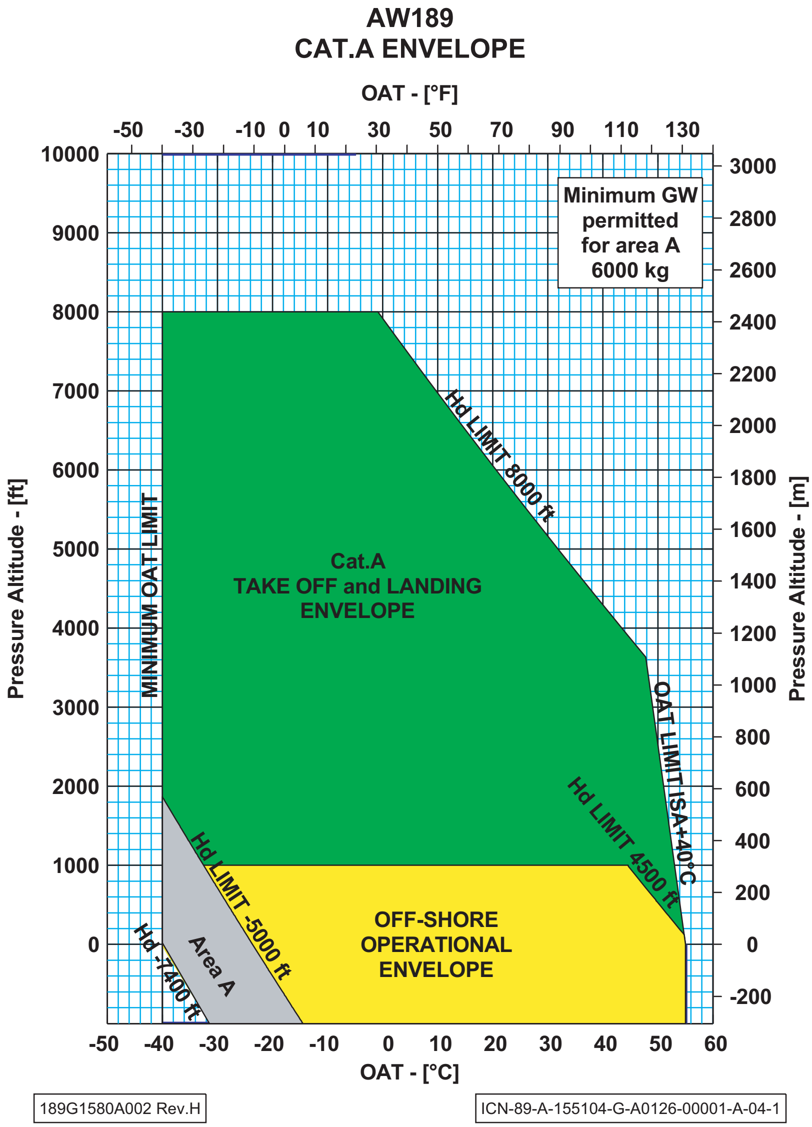

Figure 1-4 CAT A Altitude and OAT Limitations 8300 kg

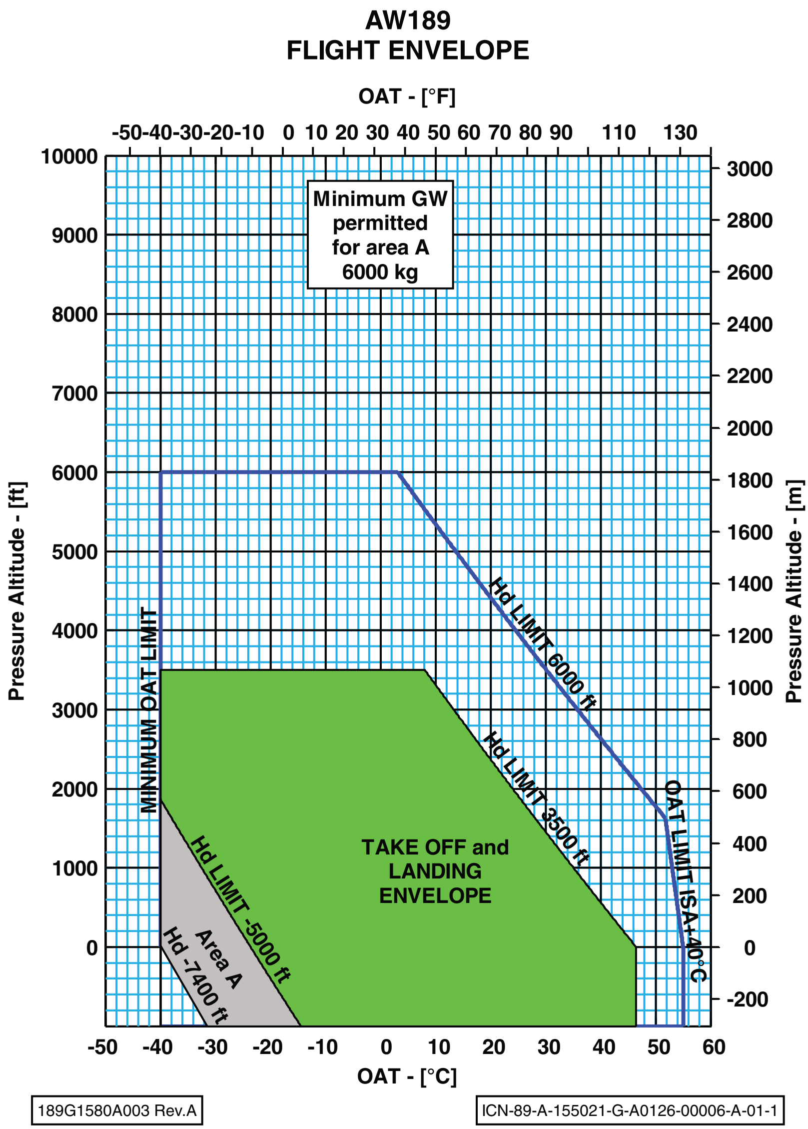

Figure 1-5 Altitude and OAT Limitations 8600 kg

CHARTS
DIAGS

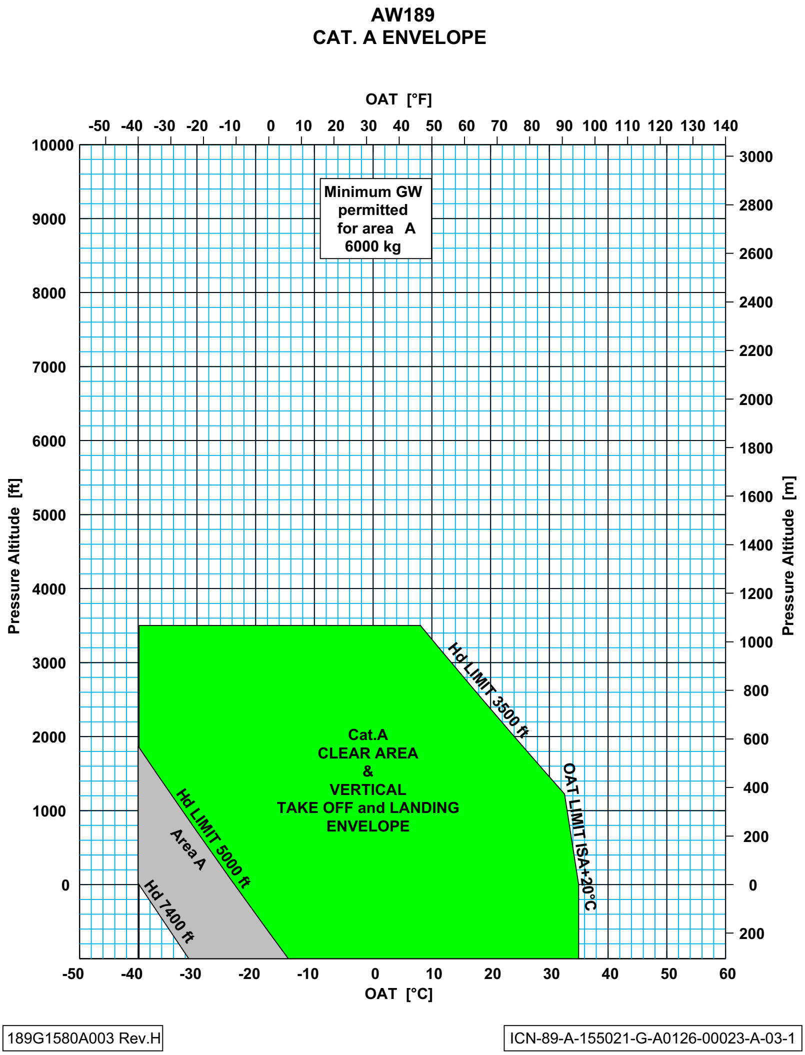

Figure 1-6 CAT A Clear Area Altitude and OAT Limitations for Weight above 8300 kg

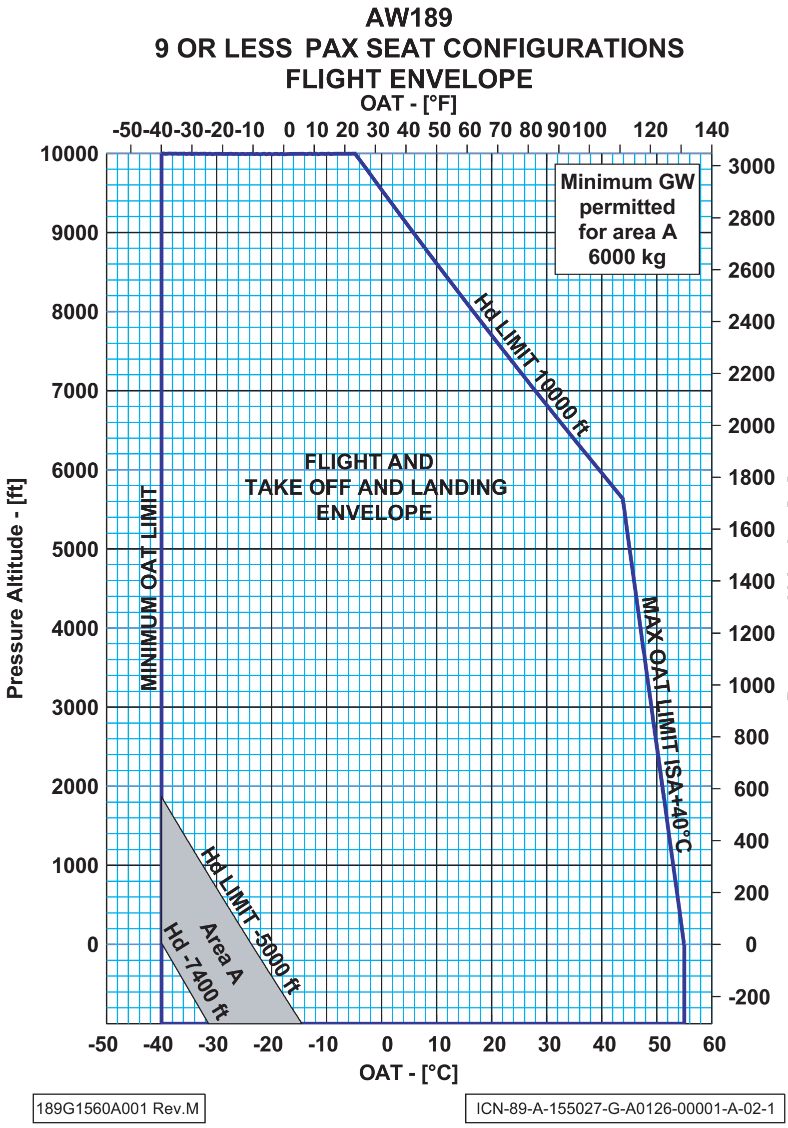

Figure 1-6A Altitude and OAT Limitations for up to 9 Passenger Seats

CHARTS
DIAGS

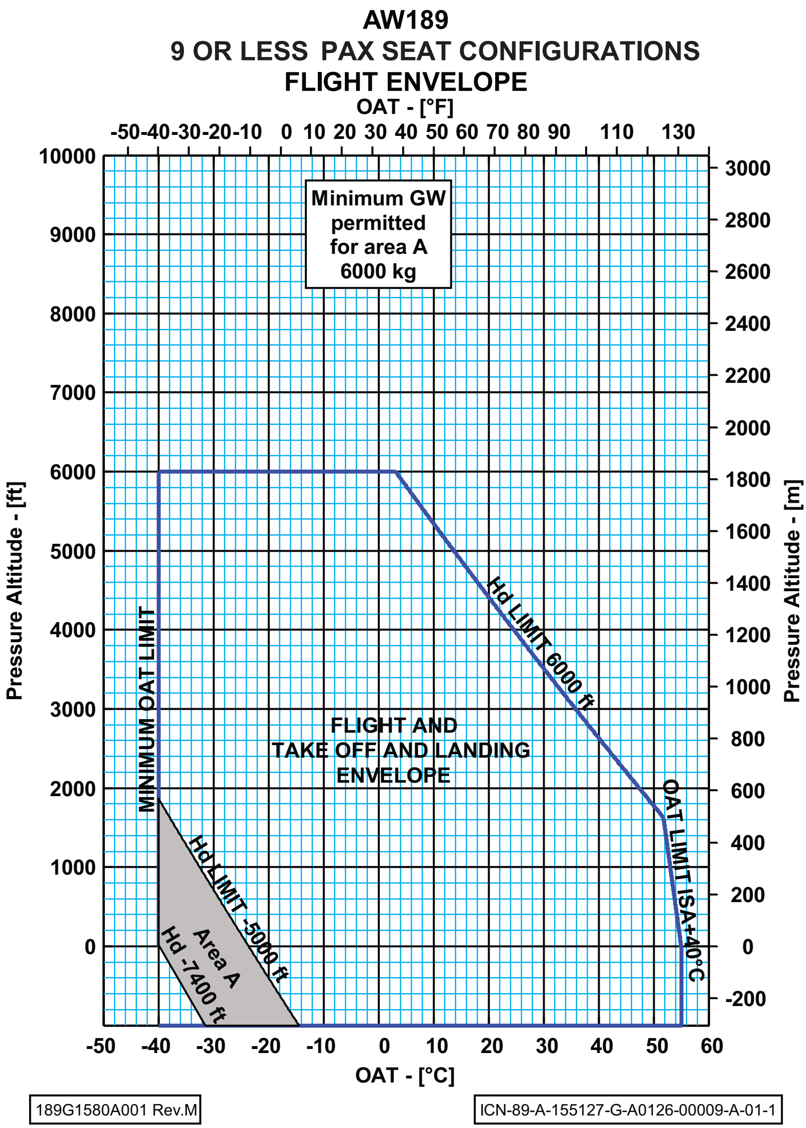

Figure 1-6B Altitude and OAT Limitations for up to 9 Passenger Seats Weight above 8300 kg

Airspeed Envelope Limitations Charts

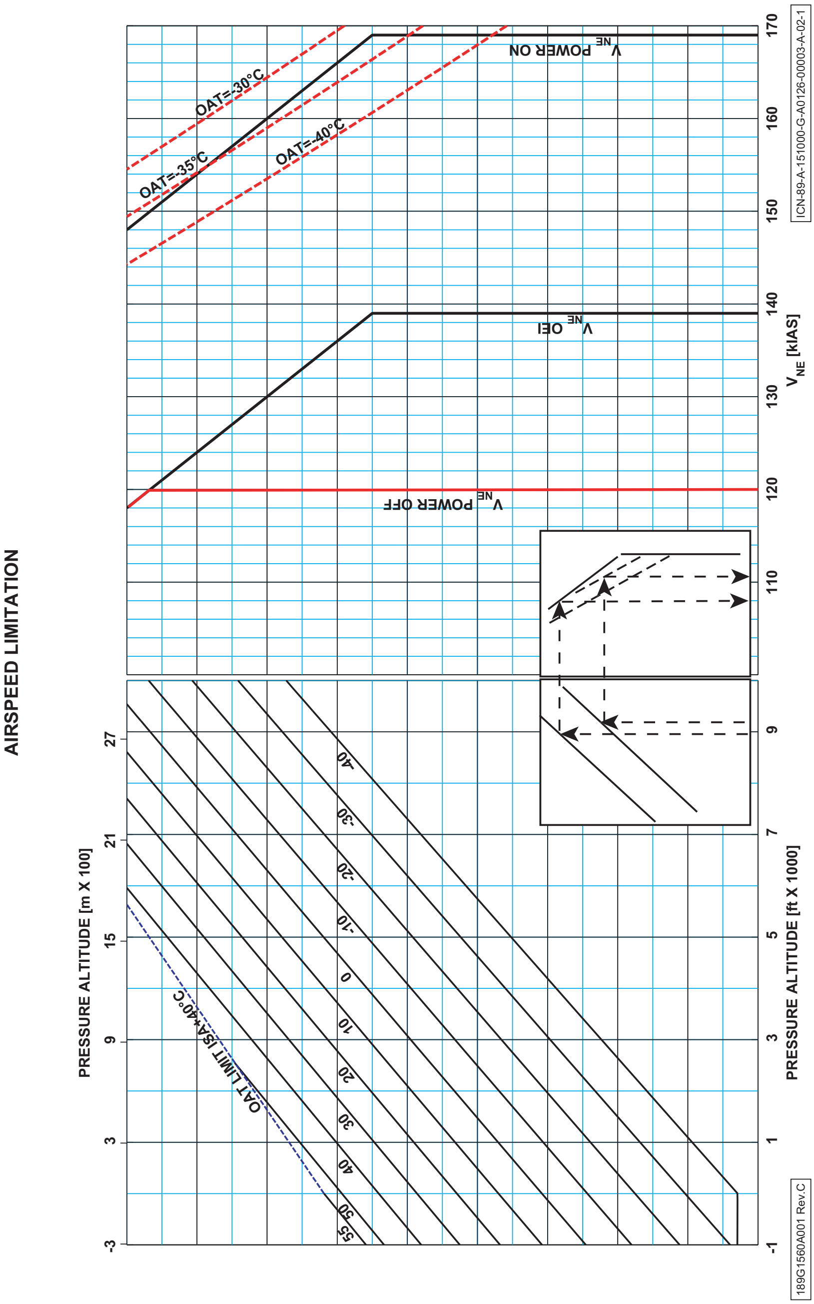

Figure 1-7 Airspeed Envelope (Vne - Power ON, OEI/Power Off) 8300 kg

CHARTS
DIAGS

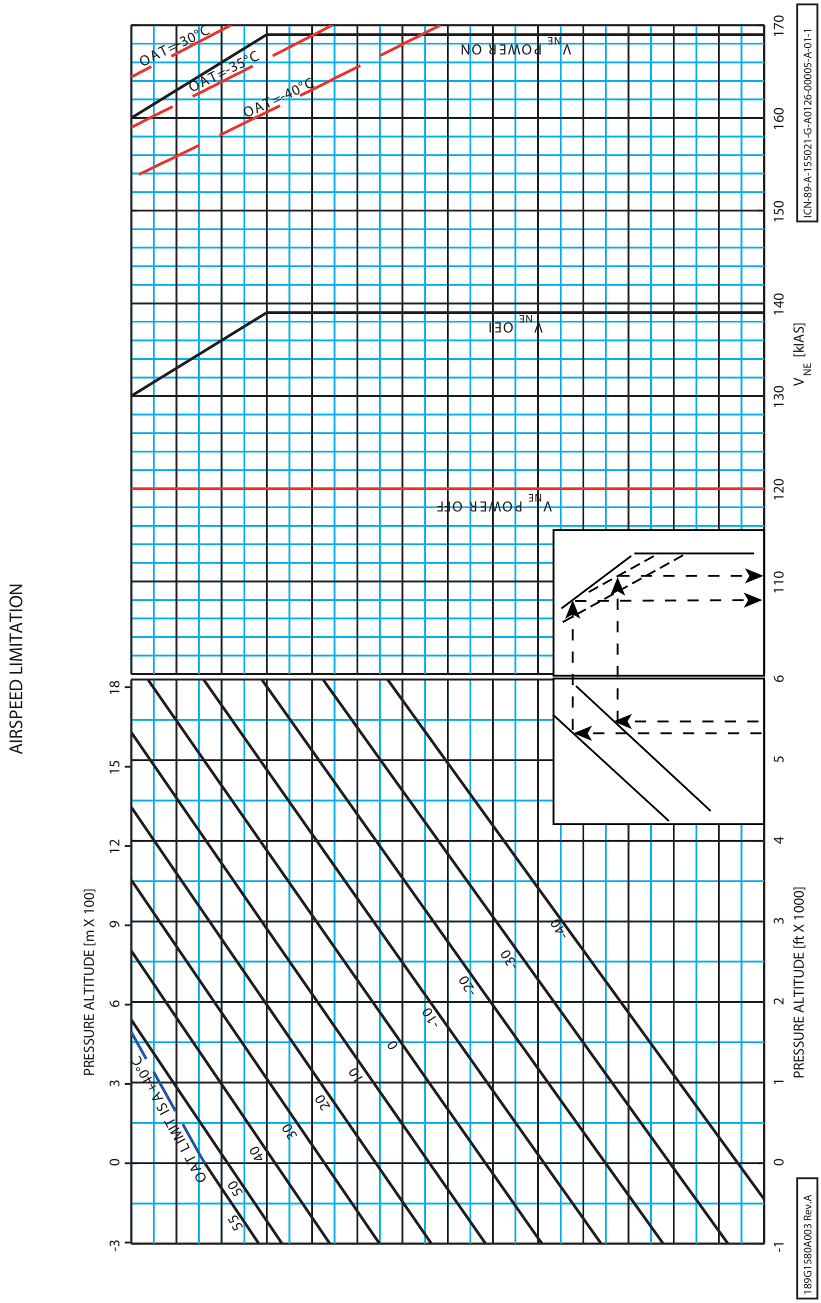

Figure 1-8 Airspeed Envelope (Vne - Power ON, OEI/Power Off) 8600 kg

CHARTS
DIAGS

WAT for Cat.B HIGE T.O. & Landing
Heater OFF/ON, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8600	8600	8600	8276	7898
-500	8600	8600	8600	8600	8600	8600	8600	8600	8600	8106	7735
0	8600	8600	8600	8600	8600	8600	8600	8600	8600	7936	7572
500	8600	8600	8600	8600	8600	8600	8600	8600	8600	7763	
1000	8600	8600	8600	8600	8600	8600	8600	8600	8300	7592	
1500	8600	8600	8600	8600	8600	8600	8600	8600	8234	7424	
2000	8600	8600	8600	8600	8600	8600	8600	8300	8042	7259	
2500	8600	8600	8600	8600	8600	8600	8300	8300	7853	7094	
3000	8600	8600	8600	8600	8600	8556	8300	8300	7669		
3500	8600	8600	8600	8570	8495	8300	8300	8254	7489		
4000	8300	8300	8300	8300	8300	8300	8285	8109	7310		
4500	8300	8300	8300	8282	8230	8189	8150	7956			
5000	8300	8261	8195	8135	8084	8048	8009	7791			
5500	8187	8112	8050	7991	7942	7910	7866				
6000	8039	7967	7908	7849	7803	7773	7723				
6500	7894	7827	7767	7709	7667	7635					
7000	7752	7690	7627	7571	7531						
7500	7614	7555	7490	7436	7395						
8000	7481	7421	7356	7304							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-9 CAT B - WAT Limitations, HIGE Take-Off and Landing, Anti Ice OFF, Heater OFF/ON

CHARTS
DIAGS

WAT for Cat.B HIGE T.O. & Landing
Heater OFF/ON, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8600					
500	8600	8600	8600	8600	8600	8600					
1000	8600	8600	8600	8600	8600	8600					
1500	8600	8600	8600	8600	8600	8600					
2000	8600	8600	8600	8600	8600	8513					
2500	8600	8600	8600	8600	8600	8347					
3000	8600	8600	8591	8533	8477	8181					
3500	8600	8600	8439	8383	8331	8014					
4000	8300	8300	8290	8235	8186	7841					
4500	8281	8209	8144	8089	8043	7662					
5000	8133	8063	8000	7946	7901	7485					
5500	7987	7919	7857	7806	7760	7316					
6000	7844	7778	7716	7667	7620	7150					
6500	7705	7640	7578	7528	7483	6981					
7000	7569	7504	7441	7391	7348						
7500	7435	7370	7305	7256	7213						
8000	7304	7235	7170	7124							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-10 CAT B - WAT Limitations, HIGE Take-Off and Landing, Anti Ice ON, Heater OFF/ON

WAT for Cat.B Rolling Take Off
Heater OFF/ON, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8600	8600	8600	8276	7898
-500	8600	8600	8600	8600	8600	8600	8600	8600	8600	8106	7735
0	8600	8600	8600	8600	8600	8600	8600	8600	8600	7936	7572
500	8600	8600	8600	8600	8600	8600	8600	8600	8600	7763	
1000	8600	8600	8600	8600	8600	8600	8600	8600	8300	7592	
1500	8600	8600	8600	8600	8600	8600	8600	8600	8234	7424	
2000	8600	8600	8600	8600	8600	8600	8600	8300	8042	7259	
2500	8600	8600	8600	8600	8600	8600	8300	8300	7853	7094	
3000	8600	8600	8600	8600	8600	8600	8300	8300	7669		
3500	8600	8600	8600	8600	8600	8300	8300	8300	7489		
4000	8300	8300	8300	8300	8300	8300	8300	8153	7310		
4500	8300	8300	8300	8300	8300	8300	8300	7972			
5000	8300	8300	8300	8300	8300	8245	8170	7791			
5500	8300	8298	8271	8221	8161	8102	8023				
6000	8152	8150	8126	8075	8017	7961	7877				
6500	8007	8009	7981	7930	7876	7818					
7000	7865	7871	7839	7788	7736						
7500	7728	7734	7698	7650	7596						
8000	7596	7599	7561	7513							

Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-11 CAT B WAT for Rolling Take-Off, Anti Ice OFF, Heater OFF/ON

CHARTS
DIAGS

WAT for Cat.B Rolling Take Off
Heater OFF/ON, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8600					
500	8600	8600	8600	8600	8600	8600					
1000	8600	8600	8600	8600	8600	8600					
1500	8600	8600	8600	8600	8600	8600					
2000	8600	8600	8600	8600	8600	8513					
2500	8600	8600	8600	8600	8600	8347					
3000	8600	8600	8600	8600	8600	8181					
3500	8600	8600	8600	8600	8570	8014					
4000	8300	8300	8489	8465	8421	7841					
4500	8299	8300	8341	8315	8273	7662					
5000	8153	8197	8194	8168	8125	7485					
5500	8010	8052	8048	8025	7950	7316					
6000	7870	7910	7905	7882	7772	7150					
6500	7735	7772	7765	7740	7596	6981					
7000	7602	7637	7626	7599	7422						
7500	7472	7501	7487	7461	7252						
8000	7345	7366	7350	7325							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-12 CAT B WAT for Rolling Take-Off, Anti Ice ON, Heater OFF/ON

HOVER CEILING IN GROUND EFFECT - 5 min AEO
Heater OFF, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600
-500	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600
0	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600
500	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600	
1000	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600	
1500	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600	
2000	8600	8600	8600	8600	8600	8600	8600	8600	8600	8300	
2500	8600	8600	8600	8600	8600	8600	8600	8600	8600	8300	
3000	8600	8600	8600	8600	8600	8600	8600	8600	8300		
3500	8600	8600	8600	8600	8600	8600	8600	8600	8300		
4000	8600	8600	8600	8600	8600	8600	8600	8300	8300		
4500	8600	8600	8600	8600	8600	8600	8300	8300	8300		
5000	8600	8600	8600	8600	8600	8600	8300	8300	8300		
5500	8600	8600	8600	8600	8600	8300	8300	8300	8300		
6000	8600	8600	8600	8600	8600	8300	8300	8300			
6500	8300	8300	8300	8300	8300	8300	8300	8300			
7000	8300	8300	8300	8300	8300	8300	8300				
7500	8300	8300	8300	8300	8300	8300	8300				
8000	8300	8300	8300	8300	8300	8300					
8500	8300	8300	8300	8300	8300	8300					
9000	8300	8300	8300	8300	8300						
9500	8300	8300	8300	8300	8300						
10000	8300	8300	8300	8300							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-13 CAT B WAT for Take-Off and Landing for Cabin Configurations up to 9 PAX Seats, Anti Ice OFF, Heater OFF

CHARTS
DIAGS

HOVER CEILING IN GROUND EFFECT - 5 min AEO
Heater OFF, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8600					
500	8600	8600	8600	8600	8600	8600					
1000	8600	8600	8600	8600	8600	8600					
1500	8600	8600	8600	8600	8600	8600					
2000	8600	8600	8600	8600	8600	8600					
2500	8600	8600	8600	8600	8600	8600					
3000	8600	8600	8600	8600	8600	8600					
3500	8600	8600	8600	8600	8600	8600					
4000	8600	8600	8600	8600	8600	8600					
4500	8600	8600	8600	8600	8600	8600					
5000	8600	8600	8600	8600	8600	8600					
5500	8600	8600	8600	8600	8600	8300					
6000	8600	8600	8600	8600	8600	8300					
6500	8300	8300	8300	8300	8300	8300					
7000	8300	8300	8300	8300	8300	8300					
7500	8300	8300	8300	8300	8300	8300					
8000	8300	8300	8300	8300	8300	8200					
8500	8300	8300	8300	8300	8300	8000					
9000	8300	8300	8300	8300	8300						
9500	8300	8300	8300	8300	8240						
10000	8300	8300	8300	8300							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-14 CAT B WAT for Take-Off and Landing for Cabin Configurations up to 9 PAX Seats, Anti Ice ON, Heater OFF

HOVER CEILING IN GROUND EFFECT - 5 min AEO
Heater ON, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8600				
-500	8600	8600	8600	8600	8600	8600	8600				
0	8600	8600	8600	8600	8600	8600	8600				
500	8600	8600	8600	8600	8600	8600	8600				
1000	8600	8600	8600	8600	8600	8600	8600				
1500	8600	8600	8600	8600	8600	8600	8600				
2000	8600	8600	8600	8600	8600	8600	8600				
2500	8600	8600	8600	8600	8600	8600	8600				
3000	8600	8600	8600	8600	8600	8600	8600				
3500	8600	8600	8600	8600	8600	8600	8600				
4000	8600	8600	8600	8600	8600	8600	8600				
4500	8600	8600	8600	8600	8600	8600	8300				
5000	8600	8600	8600	8600	8600	8600	8300				
5500	8600	8600	8600	8600	8600	8300	8300				
6000	8600	8600	8600	8600	8600	8300	8300				
6500	8300	8300	8300	8300	8300	8300	8300				
7000	8300	8300	8300	8300	8300	8300	8300				
7500	8300	8300	8300	8300	8300	8300	8100				
8000	8300	8300	8300	8300	8300	8300					
8500	8300	8300	8300	8300	8300	8300					
9000	8300	8300	8300	8300	8300						
9500	8300	8300	8300	8300	8300						
10000	8300	8300	8300	8300							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-15 CAT B WAT for Take-Off and Landing for Cabin Configurations up to 9 PAX Seats, Anti Ice OFF, Heater ON

CHARTS
DIAGS

HOVER CEILING IN GROUND EFFECT - 5 min AEO
Heater ON, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8600					
500	8600	8600	8600	8600	8600	8600					
1000	8600	8600	8600	8600	8600	8600					
1500	8600	8600	8600	8600	8600	8600					
2000	8600	8600	8600	8600	8600	8600					
2500	8600	8600	8600	8600	8600	8600					
3000	8600	8600	8600	8600	8600	8600					
3500	8600	8600	8600	8600	8600	8600					
4000	8600	8600	8600	8600	8600	8600					
4500	8600	8600	8600	8600	8600	8300					
5000	8600	8600	8600	8600	8600	8300					
5500	8600	8600	8600	8600	8600	8100					
6000	8600	8600	8600	8600	8600	7910					
6500	8300	8300	8300	8300	8300	7720					
7000	8300	8300	8300	8300	8230	7550					
7500	8300	8300	8300	8300	8060	7380					
8000	8300	8300	8300	8300	7882	7200					
8500	8300	8300	8300	8300	7700	7015					
9000	8300	8300	8300	8300	7515						
9500	8300	8300	8300	8300	7348						
10000	8300	8300	8300	8300							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-16 CAT B WAT for Take-Off and Landing for Cabin Configurations up to 9 PAX Seats, Anti Ice ON, Heater ON

CHARTS
DIAGS

**WAT for HIGE Controllability 5 min AEO
Heater OFF, Engine A.I. OFF**

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600
-500	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600
0	8600	8600	8600	8600	8600	8600	8600	8600	8600	8600	8496
500	8600	8600	8600	8600	8600	8600	8600	8600	8600	8473	
1000	8600	8600	8600	8600	8600	8600	8600	8600	8586	8320	
1500	8600	8600	8600	8600	8600	8600	8600	8600	8431	8170	
2000	8600	8600	8600	8600	8600	8600	8600	8551	8278	8022	
2500	8600	8600	8600	8600	8600	8600	8600	8396	8128	7876	
3000	8600	8600	8600	8600	8600	8600	8524	8243	7979		
3500	8600	8600	8600	8600	8600	8600	8368	8092	7833		
4000	8600	8600	8600	8600	8600	8504	8214	7943	7689		
4500	8600	8600	8600	8600	8600	8347	8063	7797			
5000	8600	8600	8600	8600	8493	8193	7913	7652			
5500	8600	8600	8600	8600	8335	8041	7766				
6000	8600	8600	8600	8491	8180	7891	7622				
6500	8300	8300	8300	8300	8027	7743					
7000	8300	8300	8300	8175	7876						
7500	8300	8300	8300	8021	7728						
8000	8300	8300	8181	7870							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-17 WAT for HIGE Controllability at AEO 5min, Anti Ice OFF, Heater OFF

CHARTS
DIAGS

WAT for HIGE Controllability 5 min AEO
Heater OFF, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8600					
500	8600	8600	8600	8600	8600	8600					
1000	8600	8600	8600	8600	8600	8600					
1500	8600	8600	8600	8600	8600	8600					
2000	8600	8600	8600	8600	8600	8600					
2500	8600	8600	8600	8600	8600	8600					
3000	8600	8600	8600	8600	8600	8600					
3500	8600	8600	8600	8600	8600	8600					
4000	8600	8600	8600	8600	8600	8504					
4500	8600	8600	8600	8600	8600	8347					
5000	8600	8600	8600	8600	8493	8193					
5500	8600	8600	8600	8600	8335	8041					
6000	8600	8600	8600	8491	8180	7891					
6500	8300	8300	8300	8300	8027	7743					
7000	8300	8300	8300	8175	7876						
7500	8300	8300	8300	8021	7728						
8000	8300	8300	8181	7870							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-18 WAT for HIGE Controllability AEO 5min, Anti Ice ON, Heater OFF

WAT for HIGE Controllability 5 min AEO
Heater ON, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8600				
-500	8600	8600	8600	8600	8600	8600	8600				
0	8600	8600	8600	8600	8600	8600	8600				
500	8600	8600	8600	8600	8600	8600	8600				
1000	8600	8600	8600	8600	8600	8600	8600				
1500	8600	8600	8600	8600	8600	8600	8600				
2000	8600	8600	8600	8600	8600	8600	8600				
2500	8600	8600	8600	8600	8600	8600	8600				
3000	8600	8600	8600	8600	8600	8600	8524				
3500	8600	8600	8600	8600	8600	8600	8368				
4000	8600	8600	8600	8600	8600	8504	8214				
4500	8600	8600	8600	8600	8600	8347	8063				
5000	8600	8600	8600	8600	8493	8193	7913				
5500	8600	8600	8600	8600	8335	8041	7766				
6000	8600	8600	8600	8491	8180	7891	7622				
6500	8300	8300	8300	8300	8027	7743					
7000	8300	8300	8300	8175	7876						
7500	8300	8300	8300	8021	7728						
8000	8300	8300	8181	7870							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-19 WAT for HIGE Controllability AEO 5min, Anti Ice OFF, Heater ON

CHARTS
DIAGS

CHARTS
DIAGS

WAT for HIGE Controllability 5 min AEO
Heater ON, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8600					
500	8600	8600	8600	8600	8600	8600					
1000	8600	8600	8600	8600	8600	8600					
1500	8600	8600	8600	8600	8600	8600					
2000	8600	8600	8600	8600	8600	8600					
2500	8600	8600	8600	8600	8600	8600					
3000	8600	8600	8600	8600	8600	8600					
3500	8600	8600	8600	8600	8600	8557					
4000	8600	8600	8600	8600	8600	8356					
4500	8600	8600	8600	8600	8600	8155					
5000	8600	8600	8600	8600	8493	7956					
5500	8600	8600	8600	8600	8335	7762					
6000	8600	8600	8600	8491	8180	7573					
6500	8300	8300	8300	8300	8027	7390					
7000	8300	8300	8300	8175	7876						
7500	8300	8300	8300	8021	7728						
8000	8300	8300	8181	7870							

ICN-89-A-154999-G-A0126-00004-A-01-1

Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-20 WAT for HIGE Controllability AEO 5min, Anti Ice ON, Heater ON

**WAT for HOGE Controllability 5 min AEO
Heater OFF, Engine A.I. OFF**

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8582	8519	8456	8367	8240
-500	8600	8600	8600	8600	8600	8600	8548	8484	8422	8218	8093
0	8600	8600	8600	8600	8600	8579	8514	8449	8329	8071	7948
500	8600	8600	8600	8600	8600	8546	8479	8415	8179	7926	
1000	8600	8600	8600	8600	8579	8511	8444	8297	8032	7784	
1500	8600	8600	8600	8600	8545	8476	8409	8147	7887	7643	
2000	8600	8600	8600	8580	8510	8441	8273	8000	7744	7505	
2500	8600	8600	8600	8546	8475	8406	8122	7854	7603	7368	
3000	8600	8600	8584	8511	8439	8256	7974	7711	7465		
3500	8600	8600	8550	8475	8401	8104	7828	7570	7328		
4000	8600	8590	8514	8440	8247	7955	7684	7431	7193		
4500	8600	8555	8478	8402	8095	7809	7542	7294			
5000	8599	8520	8443	8247	7945	7664	7403	7159			
5500	8564	8484	8407	8094	7797	7522	7265				
6000	8529	8448	8257	7943	7652	7382	7130				
6500	8300	8300	8102	7794	7509	7244					
7000	8300	8277	7950	7648	7368						
7500	8300	8121	7800	7504	7229						
8000	8300	7968	7653	7362							

ICN-89-A-154999-G-A0126-00022-A-01-1

Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-21 WAT for HOGE Controllability AEO 5min, Anti Ice OFF, Heater OFF

CHARTS
DIAGS

WAT for HOGE Controllability 5 min AEO
Heater OFF, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8579					
500	8600	8600	8600	8600	8600	8546					
1000	8600	8600	8600	8600	8579	8511					
1500	8600	8600	8600	8600	8545	8476					
2000	8600	8600	8600	8580	8510	8441					
2500	8600	8600	8600	8546	8475	8406					
3000	8600	8600	8584	8511	8439	8256					
3500	8600	8600	8550	8475	8401	8104					
4000	8600	8590	8514	8440	8247	7955					
4500	8600	8555	8478	8402	8095	7809					
5000	8599	8520	8443	8247	7945	7664					
5500	8564	8484	8407	8094	7797	7522					
6000	8529	8448	8257	7943	7652	7382					
6500	8300	8300	8102	7794	7509	7244					
7000	8300	8277	7950	7648	7368						
7500	8300	8121	7800	7504	7229						
8000	8300	7968	7653	7362							

ICN-89-A-154999-G-A0126-00023-A-01-1

Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-22 WAT for HOGE Controllability AEO 5min, Anti Ice ON, Heater OFF

WAT for HOGE Controllability 5 min AEO
Heater ON, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8582				
-500	8600	8600	8600	8600	8600	8600	8548				
0	8600	8600	8600	8600	8600	8579	8514				
500	8600	8600	8600	8600	8600	8546	8479				
1000	8600	8600	8600	8600	8579	8511	8444				
1500	8600	8600	8600	8600	8545	8476	8409				
2000	8600	8600	8600	8580	8510	8441	8273				
2500	8600	8600	8600	8546	8475	8406	8122				
3000	8600	8600	8584	8511	8439	8256	7974				
3500	8600	8600	8550	8475	8401	8104	7828				
4000	8600	8590	8514	8440	8247	7955	7684				
4500	8600	8555	8478	8402	8095	7809	7542				
5000	8599	8520	8443	8247	7945	7664	7403				
5500	8564	8484	8407	8094	7797	7522	7265				
6000	8529	8448	8257	7943	7652	7382	7130				
6500	8300	8300	8102	7794	7509	7244					
7000	8300	8277	7950	7648	7368						
7500	8300	8121	7800	7504	7229						
8000	8300	7968	7653	7362							

ICN-89-A-154999-G-A0126-00024-A-01-1

CHARTS
DIAGS

Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-23 WAT for HOGE Controllability AEO 5min, Anti Ice OFF, Heater ON

CHARTS
DIAGS

WAT for HOGE Controllability 5 min AEO
Heater ON, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8579					
500	8600	8600	8600	8600	8600	8546					
1000	8600	8600	8600	8600	8579	8511					
1500	8600	8600	8600	8600	8545	8357					
2000	8600	8600	8600	8580	8510	8181					
2500	8600	8600	8600	8546	8475	8006					
3000	8600	8600	8584	8511	8439	7831					
3500	8600	8600	8550	8475	8278	7654					
4000	8600	8590	8514	8440	8103	7475					
4500	8600	8555	8478	8402	7931	7295					
5000	8599	8520	8443	8247	7758	7117					
5500	8564	8484	8407	8094	7584	6945					
6000	8472	8448	8257	7939	7410	6777					
6500	8300	8300	8102	7764	7240	6613					
7000	8172	8181	7950	7589	7073						
7500	8021	8024	7800	7415	6911						
8000	7869	7871	7653	7245							

ICN-89-A-154999-G-A0126-00025-A-01-1

Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-24 WAT for HOGE Controllability AEO 5min, Anti Ice ON, Heater ON

CHARTS
DIAGS

WAT for HOGE Controllability 30 min AEO
Heater OFF, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8582	8519	8456	8214	7835
-500	8600	8600	8600	8600	8600	8600	8548	8484	8422	8041	7666
0	8600	8600	8600	8600	8600	8579	8514	8449	8329	7867	7494
500	8600	8600	8600	8600	8600	8546	8479	8415	8179	7689	
1000	8600	8600	8600	8600	8579	8511	8444	8297	8032	7510	
1500	8600	8600	8600	8600	8545	8476	8409	8147	7887	7334	
2000	8600	8600	8600	8580	8510	8441	8273	8000	7744	7160	
2500	8600	8600	8600	8546	8475	8406	8122	7854	7603	6990	
3000	8600	8600	8584	8511	8439	8256	7974	7711	7465		
3500	8600	8600	8550	8475	8401	8104	7828	7570	7328		
4000	8600	8590	8514	8440	8247	7955	7684	7431	7177		
4500	8600	8555	8478	8402	8095	7809	7542	7294			
5000	8599	8520	8443	8247	7945	7664	7403	7159			
5500	8564	8484	8407	8094	7797	7522	7265				
6000	8529	8448	8257	7943	7652	7382	7130				
6500	8300	8300	8102	7794	7509	7244					
7000	8300	8277	7950	7648	7368						
7500	8300	8121	7800	7504	7229						
8000	8300	7968	7653	7362							

ICN-89-A-154999-G-A0126-00026-A-01-1

Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-25 WAT for HOGE Controllability 30min, Anti Ice OFF, Heater OFF

WAT for HOGE Controllability 30 min AEO
Heater OFF, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8579					
500	8600	8600	8600	8600	8600	8546					
1000	8600	8600	8600	8600	8579	8511					
1500	8600	8600	8600	8600	8545	8476					
2000	8600	8600	8600	8580	8510	8441					
2500	8600	8600	8600	8546	8475	8384					
3000	8600	8600	8584	8511	8439	8206					
3500	8600	8600	8550	8475	8401	8023					
4000	8600	8590	8514	8440	8247	7837					
4500	8600	8555	8478	8402	8095	7650					
5000	8599	8520	8443	8247	7945	7467					
5500	8564	8484	8407	8094	7797	7291					
6000	8529	8448	8257	7943	7652	7118					
6500	8300	8300	8102	7794	7509	6944					
7000	8300	8277	7950	7648	7368						
7500	8300	8121	7800	7504	7229						
8000	8300	7968	7653	7362							

ICN-89-A-154999-G-A0126-00027-A-01-1

Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-26 WAT for HOGE Controllability 30min, Anti Ice ON, Heater OFF

WAT for HOGE Controllability 30 min AEO
Heater ON, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8582				
-500	8600	8600	8600	8600	8600	8600	8548				
0	8600	8600	8600	8600	8600	8579	8514				
500	8600	8600	8600	8600	8600	8546	8479				
1000	8600	8600	8600	8600	8579	8511	8444				
1500	8600	8600	8600	8600	8545	8476	8409				
2000	8600	8600	8600	8580	8510	8441	8264				
2500	8600	8600	8600	8546	8475	8406	8093				
3000	8600	8600	8584	8511	8439	8256	7922				
3500	8600	8600	8550	8475	8401	8104	7744				
4000	8600	8590	8514	8440	8247	7955	7565				
4500	8600	8555	8478	8402	8095	7809	7389				
5000	8599	8520	8443	8247	7945	7664	7217				
5500	8564	8484	8407	8094	7797	7522					
6000	8529	8448	8257	7943	7652	7382					
6500	8300	8300	8102	7794	7509						
7000	8300	8277	7950	7648							
7500	8278	8121	7800	7504							
8000	8129	7968	7653								

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-27 WAT for HOGE Controllability 30min, Anti Ice OFF, Heater ON

CHARTS
DIAGS

WAT for HOGE Controllability 30 min AEO
Heater ON, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8517					
-500	8600	8600	8600	8600	8600	8341					
0	8600	8600	8600	8600	8600	8165					
500	8600	8600	8600	8600	8600	7989					
1000	8600	8600	8600	8600	8579	7812					
1500	8600	8600	8600	8600	8438	7637					
2000	8600	8600	8600	8580	8266	7463					
2500	8600	8600	8600	8546	8096	7291					
3000	8600	8600	8584	8511	7928	7118					
3500	8600	8600	8550	8361	7758	6944					
4000	8600	8590	8514	8189	7586	6767					
4500	8600	8555	8478	8017	7413	6586					
5000	8599	8520	8395	7846	7239	6407					
5500	8564	8484	8216	7677	7063	6234					
6000	8472	8448	8039	7507	6888	6067					
6500	8300	8300	7865	7336	6716	5906					
7000	8172	8176	7693	7165	6549						
7500	8021	8009	7519	6996	6387						
8000	7869	7839	7346	6831							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-28 WAT for HOGE Controllability AEO 30min, Anti Ice ON, Heater ON

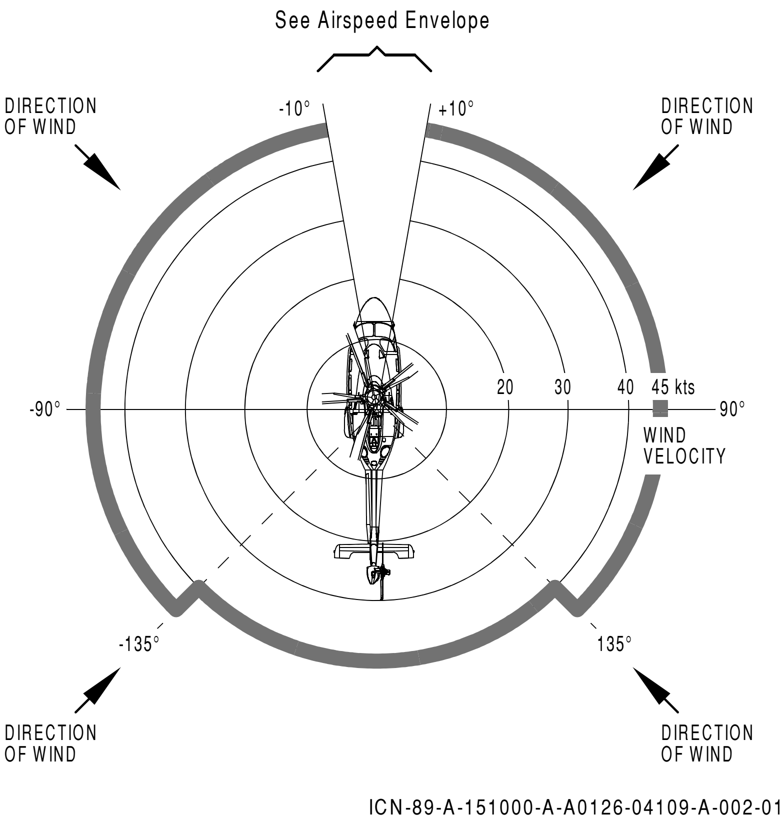

Figure 1-29 Wind/Ground/Airspeed Azimuth Envelope for Hover IGE and OGE Controllability

CHARTS
DIAGS

Unfactored Wind correction	
Wind [kt]	dGW [kg]
0	0
5	189
10	362
15	424
20	474
25	474
30	474
35	474
40	474

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WAT for Vertical T.O. & Landing
Heater OFF. Engine A.I. OFF

Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8552	8600	8600	8588	8511	8421	8308	8188	8056	7863	7731
-500	8448	8548	8565	8518	8437	8345	8237	8118	7972	7741	7611
0	8343	8436	8447	8417	8359	8264	8160	8041	7855	7619	7488
500	8239	8323	8329	8297	8240	8171	8078	7957	7732	7497	
1000	8117	8210	8211	8178	8120	8051	7967	7837	7610	7357	
1500	7976	8076	8094	8059	8001	7931	7848	7714	7488	7218	
2000	7838	7934	7952	7934	7881	7811	7731	7593	7351	7082	
2500	7702	7795	7813	7794	7750	7694	7614	7472	7212	6949	
3000	7568	7658	7676	7657	7613	7562	7493	7334	7076		
3500	7433	7523	7540	7521	7479	7428	7361	7197	6942		
4000	7301	7390	7406	7388	7347	7297	7233	7061	6811		
4500	7173	7259	7274	7256	7217	7169	7108	6928	6681		
5000	7048	7130	7147	7128	7090	7044	6984	6796			
5500	6926	7003	7022	7002	6965	6923	6858				
6000	6804	6879	6899	6879	6843	6802	6733				
6500	6685	6762	6777	6756	6723	6680					
7000	6569	6648	6657	6635	6604						
7500	6458	6534	6539	6518	6484						
8000	6351	6421	6423	6402							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-30 CAT A Vertical Heliport Procedure Weight Limitations, Anti Ice OFF, Heater OFF

Unfactored Wind benefit	
Wind [kt]	dGW [kg]
0	0
5	187
10	351
15	461
20	494
25	494
30	494
35	494
40	494

WAT for Vertical T.O. & Landing
Heater OFF. Engine A.I. ON

Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8150	8386	8463	8471	8443	8366					
-500	8072	8281	8350	8353	8324	8265					
0	7936	8171	8236	8235	8203	8142					
500	7803	8030	8112	8119	8084	8023					
1000	7672	7891	7971	7989	7968	7906					
1500	7543	7755	7833	7850	7835	7786					
2000	7416	7620	7698	7714	7701	7649					
2500	7288	7488	7563	7581	7566	7515					
3000	7162	7358	7430	7450	7432	7384					
3500	7041	7230	7301	7320	7302	7255					
4000	6923	7104	7174	7191	7175	7124					
4500	6808	6983	7050	7065	7051	6987					
5000	6694	6864	6927	6941	6927	6849					
5500	6581	6745	6805	6819	6803	6716					
6000	6472	6628	6685	6699	6681	6585					
6500	6367	6515	6567	6578	6561	6456					
7000	6265	6404	6451	6459	6443						
7500	6164	6293	6334	6342	6324						
8000	6064	6181	6218	6228							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-31 CAT A Vertical Heliport Procedure Weight Limitations, Anti Ice ON, Heater OFF

CHARTS
DIAGS

WAT for Shallow Landing
Heater OFF, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8300	8300	8300	8300	8300	8300	8300	8300	8300	8201	7822
-500	8300	8300	8300	8300	8300	8300	8300	8300	8280	8029	7654
0	8300	8300	8300	8300	8300	8300	8300	8300	8199	7855	7481
500	8300	8300	8300	8300	8300	8300	8300	8267	8117	7677	
1000	8300	8300	8300	8300	8300	8300	8293	8185	8031	7498	
1500	8300	8300	8300	8300	8300	8300	8212	8104	7909	7321	
2000	8300	8300	8300	8300	8278	8207	8131	8015	7788	7148	
2500	8300	8300	8300	8235	8157	8090	8024	7895	7667	6977	
3000	8300	8258	8185	8113	8038	7974	7909	7774	7510		
3500	8191	8111	8039	7975	7917	7858	7796	7654	7336		
4000	8043	7966	7894	7833	7778	7733	7684	7520	7165		
4500	7899	7823	7753	7693	7640	7598	7559	7378			
5000	7757	7682	7616	7556	7505	7467	7428	7236			
5500	7618	7543	7481	7423	7373	7339	7295				
6000	7480	7408	7349	7291	7244	7212	7163				
6500	7345	7278	7218	7160	7117	7084					
7000	7213	7151	7088	7032	6991						
7500	7085	7025	6961	6907	6865						
8000	6960	6900	6836	6784							

Unfactored Wind correction

Wind [kt]	dGW [kg]
0	0
5	144
10	299
15	439
20	646
25	646
30	646
35	646
40	646

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Figure 1-32 CAT A Ground Heliport (Shallow) Procedure Weight Limitations, Anti Ice OFF, Heater OFF

CHARTS
DIAGS

WAT for Shallow Landing
Heater OFF, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8300	8300	8300	8300	8300	8300					
-500	8300	8300	8300	8300	8300	8300					
0	8300	8300	8300	8300	8300	8300					
500	8300	8300	8300	8300	8300	8300					
1000	8300	8300	8300	8300	8300	8300					
1500	8300	8300	8300	8300	8262	8184					
2000	8300	8300	8279	8214	8143	8066					
2500	8284	8204	8132	8071	8018	7948					
3000	8136	8059	7988	7930	7876	7817					
3500	7991	7915	7847	7790	7738	7680					
4000	7849	7774	7708	7652	7603	7542					
4500	7709	7637	7572	7517	7470	7397					
5000	7571	7502	7438	7384	7338	7251					
5500	7435	7367	7305	7253	7207	7110					
6000	7302	7236	7174	7124	7077	6971					
6500	7173	7107	7045	6995	6950	6834					
7000	7046	6981	6918	6867	6824						
7500	6921	6856	6792	6742	6698						
8000	6798	6730	6666	6619							

Unfactored Wind correction

Wind [kt]	dGW [kg]
0	0
5	163
10	294
15	429
20	455
25	455
30	455
35	455
40	455

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Figure 1-33 CAT A Ground Heliport (Shallow) Procedure Weight Limitations, Anti Ice ON, Heater OFF

CHARTS
DIAGS

WAT for Clear Area T.O. & Landing
Heater OFF, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8600	8600	8600	8276	7898
-500	8600	8600	8600	8600	8600	8600	8600	8600	8600	8106	7735
0	8600	8600	8600	8600	8600	8600	8600	8600	8600	7936	7572
500	8600	8600	8600	8600	8600	8600	8600	8600	8300	7763	
1000	8600	8600	8600	8600	8600	8600	8600	8600	8300	7592	
1500	8600	8600	8600	8600	8600	8600	8600	8300	8234	7424	
2000	8600	8600	8600	8600	8600	8600	8600	8300	8042	7259	
2500	8600	8600	8600	8600	8600	8600	8300	8300	7853	7094	
3000	8514	8541	8546	8566	8600	8600	8300	8243	7669		
3500	8390	8413	8421	8444	8487	8300	8300	8092	7489		
4000	8268	8289	8300	8300	8300	8300	8214	7943	7310		
4500	8146	8166	8267	8270	8280	8300	8063	7797			
5000	8024	8045	8149	8124	8136	8193	7913	7652			
5500	7905	7926	8013	7982	7996	8041	7766				
6000	7787	7811	7872	7841	7859	7891	7622				
6500	7673	7700	7732	7702	7725	7743					
7000	7561	7592	7594	7565	7592						
7500	7451	7485	7458	7432	7457						
8000	7345	7381	7325	7302							

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Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-34 CAT A Clear Area Procedure Weight Limitations, Anti Ice OFF, Heater OFF

WAT for Clear Area T.O. & Landing Heater OFF, Engine A.I. ON

Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8600					
500	8600	8600	8600	8600	8600	8600					
1000	8600	8600	8600	8600	8600	8600					
1500	8580	8600	8600	8600	8600	8600					
2000	8458	8536	8564	8572	8598	8513					
2500	8336	8412	8438	8450	8481	8347					
3000	8216	8290	8313	8332	8363	8181					
3500	8096	8168	8193	8216	8247	8014					
4000	7980	8049	8074	8101	8133	7841					
4500	7866	7933	7959	7987	8025	7662					
5000	7755	7819	7844	7874	7903	7485					
5500	7644	7705	7731	7765	7762	7316					
6000	7536	7592	7620	7636	7624	7150					
6500	7431	7482	7511	7498	7488	6981					
7000	7327	7374	7403	7362	7354						
7500	7224	7267	7269	7228	7219						
8000	7121	7161	7135	7097							

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CHARTS
DIAGS

Note

Green shaded area represents the Weight Extension 8600 kg envelope.

Figure 1-35 CAT A Clear Area Procedure Weight Limitations, Anti Ice ON, Heater OFF

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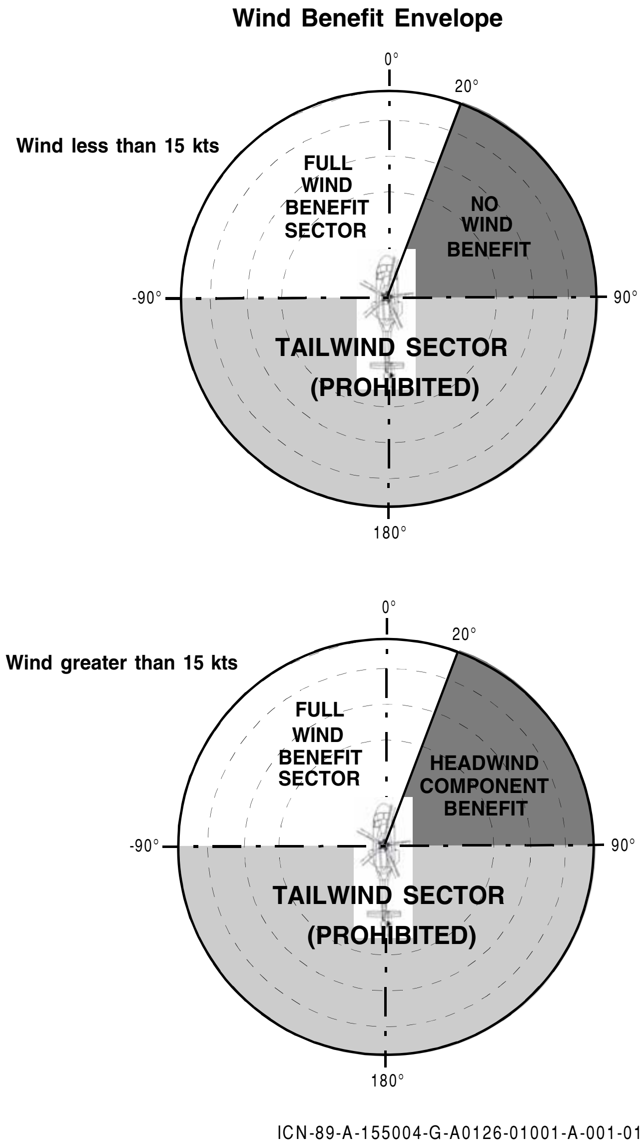

Figure 1-36 WAT CAT A Offshore/Elevated Helideck Wind Limitation Chart

CHARTS
DIAGS

WAT for OFFSHORE TAKE OFF
Engine A.I. OFF. Heater OFF/ON

Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600	8600	8600	8600	8276	7898
-500	8600	8600	8600	8600	8600	8600	8600	8600	8600	8106	7735
0	8600	8600	8600	8600	8600	8600	8600	8600	8514	7936	7572
500	8600	8600	8600	8600	8600	8600	8600	8600	8377	7763	
1000	8600	8600	8600	8600	8600	8600	8600	8492	8243		

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Figure 1-37 Offshore Helideck Take-Off Procedure Weight Limitations, Table Anti Ice OFF, Heater OFF/ON

CHARTS
DIAGS

WAT for OFFSHORE TAKE OFF
Engine A.I. ON. Heater OFF/ON

Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8600					
-500	8600	8600	8600	8600	8600	8600					
0	8600	8600	8600	8600	8600	8600					
500	8600	8600	8600	8600	8600	8600					
1000	8600	8600	8600	8600	8600	8600					

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Figure 1-38 Offshore Helideck Take-Off Procedure Weight Limitations Table, Anti Ice ON, Heater OFF/ON

CHARTS
DIAGS

DROP DOWN HEIGHT

Weight	Hp [ft] \ OAT [°C]	-40	-30	-20	-10	0	10	20	30	40	50	55
6400 kg	-1000	0	0	0	0	0	0	0	0	0	0	0
	-500	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	500	0	0	0	0	0	0	0	0	0	0	
	1000	0	0	0	0	0	0	0	0	0	5	
	1500	0	0	0	0	0	0	0	0	0		
	2000	0	0	0	0	0	0	0	0	8		
	2500	0	0	0	0	0	0	0	1			
	3000	0	0	0	0	0	0	0	10			
	3500	0	0	0	0	0	0	2				
	4000	0	0	0	0	0	0	12				
	4500	0	0	0	0	0	4					
	5000	0	0	0	0	0						

Weight	Hp [ft] \ OAT [°C]	-40	-30	-20	-10	0	10	20	30	40	50	55
6600 kg	-1000	0	0	0	0	0	0	0	0	0	0	0
	-500	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	3	10
	500	0	0	0	0	0	0	0	0	0	12	
	1000	0	0	0	0	0	0	0	0	5	21	
	1500	0	0	0	0	0	0	0	0	14		
	2000	0	0	0	0	0	0	0	7	24		
	2500	0	0	0	0	0	0	0	16			
	3000	0	0	0	0	0	0	9	26			
	3500	0	0	0	0	0	1	18				
	4000	0	0	0	0	0	10	28				
	4500	0	0	0	0	1	19					
	5000	0	0	0	0	11						

Weight	Hp [ft] \ OAT [°C]	-40	-30	-20	-10	0	10	20	30	40	50	55
6800 kg	-1000	0	0	0	0	0	0	0	0	0	0	7
	-500	0	0	0	0	0	0	0	0	0	9	16
	0	0	0	0	0	0	0	0	0	2	18	26
	500	0	0	0	0	0	0	0	0	11	27	
	1000	0	0	0	0	0	0	0	4	20	37	
	1500	0	0	0	0	0	0	0	13	30		
	2000	0	0	0	0	0	0	5	22	40		
	2500	0	0	0	0	0	0	15	32			
	3000	0	0	0	0	0	6	24	42			
	3500	0	0	0	0	0	16	34				
	4000	0	0	0	0	7	25	44				
	4500	0	0	0	0	16	35					
	5000	0	0	0	7	26						

Unfactored Wind correction

Wind [kt]	ΔH [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-38A Offshore Helideck Drop Down Height BTS Table for CTO Distance OEI, Anti Ice OFF, Heater OFF/ON, weights 6400 to 6800 kg

DROP DOWN HEIGHT

Weight	Hp [ft] \ OAT [°C]	-40	-30	-20	-10	0	10	20	30	40	50	55
7000 kg	-1000	0	0	0	0	0	0	0	0	0	14	22
	-500	0	0	0	0	0	0	0	0	7	23	31
	0	0	0	0	0	0	0	0	0	16	33	41
	500	0	0	0	0	0	0	0	9	26	43	
	1000	0	0	0	0	0	0	1	18	35	53	
	1500	0	0	0	0	0	0	11	28	45		
	2000	0	0	0	0	0	2	20	38	55		
	2500	0	0	0	0	0	12	30	48			
	3000	0	0	0	0	3	21	39	58			
	3500	0	0	0	0	12	31	49				
	4000	0	0	0	3	22	41	60				
	4500	0	0	0	12	31	51					
	5000	0	0	2	22	41						

Weight	Hp [ft] \ OAT [°C]	-40	-30	-20	-10	0	10	20	30	40	50	55
7200 kg	-1000	0	0	0	0	0	0	0	0	12	29	37
	-500	0	0	0	0	0	0	0	5	22	38	47
	0	0	0	0	0	0	0	0	14	31	48	57
	500	0	0	0	0	0	0	6	24	41	58	
	1000	0	0	0	0	0	0	16	33	51	68	
	1500	0	0	0	0	0	7	25	43	61		
	2000	0	0	0	0	0	17	35	53	71		
	2500	0	0	0	0	8	26	45	63			
	3000	0	0	0	0	17	36	55	74			
	3500	0	0	0	7	27	46	65				
	4000	0	0	0	17	36	56	76				
	4500	0	0	7	27	47	66					
	5000	0	0	16	36	57						

Weight	Hp [ft] \ OAT [°C]	-40	-30	-20	-10	0	10	20	30	40	50	55
7400 kg	-1000	0	0	0	0	0	0	0	10	27	43	52
	-500	0	0	0	0	0	0	2	19	36	53	62
	0	0	0	0	0	0	0	11	29	46	63	72
	500	0	0	0	0	0	3	20	38	56	74	
	1000	0	0	0	0	0	12	30	48	66	84	
	1500	0	0	0	0	3	21	40	58	76		
	2000	0	0	0	0	12	31	50	68	87		
	2500	0	0	0	3	22	41	60	79			
	3000	0	0	0	12	31	51	70	89			
	3500	0	0	2	21	41	61	81				
	4000	0	0	11	31	51	71	92				
	4500	0	0	21	41	62	82					
	5000	0	10	30	51	72						

Unfactored Wind correction

Wind [kt]	ΔH [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-38B Offshore Helideck Drop Down Height BTS Table for CTO Distance OEI, Anti Ice OFF, Heater OFF/ON, weights 7000 to 7400 kg

CHARTS
DIAGS

DROP DOWN HEIGHT

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
7600 kg	-1000	0	0	0	0	0	0	6	24	41	58	67
	-500	0	0	0	0	0	0	16	33	51	68	77
	0	0	0	0	0	0	7	25	43	61	78	87
	500	0	0	0	0	0	16	34	53	71	89	
	1000	0	0	0	0	7	26	44	63	81	100	
	1500	0	0	0	0	17	35	54	73	92		
	2000	0	0	0	7	26	45	64	84	103		
	2500	0	0	0	16	36	55	75	94			
	3000	0	0	6	26	46	66	85	105			
	3500	0	0	15	36	56	76	96				
	4000	0	4	25	46	66	87	107				
	4500	0	14	35	56	77	98					
	5000	0	23	45	66	88						

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
7800 kg	-1000	0	0	0	0	0	2	20	37	55	73	82
	-500	0	0	0	0	0	11	29	47	65	83	92
	0	0	0	0	0	2	20	39	57	75	94	103
	500	0	0	0	0	11	30	48	67	86	104	
	1000	0	0	0	2	21	40	58	77	96	115	
	1500	0	0	0	11	30	49	69	88	107		
	2000	0	0	0	20	40	60	79	99	119		
	2500	0	0	10	30	50	70	90	110			
	3000	0	0	19	40	60	80	101	121			
	3500	0	8	29	50	70	91	112				
	4000	0	17	39	60	81	102	123				
	4500	5	27	49	70	92	113					
	5000	15	37	59	81	103						

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
8000 kg	-1000	0	0	0	0	0	15	33	51	69	87	96
	-500	0	0	0	0	6	24	43	61	79	98	107
	0	0	0	0	0	15	34	52	71	90	109	118
	500	0	0	0	5	24	43	62	82	101	120	
	1000	0	0	0	14	34	53	73	92	112	131	
	1500	0	0	4	24	44	63	83	103	123		
	2000	0	0	13	33	54	74	94	114	134		
	2500	0	2	23	43	64	84	105	126			
	3000	0	11	32	53	74	95	116	137			
	3500	0	21	42	64	85	106	128				
	4000	9	31	52	74	96	118	139				
	4500	18	41	63	85	107	129					
	5000	28	51	73	96	118						

Unfactored Wind correction

Wind [kt]	ΔH [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-38C Offshore Helideck Drop Down Height BTS Table for CTO Distance OEI, Anti Ice OFF, Heater OFF/ON, weights 7600 to 8000 kg

DROP DOWN HEIGHT

Weight	Hp [ft] \ OAT [°C]	-40	-30	-20	-10	0	10	20	30	40	50	55
8200 kg	-1000	0	0	0	0	9	28	46	65	83	102	111
	-500	0	0	0	0	18	37	56	75	94	113	122
	0	0	0	0	8	28	47	66	85	105	124	134
	500	0	0	0	18	37	57	77	96	116	135	
	1000	0	0	7	27	47	67	87	107	127	147	
	1500	0	0	16	37	57	77	98	118	138		
	2000	0	5	26	47	67	88	109	130	150		
	2500	0	15	36	57	78	99	120	141			
	3000	3	24	46	67	89	110	132	153			
	3500	12	34	56	78	100	121	143				
	4000	22	44	66	88	111	133	155				
	4500	31	54	77	99	122	145					
	5000	41	64	88	111	134						

Weight	Hp [ft] \ OAT [°C]	-40	-30	-20	-10	0	10	20	30	40	50	55
8400 kg	-1000	0	0	0	2	21	40	60	79	98	117	126
	-500	0	0	0	12	31	50	70	89	108	128	137
	0	0	0	1	21	41	60	80	100	119	139	149
	500	0	0	10	30	50	70	91	111	131	151	
	1000	0	0	20	40	60	81	101	122	142	163	
	1500	0	8	29	50	71	92	112	133	154		
	2000	0	18	39	60	81	102	124	145	166		
	2500	6	27	49	70	92	114	135	157			
	3000	15	37	59	81	103	125	147	169			
	3500	24	47	69	92	114	137	159				
	4000	34	57	80	103	126	148	171				
	4500	44	67	91	114	137	161					
	5000	54	78	102	126	149						

Weight	Hp [ft] \ OAT [°C]	-40	-30	-20	-10	0	10	20	30	40	50	55
8600 kg	-1000	0	0	0	14	34	53	73	92	112	131	141
	-500	0	0	4	24	43	63	83	103	123	143	153
	0	0	0	13	33	53	74	94	114	134	154	164
	500	0	2	22	43	63	84	105	125	146	166	
	1000	0	11	32	53	74	95	116	137	157	178	
	1500	0	20	42	63	84	106	127	148	170		
	2000	8	30	52	73	95	117	138	160	182		
	2500	18	40	62	84	106	128	150	172			
	3000	27	50	72	95	117	140	162	185			
	3500	37	60	83	106	129	152	175				
	4000	47	70	94	117	140	164	187				
	4500	57	81	105	129	152	176					
	5000	68	92	116	140	165						

Unfactored Wind correction

Wind [kt]	ΔH [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-38D Offshore Helideck Drop Down Height BTS Table for CTO Distance OEI, Anti Ice OFF, Heater OFF/ON, weights 8200 to 8600 kg

CHARTS
DIAGS

DROP DOWN HEIGHT - Eng. A.I. ON

6400 kg

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	0	0	0					
-500	0	0	0	0	0	0					
0	0	0	0	0	0	0					
500	0	0	0	0	0	0					
1000	0	0	0	0	0	0					
1500	0	0	0	0	0	0					
2000	0	0	0	0	0	0					
2500	0	0	0	0	0	0					
3000	0	0	0	0	0	0					
3500	0	0	0	0	0	0					
4000	0	0	0	0	0	0					
4500	0	0	0	0	0	4					
5000	0	0	0	0	0						

6600 kg

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	0	0	0					
-500	0	0	0	0	0	0					
0	0	0	0	0	0	0					
500	0	0	0	0	0	0					
1000	0	0	0	0	0	0					
1500	0	0	0	0	0	0					
2000	0	0	0	0	0	0					
2500	0	0	0	0	0	0					
3000	0	0	0	0	0	0					
3500	0	0	0	0	0	1					
4000	0	0	0	0	0	10					
4500	0	0	0	0	1	19					
5000	0	0	0	0	11						

6800 kg

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	0	0	0					
-500	0	0	0	0	0	0					
0	0	0	0	0	0	0					
500	0	0	0	0	0	0					
1000	0	0	0	0	0	0					
1500	0	0	0	0	0	0					
2000	0	0	0	0	0	0					
2500	0	0	0	0	0	0					
3000	0	0	0	0	0	6					
3500	0	0	0	0	0	16					
4000	0	0	0	0	7	25					
4500	0	0	0	0	16	35					
5000	0	0	0	7	26						

Unfactored Wind correction

Wind [kt]	ΔH [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-38E Offshore Helideck Drop Down Height BTS Table for CTO Distance OEI, Anti Ice ON, Heater OFF/ON, weights 6400 to 6800 kg

CHARTS
DIAGS

DROP DOWN HEIGHT - Eng. A.I. ON

Weight	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
		OAT [°C]										
7000 kg	-1000	0	0	0	0	0	0					
7000 kg	-500	0	0	0	0	0	0					
7000 kg	0	0	0	0	0	0	0					
7000 kg	500	0	0	0	0	0	0					
7000 kg	1000	0	0	0	0	0	0					
7000 kg	1500	0	0	0	0	0	0					
7000 kg	2000	0	0	0	0	0	2					
7000 kg	2500	0	0	0	0	0	12					
7000 kg	3000	0	0	0	0	3	21					
7000 kg	3500	0	0	0	0	12	31					
7000 kg	4000	0	0	0	3	22	41					
7000 kg	4500	0	0	0	12	31	51					
7000 kg	5000	0	0	2	22	41						
		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
7200 kg	-1000	0	0	0	0	0	0					
7200 kg	-500	0	0	0	0	0	0					
7200 kg	0	0	0	0	0	0	0					
7200 kg	500	0	0	0	0	0	0					
7200 kg	1000	0	0	0	0	0	0					
7200 kg	1500	0	0	0	0	0	7					
7200 kg	2000	0	0	0	0	0	17					
7200 kg	2500	0	0	0	0	8	26					
7200 kg	3000	0	0	0	0	17	36					
7200 kg	3500	0	0	0	7	27	46					
7200 kg	4000	0	0	0	17	36	56					
7200 kg	4500	0	0	7	27	47	66					
7200 kg	5000	0	0	16	36	57						
		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
7400 kg	-1000	0	0	0	0	0	0					
7400 kg	-500	0	0	0	0	0	0					
7400 kg	0	0	0	0	0	0	0					
7400 kg	500	0	0	0	0	0	3					
7400 kg	1000	0	0	0	0	0	12					
7400 kg	1500	0	0	0	0	3	21					
7400 kg	2000	0	0	0	0	12	31					
7400 kg	2500	0	0	0	3	22	41					
7400 kg	3000	0	0	0	12	31	51					
7400 kg	3500	0	0	2	21	41	61					
7400 kg	4000	0	0	11	31	51	71					
7400 kg	4500	0	0	21	41	62	82					
7400 kg	5000	0	10	30	51	72						

Unfactored Wind correction	
Wind [kt]	ΔH [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-38F Offshore Helideck Drop Down Height BTS Table for CTO Distance OEI, Anti Ice ON, Heater OFF/ON, weights 7000 to 7400 kg

CHARTS
DIAGS

DROP DOWN HEIGHT - Eng. A.I. ON

7600 kg	OAT [°C]										
Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	0	0	0					
-500	0	0	0	0	0	0					
0	0	0	0	0	0	7					
500	0	0	0	0	0	16					
1000	0	0	0	0	7	26					
1500	0	0	0	0	17	35					
2000	0	0	0	7	26	45					
2500	0	0	0	16	36	55					
3000	0	0	6	26	46	66					
3500	0	0	15	36	56	76					
4000	0	4	25	46	66	87					
4500	0	14	35	56	77	98					
5000	2	23	45	66	88						

7800 kg	OAT [°C]										
Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	0	0	2					
-500	0	0	0	0	0	11					
0	0	0	0	0	2	20					
500	0	0	0	0	11	30					
1000	0	0	0	2	21	40					
1500	0	0	0	11	30	49					
2000	0	0	0	20	40	60					
2500	0	0	10	30	50	70					
3000	0	0	19	40	60	80					
3500	0	8	29	50	70	91					
4000	0	17	39	60	81	102					
4500	5	27	49	70	92	113					
5000	15	37	59	81	103						

8000 kg	OAT [°C]										
Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	0	0	15					
-500	0	0	0	0	6	24					
0	0	0	0	0	15	34					
500	0	0	0	5	24	43					
1000	0	0	0	14	34	53					
1500	0	0	4	24	44	63					
2000	0	0	13	33	54	74					
2500	0	2	23	43	64	84					
3000	0	11	32	53	74	95					
3500	0	21	42	64	85	106					
4000	9	31	52	74	96	118					
4500	18	41	63	85	107	129					
5000	28	51	73	96	118						

Unfactored Wind correction	
Wind [kt]	ΔH [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-38G Offshore Helideck Drop Down Height BTS Table for CTO Distance OEI, Anti Ice ON, Heater OFF/ON, weights 7600 to 8000 kg

DROP DOWN HEIGHT - Eng. A.I. ON

	OAT [°C]										
8200 kg Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	0	9	28					
-500	0	0	0	0	18	37					
0	0	0	0	8	28	47					
500	0	0	0	18	37	57					
1000	0	0	7	27	47	67					
1500	0	0	16	37	57	77					
2000	0	5	26	47	67	88					
2500	0	15	36	57	78	99					
3000	3	24	46	67	89	110					
3500	12	34	56	78	100	121					
4000	22	44	66	88	111	133					
4500	31	54	77	99	122	145					
5000	41	64	88	111	134						

	OAT [°C]										
8400 kg Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	2	21	40					
-500	0	0	0	12	31	50					
0	0	0	1	21	41	60					
500	0	0	10	30	50	70					
1000	0	0	20	40	60	81					
1500	0	8	29	50	71	92					
2000	0	18	39	60	81	102					
2500	6	27	49	70	92	114					
3000	15	37	59	81	103	125					
3500	24	47	69	92	114	137					
4000	34	57	80	103	126	148					
4500	44	67	91	114	137	161					
5000	54	78	102	126	149						

	OAT [°C]										
8600 kg Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	14	34	53					
-500	0	0	4	24	43	63					
0	0	0	13	33	53	74					
500	0	2	22	43	63	84					
1000	0	11	32	53	74	95					
1500	0	20	42	63	84	106					
2000	8	30	52	73	95	117					
2500	18	40	62	84	106	128					
3000	27	50	72	95	117	140					
3500	37	60	83	106	129	152					
4000	47	70	94	117	140	164					
4500	57	81	105	129	152	176					
5000	68	92	116	140	165						

Unfactored Wind correction	
Wind [kt]	ΔH [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-38H Offshore Helideck Drop Down Height BTS Table for CTO Distance OEI, Anti Ice ON, Heater OFF/ON, weights 8200 to 8600 kg

CHARTS
DIAGS

WAT for OFFSHORE Landing
Engine A.I. OFF. Heater OFF/ON

Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8577	8445	8322	8206	8070	7898
-500	8600	8600	8600	8600	8600	8508	8379	8257	8142	7984	7735
0	8600	8600	8600	8600	8572	8440	8313	8194	8057	7889	7572
500	8600	8600	8600	8600	8481	8361	8248	8128	7971	7763	
1000	8600	8600	8600	8515	8389	8273	8162	8043	7882		

Unfactored Wind benefit

Wind [kt]	dGW [kg]
0	0
5	151
10	301
15	452
20	533
25	533
30	533
35	533
40	533

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Figure 1-39 Offshore Helideck Landing Procedure Weight Limitations Table, Anti Ice OFF, Heater OFF/ON

CHARTS
DIAGS

Unfactored Wind benefit	
Wind [kt]	dGW [kg]
0	0
5	151
10	301
15	452
20	452
25	452
30	452
35	452
40	452

WAT for OFFSHORE Landing
Engine A.I. ON. Heater OFF/ON

Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8600	8600	8600	8577					
-500	8600	8600	8600	8600	8600	8490					
0	8600	8600	8600	8600	8521	8398					
500	8600	8600	8600	8521	8418	8307					
1000	8600	8600	8504	8395	8294	8196					

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Figure 1-40 Offshore Helideck Landing Procedure Weight Limitations Table, Anti Ice ON, Heater OFF/ON

CHARTS
DIAGS

HEIGHT LOSS below LDP

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
6400 kg	-1000	0	0	0	0	0	0	0	0	0	0	0
6400 kg	-500	0	0	0	0	0	0	0	0	0	0	0
6400 kg	0	0	0	0	0	0	0	0	0	0	0	0
6400 kg	500	0	0	0	0	0	0	0	0	0	0	
6400 kg	1000	0	0	0	0	0	0	0	0	0	0	
6600 kg	-1000	0	0	0	0	0	0	0	0	0	0	0
6600 kg	-500	0	0	0	0	0	0	0	0	0	0	0
6600 kg	0	0	0	0	0	0	0	0	0	0	0	0
6600 kg	500	0	0	0	0	0	0	0	0	0	0	
6600 kg	1000	0	0	0	0	0	0	0	0	0	0	
6800 kg	-1000	0	0	0	0	0	0	0	0	0	0	0
6800 kg	-500	0	0	0	0	0	0	0	0	0	0	0
6800 kg	0	0	0	0	0	0	0	0	0	0	0	0
6800 kg	500	0	0	0	0	0	0	0	0	0	0	
6800 kg	1000	0	0	0	0	0	0	0	0	0	0	

Unfactored Wind benefit	
Wind [kt]	H [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-41 Offshore Helideck OEI Balked Landing Height Loss Below LDP Table, Anti Ice OFF Heater OFF/ON weights 6400 to 6800 kg

HEIGHT LOSS below LDP

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
7000 kg	-1000	0	0	0	0	0	0	0	0	0	0	0
	-500	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	500	0	0	0	0	0	0	0	0	0	0	
	1000	0	0	0	0	0	0	0	0	0	0	

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
7200 kg	-1000	0	0	0	0	0	0	0	0	0	0	0
	-500	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	500	0	0	0	0	0	0	0	0	0	1	
	1000	0	0	0	0	0	0	0	0	0	12	

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
7400 kg	-1000	0	0	0	0	0	0	0	0	0	0	0
	-500	0	0	0	0	0	0	0	0	0	0	5
	0	0	0	0	0	0	0	0	0	0	7	16
	500	0	0	0	0	0	0	0	0	0	17	
	1000	0	0	0	0	0	0	0	0	9	28	

Unfactored Wind benefit

Wind [kt]	H [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-42 Offshore Helideck OEI Balked Landing Height Loss Below LDP Table, Anti Ice OFF Heater OFF/ON weights 7000 to 7400 kg

CHARTS
DIAGS

HEIGHT LOSS below LDP

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
7600 kg	-1000	0	0	0	0	0	0	0	0	0	1	10
	-500	0	0	0	0	0	0	0	0	0	12	21
	0	0	0	0	0	0	0	0	0	4	22	32
	500	0	0	0	0	0	0	0	0	14	33	
	1000	0	0	0	0	0	0	0	6	25	44	
7800 kg	-1000	0	0	0	0	0	0	0	0	0	16	25
	-500	0	0	0	0	0	0	0	0	8	27	36
	0	0	0	0	0	0	0	0	0	19	38	47
	500	0	0	0	0	0	0	0	11	30	49	
	1000	0	0	0	0	0	0	2	21	41	61	
8000 kg	-1000	0	0	0	0	0	0	0	0	13	31	41
	-500	0	0	0	0	0	0	0	4	23	42	52
	0	0	0	0	0	0	0	0	15	34	54	63
	500	0	0	0	0	0	0	6	26	45	65	
	1000	0	0	0	0	0	0	16	37	57	77	

Unfactored Wind benefit	
Wind [kt]	H [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-43 Offshore Helideck OEI Balked Landing Height Loss Below LDP Table, Anti Ice OFF Heater OFF/ON weights 7600 to 8000 kg

CHARTS
DIAGS

HEIGHT LOSS below LDP

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
8200 kg	-1000	0	0	0	0	0	0	0	8	27	47	56
	-500	0	0	0	0	0	0	0	19	38	58	68
	0	0	0	0	0	0	0	10	30	49	69	79
	500	0	0	0	0	0	0	20	41	61	81	
	1000	0	0	0	0	0	11	31	52	72	93	
8400 kg	-1000	0	0	0	0	0	0	3	22	42	62	72
	-500	0	0	0	0	0	0	13	33	53	73	83
	0	0	0	0	0	0	3	24	44	65	85	95
	500	0	0	0	0	0	14	35	56	76	97	
	1000	0	0	0	0	4	25	46	67	88	109	
8600 kg	-1000	0	0	0	0	0	0	16	37	57	77	87
	-500	0	0	0	0	0	7	27	48	68	89	99
	0	0	0	0	0	0	17	38	59	80	101	111
	500	0	0	0	0	7	28	49	71	92	113	
	1000	0	0	0	0	17	39	61	82	104	126	

Unfactored Wind benefit

Wind [kt]	H [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-44 Offshore Helideck OEI Balked Landing Height Loss Below LDP Table, Anti Ice OFF Heater OFF/ON weights 8200 to 8600 kg

CHARTS
DIAGS

HEIGHT LOSS below LDP - ENG. A.I: ON

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
6400 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					
6600 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					
6800 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					

Unfactored Wind benefit

Wind [kt]	H [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-45 Offshore Helideck OEI Balked Landing Height Loss Below LDP Table, Anti Ice ON Heater OFF/ON weights 6400 to 6800 kg

CHARTS
DIAGS

HEIGHT LOSS below LDP - ENG. A.I: ON

	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
7000 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					
	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
7200 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					
	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
7400 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					

Unfactored Wind benefit	
Wind [kt]	H [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-46 Offshore Helideck OEI Balked Landing Height Loss Below LDP Table, Anti Ice ON Heater OFF/ON weights 7000 to 7400 kg

CHARTS
DIAGS

HEIGHT LOSS below LDP - ENG. A.I: ON

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
7600 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					
7800 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					
8000 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					

Unfactored Wind benefit

Wind [kt]	H [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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Figure 1-47 Offshore Helideck OEI Balked Landing Height Loss Below LDP Table, Anti Ice ON Heater OFF/ON weights 7600 to 8000 kg

HEIGHT LOSS below LDP - ENG. A.I: ON

Weight	Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
8200 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	11					
8400 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	3					
	500	0	0	0	0	0	14					
	1000	0	0	0	0	4	25					
8600 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	7					
	0	0	0	0	0	0	17					
	500	0	0	0	0	7	28					
	1000	0	0	0	0	17	39					

Unfactored Wind benefit

Wind [kt]	H [ft]
5	0
10	-30
20	-92
30	-145
40	-198

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CHARTS
DIAGS

Figure 1-48 Offshore Helideck OEI Balked Landing Height Loss Below LDP Table, Anti Ice ON Heater OFF/ON weights 8200 to 8600 kg

WAT for Safe Vertical Reject
Heater OFF, Engine A.I. OFF

	OAT [°C]										
Hp [ft]	**-40**	**-30**	**-20**	**-10**	**0**	**10**	**20**	**30**	**40**	**50**	**55**
-1000	8527	8603	8594	8545	8472	8381	8273	8156	8025	7853	7724
-500	8433	8530	8533	8476	8398	8308	8202	8084	7940	7734	7604
0	8334	8423	8433	8401	8321	8229	8128	8010	7845	7615	7477
500	8237	8317	8320	8287	8228	8148	8045	7925	7726	7497	
1000	8117	8208	8207	8171	8111	8041	7956	7827	7606	7357	
1500	7978	8077	8094	8056	7996	7924	7841	7708	7488	7219	
2000	7838	7934	7952	7934	7880	7808	7726	7589	7351	7082	
2500	7703	7796	7814	7795	7751	7695	7612	7471	7213	6949	
3000	7568	7658	7676	7657	7613	7562	7493	7334	7076		
3500	7434	7524	7541	7522	7480	7429	7363	7197	6943		
4000	7301	7390	7406	7388	7347	7297	7233	7061	6811		
4500	7175	7260	7276	7257	7218	7170	7108	6928			
5000	7048	7130	7147	7128	7090	7044	6984	6796			
5500	6926	7005	7023	7003	6966	6923	6858				
6000	6804	6879	6899	6879	6843	6802	6733				
6500	6687	6764	6778	6756	6723	6680					
7000	6569	6648	6657	6635	6604						
7500	6460	6534	6540	6518	6484						
8000	6351	6421	6423	6402							

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Figure 1-49 WAT Table for Safe OEI Vertical Reject, Anti Ice OFF, Heater OFF

WAT for Safe Vertical Reject
Heater OFF, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8141	8374	8449	8455	8412	8329					
-500	8073	8277	8342	8343	8311	8248					
0	7936	8171	8233	8229	8195	8133					
500	7805	8031	8113	8118	8081	8018					
1000	7672	7891	7971	7989	7967	7904					
1500	7544	7756	7834	7851	7836	7786					
2000	7416	7620	7698	7714	7701	7649					
2500	7289	7489	7564	7582	7566	7516					
3000	7162	7358	7430	7450	7432	7384					
3500	7043	7231	7302	7320	7304	7254					
4000	6923	7104	7174	7191	7175	7124					
4500	6809	6984	7050	7066	7051	6986					
5000	6694	6864	6927	6941	6927	6849					
5500	6583	6746	6806	6820	6803	6717					
6000	6472	6628	6685	6699	6681	6585					
6500	6369	6516	6567	6579	6561	6456					
7000	6265	6404	6451	6459	6443						
7500	6165	6292	6334	6343	6325						
8000	6064	6181	6218	6228							

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Figure 1-50 WAT Table for Safe OEI Vertical Reject, Anti Ice ON, Heater OFF

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FLY AWAY HEIGHT LOSS

Heater OFF/ON

5500 kg

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	0	0	0	0	0	0	0	0
-500	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
500	0	0	0	0	0	0	0	0	0	0	
1000	0	0	0	0	0	0	0	0	0	0	
1500	0	0	0	0	0	0	0	0	0	0	
2000	0	0	0	0	0	0	0	0	0	0	
2500	0	0	0	0	0	0	0	0	0	0	
3000	0	0	0	0	0	0	0	0	0	0	
3500	0	0	0	0	0	0	0	0	0		
4000	0	0	0	0	0	0	0	0	0		
4500	0	0	0	0	0	0	0	0			
5000	0	0	0	0	0	0	0	0			
5500	0	0	0	0	0	0	0				
6000	0	0	0	0	0	0	0				
6500	0	0	0	0	0	0					
7000	0	0	0	0	0						
7500	0	0	0	0	0						
8000	0	0	0	0							

Unfactored Speed correction

IAS [kt]	ΔH [ft]
20	-103
30	-150
40	-196
50	-238

5900 kg

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	0	0	0	0	0	0	0	0
-500	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
500	0	0	0	0	0	0	0	0	0	0	
1000	0	0	0	0	0	0	0	0	0	0	
1500	0	0	0	0	0	0	0	0	0	0	
2000	0	0	0	0	0	0	0	0	0	0	
2500	0	0	0	0	0	0	0	0	0	0	
3000	0	0	0	0	0	0	0	0	0	0	
3500	0	0	0	0	0	0	0	0	0		
4000	0	0	0	0	0	0	0	0	0		
4500	0	0	0	0	0	0	0	0			
5000	0	0	0	0	0	0	0	0			
5500	0	0	0	0	0	0	0				
6000	0	0	0	0	0	0	0				
6500	0	0	0	0	0	0					
7000	0	0	0	0	2						
7500	0	0	0	9	25						
8000	0	0	0	32							

Unfactored Speed correction

IAS [kt]	ΔH [ft]
20	-88
30	-127
40	-165
50	-200

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Figure 1-51 Height Loss During flyaway Table 5500 kg & 5900 kg, Anti Ice OFF, Heater OFF/ON

FLY AWAY HEIGHT LOSS

Heater OFF/ON

6300 kg

Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
	OAT [°C]										
-1000	0	0	0	0	0	0	0	0	0	0	0
-500	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
500	0	0	0	0	0	0	0	0	0	0	
1000	0	0	0	0	0	0	0	0	0	0	
1500	0	0	0	0	0	0	0	0	0	0	
2000	0	0	0	0	0	0	0	0	0	7	
2500	0	0	0	0	0	0	0	0	0	28	
3000	0	0	0	0	0	0	0	0	9	47	
3500	0	0	0	0	0	0	0	0	30		
4000	0	0	0	0	0	0	0	11	48		
4500	0	0	0	0	0	0	3	32			
5000	0	0	0	0	0	9	23	51			
5500	0	0	0	0	17	30	42				
6000	0	0	0	23	38	48	59				
6500	0	0	9	45	56	65					
7000	0	15	51	64	73						
7500	23	55	71	81	89						
8000	67	77	89	97							

Unfactored Speed correction

IAS [kt]	H [ft]
20	-64
30	-98
40	-133
50	-166

6700 kg

Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
	OAT [°C]										
-1000	0	0	0	0	0	0	0	0	0	0	0
-500	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	14
500	0	0	0	0	0	0	0	0	0	13	
1000	0	0	0	0	0	0	0	0	0	33	
1500	0	0	0	0	0	0	0	0	15	52	
2000	0	0	0	0	0	0	0	0	34	68	
2500	0	0	0	0	0	0	0	17	52	83	
3000	0	0	0	0	0	0	13	37	69	97	
3500	0	0	0	0	4	19	32	55	84		
4000	0	0	0	9	26	39	50	71	98		
4500	0	0	0	32	46	57	65	85			
5000	0	0	39	53	64	72	80	99			
5500	0	33	59	71	80	87	93				
6000	41	71	78	88	95	100	105				
6500	83	85	95	103	108	112					
7000	115	102	110	116	120						
7500	111	117	124	128	131						
8000	126	131	136	139							

Unfactored Speed correction

IAS [kt]	H [ft]
20	-45
30	-76
40	-108
50	-140

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Figure 1-52 Height Loss During flyaway Table 6300 kg & 6700 kg, Anti Ice OFF, Heater OFF/ON

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FLY AWAY HEIGHT LOSS

	OAT [°C]											
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
7100 kg	-1000	0	0	0	0	0	0	0	0	0	25	42
	-500	0	0	0	0	0	0	0	0	12	41	56
	0	0	0	0	0	0	0	0	1	26	56	70
	500	0	0	0	0	0	0	0	14	42	69	
	1000	0	0	0	0	0	0	8	29	57	84	
	1500	0	0	0	0	0	9	26	45	70	98	
	2000	0	0	0	0	10	27	41	59	85	110	
	2500	0	0	0	15	31	44	56	72	98	121	
	3000	0	0	0	37	50	61	70	86	110	131	
	3500	0	0	43	57	68	76	84	99	121		
	4000	0	41	64	75	84	91	96	111	131		
	4500	50	76	82	91	98	104	108	122			
	5000	89	89	99	106	111	115	118	132			
	5500	120	106	113	119	123	125	128				
	6000	114	121	126	130	133	134	137				
	6500	129	134	138	144	149	152					
	7000	158	164	170	176	180						
	7500	209	200	202	206	211						
	8000	242	230	231	236							

Unfactored Speed correction	
IAS [kt]	ΔH [ft]
20	-44
30	-74
40	-106
50	-137

	OAT [°C]											
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
7500 kg	-1000	0	0	0	0	0	0	20	40	57	76	89
	-500	0	0	0	0	0	12	32	50	67	88	99
	0	0	0	0	0	5	26	43	59	77	99	110
	500	0	0	0	0	22	39	54	68	89	109	
	1000	0	0	0	22	39	53	65	79	99	120	
	1500	0	0	0	40	55	67	77	90	109	130	
	2000	0	0	44	58	70	80	89	101	120	139	
	2500	0	42	64	76	85	92	99	110	130	172	
	3000	50	77	83	92	99	105	109	121	139	212	
	3500	90	90	99	106	112	116	120	131	172		
	4000	121	107	114	120	124	127	129	139	213		
	4500	114	122	127	131	134	136	137	175			
	5000	130	135	139	146	152	156	162	218			
	5500	160	168	172	178	183	187	198				
	6000	212	205	204	208	214	221	241				
	6500	247	234	232	237	246	260					
	7000	273	260	260	268	282						
	7500	295	285	289	302	326						
	8000	316	310	319	340							

Unfactored Speed correction	
IAS [kt]	ΔH [ft]
20	-42
30	-72
40	-104
50	-136

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NOTE

Green shaded area represents the conditions that, after the flyaway, the minimum climb value of 150 ft at Vy is not guaranteed.

Figure 1-53 Height Loss During flyaway Table 7100 kg & 7500 kg, Anti Ice OFF, Heater OFF/ON

FLY AWAY HEIGHT LOSS

7900 kg

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	0	0	5	51	70	84	95	104	112	122
-500	0	0	0	38	59	77	90	100	108	121	130
0	0	0	7	48	67	83	95	105	113	129	137
500	0	0	41	64	77	88	100	109	121	136	
1000	0	39	66	79	90	98	105	114	129	161	
1500	45	74	81	92	101	108	114	123	137	200	
2000	86	88	98	105	112	118	122	130	160	245	
2500	117	105	112	118	123	126	130	137	200	301	
3000	112	120	126	130	133	135	137	164	248	377	
3500	128	134	138	142	150	155	162	205	307		
4000	152	163	170	175	181	187	197	253	520		
4500	209	201	202	205	212	220	236	316			
5000	245	232	231	235	244	258	285	407			
5500	272	259	258	265	279	302	352				
6000	295	285	285	297	320	358	452				
6500	316	309	315	334	369	438					
7000	337	334	348	378	435						
7500	359	362	386	433	528						
8000	382	394	432	506							

Unfactored Speed correction

IAS [kt]	ΔH [ft]
20	-44
30	-76
40	-109
50	-141

8300 kg

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	0	18	67	84	100	112	121	128	133	139	165
-500	0	48	72	90	104	116	124	131	135	162	195
0	44	78	86	97	109	119	127	134	139	191	229
500	81	87	99	109	116	123	130	136	162	226	
1000	111	102	112	119	125	130	134	140	193	277	
1500	108	116	123	129	134	137	141	166	229	345	
2000	124	130	135	138	146	156	167	197	281	442	
2500	138	152	161	168	174	181	194	234	354	603	
3000	197	193	194	198	205	213	228	289	462	943	
3500	238	225	224	228	236	249	274	367	651		
4000	267	253	252	257	270	292	334	487	1098		
4500	290	278	279	289	309	344	417	710			
5000	312	303	308	324	355	413	552	1311			
5500	332	329	339	365	414	514	823				
6000	354	356	374	415	494	684	1670				
6500	377	386	416	480	614	1043					
7000	402	421	469	570	822						
7500	431	464	538	706	1279						
8000	465	517	635	946							

Unfactored Speed correction

IAS [kt]	ΔH [ft]
20	-47
30	-80
40	-115
50	-148

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NOTE

Green shaded area represents the conditions that, after the flyaway, the minimum climb value of 150 ft at Vy is not guaranteed.

Figure 1-54 Height Loss During flyaway Table 7900 kg & 8300 kg, Anti Ice OFF, Heater OFF/ON

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FLY AWAY HEIGHT LOSS

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
8300 kg	-1000	0	18	67	84	100	112	121	128	133	139	165
	-500	0	48	72	90	104	116	124	131	135	162	195
	0	44	78	86	97	109	119	127	134	139	191	229
	500	81	87	99	109	116	123	130	136	162	226	
	1000	111	102	112	119	125	130	134	140	193	277	
	1500	108	116	123	129	134	137	141	166	229	345	
	2000	124	130	135	138	146	156	167	197	281	442	
	2500	138	152	161	168	174	181	194	234	354		
	3000	197	193	194	198	205	213	228	289	462		
	3500	238	225	224	228	236	249	274	367			
	4000	267	253	252	257	270	292	334				
	4500	290	278	279	289	309	344	417				
	5000	312	303	308	324	355	413					
	5500	332	329	339	365	414	514					
	6000	354	356	374	415	494						

Unfactored Speed correction	
IAS [kt]	DH [ft]
20	-47
30	-80
40	-115
50	-148

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
8600 kg	-1000	58	96	100	115	126	135	146	163	178	203	241
	-500	92	93	106	119	130	138	154	172	188	237	282
	0	119	107	117	124	133	140	161	180	204	280	338
	500	109	120	127	133	138	149	169	190	240	337	
	1000	124	131	137	146	158	168	181	209	285	430	
	1500	138	151	162	172	183	193	209	246	346	584	
	2000	197	193	195	198	207	220	240	293	447		
	2500	237	225	224	228	236	250	279	358	626		
	3000	266	253	251	257	270	291	333	471			
	3500	290	278	279	288	308	343	415	678			
	4000	312	303	307	323	354	411	544				
	4500	332	328	338	363	411	510	793				
	5000	353	355	373	412	489	670					
	5500	376	386	414	474	604	994					
	6000	401	421	465	560	796						

Unfactored Speed correction	
IAS [kt]	DH [ft]
20	-69
30	-107
40	-145
50	-179

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NOTE

Green shaded area represents the conditions that, after the flyaway, the minimum climb value of 150 ft at Vy is not guaranteed.

Figure 1-55 Height Loss During flyaway Table 8300 kg & 8600 kg, Anti Ice OFF, Heater OFF/ON

FLY AWAY HEIGHT LOSS - Eng. A.I. ON

Heater OFF/ON

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
5500 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					
	1500	0	0	0	0	0	0					
	2000	0	0	0	0	0	0					
	2500	0	0	0	0	0	0					
	3000	0	0	0	0	0	0					
	3500	0	0	0	0	0	0					
	4000	0	0	0	0	0	0					
	4500	0	0	0	0	0	0					
	5000	0	0	0	0	0	0					
	5500	0	0	0	0	0	0					
	6000	0	0	0	0	0	0					
	6500	0	0	0	0	0	0					
	7000	0	0	0	0	0						
	7500	0	0	0	0	0						
	8000	0	0	0	0							

Unfactored Speed correction	
IAS [kt]	ΔH [ft]
20	-103
30	-150
40	-196
50	-238

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
5900 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					
	1500	0	0	0	0	0	0					
	2000	0	0	0	0	0	0					
	2500	0	0	0	0	0	0					
	3000	0	0	0	0	0	0					
	3500	0	0	0	0	0	0					
	4000	0	0	0	0	0	0					
	4500	0	0	0	0	0	0					
	5000	0	0	0	0	0	0					
	5500	0	0	0	0	0	0					
	6000	0	0	0	0	0	4					
	6500	0	0	0	0	3	29					
	7000	0	0	0	0	26						
	7500	0	0	0	34	48						
	8000	0	0	30	56							

Unfactored Speed correction	
IAS [kt]	ΔH [ft]
20	-93
30	-134
40	-173
50	-209

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Figure 1-56 Height Loss During flyaway Table 5500 kg & 5900 kg, Anti Ice ON, Heater OFF/ON

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FLY AWAY HEIGHT LOSS - Eng. A.I. ON

Heater OFF/ON

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
6300 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					
	1500	0	0	0	0	0	0					
	2000	0	0	0	0	0	0					
	2500	0	0	0	0	0	0					
	3000	0	0	0	0	0	0					
	3500	0	0	0	0	0	0					
	4000	0	0	0	0	0	0					
	4500	0	0	0	0	0	13					
	5000	0	0	0	0	17	36					
	5500	0	0	0	1	39	57					
	6000	0	0	10	47	59	75					
	6500	0	18	51	67	76	92					
	7000	25	62	75	85	92						
	7500	77	97	93	101	107						
	8000	113	101	110	115							

Unfactored Speed correction	
IAS [kt]	ΔH [ft]
20	-84
30	-122
40	-160
50	-194

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
6700 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	0					
	1500	0	0	0	0	0	0					
	2000	0	0	0	0	0	0					
	2500	0	0	0	0	0	0					
	3000	0	0	0	0	4	21					
	3500	0	0	0	0	27	41					
	4000	0	0	0	34	47	60					
	4500	0	0	27	55	66	78					
	5000	0	37	63	74	83	94					
	5500	49	78	82	91	98	109					
	6000	94	109	100	106	112	122					
	6500	128	108	115	120	124	133					
	7000	153	123	129	133	135						
	7500	132	137	145	153	158						
	8000	189	183	185	186							

Unfactored Speed correction	
IAS [kt]	ΔH [ft]
20	-73
30	-109
40	-145
50	-178

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Figure 1-57 Height Loss During flyaway Table 6300 kg & 6700 kg, Anti Ice ON, Heater OFF/ON

FLY AWAY HEIGHT LOSS - Eng. A.I. ON

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
7100 kg	-1000	0	0	0	0	0	0					
	-500	0	0	0	0	0	0					
	0	0	0	0	0	0	0					
	500	0	0	0	0	0	0					
	1000	0	0	0	0	0	7					
	1500	0	0	0	0	10	26					
	2000	0	0	0	0	32	46					
	2500	0	0	0	39	52	64					
	3000	0	0	37	60	70	80					
	3500	0	47	67	78	87	95					
	4000	59	86	86	95	101	108					
	4500	103	115	103	110	114	121					
	5000	134	111	118	123	126	133					
	5500	159	127	132	135	137	151					
	6000	136	142	154	159	163	185					
	6500	216	194	191	192	194	220					
	7000	261	229	223	222	225						
	7500	287	258	251	251	257						
	8000	306	283	278	280							

Unfactored Speed correction	
IAS [kt]	ΔH [ft]
20	-66
30	-102
40	-138
50	-172

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
7500 kg	-1000	0	0	0	0	0	7					
	-500	0	0	0	0	0	19					
	0	0	0	0	0	19	37					
	500	0	0	0	0	38	53					
	1000	0	0	0	41	55	68					
	1500	0	0	39	61	72	82					
	2000	0	49	69	80	88	96					
	2500	61	87	87	96	102	109					
	3000	105	117	104	111	116	121					
	3500	136	112	119	124	127	131					
	4000	161	128	132	136	138	143					
	4500	137	146	157	162	165	177					
	5000	226	198	194	194	195	212					
	5500	270	234	225	223	226	248					
	6000	295	262	252	251	257	287					
	6500	313	285	278	280	290	334					
	7000	329	307	304	311	329						
	7500	345	330	332	345	375						
	8000	361	354	363	386							

Unfactored Speed correction	
IAS [kt]	ΔH [ft]
20	-62
30	-98
40	-134
50	-168

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Note

Green shaded area represents the conditions that, after the flya-way, the minimum climb value of 150 ft at Vy is not guaranteed.

Figure 1-58 Height Loss During flyaway Table 7100 kg & 7500 kg, Anti Ice ON, Heater OFF/ON

FLY AWAY HEIGHT LOSS - Eng. A.I. ON

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
7900 kg	-1000	0	0	0	6	49	67					
	-500	0	0	1	47	62	75					
	0	0	0	40	64	77	88					
	500	0	45	72	80	90	99					
	1000	56	84	86	95	102	110					
	1500	100	115	103	110	115	120					
	2000	133	111	118	123	127	131					
	2500	159	126	131	135	137	141					
	3000	135	140	154	159	164	172					
	3500	225	196	192	191	194	202					
	4000	272	233	223	221	223	235					
	4500	297	261	250	249	253	273					
	5000	315	284	276	277	285	317					
	5500	332	307	301	306	322	370					
	6000	347	329	328	339	366	438					
	6500	363	351	357	377	419	533					
	7000	380	376	390	424	491						
	7500	399	403	430	482	593						
	8000	421	436	478	561							

Unfactored Speed correction	
IAS [kt]	ΔH [ft]
20	-64
30	-101
40	-138
50	-173

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
8300 kg	-1000	0	47	78	85	97	109					
	-500	44	81	87	98	107	114					
	0	92	109	101	110	118	124					
	500	127	107	115	122	127	132					
	1000	154	123	129	133	136	140					
	1500	131	137	144	153	158	166					
	2000	205	186	184	186	188	196					
	2500	267	226	217	215	218	227					
	3000	295	256	245	243	247	261					
	3500	314	281	271	270	279	298					
	4000	330	303	296	299	313	344					
	4500	346	324	322	331	353	405					
	5000	361	346	349	366	401	488					
	5500	378	370	380	408	465	609					
	6000	396	396	417	460	552	812					
	6500	417	426	460	530	684	1240					
	7000	441	462	516	627	913						
	7500	469	506	590	776	1417						
	8000	504	563	694	1037							

Unfactored Speed correction	
IAS [kt]	ΔH [ft]
20	-68
30	-106
40	-145
50	-180

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Note

Green shaded area represents the conditions that, after the flyaway, the minimum climb value of 150 ft at Vy is not guaranteed.

Figure 1-59 Height Loss During flyaway Table 7900 kg & 8300 kg, Anti Ice ON, Heater OFF/ON

FLY AWAY HEIGHT LOSS - Eng. A.I. ON

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
8300 kg	-1000	0	47	78	85	97	109					
	-500	44	81	87	98	107	114					
	0	92	109	101	110	118	124					
	500	127	107	115	122	127	132					
	1000	154	123	129	133	136	140					
	1500	131	137	144	153	158	166					
	2000	205	186	184	186	188	196					
	2500	267	226	217	215	218	227					
	3000	295	256	245	243	247	261					
	3500	314	281	271	270	279	298					
	4000	330	303	296	299	313	344					
	4500	346	324	322	331	353	405					
	5000	361	346	349	366	401	488					
	5500	378	370	380	408	465	609					
	6000	396	396	417	460	552						

Unfactored Speed correction	
IAS [kt]	DH [ft]
20	-68
30	-106
40	-145
50	-180

		OAT [°C]										
	Hp [ft]	-40	-30	-20	-10	0	10	20	30	40	50	55
8600 kg	-1000	99	118	107	116	124	133					
	-500	127	109	119	126	132	136					
	0	154	123	130	136	141	153					
	500	131	137	144	157	167	178					
	1000	208	187	185	187	191	202					
	1500	269	227	218	216	219	228					
	2000	296	257	245	244	247	261					
	2500	316	281	271	271	278	298					
	3000	332	303	296	299	313	343					
	3500	347	325	322	330	352	398					
	4000	362	347	349	365	400	474					
	4500	379	370	379	406	460	588					
	5000	397	396	415	457	544	777					
	5500	417	425	457	523	669	1159					
	6000	441	461	511	616	881						

Unfactored Speed correction	
IAS [kt]	DH [ft]
20	-77
30	-118
40	-157
50	-193

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ICN-89-A-155121-G-A0126-00013-A-04-1

Note

Green shaded area represents the conditions that, after the flyaway, the minimum climb value of 150 ft at Vy is not guaranteed.

Figure 1-60 Height Loss During flyaway Table 8300 kg & 8600 kg, Anti Ice ON, Heater OFF/ON

CHARTS
DIAGS

WAT for SAR MODE OPERATION
Heater OFF, Engine A.I. OFF

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8543	8480	8417	8353	8291	8231	8173	8116	8087
-500	8600	8578	8514	8450	8385	8321	8259	8199	8141	8083	8055
0	8600	8550	8484	8419	8353	8289	8227	8167	8107	8050	7948
500	8587	8521	8454	8387	8321	8256	8195	8134	8074	7926	
1000	8559	8491	8423	8355	8288	8224	8162	8100	8032	7784	
1500	8530	8461	8391	8322	8255	8192	8129	8067	7887	7643	
2000	8500	8430	8359	8289	8223	8159	8095	8000	7744	7505	
2500	8470	8398	8326	8257	8191	8125	8061	7854	7603	7368	
3000	8439	8365	8293	8224	8157	8091	7974	7711	7465		
3500	8407	8332	8260	8191	8123	8057	7828	7570	7328		
4000	8374	8299	8227	8158	8089	7955	7684	7431	7193		
4500	8341	8266	8194	8123	8055	7809	7542	7294	7061		
5000	8307	8232	8160	8089	7945	7664	7403	7159	6930		
5500	8274	8199	8126	8055	7797	7522	7265	7026	6801		
6000	8240	8165	8091	7943	7652	7382	7130	6895	6675		
6500	8207	8131	8057	7794	7509	7244	6997	6766	6550		
7000	8173	8096	7950	7648	7368	7108	6865	6639	6427		
7500	8138	8061	7800	7504	7229	6974	6736	6514	6306		
8000	8103	7968	7653	7362	7092	6842	6609	6391			

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Figure 1-61 Search Mode Operation WAT Anti Ice OFF, Heater OFF

CHARTS
DIAGS

WAT for SAR MODE OPERATION
Heater ON, Engine A.I. ON

Hp [ft]	OAT [°C] -40	-30	-20	-10	0	10	20	30	40	50	55
-1000	8600	8600	8543	8480	8417	8353					
-500	8600	8578	8514	8450	8385	8321					
0	8600	8550	8484	8419	8353	8289					
500	8587	8521	8454	8387	8321	8256					
1000	8559	8491	8423	8355	8288	8224					
1500	8530	8461	8391	8322	8255	8192					
2000	8500	8430	8359	8289	8223	8159					
2500	8470	8398	8326	8257	8191	8006					
3000	8439	8365	8293	8224	8157	7831					
3500	8407	8332	8260	8191	8123	7654					
4000	8374	8299	8227	8158	8089	7475					
4500	8341	8266	8194	8123	7931	7295					
5000	8307	8232	8160	8089	7758	7117					
5500	8274	8199	8126	8055	7584	6945					
6000	8240	8165	8091	7939	7410	6777					
6500	8207	8131	8057	7764	7240	6613					
7000	8172	8096	7950	7589	7073	6453					
7500	8021	8024	7800	7415	6911	6295					
8000	7869	7871	7653	7245	6751	6138					

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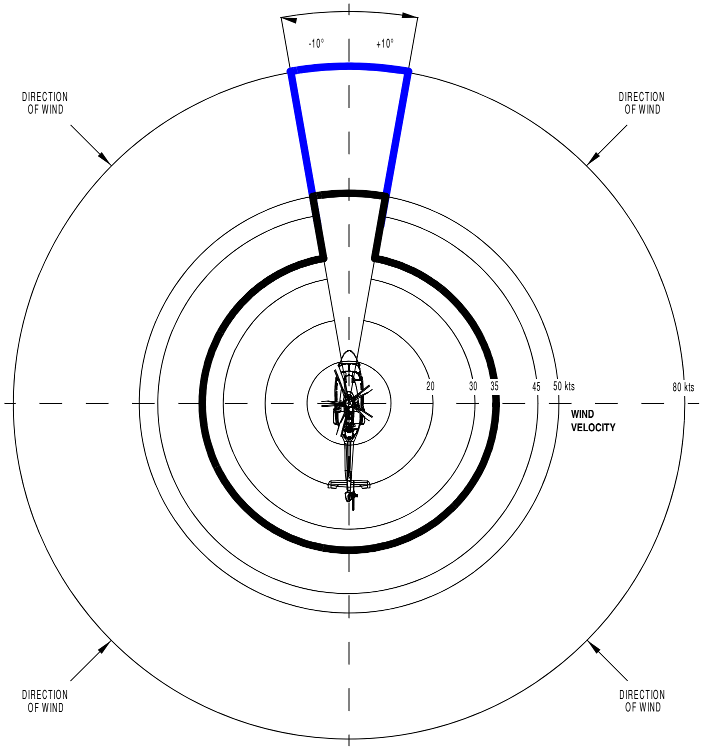
Figure 1-62 Search Mode Operation WAT Anti Ice ON, Heater ON

CHARTS
DIAGS



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When either or both cabin door(s) are open the BLUE lines are only valid for aircraft fitted with Kit Stop Passenger Door P/N 8G5212F00211

Figure 1-63 Wind/Groundspeed/Airspeed Azimuth Envelope AEO for Search Mode WAT

<table>
<tr><th>Radalt (ft)</th><th colspan="4">MOT Button Press</th></tr>
<tr><td>>2000</td><td colspan="4">No effect
Too High for MOT</td></tr>
<tr><td>2000
150</td><td colspan="3">No effect
Too Slow for MOT</td><td>Collective = NRHT/NPATH
(NRHT if H/C is below vertical path, else NPATH)
Pitch = NIAS
Roll = NPATH</td></tr>
<tr><td>0</td><td colspan="4">No effect
Too Low for MOT</td></tr>
<tr><td></td><td><–40</td><td>–40 <0</td><td>0</td><td>40 >Vne-5</td></tr>
<tr><td></td><td colspan="2">Groundspeed (kts)</td><td colspan="2">CAS (kts)</td></tr>
</table>

Figure 1-64 Search Mode MOT Pushbutton Engagement Criteria

GA/TU Button Press

Radalt (ft)	Groundspeed (kts) <–40	Groundspeed (kts) –40 to <0	CAS (kts) 0 to 40	CAS (kts) 40 to FASR	CAS (kts) FASR to >Vne-5
>2000	**No effect** Too Hign for TU		**No effect** Too High for TU Too Slow For GA	**Collective = GA** **Pitch = GA** **Roll = HDG/NAV**	
2000 to FHR	**No effect** Too much aft velocity for TU	**Collective = RHT** (Reference set to current radalt) **Pitch = TU** **Roll = TU**		**<u>If HOV or TDH or MOT-TDH Phase mode engaged or in hover cond</u>** **Collective = RHT** (Reference set to current radalt) **Pitch = TU** **Roll = HDG** (Reference set to current heading) (autotransition from TU.R to HDG at cruise condition) else **Collective = GA** **Pitch = GA** **Roll = HDG/NAV**	**<u>If HOV or TDH or MOT-TDH Phase mode engaged</u>** **Collective = RHT** (Reference set to current radalt) **Pitch =IAS** (Reference set to current airspeed) **Roll = HDG** (Reference set to current heading) else **Collective = GA** **Pitch = GA** **Roll = HDG/NAV**
FHR to 10		**Collective = TU** **Pitch = TU** **Roll = TU**		**<u>If HOV or TDH or MOT-TDH Phase mode engaged or in hover cond</u>** **Collective = TU** **Pitch = TU** **Roll = HDG** (Reference set to current heading) (autotransition from TU.R to HDG at cruise condition) else **Collective = GA** **Pitch = GA** **Roll = HDG/NAV**	**<u>If HOV or TDH or MOT-TDH Phase mode engaged</u>** **Collective = TU** **Pitch =IAS** (Reference set to current airspeed) **Roll = HDG** (Reference set to current heading) else **Collective = GA** **Pitch = GA** **Roll = HDG/NAV**
10 to 0	**No Effect** Too Low for TU		**No Effect** Too Low for TU Too Slow For GA	**<u>If HOV mode not engaged and in cruise condition</u>** **Collective = GA** **Pitch = GA** **Roll = HDG/NAV** else **no effect**	**Collective = GA** **Pitch = GA** **Roll = HDG/NAV**

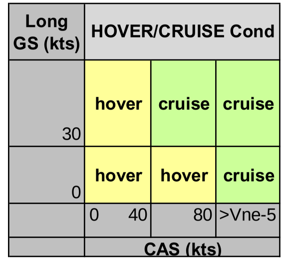
FHR = Final Height Reference (TU only). TU power up default = 200 feet. Variable between 150 and 2000 feet. Last value not retained.

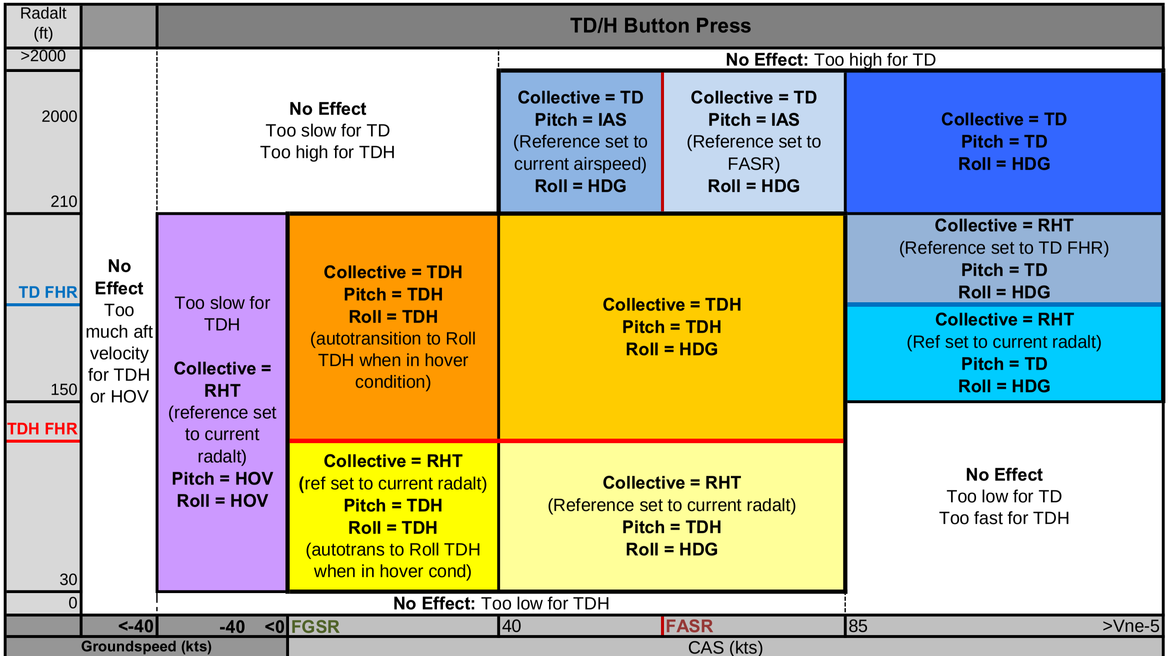
FASR = Final Airspeed Reference (TU only). Power up default = 80 knots. Variable between 45 to Vne-5 knots. Last value not retained.

Go Around, GA airspeed ref = 80 knots, GA vertical speed reference = either +1000feet/min or the current vertical speed value whichever is larger. References cannot be changed.

Long GS (kts)	HOVER/CRUISE Cond CAS (kts) 0 to 40	HOVER/CRUISE Cond CAS (kts) 40 to 80	HOVER/CRUISE Cond CAS (kts) 80 to >Vne-5
>30	hover	cruise	cruise
0 to 30	hover	hover	cruise

Figure 1-65 Search Mode GA/TU Pushbutton Engagement Criteria





TDH FHR = Final Height Reference (TDH only). TDH power up default = 50 feet. Variable between 50 to 200 feet. Last value retained.

FGSR = Final Groundspeed Reference (TDH only). Power up default = 0 knots. Last value not retained.
Longitudinal groundspeed variable between 0 to 30 knots. Lateral groundspeed variable between -10 to 10 knots.

FASR = Final Airspeed Reference (TD only). Power up default = 80 knots. Reference cannot be changed.

TD FHR = Final Height Reference (TD only). Power up default = 200 feet. Reference cannot be changed.

Figure 1-66 Search Mode TDH Pushbutton Engagment Criteria

LIMITED ICE PROTECTION SYSTEM LIMITATIONS

GENERAL

For operation in Limited Icing Conditions the aircraft must be in accordance with the requirements as detailed in RFM Supplement 48 or 50.

Any flight where Limited Icing conditions are encountered must be recorded in the helicopter log-book.

TYPE OF OPERATIONS

Limited icing assumes that the aircraft has the ability to vacate the icing conditions, at any time, with the availability of a band of positive air temperature of at least 500 ft height into which the aircraft can descend to de-ice naturally.

MINIMUM FLIGHT CREW

Limited Ice conditions - Two pilots

REQUIRED EQUIPMENT

— For Operations in Limited Icing conditions LIPS is to be installed (P/N 8G3000F00211 “Kit Limited Ice Protection System”).

— Core Avionics Phase 4.0 software or higher versions.

AIRSPEED LIMITATIONS

V_{NE} Icing ....Figure LIPS-1
(after icing encountered if ice is still present on the aircraft)

ALTITUDE AND TEMPERATURE LIMITATIONS

Altitude and temperature limitations for icing conditions ....Figure LIPS-2

MISCELLANEOUS LIMITATIONS

Rate Of Descent

Maximum Rate of descent in icing conditions .... 1000 fpm
(or after icing encountered if ice is still present on the aircraft)

Note

The maximum rate of descent limitation does not apply in an emergency.

Vernier Ice Accretion Meter (if fitted)

Maximum cumulative accretion .... 40 mm

Note

The Vernier Accretion Meter is not heated.

Freezing Rain / Freezing Drizzle / Supercooled Large Droplets (SLD)

Flight in known Freezing Rain, Freezing Drizzle or SLD conditions is prohibited.
In case of an encounter with Freezing Rain, Freezing Drizzle or SLD conditions, take immediate action to vacate the icing conditions.

LIPS

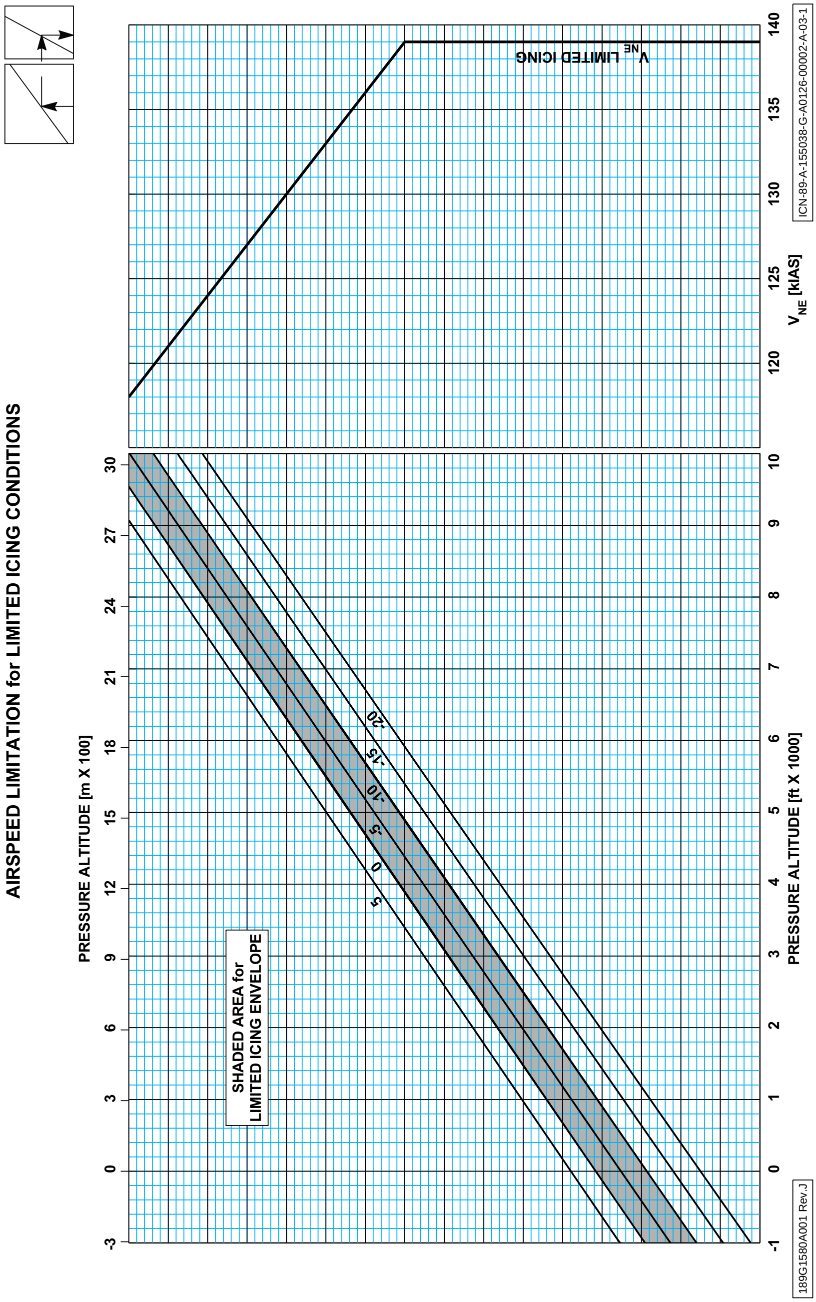


Figure LIPS-1 Airspeed Limitations for Limited Icing Conditions

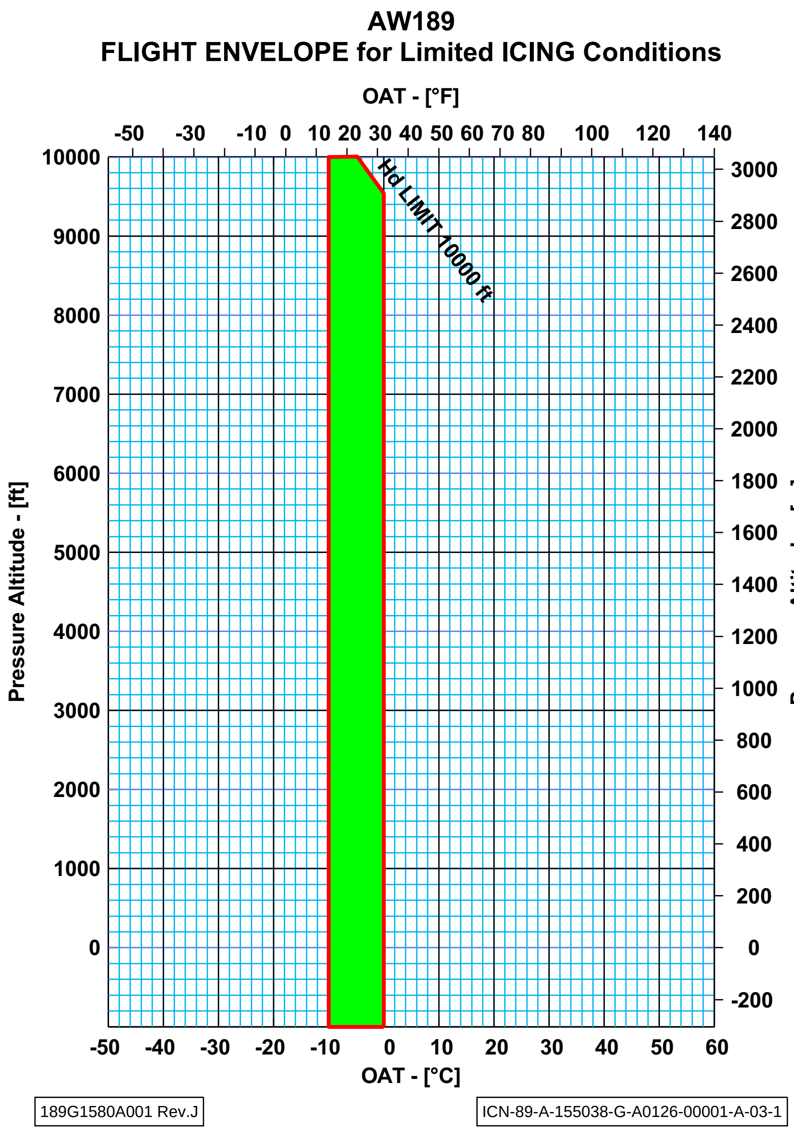


Figure LIPS-2 Altitude Temperature Limitations for LIPS Operation

RATE OF CLIMB REDUCTION IN LIMITED ICING CONDITIONS

The aircraft rate of climb is reduced in limited icing conditions. This is considered an increase in Drag Factor for the aircraft and the appropriate information and procedures for calculating the reduction in the rate of climb can be found in the Basic RFM Section 4 Performance Correction After Kit installation.

When flying with LIPS selected ON but not in icing conditions no correction to performance charts is required.

CATEGORY A AND B TAKE-OFF AND LANDING

No change.

FUEL CONSUMPTION

Fuel consumption will be increased when the aircraft is operating with LIPS ON in the ‘No-Limit Zone’ icing conditions. The effect on fuel consumption is considered in Basic RFM Section 9 Supplementary Performance Information.

When flying with LIPS selected ON but not in icing conditions no correction to fuel consumption charts is required.

ICE PROTECTION SYSTEM LIMITATIONS

GENERAL

For operation in Icing Conditions the aircraft must be in accordance with the requirements as detailed in RFM Supplement 49.

Any flight where Limited Icing conditions are encountered must be recorded in the helicopter log-book.

TYPE OF OPERATIONS

Flight in known icing.

REQUIRED EQUIPMENT

— For Operations in Icing conditions IPS is to be installed (P/N 8G3000F00111 “Kit Ice Protection System”).

— Avionics Software Phase 4.0 or higher versions.

AIRSPEED LIMITATIONS

V_{NE} Icing .... Figure IPS-1

ALTITUDE AND TEMPERATURE LIMITATIONS

Altitude and temperature limitations for icing conditions .... 10000 ft Hp

MISCELLANEOUS LIMITATIONS

Use of Overide Mode

Use of the OVRD MODE is prohibited when OAT is above +4°C.

Rate Of Descent

Maximum Rate of descent in icing conditions .... 1000 fpm (or after icing encountered if visible ice is still present on the aircraft).

Note

The maximum rate of descent limitation does not apply in an emergency.

Freezing Rain / Freezing Drizzle / Supercooled Large Droplets (SLD)

Flight in known Freezing Rain, Freezing Drizzle or SLD conditions is prohibited.

In case of an encounter with Freezing Rain, Freezing Drizzle or SLD conditions take immediate action to vacate the flight conditions.

IPS

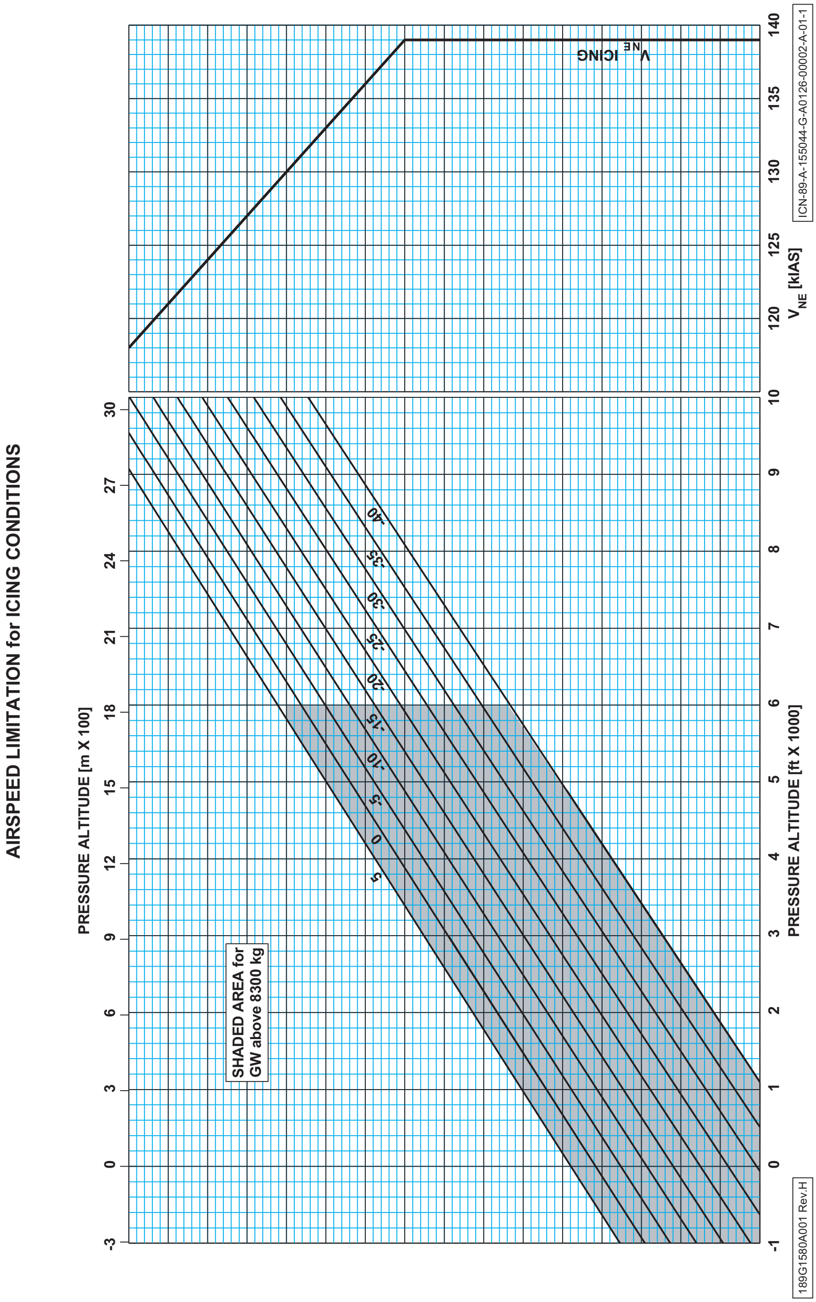


Figure IPS-1 Airspeed Limitations for Icing Conditions

RATE OF CLIMB REDUCTION IN LIMITED ICING CONDITIONS

The aircraft rate of climb is reduced in icing conditions. This is considered an increase in Drag Factor for the aircraft and the appropriate information and procedures for calculating the reduction in the rate of climb can be found in the Basic RFM Section 4 Performance Correction After Kit Installation.

‘Light Icing’ is defined as atmospheric conditions are indicated ‘L’ on the Ice Severity Meter.

When flying with IPS selected ON and AUTO but not in icing conditions no correction to performance charts is required.

FUEL CONSUMPTION

Fuel consumption will be increased when the aircraft is operating with IPS ON in icing conditions. The effect on fuel consumption is considered in Section 9 Supplementary Performance Information.

When flying with IPS selected ON but not in icing conditions no correction to fuel consumption charts is required.

IPS

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NORMAL PROCEDURES

GENERAL

Note

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.

CATEGORY A PROCEDURES

See Supplement 4 for detailed information on CATEGORY A procedures.

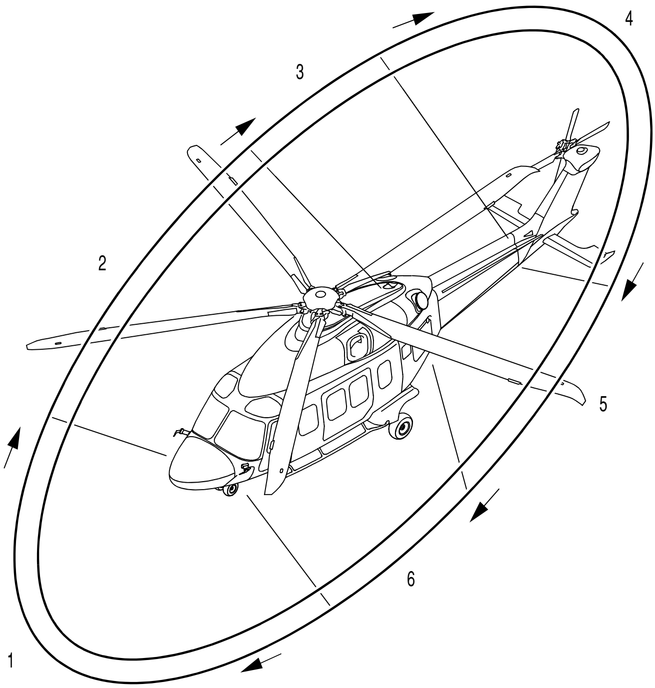
COLD WEATHER OPERATION

If the helicopter is to remain parked outside with an OAT at or below -20 °C both Main and Auxiliary (if fitted) batteries should be removed and stored in a heated room. Confirm batteries have been installed before flight.

EXT/INT
CHECKS

EXTERNAL PRE-FLIGHT CHECKS

Pilot's Pre Flight Check (pilot walk around and interior checks)



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Preflight Check Sequence

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

CHECKS

1.	Main and tail rotor tie downs	— 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, tire pressure.
6.	Ventilation air intakes (under nose)	— Un-obstructed
7.	Nose compartment access door	— Latched and Secure.
8.	Pitot-Static Probe (Right side)	— Cover removed, condition and un-obstructions
9.	Right side brake lines in brake pedal area (looking through bottom transparent panel)	— Condition/leaks
AREA N°2 (Fuselage - Right Hand Side)		
10.	Windshield/roof transparent panel	— Condition, cleanliness
11.	Windscreen wiper	— Condition
12.	Fuselage exterior	— Condition
13.	Pilot cockpit door	— Condition, cleanliness, window secure.
14.	Flotation (if fitted)	— Condition
15.	Passenger cabin door	— Condition, cleanliness
16.	Right side emergency exits ➡	— Verify secure
17.	Right hand flotation and liferaft installation (if fitted)	— Condition, secure, verify pressure
18.	Main landing gear	— Condition, shock strut extension, leaks, tire condition and pressure
19.	Drains and vent lines	— Free of obstructions, no leaks
20.	Fuel tank sump area (Right side)	— Confirm no leaks
21.	Baggage compartment, tie down/net	— Condition, cargo (if on board) correctly secure
22.	Baggage door	— Latches fully angaged (no orange paint visible around handle) and door secure
23.	Maintenance steps	— Condition, closed

EXT/INT CHECKS

EXT/INT
CHECKS

24. Engine air intake — Cover removed, clear of damage and obstructions
25. APU fire bottle discharge indicator — Green
26. Engine oil level — Check
27. Engine area — Check for fuel and/or oil leaks
28. Cowling and fairings — Condition and latched
29. Vents and ports — Clear and unobstructed
30. Main rotor components and blades — General condition
31. Engine cowling — Secure
32. Gravity fuel filler cap — Secure
33. Pressure refuel point (if fitted) — Secure, control panel (in AC PWR socket bay) selected OFF
34. Engine exhaust — Cover removed, condition
35. Engine fire bottle discharge indicator — Green
36. APU exhaust — Cover removed condition

AREA N°3 (Tail Boom - Right Hand Side)

37. Tail boom exterior — Condition
38. Antennas ➡ — Condition
39. Stabilizer — Condition and secure
40. Navigation light — Condition

AREA N°4 (Fin, Intermediate and Tail Gearbox, Tail Rotor)

41. Tail fin — Condition
42. Intermediate and tail rotor gearbox — Check for leaks.
43. Vents and ports — Clear and un-ostructed
44. Tail navigation and anticoll lights — Condition
45. Tail rotor hub and blades — Condition, cleanliness
46. Tail rotor pitch change mechanism➡ — Condition

AREA N°5 (Tail Boom Left Hand Side)

47. Stabilizer — Condition and secure
48. Navigation light — Condition
49. Tail boom exterior — Condition
50. Tail rotor drive shaft cover — Secure
51. Antenna ➡ — Condition

AREA N°6 (Fuselage Left Hand Side)

52. Fuselage exterior — Condition
53. Engine fire bottle discharge indicator — Green
54. Engine exhaust — Cover removed, condition

55.	Baggage compartment, tie down/net	— Condition, cargo (if on board) correctly secure
56.	Baggage door	— Secure
57.	Engine area	— Check for fuel and/or oil leaks
58.	Engine oil level	— Check
59.	Engine air intake	— Cover removed, clear of damage and obstructions
60.	Engine cowling	— Secure
61.	Vents and ports	— Clear and unobstructed
62.	Main rotor components and blades	— General condition
63.	Gravity fuel filler cap	— Secure
64.	Maintenance steps	— Condition, closed
65.	Left side emergency exits ➡	— Confirm secure.
66.	Drains and vent lines	— Free of obstructions, no leaks
67.	Fuel tank sump area (Left side)	— Confirm no leaks
68.	Main landing gear	— Condition, shock strut extension, leaks, tire condition and pressure
69.	Left hand flotation and liferaft installation (if fitted)	— Condition, secure, verify pressure
70.	Passenger cabin door	— Condition, cleanliness
71.	Cowling and fairings ➡	— Condition and latched
72.	Co-pilot cockpit door	— Condition, cleanliness, window secure
73.	Windshield and roof transparent panel	— Condition and cleanliness
74.	Windscreen wiper	— Condition

AREA N°7 (Cabin and Cockpit Interior)

75.	Passenger Emergency exits	— Verify secure
76.	Cabin interior	— Equipment and cargo secure
77.	First Aid Kit ➡	— On board
78.	Emergency equipment (if any)	— Check
79.	Cabin fire extinguisher ➡	— Secure
80.	Passenger seat belts & inertia reels	— Condition
81.	Passenger doors	— Secure
82.	Pilot/Copilot seat belt and inertia reel	— Condition
83.	Pilot and Copilot seats	— Secure
84.	Pilot and Copilot flight controls ➡	— Condition and secure

85.	Lower and lateral transparent panels	— Integrity, cleanliness and no signs of brake fluid
86.	Pilot and Copilot doors	— Secure
87.	Instruments, panels and circuit breakers	— Condition, legibility and IN

COCKPIT/SAFETY CHECKS

1.	Cockpit fire extinguisher	— Secure
2.	Pedals and seats	— Adjust
3.	Seat belts	— Fasten and adjust
4.	Circuit breakers	— IN
5.	Rotor Brake	— OFF/ BRAKE for windy conditions
6.	Static source	— Normal and GUARDED
7.	ELT switch on instrument panel (if applicable)	— Confirm ARM
8.	EPGDS panel switches	— OFF
9.	ENG 1 & ENG 2 MODE switches	— OFF
10.	RCP panel switches	— NORM
11.	APU PNL SEL MODE switch	— OFF
12.	ECS panel	— HEATER OFF
13.	ICS panel	— Mode switch, confirm NORM
14.	LDG GEAR lever	— Confirm DOWN
15.	PARK BRAKE lever	— As required

ENGINE PRE-START CHECKS

1.	BATT MASTER	— ON
2.	APU	— START
3.	MAIN BATT	— ON
4.	BATT AUX (if available)	— ON
5.	LTG (MISC panel)	— As required
6.	ECDU	— Check
7.	ECDU LIGHTS page	— POS LT and A/COLL ON
8.	ECDU 5R (CAB LTS)	— As required
9.	Clock	— Set
10.	ENG FIRE PANEL	— Check

Note

Confirm AMMC 1&2 functioning and all parameters displayed before continuing with the following checks

11.	RCP panel switches Pilot and Copilot	—All NORM
12.	AFCS panel	— Check
13.	Display DIM panel	— As required
14.	MISC PNL	— As required
15.	ECS/HEATER/FANS	— As required
16.	Cyclic stick	— Centred, check switches
17.	Collective lever	— Down, friction, switches
18.	LDG GEAR panel	— Check
19.	PARK BRAKE	— Check
20.	ECDU press 6R (TEST)	— Select FIRE and confirm
21.	LAMP TEST ➡	— Select LAMP and confirm
22.	ENG INTK TEST	— Carry out test procedure (AIR COND OFF, if fitted)
23.	Aural Warning test, - Short - Long ➡	— Select as required
24.	TRANS OIL TEST	— Select XMSN OIL LVL and confirm
25.	ECDU press 6R (HYD)	— ➡ Controls full and free checks — HYD SOV NORM

CAUTION

Full and free check should be carried out with slow displacement of the controls and one control at a time in order not to overload the electric pump.

ENG START

26. ECDU — Press 6R (FUEL)
27. FLOATS EMER (if fitted) — Check
28. Rotor Brake — OFF

ABORTED ENGINE START PROCEDURES

CAUTION

Failure to follow the Abort Procedure may cause damage to the engine.

Monitor engine start and if any of the following occur:

— light up is not within 18 seconds of NG initial indications.

— abnormal noise heard

— ITT increases beyond engine limits (HOT START caution illuminated) or start terminated by engine control at 963 °C

— engine hangs (stagnation in NG below idle value)

— no indication of oil pressure within 30 seconds of ENG MODE to IDLE/FLT

— the main rotor has not begun to rotate when the gas generator (NG) reaches 40%

— engine starter fails to disengage by 52% ±2%.

Shut down engine by:

1. ENG MODE switch — OFF
2. Fuel XFEED switch — CLSD
3. FUEL PUMP — OFF
4. FUEL ENG SOV — CLSD

DRY MOTORING PROCEDURE

Following an aborted start shutdown, perform the following procedure allowing a 30 seconds fuel drain period before restarting.

Note

Observe the starter generator duty cycle limitations during re-start attempts. Refer to Limitations.

1. ENG MODE switch — OFF
2. Fuel XFEED — CLSD
3. FUEL PUMP — OFF
4. FUEL ENG SOV — CLSD (confirm fuel valve closed on engine synoptic page)

5.	ENG MODE switch	— Select ENG MODE to CRANK and hold (for not more than 45 sec, starter duty cycle must be respected)
6.	ENG NG	— Note increasing
7.	ENG MODE switch	— Release to OFF as necessary

ENGINE STARTING

1.	MFD	— PWR PLANT
2.	FUEL PUMP 1 & 2	— ON
3.	FUEL ENG 1 & 2 SOV	— OPEN
4.	FUEL XFEED	— AUTO
5.	ENG ITT	— Less than 150 °C (175 °C after cranking)

Note

Either engine may be started first

6.	ENG 1 MODE switch	— IDLE (when NG 0%)
7.	ENG NG	— Check
8.	ENG ITT	— Check
9.	Engine oil pressure	— Rising
10.	ENG starter	— Disengaged by 52%±2% NG
11.	Main hydraulic system	— Check pressure, cyclic centered
12.	NF/NR	— IDLE speed 55%±1%.
13.	Deleted	

SECOND ENGINE START

14.	ENG ITT	— Less than 150 °C (175 °C after cranking)
15.	ENG 2 MODE switch	— IDLE. (when ITT below 150 °C and NG 0%)
16.	ENG 2 NG	— Check
17.	ENG 2 ITT	— Check
18.	Engine oil pressure	— Rising
19.	ENG N°2 starter	— Disengaged by 52%±2% NG
20.	NF/NR	— IDLE speed 73%±1%
20A.	Temps and Pressures	— Within limits
21.	HEATER	— As required
22.	AFCS panel ➡	— Complete TEST procedure
23.	APU	— OFF

ENG START

24. MFD — Confirm PWR PLANT page

AFTER ENGINE START CHECKS

1. Engine Anti Ice-Bleed Valve checks — If flight in OAT conditions less than 5 °C is envisaged carry out the following:
   - Confirm HEATER selected OFF
   - Select ENG 1 MODE to FLT
   - Increase collective as necessary to stabilize an ENG 1 NG between 90-95%
   - Note ENG 1 ITT, select ENG 1 A/ICE ON and confirm ENG 1 ITT increases by at least 30 °C
   - Select ENG 1 A/ICE OFF, confirm ITT reduces
   - Return collective to MPOG and select ENG 1 IDLE
   - Repeat above test on ENG 2

Note

If required to speed up Anti Ice Bleed Valve check ENG 2 may be selected to FLT prior to selecting ENG 1 to IDLE.

2. ENG 1 & 2 MODE switches — FLT. NR/NF 102%
3. MISC PNL — Check, select Anti Ice system, if required

CAUTION

Ensure both engines engage as the NFs reach FLIGHT condition. A failed engagement is indicated by NF possible higher than NR and near zero torque. If this occurs, shut down the non engaged engine first and when engine stopped shut down other engine. If a hard engagement occurs, shut down both engines for maintenance action.

Note

Ensure APU is OFF before carrying out the following fuel tests.

4. MFD — ENG synoptic page
5. FUEL PUMP 1 — OFF
   - Fuel N°1 pressure drop
   - XFEED valve opens
   - Fuel N°1 pressure restored

6. Fuel XFEED	— CLSD • XFEED valve closes • Fuel N°1 pressure drop
7. FUEL PUMP 2	— OFF • Fuel N°2 drop • After 15 secs engine operation satisfactory?
8. FUEL PUMP 1	— ON • Fuel N°1 pressure restored • XFEED closed
9. Fuel XFEED	— OPEN • XFEED valve opens • Fuel 2 pressure restored
10. FUEL PUMP 2	— ON • Fuel 2 pressure restored
11. Fuel XFEED	— AUTO • XFEED valve closes
12. MFD	— ELECTRIC synoptic page — MAIN and AUX (if fitted) batteries not discharging
13. ECDU press 6R (ELEC)	— Check
14. ECDU Press 6R (HYD)	— Check
15. MFD	— HYDRAULIC synoptic page, check — Control checks
16. ECDU	— Press 6L (MENU)
17. MFD	— PWR PLANT page
18. PFD/MFD	— Check
19. Altimeters: Pilot, Standby & Copilot	— Set and cross-check
20. RAD ALT	— Check both
21. RA TEST	— Check both
22. DH selector	— Set
23. SVS/FD SEL/EVS	— As required
24. MCDU	— Set COMM and NAV — Set COMPASS
25. ICS panels	— Set as required

26. ECDU press PITOT	— AUTO/ON as required
	— Press 6L (MENU)
27. ECDU press MISC	— AWG as required
	— CAMERA as required
	— Press 6L (MENU)
28. ECDU press LT	— Set CAB DIM
	— Press 6L (LIGHTS)
	— Press 6L (MENU)
29. APU	— Confirm STATUS READY
30. MISC PNL	— Check

TAXIING

1.	AFCS	— Engaged
2.	LH LDG LT & RH LDG LT	— ON
3.	PARK BRAKE	— OFF
4.	NOSE WHEEL	— UNLK
5.	Pedal brakes	— Check

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.

PRE TAKE-OFF CHECKS

1.	ENG MODE switches	— Confirm FLT
2.	AEO LIM SEL	— As required
3.	PARK BRAKE	— Released/as required
4.	CAS	— Clear
5.	FLOATS EMER panel (if fitted)	— Over land operation - OFF — Over water operation - ARMED
6.	Pre Take-OFF checks	— Completed

TAKE-OFF

CATEGORY B TAKE OFF (HOVER IGE)

1.	Power checks ➡	— Carry out
2.	Hover IGE	— Establish 7 feet AGL
3.	NOSE WHEEL steering	— Confirm LOCK
4.	Engines	— Check
5.	CAS	— Clear/as required
6.	PFD	— Check
7.	Flight controls	— Check
8.	PI	— Note PI hover value
9.	Attitude	— Note pitch attitude value in hover
10.	Collective/Cyclic Control	— Apply cyclic to attain a nose down attitude change of -3 deg and maintain, with collective fixed. When the aircraft reaches approximately 15 kts groundspeed apply collective to increase PI by +5% above the hover PI. Slowly (3 to 4 seconds) return pitch attitude to the hover value when airspeed is indicating (20-25 KIAS)
11.	Acceleration and climb	— Accelerate forward and climb to achieve 50 ft (15 m) above take off surface at 40 KIAS, continue up to 80 KIAS
12.	Climb	— 80 KIAS (Vy)
13.	Landing gear	— UP (above 200 ft AGL)
14.	Power	— As required

CATEGORY B TAKE OFF (ROLLING TAKE OFF)

1.	Power checks ➡	— Carry out
2.	Hover IGE	— Establish7 feet AGL. Avoid winds from rear sectors between 090° and 270°
3.	PI	— Note hover PI
4.	Attitude	— Note pitch attitude value in hover
5.	NOSE WHEEL steering	— Confirm LOCK
6.	Engines	— Check
7.	CAS	— Clear/as required
8.	PFD	— Check
9.	Flight controls	— Check
10.	Touchdown	— Touchdown, prepare for ground acceleration
11.	Ground acceleration	— Commence acceleration to 30 kts GS
12.	Lift Off	— At approximately 30 kts lift off with PI hover value to achieve 50 ft (15 m) above Take-off surface at 40 KIAS (return pitch to hover attitude), continue up to 80 KIAS
13.	Climb	— 80 KIAS (Vy)
14.	Landing gear	— UP (above 200 ft AGL)
15.	Power	— As required cruise /climb

TAXI T-O
CAT A/B

CATEGORY A TAKE-OFF PROCEDURES

VERTICAL TAKE-OFF PROCEDURE

Take-Off Safety Speed (V_{TOSS}) .... 50 KIAS

Climb Out Safety Speed (V_{COSS})... Figure 1

Best Rate of Climb Speed (V_Y) .... 80 KIAS

TDP.. 110 ft ATS

Minimum height during CTO .... 15ft ATS

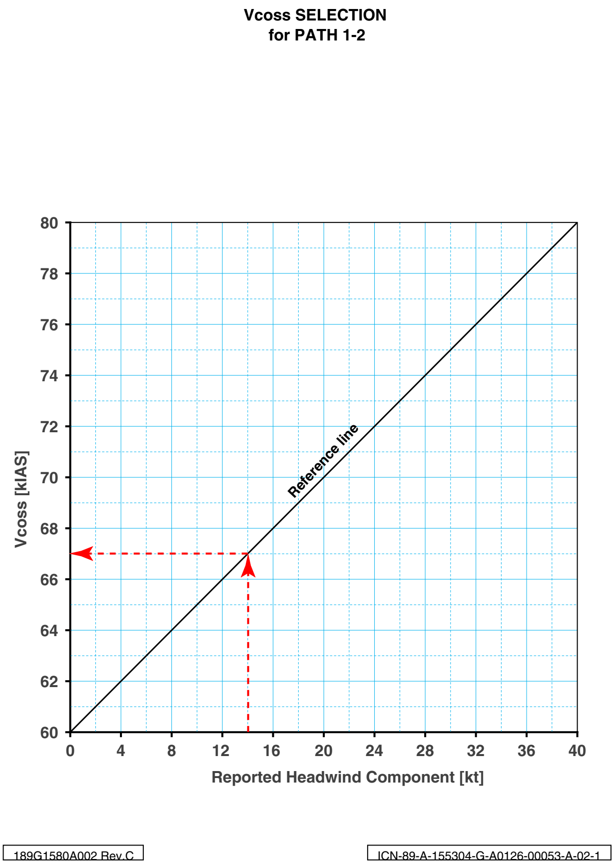

Figure 1 V_{COSS} Calculation Chart

1. Climb Out Safety Speed — Select V_{COSS}. based on reported headwind
2. PARK BRAKE — Apply. Confirm pressure can be felt on brake pedals.
3. HEATER — As required
4. Pilot Altimeter — Set 0 ft or nearest 1000 ft setting to T-O altitude, with collective at MPOG.
5. Rad Alt — Check

6.	Power checks ➡	— Carry out daily power checks
7.	NOSEWHEEL steering	— LOCK
8.	Engine/Rotor	— TQ/ITT matched, NF/NR 102%
9.	MFD PWR PLANT page	— Check and cross check with PFD
10.	Warnings and Cautions	— None/as required
11.	Flight controls	— Check correct functioning
12.	Hover	— Establish a 7 ft ATS hover, no winds from rear sectors (090° to 270°)
13.	Collective/Cyclic Control	— Increase PI to climb slowly to TDP (110 ft ATS) maintaining hover position
14.	Take Off Decision Point (TDP)	— Maintain TDP (110 ft ATS) until ready to depart. Note pitch attitude
15.	Hover departure	— Rotate nose down slowly for an attitude change of 5° maintaining collective position. Maintain attitude to accelerate to V_{TOSS} (50 KIAS). From V_{TOSS} continue climb and accelerate to V_Y
16.	Climb	— At V_y adjust attitude to stabilize speed. Continue climb
17.	Landing gear	— UP (when reaching V_y but not below 200 ft ATS)
18.	Power	— Adjust collective to continue climb at V_y, using up to 5min power, as required, to 1000 ft ATS
19.	At 1000 ft (300 m) ATS	— Adjust collective and cyclic to continue climb at V_y or accelerate to cruise speed as required
20.	PARK BRAKE	— Release
21.	After Take-Off checks Page 115	— Complete

CLEAR AREA TAKE-OFF PROCEDURE

Take-Off Safety Speed (V_{TOSS}) weights up to 8300 kg .... Figure 2

Take-Off Safety Speed (V_{TOSS}) weights above 8300 kg .... Figure 3

Best Rate of Climb Speed (V_Y).. 80 KIAS

TDP .... 30 ft AGL and V_{TOSS}

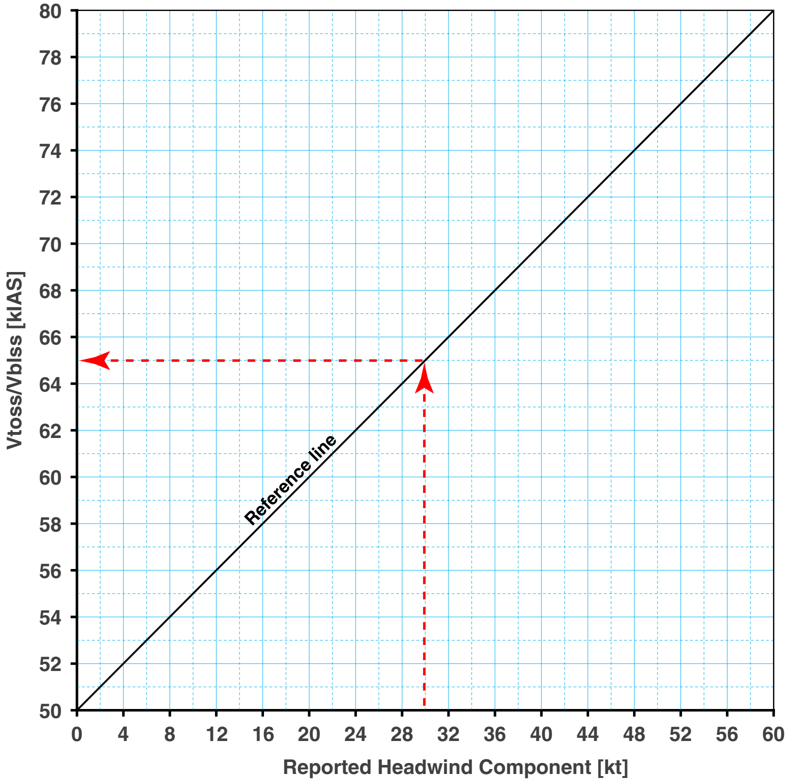

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Figure 2 V_{TOSS} /V_{BLSS} Calculation Chart, weights up to 8300 kg

TAXI T-O
CAT A/B

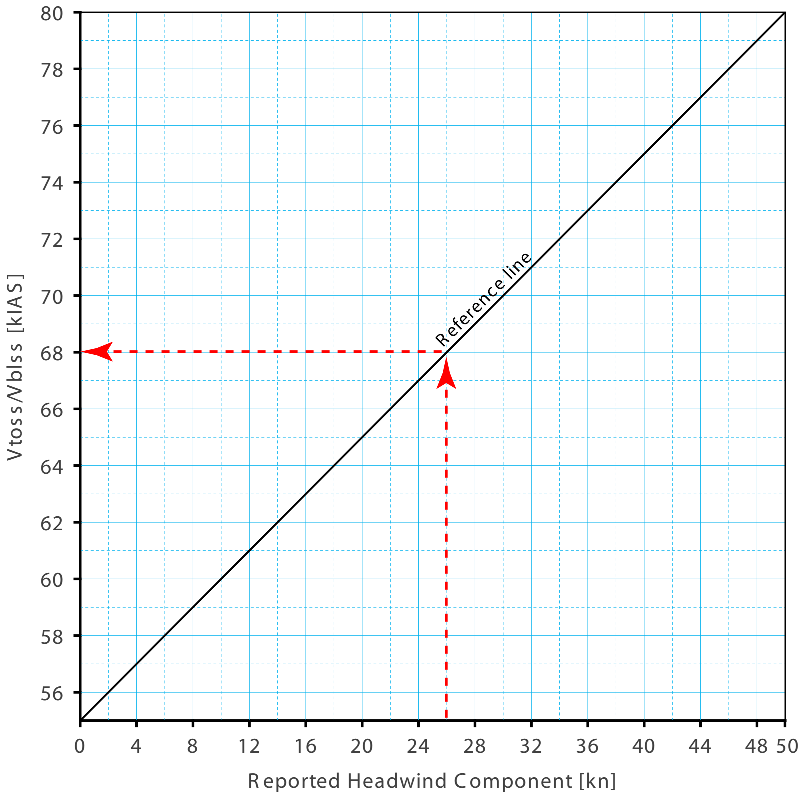

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Figure 3 V_{TOSS} /V_{BLSS} Calculation Chart, weights above 8300 kg

1. V_{TOSS} — Select V_{TOSS} based on reported head-wind component
2. PARK BRAKE — Release
3. HEATER — As required
4. Pilot Altimeter — Set
5. Rad Alt — Check
6. Power checks ➡ — Carry out daily power checks
7. NOSE WHEEL steering — LOCK
8. Engine/Rotor — TQ/ITT matched as required and check NF/NR 102%.
9. MFD PWR PLANT page — Check and cross check with PFD
10. Warnings and Cautions — None / as required
11. Flight controls — Check correct functioning
12. Hover — Establish a 7 ft ATS hover, no winds from rear sectors (090° to 270°)

TAXI T-O CAT A/B

13. PI/Attitude	— Note PI_{TARGET} and pitch attitude
14. Land	— Centralize cyclic and MPOG.
15. Rolling departue	— Increase collective to 50% PI (±5%) and cyclic forward to allow smooth acceleration
16. Lift Off	— At 25 Kts groundspeed apply collective to PI_{TARGET} in 3 seconds
17. Cyclic control	— After lift-off rotate nose down for an attitude change of -5° deg from hover value
18. Take Off Decision Height TDP	— At 30 ft AGL continue acceleration. Verify V_{TOSS} (50 KIAS) already achieved. Accelerate to Vy and continue climb
19. Climb	— At V_y adjust attitude to stabilize speed. Continue climb
20. Landing gear	— UP at or above 200 ft AGL)
21. Power	— Adjust collective to climb at VY (80 KIAS), using up to 5min power, to 1000 ft AGL.
22. At 1000 ft (300 m) ATS	— Adjust collective and cyclic to continue climb at V_y or accelerate to cruise speed as required
23. After Take-Off checks Page 115	— Complete

OFFSHORE ELEVATED HELIDECK TAKE-OFF PROCEDURE

Take-Off Safety Speed (V_{TOSS}) weights below 8300 kg............. 50 KIAS

Take-Off Safety Speed (V_{TOSS}) weights above 8300 kg .... 55 KIAS

Climb Out Safety Speed (V_{COSS}) .... Figure 5

Best Rate of Climb Speed (V_Y)... 80 KIAS

TDP .... 25 ft (7.5 m) ATS

Temperature	AUW	Delta PI
-40 to +15 °C	less than 8000kg	10%
-40 to +15 °C	greater than 8000kg	15%
+15 to +40 °C	less than 8000 kg	15%
+15 to +40 °C	greater than 8000 kg	20%
+40 to +55 °C	All weights	20%

Figure 4 Delta PI Values

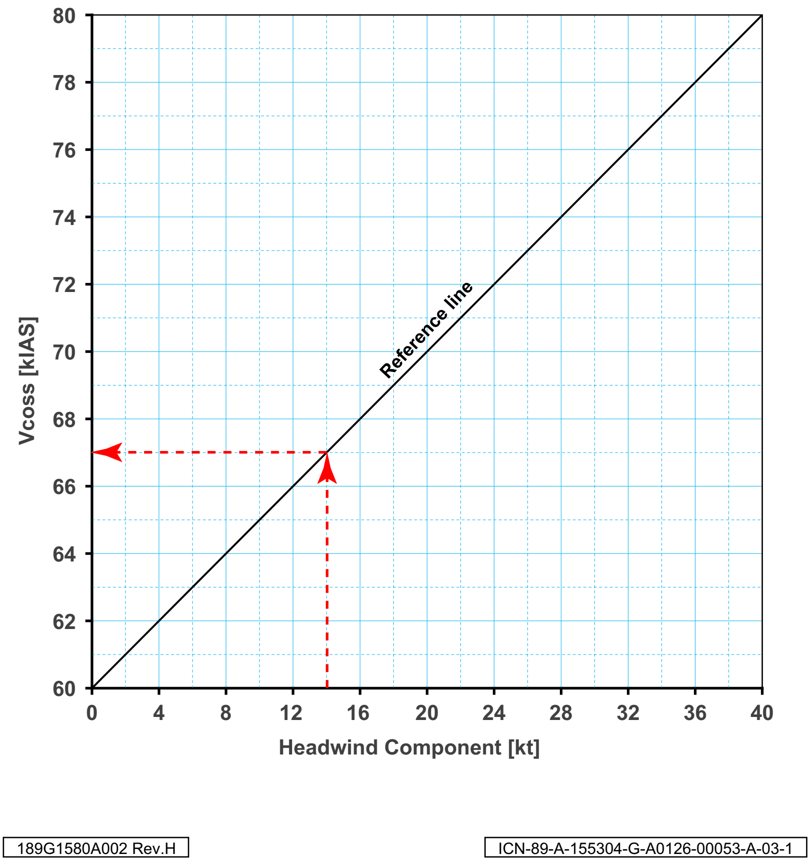

Figure 5 V_{COSS} Calculation Chart for Path 1-2

1. V_{COSS}	— Select V_{COSS} based on reported head-wind component
2. PARK BRAKE	— Apply
3. HEATER	— As required
4. Pilot Altimeter	— Set
5. Rad Alt	— Check
6. Power checks ➡	— Carry out
7. NOSE WHEEL lock	— LOCK
8. Engine/Rotor	— TQ matched as required and check NF/NR 102%
9. MFD PWR PLANT page	— Check and cross check with PFD
10. PFD page	— Select DG
11. Warnings and Cautions	— None/as required
12. Flight controls	— Check correct functioning
13. 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
14. Collective/Cyclic Control	— Apply a PI Delta (selected from Figure 4 for the ambient temperature and aircraft AUW), in 2-3 seconds to climb vertically at 400 fpm or greater, maintaining hover position
15. Take Off Decision Point (TDP)	— At 25 ft (7.5 m) ATS rotate nose to -12° to achieve 25 kts GS then rotate to +5° and accelerate to V_{TOSS}
16. V_{TOSS}	— Continue and accelerate to V_Y climb
17. Landing gear	— UP
18. PARK BRAKE	— Release
19. PFD page	— Select MAG
20. After Take-Off checks Page 115	— Complete

IN-FLIGHT PROCEDURES

AFTER TAKE-OFF CHECKS

1.	LDG GEAR lever	— Confirm UP
2.	LH LDG LT & RH LDG LT	— Check
3.	AEO LIM SEL pushbutton	— As required
4.	Temps and Pressure	— Check
5.	Altimeters	— Set and cross-check
6.	LOAD-SHARE	— As required
7.	CAS	— Clear/as required
8.	MFD	— As required
9.	After Take-Off checks	— Complete

CRUISE CHECKS

1.	Temps and Pressures	— Check
2.	Altimeters	— Check and cross-check
3.	Compass	— Check
4.	Radios/Navigation	— As required
5.	FUEL	— Check, XFEED as required
6.	PITOT HEATERS	— Confirm AUTO
7.	ECS/HEATER/FANS	— As required
8.	LOAD-SHARE	— As required
9.	Anti Ice system (MISC PNL)	— As required
10.	FLOATS EMER panel (if fitted)	— Over land operation - OFF — Over water operation - ARMED
11.	Standby instrument	— Cross check
12.	CAS	— Check
13.	Cruise checks	— Complete

PRE-LANDING CHECKS

1.	LDG GEAR	— DOWN
2.	LH LDG LT & RH LDG LT	— ON
3.	NOSEWHEEL steering	— LOCK

IN FLIGHT

4. PARK BRAKE handle — As required
5. AEO LIM SEL pushbutton — As required
6. DH knob — As required
7. ECS/HEATER/FANS — As required
8. LOAD-SHARE — As required
9. FLOATS EMER panel (if fitted) — Over land operation - OFF
   — Over water operation - ARMED
10. APU If not required or not available continue Item 11 — ON
11. Temps and pressures — Check
12. Altimeters — Set and cross-check
13. Fuel — Quantity, XFEED
14. CAS — Clear/as required
15. Cabin — Secure
16. Pre-Landing checks — Complete

APPROACH AND LANDING

CATEGORY B LANDING

1.	Pre-landing checks	— Complete
2.	ECDU press MENU (MISC)	— AWG NORMAL — Press 6L MENU
3.	Landing direction	— Set
4.	LDG GEAR	— Check 3 greens
5.	Initial point	— Reduce airspeed gradually to arrive at 200 ft (61 m) above touchdown point with a rate of descent of no more than 500 fpm. Initiate a deceleration to stabilize 40 KIAS at 50 ft (15 m). At 50 ft rotate nose up to obtain an attitude change of 5 deg to decelerate
6.	Landing	— Descent to hover at 7 ft AGL
7.	Touch down	— Maximum nose up attitude at touch down 15°. Apply wheel brakes, as required
8.	NOSE WHEEL steering	— UNLK for ground taxi

CATEGORY A LANDING

VERTICAL LANDING PROCEDURE

Balked Landing Safety Speed (V_{BLSS}) .... 50 KIAS

Climb Out Safety Speed (V_{COSS}) ....Figure 1 Page 108

Best Rate of Climb Speed (V_Y)... 80 KIAS

LDP Height ....110 ft ALS

LDP Groundspeed ....Less than 3 kts

1. Climb Out Safety Speed — Select V_{COSS} based on reported head-wind
2. Pre-landing checks — Complete
3. Landing direction — If possible orientate the aircraft for an approach into the prevailing wind.
4. AWG (ECDU MISC page) — NORM/REGR as required
5. Pilot Altimeters — Set QNH (landing surface elevation should be known) and cross check.
6. PARK BRAKE — Apply, Confirm pressure can be felt on brake pedals
7. Initial point — Establish an approach to pass through 150 ft ALS at a groundspeed of 10 kts and rate of descent of not more than 100 fpm. Descend and decelerate to achieve LDP (110 ft ALS) vertically above the landing zone with less than 3 kts groundspeed
8. Landing — Continue to descend vertically over the landing zone to a HIGE, maintainng less than 3 kts groundspeed
9. PARK BRAKE — As required
10. Post Landing checks — Complete
    Page 121

APPR
LAND

GROUND HELIPORT LANDING PROCEDURE

Balked Landing Safety Speed (V_{BLSS}) .... 50 KIAS

Climb Out Safety Speed (V_{COSS}) ....Figure 1 Page 108

Best Rate of Climb Speed (V_Y)... 80 KIAS

LDP Height .... 50 ft AGL (15 m ALS)

Groundspeed ....25 kts

1. Climb Out Safety Speed — Select V_{COSS} based on reported headwind
2. Pre-landing checks — Complete
3. Landing direction — If possible orientate the aircraft for an approach into the prevailing wind. Avoid winds from rear sectors (relative 90°-270°)
4. AWG (ECDU MISC page) — NORM/REGR as required
5. PARK BRAKE — Apply, Confirm pressure can be felt on brake pedals
6. Initial point — Establish an approach to pass through 200 ft ALS at 40 KIAS and rate of descent of not more than 200 fpm. Decelerate to achieve LDP (50 ft ALS) with a groundspeed of 25 kts
7. Landing — Continue to descend to a HIGE. Max forward G/S on touchdown 5 kts
8. PARK BRAKE — As required
9. Post Landing checks Page 121— Complete

CLEAR AREA LANDING PROCEDURE

Balked Landing Safety Speed (V_{BLSS}) up to 8300 kg .... Figure 2 Page 110

Balked Landing Safety Speed (V_{BLSS})above 8300 kg..... Figure 3 Page 111

Best Rate of Climb Speed (V_Y)... 80 KIAS

LDP Height ....50 ft (15 m) AGL

LDP Airspeed .... 50 KIAS

LDP Rate of Descent..Less than 400 ft/min

1. Balked Landing Safety Speed — Select V_{BLSS} based on reported headwind component
2. Pre-landing checks — Complete
3. AWG (ECDU MISC page) — NORM/REGR as required
4. PARK BRAKE — Confirm released
5. Initial point — Establish an approach to pass through 200 ft (60 m) AGL at a rate of descent of no more than 500 fpm. Decelerate to achieve LDP, (50 ft (15 m) AGL) at 50 KIAS and rate of descent less than 400 ft/min
6. Landing — Continue to cushion down for a rolling touchdown. At touchdown maximum attitude 15° nose up and 40 KIAS airspeed

APPR
LAND

7. PARK BRAKE — As required.
8. Post Landing checks — Complete.
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OFFSHORE/ELEVATED HELIDECK LANDING PROCEDURE

BLSS (V_{BLSS}) weights below 8300 kg .... 50 KIAS

BLSS (V_{BLSS}) weights above 8300 kg.. 55KIAS

Climb Out Safety Speed (V_{COSS}) .... Figure 5 Page 113

Best Rate of Climb Speed (V_Y).. 80 KIAS

LDP Height ....50 ft ALS

LDP Groundspeed .... 10 to 15 kts

1. Climb Out Safety Speed — Select V_{COSS} based on reported headwind component and weight
2. Pre-landing checks — Complete
3. Landing direction — If possible orientate the aircraft for an approach into the prevailing wind.
4. AWG — NORM/REGR as required
5. PARK BRAKE — Apply
6. PFD page — Select DG
7. Initial point — Establish a constant descent between 200 and 300 fpm and decelerate slowly towards the LDP (50 ft ALS at 10-15 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 using the pitot tube as a reference
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 allowed GS at touchdown 5 kts (9 km/ h)
11. PARK BRAKE — As required after landing
12. Post Landing Checks — Complete
    Page 121

POST LANDING CHECKS

1. LH LDG LT & RH LDG LT — OFF and STOWed
2. MISC PNL — EMERG LTG OFF
   — MODE as required
3. Systems — OFF/STBY

Note

For Extended Range configuration on ground, with fuel less than 283 kg/tank, close crossfeed to prevent fuel transfer between tanks.

PRE-SHUTDOWN CHECKS

Note

If APU not started use Supplementary Shutdown Procedures (AC EXT PWR) on Page 127.

1. NOSE WHEEL — LOCK, if required
2. PARK BRAKE — Apply
3. Collective — MPOG
4. Cyclic stick — Centralized
5. Pedals — Centred
6. AFCS — OFF
7. MISC PNL — Anti Ice system OFF
8. FLOATS EMER panel (if fitted) — OFF
9. ECDU MENU (PITOT) — Confirm AUTO
10. ECDU — Press FUEL

ENGINES AND ROTOR SHUTDOWN

Note

If DC External Power required for shutdown go to Supplementart Procedures Engines and Rotor Shutdown (APU + DC EXT power) on Page 128.

1. ENG 1 & 2 MODE switches — IDLE

Note

A period of 2 minutes stabilization at IDLE or with NG less than 90% is mandatory. If this is not carried out, refer to ENGINE RESTART PROCEDURE AFTER EMERGENCY SHUTDOWN, EMERG-MALFUNC Page 105.

2. MFD — PWR PLANT page
3. ENG 1 & 2 MODE switches — OFF

CAUTION

During shut down note that:
- NG speed decelerates freely without abnormal noise or rapid run down
- ITT does not rise abnormally.

4.	Rotor Brake	— Select when NR below 40% NR
		— Select OFF when rotor stopped

CAUTION

Avoid use or rotor brake if helicopter is on ice or other slippery or loose surface to prevent rotation of helicopter.

5.	FUEL XFEED	— CLSD
6.	Fuel PUMP 2	— OFF
7.	Fuel PUMP 1	— OFF
8.	ECDU press LT	— A/COLL OFF
		— POS LT as required
		— Press 5R, CABIN SIGN select OFF
		— Press FUEL
9.	Rotor Brake	— As required
10.	APU	— OFF
11.	MAIN BATT and BATT AUX	— OFF
12.	BATT MASTER	— OFF (when APU READY light ON)

POST SHUTDOWN CHECKS

If post shutdown engine cranking required see SUPP PROC “ENGINE CRANKING PROCEDURE” on page 130.

Before leaving the aircraft:

— Chock wheels if helicopter is to be parked for prolonged periods (greater than 1 hour).

— Chock wheels as soon as possible if helicopter is to be parked on sloping ground.

— Remove Main and Aux (if fitted) batteries and store in heated room if helicopter is to remain outside with an OAT at or below -20 °C.

SUPPLEMENTERY NORMAL PROCEDURES

The following supplementary procedures are alternative to the normal procedures when the operating situation dictates for covenience or requirements.

ENGINE PRE-START CHECKS (AC EXT POWER)

1.	BATT MASTER	— ON
2.	MAIN BATT	— ON
3.	BATT AUX (if available)	— ON
4.	LTG (MISC panel)	— As required
5.	ECDU	— Check
6.	EXT AC PWR source	— Connect and ON
7.	ECDU LIGHTS page	— POS LT and A/COLL ON
8.	ECDU 5R (CAB LTS)	— As required
9.	Clock	— Set
10.	ENG FIRE PANEL	— Check

Note

Confirm AMMC 1&2 functioning and all parameters displayed before continuing with the following checks

11.	RCP panel switches Pilot and Copilot	— All NORM
12.	AFCS panel	— Check
13.	Display DIM panel	— As required
14.	MISC PNL	— As required
15.	ECS/HEATER/FANS	— As required
16.	Cyclic stick	— Centred, check switches
17.	Collective lever	— Down, friction, switches
18.	LDG GEAR panel	— Check
19.	PARK BRAKE	— Check
20.	ECDU press 6R (TEST)	— Select FIRE and confirm
21.	LAMP TEST ➡	— Select LAMP and confirm
22.	ENG INTK TEST	— Carry out test procedure (AIR COND OFF, if fitted)
23.	Aural Warning test - Short - Long ➡	— Select as required
24.	TRANS OIL TEST	— Select XMSN OIL LVL and confirm

SUPP
PROC

25. ECDU press 6R (HYD) — ➡ Cyclic, collective and yaw pedals full and free, check
— HYD SOV NORM

CAUTION

Full and free check should be carried out with slow displacement of the controls and one control at a time in order not to overload the electric pump.

26. ECDU — Press 6R (FUEL)

27. Rotor Brake — OFF

ENGINE STARTING

1. MFD — PWR PLANT
2. FUEL PUMP 1 & 2 — ON
3. FUEL ENG 1 & 2 SOV — OPEN
4. FUEL XFEED — AUTO
5. ENG ITT — Less than 150 °C (175 °C after cranking)
6. ENG 1 MODE switch — IDLE (when NG 0%)
7. ENG NG — Check
8. ENG ITT — Check
9. Engine oil pressure — Rising
10. ENG starter — Disengaged by 52%±2% NG
11. Main hydraulic system — Check pressure, cyclic centered
12. NF/NR — IDLE speed 55%±1%
13. Deleted

SECOND ENGINE START

13a. ENG ITT — Less than 150 °C (175 °C after cranking)
14. ENG 2 MODE switch — IDLE (when NG 0%)
15. ENG 2 NG — Check
16. ENG 2 ITT — Check
17. Engine oil pressure — Rising
18. ENG N°2 starter — Disengaged by 52% ±2% NG
19. NF/NR — IDLE speed 73%±1%
19A. Temps and Pressures — Within limits
20. HEATER — As required
22. EXT PWR AC — OFF and disconnect

23. AFCS panel — Complete TEST procedure
24. MFD — Confirm PWR PLANT page
25. Continue on Page 102 After Engine Start Checks

ENGINE PRE-START CHECKS (DC EXTERNAL + APU)

1. BATT MASTER — ON
2. MAIN BATT — ON
3. BATT AUX (if available) — ON
4. LTG (MISC panel) — As required
5. ECDU — Check
6. EXT DC PWR source — Connect and ON
7. ECDU LIGHTS page — POS LT and A/COLL ON
8. ECDU 5R (CAB LTS) — As required
9. Clock — Set
10. ENG FIRE PANEL — Check

Note

Confirm AMMC 1&2 functioning and all parameters displayed before continuing with the following checks.

11. RCP panel switches Pilot and Copilot — All NORM
12. AFCS panel — Check
13. Display DIM panel — As required
14. MISC PNL — As required
15. ECS/HEATER/FANS — As required
16. Cyclic stick — Centred, check switches
17. Collective lever — Down, friction, switches
18. LDG GEAR panel — Check
19. PARK BRAKE — Check
20. ECDU press 6R (TEST) — Select FIRE and confirm
21. LAMP TEST ➡ — Select LAMP and confirm
23. Aural Warning test — Select as required
    - Short
    - Long ➡
24. TRANS OIL TEST — Select XMSN OIL LVL and confirm

SUPP PROC

25. ECDU press 6R (HYD) — ➡ Cyclic, collective and yaw pedals full and free, check
— HYD SOV NORM

CAUTION

Full and free check should be carried out with slow displacement of the controls and one control at a time in order not to overload the electric pump.

26. ECDU — Press 6L (MENU)
27. ECDU — Press TEST
28. APU — START
29. ENG INTK TEST — Carry out test procedure (AIR COND OFF, if fitted)
30. ECDU — Press FUEL
31. Rotor Brake — OFF

ENGINE STARTING

1. MFD — PWR PLANT page
2. FUEL PUMP 1 & 2 — ON
3. FUEL ENG 1 & 2 SOV — OPEN
4. FUEL XFEED — AUTO
5. ENG ITT — Less than 150 °C (175 °C after cranking)
6. ENG 1 MODE switch — IDLE (when NG 0%)
7. ENG NG — Check
8. ENG ITT — Check
9. Engine oil pressure — Rising
10. ENG starter — Disengaged by 52% ±2% NG
11. Main hydraulic system — Check pressure, cyclic centered
12. NF/NR — IDLE speed 55%±1%.
13. Deleted

SECOND ENGINE START

13a. ENG ITT — Less than 150 °C (175 °C after cranking)
14. ENG 2 MODE switch — IDLE (when NG 0%)
15. ENG 2 NG — Check
16. ENG 2 ITT — Check

17. Engine oil pressure — Rising
18. ENG N°2 starter — Disengaged by 52% ±2% NG
19. NF/NR — IDLE speed 73%±1%

19A. Temps and Pressures — Within limits

20. HEATER — As required
21. EXT PWR DC — OFF and disconnect
22. AFCS panel — Complete TEST procedure
23. APU — OFF
24. MFD — Confirm PWR PLANT page
25. Continue on Page 102 After Engine Start Checks

SHUTDOWN PROCEDURES (AC EXT POWER)

PRE-SHUTDOWN CHECKS

1. NOSE WHEEL — LOCK, if required
2. PARK BRAKE — Apply
3. Collective — MPOG
4. Cyclic stick — Centralized
5. Pedals — Centred
6. AFCS — OFF
7. MISC PNL — Anti ice system OFF
8. ECDU MENU (PITOT) — Confirm AUTO
9. ECDU — Press FUEL
10. EXT AC PWR — Connect and ON

ENGINES AND ROTOR SHUTDOWN

1. ENG 1 & 2 MODE switches — IDLE

Note

A period of 2 min stabilization at IDLE or with NG less than 90% is mandatory. If this is not carried out, refer to ENGINE RESTART PROCEDURE AFTER EMERGENCY SHUTDOWN, EMERG-MALFUNC Page 105.

2. FEUL PUMP 1 & 2 — OFF
3. MFD — PWR PLANT page
4. ENG 1 & 2 MODE switches — OFF

CAUTION

During shut down note that:
- NG speed decelerates freely without abnormal noise or rapid run down
- ITT does not rise abnormally.

5. Rotor Brake — Select when NR below 40% NR
   — Select OFF when rotor stopped

CAUTION

Avoid use of rotor brake if helicopter is on ice or other slippery or loose surface to prevent rotation of helicopter.

6. ECDU press LT — A/COLL OFF
   — POS LT as required
   — Press 5R, CABIN SIGN select OFF
   — Press FUEL
7. Rotor Brake — As required
8. EXT PWR AC — OFF and disconnect
9. MAIN BATT and BATT AUX — OFF
10. BATT MASTER — OFF
11. Proceed with Post Shut Down Check Page 122

SHUTDOWN PROCEDURES (APU+DC EXT POWER)

1. EXT DC PWR — Connect and ON
2. ENG 1 & 2 MODE switches — IDLE

Note

A period of 2 minutes stabilization at IDLE or with NG less than 90% is mandatory. If this is not carried out, refer to ENGINE RESTART PROCEDURE AFTER EMERGENCY SHUTDOWN, EMERG-MALFUNC Page 105.

3. MFD — PWR PLANT page
4. ENG 1 & 2 MODE switches — OFF

CAUTION

During shut down note that:
- NG speed decelerates freely without abnormal noise or rapid run down
- ITT does not rise abnormally.

5. Rotor Brake — Select when NR below 40% NR
   — Select OFF when rotor stopped

CAUTION

Avoid use of rotor brake if helicopter is on ice or other slippery or loose surface to prevent rotation of helicopter.

6. FUEL XFEED	— CLSD
7. FUEL PUMP 2	— OFF
8. FUEL PUMP 1	— OFF
9. ECDU press LT	— A/COLL OFF
	— POS LT as required.
	— Press 5R, CABIN SIGN select OFF
	— Press FUEL
10. Rotor Brake	— As required
11. APU	— OFF (when ENG ITT under control)
12. EXT PWR DC	— OFF and disconnect
13. MAIN BATT and BATT AUX	— OFF
14. BATT MASTER	— OFF (when APU READY light ON)

15. Proceed with Post Shut Down Check Page 122

SLOPING GROUND OPERATION

TAKE OFF PROCEDURE

1. PARK BRAKE applied.
2. Increase collective and move cyclic in a coordinated manner to achieve a lift off.
3. Establish hover above take off surface.
4. Take Off as required.
5. Release PARK BRAKE as necessary.

LANDING PROCEDURE

1. Establish hover above landing area.
2. PARK BRAKE applied.
3. Lower collective to commence vertical descent.

When the wheels contact the ground:

4. Move cyclic and collective in a coordinated manner to achieve the cyclic centralized as the collective reaches MPOG.
5. If taxiing required release PARK BRAKE.

ENGINE CRANKING PROCEDURE

The following procedure may be used when a normal engine shut down has been carried out and a re-start is required before the engines have time to cool down.

Note

Starter generator duty cycle refer Limitations Page 19.

1.	ENG MODE switch	— Confirm OFF
2.	FUEL PUMP	— If OFF, leave OFF, if ON, leave ON
3.	ENG MODE switch	— Select CRANK and hold to reduce ITT to below 150 °C
4.	Gas generator (NG)	— Note increasing
5.	ENG MODE switch	— Release to OFF as necessary (up to 45 seconds of cranking may be used, Starter Duty Cycle must be respected)

6. Continue with engine start or as required.

Note

Engine start is acceptable with ITT below 175 °C.

FLIGHT IN SEVERE TURBULENCE

1. All occupants must be seated with seat belts fastened.
2. Disengage AFCS upper modes, if engaged.
3. Slow the aircraft to a comfortable speed, recommended between 80 and 100 KIAS.
4. Fly a constant attitude. Do not attempt to correct rapidly changing airspeed indications.
5. Do not make large, rapid collective pitch adjustments.

FMS OPERATION NORMAL PROCEDURES

PRE-DEPARTURE OPERATIONS

At the power-up of the aircraft, the DB IDENT page is presented on MCDU.

— Check the NAVIGATION DB in the DB IDENT page as current and appropriate for the region of intended RNP operations.

Basic pre-departure operations are:

— Check the aircraft position by pressing the INIT key (6R) and access to INIT page.

— Press the PERF INIT key (6R), enter the performance data as required and confirm the initialization (CONFIRM INIT key 6R page 4/4)

— Press the FMS direct key to select the FMS page. Press the FPL LIST key (1L) to access the flight Plan page.

— Create a new flight plan or select a stored flight plan as required.

— If required insert an alternate destination airport and relative waypoints of En-Route to alternate destination.

— If required on LEGS pages enter en-route waypoint altitude constraints.

— If required activate flyover attribute and/or holding procedure on the required waypoints

— If P-RAIM of destination is required, out of SBAS coverage, press the GPS (3L) key on FMS page and select the GPS unit to use. Press the PRED-RAIM key (6R) to perform the Predictive RAIM function on Destination waypoint.

IN-FLIGHT OPERATIONS

Departure, Climb

— Set CRUISE ALT in PERF INIT page 3/4 at Initial Cruise Altitude; set altitude selector (ALTA) at the same reference altitude or above as cleared by ATC/ACC.

— If required, activate the SID procedure of Origin airport from NAV DB.

— Arm the AFCS NAV mode with FMS as Primary Navigation source from PFD of pilot flying.

Cruise

— Monitor the leg sequencing of active flight plan on MFD (FPLN pages: Rose, Arc, Plan) and/or on the MCDU display (LEGS 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.

— During flight, check NAV1 and NAV2 receivers auto tuning active and the corresponding receivers are tuned to the appropriate ground NAVAIDs.

— During flight, where feasible, the flight progress page 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.

— During flight, where feasible, the cleared active flight plan on LEGS page of MCDU or MAP display of MFD should be cross-checked by comparison with charts or other applicable resources.

Descent

— If DCL required confirm the distances/speeds on the MCDU FMS Approach Speed (APPR SPD) page.

— In Terminal area adjust/verify the baro correction with destination on both PFDs. Verify that each pilot's altimeter has the current setting before beginning the final approach of a RNP APCH procedure.

— If required, activate the ARRIVAL procedure of Destination airport from NAV DB.

— If required, activate ton FMS MCDU ARRIVAL page the _COLD TEMPERATURE COMPENSATION function.

— 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 manually or with VS/ALTA mode. The APP mode and VPATH couled operation (NAPP) engages only after passing the IAF point.

— Before the TOD waypoint verify, on LEGS page, the VNAV phase equal to CRZ.

— If required, arm the APP (and DCL for longitudinal axis, if required) mode to fly the VPATH of approach fully coupled in collective axis (and longitudinal axis) up to MAP waypoint.

— Confirm the FMS is in approach mode ("APP" green annunciation) within 2 NM prior to the FAF.

— Ensure that lateral deviation indicator scaling is suitable for approach segment (±0.3NM for RNP APCH or ±0.5NM for NPA).

— RNP APCH approach procedure requires pilot monitoring of lateral and vertical track deviations on PFD to ensure the helicopter remains within the lateral/vertical bounds defined by the procedure.

The following table provides, as reference, the ROD (Rate Of Descent) for varying Groundspeed (GS) and Glide Path Angle (GPA):

GPA (deg)	GROUNDSPEED (kts)	ROD (fpm)
4	141	1000
4.5	125	1000
5	113	1000
5.5	103	1000
6	94	1000
6.5	87	1000
7	80	1000
7.5	75	1000
7.5	68	900

7.5	60	800
7.5	53	700
8	70	1000
8	60	850
8	50	710
9	62	1000
9	50	800

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, and
- The integrity alerting function (“FMS DGR” or “RAIM”) is activated before passing the FAF.

USER DEFINABLE APPROACHES

VFR APPROACH

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.

The availability of a User-Definable Approach requires 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 pattern (Holding, SAR);
- None of the following patterns is active: HPA, MOT, RNZ, SAR.

To activate a VFR approach the following data is inserted on the approach definition 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 APPROACH 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) *	Heliport Elevation, if available in Nav DB	LTE Landing Threshold 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

** Approach with GPA greater than 7.5° are classified as steep and TCH/CROSS HGT is automatically set at 300 ft.

— it is not possible to create a VFR Approach onto an Heliport itself. If a Helipad is present, it is automatically presented and only this may be selected.

— it is not possible to create a VFR Approach onto an Airport itself. If a Runway is present, it is automatically presented and only this may be selected.

The VFR Approach provides a basic Missed Approach procedure which consists of a course-to-fix leg (3nm length) and an holding on the MAHWP waypoint.

FD/FMS OPER

At activation of the VFR Approach the FMS substitutes in the Active Flight Plan the Destination Waypoint with the VFR Approach circuit. After activation the FMS calculates the Flight Phase as the Destination Waypoint being an actual Airport/Heliport, and the VFR Approach as an actual IFR procedure.

The Holding set within the VFR Missed Approach has the following characteristics, pilot adjustable, with the following defaults:

- Type .... conventional
- Turn Direction.................. RIGHT
- Inbound Course .... equal to the Missed Approach Course
- Ground Speed................. 100 knots
- Leg Time .... 1 Minute
- Altitude .... equal to the Missed Approach Altitude.

COLD TEMPERATURE COMPENSATION

During APV Baro-VNAV approach in cold weather conditions the FMS COLD temperature compensation function must be activated when the airport temperature is below the published minimum airport temperature for the procedure. When active, the function raises the altitude constraints of the waypoints between IAF to MAP (and during the MAP procedure) adding the correction value.

MCDU FMS - ARRIVAL page COLD TEMP COMPENSATION field select:

— **OFF** = FMS assumes standard day temperature.

— **ON** = FMS applies temperature compensation at approach waypoints.

— **OAT** = OAT enter value of destination airport/heliport in centigrade.

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 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 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 panel. The arming of DCL mode also arms automatically the APP mode.

FMS NAVIGATION ANNUNCIATORS

1. Message (MSG)

   MSG is an annunciation (amber) displayed on both PFDs and on the MCDU. This annunciation is displayed flashing for 5 seconds then steady when a message is available in the MSG page. The annunciation is removed after the message has been acknowledged from the MSG page of MCDU. Messages are displayed in the MCDU MSG page at various times. They inform or alert the pilot as to system status.

2. RNP Digital Readout (RNP X.X NM)

   The RNP digital readout is displayed on the PFD display whenever the FMS is selected as the Primary Navigation Source. The RNP display indicates to the pilot that 2 dots deflection in Lateral Deviation/Pointer display within the HSI is equal to the RNP value.

3. OFST (Lateral OFFSET)

   OFST is a cyan advisory (magenta if NAV coupled) annunciation. It is displayed when the parallel OFFSET function is active

FD/FMS OPER

4. APP (APPROACH)

   APP is an advisory (green) annunciation. It is displayed when the a/c reaches the approach area at 2NM to FAF wpt.

5. VGP (Vertical Glide Path)

   VGP is an status/advisory/alert (white/green/amber) annunciation. It is displayed when the FMS computes a VPATH in Terminal area or Approach. The VGP is displayed in white when a VPATH is computed, in green during the DESCENT phase (DES at MCDU-LEGS page) and in amber in case of degraded/failure condition of APV Baro-VNAV function or GNSS lateral guidance (for a complete list of degraded/failure condition of APV Baro-VNAV function refer to FMS AW189 Pilots Guide, latest edition).

6. VFR (VFR Approach Annunciation)

   VFR is a status/advisory/alert (white/green/amber) annunciation. It is displayed when the FMS computes a VPATH of USER-DEFINABLE Approach. The VFR caption illuminates in white when VFR approach becomes active, in green during the DESCENT phase (DES at MACU-LEGS page) and in amber in case of degraded failure condition of APV Baro-VNAV function or GNSS lateral guidance (for a complete list of degraded/failure refer to FMS AW189 Pilots Guide, latest edition).

7. VTA (Vertical Track Alert)

   VTA is a status/caution (white/amber) annunciation. Displayed in white, 30 seconds before the start of descent, or in amber, as a vertical alert on collective axis when below 1 dot with respect to calculated VGP (-75 ft VTE) .

8. FMS DGR (amber annunciation at PFD) + UNABLE RNP (MCDU message)

   The Alerting Messages “UNABLE RNP” in conjunction with RNP digital readout value in amber and “FMS DGR” alerting annunciator on both PFDs in amber colour provide the pilot the information that the FMS is no longer capable of performing the required A-RNP Navigation Specification.

9. RAIM (amber on PFD) + GNSS RAIM UNAVAILABLE (MCDU message)

   The Alerting Messages “GNSS RAIM UNAVAILABLE” in conjunction with “RAIM” alerting annunciator on both PFDs in amber colour provide the pilot the information that the FMS “*RNP Monitoring Performance and Alerting*” function has detected a degraded/failure condition on GNSS Horizontal Integrity. This degradation affects the A-RNP capability.

10. 1(2) GNSS RAIM ABOVE LIMIT (MCDU message)

   The Alerting Messages “1(2) GNSS RAIM ABOVE LIMIT” provides the pilot the information that the FMS “*RNP Monitoring Performance and Alerting*” function has detected the Horizontal/Vertical Integrity limit is exceeded.

ECDU SCRATCHPAD MESSAGE DEFINITIONS

NEW ALRT(S) PENDING	One CB has tripped (TRIP) or failed (FAIL)
X ALRT PENDING	One or more CB(s) have tripped (TRIP) or failed (FAIL)
APU ON	The system cannot close the FUEL PUMP 1 due to the APU operating
CMD NOT EXECUTED	The issued command was not executed due to either: • The command was issued more than once and the first command is still in progress, • The associated REPU is not available due to not being powered. • System failure
CMD NOT ALLOWED	The command issued is not permitted due to a system interlock
ENG 1(2) SOV FAIL	The system cannot open/close the fuel SOV. Check MFD ENG Synoptic page for fuel SOV position
XFEED VLV FAIL	The system cannot open/close the fuel XFEED valve. Check PFD for FUEL XFEED advisory
ENG 1(2) FIRE ARMED	The ENG 1(2) SOV cannot be operated due to the ENG 1(2) FIRE ARMED pushbutton pressed on the FIRE control panel
NVG MODE	The selected light may not operate as the light are selected to NVG mode
DC ESS 1(2) OFF	The BTC 1(2) cannot be closed as the DC ESS 1(2) is not powered

MCDU SCRATCHPAD MESSAGE DEFINITION

The illumination of a amber MSG caption on the PFD (below the PI) indicates there are messages on the MCDU alert page. See FMS Handbook for more information.

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LIMITED ICING PROTECTION SYSTEM, NORMAL PROCEDURE

Select LIPS ON (ECDU ICE PROTECTION page) when at least one of the following are present:

- ICING caution is displayed.
- 1 PITOT HEAT OFF and/or 2 PITOT HEAT OFF caution is displayed.
- OAT is +4°C or less on one of the OAT indications (PFD and/or Standby).

Note

The following natural visual cues shall also be taken into account:

- Ice accretion on SLD marker or Vernier Ice Accretion Meter (if fitted) is detected
- Ice accretion on windshield and/or windshield wipers is detected.
- Conditions of visible moisture are encountered.

EXTERIOR CHECKS

1. Ice detectors — Condition
2. OAT sensors — Condition
3. SLD Marker — Condition
4. Vernier ice accretion meter (if fitted) — Condition
5. Engine Intakes — Check free of ice and snow, and for any possible accumulations inside the intake
6. All fuselage upper surfaces — Check free of ice, slush and snow

CAUTION

A/C should not be started until free of ice. The applicable de-ice procedure is detailed in the Maintenance Manual.

LIPS

AFTER ENGINES START

1. Anti Ice Bleed Valve check — If flight in OAT conditions less than 5°C is envisaged carry out the following:
   - Confirm HEATER selected OFF.
   - Select ENG 1 MODE to FLT
   - Increase collective as necessary to stabilize an ENG 1 NG between 90-95%
   - Note ENG 1 ITT, select ENG 1 A/ICE ON and confirm ENG 1 ITT increases by at least 30°C.
   - Select ENG 1 A/ICE OFF, confirm ITT reduces
   - Return collective to MPOG and select ENG 1 IDLE.
   - Repeat above test on ENG 2.

Note

If required to speed up Anti Ice Bleed Valve Check ENG 2 may be selected to FLT prior to selecting ENG 1 to IDLE.

2. ECDU ICE PROTECTION page — Select SYSTEM ON and TEST (Test duration approx 30 seconds).

Note

PITOT HTR should be selected to ON (ECDU PITOT page), when taxiing, to prevent any build up of ice on the pitots.

PRE-TAKE OFF CHECKS

1. ECDU ICE PROTECTION page — Select LIPS ON or as required
2. MISC PNL — If flight into limited icing is expected ensure Anti Ice system is selected ON.

IN FLIGHT PROCEDURES

LIPS

When OAT is 4 °C or below and/or icing conditions are expected along the flight route and/or when visible moisture condition are encountered and/or ice accretion is detected during flight:

1. ECDU ICE PROTECTION page — Select SYSTEM ON
2. MISC PNL — If flight into limited icing is required ensure Anti Ice system is selected ON.

With the LIPS system selected ON, entering icing conditions will cause illumination of the ICE 5 MIN caution on CAS and Ice Severity Meter Indication and Time in ICE values when Ice Severity indicator is in the amber zone.

If the ambient conditions display Ice Severity indication in the green zone the ICING caution illuminates for 5 seconds only and the 'Time in Ice' is not presented.

When entering icing conditions a maximum airspeed of 120 KIAS is recommended until the severity of the icing conditions is established.

In cruise when ALT and IAS modes are engaged, if PI limiting is active the airspeed will automatically reduce to maintain altitude.

CAUTION

A power increase can be expected in icing conditions and should be carefully monitored by the pilot. The icing conditions should be vacated as soon as possible if excessive power increase or unacceptable vibrations are noted.

Note

Monitoring PI variation, IAS, OAT, LWC, Vernier Ice Accretion Meter (if fitted) and ice accretion type (on visible structure, SLD Marker and Vernier), amount of water streaming on the heated windscreen will all give good cues to the severity of the icing conditions.

APPROACH

PRE-LANDING CHECKS

1. ECDU ICE PROTECTION page — LIPS as required
2. MISC PNL — ENG and INTAKE ANTI ICE as required.
3. ECDU PITOT page — PITOT HTR as required.

BEFORE ENGINES SHUT DOWN

1. ECDU ICE PROTECTION page — SYSTEM OFF

CAUTION

Following flight in icing conditions, the pilot should warn personnel outside the A/C and/or crew members and passengers disembarking of the possibility of shedding ice from the rotors and/or other parts of the helicopter, which could be hazardous. Personnel should remain clear of the aircraft until the rotors have stopped.

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ICING PROTECTION SYSTEM, NORMAL PROCEDURE

The IPS is designed to operate automatically without pilot intervention when in icing conditions, therefore in normal operation there is no pilot interaction required if the system is switched ON prior to takeoff.

The IPS should be selected to ON and AUTO when icing conditions may be expected during any phase of the flight.

CAUTION

When no ice is expected along the route the IPS and IPS GEN switches should be set to OFF and the IPS ground test is not required.

EXTERIOR CHECKS

1. Ice detectors — Condition
2. OAT sensors — Condition
3. SLD Marker — Condition
4. Engine Intakes — Check free of ice and snow, and for any possible accumulations inside the intake and auxilary scoops.
5. All fuselage upper surfaces — Check free of ice, slush and snow

CAUTION

A/C should not be started until free of ice. The applicable de-ice procedure is detailed in the Maintenance Manual.

BEFORE ENGINES START

1. ECDU ICE PROT page — Confirm IPS GEN OFF and IPS OFF

AFTER ENGINES START

1. NR — Confirm 102%
2. APU Gen — Confirm ON
3. ECDU ICE PROT page — IPS GEN ON
4. ECDU ICE PROT page — IPS ON, confirm IPS AUTO MODE
5. ECDU ICE PROT page — Select TEST, confirm no IPS CAS cautions
6. APU — Shutdown or as required

Note

PITOT HTR should be selected to ON (ECDU PITOT page), when taxiing, to prevent any build up of ice on the pitots.

PRE-TAKE OFF CHECKS

1. ECDU ICE PROT page — If flight into icing conditions expected confirm IPS GEN on and IPS mode is AUTO
2. MISC PNL — If flight into icing is expected ensure Anti Ice system is selected ON.

Note

If operating in an icing environment on ground (i.e. freezing fog) on ECDU ICE PROTECTION page select IPS MODE from AUTO to OVRD to AUTO, just before take off, which will ensure a complete MR blade heating cycle of 90 second.

IN FLIGHT PROCEDURES

1. MISC PNL — If flight into icing is required ensure Anti Ice system is selected ON.

Note

With the IPS system selected ON and in AUTO mode, entering icing conditions will result in illumination of the “ICING” caution for 5 seconds on the CAS. The green “IPS HEAT ON” advisory will illuminate to indicate the system is operating.

Note

When entering icing conditions a maximum airspeed of 120 KIAS is recommended until the severity of the icing conditions is established.

Note

In cruise when ALT and IAS modes are engaged, if PI limiting is active the airspeed will automatically reduce to maintain altitude.

Note

Depending on icing severity encountered a power increase of up to 25% PI may be seen.

Note

During sustained operations in conditions with Ice Severity indication Moderate or Heavy and OAT below -10°C an increase in tail rotor vibration levels may be experienced due to ice accret- ing within the unheated hub assembly. In this case flight in icing can be continued as required as the vibration will self-limit at a safe value, however consideration should be given to changing the flight conditions to reduce the ice severity that the aircraft is encountering.

APPROACH - PRE-LANDING CHECKS

When icing conditions have been exited, select IPS from AUTO to OVRD to AUTO to maximise amount of ice shed prior to landing (momentary selection of OVRD mode will ensure a complete MR blade heating cycle of 90 seconds).

BEFORE ENGINES SHUT DOWN

1. ECDU ICE PROTECTION page — IPS OFF
   — IPS GEN OFF

CAUTION

Following flight in icing conditions, the pilot should warn personnel outside the A/C and/or crew members and passengers disembarking of the possibility of shedding ice from the rotors and/or other parts of the helicopter, which could be hazardous. Personnel should remain clear of the aircraft until the rotors have stopped.

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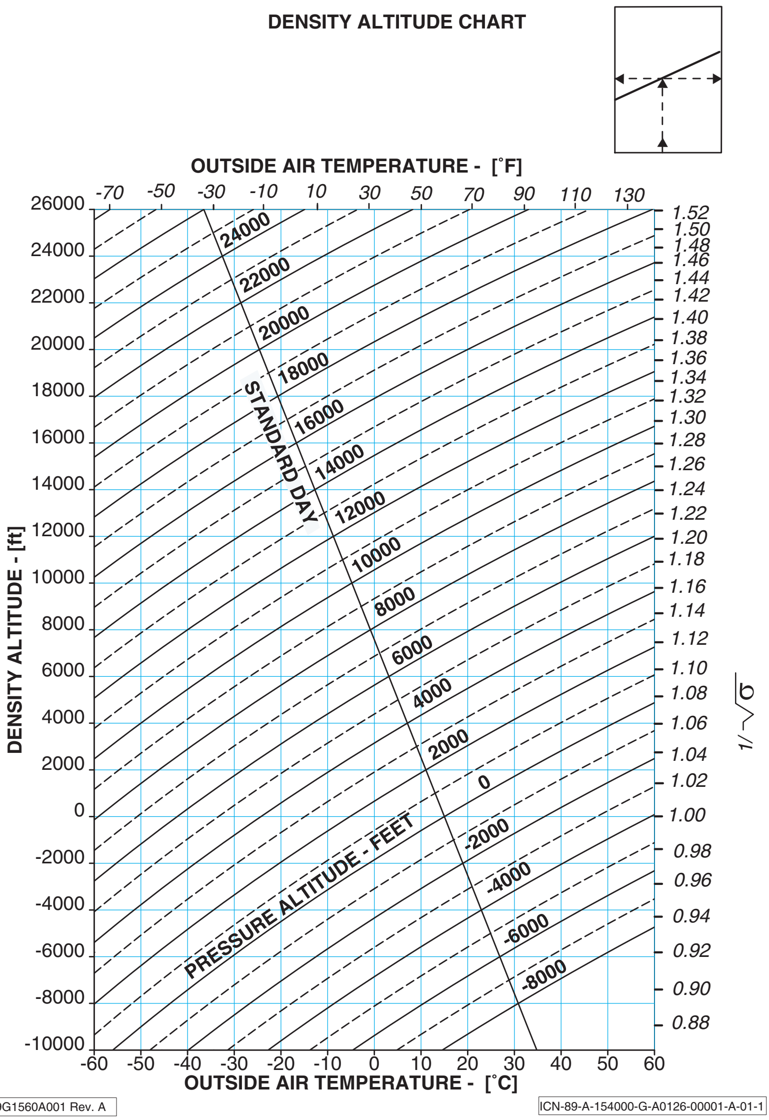
PERFORMANCE



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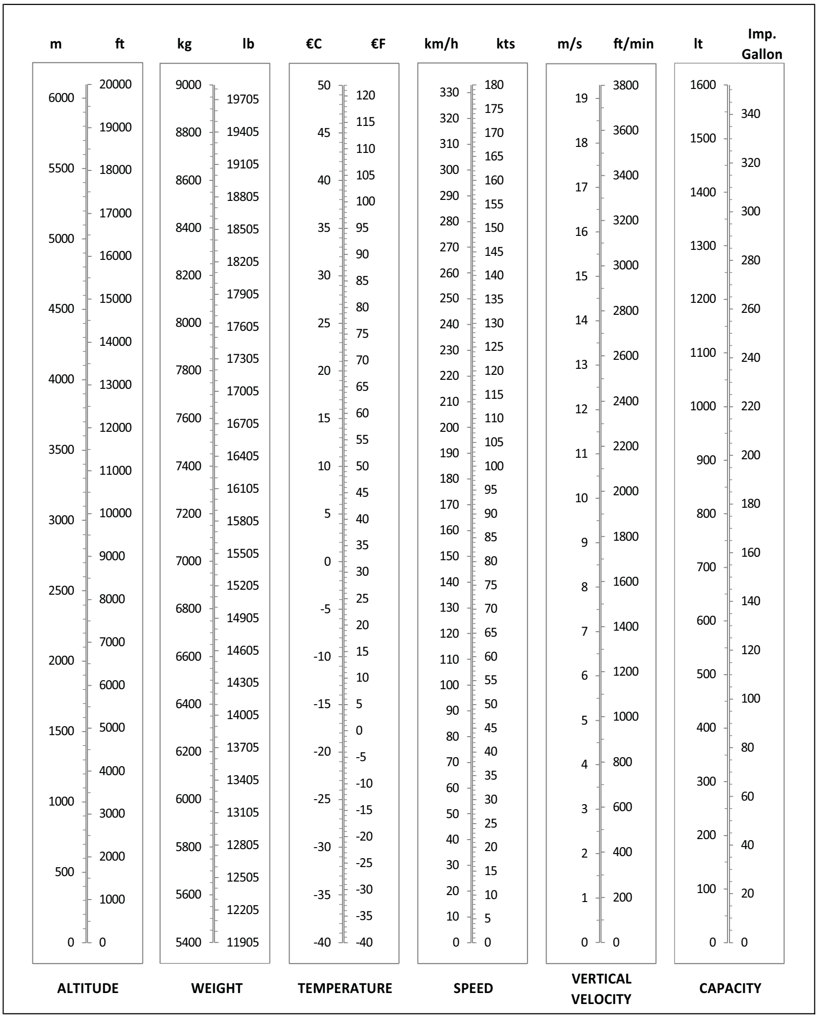
CONVERSION CHART



Gen PAC
Hvr Cont

ENGINE POWER CHECKS

A HOVER and 120 KIAS LEVEL FLIGHT power assurance check procedure is provided to the operator.
The power check procedure may also be carried out anytime there is concern over engine health/performance.

POWER CHECK PROCEDURES

CAUTION

Observe all engine and transmission limits and aircraft operating limits during this check.

Power Check Procedure

1. For Hover check position the aircraft into the prevailing wind to minimize hot gas ingestion.
2. Record date, aircraft serial number, aircraft hours, engine serial number and engine hours.
3. Confirm that the HEATER switch is set to OFF and ENG 1 & 2 SOV switches are NORMAL.
4. Confirm A/ICE OFF on both engines.

Note

If icing conditions exist do not keep anti icing system off longer than is necessary to complete the power check.

5. Set the barometric pressure to 1013 mb or 29.92 inches.
6. Apply collective to obtain Hover IGE at 7 ft or Level Flight at 120 KIAS.
7. Maintain a fixed collective for one minute, then record the following data from the Primary and Multi Function Display:

— Pressure Altitude — OAT — TQ — ITT

AUTOMATIC POWER CHECK PROCEDURE
(AVIONIC SOFTWARE PHASE 4.0 AND LATER)

MFD P-PLANT synoptic page:

- Press PWR CHECK button to display current engine parameters
- When hover or 120 KIAS level flight stabilized for 1 minute press button a second time (Green PWR CHECK IN PROGRESS caption displayed)
- Note ITT Power Margins displayed

If PWR CHECK aborted, check may be repeated when the conditions have been re-stabilized.

POWER CHECK CHART

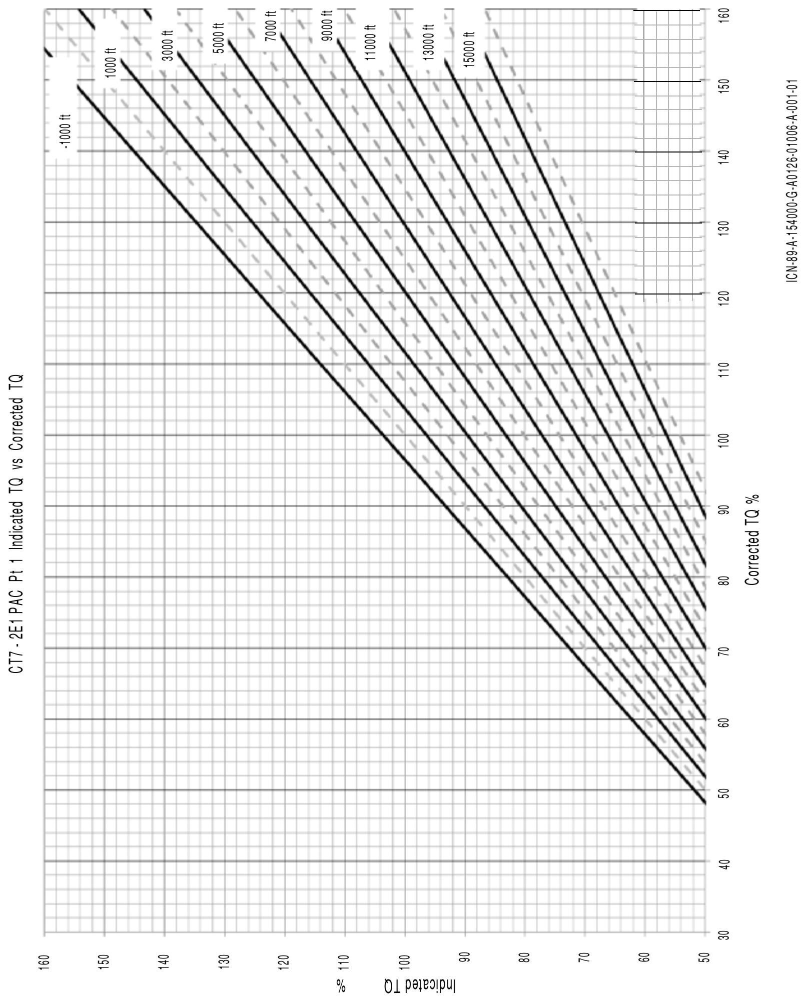


Figure 1 GE CT7-2E1 POWER CHECK CHART Pt 1

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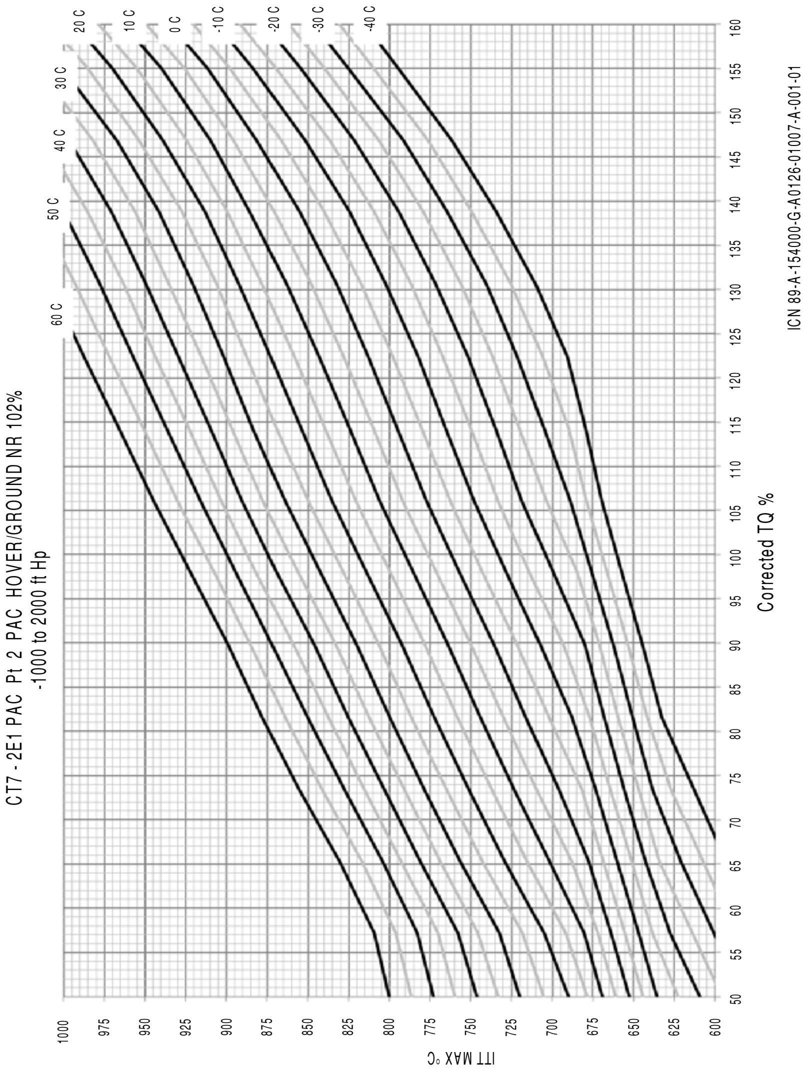

Figure 2 HOVER POWER CHECK CHART Pt 2 -1000 to 2000 ft

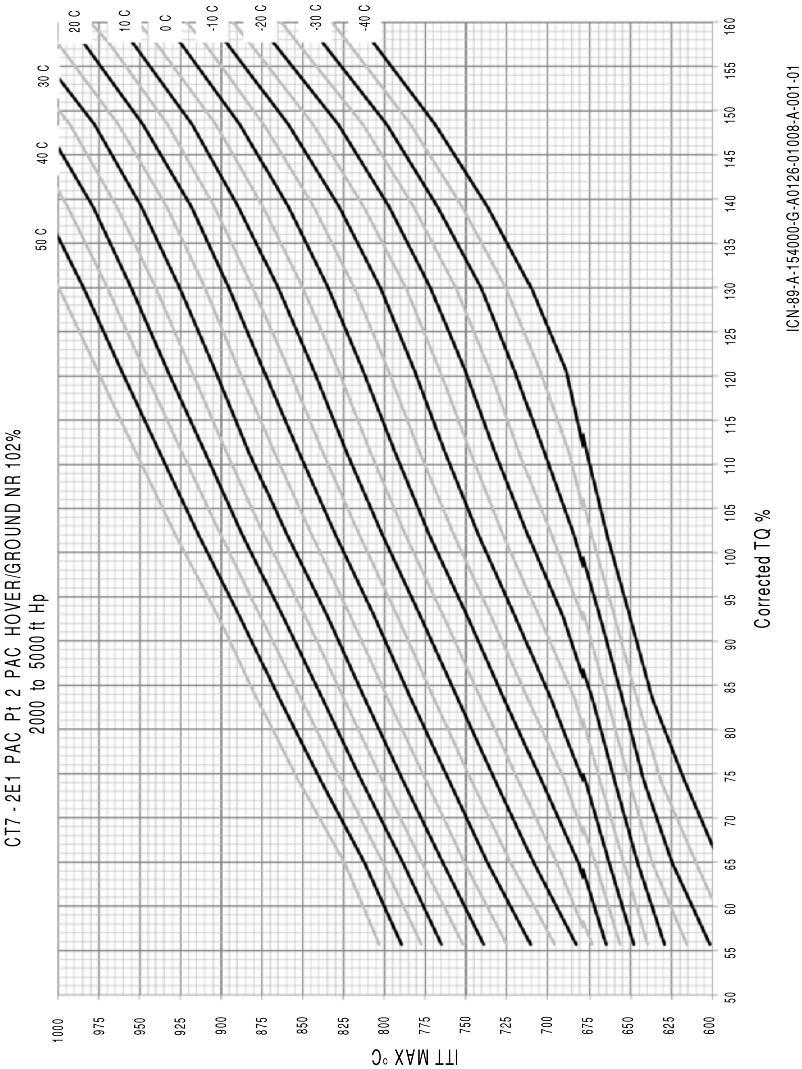

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Figure 3 HOVER POWER CHECK CHART Pt 2 2000 to 5000 ft

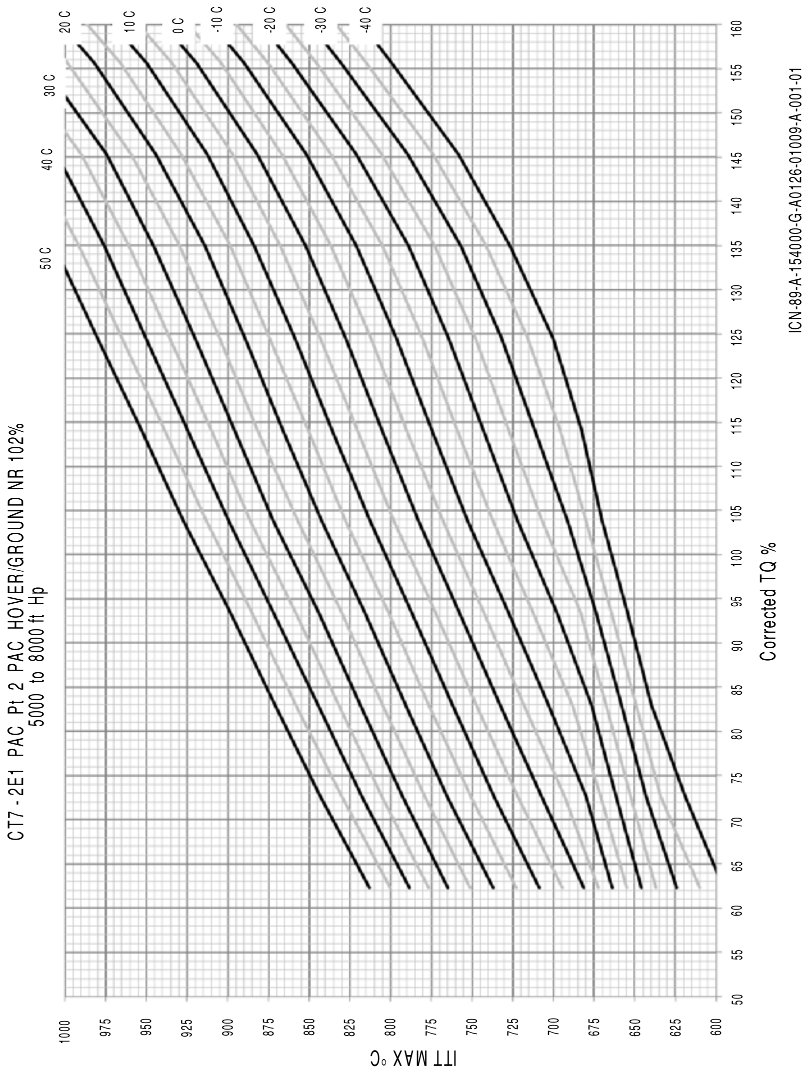

Figure 4 HOVER POWER CHECK CHART Pt 2 5000 to 8000 ft

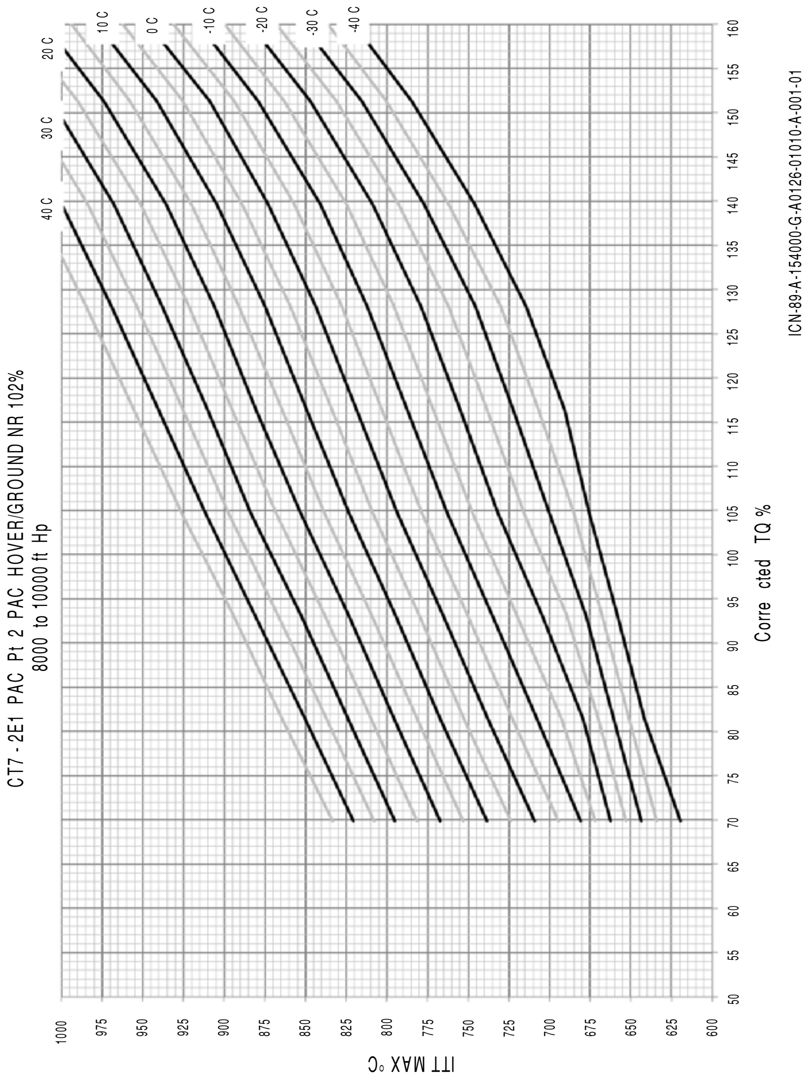

Figure 5 HOVER POWER CHECK CHART Pt 2 8000 to 10000 ft

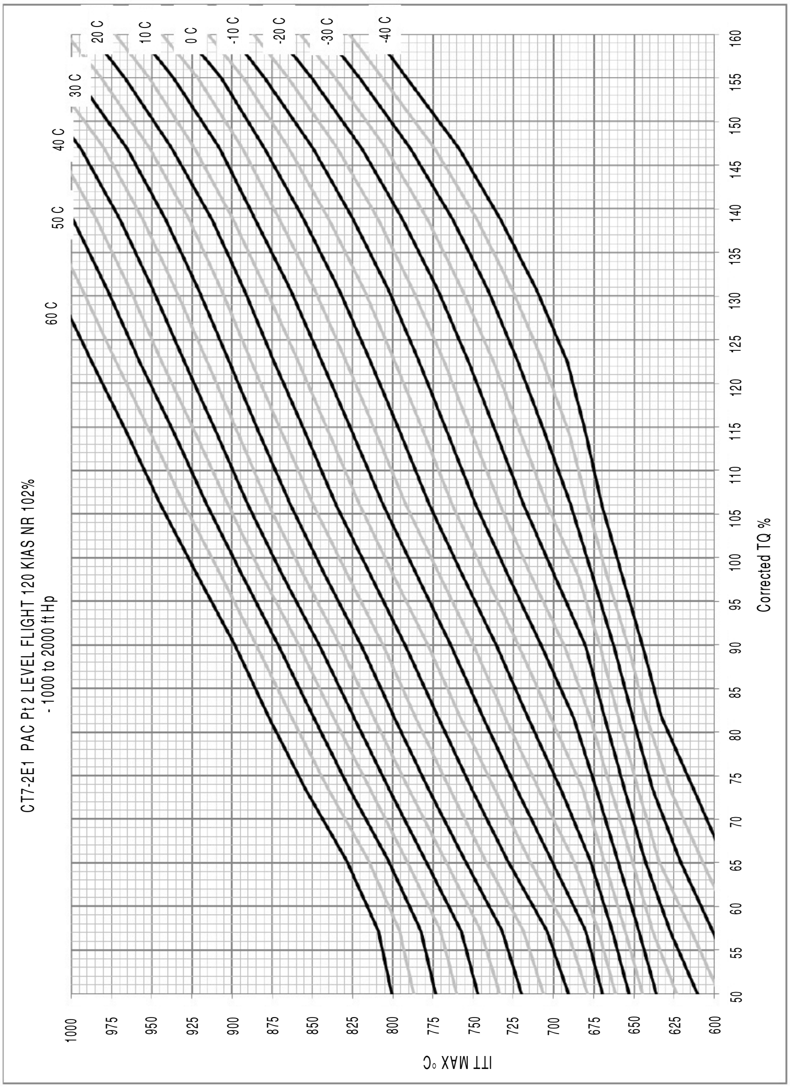

Figure 6 LEVEL FLIGHT POWER CHECK CHART Pt 2 -1000 to 2000 ft

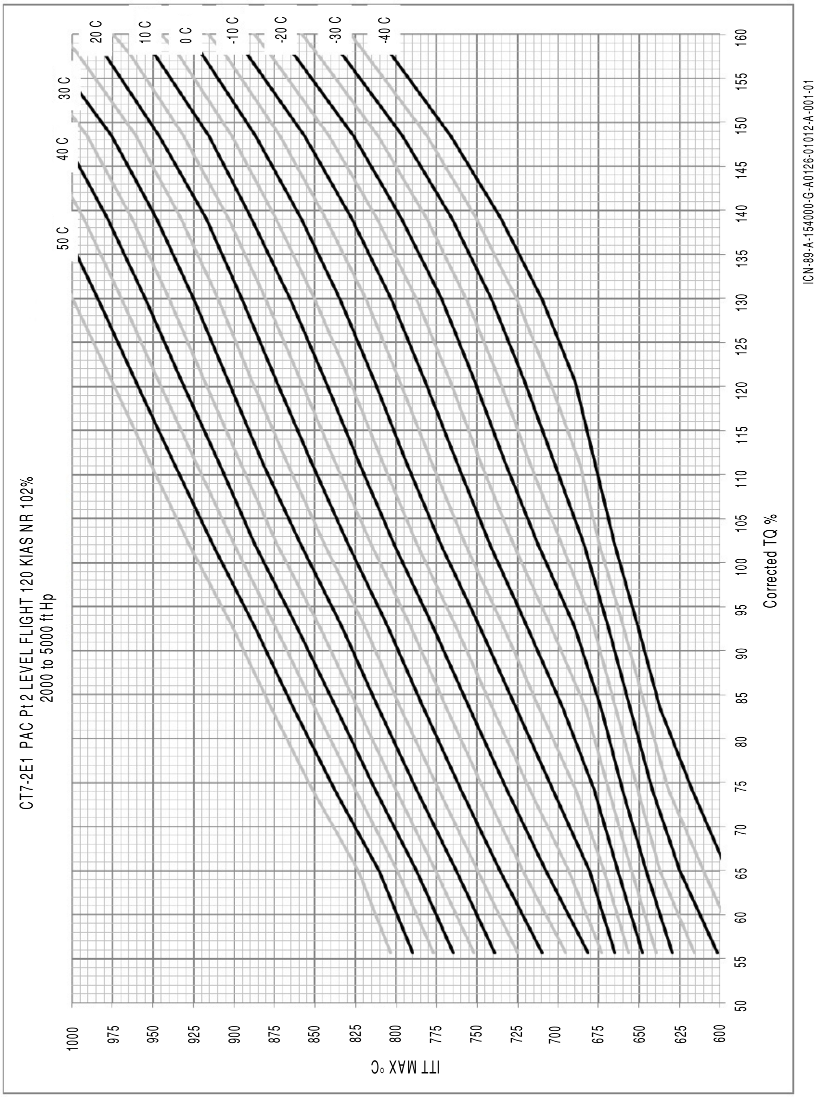

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Figure 7 LEVEL FLIGHT POWER CHECK CHART Pt 2 2000 to 5000 ft

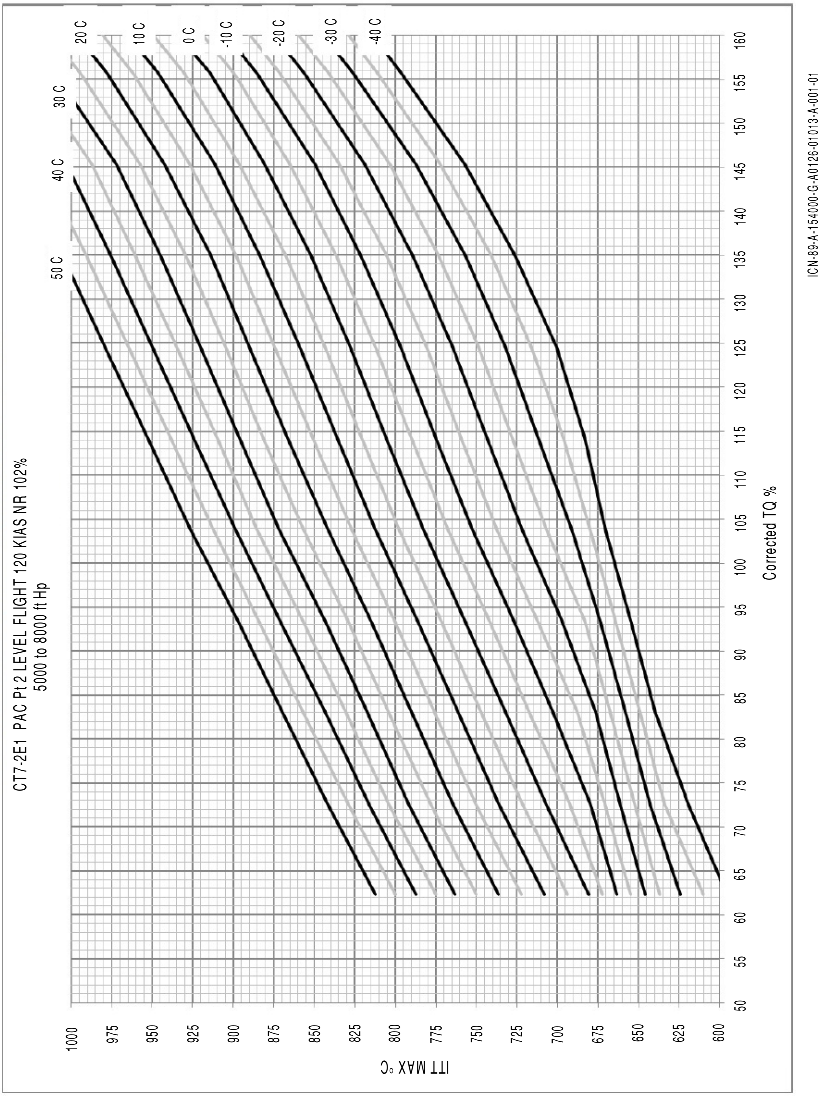
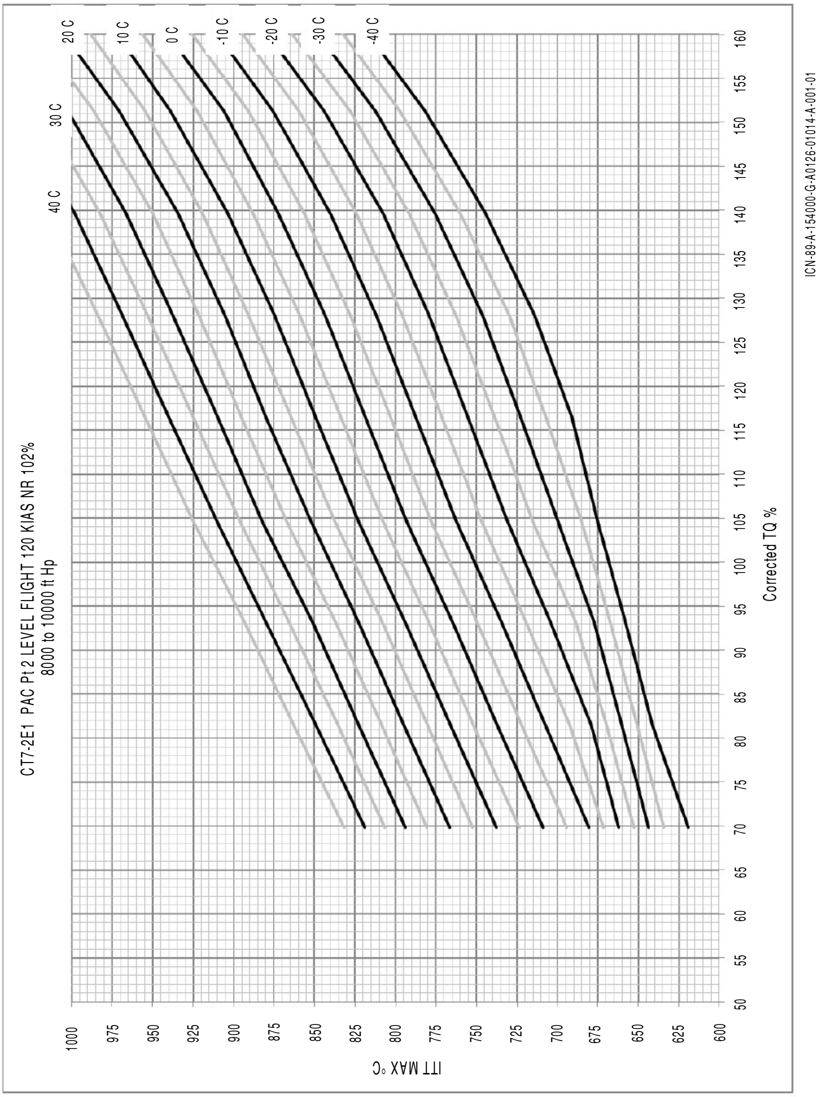


Figure 8 LEVEL FLIGHT POWER CHECK CHART Pt 2 5000 to 8000 ft



Gen PAC Hvr Cont

Figure 9 LEVEL FLIGHT POWER CHECK CHART Pt 2 8000 to 10000 ft

CONTROLLABILITY HIGE

Wt (kg) / OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
5min AEO (Anti-Ice OFF/Heater OFF)						
5900	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
6300	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
6700	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
7100	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
7500	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
7900	8000 ft	8000 ft	8000 ft	7900 ft	5050 ft	3710 ft
8300	8000 ft	8000 ft	7630 ft	6610 ft	3720 ft	2370 ft
8600	6000 ft	6000 ft	4650 ft	3650 ft	2800 ft	1500 ft
5min AEO (Anti-Ice ON/Heater ON)						
5900	8000 ft	8000 ft	8000 ft	8000 ft	N/A	N/A
6300	8000 ft	8000 ft	8000 ft	8000 ft	N/A	N/A
6700	8000 ft	8000 ft	8000 ft	8000 ft	N/A	N/A
7100	8000 ft	8000 ft	6920 ft	8000 ft	N/A	N/A
7500	8000 ft	8000 ft	8000 ft	8000 ft	N/A	N/A
7900	8000 ft	8000ft	8000 ft	7900 ft	N/A	N/A
8300	8000 ft	8000 ft	76300 ft	6610 ft	N/A	N/A
8600	6000 ft	6000 ft	4650 ft	3400 ft	N/A	N/A

Gen PAC
Hvr Cont

CONTROLLABILITY HOGE

OAT / Wt (kg)	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
5min AEO (Anti-Ice OFF/Heater OFF)						
5900	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
6300	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
6700	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
7100	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
7500	8000 ft	8000 ft	6540 ft	5580 ft	4660 ft	3310 ft
7900	8000 ft	7170 ft	5160 ft	4190 ft	3260 ft	1900 ft
8300	8000 ft	5870 ft	3830 ft	2860 ft	1910 ft	550 ft
8600	6000 ft	2800 ft	1700 ft	-300 ft	N/A	N/A
5min AEO (Anti-Ice ON/Heater ON)						
5900	8000 ft	8000 ft	8000 ft	8000 ft	N/A	N/A
6300	8000 ft	8000 ft	8000 ft	8000 ft	N/A	N/A
6700	8000 ft	8000 ft	8000 ft	6240 ft	N/A	N/A
7100	8000 ft	8000 ft	6920 ft	5050 ft	N/A	N/A
7500	8000 ft	8000 ft	5740 ft	3930 ft	N/A	N/A
7900	7900 ft	7170ft	4590 ft	2810 ft	N/A	N/A
8300	6580 ft	5870 ft	3440 ft	1670 ft	N/A	N/A
8600	5000 ft	2800 ft	700 ft	-300 ft	N/A	N/A
30min AEO (Anti-Ice OFF/Heater OFF)						
5900	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
6300	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
6700	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
7100	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft	8000 ft
7500	8000 ft	8000 ft	6540 ft	5580 ft	4660 ft	3310 ft
7900	8000 ft	7170 ft	5160 ft	4190 ft	3260 ft	1900 ft
8300	8000 ft	5870 ft	3830 ft	2860 ft	1910 ft	550 ft
8600	5000 ft	2800 ft	700 ft	-300 ft	N/A	N/A
30min AEO (Anti-Ice ON/Heater ON)						
5900	8000 ft	8000 ft	8000 ft	6520 ft	N/A	N/A
6300	8000 ft	8000 ft	7780 ft	5310 ft	N/A	N/A
6700	8000 ft	8000 ft	6550 ft	4190 ft	N/A	N/A
7100	8000 ft	8000 ft	5400 ft	3060 ft	N/A	N/A
7500	8000 ft	7560 ft	4260 ft	1900 ft	N/A	N/A
7900	7900 ft	6400ft	3090 ft	760 ft	N/A	N/A
8300	6580 ft	5270 ft	1900 ft	-380 ft	N/A	N/A
8600	5000 ft	2800 ft	700 ft	N/A	N/A	N/A

HOVER CEILING

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
IGE Hover ceiling 5min AEO (Anti-Ice OFF/Heater OFF)						
Weight 5900 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 6300 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 6700 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 7100 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 7500 kg						
(ft Hp)	10000		9540	8600	7700	6390
Weight 7900 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 8300 kg						
(ft Hp)	10000	10000	9200	8000	6800	4453
Weight 8600 kg						
(ft Hp)	6000	6000	6000	5400	4400	3000
IGE Hover ceiling 5min AEO (Anti-Ice ON/Heater ON)						
Weight 5900 kg						
(ft Hp)	10000	10000	9540	8600	N/A	N/A
Weight 6300 kg						
(ft Hp)	10000	10000	9540	8600	N/A	N/A
Weight 6700 kg						
(ft Hp)	10000	10000	9540	8600	N/A	N/A
Weight 7100 kg						
(ft Hp)	10000	10000	9540	8291	N/A	N/A
Weight 7500 kg						
(ft Hp)	10000	10000	9094	7154	N/A	N/A
Weight 7900 kg						
(ft Hp)	10000	10000	7962	6000	N/A	N/A
Weight 8300 kg						
(ft Hp)	10000	9790	6861	5000	N/A	N/A
Weight 8600 kg						
ft Hp	6000	6000	6000	4300	N/A	N/A

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HOVER CEILING (cont.d)						
OAT	**-40 °C**	**-20 °C**	**0 °C**	**10 °C**	**20 °C**	**35 °C**
OGE Hover ceiling 5min AEO (Anti-Ice OFF/Heater OFF)						
Weight 5900 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 6300 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 6700 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 7100 kg						
(ft Hp)	10000	10000	9540	8600	7700	6000
Weight 7500 kg						
(ft Hp)	10000	10000	9540	8600	7700	4700
Weight 7900 kg						
(ft Hp)	10000	10000	9432	8000	6475	3719
Weight 8300 kg						
(ft Hp)	10000	10000	8146	6828	5361	2609
Weight 8600 kg						
ft Hp	6000	6000	6000	5400	4400	1750
OGE Hover ceiling 5min AEO (Anti-Ice ON/Heater ON)						
Weight 5900 kg						
(ft Hp)	10000	10000	9540	8600	N/A	N/A
Weight 6300 kg						
(ft Hp)	10000	10000	9540	8452	N/A	N/A
Weight 6700 kg						
(ft Hp)	10000	10000	9103	7179	N/A	N/A
Weight 7100 kg						
(ft Hp)	10000	10000	7833	5936	N/A	N/A
Weight 7500 kg						
(ft Hp)	10000	9538	6608	4767	N/A	N/A
Weight 7900 kg						
(ft Hp)	8914	8358	5435	3641	N/A	N/A
Weight 8300 kg						
(ft Hp)	7588	7193	4276	2504	N/A	N/A
Weight 8600 kg						
ft Hp	6000	6000	3400	1650	N/A	N/A

HOVER CEILING (cont.d)

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
OGE Hover ceiling 30min AEO (Anti-Ice OFF/Heater OFF)						
Weight 5900 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 6300 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 6700 kg						
(ft Hp)	10000	10000	9540	8600	7700	6390
Weight 7100 kg						
(ft Hp)	10000	10000	9540	8600	7700	6000
Weight 7500 kg						
(ft Hp)	10000	10000	9540	8600	7700	4700
Weight 7900 kg						
(ft Hp)	10000	10000	9432	8000	6475	3719
Weight 8300 kg						
(ft Hp)	10000	10000	8146	6828	5361	2609
Weight 8600 kg						
ft Hp	6000	6000	6000	5400	4400	1750
OGE Hover ceiling 30min AEO (Anti-Ice ON/Heater ON)						
Weight 5900 kg						
(ft Hp)	10000	10000	9540	7500	N/A	N/A
Weight 6300 kg						
(ft Hp)	10000	10000	8762	6264	N/A	N/A
Weight 6700 kg						
(ft Hp)	10000	10000	7486	5000	N/A	N/A
Weight 7100 kg						
(ft Hp)	10000	9631	6275	3935	N/A	N/A
Weight 7500 kg						
(ft Hp)	10000	8414	5122	2788	N/A	N/A
Weight 7900 kg						
(ft Hp)	8914	7252	3965	1629	N/A	N/A
Weight 8300 kg						
(ft Hp)	7558	6094	2787	478	N/A	N/A
Weight 8600 kg						
ft Hp	6000	5250	1900	-400	N/A	N/A

HOVER CEILING (cont.d)

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
OGE Hover ceiling 2.5 min OEI (Anti-Ice OFF/Heater OFF)						
Weight 5500 kg						
ft Hp	6000	6351	6619	6752	6775	5516
Weight 5900 kg						
(ft Hp)	4000	4353	4604	4728	4818	3734
Weight 6300 kg						
(ft Hp)	2174	2505	2708	2748	2745	2031
Weight 6700 kg						
(ft Hp)	-	-	-	-	-	-
OGE Hover ceiling 2.5 min OEI (Anti-Ice ON/Heater ON)						
Weight 5500 kg						
ft Hp	2824	3380	3674	3121	N/A	N/A
Weight 5900 kg						
(ft Hp)	800	1342	1690	1323	N/A	N/A
Weight 6300 kg						
(ft Hp)	-1000	-500	-243	-437	N/A	N/A
Weight 6700 kg						
(ft Hp)	-	-	-	-	N/A	N/A

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RATE OF CLIMB AT 6000 KG AEO

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
ROC @ 5min AEO (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	3478	3452	3436	3436	3428	3420
Altitude 2000 ft						
ft/min	3444	3437	3421	3417	3412	3408
Altitude 6000 ft						
ft/min	3422	3412	3407	3408	3386	2817
Altitude 10000 ft						
ft/min	3195	3285	-	-	-	-
ROC @ 5min AEO (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	3438	3452	3440	3436	N/A	N/A
Altitude 2000 ft						
ft/min	3444	3437	3416	3030	N/A	N/A
Altitude 6000 ft						
ft/min	3270	3292	2660	2248	N/A	N/A
Altitude 10000 ft						
ft/min	3652	2542	-	-	N/A	N/A

RATE OF CLIMB AT 6000 KG AEO

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
ROC @ 30min AEO (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	3438	3452	3440	3436	3428	3420
Altitude 2000 ft						
ft/min	3444	3437	3421	3417	3412	3149
Altitude 6000 ft						
ft/min	3422	3412	3407	3363	2995	2356
Altitude 10000 ft						
ft/min	3195	3285	-	-	-	-
ROC @ 30min AEO (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	3478	3452	3440	3120	N/A	N/A
Altitude 2000 ft						
ft/min	3444	3437	3062	2540	N/A	N/A
Altitude 6000 ft						
ft/min	3270	3025	2294	1741	N/A	N/A
Altitude 10000 ft						
ft/min	2652	2275	-	-	N/A	N/A

RATE OF CLIMB AT 7000 KG AEO

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
ROC @ 5min AEO (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	2806	2796	2765	2765	2762	2763
Altitude 2000 ft						
ft/min	2786	2766	2762	2765	2764	2754
Altitude 6000 ft						
ft/min	2762	2764	2747	2734	2707	2193
Altitude 10000 ft						
ft/min	2555	2610	-	-	-	-
ROC @ 5min AEO (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	2806	2796	2772	2765	N/A	N/A
Altitude 2000 ft						
ft/min	2786	2766	2758	2411	N/A	N/A
Altitude 6000 ft						
ft/min	2623	2650	2068	1682	N/A	N/A
Altitude 10000 ft						
ft/min	2062	1935	-	-	N/A	N/A

RATE OF CLIMB AT 7000 KG AEO

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
ROC @ 30min AEO (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	2806	2796	2372	2765	2762	2763
Altitude 2000 ft						
ft/min	2786	2766	2762	2765	2764	2518
Altitude 6000 ft						
ft/min	2762	2764	2747	2694	2345	1776
Altitude 10000 ft						
ft/min	2555	2610	-	-	-	-
ROC @ 30min AEO (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	2806	2796	2772	2477	N/A	N/A
Altitude 2000 ft						
ft/min	2786	3766	2435	1970	N/A	N/A
Altitude 6000 ft						
ft/min	2623	2411	1739	1229	N/A	N/A
Altitude 10000 ft						
ft/min	2062	1694	-	-	N/A	N/A

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RATE OF CLIMB AT 8000 KG AEO

OAT	**-40 °C**	**-20 °C**	**0 °C**	**10 °C**	**20 °C**	**35 °C**
ROC @ 5min AEO (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	2260	2243	2234	2230	2229	2222
Altitude 2000 ft						
ft/min	2239	2230	2224	2218	2202	2199
Altitude 6000 ft						
ft/min	2225	2201	2203	2214	2184	1685
Altitude 10000 ft						
ft/min	2024	2095	-	-	-	-
ROC @ 5min AEO (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	2260	2243	2234	2230	N/A	N/A
Altitude 2000 ft						
ft/min	2239	2230	2220	1894	N/A	N/A
Altitude 6000 ft						
ft/min	2097	2096	1582	1257	N/A	N/A
Altitude 10000 ft						
ft/min	1573	1480	-	-	N/A	N/A

RATE OF CLIMB AT 8000 KG AEO

OAT	**-40 °C**	**-20 °C**	**0 °C**	**10 °C**	**20 °C**	**35 °C**
ROC @ 30min AEO (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	2260	2243	2234	2230	2229	2222
Altitude 2000 ft						
ft/min	2239	2230	2224	2218	2202	1981
Altitude 6000 ft						
ft/min	2225	2201	2203	2177	1857	1307
Altitude 10000 ft						
ft/min	2024	2095	-	-	-	-
ROC @ 30min AEO (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	2260	2243	2234	1966	N/A	N/A
Altitude 2000 ft						
ft/min	2239	2230	1924	1491	N/A	N/A
Altitude 6000 ft						
ft/min	2097	1877	1283	848	N/A	N/A
Altitude 10000 ft						
ft/min	1573	1262	-	-	N/A	N/A

RATE OF CLIMB AT 8300 KG AEO

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
ROC @ 5min AEO (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	2112	2101	2080	2086	2080	2070
Altitude 2000 ft						
ft/min	2098	2087	2074	2064	2060	2066
Altitude 6000 ft						
ft/min	2076	2060	2075	2061	2024	1532
Altitude 10000 ft						
ft/min	1900	1937	-	-	-	-
ROC @ 5min AEO (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	2112	2101	2086	2086	N/A	N/A
Altitude 2000 ft						
ft/min	2098	2087	2070	1748	N/A	N/A
Altitude 6000 ft						
ft/min	1952	1962	1470	1128	N/A	N/A
Altitude 10000 ft						
ft/min	1462	1337	-	-	N/A	N/A

RATE OF CLIMB AT 8300 KG AEO

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
ROC @ 30min AEO (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	2112	2101	2080	2086	2080	2070
Altitude 2000 ft						
ft/min	2098	2087	2064	2064	2060	1855
Altitude 6000 ft						
ft/min	2076	2060	2075	2025	1705	1163
Altitude 10000 ft						
ft/min	1900	1937	-	-	-	-
ROC @ 30min AEO (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	2112	2101	2090	1828	N/A	N/A
Altitude 2000 ft						
ft/min	2098	2087	1781	1355	N/A	N/A
Altitude 6000 ft						
ft/min	1952	1745	1180	731	N/A	N/A
Altitude 10000 ft						
ft/min	1462	1124	-	-	N/A	N/A

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RATE OF CLIMB AT 8600 KG AEO

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
ROC @ 5min AEO (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	1972	1967	1950	1945	1940	1930
Altitude 2000 ft						
ft/min	1960	1945	1939	1930	1932	1938
Altitude 6000 ft						
ft/min	1934	1932	1942	N/A	N/A	N/A
ROC @ 5min AEO (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	1972	1967	1945	1945	N/A	N/A
Altitude 2000 ft						
ft/min	1960	1945	1927	1620	N/A	N/A
Altitude 6000 ft						
ft/min	1820	1836	1340	N/A	N/A	N/A

RATE OF CLIMB AT 8600 KG AEO

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
ROC @ 30min AEO (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	1972	1967	1952	1945	1940	1930
Altitude 2000 ft						
ft/min	1960	1945	1931	1930	1932	1720
Altitude 6000 ft						
ft/min	1934	1932	1929	N/A	N/A	N/A
ROC @ 30min AEO (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	1972	1967	1958	1693	N/A	N/A
Altitude 2000 ft						
ft/min	1960	1945	1646	1240	N/A	N/A
Altitude 6000 ft						
ft/min	1812	1625	1056	N/A	N/A	N/A

RATE OF CLIMB AT 6000 KG OEI

OAT	-40°C	-20°C	0°C	10°C	20°C	35°C
ROC @ 2.5min OEI (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	2038	2037	2023	2019	2009	2000
Altitude 2000 ft						
ft/min	1635	1705	1760	1790	1816	1695
Altitude 6000 ft						
ft/min	1158	1222	1290	1331	1356	1178
Altitude 10000 ft						
ft/min	752	811	-	-	-	-
ROC @ 2.5min OEI (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	1598	1664	1700	1677	N/A	N/A
Altitude 2000 ft						
ft/min	1231	1299	1346	1287	N/A	N/A
Altitude 6000 ft						
ft/min	808	859	907	784	N/A	N/A
Altitude 10000 ft						
ft/min	425	474	-	-	N/A	N/A

RATE OF CLIMB AT 6000 KG OEI

OAT	-40°C	-20°C	0°C	10°C	20°C	35°C
ROC @ MCP OEI (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	1587	1557	1543	1538	1528	1403
Altitude 2000 ft						
ft/min	1547	1538	1519	1515	1376	1028
Altitude 6000 ft						
ft/min	1158	1222	1197	1048	871	524
Altitude 10000 ft						
ft/min	752	811	-	-	-	-
ROC @ MCP OEI (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	1587	1557	1264	1023	N/A	N/A
Altitude 2000 ft						
ft/min	1231	1294	897	658	N/A	N/A
Altitude 6000 ft						
ft/min	808	816	429	186	N/A	N/A
Altitude 10000 ft						
ft/min	425	361	-	-	N/A	N/A

RATE OF CLIMB AT 7000 KG OEI

OAT	-40°C	-20°C	0°C	10°C	20°C	35°C
ROC @ 2.5min OEI (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	1502	1517	1490	1483	1479	1480
Altitude 2000 ft						
ft/min	1155	1203	1264	1298	1325	1211
Altitude 6000 ft						
ft/min	728	798	845	864	873	726
Altitude 10000 ft						
ft/min	371	392	-	-	-	-
ROC @ 2.5min OEI (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	1110	1167	1201	1177	N/A	N/A
Altitude 2000 ft						
ft/min	797	843	897	851	N/A	N/A
Altitude 6000 ft						
ft/min	420	478	506	382	N/A	N/A
Altitude 10000 ft						
ft/min	84	94	-	-	N/A	N/A

RATE OF CLIMB AT 7000 KG OEI

OAT	-40°C	-20°C	0°C	10°C	20°C	35°C
ROC @ MCP OEI (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	1011	1089	1061	1054	1050	945
Altitude 2000 ft						
ft/min	1078	1054	1050	1053	934	620
Altitude 6000 ft						
ft/min	728	798	762	614	444	149
Altitude 10000 ft						
ft/min	371	392	-	-	-	-
ROC @ MCP OEI (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	956	945	814	598	N/A	N/A
Altitude 2000 ft						
ft/min	797	841	500	297	N/A	N/A
Altitude 6000 ft						
ft/min	420	440	86	-	N/A	N/A
Altitude 10000 ft						
ft/min	84	-	-	-	N/A	N/A

RATE OF CLIMB AT 8000 KG OEI

OAT	-40°C	-20°C	0°C	10°C	20°C	35°C
ROC @ 2.5min OEI (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	1073	1078	1067	1063	1062	1054
Altitude 2000 ft						
ft/min	757	810	862	883	891	794
Altitude 6000 ft						
ft/min	383	416	477	521	527	360
Altitude 10000 ft						
ft/min	50	93	-	-	-	-
ROC @ 2.5min OEI (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	720	762	807	788	N/A	N/A
Altitude 2000 ft						
ft/min	435	487	532	482	N/A	N/A
Altitude 6000 ft						
ft/min	107	129	174	90	N/A	N/A
Altitude 10000 ft						
ft/min	-	-	-	-	N/A	N/A

RATE OF CLIMB AT 8000 KG OEI

OAT	-40°C	-20°C	0°C	10°C	20°C	35°C
ROC @ MCP OEI (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	711	692	681	677	676	576
Altitude 2000 ft						
ft/min	687	677	670	663	539	263
Altitude 6000 ft						
ft/min	383	416	403	297	144	-
Altitude 10000 ft						
ft/min	50	93	-	-	-	-
ROC @ MCP OEI (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	711	692	459	268	N/A	N/A
Altitude 2000 ft						
ft/min	435	486	177	-	N/A	N/A
Altitude 6000 ft						
ft/min	107	95	-	-	N/A	N/A
Altitude 10000 ft						
ft/min	-	-	-	-	N/A	N/A

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RATE OF CLIMB AT 8300 KG OEI

OAT	-40°C	-20°C	0°C	10°C	20°C	35°C
ROC @ 2.5min OEI (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	955	966	954	950	943	933
Altitude 2000 ft						
ft/min	655	705	748	764	784	701
Altitude 6000 ft						
ft/min	284	325	398	413	411	242
Altitude 10000 ft						
ft/min	-	-	-	-	-	-
ROC @ 2.5min OEI (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	613	659	701	683	N/A	N/A
Altitude 2000 ft						
ft/min	343	392	428	374	N/A	N/A
Altitude 6000 ft						
ft/min	17	46	105		N/A	N/A
Altitude 10000 ft						
ft/min	-	-	-	-	N/A	N/A

RATE OF CLIMB AT 8300 KG OEI

OAT	-40°C	-20°C	0°C	10°C	20°C	35°C
ROC @ MCP OEI (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	604	592	579	575	568	470
Altitude 2000 ft						
ft/min	588	576	561	550	443	186
Altitude 6000 ft						
ft/min	284	325	326	196	38	-
Altitude 10000 ft						
ft/min	-	-	-	-	-	-
ROC @ MCP OEI (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	604	592	364	179	N/A	N/A
Altitude 2000 ft						
ft/min	343	390	83	-	N/A	N/A
Altitude 6000 ft						
ft/min	17	13	-	-	N/A	N/A
Altitude 10000 ft						
ft/min	-	-	-	-	N/A	N/A

RATE OF CLIMB AT 8600 KG OEI

OAT	-40°C	-20°C	0°C	10°C	20°C	35°C
ROC @ 2.5min OEI (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	845	861	846	837	832	823
Altitude 2000 ft						
ft/min	556	600	639	664	690	608
Altitude 6000 ft						
ft/min	190	244	295	N/A	N/A	N/A
ROC @ 2.5min OEI (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	512	563	600	570	N/A	N/A
Altitude 2000 ft						
ft/min	253	294	328	286	N/A	N/A
Altitude 6000 ft						
ft/min	-	-	-	N/A	N/A	N/A

RATE OF CLIMB AT 8600 KG OEI

OAT	-40°C	-20°C	0°C	10°C	20°C	35°C
ROC @ MCP OEI (Anti-Ice OFF/Heater OFF)						
Altitude -1000 ft						
ft/min	503	498	481	473	467	371
Altitude 2000 ft						
ft/min	490	473	458	457	359	109
Altitude 6000 ft						
ft/min	189	244	226	92	N/A	N/A
ROC @ MCP OEI (Anti-Ice ON/Heater ON)						
Altitude -1000 ft						
ft/min	503	498	273	90	N/A	N/A
Altitude 2000 ft						
ft/min	253	293	-	-	N/A	N/A
Altitude 6000 ft						
ft/min	-	-	-	N/A	N/A	N/A

Note: In this Performance section ‘N/A’ represents Not Applicable due to temperature limitations.

FUEL CONSUMPTION AT 7000 KG

(ENGINE ANTI-ICE OFF/ANTI ICE ON)

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
SL @ 80 KIAS						
kg/hr (lb/hr)	308/317 (680/700)	316/325 (697/719)	324/334 (713/737)	328/338 (722/746)	331 (730)	337 (743)
SL @ 120 KIAS						
kg/hr (lb/hr)	348/358 (767/791)	356/367 (786/810)	366/379 (807/839)	370/384 (817/848)	376 (795)	385 (848)
SL @ 140 KIAS						
kg/hr (lb/hr)	393/405 (866/893)	407/423 (896/932)	422/440 (933/973)	431/444 (952/989)	440 (969)	452 (997)
2000ft @ 80 KIAS						
kg/hr (lb/hr)	301/310 (664/684)	308/317 (678/700)	313/322 (691/712)	317/326 (699/721)	321 (708)	328 (722)
2000ft @ 120 KIAS						
kg/hr (lb/hr)	341/351 (750/775)	351/361 (772/798)	361/372 (795/821)	367/378 (808/835)	373 (823)	384 (845)
2000ft @ 140 KIAS						
kg/hr (lb/hr)	390/402 (861/887)	407/420 (896/926)	423/440 (934/973)	433/446 (954/985)	442 (974)	458 (1009)
4000ft @ 80 KIAS						
kg/hr (lb/hr)	293/302 (645/666)	298/307 (657/678)	304/313 (670/691)	308/317 (678/700)	313 (689)	320 (705)
4000ft @ 120 KIAS						
kg/hr (lb/hr)	335/345 (739/762)	345/355 (762/785)	358/369 (789/814)	366/377 (806/832)	374 (825)	387 (852)
4000ft @ 140 KIAS						
kg/hr (lb/hr)	390/405 (861/896)	408/424 (900/936)	426/444 (939/980)	437/455 (963/1005)	448 (988)	466 (1028)
8000ft @ 80 KIAS						
kg/hr (lb/hr)	277/285 (611/630)	284/292 (626/646)	293/302 (647/666)	296/305 (653/673)	299 (659)	- (-)
8000ft @ 120 KIAS						
kg/hr (lb/hr)	331/341 (729/753)	347/357 (764/789)	365/376 (804/830)	372/383 (821/846)	380 (837)	- (-)
8000ft @ 140 KIAS						
kg/hr (lb/hr)	394/410 (868/905)	417/435 (920/960)	443/464 (976/1023)	456/479 (1005/1057)	469 (1034)	- (-)

FUEL CONSUMPTION AT 8300 KG

(ENGINE ANTI-ICE OFF/ANTI ICE ON)

OAT	-40 °C	-20 °C	0 °C	10 °C	20 °C	35 °C
SL @ 80 KIAS						
kg/hr (lb/hr)	341/352 (751/775)	347/358 (764/789)	353/365 (779/805)	357/369 (787/814)	362 (797)	369 (814)
SL @ 120 KIAS						
kg/hr (lb/hr)	371/384 (819/846)	380/394 (837/868)	390/405 (861/893)	398/412 (877/909)	406 (894)	418 (921)
SL @ 140 KIAS						
kg/hr (lb/hr)	418/434 (921/957)	434/452 (957/996)	452/471 (996/1037)	463/482 (1019/1064)	474 (1045)	490 (1080)
2000ft @ 80 KIAS						
kg/hr (lb/hr)	331/342 (730/753)	338/349 (745/767)	346/357 (762/786)	351/363 (774/800)	355 (783)	359 (791)
2000ft @ 120 KIAS						
kg/hr (lb/hr)	365/377 (804/830)	375/389 (826/857)	390/408 (861/900)	399/414 (879/914)	407 (896)	416 (917)
2000ft @ 140 KIAS						
kg/hr (lb/hr)	417/434 (920/957)	435/453 (958/999)	457/476 (1007/1052)	468/488 (1033/1071)	480 (1057)	496 (1092)
4000ft @ 80 KIAS						
kg/hr (lb/hr)	323/334 (711/739)	331/342 (730/755)	340/352 (749/756)	343/355 (756/782)	346 (762)	352 (777)
4000ft @ 120 KIAS						
kg/hr (lb/hr)	360/373 (793/823)	375/390 (827/861)	391/407 (863/898)	399/414 (879/914)	405 (892)	420 (925)
4000ft @ 140 KIAS						
kg/hr (lb/hr)	418/434 (921/957)	440/458 (969/1012)	463/483 (1019/1066)	474/495 (1045/1091)	485 (1070)	508 (1120)
8000ft @ 80 KIAS						
kg/hr (lb/hr)	312/324 (689/714)	318/329 (701/725)	330/341 (727/752)	336/348 (741/766)	343 (755)	- (-)
8000ft @ 120 KIAS						
kg/hr (lb/hr)	362/375 (798/827)	376/391 (829/861)	399/416 (879/918)	412/430 (909/950)	433 (955)	- (-)
8000ft @ 140 KIAS						
kg/hr (lb/hr)	428/448 (944/989)	451/474 (995/1043)	487/517 (1073/1137)	510/543 (1073/1194)	509 (1124)	- (-)

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WIND COMPONENT CHART

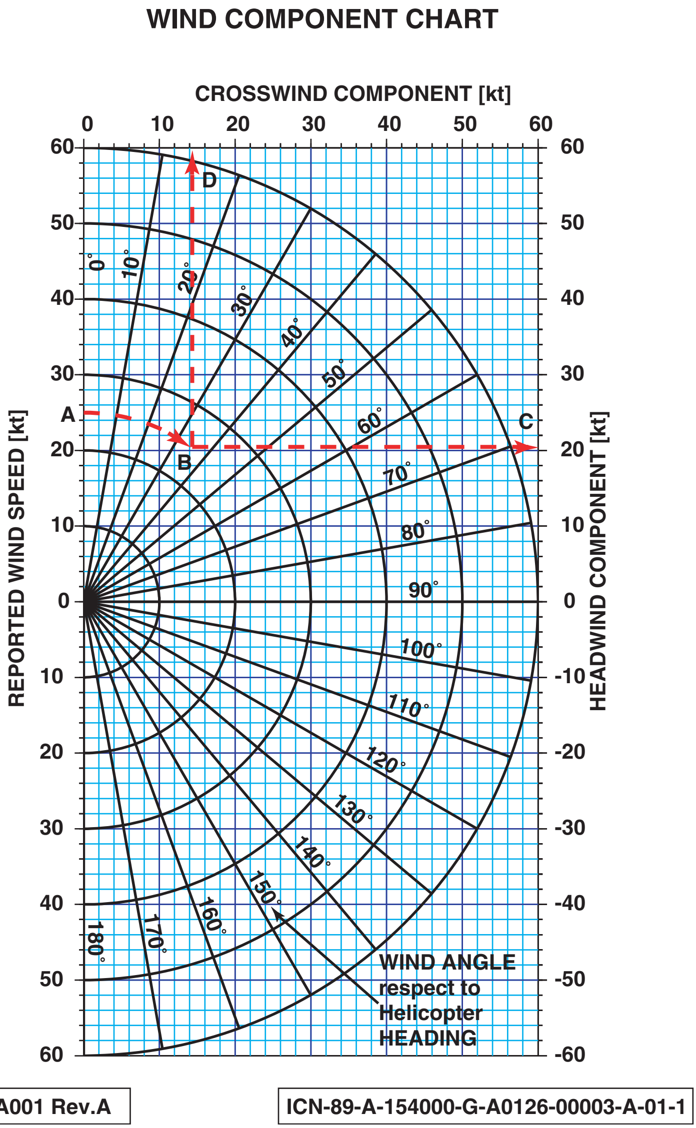

Figure 1 Wind Component Chart

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AW189

QUICK REFERENCE HANDBOOK

ISSUE 2 : 30th JUNE 2017
REVISION 11 : 06th SEPTEMBER 2022

Source Document :
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This QRH is valid for aircraft fitted with Avionic Software Phase 4.0 (*Aircraft Configuration B*).
Where appropriate the validity of the page is highlighted in the page footer.

Continuing airworthiness criteria for the AW189 is developed and maintained by Leonardo S.p.A., who is the holder of the type certificate in the state of design.

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TABLE OF CONTENTS

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.

Optional Equipment: The QRH includes Limitations, Procedures and Emergency Malfunction Procedures on a limited number of Optional Equipment Supplements that may be applicable to the aircraft. The following are included alongside the basic aircraft information:

- Supplement 1 and 2 Air Conditioning and Forced Ventilation
- Supplement 4 Category A Operations
- Supplement 6 Ditching Configurations
- Supplement 21 Weight Extension 8600 kg
- Supplement 22 Extended Range
- Supplement 24 Automatic Search Modes
- Supplement 53 RNP APCH with LPV/LP Minima (S/W Phase 5.0 and later).

The following Supplements are included as separate sections that may be inserted or removed as required:

- Supplement 38 or 45 Limited Icing Protection System and Supplement
- Supplement 44 or 50 Icing Protection System Supplement

The RFM must be consulted for comprehensive information and applicability of the Limitations, Normal Procedures etc. for the Optional Equipment Supplements that are included on the aircraft.

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RECORD OF REVISIONS

Note

For revisions of the RFM which do not affect the QRH, no revision of the QRH is carried out.

QRH REVISION No.	Date	Basis of Revision	Notes
Issue 2	30-06-2017	AW189-RFM Issue 2	-
Rev 1	23-10-2017	AW189-RFM Issue 2 Rev. 1	-
Rev 2 & 3	19-07-2018	AW189-RFM Issue 2 Rev. 3	-
Rev 4 thru 6	24-10-2019	AW189-RFM Issue 2 Rev. 6	-
Rev 7 thru 9	21-07-2021	AW189-RFM Issue 2 Rev. 9	-
Rev 10	08-11-2021	AW189-RFM Issue 2 Rev. 10	-
Rev 11	06-09-2022	AW189-RFM Issue 2 Rev. 11	-

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RECORD OF EFFECTIVE PAGES

NOTE: This symbol + indicates that the page is valid for the aircraft configuration indicated and any subsequent Aircraft Configuration. The page referenced will have in the footer “Aircraft Configuration [X] and later”.

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57	3 [B+]
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103	1
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104 thru 107	9 [E+]
108	0
109	9 [ABCD]
109	9 [E+]
110	0
111	9 [ABCD]
111	9 [E+]
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114	9 [ABCD]
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121	9
122	5
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130	5 [B]
130	5 [C+]
131	0 [A]
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136A and 136B	6 [D+]
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140	3
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162 thru 166	0 [A]
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1 and 2	0
3 and 4	6 [A]
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3 and 4	6 [D]
3 and 4	9 [E+]
5	11 [A]
5	11 [B]
5	11 [C]
5	11 [D]
5 thru 9	11 [E+]
6 thru 10	6 [A]
6 thru 10	6 [B]
6 thru 9	6 [C]
10	3 [C]
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10	9 [E+]
11	3
12	3 [A]
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19	0 [A]
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20	0
21	8
22	0
23	1
24	6
25 and 26	0
27	1
28 and 29	0
30	8
31	0
32	1
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44	0
45	11
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47	6 [A]
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48	11 [A]
48	11 [BC]
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49 and 50	9 [E+]

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55 and 56	3 [A]
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57 and 58	0
59	11 [A]
59	11 [B]
59	11 [C+]
60	2
61	3 [A]
61	3 [B]
61	3 [C+]
62 thru 66	0
65	9 [ABCD]
65	9 [E+]
66	0
67	3 [A]
67	3 [B+]
68	0
68A	11
68B	11 [ABCD]
68B	11 [E+]
69	11
70 thru 72	3 [A]
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70	6 [D+]
70A	9 [D+]
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84	11
85 thru 87	0
88	2 [A]
88	2 [B+]
89	0 [A]
89	2 [B+]
90 and 91	0
92	9 [ABCD]
92	9 [E+]
93	0
94	0 [A]
94	9 [BCD]
94	9 [E+]
95 and 96	0
96A and 96B	9 [E+]
97 and 98	9 [ABCD]
97 and 98	9 [E+]
99 thru 104	0
105 thru 108	5
109 thru 127	0
128 thru 130	4
131 and 132	0
133	5
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136 thru 138	0
139	0 [A]
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147 thru 152	3 [A]
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149	3 [C+]
150 thru 152	6 [C+]
152A and 152B	3 [A]
152A and 152B	3 [B]
152A	6 [C+]
152B	9 [C+]
152C	6 [C+]
152D	6 [C]
152D thru 152F	6 [D+]
153	0 [A]
153	3 [B+]
154	4
155 and 156	0
157	7
158 thru 163	0
164	6
165 thru 170	0
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LIPS-1 thru LIPS-6	0 [A]
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IPS-1 thru IPS-12	0 [A]
IPS-1	9 [B+]
IPS-2	3 [B+]
IPS-3	11 [B+]
IPS-4 and IPS-5	3 [B+]
IPS-6	9 [B+]
IPS-7 thru IPS-9	3 [B+]
IPS-10 thru IPS-12	9 [BCD]
IPS-10 thru IPS-12	9 [E+]

EMERG	LIST OF WARNING MESSAGES	WARNING MSGs
	ELECTRICAL	ELEC
	ENGINE & DRIVE SHAFT FAILURE EMERGENCY SHUT DOWN / DITCHING	ENG FAIL SHT DWN
	FIRE & SMOKE	FIRE
	LANDING GEAR, STATIC PORT OBSTRUCTION, LIGHTNING STRIKE	LDG GR STC PRT
	ROTOR TRANSMISSION CONTROLS	RTR XMSN CTRLS
MALFUNCTION	LIST OF CAUTION, ADVISORY STATUS & PFD/MFD MESSAGES	CAUTION MSGs
	AUTOMATIC FLIGHT CONTROL SYSTEM	AFCS
	AVIONIC SYSTEMS	AVIONIC
	ELECTRICAL	ELEC
	ENGINE & APU ENGINE RESTART IN FLIGHT	ENG/APU
	FUEL SYSTEM	FUEL
	HYDRAULIC SYSTEM LANDING GEAR	HYD LDG GR
	MISCELLANEOUS SYSTEMS	MISC
	PFD/MFD MESSAGES	PFD/MFD MSGs
	ROTOR & TRANSMISSION	ROTOR XMSN
	OEI FLIGHT PROCEDURES, CAT A/B T-O & LAND OEI PROCEDURES	OEI PROC CAT A/B
	MISC KITS MALF Procedures (LIPS/IPS - if applicable)	

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.

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.

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 flight path using hands on when required.

Fly Manually - Pilot to control directly the flight path using hands on.

EMERGENCY PROCEDURES

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MALFUNCTION PROCEDURES

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EMERGENCY PROCEDURES

CAS WARNING SYSTEM

VOICE WARNING MESSAGES AND PRIORITIES LOGIC

1. **“ROTOR LOW”** 2. **“ENGINE OUT”**

3. **“ENGINE FIRE”** 4. **“APU FIRE”**

5. **“ROTOR HIGH”** 6. **“ENGINE IDLE”**

7. **“WARNING”** 8 **“AUTOPILOT”**

9. **“AIRSPEED”** 10 **“LOW SPEED”**

11. **“LANDING GEAR”** 12 **“150 FEET”**

13. **“ALTITUDE”** 14 **“DECISION HEIGHT”**

TABLE OF CAS WARNING MESSAGES

CAS caption	Voice Warning	Audio	Failure/System State
ROTOR LOW Page 37	ROTOR LOW	Tone	Power ON: NR below 98% (AEO), or below 90% (OEI), Power OFF: NR below 95%
1(2) ENG OUT Page 17	ENGINE 1(2) OUT	Tone	Engine NG below 50% or NG rate of change outside predetermined limits.
1(2) ENG FIRE Page 29	ENGINE 1(2) FIRE	Tone	Engine bay high temperature, fire or hot gas leak
ROTOR HIGH Page 37	ROTOR HIGH	Tone	Power ON: NR above 105% Power OFF: NR above 110%
1(2) ENG IDLE Page 18	ENGINE 1(2) IDLE	Tone	Engine in IDLE and collective being raised. (On ground only)
1(2) ENG GOV LOSS Page 19	WARNING	None	Automatic reversion of associated engine to fixed engine power
MGB OIL PRESS Page 39	WARNING	None	Low pressure in MGB lubricating systems (less than 3.1 bar)
MGB OIL TEMP Page 38	WARNING	None	Overheating of MGB lubricating system (greater than 114 °C)
1(2) ENG OIL P LOW Page 20	WARNING	None	Low oil pressure in associated engine (less than 1.4 bar)
ELEC FAIL Page 13	WARNING	None	Failure of both generators and APU generator
APU FIRE Page 28	WARNING	None	APU bay hight temperature, fire or hot gas leak
BAG FIRE Page 31	WARNING	None	Smoke detected in baggage bay

WARNING
MSGs

VOICE MESSAGES

1. **"AUTOPILOT"** — Associated with any AP caution message
2. **"AIRSPEED, AIRSPEED"** — Vne speed exceeded
3. **"LOW SPEED, LOW SPEED"** — Aircraft below 38 KIAS and FD mode has automatically disengaged
4. **"150 FEET"** — Aircraft at less than 150 ft RAD ALT height
5. "**ALTITUDE, ALTITUDE**" — Altitude deviation in ALT or RHT mode exceeded:

ALT Mode	± 150 ft
RHT Mode	Error
20 ft	± 10 ft
50 ft	± 15 ft
100 ft	± 23 ft
150 ft	± 30 ft
200 ft	± 34 ft
250 ft	± 37 ft
500 ft	± 55 ft
1500 ft	± 125 ft
2000 ft	± 160 ft

or A/C descends below MUH of collective upper mode engaged.

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.

1. **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.
2. **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.
3. **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.

TRIPLE AC GENERATOR FAILURE

ELEC FAIL + **BUS TIE CLOSED** + Voice Warning

Triple AC Generator failure and TRU not powered

1.	**APU**	**— Confirm ON**
2.	**ECDU**	**— Select ELEC page**
3.	**GEN 1 & 2**	**— Select OFF**
4.	**GEN 1**	**— Select ON**

ELEC FAIL clears

1(2) AC GEN **APU GEN FAIL** captions illuminate

GEN 1(2) back on line,
Assume GEN 2(1) failed leave OFF

- When 1 AMMC DBU READY advisory illuminated reset AMMC 1 (on MCDU MENU/AMMC/DBU - EXEC)
- TCAS select TA/RA
- XFEED on ECDU select OPEN then AUTO

DC NON ESS BUS 1 & 2 lost
See Page 16

Land as soon as practicable

ELEC FAIL remains

GEN 1 failed
- GEN 1 OFF
- GEN 2 ON

(If **ELEC FAIL** clears, go to the left branch.)

ELEC FAIL caption remains

- GEN 2 failed,
- GEN 2 OFF

Triple AC generator/TRU not powered
- Select APU SEL MODE OFF

Land as soon as possible (within 15 min)
(30 min if Aux Bat installed)

Loss of
- ESS BUS 1 & 2
- DC MAIN BUS 1, 2, 3 & 4
- DC NON ESS BUS 1 & 2

Main and Aux (if installed) battery will supply EMER BUS 1 & 2

END

SERVICES AVAILABLE ON SW BATT BUS 1 AND EMER BUS 1 AND 2

(Circuit Breakers on Pilot and Copilot Overhead Panel)

SW BATT BUS 1

APU ECU
APU FIRE DET
APU PNL LT
APU FUEL SOV
APU FMP
APU FIRE EXT
APU GCU

DC EMER BUS 1

ADI STBY
AFCS ACT CPLT PITCH
AFCS ACT CPLT ROLL
AFCS FCC 2 PRI
AFCS FORCE TRIM PRI
AHRS 1 PRI
ECDU DU PLT PRI
ECDU IOM 1 PRI
ELT
EPGDS BUS 1 CTL
EPGDS SGCU 1
EPGDS SW BATT BUS 1
EPGDS AC EXT PWR
EPGDS MAIN BATT
FADEC 1 CH A
FIRE ENG 1 DET
FIRE ENG 1 EXTG
ICS PRI
LIGHTING EMERG
LDG GEAR EMERG
LDG GEAR CONTR PRI
NAV/COMM AMU EMERG
NAV/COMM MCDU PLT
NAV/COMM VHF2
PITOT HTR PLT
RTR BRK CONTR (if installed)
RTR BRK PWR (if installed)

DC EMER BUS 2

ADU 2
AFCS ACT PLT PITCH
AFCS ACT PLT ROLL
AFCS FCC 2 SEC
AHRS 2 PRI
AMMC 2 PRI
CLOCK PLT
DISPLAY CCD PLT
DISPLAY DCP PLT
DISPLAY PFD PLT
DISPLAY SW B AFDX
NAV/COMM GPS 2
NAV/COMM NAV 2
NAV/COMM XPDR
RAD ALT 2
ECDU IOM 2 PRI
EPGDS BUS 2 CTL
EPGDS SGCU 2
EPGDS SW BATT BUS 2
FADEC 2 CH A
EPGDS AUX BATT (if installed)
FIRE ENG 2 DET
FIRE ENG 2 EXTG
LIGHTING LDG PWR PLT
LIGHTING CKPT PLT
MWL & MCL PLT

SERVICES LOST FOR DC ESS BUS 1 & 2 FAILURE

ESS BUS 1	ESS BUS 2
AFDX SW A AMMC 1 PRI AMMC 1 DISC AMU NORM CVFDR ECDU DU CPLT SEC ECDU IOM 1 SEC ENG CTL PNL ENG 1 INTK FADEC 1 CH B FIRE BAG DET FUEL LLS 1 FUEL SYS PUMP 1 FUEL SYS VALVE 1 CLOSE FUEL SYS VALVE 1 OPEN HYD SOV 1 HYD SYS EMER SOV LIGHTING INST PNL LDG GEAR NLG NOSE FAN 1 PFD CPLT PFD CPLT AUX TRANS CHIP BURN VHF 1	AFCS CP PRI ECDU DU CPLT PRI ECDU DU PLT SEC ECDU IOM 2 SEC ENG 2 INTK FADEC 2 CH B FUEL LLS2 FUEL SYS PUMP 2 FUEL SYS VALVE 2 CLOSE FUEL SYS VALVE 2 OPEN FUEL SYS XFEED CLOSE FUEL SYS XFEED OPEN HYD SOV 2 HYD SYS TAIL SOV HYD SYS UTIL SOV LIGHTING POSN MFD PLT MFD PLT AUX
C/B Panel (Overhead) VENT OPEN CKPT FAN 1 VENT/HTR	VENT OPEN CKPT FAN 2 VENT/HTR

SERVICES LOST FOR DC MAIN BUS 1,2,3,4 & DC NON ESS BUS 1, 2,3,4 FAILURE

ELEC

DC MAIN BUS 1	DC MAIN BUS 2
ADU 1 AFCS CP SEC AFCS FCC1 PRI AHRS 1 SEC AMMC 1 SEC CCD CPLT CLOCK CPLT DCP 1 LIGHTING LDG CONTR CPLT LIGHTING LDG PWR CPLT LIGHTING CKPT CPLT MCDU CPLT MFD CPLT MFD CPLT AUX NAV 1 PITOT HTR CPLT WIPER CPLT	AFCS DTS AFCS FCC 1 SEC AFCS TRIM AHRS 2 SEC AMMC 2 SEC DME DTD HUMS NOSE FAN 2 LDG GEAR CONTR SEC LIGHTING CSL LIGHTING CSL 28V AUX LIGHTING DOME LIGHTING OVHD LIGHTING STORM WHEEL BRAKE CONTR WHEEL BRAKE PWR WIPER PLT
DC MAIN BUS 3	**DC MAIN BUS 4**
EXTERNAL CAMERA FLOOD LT WHITE GPS 1 LIGHTING ANTI COLL LIGHTING BAG COMP LIGHTING CAB LIGHTING CAB CONTR LIGHTING FLOOD IR PA PIA AFT PIA FWD PSU RAD ALT 1 STROBE LT TRANS OIL LOW	SEATBELT ON DF UTIL PWR
DC NON ESS BUS 1	**DC NON ESS BUS 2**
–	–
DC NON ESS BUS 3	**DC NON ESS BUS 4**
–	–

SECTION END

ENGINE FAILURE (ENG FAIL SHT DWN)

ENGINE OUT

1(2) ENG OUT + Audio Tone and
Voice Warning 'ENGINE 1(2) OUT'

Affected eng NG less than 50% or rate of change outside predetermined limits

1.	**Flight condition**	**— Safe OEI**
2.	**APU**	**— Start**

3. Land as soon as practicable
4. Refer to Single Engine Procedure Page 159

END

ENGINE DRIVE SHAFT FAILURE

ENG FAIL
SHT DWN

Rapid decrease in effected TQ to 0% effected NF above NR

possible **1(2) ENG OVSP**

1.	**Flight condition**	**— Safe OEI**
2.	**APU**	**— Start**

3. Land as soon as practicable
4. Carry out ENGINE SHUTDOWN IN EMERGENCY procedure Page 26
5. Refer to Single Engine Procedure Page 159

Note

Following engine drive shaft failure, NF may overspeed and reach the NF overspeed trip point (119%).

END

ENGINE IDLE

1(2) ENG IDLE + Voice Warning 'ENGINE 1(2) IDLE'

(Warning triggered only with aircraft on ground)

Take Off commenced with associated engine at IDLE

or

Associated engine MODE switch at IDLE and collective not fully down

1.	**Reduce collective to MPOG**

2. Select eng MODE switch to FLT before Take-Off

END

ENGINE EEC FAILURE

1(2) ENG GOV LOSS + Voice Warning

Engine failed at fixed or partially fixed engine power
due to loss of FADEC control

NF governing on affected engine and load share does not function

1.	**Collective**	**— Do not move or avoid abrupt and large movements**
2.	**Affected ENG FIRE EXT guard**	**— Confirm, lift and press**
3.	**Affected ENG MODE**	**— Confirm and OFF**
4.	**Affected FUEL ENG SOV (ECDU)**	**— Confirm and CLSD**
5.	**APU**	**— ON**

6. Land as soon as practicable using Single Engine Procedure
Page 159

Note
Care should be taken when moving collective because this may cause unexpected NF/NR run up or run down depending on the engine power when the failure occured.

Note
Selecting the affected ENG MODE switch to IDLE will have no effect.

END

ENGINE OIL PRESSURE LOW

1(2) ENG OIL P LOW + Voice Warning

Associated engine oil pressure below limit (less than 1.4 bar)

1. Affected engine	**— Check oil pressure & temperature on PFD**

OIL PRESSURE LOW OR INVALID?

YES

- Achieve safe OEI flight

On affected engine
- Select ENG MODE to IDLE

If warning extinguishes

On affected engine
- Select ENG MODE to FLT

Continue flight

If warning illuminates
On affected engine
- Select ENG MODE to IDLE

If warning remains

- Start APU

On affected engine
Carry out ENGINE SHUT DOWN IN EMERGENCY procedure Page 26

Land as soon as practicable
Refer to Single Engine procedure Page 159

NO

Land as soon as practicable

END

DOUBLE ENGINE FAILURE

A sequential or simultaneous failure of both engines will require entry into autorotation. If sufficient additional time is available to make an engine restart feasible, use the **ENGINE RESTART IN FLIGHT** Page 106 procedure.

AUTOROTATION ENTRY AND LANDING/WATER PROCEDURE

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

1. Collective — Reduce to enter autorotation.
2. Cyclic — Adjust to obtain autorotation at between 70 KIAS and 100 KIAS (Best Glide speed).
3. Collective — Adjust to obtain up to110% NR.
4. APU — Start.
5. Landing gear — Extend. (UP for water landing).
6. Landing site — Select and manoeuvre into wind.
7. Briefing — Cabin crew and occupants, confirm cabin-doors closed.
8. Radar altimeter — Verify working.
9. Windscreen wipers — As required (FAST for water landing).
10. Distress procedure — Broadcast Mayday (time permitting).
11. Flare — At approximately 200 ft AGL, initiate a cyclic flare with an attitude change of 15° nose-up.
12. Cyclic/Collective — At approximately 35 feet AGL, reduce pitch attitude to 10° nose-up and apply collective, as required, to achieve touchdown at approximately 300 feet per minute or less.
13. Landing — For water landing, dependent on sea state, prevailing winds and current, approach into oncoming waves, or at 45° offset.
14. Wheel brakes — Apply as required (land only).
15. Shutdown —
    - Land
      Execute the EMERGENCY GROUND EGRESS procedure Page 27.
    - Water
      Execute Engine and APU Shutdown in Emergency Procedure Page 26.
16. Evacuate — Evacuate the aircraft with survival equipment.

END

DITCHING PROCEDURE (WHEN FLOTATION AND LIFE RAFTS INSTALLED).

— Approach and landing should be into wind.

— When landing into waves, land head-on to oncoming waves avoiding, if possible, ditching into the face of the wave.

— Rotor Brake will not function.

Preliminary

1.	Descent	— Plan
2.	Crew/passengers	— Notify and Brief
3.	ATC	— Notify
4.	Transponder	— Set 7700
5.	Cabin sign (ECDU-LT-CAB LTS)	— Check ON
6.	Loose equipment	— Secure

WARNING

Cockpit and Cabin Doors must be kept closed to avoid potentially large quantities of water from entering the helicopter.

7.	Cabin doors	— Ensure closed
8.	HTAWS (if fitted)	— MUTE
9.	AWG	— REGRADE
10.	Life Vest, Harness & Belts	— ON & tighten
11.	Shoulder harness reel control	— Up & locked

Approach

1.	RAD ALT	— Set
2.	Wipers (ECDU-MENU-WIPERS page)	— FAST
3.	PITOT (ECDU-MENU-PITOT page)	— OFF
4.	Flotation	— Confirm Armed
5.	Sea conditions/wind direction	— Determine
6.	Ditching heading	— Establish

PROCEDURE CONTINUED ON NEXT PAGE

ENG FAIL
SHT DWN

DITCHING PROCEDURE CONTINUED FROM PREVIOUS PAGE

7.	Descent rate & speed	— Establish to ensure maximum 30 kts groundspeed at water contact.
8.	EMERG LTS	— ON
9.	LDG GEAR	— UP
10.	Crew/passengers	— ALERT for imminent impact
11.	Radio	— Transmit final position
12.	Brace for impact	— Order using PA
13.	Hover	— Establish at safety height if power available

Upon water contact

1.	ENG 1 & 2 FIRE ARM guard	— Lift and press
2.	APU FIRE ARM guard	— Lift and press
3.	FLOTATION	— Activate

Time and conditions permitting

1.	ENG 1 & 2 MODE switches	— OFF
2.	Deleted	
3.	Survival equipment	— ON
4.	EMERG EXITS	— OPEN/RELEASE
5.	Life rafts	— Release
6.	ELT	— DEPLOY/ON
7.	Evacuation	— Initiate using PA
8.	APU MODE switch	— OFF
9.	BATT MASTER	— OFF

END

ENG FAIL
SHT DWN

SINGLE ENGINE FAILURE IN HOVER OGE SAFE VERTICAL REJECT PROCEDURE

A safe vertical reject is assured if the maximum gross weight is at or below that defined in the WAT Safe Vertical Reject charts page Limitations Page 76 and 77 for the ambient conditions.

The procedure for the vertical reject is the following:

1. Collective — On engine failure recognition adjust collective setting to initiate descent and to achieve a minimum NR of 100%.
2. Descent — Descend vertically with a minimum NR of 100%.
3. Touchdown — Increase collective to cushion landing as touchdown becomes imminent allowing the rotor to droop to a minimum of 85% NR.
4. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to minimum. Apply wheel brakes as required.

END

SINGLE ENGINE FAILURE IN HOVER OGE FLYAWAY PROCEDURE

The hover flyaway height loss defined in Limitations Page 78 to 87 assume the following flyaway procedure is followed:

1. Collective/Cyclic control — Rotate nose down to an attitude of -12°. Adjust collective to droop the NR to a minimum of 90% NR to accelerate to 20 kts groundspeed.
2. Acceleration — On achieving 20 kts raise nose to 5° nose up and accelerate to V_{FASS} (50 KIAS). Recover NR to 102% using up to 2.5 min power rating as required.
3. At VFASS — When the aircraft has achieved V_{FASS} (50 KIAS) continue climb accelerating to Vy.

Note

The height loss indicated on chart Limitations Page 78 to 87, for ambient condition and aircraft weight, guarantees that V_{FASS} (50 KIAS) will be achieved and a subsequent minimum Rate Of Climb of 150 fpm at V_y is assured. Refer Basic RFM Section 4 Single Engine Failure in Hover OGE Flyaway.

END

SINGLE ENGINE FAILURE ON TAKE OFF CATEGORY B

If gross weight and flight path permit, takeoff 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.

END

SINGLE ENGINE CATEGORY B LANDING PROCEDURE

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 — During the approach, reduce airspeed gradually to arrive at a point 200 ft above touchdown point with a rate of descent of no more than 500 fpm. Initiate a deceleration to achieve 40 KIAS at 50ft. At 50 ft rotate nose up to a maximum of 20° to decelerate.
4. Collective — Continue deceleration to running touchdown or hover. Use collective *to* cushion touchdown. Maximum nose up attitude on touchdown 15°.
5. Landing/Ditching — After touchdown, centralize cyclic and reduce collective to minimum.
6. 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.
4. APU — Start APU.
5. Engine — Carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26.
6. Refer to SINGLE ENGINE PROCEDURE Page 159.

END

ENG FAIL
SHT DWN

ENGINE SHUTDOWN IN EMERGENCY

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

1.	**ENG FIRE EXT guard**	**— Confirm, lift and press**
2.	**ENG MODE switch**	**— Confirm and OFF**
3.	**FUEL ENG SOV (ECDU)**	**— Confirm and CLSD**

4. XFEED (ECDU) — CLSD, unless required for crossfeed

5. FUEL PUMP (ECDU) — OFF, unless required for crossfeed

Note

1 FUEL PUMP will not select OFF, if APU running, or will be automatically selected ON if APU started.

6. Fuel contents — Monitor, use crossfeed as required

7. HEATER — Select as required

Note

If there is evidence of combustion after engine shutdown carry out a dry motoring procedure Lims-Norm-Perf Page 100, as required to extinguish any possible fire.

END

APU SHUTDOWN IN EMERGENCY

If it is necessary to shut down the APU in emergency, without the automatic 1 minute cooling period, carry out the following procedure:

1.	**APU FIRE EXT guard**	**— Lift and press**
2.	**APU SEL MODE**	**— OFF**

3. BATT MASTER switch — OFF

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 passenger and crew:

1. PARK BRAKE — Set
2. Evacuation — Command (prepare to evacuate)
3. ENG MODE 1 & 2 switches — OFF.
4. APU SEL MODE — OFF (if selected ON)
5. Deleted
6. Rotor brake — Select BRAKE

Note

If the undercarriage is not extended the Rotor Brake will not function. In this case use collective to slow rotor, being aware the aircraft may yaw left.

7. ATC — Notify (condition and intention to evacuate)
8. LTG EMER lights — Select ON
9. Evacuation — Initiate using PA
10. Emergency Exits — OPEN/EJECT
11. APU FIRE EXT pushbutton (If APU used) — Press
12. When rotor stopped. — Passenger evacuation, assist away from helicopter
13. BATT MASTER switch — OFF
14. Helicopter — Abandon

SECTION END

FIRE

In the event of smoke or fire, prepare to land the aircraft without delay while completing the applicable emergency procedures.

APU BAY FIRE (GROUND)

APU FIRE + Voice Warning

Confirm on APU panel FIRE light ON

1.	**APU FIRE EXT guard**	**— Lift and press**
2.	**BTL switch**	**— Select to BTL**
3.	**APU SEL MODE**	**— OFF**

4. Carry out EMERGENCY GROUND EGRESS procedure Page 27

Note
If PFD not available monitor APU panel FIRE warning light.

END

APU BAY FIRE (FLIGHT)

APU FIRE + Voice Warning

Confirm on APU panel FIRE light ON

1.	**Airspeed**	**— Less than 150 KIAS**
2.	**APU FIRE EXT guard**	**— Lift and press**
3.	**BTL switch**	**— Select to BTL**
4.	**APU SEL MODE**	**— OFF**

If **APU FIRE** warning remains

Land Immediately

When on ground:
Carry out EMERGENCY GROUND EGRESS procedure Page 27

If **APU FIRE** warning clears

Land as soon as possible

END

ENGINE BAY FIRE (GROUND)

1(2) ENG FIRE + Audio Tone and Voice Warning 'ENGINE 1(2) FIRE'

Confirm on engine control panel FIRE light ON

1.	**PARK BRAKE**	**— PULL**
2.	**ENG 1 & 2 MODE**	**— OFF**
3.	**APU FIRE EXT guard**	**— Lift and press**
4.	**Affected ENG FIRE EXT guard**	**— Confirm, lift and press**
5.	**Affected Eng FIRE EXTING switch**	**— Select to BTL1**

1 FIRE BTL LOW P caution illuminates after bottle discharged

If **1(2) ENG FIRE** warning clears

If **1(2) ENG FIRE** warning remains
- Set FIRE EXTING switch to BTL2

2 FIRE BTL LOW P caution illuminates after bottle has discharged

- Carry out EMERGENCY GROUND EGRESS procedure Page 27

CAUTION

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

END

FIRE

ENGINE BAY FIRE (FLIGHT)

1(2) ENG FIRE + Audio Tone and Voice Warning 'ENGINE 1(2) FIRE'

Confirm on engine control panel FIRE light ON

1.	**Airspeed**	**— Between 70 - 80 KIAS**
2.	**AIR COND/HEATER**	**— OFF**
3.	**AIR COND/HEATER/ECS PNL ENG 1 & 2 SOV**	**— NORMAL/CLSD (OVRD not illuminated)**
4.	**Affected ENG MODE**	**— Confirm and IDLE**

Confirm engine FIRE

5.	**Affected ENG MODE**	**— Confirm and OFF**
6.	**Affected ENG FIRE EXT guard**	**— Confirm, lift and press**
7.	**Affected eng NG less than 20%**	**— FIRE EXTING switch to BTL1**

1 FIRE BTL LOW P caution illuminates after bottle discharged

If **1(2) ENG FIRE** warning clears
- Deselect FIRE/ARM pushbutton
- Start APU

Land as soon as possible
Refer to Single Engine Procedure Page 159

If **1(2) ENG FIRE** warning remains
- Set FIRE EXTING switch to BTL2

2 FIRE BTL LOW P caution illuminates after bottle has discharged

- *If* **1(2) ENG FIRE** warning clears
- Start APU

Land as soon as possible
Refer to Single Engine Procedure Page 159

- *If* **1(2) ENG FIRE** warning remains

LAND IMMEDIATELY
Refer to Single Engine Procedure Page 159
When on ground:
Carry out EMERGENCY GROUND EGRESS procedure Page 27

CAUTION

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

END

BAGGAGE BAY FIRE (FLIGHT)

BAG FIRE + Voice Warning

1.	AIR COND/HEATER	— OFF
2.	HEATER PNL ENG 1 & 2 SOV	— NORMAL
3.	VENT CREW FAN	— HIGH
4.	VENT PAX FAN	— HIGH

SMOKE IN CABIN?

YES

- Reduce airspeed to below 50 KIAS
- OPEN storm window(s)
- Cabin emergency windows, left side only, PUSH to release if possible

LAND IMMEDIATELY

Carry out EMERGENCY GROUND EGRESS procedure Page 27

NO

Land as soon as possible

END

BAGGAGE BAY FIRE (GROUND)

BAG FIRE + Voice Warning

- Carry out EMERGENCY GROUND EGRESS procedure Page 27

END

COCKPIT / CABIN FIRE (GROUND)

FIRE in cockpit or cabin

- Carry out EMERGENCY GROUND EGRESS procedure Page 27

END

COCKPIT / CABIN FIRE (FLIGHT)

FIRE in cockpit or cabin
+ possible **BAG FIRE** when Sup 26 Cabin extension installed

1.	**AIR COND/HEATER**	**— OFF**
2.	**HEATER PNL ENG 1 & 2 SOV**	**— Confirm NORMAL**
3.	**VENT CREW FAN**	**— OFF**
4.	**VENT PAX FAN**	**— OFF**

FIRE SOURCE DETERMINED?

YES

Use on board hand held extinguisher to fight fire

- Fire is extinguished
  - Increase ventilation
  - Land as soon as possible
- Fire persists
  - LAND IMMEDIATELY
  - When on ground: Carry out EMERGENCY GROUND EGRESS procedure Page 27

NO

LAND IMMEDIATELY

When on ground: Carry out EMERGENCY GROUND EGRESS procedure Page 27

CAUTION

If the fire is not completely extinguished, increased ventilation may aggravate the problem.

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 Page 27.

END

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 ECDU display) and the equipment electrically isolated, carry out procedure detailed on next page.

ELECTRICAL FIRE/SMOKE PROCEDURE FLIGHT

1.	**Airspeed**	**— 50 KIAS**
2.	**VENT FAN**	**— OFF**
3.	**Storm window(s)**	**— OPEN to ventilate cockpit**
4.	**APU**	**— ON**
5.	**Right MCDU TUNE page**	**— Select COM/NAV on side 2**
6.	**PILOT UTILITY LIGHT**	**— ON**
7.	**Land as soon as possible**	

Note

If operational conditions permit consider releasing cabin left side windows.

If conditions permit

- Switch GEN 1 & 2 OFF (Loss of NON-ESS BUS 1,2,3 & 4)

Does smoke clear?

Yes

NON-ESS BUS 1,2,3 & 4 not available

No

- Select BTC 1 to AUTO (MAIN BUS 1 & 3 Lost)

Does smoke clear?

Yes

NON-ESS BUS 1,2,3 & 4 and MAIN BUS 1 & 3 not available

No

- Select BTC 2 to AUTO (MAIN BUS 2 & 4 Lost)

Does smoke clear ?

Yes

NON-ESS BUS 1,2,3 & 4 and MAIN BUS 1,2,3 & 4 not available

No

- Select APU OFF (ESS Bus 1 & 2 Lost)

If smoke clears

Land as soon as possible within 15 mins (30 mins if AUX BATT installed)

If smoke *and/or* fire severe

LAND IMMEDIATELY

When on ground:
Carry out EMERGENCY GROUND EGRESS procedure Page 27

Note

If operational conditions permit consider releasing cabin left side window.

END

FIRE

FIRE

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:

Note

Ensure an AC power source is supplied to the helicopter before proceeding.

1. Fire warnings — Confirm not illuminated.
2. ENG PNL MODE switch — Select CRANK on affected engine and hold.
3. NG — Note increasing.
4. CRANK — Release switch to stop when ITT decrease is noted (Starter Duty Cycle 45 seconds).

END

APU EXHAUST FIRE AFTER SHUTDOWN

If there are visible signs of fire in the APU exhaust, personnel should not be allowed to exit until the following actions have been carried out:

1. EPGDS panel — Confirm BATT MASTER ON.
2. APU Fire warning — Confirm not illuminated.
3. APU SEL MODE switch — Select CRANK and hold.
4. CRANK switch — Release switch to stop when necessary. Cranking automatically stops after 15 seconds.

END

WHEEL BRAKE FIRE

ON GROUND

When aircraft is stationary:

1. Shutdown — Carry out EMERGENCY GROUND EGRESS procedure Page 27.

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 Page 27.

CAUTION

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

SECTION END

LANDING GEAR

LANDING GEAR FAILS TO EXTEND OR FAILS TO LOCK DOWN

If, after selecting the landing gear DOWN any indicators remain blank or amber, carry out the following:

- Press LAMP TEST, confirm indicator lights functioning
- Maximum airspeed 150 KIAS
- Check UTIL pressure (MFD Hydraulic synoptic page)

If pressure low (amber box)

- EMER DOWN pushbutton lift guard and press

If all indicators illuminate green (down and locked)

- Continue to land

If any indicators remain blank or amber

- Attempt to confirm if landing gear is down

Land on suitable soft surface

If pressure normal (green box)

- Carry out the following actions, confirming landing gear indicatons, after each action:
  - Check LDG GEAR circuit breakers IN (2 C/Bs)
  - Cycle LDG GEAR lever, (max 3 times), leave down
  - EMER DOWN pushbutton lift guard and press (hold depressed for oil temp below -20 °C)

If any indicators remain blank or amber

- Attempt to confirm if landing gear is down

Land on suitable soft surface

If all indicators illuminate green (down and locked)

- Continue to land

Note

When the undercarriage has been extended using the EMER DOWN then subsequent retraction is not possible.

Note

For OAT of -30 °C and below the undercarriage extension time may increase.

END

EMERGENCY BRAKING

Emergency symmetric braking is possible using the PARK BRAKE handle, by modulating the handle displacement. Care should be taken to avoid 'lock-ing' the wheels with possible damage to the tyres.

During this procedure the **PARK BRK ON** caution will be displayed.

END

STATIC PORT OBSTRUCTION

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

1. Storm window and vents — Closed
2. AIR COND/HEATER — OFF
3. STATIC source switch — Remove guard and select ALTERNATE
4. Proceed with flight

This procedure selects an alternate static source utilizing cabin air.

CAUTION

When utilizing the alternate static source, decrease the altimeter reading by 250 ft

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
— selected heading
— selected decision height
— selected radio frequencies (including radio comms transmission check)

SECTION END

ROTOR UNDER-SPEED

ROTOR LOW + Audio Tone and
Voice Warning 'ROTOR LOW'

Rotor RPM below limit

1.	**Collective**	**— Lower to increase rotor speed**

Tone and ROTOR LOW
below 98% Power ON
below 90% Power ON
below 95% Power OFF

Refer to engine Emergency and Malfunction drills if relevant

END

ROTOR-OVERSPEED

ROTOR HIGH + Audio Tone and
Voice Warning
"ROTOR HIGH"

Rotor RPM above limit

1.	**Collective**	**— Raise to decrease rotor speed**

Tone and ROTOR HIGH
above 105% Power ON or OEI
above 110% Power OFF

Refer to engine Emergency and Malfunction drills if relevant

END

TRANSMISSION SYSTEM FAILURES

In general a single failure indication dictates that the helicopter **Land as soon as practicable** while a double failure dictates **Land as soon as possible**. If multiple failure indication, including abnormal noise and/or vibration are present **LAND IMMEDIATELY**

END

MAIN GEARBOX OIL TEMPERATURE HIGH

MGB OIL TEMP + Voice Warning

MGB oil temperature above limit (greater than 114 °C)

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1. **TQ 1 & 2** — **MAX 65%**
2. **MGB Oil Temperature** — **Check on PFD**

OIL TEMP HIGH OR INVALID?

YES

Land as soon as possible

NO

Continue flight monitoring MGB oil temperature and pressure.

END

MAIN GEARBOX OIL PRESSURE LOW

MGB OIL PRESS + Voice Warning

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

1.	**TQ 1 & 2**	**— MAX 65%**
2.	**Clock**	**— START**
3.	**MGB Oil Pressure**	**— Check on PFD**

OIL PRESSURE LOW OR INVALID?

YES

- Reduce power as operational conditions permit

If associated oil pressure permanently above 1.5 bar

Land as soon as possible
See Note 2 below

Note

This condition could be induced by the failure of one of the dual pumps of the MGB lubrication system. Landing or Ditching should be made within 3 hours at torque not exceeding 65/65%.

If **1(2) BRG TEMP** caution illuminates

Land as soon as possible
See Note 1 below

Note

Landing or Ditching should be made within 50 minutes at torque not exceeding 65/65%

NO

- Land as soon as practicable monitoring MGB oil pressure and temperatures.
Do not activate chip burner

Note

TQ values maybe resumed to previous setting.

SECTION END

MAIN ROTOR CONTROLS BINDING

WARNING

If a binding occurs in the aircraft main rotor control circuit, depending on the severity of the binding, greater forces will be required to operate the controls. DO NOT ATTEMPT TO APPLY MAXIMUM EFFORT, since more serious malfunction could result. A reduction in the available control ranges may result and, in this situation, the low speed flight envelope may be restricted.

If the airspeed is more than 25 KIAS, the aircraft should be landed into the wind as soon as possible using a running landing procedure and a touchdown speed of 25 KIAS.

If the airspeed is less than 25 KIAS, carry out a running landing at the speed at which the binding occurs. If the aircraft is in a hover, land vertically.

END

TAIL ROTOR SYSTEM FAILURES

YAW CONTROL DIAGNOSTICS

PEDAL CHARACTERISTICS	POSSIBLE CAUSE	AIRCRAFT MOTION
Free But Ineffective	**TAIL ROTOR DRIVE FAILURE** **TAIL ROTOR CONTROL CIRCUIT FAILURE** Disconnect between pedals and tail rotor servo	Rapid yaw to the right Direction of Yaw depends on airspeed / torque
Partially Effective (Perhaps effective in one direction only or with considerable backlash)	**TAIL ROTOR CONTROL CIRCUIT FAILURE** Disconnect between tail rotor servo output and tail rotor or mechanical disconnect of AFCS Yaw Series Actuator	Direction of Yaw depends on airspeed / torque
Seized (Excessive force required to move pedals)	**TAIL ROTOR CONTROL BINDING**	Aircraft yaws right when raising collective. Aircraft yaws left when lowering collective

TAIL ROTOR DRIVE FAILURE

The following cues will be present:

— Aircraft yaws rapidly to the right

— 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 unacceptably high levels.

Failure Cues:

In Hover

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

— **Select ENG MODE switches to OFF if time available**

In Forward Flight

— **Lower collective immediately to minimize yaw right.**

— **Establish an airspeed/power/roll angle sufficient to reach a suitable landing site.**

— **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 Engine Off Landing.**

Note

- Land into wind
- Raising or Lowering the collective while maintaining NR within limits may be effective in helping control sideslip. (Increasing collective, nose left)

END

TAIL ROTOR CONTROL SYSTEM FAILURE

Failure Cues:

— Aircraft Yaws Left or Right

— Loss of Yaw Control, pedals free but ineffective or free and partially effective.

In Low Hover

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

If rapid yaw right develops

— **Retard ENG MODE switches to OFF (or IDLE) if time available.**

In Forward Flight / High Hover

— **Attempt to determine a combination of speed and power to minimize the yaw**

— **Carry out the following to diagnose the failure:**

- Gently and progressively apply left pedal to assess whether the aircraft responds in that direction. Pedal needs to be pushed until a positive response is obtained (it may be necessary to reach full displacement if no response is obtained)

If aircraft does not respond to the left, consideration should be given before assessing controllability to the right as this may worsen the situation. Gently and progressively apply right pedal to assess whether the aircraft responds in that direction. Pedal needs to be pushed until a positive response is obtained (it may be necessary to reach full displacement if no response is obtained).

If the aircraft does not respond OR responds to right pedal but not to left pedal	**If the aircraft does respond to both pedal inputs but is slow to respond, with noticeable backlash**
Tail Rotor Pitch set to *zero* thrust - Set up a rate of descent to align the aircraft nose to the flight path. - Reduce speed approaching the touchdown point; a yaw to the right may start to develop. In this case a low speed rotating landing will be required. - When the aircraft is rotating at low level, retard ENG MODE switched to OFF and cushion the final touch down.	Mechanical disconnect of the AFCS yaw series actuators. The remaining tail rotor pitch available is such that an IGE hover could be possible. However, depending upon the weight, altitude and wind, a power on running landing may be carried out.
Note Wind from the front **Left** quadrant of the a/c may be beneficial.	

END

TAIL ROTOR CONTROL BINDING

Failure Cues:

— Pedals seized or require excessive force (DO NOT ATTEMPT TO APPLY MAXIMUM EFFORT)

— Aircraft yaws Left or Right in response to collective changes.

In Low Hover

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

Note

- Do not shut down engine unless a severe right yaw occurs. If tail rotor control binds while hovering, landing can be accomplished with greater safety under controlled, powered flight rather than by shutting down engines and entering autorotation.

In Forward Flight / High Hover

— Attempt to determine a combination of speed and power to minimize the yaw.

If binding occurred in high power climb or high hover **(High Tail Rotor Thrust)**	If binding occurred in high power cruise **(Moderate Tail Rotor Thrust)**	If binding occurred in descent or low power cruise. **(Low Tail Rotor Thrust)**
- Carry out a high power, low speed approach, keeping the nose to the left. **- Carry out a power-on landing using a speed / power combination which will keep the aircraft nose aligned.** **- On touch down, reduce collective and ENG MODE switches to OFF.**	**- During the approach keep the nose to the left.** **- Carry out running landing at an airspeed of approximately 20 knots, raising the collective to straighten the nose.** **- As aircraft touches down, ENG MODE switches to OFF while slowly lowering the collective.**	**- Set up a ROD to align the aircraft nose to flight path.** **- Reduce speed approaching the touchdown point; a yaw to the right may start to develop. In this case a low speed yawing landing will be required.** **- When the aircraft is yawing at low level, select ENG MODE switches to OFF and cushion the touch down.**
Note Wind from the front **Right** quadrant of the a/c will be beneficial.		**Note** Wind from the front **Left** quadrant of the a/c will be beneficial.

SECTION END

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MALFUNCTION PROCEDURES

CAS CAUTION SYSTEM

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 feet and undercarriage is retracted.

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

TABLE OF CAS CAUTION MESSAGES

CAS Caption	Page	Failure/System State
AC EXT PWR DOOR	126	AC external power door open
1(2) AC GEN FAIL	74	Associated generator failed
1(2) AC GEN HOT	75	Associated generator overheating
1(2) ADS FAIL	67	Associated ADS failed
AFCS PNL FAIL	61	Failure of upper modes and FD mode pushbuttons
AFT COND FAIL	128	PAX conditoner failure
1(2) AHRS FAIL	66	Associated AHRS failed
1(2) AMMC DEGR	68A	Associated AMMC degraded
1(2) AMMC FAIL	68	Associated AMMC failed
AMMS CONFIG FAIL	68	AMMC option configuration discrepancy
AP AHRS 1(2) FAIL	61	Associated AFCS not receiving data from AHRS
AP-CAS FAIL	60	AFCS CAS and audio messages not available
AP DEGR	58	AFCS not receiving ADI Stby data
1(2) AP FAIL	55	Associated autopilot failed
1(2) AP HOT	59	Associated FCC temperature above limit
1(2) AP MAINT	60	Associated AP channel has a failure (only displayed on ground)
1(2) AP OFF	55	Associated autopilot switched OFF
1(2) AP P FAIL	56	Associated pitch axis single series actuator failure
1(2) AP R FAIL	56	Associated roll axis single series actuator failure
1(2) AP TEST FAIL	59	Associated AP channel PFT failed
1(2) AP TEST DEGR	60	Associated AP channel unable to carry out pre flight test
1(2) AP Y FAIL	56	Associated yaw axis single series actuator failure
APU CHIP	102	APU oil chip detected

CAUTION MSGs

CAUTION MSGs

CAS Caption	Page	Failure/System State
APU DEGR	100	APU control system degraded
APU FAIL	101	APU failed
APU FIRE BTL LOW P	102	APU fire bottle pressure low
APU FIRE DET	103	APU fire detect system failure
APU FUEL FILTER	103	APU fuel filter blocked and in bypass
APU GEN FAIL	82	APU generator failure
APU GEN OVERLOAD	83	APU generator overload
APU OIL LEVEL	103	APU oil level low
APU OIL LOW PRESS	104	APU oil pressure low
APU TRU FAIL	83	APU TRU failed with APU generator ON
APU TRU HOT	83	APU AC generator TRU overheat
APU VALVE OPEN	104	APU fuel valve open when APU OFF
ATT OFF	56	AFCS attitude mode OFF or failed
AUX BATT HOT	84	Auxiliary battery over temperature
AUX BATT OFF	81	Auxiliary battery off line (if installed)
AVIONIC FAULT	67	Avionic fault
BAG DOOR	126	Baggage door open
1(2) BRG TEMP	156	Associated ENG-MGB input bearing over heating
CABIN DOOR	125	Cabin door open
CHIP DET UNIT	157	Drive system chip detect system malfunction
COCKPIT DOOR	125	Cockpit door open
C TRIM FAIL	58	Colective trim actuator drive failure
CVR FAIL	70	Cockpit voice recorder failed
DC EXT PWR DOOR	126	DC external Power door open
ECDU DEGR	85	ECDU degraded
ECDU FAIL	85	ECDU failure
1(2) EECU DATA	96	Associated engine data not being received by AMMC
1(2) EECU DEGR	92	Associated engine control degraded
1(2) EECU MAINT	97	Associated engine control unit internal fault
1(2) EECU OVERHEAT	96	Associated engine control unit overheating
1 EMER BUS FAIL	81	Emergency BUS 1 failure
2 EMER BUS FAIL	82	Emergency BUS 2 failure
EMER LDG PRESS	114	Emergency landing gear deployment system pressure low
1(2) ENG A/ICE FAIL	98	Associated engine bleed valve closed with anti ice selected ON

CAS Caption	Page	Failure/System State
1(2) ENG LIM EXPIRE	89	Associated engine exceeded 2.5 min OEI rating
1(2) ENG OIL CHIP	93	Associated engine chip detected
1(2) ENG OIL FILTER	92	Engine filter in bypass condition
1(2) ENG OIL P HIGH	91	Engine oil pressure above limit
1(2) ENG OIL TEMP	90	Associated engine oil overtemp (> 132 °C)
1(2) ENG OVSP	88	Associated engine NF overspeed triggered
ENG PANEL FAIL	99	Engine control panel failed
1(2) ENG PWR LIM	94	Associated engine operation degraded and possible limited power
1(2) ENG SLOW RESP	95	Associated engine operation degraded and possible slow response
1(2) ENG VG STUCK	94	Associated engine inlet guide vane fault (Aircraft Configuration B only)
FDR FAIL	70	Flight data recorder partial or total failure
1(2) FIRE BTL LOW P	95	Associated fire bottle low pressure
1(2) FIRE DET	93	Associated fire detect system failed
FLOAT ARM	130	Flotation system armed
FMS/GPS MSCP	71	Miscompare between FMS and GPS position data
FMS/GPS MSCP UNAVL	72	FMS/GPS position data checking function not available
FPLN MSCP	72	Mismatch of FMS 1 & 2 active flight plan
1(2) FUEL FILTER	98	Associated fuel filter blocked and impending bypass condition
1(2) FUEL LOW	107	Associated fuel level less that 58 kg
1(2) FUEL LOW FAIL	107	Associated fuel low sensor failed
1(2) FUEL PROBE	111	Associated fuel contents probe failed
1(2) FUEL PUMP	108 109 110	Associated fuel pump pressure low (< 0.3 bar)
FWD COND FAIL	128	CREW conditioner failure
1(2) GCU FAIL	76	Generator control unit failed
1-2 GPS FAIL	70	Double GPS failure
1(2) GPS FAIL	71	Associated GPS failed
HEATER FAIL	127	Heater system failure
1(2) HOT START	97	Associated engine ITT limits exceeded on engine starting
1(2) HYD MIN	116	Associated hydraulic system fluid level low
1(2) HYD OIL PRESS	113	Associated hydraulic system pressure low (less than 163 bar)

CAUTION MSGs

CAUTION MSGs

CAS Caption	Page	Failure/System State
1(2) HYD OIL TEMP	115	Associated hydraulic system overtemp (greater than 134 °C)
1(2)(4) HYD PUMP	116	Associated hydraulic pump failed
1(2) HYD SERVO	117	Associated hydraulic servo actuator in bypass
HYD UTIL PRESS	114	Utility hydraulic pressure low (< 163 bar)
IGB OIL LOW	153	Intermediate gearbox oil level low
IGB OIL TEMP	156	IGB oil overtemp (>119 °C)
1(2) INTAKE FAIL	98	Associated heated air intake failure
LANDING GEAR	119	LDG retracted and aircraft < 200 ft AGL
MAIN BATT HOT	84	Main battery over temperature
MAIN BATT OFF	81	Main battery off line
MGB OIL LOW	153	Main gearbox oil level low
1(2) MGB OIL PRESS	155	Associated MGB engine input oil pressure low (< 3.1 bar)
MISTRIM	57	Linear actuators not re-centered by trim
1(2) NG MISCOMPARE	99	Discrepancy between EEC and analog value of NG
NOSE DOOR	126	Nose door open
1(2) NOSE FAN FAIL	68A	Associated nose bay fan failure
NOSE WHL UNLK	120	Nose wheel unlocked
1(2) OVSP TEST FAIL	89	Associated engine NF overspeed system self test failed
PARK BRK ON	121	Park brake on
PARK BRK PRESS	121	Park brake system low pressure
1(2) PITOT HEAT OFF	123	Associated pitot heating system OFF or failed and OAT < 4 °C
P(R)(Y) TRIM FAIL	58	Associated Pitch, Roll or Yaw trim actuator failed
ROTOR BRK FAIL	117	Rotor brake failure
SNSR DORMANT FAIL	124	Transmission and/or hydraulic system sensor failure
TGB OIL LOW	153	Tail gearbox oil low (only active on ground)
TGB OIL TEMP	157	Tail gearbox oil overtemp (> 114 °C)
TRIM FAIL	57	AP Trim system failed
1 TRU FAIL	78	Transformer rectifier unit 1 failed.
2 TRU FAIL	79	Transformer rectifier unit 2 failed.
1(2) TRU HOT	76	Transformer rectifier unit 1(2) overheat
VENT FAIL	127	Failure of crew and/or pax vent fan
1(2) WOW FAIL	124	Associated Weight On Wheels (WOW) switch failed

CAS Caption	Page	Failure/System State
XMSN CHIP	154	Transmission chip detected
XMSN CHIP FAIL	154	Transmission chip system failure
XMSN LARGE CHIP	154	Transmission large chip detected
XMSN OVTQ	153	Main gearbox overtorque

ADVISORY CAPTIONS DEFINITIONS

CAS Caption (Green)	System State
AC EXT PWR ON	AC external power ON
AC EXT PWR READY	External AC power connected
AEO TOP LIM	AEO limiter ON
AFT AIR COND ON	Cabin air conditioning selected ON
AFT VENT ON	Cabin vent fan selected ON
1(2) AMMC DBU READY	AMMC1 and 2 ready to be aligned
APU CRANK	APU CRANK switch selected
APU ON	APU selected ON
C/Y TRIM OFF	Collective and yaw trim system switched OFF
DC EXT PWR ON	External DC power ON
DC EXT PWR READY	External DC power connected
1(2) ENG A/ICE ON	Associated engine anti ice system selected ON
1(2) ENG A/ICE FULL	Associated engine and intake anti ice system selected ON
EVS NOT INSTALLED	Enhanced Vision System not installed
EXT LTS IR MODE	External lights infra-red mode selected
FUEL VENT VLV OPEN	Pressure refuel valve open with pressure refueling selected OFF
FUEL XFEED	Fuel cross feed open
FUNCTION UNAVL	An AFCS MODE requested but not available or not installed
FWD AIR COND ON	Cockpit air conditioning selected ON
FWD VENT ON	Cockpit vent fan ON
HEATER ON	Heating system switched ON
ICS BKUP/EMER MODE	Intercom system in backup/emergency mode
LDG EMER DOWN	Landing gear lowered using emergency down system
LH LDG LT ON	Left hand landing light switched ON

CAUTION MSGs

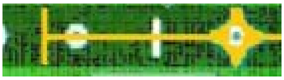
CAS Caption (Green)	System State
LOW HEIGHT INHIBIT	150 ft low height aural warning inhibited
OEI MCP LIM	OEI MCP limiter ON
PARK BRK ON	Park brake ON
1(2) PITOT HEAT ON	Pitot heating ON
P/R TRIM OFF	Cyclic force trim switched OFF
REFUEL SWITCH ON	Pressure refuel switch on operator panel selected ON
RH LDG LT ON	Right hand landing light switched ON
ROTOR BRK ON	Rotor brake selected on and pressurized
SVS NOT INSTALLED	Synthetic Vision System not installed

CAS Caption (White)	System State
BUS TIE CLOSED	BUS TIE closed
ECDU ALERT	ECDU scratch pad has messages
ENG A/ICE OFF	OAT less than 5 °C and engine anti icing not selected to FULL
LH LDG LT EXTD	Left hand landing light extended
RH LDG LT EXTD	Right hand landing light extended
MAINTENANCE	(Caption only active on ground) Informs maintenance crew to interrogate maintenance system. No pilot action

TABLE OF PFD AND MFD MESSAGES

CAUTION MSGs

Message	Page	Failure/System State
'HDG' on attitude indicator	144A	Miscompare between AHRS 1 & 2 for Heading information (±10° heading)
'HT LOSS' on PFD	146	AFCS Low height protection system not functioning
'IAS' on airspeed tape	144	Miscompare between ADS 1 & 2 airspeed information (±20 kts).
LOC lateral deviation scale crossed	149	Loss of valid LOC lateral deviation data
'LOC/GS' on PFD	147	Miscompare between navigation LOC/ GS information from FMS sources
'LG/VG' on PFD	148	Miscompare between navigation Lateral Guidance and Vertical Guidance information from FMS sources
MAG	139	TRU selected on MCDU and MAGnetic VARiation from AMMC invalid
'LOW HT' on PFD	145	AFCS Low height protection active
'NR' on NR scale	143	NR miscompare between EECU 1 & 2
'OAT ' on PFD	134	Amber text = OAT sensor failure
	147	Black text = OAT sensor miscompare
'OEI' on side of PI, TQ, ITT, NG indications	142	Associated engine failed
'PITCH' on attitude indicator	143	Miscompare between AHRS 1 & 2 for Pitch information (±5° in pitch)
'PWR LIM' on PFD	146	AFCS collective safety function (power/ autorotation) protection system active
'PWR LOSS' on PFD	147	AFCS collective safety function (power/ autorotation) protection system not functioning
RA on RAD ALT display	144	Miscompare between RAD ALT 1 & 2 altitude information
RA 1(2) on RAD ALT display	134	RAD ALT failure, reconfiguration to functioning system
'RAIM' on PFD	152	GPS performance integrity insufficient
'REV' on PFD	139	Display unit in reversion
'ROLL' on attitude indicator	143	Miscompare between AHRS 1 & 2 for Roll information (±5° in roll)
'UCPL' on PFD	146	Collective mode uncoupled due to transition to OEI and power above OEI MCP
'VNE' on airspeed tape	144	Miscompare between ADS 1 & 2 VNE information (±7 kts)
'VS' on vertical speed tape	143	Miscompare between AHRS 1 & 2 vertical speed information (±200 ft/min)

Message	Page	Failure/System State
◁ **or** ▷	67	Display Control Panel failure
Lateral Deviation Winglets 	151	During APP either: XTK > RNP or EPU > RNP

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AUTOMATIC FLIGHT CONTROL SYSTEM

AUTOPILOT FAIL

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

Associated autopilot failure

On affected AP channel
- Re-engage AP on AFCS panel

If caution extinguishes

- Continue flight

If caution remains

- Disengage AFCS upper modes except during ILS coupled approach
- Continue flight attentive reducing speed to 110 KIAS
- Below 500 ft AGL fly manually

If subsequent **1-2 AP FAIL** cautions illuminate + Aural Message 'AUTOPILOT AUTOPILOT'

- Continue flight manually not exceeding 140 KIAS or Vne-20 KIAS, if lower

END

AUTOPILOT OFF

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

Associate AP not switched on

On affected AP
- Engage channel on AFCS panel

If fault remains

- Disengage AFCS upper modes except during ILS coupled approach
- Continue flight attentive reducing speed to 110 KIAS
- Below 500 ft AGL fly manually

If subsequent **2(1) AP FAIL** or **1-2 AP FAIL** cautions illuminate

- Continue flight manually not exceeding 140 KIAS or Vne-20 KIAS if lower

END

AUTOPILOT AXIS FAILURE

1(2) AP P(R) FAIL

+ Aural Message
'AUTOPILOT AUTOPILOT'

Pitch (Roll) axis single series actuator failed

- Disengage AFCS upper modes except during ILS coupled approach
- Continue flight attentive
  Reduce speed to 110 KIAS
- Below 500 ft AGL fly manually

END

YAW AUTOPILOT FAILURE

1(2) AP Y FAIL

Yaw axis single channel failed

- Disengage AFCS upper modes except during ILS coupled approach
- Continue flight attentive
- Reduce speed to 110 KIAS
- Below 500 ft AGL fly manually

END

ATTITUDE SYSTEM OFF

ATT OFF

ATT mode not engaged or not available in either pitch or roll due to fault.

- Engage ATT mode by pushing ATT button on cyclic

If ATT hold not available

- Continue flight manually not exceeding 140 KIAS or Vne-20 KIAS if lower

END

MISTRIM

MISTRIM

Series actuators(s) not centered

- 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.

END

AFCS TRIM FAILURE

TRIM FAIL

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

- Dis-engage then re-engage AP 1

If caution remains

- Dis-engage then re-engage AP 2

If caution clears
Continue flight
Collective modes may be engaged

If caution remains
- Continue flight being aware that AFCS pitch, roll, yaw and collective trim and enhanced SCAS functions are unavailable
Any change of flight condition must be flown manually
- In turbulence condition reduce speed to 110 KIAS
Above 140 KIAS fly attentive ‘feet on’

If subsequent **MISTRIM** caution illuminates
see Page 57

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

END

PITCH, ROLL, YAW, COLLECTIVE TRIM FAIL

P(R)(Y)(C) TRIM FAIL

AFCS trim actuator drive in pitch (roll) (yaw) (collective) axis failed

- Dis-engage then re-engage AP 1

If caution remains

- Dis-engage then re-engage AP 2

If caution clears
Continue flight
Collective modes may be engaged

If caution remains
- Continue flight being aware that trim function in pitch (roll)(Enhanced SCAS)(yaw)(collective) is unavailable. Any change of flight conditon must be flown manualy

- Pitch Trim failure in turbulent conditions reduce speed to 110 KIAS
- Yaw Trim failure above 140 KIAS fly attentive ‘feet on’

If subsequent

MISTRIM

caution illuminates
see Page 57

Note
For Collective Trim failure AFCS Upper Modes on the collective axis will disengage and cannot be re-engaged

END

AFCS DEGRADED

AP DEGR

Loss of ADI Stby data

Attitude data misaligned with PFD values

Push ALN pushbutton on ADI Stby for at least 1 sec when aircraft has been in straight and level flight for more than 5 secs.

Attitude data lost

- Continue flight attentive reducing speed to 110 KIAS
- Below 500ft AGL fly manually

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

END

AFCS

AUTOPILOT HOT

1(2) AP HOT

Associate FCC temperature above limit

Continue flight
Be attentive to possible AP channel disengagement

If **1(2) AP FAIL** cautions illuminate an automatic AP channel 1(2) disengagement

+ Aural Message 'AUTOPILOT AUTOPILOT'

- Disengage upper modes except during ILS approach
- Continue flight attentive reducing speed to 110 KIAS
- Below 500 ft AGL fly manually

END

AFCS TEST FAILURE

1(2) AP TEST FAIL

Associated AP channel has failed the pre-flight test

- Repeat TEST ensuring flight controls are centered and free during the test

If caution remains

- Maintenance action

END

AFCS

AFCS TEST PARTIALLY COMPLETED

1(2) AP TEST DEGR

Associated AP channel was unable to carryout all the pre-flight tests

- Repeat TEST ensuring flight controls are centered and free during the test

If caution remains

Maintenance action

END

AUTOPILOT CAS FAILURE

AP CAS FAIL

AFCS CAS messages and audio attention getters unavailable

- Continue flight attentive reduce speed to 110 KIAS

Note

The AFCS system status may be monitored on the AFCS synoptic page.

END

AUTOPILOT CHANNEL FAILURE

1(2) AP MAINT

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

- Maintenance action before next flight

END

AUTOPILOT-AHRS FAILURE

AP AHRS 1(2) FAIL

The AFCS is not receiving information
from associated AHRS
Associated AP channel disengages

- Re-engage associated AP channel

If associated channel
cannot be re-engaged

- Disengage AFCS upper modes except during ILS approach
- Continue flight manually not exceeding 110 KIAS
- Below 500 ft AGL fly manually

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.

END

AFCS OSCILLATORY MALFUNCTION

Repeated disturbances in one or more axes

If disturbances severe press AP OFF pushbutton on cyclic to disengage AP

- Maximum speed 110 KIAS

- Engage AP1

If fault clears

- Continue flight attentive
- Below 500 ft AGL fly manually

If fault remains

- Disengage AP 1 and engage AP 2

- Continue flight attentive
- Below 500 ft AGL fly manually

END

CYCLIC FORCE TRIM FAIL OR OFF

Cyclic force trim switched OFF (e.g. via P/R PTR DECLUTCHED selection on ECDU AFCS page with P/R TRIM OFF advisory or due to longitudinal/ lateral Trim clutch loss) is indicated by the cyclic being free to move in longitudinal and/or lateral axis with loss of cyclic trim release (FTR switch) and cyclic beep trim functions. The ATT OFF caution and SAS mode annunciation on PFD may also be displayed.

The cyclic must be used hands-on to prevent it moving from its selected position.

CYCLIC FORCE TRIM RELEASE FAILURE

Cyclic force trim release failure (e.g. due to loss/fail of longitudinal/lateral trim clutch power supply) is indicated by the cyclic being maintained in a given position without any effect of cyclic trim release (FTR switch), or for P/R PTR DECLUTCHED (selection on ECDU AFCS page).

This will require the pilot to fly the aircraft manoeuvring the cyclic control against the force feel spring, or use the cyclic beep trim to modify trim position.

COLLECTIVE FORCE TRIM FAIL OR OFF

Collective force trim switched OFF (e.g. via C/Y PTR DECLUTCHED selection on ECDU AFCS page with C/Y TRIM OFF advisory or due to collective trim clutch loss) is indicated by the Collective being free to move with loss of collective trim release (FTR switch) and collective longitudinal beep trim functions.

The collective must be used hands-on; collective manual friction may be adjusted as required.

COLLECTIVE FORCE TRIM RELEASE FAILURE

Collective force trim release failure (e.g. due to loss/fail of collective trim clutch power supply) is indicated by the collective being maintained in a given position without any effect of collective trim release (FTR switch), or for C/Y PTR DECLUTCHED (selection on ECDU AFCS page).

This will require the pilot to fly the aircraft manoeuvring the collective against the force feel spring, or use the collective longitudinal beep trim to modify the trim position (only with collective upper mode engaged).

PEDALS FORCE TRIM FAIL OR OFF

Pedals force trim OFF (e.g. via C/Y PTR DECLUTCHED on ECDU AFCS page with C/Y TRIM OFF advisory or due to pedals trim clutch loss) indicated by the pedals being free to move with loss of pedal trim release (FTR switches) and collective lateral beep trim functions (at low speed).

Pedals must be used feet-on to control the yaw axis.

PEDALS FORCE TRIM RELEASE FAILURE

Pedals force trim release failure (e.g. due to loss/fail of pedals trim clutch power supply) is indicated by the Pedals being maintained in a given position without any effect of pedals trim release (FTR switch), or C/Y PTR DECLUTCHED(selection on ECDU AFCS page).

This will require the pilot to fly the aircraft manoeuvring pedals against force feel spring, or use the collective lateral beep trim to modify trim position (at low speed only).

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 PITCH FAIL (loss of N°1 series actuator) and a subsequent AP 2 FAIL would cause a complete loss of the AFCS pitch axis which would require the aircraft to be flown manually.

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

SECTION END

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AVIONIC SYSTEMS

PRIMARY AND MULTIFUNCTIONAL FLIGHT DISPLAY UNIT FAILURE

Loss of either PFD or MFD (black screens, red cross, intermittent image) will automatically configure the remaining display to Reversionary mode

- Continue flight using Reversionary mode

- Select associated RCP selector to the functioning display

(Switching to PFD, powers down MFD
Switching to MFD, powers down PFD)

If subsequent loss of MFD in Reversionary mode

If Left displays failed and Left pilot flying

- Right pilot take control of aircraft
  Continue flight

If Right Pilot displays failed and Right pilot flying

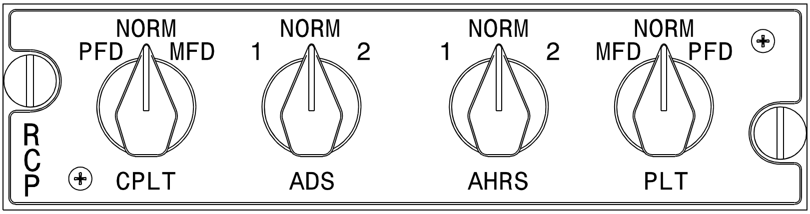
- Revert to Standby instrument

Land as soon as practicable

Note

When using Standby instrument the correct Vne must be determined from the Vne placard.

Reversion Control Panel



ICN-89-A-153000-A-00001-04121-A-001-01

END

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

and possible **1(2) AP OFF** + Aural message

Associated AHRS failure

If 1(2) AP OFF caution illuminated refer Page 55

- On RCP move AHRS switch to non failed AHRS

AHRS illuminates on attitude indicator to highlight both attitude indicators are using the same AHRS data

+

1(2) AP OFF
AP AHRS 1(2) FAIL CAS cautions illuminate

- Compare frequently PFD attitude and heading with STANDBY instruments

END

AVIONIC

ADS FAILURE

1(2) ADS FAIL +

and loss of:

- Airspeed
- Altitude
- PI indicator

Data on Left (Right) PFD indicators

Associated ADS system failure

- On RCP move ADS switch to non failed ADS

ADU illuminates on both attitude indicators to highlight air data indicators systems using the same data source

- Re-engage upper modes as required

Continue flight

- Compare frequently PFD data with STANDBY indicator

END

AVIOIC FAULT

AVIONIC FAULT

Loss of redundancy in avionic system

On ground

- Shut down aircraft for maintenance action

In flight

◁ **or** ▷

Replaces green arrow above attitude indicator on PFD

At least one DCP has failed

Continue flight using PFD bezel keys

Continue flight At least one CCD or RCP has failed

END

AVIONIC

AMMS CONFIGURATION FAILURE

AMMS CONFIG FAIL

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

Maintenance action required

END

AMMC FAILURE

1(2) AMMC FAIL

Associated AMMC failed
See NOTE 1

If 1(2) AMMC DBU READY advisory not displayed after 2 mins

Continue Flight
Be aware AMMC redundancy lost.
See NOTE 2

If 1(2) AMMC DBU READY advisory displayed

- Activate DBU on MCDU AMMS page
- Confirm caution clears

Continue Flight

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 MGB & 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).
Do NOT perform the DBU (DBU EXEC on MCDU) during SID, STAR Terminal procedure or during Approach.

END

AMMC DEGRADED

1(2) AMMC DEGR

Associated AMMC degraded

- Select 2(1) AMMC to MASTER on MCDU AMMS page (MCDU-MENU-AMMC)
  Be aware possible AMMC loss of redundancy

- Confirm AWG SHORT TEST functional (ECDU TEST page)

If AWG SHORT TEST functional

Continue flight

If AWG SHORT TEST not functional
Complete loss of aural warning system

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

END

NOSE AVIONIC FAN FAILURE

1(2) NOSE FAN FAIL

Nose bay cooling fan 1(2) failed

- Continue flight reduce cockpit ambient temperature if possible.
  Be aware that some avionic functions may be degraded or fail

END

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FLIGHT DATA RECORDER FAILURE

FDR FAIL

Flight Data Recorder partial or total failure

On ground

- Maintenance action

In flight

Continue flight

END

COCKPIT VOICE RECORDER FAILURE

CVR FAIL

Cockpit Flight Recorder failed

On ground

- Maintenance action

In flight

Continue flight

END

DOUBLE GPS FAILURE

1-2 GPS FAIL

Double GPS system failure and subsequent loss of RNAV/RNP operation capability

- Disengage HOV mode (if engaged)

RNAV/RNP operations

- 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

Note

RNP and FMS DGR amber messages are both displayed at the same time on the PFD.

END

GPS FAILURE

1(2) GPS FAIL

Associated GPS system failure

- Continue Flight
  Loss of GPS redundancy for
  RNAV/RNP operations

Note

FMS/GPS MSCP UNAVL caution messages also displayed.

END

FMS/GPS MISCOMPARE

FMS/GPS MSCP

Miscompare between FMS position
using priority GPS 1(2)
and the standby 2(1) GPS position data
and subsequent loss of RNAV/RNP operations
capability

RNAV/RNP
operations

- Revert to Radio Navigation,
  deselecting the FMS as
  Primary NAV source
- Notify ATC loss of RNAVRNP capability

All other
operations

Use radio navigation
procedures

Note

Be aware of possible inaccuracy in FMS or GPS position data.

END

FLIGHT PLAN MISCOMPARE

FPLN MSCP

Mismatch on FMS 1 and FMS 2 active flight plans displayed at CDS

- Do NOT use FMS as NAV source for navigation
- Revert to Radio Navigation, deselecting the FMS as Primary NAV source
- Notify ATC loss of RNAV/RNP capability

END

FMS/GPS MISCOMPARE UNAVAILABLE

FMS/GPS MSCP UNAVL

FMS/GPS miscompare function not available due to FMS or GPS data invalid

RNAV/RNP operations

- 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

Note

RNP and FMS DGR amber messages are both displayed at the same time on the PFD.

SECTION END

ELECTRICAL

ECDU CIRCUIT BREAKER RESET PROCEDURE

The tripping (TRIP) of an ECDU managed Circuit Breaker (CB) or a failure to recognise the CB status (FAIL) will be indicated by a 'NEW ALERT PENDING' for a single failue or '# AELRT PENDING' for multiple failure message on the ECDU Scratch pad.

A reset of a Tripped CB carry out the following procedure:

1. Press the ALRT button on the ECDU keypad to display the ALERT page.
2. Press button on the RH side of the relevant tripped CB.
3. Confirm the CB goes to OUT status.
4. Press, the button on the RH side relevant to tripped OUT CB.
5. Confirm the CB is removed from the page.
6. If the CB is not removed from the ALERT page then repeat step 3 to 5 again, if required.
7. If CB is not removed from the ALERT page then confirm that the CB goes to FAIL status. Further action for this CB is not possible.

Note
CB's can be reset a maximum of 2 times.

Note
A failed (FAIL) CB status, whether illuminated after a reset procedure or if causing the original ALERT message, cannot be reset.

END

DOUBLE AC GENERATOR FAILURE

1-2 AC GEN FAIL + **BUS TIE CLOSED**

Aircraft supplied by battery power only
Double ENG AC Generator failure (TRU 1-2 not supplied)

- Start APU

When APU STATUS light ON
- When 1 AMMC DBU READY advisory illuminated reset AMMC 1 (on MCDU MENU/AMMC/DBU - EXEC)
- TCAS select TA/RA
- XFEED on ECDU select OPEN then AUTO
- Land as soon as practicable

All DC NON ESS BUSes lost

If convenient and conditions permit:
- Select ELEC page on ECDU
- Select GEN 1 & 2 to OFF

- Select one AC GEN ON at a time

ELEC

1(2) AC GEN FAIL caption illuminates

AC generator back on line, Assume other AC Generator has failed, leave OFF

Continue Flight.
Confirm TRU LOAD is within limits

Cautions remain

- Selected both AC GEN OFF

Double ENG AC GEN/TRU failure confirmed
Loss of:
DC NON ESS BUS 1 & 2
See Note Page 16
If DC NON ESS 1 and/or 2 required, on ECDU ELEC page select NON ESS 1 and/or 2 to OVRD.

Note

Disregard 1(2) TRU FAIL caution that may momentarily illuminate when AC GEN comes on line.

Note

TRU loads should be monitored and equipment selected OFF to maintain load under 100%.

END

SINGLE AC GENERATOR FAILURE

1(2) AC GEN FAIL + **BUS TIE CLOSED**

Associated AC generator failure
and BUS TIE closed automatically

- Select ELEC page on ECDU

On failed generator
- Select OFF then ON

If cautions remains
- Select OFF associated generator
- Start APU

- Continue flight

Note

When AC power has been restored, if 1(2) INTAKE FAIL caution is illuminated select associated ENG A/ICE-INTAKE switch from FULL to ENG A/ICE then back to FULL to re-activate intake anti icing.

END

AC GENERATOR OVERHEAT

1(2) AC GEN HOT

Associated AC generator overheat

- Select ELEC page on E-DU

On affected AC generator
- Select OFF
- Start APU

- Continue flight

END

AC GENERATOR GCU FAILURE

1(2) GCU FAIL

Associated AC generator control unit failure

- Select ELEC page on ECDU

On failed GCU generator
- Select OFF then ON

If cautions remains
- Select OFF associated generator
- Start APU

- Continue flight

CAUTION

Subsequent engine cross start prhibited

END

SINGLE TRU OVERHEAT

1(2) TRU HOT

Associated Transformer Rectifier Unit overheat

- Select ELEC page on ECDU

On failed TRU
- Select OFF

BUS TIE CLOSED
message illuminates)

- START APU

Continue flight
Power is supplied by remaining TRU
Confirm TRU LOAD is within limits

END

ELEC

TRANSFORMER RECTIFIER UNIT 1 AND/OR DC POWER DISTRIBUTION PANEL 1 FAILURE

1 TRU FAIL

If **MAIN BATT OFF** +

1 EMER BUS FAIL

caution message illuminated

DC PDU 1 fault detected

- Select ELEC page on ECDU

- Select BUS TIE reset

If all caution remain

- Select 1 TRU OFF

Continue flight
Services lost:
DC EMER BUS 1
ESS BUS 1
DC MAIN BUS 1
DC NON ESS BUS 1 & 2
(See EMERG ELEC
Page 14 15, 16
for services lost)

If **BUS TIE CLOSED**

status message illuminated BUS TIE closed automatically

Associated transformer rectifier unit failure

- Select ELEC page on ECDU

- Select 1 TRU OFF then ON

If cautions remains
- Select 1 TRU OFF
- START APU

Continue flight
Power is supplied by remaining TRU
Confirm TRU LOAD is within limits

CONTINUED ON NEXT PAGE

ELEC

TRU 1 AND/OR DC POWER DISTRIBUTION PANEL 1 FAILURE (CONTINUED)

CONTINUED FROM PREVIOUS PAGE

If **1 TRU** caution extinguishes and **MAIN BATT OFF** + **1 EMER BUS FAIL** cautions remain illuminated

- Select MAIN BATT switch OFF on EPGDS panel

Continue flight
Services lost:
DC EMER BUS 1
ESS BUS 1
(See EMERG ELEC Page 14 15 for services lost)

If **1 TRU** caution remains illuminated and **MAIN BATT OFF** + **1 EMER BUS FAIL** extinguish

- Select ELEC page on ECDU
- Select TRU 1 OFF

Continue flight
power is supplied by remaining TRU.
Services lost:
DC MAIN BUS 1
DC NON ESS BUS 1 & 2
(See EMERG ELEC Page 16 for services lost)

END

ELEC

TRANSFORMER RECTIFIER UNIT 2 AND/OR DC POWER DISTRIBUTION PANEL 2 FAILURE

2 TRU FAIL

If **2 EMER BUS FAIL** caution message illuminated + if AUX BATT installed

AUX BATT OFF

DC power distribution panel 2 fault detected

- Select ELEC page on ECDU

- Select BUS TIE reset

If cautions remain

- Select 2 TRU OFF

Continue flight
Services lost:
DC EMER BUS 2
ESS BUS 2
DC MAIN BUS 2
DC NON ESS BUS 1 & 2
(See EMERG ELEC
Page 14 15, 16
for services lost)

If **BUS TIE CLOSED** status message illuminated BUS TIE closed automatically

Associated transformer rectifier unit failure

- Select ELEC page on ECDU

- Select 2 TRU OFF then ON

If caution remains
- Select 2 TRU OFF

- START APU
Continue flight
Power is supplied by remaining TRU.
Confirm TRU LOAD is within limits

CONTINUED ON NEXT PAGE

TRU 2 AND/OR DC POWER DISTRIBUTION PANEL 2 FAILURE (CONTINUED)

CONTINUED FROM PREVIOUS PAGE

If **2 TRU** caution extinguishes and **2 EMER BUS FAIL** + if AUX BATT installed **AUX BATT OFF** cautions remain illuminated

- Select AUX BATT switch OFF (if installed) on EPGDS panel

Continue flight
Services lost:
DC EMER BUS 2
ESS BUS 2
(See EMERG ELEC Page 14, 15 for services lost)

If **2 TRU** caution remains illuminated and **2 EMER BUS FAIL** + if AUX BATT installed **AUX BATT OFF** extinguishes

- Select ELEC page on ECDU

- Select 2 TRU OFF
- START APU

Continue flight
power is supplied by remaining generator.
Services lost:
DC MAIN BUS 2
DC NON ESS BUS 1 & 2
(See EMERG ELEC Page 15 for services lost)

END

ELEC

MAIN BATTERY OFF

MAIN BATT OFF

Failure of MAIN battery to MAIN BUS 1

- On EGPDS PNL confirm BATTERY MAIN switch ON

Continue flight being aware MAIN BATTery not being charged

END

AUXILIARY BATTERY OFF (IF INSTALLED)

AUX BATT OFF

Failure of AUX battery to MAIN BUS 2

- On EGPDS PNL confirm BATTERY AUX switch ON

Continue flight being aware AUX BATTERY not being charged

END

EMERGENCY BUS 1 FAILURE

1 EMER BUS FAIL + associated

1 FIRE DET

1 AP P FAIL

1 AP R FAIL

+ Aural message

EMER BUS 1 and associated services lost

- Reduce speed to 110 KIAS and fly attentive

Land as soon as practicable (See EMER ELEC Page 14 for services lost)

END

EMERGENCY BUS 2 FAILURE

2 EMER BUS FAIL + associated **2 FIRE DET** **2 AP P FAIL** **2 AP R FAIL** **AVIONIC FAULT** **2 ADS FAIL**

+ Aural message

EMER BUS 2 and
associated services lost

- Reduce speed to 110 KIAS
  and fly attentive

Land as soon as practicable
(See EMER ELEC Page 14
for services lost)

END

APU GENERATOR FAILURE

ELEC

APU GEN FAIL

Failure of APU AC generator

If cautions remains
- Select APU OFF

Land as soon as practicable
APU GEN not available

END

APU TRU CAUTION

APU TRU FAIL

APU TRU failed with
APU generator ON

Continue flight
Loss of redundancy
on DC Busses

END

APU GENERATOR OVERLOAD

APU GEN OVERLOAD

APU AC generator overload

- Reduce generator load

If cautions remains
- Switch APU OFF

Land as soon as practicable
APU GEN not available

END

APU TRANSFORMER RECTIFIER UNIT HOT

APU TRU HOT

APU TRU over temperature

If cautions remains
- Switch APU OFF

Land as soon as practicable
APU GEN not available

END

MAIN BATTERY OVERHEAT

MAIN BATT HOT

Main battery temperature exceeding limits

- Switch MAIN BATT OFF on EPGDS PNL

MAIN BATT OFF caution illuminates

Continue flight
Main battery not being charged

END

AUXILIARY BATTERY OVERHEAT (IF INSTALLED)

AUX BATT HOT

Auxiliary battery temperature exceeding limits

- Switch BATT AUX OFF on EPGDS PNL

AUX BATT OFF caution illuminates

Continue flight
Auxiliary battery not being charged

END

ELECTRICAL CONTROL DISPLAY UNIT DEGRADED

ECDU DEGR

Elecrical control display unit
loss of redundancy

On Ground

- Shutdown aircraft
  for maintenance action

In Flight

Continue flight

END

ELECTRICAL CONTROL DISPLAY UNIT FAILURE

ECDU FAIL

Elecrical control display unit
failure, loss of ECDU screen data

- Check ECDU displays

On Ground

- Shutdown aircraft
  for maintenance action

In Flight

If at least one
display servicable

Land as soon as practicable

If both displays
unservicable

Land as soon as possible

SECTION END

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ENGINE MALFUNCTIONS

COMPRESSOR STALL

If compressor stall occurs, carry out the following procedure.

- Lower collective if possible
- Achieve safe OEI flight

- Monitor engine parameters on MFD for abnormal indications

If indications still abnormal

- ENG MODE switch, on stalled engine, select IDLE

If ITT decreases, NG stabilizes and other abnormal indications clear

- ENG MODE switch select FLT

If engine responds normally

- Continue flight

If engine responds abnormally

On affected engine
- Carry out ENGINE SHUT DOWN IN AN EMERGENCY procedure Page 26
- Start APU
- Land as soon as practicable Refer to Single Engine Procedure Page 159

If stall does not clear and ITT continues to rise

On affected engine
- Carry out ENGINE SHUT DOWN IN AN EMERGENCY procedure Page 26
- Start APU
- Land as soon as practicable Refer to Single Engine Procedure Page 159

If parameters within limits and engine responds normally

Continue flight

END

UNUSUAL ENGINE NOISE

If an unusual noise is detected and FOD damage suspected:

1. Switch ENG MODE to IDLE sequentially to determine the affected engine
2. Shutdown as soon as practicable to avoid possible secondary compressor damage.
3. Land as soon as practicable, refer to Single Engine Procedure Page 159.

END

ENGINE POWER TURBINE OVERSPEED

1(2) ENG OVSP

Associated engine in overspeed condition

- Check PI and NF

If PI on both engines fluctuating and NF approx 119% on affected engine probable 'run up' has occured. Engine run down and relight with possible engine power cycling occuring

- Achieve safe OEI flight
- Identify engine in overspeed condition (CAS caution message)

If NF approx 119% and/or TQ 0% the drive shaft has failed on affected engine

- Achieve safe OEI flight

On affected engine:

- Carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26

- Start APU

- Land as soon as practicable Refer to Single Engine Procedure Page 159

Note
Following engine drive shaft failure, NF may overspeed and reach the NF overspeed trip point (119%).

END

ENGINE LIMIT EXCEEDANCE

1(2) ENG LIM EXPIRE

Associated engine is within 10 seconds of exceeded the OEI 2.5 minute time rating

- Reduce power to below the OEI 2.5 minute rating (142% PI on PFD) (968 °C ITT) 102.7%NG on MFD) to extinguish caution

- Select OEI SEL pushbutton on collective, if required

END

ENGINE POWER TURBINE OVERSPEED SYSTEM FAILURE

1(2) OVSP TEST FAIL

Associated engine NF overspeed protection system failed self test during start or shutdown

- Shut down affected engine

- A maximum of 2 engine starts may be attempted to clear caution

If caution remains

- Shut down for maintenance action

If caution extinguished

Continue flight

END

ENG/APU

ENGINE OIL TEMPERATURE

1(2) ENG OIL TEMP

Associated engine oil temperature high (greater than 132 °C)

On affected engine
- Confirm oil temperature

If oil temperature below 150 °C

- Continue flight monitoring engine oil pressure and temperature

If oil temperature greater than 150 °C

- Achieve safe OEI flight
- Start APU

On affected engine
- Select ENG MODE to IDLE
- Monitor temperature and pressure and ENG OIL CHIP indications

If engine oil Temp indications high but other engine parameters normal the engine may be selected to FLT for landing

If engine indications abnormal
- Shut down engine using ENGINE SHUT DOWN IN EMERGENCY procedure Page 26

Land as soon as practicable
Refer to Single Engine Procedure Page 159

END

ENG/APU

ENGINE OIL PRESSURE HIGH

1(2) ENG OIL P HIGH

Engine oil pressure above limit

On affected engine
- Monitor engine parameters

If oil pressure remains in amber during cold start leave at IDLE to warm oil

Continue flight

If oil pressure remains above 6.0 Bar, engine parameters erratic, or chip detect caution illuminates

- Achieve safe OEI flight

On affected engine
- Select ENG MODE to IDLE

If caution extinguishes

On affected engine
- Select ENG MODE to FLT

Continue flight

If caution iluminates
On affected engine
- Select ENG MODE to IDLE

If caution remains

- Start APU

On affected engine
- Carry out ENGINE SHUT DOWN IN AN EMERGENCY procedure Page 26

Land as soon as practicable
Refer to Single Engine Procedure Page 159

END

ENGINE OIL FILTER

1(2) ENG OIL FILTER

Associated engine oil filter clogged and in bypass

- Check oil temperature and pressure

If oil temperature and pressure changes or ENG OIL CHIP caution illuminates

- Achieve safe OEI flight
- Start APU
- Shut down engine using ENGINE SHUT DOWN IN EMERGENCY procedure Page 26

Land as soon as practicable
Refer to Single Engine Procedure Page 159

If oil temperature and pressure indications normal or appears during cold engine start until engine warms

- Continue flight

Note
When flight conditions permit cycling the associated ENG MODE switch from FLIGHT - IDLE - FLIGHT may have the effect of clearing the caution.

END

ENGINE ELECTRONIC CONTROL UNIT DEGRADED

1(2) EECU DEGR

Associated engine control loss of redundancy
Engine parameter display may be lost.

On ground

- Shutdown aircraft for maintenance action

In flight

Land as soon as practicable

END

ENG/APU

ENGINE OIL CHIP DETECTOR

1(2) ENG OIL CHIP

- Achieve safe OEI flight

On affected engine
- Select ENG MODE to IDLE
- Start APU

If engine indications stable at IDLE

- Land as soon as practicable
If required, and ENG oil pressure and temperatures normal ENG MODE may be selected to FLT for landing

If any of the following occur:
- engine speed starts to decrease
- engine vibration increases
- engine oil pressure/temperature changes significantly

On affected engine
- Carry out ENGINE SHUTDOWN IN EMERGENCY procedure Page 26

- Land as soon as practicable
Refer to Single Engine Procedure Page 159

END

ENGINE FIRE DETECTOR SYSTEM

1(2) FIRE DET

Associated engine fire detect system not operational

On affected engine:
- Monitor engine parameters for abnormalities and check for signs of fire (Fin Camera, ECDU-MENU-MISC, may be helpful in determining if fire present)

If fire suspected

Refer to ENGINE BAY FIRE (FLIGHT) Page 30

If all parameters normal and no signs of fire

Land as soon as practicable

END

ENGINE POWER LIMITED

1(2) ENG PWR LIM

Associated engine operation degraded, possible limited power

Land as soon as practicable
Be aware that maximum power may be limited on affected engine

END

ENGINE VG STUCK

1(2) ENG VG STUCK + **1(2) ENG PWR LIM**

Associated engine operation degraded and in reversionary mode due to engine inlet guide vane electrical or hydro mechanical fault.

- Collective:
  - control and avoid abrupt movements
  - disengage upper modes if required

Expect NR fluctuation with torque split
- Minimum PI on unaffected engine 10%
- AFCS upper modes as required

- Land as soon as practicable

Note

The affected engine may remain stuck at a high or low power setting depending on power at the time of failure.
Consider shutting down affected engine for landing.

Note

Selecting the affected ENG MODE switch to IDLE has no effect.

END

ENGINE SLOW RESPONSE

1(2) ENG SLOW RESP

Associated engine operation degraded. Possible slow engine response

Land as soon as practicable
Be aware that engine acceleration may be reduced. Engine torque sharing may not be functional. Avoid rapid collective changes

END

ENGINE FIRE BOTTLE LOW PRESSURE

1(2) FIRE BTL LOW P

Associated engine fire bottle pressure low

On Ground

- Shut down for maintenance action

In Flight

Land As Soon As Practicable

END

ENGINE ELECTRONIC CONTROL UNIT OVERHEAT

1(2) EECU OVERHEAT

Associated engine internal EECU temperature limit exceeded, possible EECU failure may occur

Continue flight
Monitor associated engine parameters

If engine control problems encountered or **1(2) ENG GOV LOSS** warning illuminates

- Refer to Engine EEC Fail Procedure Page 19

If engine operates satisfactorily

Continue flight

END

DEGRADATION OF ENGINE CONTROL FUNCTIONS

1(2) EECU DATA

EECU data not being received by display

- Check engine parameter display for missing data.
  If NG and/or NR data invalid select ANALOGUE parameters from MFD PWR PLANT page

If parameter display unsatisfactory

Land as soon as practicable

If parameter display satisfactory

Continue flight

END

EECU MAINTENANCE

1(2) EECU MAINT

Associated engine control unit fault detected

On ground

- Shutdown aircraft for maintenance action

In flight

Land as soon as practicable

Note

1(2) EECU MAINT caution may illuminate temporarily with the aircraft light on wheels or during slope operations.

END

ENGINE HOT START

1(2) HOT START

Associated engine ITT limits exceeded during start

On ground

Engine automatically shuts down

On affected engine:
- ENG MODE select OFF
- Fuel ENG SOV select CLSD
- FUEL PUMP select OFF

- Shut down aircraft

Note

1 FUEL PUMP will not select OFF, if APU running, or will be automatically selected ON if APU started.

In flight

- Maintain safe OEI flight

- A maximum of 2 engine starts may be attempted

If restart not successful
On affected engine:
- ENG MODE select OFF
- Fuel ENG SOV select CLSD
- FUEL PUMP select OFF

Land as soon as practicable
Refer to Single Engine Procedure Page 159

CAUTION

When the engine is started to IDLE mode on ground a hot start preventor automatically limits the ITT to 953 °C, however, when started to FLT or the aircraft is in flight this preventor is deactivated. For this situation a HOT START caution indicates the ITT start limit has been exceeded and the engine start must be aborted by the pilot.

END

FUEL FILTER BY-PASS

1(2) FUEL FILTER

Fuel filter blockage, impending bypass condition

Affected engine
- Monitor engine parameters for possible reduction in power available or potential flameout
- Consider starting APU

Land as soon as practicable

END

ENGINE ANTI ICING CAUTION

1(2) ENG A/ICE FAIL

Associated engine anti ice bleed valve closed with ENG ANTI ICE switch selected to A/ICE or FULL

Continue flight,
Avoid flight in visible moisture with OAT
5 °C or below

END

AIR INTAKE HEATER FAILURE

1(2) INTAKE FAIL

Associated engine heated air intake failure

Continue flight,
Avoid flight in visible moisture with OAT
5 °C or below

Note

When convenient select associated ENG ANTI-A/ICE-INTAKE switch to A/ICE only.

Note

An INTAKE FAIL caution will illuminate if the system is selected ON and the engine NG is below 79%

END

ENGINE NG MISCOMPARE

1(2) NG MISCOMPARE

Associated NG parameter EECU and analogue backup data comparison discrepancy (3% NG)

Continue flight

- Confirm correct value with analogue backup parameter

Note

The NG analogue sensors are selected from MFD PWR PLANT page, menu selection using Cursor Control Device.

END

ENGINE PANEL FAILURE

ENG PANEL FAIL

Engine mode select panel failure.

Continue flight

Do not use ENG TRG pushbuttons or LOAD SHARE switch

When on ground carry out normal shut down

If ENG MODE switches do not shut down engines use ENG FIRE PANEL FIRE/ARM pushbutton or FUEL ENG SOV CLSD on ECDU panel

END

APU MALFUNCTIONS

If, after carrying out the APU start procedure, the ON message does not illuminate and the READY message remains illuminated carry out the following APU reset procedure:

APU RESET PROCEDURE

1. BATT MASTER switch — Select OFF
2. APU SEL MODE switch — Select OFF
3. BATT MASTER switch — Wait a minimum of 30 secs then select ON
4. Carry out normal APU start procedure.

APU FAILS MESSAGE ON APU PANEL

If APU FAIL message illuminates on the APU PNL, during start on ground with battery power, carry out APU reset procedure as detailed above.

END

APU DEGRADED

APU DEGR

APU operating in a degraded mode

On Ground

- APU OFF
  Maintenance action

In Flight

- APU OFF
  Land as soon as practicable

END

ENG/APU

APU FAILURE

FAIL message on + APU PNL **APU FAIL**

APU failure and possible automatic shut down

If APU does not shut down

Leave APU ON

> **Note**
>
> APU re-start may not be possible once the APU has been shutdown

If APU shuts down

When APU RPM less than 6% (ENGINE SYSTEM synoptic page)

Carry out APU Reset procedure on Page 100

If FAIL message extinguishes
- Select APU SEL ON
- Ensure APU FUEL pressure positive
  (If FUEL PUMP 1 in FAIL select FUEL PUMP 2 ON and XFEED OPEN

- Attempt normal start procedure

If message remains or start fails:
APU not available

On ground

Maintenance action

In flight

Land as soon as practicable

END

APU OIL CHIP DETECTOR

APU CHIP

APU chip detected

On Ground
Automatic APU shutdown

Maintenance action

In Flight

- Continue, monitor for APU OIL LOW PRESS caution

- Shut down APU at the earliest opportunity. If APU OIL LOW PRESS caution illuminates shut down APU immediately

Land as soon as practicable

END

APU FIRE BOTTLE PRESSURE LOW

APU FIRE BTL LOW P

APU fire bottle pressure low extinguishing capability not guaranteed

On Ground

- Shut down for maintenance action

In Flight

Land as soon as practicable

END

APU FIRE DETECTOR SYSTEM FAILURE

APU FIRE DET

APU fire detector system failure

On Ground

- Shut down for maintenance action

In Flight

- Land as soon
- as practicable

END

APU FUEL FILTER BLOCKED

APU FUEL FILTER

APU fuel filter blocked and in impending bypass condition

On Ground

- Shut down for maintenance action

In Flight

Continue flight,

Note

Be aware APU may not give maximum power or may fail

END

APU OIL LEVEL LOW

APU OIL LEVEL

APU oil level low
(displayed on ground only)

APU start inhibited,
maintenance action

END

APU OIL PRESSURE LOW

APU OIL LOW PRESS

APU oil pressure low

On Ground

- APU OFF

In Flight

- APU OFF
  Land as soon as practicable

END

APU BLEED VALVE OPEN

APU VALVE OPEN

APU fuel valve open with APU shut down

On Ground

- Shut down for maintenance action

In Flight

Continue flight.

END

ENG/APU

ENGINE RESTART PROCEDURE AFTER EMERGENCY SHUTDOWN

ON GROUND

Whenever the engine is shut down without a 2 minute cooling period at GI, or 2 minutes with NG below 90%, this is considered and emergency shut down and one of the following procedures must be followed:

A. If and engine restart is required restart the engine using the normal start procedure, below, within 5 minutes of the shut down (provided the reason for the emergency shutdown is known and restart will not cause engine damage).

On associated engine

1. ENG FIRE EXT guard — Confirm not pressed and not illuminated.
2. FUEL PUMP switch — ON - No 1 FUEL PUMP caution displayed, check pressure.
3. FUEL ENG SOV — OPEN - Fuel valve indicator bar vertical.
4. Engine temperature (ITT) — Confirm less than 150 °C.

Note

If ITT is above 150 °C motor engine, by selecting ENG MODE to CRANK to reduce ITT to below 150 °C.

5. ENG MODE switch — IDLE.(when ITT below 150 °C and NG less than 15%).

Note

If engine cranked to reduce ITT to below 150 °C then start acceptable with ITT below 175 °C.

6. Gas Producer (NG) — Note increasing and START legend displayed.
7. Engine temperature (ITT) — Note increasing and IGN legend displayed.
8. Engine oil pressure — Confirm rising.
9. Engine starter — Disengaged by 52% NG.

After a successful start the engine should carry out a normal engine shut down with a 2 minute cooling period with the ENG MODE switch selected to IDLE or 2 minutes with the NG less than 90%.

B. If an engine restart is required but cannot be made within 5 minutes of the emergency shut down the engine must be allowed to cool for at least 4 hours before starting.

END

ENG/APU

ENGINE IN FLIGHT RESTART 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.
If restart procedure fails go to **Single Engine Procedure** Page 159.

STARTING MALFUNCTIONS AND ASSOCIATED ABORT ACTIONS

Monitor engine start and if any of the following occur:

— light up is not within 18 seconds of NG initial indications.

— abnormal noise heard

— ITT increases beyond engine limits (HOT START caution illuminated) **Note.** Hot Start Preventor is deactivated in flight.

— engine hangs (stagnation in NG below idle value)

— engine starter fails to disengage by 52% NG

— no oil pressure indications after 30 seconds from engine starter activation

Shut down engine by:

1. ENG MODE switch — OFF
2. FUEL ENG SOV — CLSD
3. FUEL PUMP — OFF

CAUTION

Failure to follow the appropriate Abort Procedure may cause damage to the engine.

RESTARTING PROCEDURE

1. APU — Start APU (if OFF)
2. Airspeed — Less than 120 KIAS
3. ENG FIRE EXT guard — Confirm not pressed and not illuminated
4. FUEL PUMP — ON
5. Fuel ENG SOV — OPEN
6. ENG ITT — Confirm less than 150 °C
7. ENG MODE switch — IDLE when ITT < 150 °C and NG ≤15% (175 °C after cranking)
8. NG — Increasing, START legend displayed
9. ITT — Increasing (in flight IGN legend is obscured by the OEI legend)
10. Engine oil pressure — Rising
11. Engine starter — Disengaged by 52% NG.
12. NF — Stabilized to IDLE or 100%
13. ENG MODE switch — FLT or as required
14. Engine parameters — Confirm
15. APU — As required.

SECTION END

ENG/APU

FUEL SYSTEM (FUEL)

ABNORMAL FUEL CONSUMPTION

Monitor fuel quantity frequently. 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

END

FUEL LOW

1(2) FUEL LOW

On affected tank fuel contents below 58 kg

- Check fuel contents and XFEED if required (see Note)

Land as soon as practicable (see Note)

Note

The following remaining flight times on associated engine are applicable, on illumination of the caution, if the XFEED is closed or if the XFEED is open with both fuel pumps ON:

TQ value (%)	Time (minutes)
50	20
70	16
100	12
112	11

If XFEED is open, both fuel pumps are ON and one tank has emptied, the 2 engines are supplied from remaining tank.
Be aware that in this condition the times above are not valid and will be reduced.

END

FUEL LOW SENSOR FAILURE

1(2) FUEL LOW FAIL

Associated fuel low sensor failure

Continue flight

On affected system
- Monitor fuel quantity, low level caution inoperative

END

FUEL PRESSURE 1 LOW

1 FUEL PUMP

1 Fuel pressure low (less than 0.3 bar)

- Confirm XFEED opens automatically (FUEL XFEED advisory displayed)
- Select APU MODE switch to ON (APU VALVE OPEN caution illuminates)

If fuel pressure not recovered.

Possible fuel leak,
- Close FUEL XFEED
- Select PUMP 1 OFF
- Select APU MODE to OFF

Continue flight

- Be attentive for signs of fuel leak or engine loss of power.

If fuel pressure recovered and caution extinguishes

- Continue flight

If fuel pressure recovered and caution does not extinguish

- Select PUMP 1 OFF
- Select APU MODE to OFF

Continue flight
See CAUTION on Page 109

END

FUEL

FUEL PRESSURE 2 LOW

2 FUEL PUMP

2 Fuel pressure low (less than 0.3 bar)

- Confirm XFEED opens automatically
  (FUEL XFEED advisory displayed)
- Select PUMP 2 OFF
- Select APU MODE to ON
  (APU VALVE OPEN caution illuminates)

If fuel pressure not recovered.

Possible fuel leak,
- Close FUEL XFEED

Continue flight

- Be attentive for signs of fuel leak or engine loss of power.

If fuel pressure recovered.

Continue flight

CAUTION

When cross feeding, the tank with pump off, NOT supplying the engines, will have a maximum quantity of unusable fuel of 283 kg. This unusable fuel level value will change to grey to indicate the tank can no longer supply fuel.
Close X-FEED to restore the availability of up to 283 kg of fuel (fuel level value returns to green). Engine operation, in suction mode, is assure and FUEL pressure is invalid displaying 0 or amber dashed. Avoid abrupt aircraft manoeuvres.

END

FUEL

DOUBLE FUEL PUMP FAILURE

1-2 FUEL PUMP

Fuel pressure low (less than 0.3 bar)
in both fuel systems

- Select APU MODE to ON
  (APU VALVE OPEN caution illuminates)

If **2 FUEL PUMP** caution remains illuminated
(Fuel pump 1 supplied
by DC EMER bus)

- Confirm XFEED opens automatically
  (XFEED advisory illuminated)
- Select PUMP 2 OFF

Continue flight

If caution remains

- Select XFEED CLSD
- Select PUMP 1 & 2 OFF
- Select APU MODE OFF

Land as soon as practicable

CAUTION

The APU is not available after a double FUEL PUMP failure.

CAUTION

Engine operation, in suction mode, is assured and FUEL pressure is invalid displaying amber ‘0’ or dashed. The maximum quantity of unusable fuel in sunction mode is 190 kg (95 kg Tank 1 / 95 kg Tank 2). Avoid abrupt aircraft manoeuvres.

END

FUEL PUMPS FAILURE (SUPP 22 EXTENDED RANGE ONLY)

1-2 FUEL PUMP

Fuel pressure low (less than 0.3 bar)
in both fuel systems due to
failure of the four booster pumps

Land as soon as practicable

CAUTION

Engine operation, in suction mode, is assured and FUEL pressure is invalid displaying amber ‘0’ or dashed.
Avoid abrupt air-craft manoeuvres.

END

FUEL PROBE FAILURE

1(2) FUEL PROBE

Associated main tank fuel probe failure with possible degradation or erratic fuel contents indication

Continue flight

If **1 FUEL PROBE**

- *If* FUEL 2 below 283 kg
  - Monitor for **1 FUEL LOW** caution when remaining fuel will be 58 kg
- *If* FUEL 2 above 283 kg
  - FUEL 1 level can be taken as equal to FUEL 2 level

If **2 FUEL PROBE**

- *If* FUEL 1 below 283 kg
  - Monitor for **2 FUEL LOW** caution when remaining fuel will be 58 kg
- *If* FUEL 1 above 283 kg
  - FUEL 2 level can be taken as equal to FUEL 1 level

Note

Be aware that aircraft fuel quantity roll angle compensation will not be functioning.

END

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HYDRAULIC SYSTEM

GENERAL

The following notes are applicable for hydraulic and undercarriage malfunctions:

Note

Fuel consumption will be increased with landing gear down.

Note

If undercarriage has been extended using the EMER DOWN then subsequent retraction is not possible.

Note

When using the EMER DOWN pushbutton if the hydraulic oil temperature is below -20 °C the button must be held depressed until the landing gear down lights are green.

HYDRAULIC PRESSURE LOW

1 HYD OIL PRESS + **1 HYD PUMP** + **1 HYD SERVO** + **EMERG LDG PRESS**

or

2 HYD OIL PRESS + **2-4 HYD PUMP** + **2 HYD SERVO** + **HYD UTIL PRESS**

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

- Confirm hydraulic pressure low

If HYD 2 PRESS illuminated
YAW AP channel not functional
1-2 AP Y FAIL illuminates

- Fly attentive ‘feet on’
- Reduce speed to 110 KIAS
- When convenient
  LDG GEAR LEVER down,
- EMER DWN pushbutton,
  lift guard and press

Land as soon as practicable

If HYD 1 PRESS illuminated

- When convenient
  LDG GEAR LEVER down

Land as soon as practicable

Note

With one hydraulic system operation taxiing manoeuvres must be carried out at 5 kts or less and turns should be carried out carefully.

END

NORMAL LANDING GEAR PRESSURE LOW

HYD UTIL PRESS

Low pressure in landing gear NORM hydraulic system

- Select LDG GEAR down

If after 15 sec LDG GEAR not down and locked
- EMER DWN pushbutton, lift guard and press

Continue flight

END

EMERGENCY LANDING GEAR PRESSURE LOW

EMER LDG PRESS

Low pressure in emergency landing gear hydraulic system

- Lower landing gear using normal procedure

Continue flight

END

HYDRAULIC FLUID OVERHEATING

1(2) HYD OIL TEMP

Associated hydraulic system overheat (greater than 134 °C)

Confirm hydraulic temperature

- When convenient
  LDG GEAR LEVER down

WARNING

If a **1 (2) HYD SERVO** caution has illuminated previously do **NOT** switch SOV to CLOSE on the **2(1)** Hydraulic system since this will cause loss of control in the affected servo jack.

- Switch off affected system by selecting SOV
  to CLSD on ECDU hydraulic page

1(2) HYD OIL PRESS and **1(2)SERVO** cautions illuminate

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.

Note

With HYD 2 OFF the YAW AP does not function, reduce speed to 110 KIAS and fly attentive 'feet on'.

Note

With one hydraulic system operation taxiing manoeuvres must be carried out at 5 kts or less and turns should be carried out carefully.

END

HYDRAULIC FLUID LEVEL LOW

1(2) HYD MIN

Associated system low hydraulic fluid level

If **EMER LDG PRESS** caution illuminated

- LDG GEAR LEVER down.

If **HYD UTIL PRESS** caution illuminated

- LDG GEAR LEVER down.
- EMER DWN pushbutton, lift guard and press

Land as soon as practicable.

Note

Loss of hydraulic fluid in system No2 will automatically close the Tail Rotor Shut Off Valve (TRSOV). This will be indicated by a **2 HYD SERVO** caution on the CAS and a TRSOV closed indication on the hydraulic synoptic page. Once the TRSOV has operated the SOV No1 is inhibited. YAW AP channel does not function.

END

HYDRAULIC PUMP 1, 2 OR 4 FAILURE

1(2)(4) HYD PUMP

Low pressure at pump outlet

If HYD PUMP 1 low

- LDG GEAR LEVER down

Monitoring hydraulic pressure

Land as soon as practicable

If 2 HYD PUMP low *or* 4 HYD PUMP low

Continue flight

Note

With one hydraulic system operation taxiing manoeuvres must be carried out at 5 kts or less and turns should be carried out carefully.

END

MAIN VALVE SEIZURE IN MAIN OR TAIL ROTOR SERVO

1(2) HYD SERVO

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

- LDG GEAR LEVER down

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 No2 will automatically close the Tail Rotor Shut Off Valve (TRSOV). This will be indicated by a **2 HYD SERVO** caution on the CAS and a TRSOV closed indication on the hydraulic synoptic page. Once the TRSOV has operated the SOV No1 is inhibited. YAW AP channel does not function

END

ROTOR BRAKE FAILURE

ROTOR BRK FAIL

Rotor brake system failure

- On ROTOR BRAKE panel confirm pressure and status of the brake caliper

On ground

- Shut down aircraft

In flight

If caliper UP

Land as soon as practicable

If caliper DOWN

Continue Flight

END

ROTOR BRAKE PRESSURE LIGHTS ON ROTOR BRAKE MONITOR PANEL

'LOW PRESS' message on rotor brake monitor panel

Low pressure in rotor brake system

During rotor braking, rotor stopping slow

When stationary
Carry out maintenance action

Helicopter parked with rotor brake ON

- Increase pressure to greater than 40 bar by pumping brake lever.

When rotor brake off

Normal situation

'HIGH PRESS' message on rotor brake monitor panel

High pressure in rotor brake system during rotor brake application

Carry out maintenance action after rotor braking completed

END

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

LANDING GEAR FAILS TO RETRACT (AMBER LIGHTS)

Landing gear selector in UP position but one *or* more **Amber** lights illuminated

- Confirm landing gear circuit breakers in (overhead panel)

DOWN EMERG button on LDG PNL illuminated?

YES

- Select landing gear lever DOWN.

Is landing gear down and locked?

YES

Continue flight

NO

- EMER DWN pushbutton, lift guard and press See NOTES on Page 113

Continue flight

NO

- Cycle landing gear lever DOWN then select UP (allow sufficient time for the landing gear to lock DOWN before selecting UP)

One or more amber lights remain illuminated?

NO

Continue flight

YES

- Select landing gear lever DOWN

Is landing gear down and locked?

NO

Refer to Page 35

YES

Continue flight

END

HYD
LDG GR

LANDING GEAR FAILS TO RETRACT (GREEN LIGHTS)

Landing gear selector in UP position but one *or* more **Green** lights illuminated

- Confirm landing gear circuit breakers in (overhead panel)

- Cycle landing gear lever DOWN then select UP

  (allow sufficient time for the landing gear to lock DOWN before selecting UP)

Green lights still illuminated?

YES

- Select landing gear lever DOWN,
- EMER DWN pushbutton, lift guard and press

NO

Continue flight

See note on Page 113

END

NOSEWHEEL UNLOCKED (IN FLIGHT)

NOSE WHL UNLK

Nose wheel not locked in fore and aft direction

- Cycle NOSE WHEEL switch on LDG GEAR panel

If caution remains
- Do not raise landing gear

Continue flight

Note

Landing gear retraction inhibited with NOSE WHL UNLK caution illuminated

Note

Avoid run on landing

END

HYD
LDG GR

PARK BRAKE ON IN FLIGHT

PARK BRK ON

Park brake system pressurized

- Confirm PARK BRAKE handle in fully down position

If caution still remains
Continue flight

CAUTION

Do not carry out run on landing or taxi

END

EMERGENCY SYMMETRIC BRAKING

Emergency symmetric braking is possible using the PARK BRAKE handle, by modulating the handle displacement. Care should be taken to avoid 'locking' the wheels with possible damage to the tyres.

During this procedure the **PARK BRK ON** caution will be displayed.

END

PARK BRAKE MALFUNCTION

PARK BRK PRESS

No pressure in park brake system
with PARK BRAKE handle in ON position

- Confirm PARK BRAKE handle fully up and turned

If caution remains
Continue flight

Note

Park brake may not hold aircraft when on ground.

Note

Differential toe braking may not be available.

SECTION END

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1(2) PITOT HEAT OFF

Associated pitot heater is not being heated and OAT below 4 °C

On Ground

- *If* required select PITOT 1(2) HTR ON (on ECDU)

In Flight

- Select PITOT 1(2) HTR to ON (on ECDU)

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 continuously 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

- Shut down aircraft for Maintenance action

In flight

Continue flight being aware of system limitations as note below:

1 WOW FAIL:

Copilot DU maintenance page not inhibited in flight and copilot timer incorrect

2 WOW FAIL:

Pilot DU maintenance page not inhibited in flight and pilot timer incorrect

Note

Illumination of the 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.

END

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)

- Shut down aircraft for Maintenance action

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 below 80 KIAS
- Land as soon as possible and secure door

END

CABIN DOOR OPEN

CABIN DOOR

A cabin door not closed

On ground

- Close cabin door before flight

In flight

- Reduce speed to 50 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 door before flight

In flight

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

END

EXTERNAL POWER SOCKET DOOR OPEN

AC EXT PWR DOOR and/or **DC EXT PWR DOOR**

External power socket door not closed

On ground

- Close external power
- socket door before flight

In flight

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

END

NOSE DOOR OPEN

NOSE DOOR

Nose bay door not closed

On ground

- Close nose door before flight

In flight

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

END

VENT FAN FAILURE

VENT FAIL

Failure of at least one CREW and/or PAX vent fan

- Confirm, using Advisory indications, which fan has failed (not illuminated)

On failed VENT fan
- Select OFF, after a few minutes select HIGH

- *If* caution remains *and* CREW FAN failed

- Confirm, by checking airflow, at least one of the two cockpit fans is operating, if not select CREW FAN OFF and open cockpit storm window(s) as necessary

- *If* caution remains and PAX FAN failed

- Confirm, by checking airflow, at least one of the two cabin fans is operating, if not select PAX FAN OFF and consider opening cockpit storm window(s)

Note

Open the cockpit-cabin dividing curtain, if fitted.

END

HEATER FAILURE

HEATER FAIL

Heater system failure

In MAN mode
Continue using MAN HTR manual selection of temperature

If caution illuminates
- Switch HEATER to OFF

In AUTO mode
Select HEATER to MAN HTR and select temperature manually

If caution remains after flight condition has changed or for prolonged period
- Switch HEATER to OFF

Note

If required for demist reselect HEATER to ENG and MAN HTR to control temperature. Set VENT CREW FAN as required. If manual control is not operational use crew fans and/or open cockpit window(s).

END

AIR CONDITIONER FAILURE

FWD(AFT) COND FAIL

CREW (PAX) air conditioner failure

- Confirm CREW(PAX) VENT FAN selection at LOW or HIGH

If caution remains
- Switch OFF the AIR COND and leave for minimum of 4 minutes. Switch to AIR COND again

If caution re-appears
- Select CREW(PAX) VENT FANS OFF

Note

For conditions of high humidity and medium OAT (Approx 15 °C to 30 °C) icing may occur in the cockpit evaporators causing the crew air conditioning fan to fail (FWD COND FAIL).
If these conditions are present it is recommended that the CREW FAN is set to HIGH (5) and the temperature selector setting is approximately mid way between the COLD and WARM position.

END

AUDIO SYSTEM FAILURE

Loss of Pilot or Copilot intercom and radio comunications

On ground

- Maintenance action

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)

If audio communication NOT recovered

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

If audio comms recovered

Continue flight using EMER mode (See Note)

If audio comms NOT recovered

- Follow radio failure procedures

Note

In BK-UP Cockpit-Cabin comms not available.
In EMER audio panels not operative, pilot & copilot intercom using PTT switch first detent.

END

FLOTATION ARM CAUTION

FLOAT ARM

Flotation system ARMED

- Confirm FLOATS EMER panel OFF/ARMED switch selected to ARMED

If switch selected to ARMED

- Check, periodically, LH SYS and RH SYS lights are not illuminated

If lights not illuminated

Flotation system ready for emergency operation, if required

If lights illuminate
- Select OFF/ARMED switch to OFF

Continue flight according to operational requirements

- Select OFF/ARMED switch on FLOATS EMER panel to RMED if ditching required/ flotation system ready for emergency operation

If switch selected to OFF

Flotation system malfunction
- Do not select switch to ARMED (flotation system may inflate erroneously)

SECTION END

PFD AND MFD DISPLAY MESSAGES

ATTITUDE DISPLAY FAILURE

ATT FAIL — loss of attitude data, slip skid indicator and vertical speed on associated attitude display

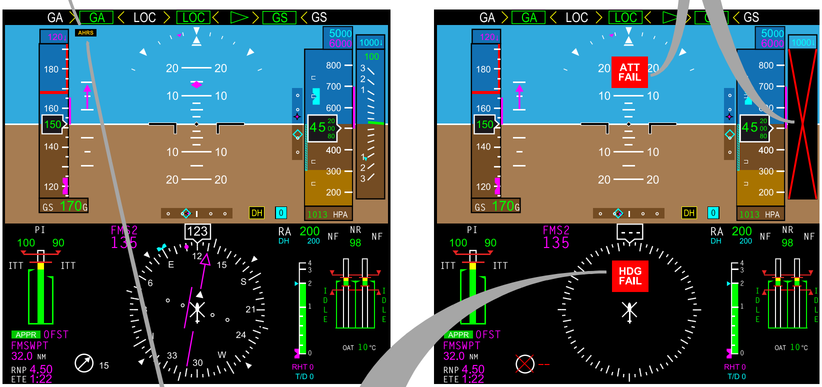
- On RCP move AHRS switch to other AHRS
  (1 = Copilot side, 2 = Pilot side)

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

\+

1(2) AP OFF
AP AHRS 1(2) FAIL — CAS cautions illuminate

- Compare frequently PFD attitude with STANDBY attitude indicator.



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HEADING DISPLAY FAILURE

HDG FAIL — loss of heading data on associated HSI display

- On RCP move AHRS switch to other AHRS
  (1 = Copilot side, 2 = Pilot side)

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

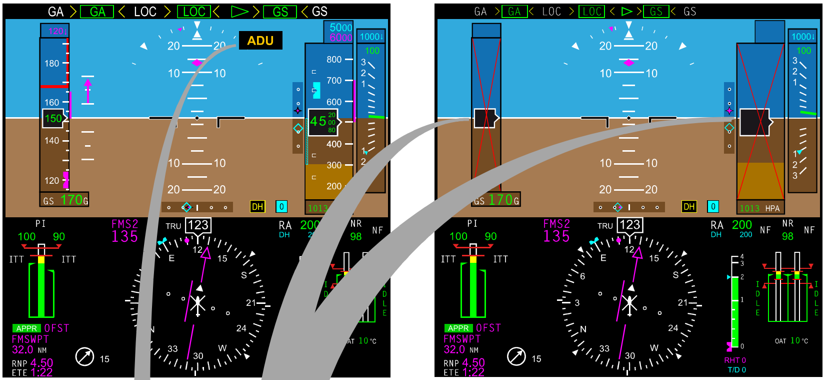
\+

1(2) AP OFF
AP AHRS 1(2) FAIL — CAS cautions illuminate

- Compare frequently PFD heading with STANDBY Compass.

END

ADS FAILURE



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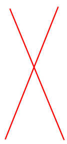


on affected indicators and loss of data on:

- Airspeed
- Altitude
- PI indicator
- displays on PFD

Failure of ADS system

- On RCP move ADS switch to other ADS (1 = Copilot side, 2 = Pilot side)

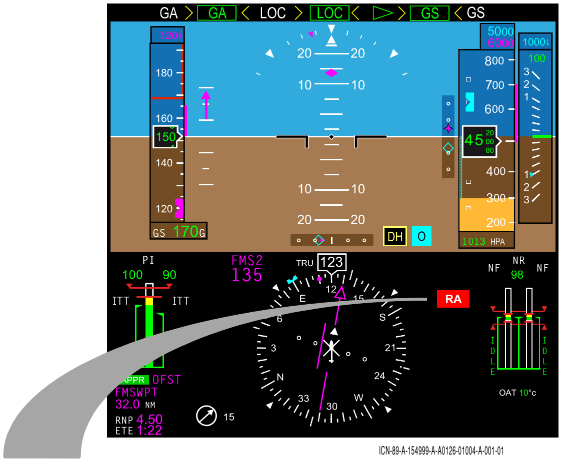
ADU illuminates on attitude indicator to highlight both air data indicators systems are using the same source data

- Compare frequently PFD data with STANDBY indicator.

END

PFD/MFD MSGs

DOUBLE RAD ALT FAILURE



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RA

and loss of RAD ALT information on PFD

Failure of both RAD ALT systems
RHT mode, if engaged, disengages with chime

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

CAUTION

When the RAD ALT fails, the 150 ft 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

SINGLE RAD ALT FAILURE

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RA1(2)

Rad Alt 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

CAUTION

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

END

OAT SENSOR FAILURE

OAT ----- °C

OAT displayed in amber on PFD

Loss of On-Side Outside Air Temperature

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

END

PFD/MFD MSGs

CAS WARNING AND CAUTION MESSAGE LIST DISCREPANCY

ICN-89-A-153000-A-A0126-04136-A-001-01

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

AMMC 1 (2) CAS Warning/Cautions message list has discrepancies

- Use CCD to select the CAS message status line on PFD and press the CCJ pushbutton to display the other AMMC CAS warning/caution message list. Confirm the CAS Warnings Cautions which have caused the miscompare message

- Change AMMC Master if necessary on MCDU AMMS page

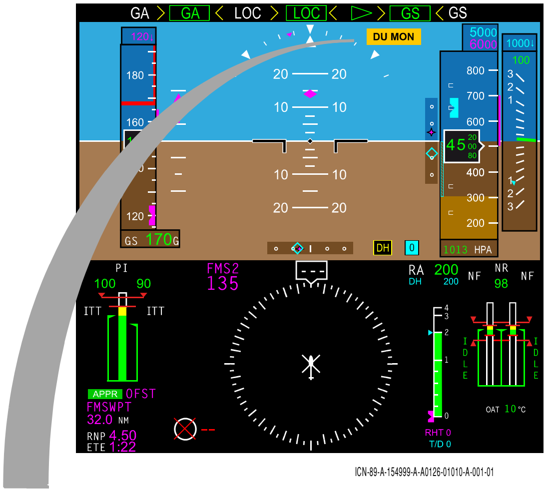
Note

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

END

PFD/MFD MSGs

DU MON MESSAGE ON PFD ONLY



ICN-89-A-154999-A-A0126-01010-A-001-01

DU MON Permanently displayed on PFD

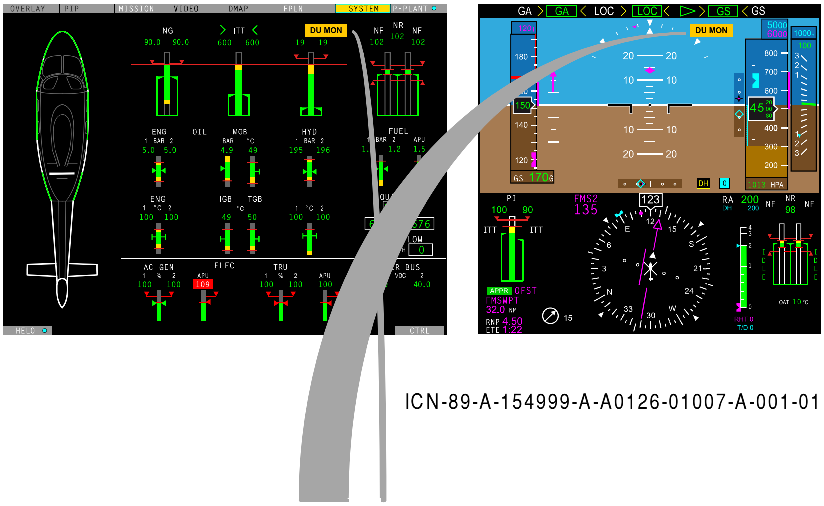
Sensor monitoring cross checking for at least one parameter does not function

- Continue flight
  cross monitoring with stby instruments

END

PFD/MFD MSGs

DU MON MESSAGE ON PFD AND MFD



ICN-89-A-154999-A-A0126-01007-A-001-01

DU MON On PFD and MFD

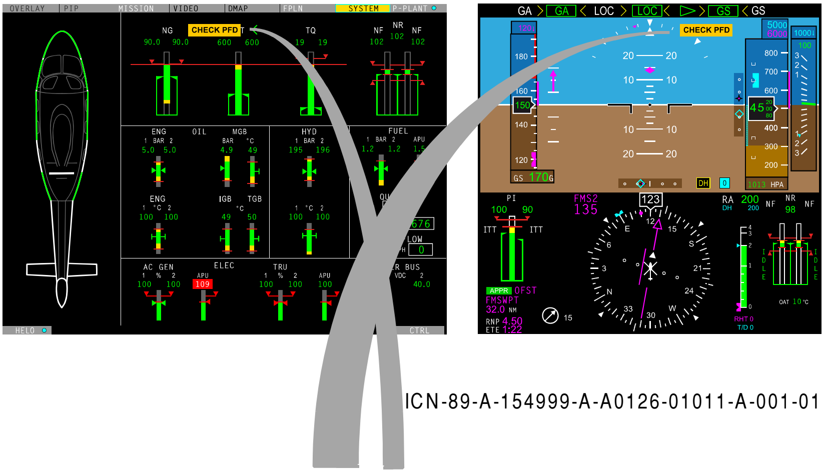
Display unit cross checking for at least one parameter does not function

- Select MFD PWR PLANT page and cross monitor PFD parameters with MFD and stby instruments

Continue flight

END

DISPLAY UNIT MESSAGES ‘CHECK PFD’



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CHECK PFD

Display unit cross checking has detected at least one parameter dicrepancy

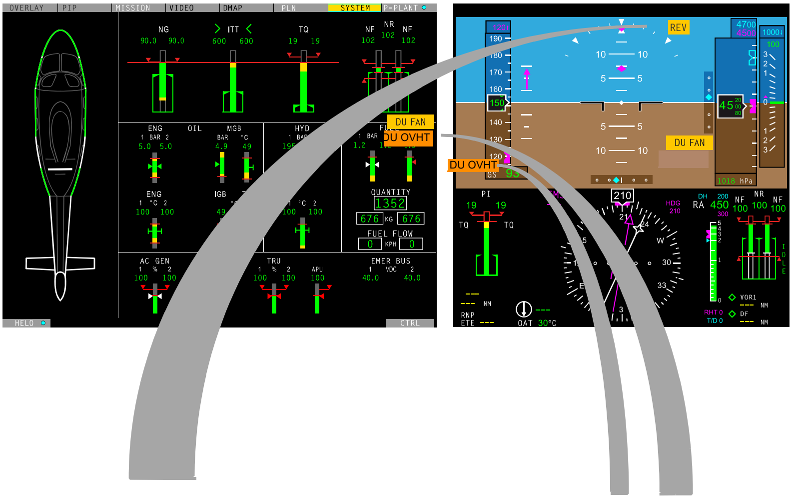
- Maintain a level and stable flight condition.

If message remains, set on-side display unit RCP switch to MFD position.

Continue flight

END

DISPLAY UNIT MESSAGES “REV” AND “DU OVHT”



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REV

Display unit in reversion mode (other display switched OFF)

Be aware that display unit cross checking not available but display sensor monitoring cross checking is available.

DU OVHT on PFD attitude indicator or MFD PWR PLANT

On 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 MCDU and invalid MAGnetic VARiation from AMMS

- Select MAG on MCDU
  Continue flight

END

PFD/MFD MSGs

5 MINUTE MESSAGE FOR AOE CONDITIONS

5 m

displayed on side of PI 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 transmission
or
AEO 5 min engine 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 transmission rating
or
AEO 5 min engine 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 transmission rating
or
AEO 5 min engine rating

Continue flight respecting
engine and transmission ratings

END

PFD/MFD
MSGs

2.5 MINUTE MESSAGE FOR OEI CONDITIONS

2.5 m displayed on side of PI 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

> **Note**
> The 2.5m message is moved down, changed to grey and replaced by the 30sec countdown timer when in the 30sec TQ range.

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

30 SECOND COUNTDOWN OEI TORQUE

29 s — displayed on side of PI digital value indicating time remaining in the 30 second transmission rating

Within OEI 30 sec transmission rating

Note

The 30sec countdown timer is moved down, changed to grey, value frozen and replaced by the 2.5min message when the 30sec TQ range is exited.
The information displayed beside the PI digital value must be respected.

10 s — blinking inverse video on side of PI

Within 10 seconds of exceeding OEI 30 sec transmission rating

0 s — steady inverse video on side of PI

OEI 30 sec transmission rating expired, the EECU automatically reduces power to below 164% TQ

Continue flight respecting transmission ratings

END

ENGINE STATE INDICATIONS ON PFD AND MFD

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

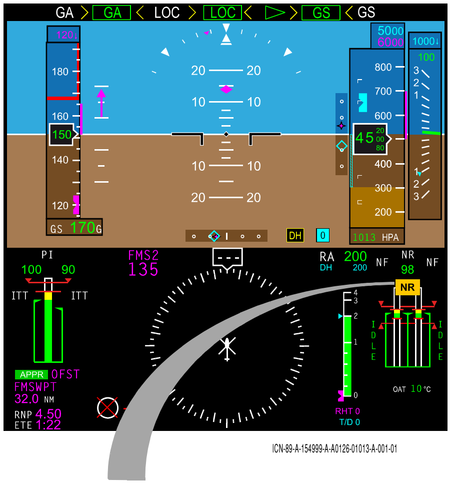
Associate engine failed

Fly aircraft in accordance with OEI operational techniques

END

PFD/MFD MSGs

NR MISCOMPARE MESSAGE



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NR on NR/NF scale

NR data miscompare
(difference greater than 3%)

- Confirm correct value with analogue back up parameter on MFD PWR PLANT page

END

PITCH, ROLL, VERTICAL SPEED 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 Standy instrument, and altimeter establish which AHRS is providing correct data and switch to this on RCP, if required.

END

PFD/MFD MSGs

ADS MISCOMPARE

ALT *and / or* **IAS** *and / or* **VNE**

on altitude tape — on airspeed tape

Miscompare between ADS 1 and 2 information.
(±75ft for ALT, ±20kts for IAS, 7 KIAS for Vne)

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

END

RAD ALT MISCOMPARE

RA

on RAD ALT display
RHT and HOV modes disengage with chime, if engaged

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 mode and ALVL not available

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

END

HEADING MISCOMPARE

HDG on attitude indicator

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

If during VAPP, ILS,NAPP, NPATH,NHPA Approach

AFCS upper modes will disengage

- Press the GA and climb to MSA HDG mode will not engage
- Carry out the published Missed Approach procedure up to MAHWP
- By comparison with Standby compass establish which AHRS is providing correct data and select on RCP
- Uncoupled approach may be carried out

Note
Course and glideslope deviation indications will remain valid

If during VOR navigation

VOR navigation mode will disengage

- Replace VOR navigation with FMS navigation
- By comparison with Standby compass establish which AHRS is providing correct data and select on RCP

If during HDG navigation

HDG mode will disengage

- By comparison with Standby compass establish 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 compass establish which AHRS is providing correct data and select on RCP

END

PFD/MFD MSGs

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CH NC MESSAGE ON PI INDICATOR

CH NC on associated side of PI indicator

Associated PI indicator is using the FADEC data channel not in control

No pilot action

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

AFCS Low height protection system active

If flight condition not stable
- Fly manually to safe height

END

POWER LIMIT

PWR LIM On upper left of attitude indicator on PFD

AFCS Power Limit/Autorotation protection system active

If flight condition not stable
- Modify flight condition to reduce/increase power required, as necessary

END

UNCOUPLED (UCPL) MESSAGE

UCPL On upper left of attitude indicator on PFD

AFCS collective mode decoupled automatically due to transition to OEI and power above OEI MCP.

Reducing power to below OEI MCP automatically re-couples collective mode when pilot releases collective

END

HEIGHT LOSS

HT LOSS On top left of attitude indicator on PFD

AFCS Low height protection system not functioning

Continue Flight
Be aware that AFCS Low Height protection system is not functioning
- Be attentive for operation near terrain when a collective mode is engaged

END

POWER LOSS

PWR LOSS On upper left of attitude indicator on PFD

AFCS Power Limit/Autorotation protection system not functioning

Continue Flight
Be aware that AFCS Power Limit/ Autorotation protection system is not functioning. Monitor PI when any AFCS collective mode engaged

END

OAT SENSOR MISCOMPARE

OAT ## °C OAT displayed in amber on PFD

Miscompare between the two Outside Air Temperature probes is 3 °C or greater

Continue flight
Use OAT standby instrument

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.

- *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

Continue Flight
- Revert to Radio Navigation, deselecting the FMS as Primary NAV source (Notify ATC to the loss of RNAV/RNP capability, if required)

END

FAILURE OF NF DISPLAY

NF FAIL on side of NF indicator

Failure of NF data from EECU

- Use other engine parameters to monitor engine.

END

LOSS OF GLIDESLOPE OR VOR DATA

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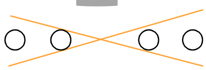
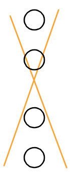
on VOR lateral deviation scale



Loss of lateral deviation data



on glideslope vertical scale

Loss of valid glideslope data

END

FLIGHT CONTROL SYSTEM LINK FAILURE

FCS LINK FAIL

Complete loss of AFCS communication to PFD
AFCS mode annunciations and datum references not available

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

END

PFD/MFD MSGs

FMS MESSAGES ON PFD

FMS DGR is an alerting (amber) message on the PFD that is displayed when the FMS cannot guarantee the navigation performance required in terms of the required position accuracy and/or horizontal/vertical Integrity, for the present phase of flight.

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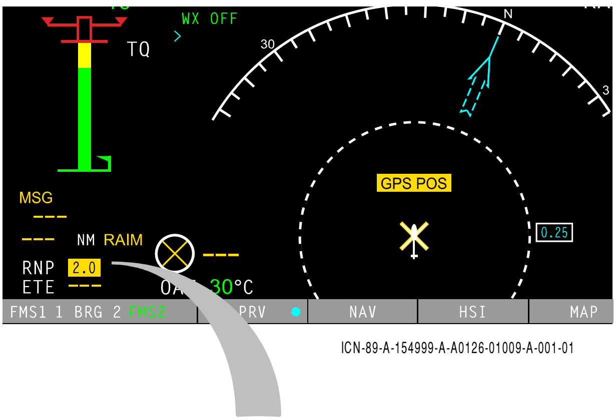
RNP and FMS DGR (amber)

|

FMS Navigation source outside RNP limit

|

Continue Flight
- Revert to Radio Navigation deselecting the FMS as Primary NAV source (Notify ATC to the loss of RNAV/RNP capability, if required)



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RNP value (amber)

|

Cross Track error exceeds RNP

END

PFD/MFD MSGs

LATERAL DEVIATION POINTER WITH WINGLETS ON APPROACH

The winglets' size are equal to the current EPU value but they are displayed beside the pointer only if the EPU > 20% of RNP.

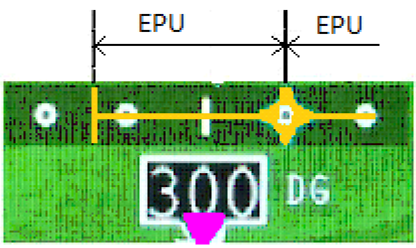
1. XTK (FTE) > RNP, or
2. EPU > RNP or
3. EPU + XTE > RNP

PROCEDURE WHEN XTK > RNP

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)

PROCEDURE WHEN EPU > RNP



Estimate Position Uncertainty greater than required RNP

Runway visual references required to continue approach are NOT in sight

- Discontinued approach
  Press the GA button to initiate a Missed Approach.
- Revert to Radio Navigation deselecting FMS as primary NAV source
  (Notify ATC to the loss of RNAV/RNP capability)

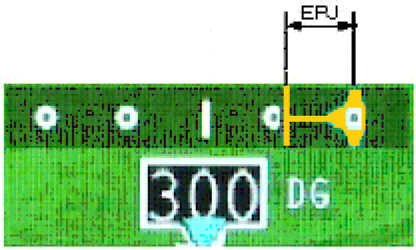
Runway visual references required to continue approach are in sight

Continue approach

END

PFD/MFD MSGs

PROCEDURE WHEN EPU + XTK > RNP



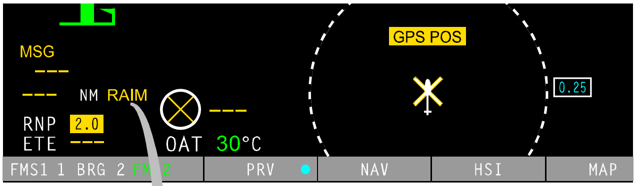
Estimate Position Uncertainty + Cross Track
Error greater than required RNP

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

In case of failure or insufficient integrity (RAIM algorithm detects a failure), the FMS displays RAIM amber annunciation on PFD.



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HIL detects a satellite failure,
or HIL/VIL data failed
or of insufficient integrity

If during RNP operations

- Revert to Radio Navigation deselecting FMS as primary NAV source
  (Notify ATC to the loss of RNAV/RNP capability)

If during approach and runway visual references required to continue approach are NOT in sight

- Discontinued approach
  Press the GA button to initiate a Missed Approach.
- Revert to Radio Navigation deselecting FMS as primary NAV source
  (Notify ATC to the loss of RNAV/RNP capability)

If during approach and runway visual references required to continue approach are in sight

Continue approach

SECTION END

PFD/MFD MSGs

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PFD/MFD
MSGs

ROTOR AND TRANSMISSION

MAIN GEARBOX OVERTORQUE

XMSN OVTQ

Transmission TQ limit exceeded,
Either engine in AEO:
above 112% at IAS greater than 90 KIAS or
above 116% at IAS less than 90 KIAS or
In OEI above or 172%

- Confirm torque values
- Confirm LD-SH switch selected to TORQUE

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 power until caption extinguishes

END

GEARBOX OIL LOW

MGB OIL LOW or **IGB OIL LOW** or **TGB OIL LOW**

Associated 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 (ECDU XMSN page)
  It is permitted to activate the CHIP BURNER up to 3 times to clear a chip for each gearbox

If CHIP caution clears

Continue flight

If CHIP caution remains after 3 activations of CHIP BURN

XMSN LARGE CHIP caution illuminates

- Reduce power as soon as conditions permit

Land as soon as practicable

CAUTION

A maximum of 3 chips can be cleared in one flight on each gearbox. On the 4th CHIP caution **Land as soon as practicable**

Note

If an MGB CHIP is present, on the XMSN Synoptic page, when MGB OIL PRESS warning is illuminated the CHIP BURNER must not be activated.

END

TRANSMISSION CHIP DETECTOR SENSORFAILURE

XMSN CHIP FAIL

Transmission chip sensor failed (Select XSMN synoptic page to identify chip sensor failed)

On ground
- Shut down aircraft

In flight
- Monitor MGB,IGB and TGB parameters

Land as soon as practicable

END

ROTOR
XMSN

MAIN GEARBOX INPUT OIL PRESSURE

1(2) MGB OIL PRESS

Associated engine - MGB input oil pressure low, possible blockage in oil duct to engine - MGB input (pressure below 3.1 bar)

- Reduce speed to safe OEI flight
- Check MGB oil pressure on PFD

If MGB pressure normal

Land as soon as practicable monitoring MGB oil pressure and temperatures.
Do not activate chip burner

If MGB pressure low or invalid

- Reduce power as operational conditions permit

If associated oil pressure permanently above approx 1.5 bar

Land as soon as possible
See Note 2 below

If **1(2) BRG TEMP** caution illuminates

Land as soon as possible
See Note 1 below
monitoring pressure and temperatures on other system

Note 1

Landing or Ditching should be made within 50 minutes of level flight at torque not exceeding 65/65%.

Note 2

This condition could be induced by the failure of one of the dual pumps of the MGB lubrication system. Landing should be made within 3 hours of level flight at torque not exceeding 65/65%.

END

MAIN GEARBOX INPUT BEARING TEMPERATURE

1(2) BRG TEMP

Associated MGB engine input bearing over temperature

- Reduce speed to safe OEI flight

Land as soon as practicable

If **1(2) MGB OIL PRESS** caution illuminates with reducing oil pressure indications

- Reduce power as operational conditions permit

- Land as soon as possible See Note 1 monitoring pressure and temperature on other system

Note 1

Landing should be made within 50 minutes of level flight at torque not exceeding 65/65%.

END

INTERMEDIATE GEARBOX OIL TEMPERATURE HIGH

IGB OIL TEMP

IGB oil temperature above limit (greater than120 °C)

- Reduce power as soon as operational conditions permit

If oil temperature reduces and caution extinguishes

Continue flight monitoring oil temperature

If caution remains

Land as soon as possible

END

TAIL ROTOR GEARBOX OIL TEMPERATURE HIGH

TGB OIL TEMP

TGB oil temperature above limit (greater than 115 °C)

- Reduce power as soon as operational conditions permit

If oil temperature reduces and caution extinguishes

Continue flight monitoring oil temperature

If caution remains

Land as soon as possible

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

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SINGLE ENGINE PROCEDURE

The following procedure intends to indicate the procedures to follow, in OEI conditions, following an emergency or malfunction procedure which has caused an engine failure or an intentional shutdown.

When conditions permit confirm the following:

1. APU — START/ON
2. Affected ENG MODE switch — OFF
3. Affected ENG FUEL SOV — CLSD
4. XFEED — CLSD, unless required,
5. Affected FUEL PUMP — OFF, unless required for crossfeed

IS ENGINE DAMAGE SUSPECTED?

NO See Page 106

YES

DO NOT attempt engine re-light continue as follows:

Single Engine Descent Checks

1. Landing elevation — Check and set
2. Fuel quantity — Monitor
3. XFEED — As required
4. HTAWS (if fitted) — Check
5. Weather radar (if fitted) — Check and set
6. NAV AIDS — Set
7. RAD ALT/DH — Set as required
8. CAS — Review

Single Engine Approach and Landing

1. Fuel quantity — Monitor
2. XFEED — As required/CLSD
3. Electrical loads — Monitor and shed
4. AIR COND/HEATER — APU/OFF

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. OEI LIM SEL pushbutton — OFF, check CAS
6. AIR COND/HEATER — OFF
7. ENG and INTAKE ANTI ICE (MISC PNL) — As required
8. EMER LTS — ON
9. ECDU (MENU/PITOT) — As reqiured
10. ECDU (LIGHTS/CAB LTS) — Cabin sign as required
11. CAS — Check
12. Cabin — Secure

Carry out OEI landing in accordance with the appropriate procedures.

END

CAT B SINGLE ENGINE FAILURE PROCEDURES

CATEGORY B SINGLE ENGINE FAILURE IN HOVER (5 TO 10 FT)

1. Collective — Maintain collective pitch 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.

CATEGORY B SINGLE ENGINE FAILURE ON TAKE OFF

If gross weight and flight path permit, takeoff 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 pitch — 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.

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.
4. APU — Start APU
5. Engine — Carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26
6. Refer Single Engine Procedure Page 159

CATEGORY B SINGLE ENGINE LANDING

1. Landing direction — Orientate the aircraft for an approach into the prevailing wind.
2. Initial point — During the approach, reduce airspeed gradually to arrive at a point 200 ft above touchdown point with a rate of descent of no more than 500 fpm. Initiate a deceleration to achieve 40 KIAS at 50 ft. At 50 ft rotate nose up to a maximum of 20° to decelerate.

3. Collective — Continue deceleration *to* running touchdown or hover. Use collective to cushion touchdown. Maximum nose up attitude on touchdown 15°.

4. Landing — After touchdown, centralize cyclic and reduce collective to minimum.

5. Braking — Apply wheel brakes, as required.

END

CAT A SINGLE ENGINE FAILURE PROCEDURES

HELIPAD VERTICAL PROCEDURE TAKE-OFF

IN HOVER (7 feet 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.

3. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG.

4. Engine — On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26.

5. PARK BRAKE — As required

RECOGNIZED IN CLIMB, PRIOR TO OR AT TDP (RTO)

1. Initial action — Adjust collective establish descent to maintain the rotor speed to approx 100%NR.

2. Cyclic — Maintain aircraft position over the Take Off point as the aircraft descends.

3. Touchdown — At approximately 7 ft to 10 ft ATS increase collective to cushion landing. Maximum allowed GS at touchdown 5 kts.

4. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG.

5. Engine — On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26.

6. PARK BRAKE — As required.

7. Consider Emergency Ground Egress procedure Page 27.

RECOGNIZED AT/AFTER TDP (CTO)
FOR GROUNDSPEED UP TO 15 KTS

1. Collective/Cyclic — Rotate nose down to -12°. Maintain until 20 Kts groundspeed, then recover pitch attitude to +6° in 4 seconds. Use collective to droop NR to minimum of 90%.
2. Acceleration/climb — Reduce attitude to +4° and continue acceleration up to V_{TOSS} (50 KIAS). Lower collective to recover NR to 101%.
3. Climb — When the aircraft achieves V_{TOSS} (50 KIAS) adjust pitch attitude to climb to 200 ft with 2.5min power range, mainting NR at 101% to ensure full power is being applied.
4. At 200 ft ATS — Landing gear UP.
   Continue climb accelerating to V_{COSS}, using 2.5min power range, up to 1000 ft AGL, maintianing NR at 101%.
5. At 1000 ft ATS — Accelerate to V_Y and continue climb to final altitude V_Y.
6. OEI SEL button — Select as required
7. PARK BRAKE — Release.
8. LH & RH LDG LT — OFF/STOW (if used)
9. Refer to Single Engine Procedure Page 159.

FOR GROUNDSPEED ABOVE 15 KTS

1. Collective/Cyclic — Rotate nose down to 0°. Use collective to droop NR to minimum of 90%.
2. Acceleration/climb — Increase attitude to +4° and continue acceleration up to V_{TOSS} while lowering collective to recover NR to 101%.
3. Climb — When the aircraft achieves V_{TOSS} adjust pitch attitude to climb to 200 ft with 2.5min power range maintaining NR at 101% to ensure full power is being applied.
4. At 200 ft ATS — Landing gear - UP
   Continue climb accelerating to V_{COSS} , using 2.5min power rating, up to 1000 ft AGL, maintaining NR at 101%.
5. At 1000 ft ATS — Accelerate to V_Y and continue climb to final altitude at V_Y.
6. OEI SEL button — Select as required

7. PARK BRAKE — Release.
8. LH & RH LDG LT — OFF/STOW (if used)
9. Refer to Single Engine Procedure Page 159.

END

CLEAR AREA TAKE-OFF

RECOGNIZED IN CLIMB, PRIOR TO OR AT TDP (RTO)

1. Collective — Adjust collective to maintain the rotor droop within 90%NR and lower collective slightly to establish descent.
2. Cyclic — Adjust pitch attitude as required to reduce speed below 40 kts GS.
3. Touchdown — At approximately 7-10 ft AGL increase collective to cushion landing. Maximum nose up attitude at touchdown 15°.
4. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG. Apply wheel brakes, as required to stop aircraft.
5. Engine — On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26.
6. PARK BRAKE — As required.
7. Consider Emergency Ground Egress procedure Page 27.

RECOGNIZED AT/AFTER TDP (CTO)

1. Collective/Cyclic — Rotate nose up to +6°. Use collective to droop NR to minimum of 90%
2. Acceleration/climb — Reduce pitch to give a +4° nose up attitude and continue acceleration to V_{TOSS} While lowering collective to recover NR to 101%.
3. Climb — When the aircraft achieves V_{TOSS} adjust pitch attitude to climb to 200 ft with 2.5min power, maintaning NR at 101% to ensure full power is being applied.
4. At 200 ft AGL — Landing gear - UP and level off to accelerate to Vy (80 KIAS) using 2.5 min power range maintaning NR at 101%.
5. OEI SEL button — Select.
6. Climb — Continue climb at Vy to 1000 ft AGL maintaining NR at 101%.

7. At 1000 ft AGL — Continue climb to final altitude at Vy.
8. LH & RH LDG LT — OFF/STOW (if used)
9. Refer to Single Engine Procedure Page 159.

END

OFFSHORE/ELEVATED HELIDECK TAKE-OFF

IN HOVER (5 feet 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.
3. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG.
4. Engine — On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26.
5. PARK BRAKE — As required

RECOGNIZED IN CLIMB, PRIOR TO OR AT TDP (RTO)

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 7 ft to 10 ft ATS increase collective to cushion landing.
Maximum allowed GS at touchdown 5 kts.
4. Landing — After touchdown, centralize cyclic and simultaneously reduce collective to MPOG.
5. Engine — On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure, Page 26.
6. PARK BRAKE — As required.
7. Consider Emergency Ground Egress procedure Page 27.

RECOGNIZED AT/AFTER TDP (CTO)

1. Collective/Cyclic — Continue rotation to -12° to achieve 25 kts GS using collective to droop NR to a minimum of 90%.
2. Acceleration/climb — Increase attitude to +5° and continue acceleration up to V_{TOSS} while lowering collective to recover NR to 101%.
3. Climb — When the aircraft achieves V_{TOSS} adjust pitch attitude to climb to 200 ft with 2.5 min power range maintaining NR at 101% to ensure full power is being applied.
4. At 200 ft (60 m) ATS — Landing gear - UP. Continue climb accelerating to V_{COSS}, using 2.5 min power range, up to 1000 ft AGL, or selected cruise altitude, maintaining NR at 101%
5. At 1000 ft (300 m) ATS or selected cruise altitude — Accelerate to V_Y and continue climb to final altitude at V_Y.
6. OEI SEL button on collective — Select as required
7. PARK BRAKE — Release.
8. LH LDG LT & RH LDG LT — OFF/STOW (if used)
9. PFD page — Select MAG
10. Refer Single Engine Procedure Page 159.

CAT A SINGLE ENGINE FAILURE DURING APPROACH AND LANDING

HELIPAD VERTICAL LANDING

RECOGNIZED PRIOR TO LDP (BALKED LANDING) FOR GROUNDSPEED ABOVE 15 KTS

1. Engine failure prior to LDP — Rotate nose to 0°. Use collective droop NR to a minimum of 90%.
2. Acceleration/Climb — Continue acceleration up to V_{BLSS} (50 KIAS), while lowering collective to recover NR to 101%.
3. Climb — At V_{BLSS} (50 KIAS) adjust pitch attitude to climb to 200 ft ALS with 2.5min power range maintaining NR at 101% to ensure full power being applied.
4. At 200 ft ALS — Landing gear - UP
   Continue climb accelerating to V_{COSS} using 2.5 min power range, up to 1000 ft AGL, maintaining NR at 101%.
5. At 1000 ft ALS — Accelerate to V_Y and continue climb to final altitude at V_Y.
6. OEI SEL button — Select as required
7. PARK BRAKE — Release.
8. LH & RH LDG LT — OFF/STOW (if used).
9. Refer to Single Engine Procedure Page 159.

FOR GROUNDSPEED BELOW 15 KTS

1. Engine failure — Rotate nose down to -12°. Maintain until achieving a groundspeed of 20 kts then rotate nose up to +6° in 4 seconds. Use collective to droop NR to a minimum of 90%.
2. Acceleration/Climb — Reduce attitude to +4° and continue acceleration up to V_{BLSS} (50 KIAS) while lowering collective to recover NR to 101%.
3. Climb — When aircraft achieves V_{BLSS} (50 KIAS) adjust pitch attitude to climb to 200 ft ALS with 2.5min power range, maintaining NR at 101% to ensure full power is being applied.
4. At 200 ft ALS — Landing gear - UP
   Continue climb accelerating to V_{COSS} using 2.5 min power range, up to 1000 ft AGL maintaining NR at 101%.

5. At 1000 ft ALS — Accelerate to V_Y and continue climb to final altitude at V_Y.
6. OEI SEL button — Select as required
7. PARK BRAKE — Release.
8. LH & RH LDG LT — OFF/STOW (if used).
9. Refer to Single Engine Procedure Page 159.

RECOGNIZED AT OR AFTER LDP (OEI LANDING)

1. Engine failure — Maintain position and descend vertically. Use collective to maintain NR at 100%.
2. At 10 ft ALS — Use collective to cushion touchdown on landing zone.
3. Landing — After touchdown, centralize cyclic, reduce collective to MPOG and apply wheel brakes.
4. Engine — On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26.
5. PARK BRAKE — As required.
6. Consider Emergency Ground Egress procedure Page 27.

END

GROUND HELIPORT LANDING

RECOGNIZED PRIOR TO LDP (BALKED LANDING)

1.	Engine failure prior to LDP	— Attain nose down attitude change of -2° and accelerate to V_{BLSS} (50 KIAS). Use collective to droop NR to a minimum of 90%.
2.	Climb	— At V_{BLSS} (50 KIAS) adjust pitch attitude to climb to 200 ft ALS with 2.5 min power while using collective to recover NR to 101% to ensure full power is being applied.
3.	At 200 ft ALS	— Landing gear - UP Continue climb accelerating to V_{COSS} using 2.5 min power range, maintaining NR at 101%.
4.	Climb	— Continue climb at V_{COSS} to 1000 ft.
5.	At 1000 ft ALS	— Accelerate to V_Y and continue climb to final altitude at V_Y.
6.	OEI SEL button	— Select as required
7.	PARK BRAKE	— Release.
8.	LH & RH LDG LTS	— OFF/STOW (if used).

9. Refer to Single Engine Procedure Page 159.

RECOGNIZED AT OR AFTER LDP (OEI LANDING)

1.	Collective/Cyclic	— Continue descent. Increase pitch attitude to reduce speed. Use collective to reduce rate of descent.
2.	At 10 ft ALS	— Use collective to cushion touchdown. Minimum rotor speed 90%, maximum 15° nose up and maximum groundspeed 5 kts on landing.
3.	Landing	— After touchdown, centralize cyclic, reduce collective to MPOG and apply wheel brakes as required.
4.	Engine	— On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26.
5.	PARK BRAKE	— As required.
6.	LDG LTS	— OFF/STOW, if used.

7. Consider Emergency Ground Egress procedure Page 27.

END

OEI PROC
CAT A/B

CLEAR AREA LANDING

RECOGNIZED PRIOR TO LDP (BALKED LANDING)

1. Engine failure prio to LDP — Attain nose down attitude change of -2° and — obtain airspeed of V_{BLSS}. Use collective to — droop NR to a minimum of 90%.
2. Climb — At V_{BLSS} adjust pitch attitude to climb to 200 ft AGL with 2.5 min power while using collective to recover NR to 101%.
3. At 200 ft AGL — Landing gear - UP and level off to accelerate to V_Y (80 KIAS) using 2.5 min power rating range maintaining NR at 101%.
4. OEI SEL button — Select as required
5. Climb — Continue climb at V_Y to 1000 ft maintaining NR at 101%.
6. At 1000 ft AGL — Continue climb to final altitude at V_Y.
7. LH & RH LDG LTS — OFF/STOW (if used).
8. Refer to Single Engine Procedure Page 159.

RECOGNIZED AT OR AFTER LDP (OEI LANDING)

1. Collective/cyclic — Obtain nose up attitude change of +5°. Use collective to control rotor droop to a minimum of 90%.
2. At 10 ft ALS — Use collective to cushion touchdown for a rolling landing. At touchdown maximum attitude 15° nose up and 60 KIAS airspeed.
3. Landing — After touchdown, centralize cyclic, reduce collective to MPOG and apply wheel brakes.
4. Engine — On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26.
5. PARK BRAKE — As required.
6. Consider Emergency Ground Egress procedure Page 27.

END

OEI PROC
CAT A/B

OFFSHORE/ELEVATED HELIDECK LANDING

RECOGNIZED PRIOR TO LDP (BALKED LANDING)

1.	Engine failure prior to LDP	— Rotate nose to -12° to achieve 25 kts GS using collective to droop NR to a minimum of 90%.
2.	Acceleration/Climb	— Increase attitude to +5° and continue acceleration up to V_{BLSS}. while lowering collective to recover NR to 101%.
3.	Climb	— When the aircraft achieves V_{BLSS} adjust pitch attitude to climb to 200 ft with 2.5 min power range maintaining NR at 101% to ensure full power is being applied.
4.	At 200 ft ALS	— Landing gear - UP. Continue climb accelerating to V_{COSS}, using 2.5min power range, up to 1000 ft AGL, or selected cruise altitude, maintaining NR at 101%
5.	At 1000 ft ALS or selected cruise altitude	— Accelerate to V_Y and continue climb to final altitude at V_Y.
6.	OEI SEL button on collective	— Select as required.
7.	PARK BRAKE	— Release
8.	LH LDG LT & RH LDG LT	— OFF/STOW (if used)
9.	PFD page	— Select MAG

10. Refer Single Engine Procedure Page 159.

RECOGNIZED AT OR AFTER LDP (OEI LANDING)

1. Engine failure at or after LDP — Engine failure at or after LDP
2. Collective/Cyclic — Continue towards the landing platform for touchdown.
   Minimum rotor speed 90% NR,.
   Maximum allowed GS at touchdown 5kts.
3. Landing — After touchdown centralize cyclic, reduce collective to MPOG.
4. Engine — On affected engine, carry out ENGINE SHUTDOWN IN AN EMERGENCY procedure Page 26
5. PARK BRAKE — As required.
6. Consider Emergency Ground Egress procedure Page 27.

SECTION END

LIMITED ICE PROTECTION SYSTEM (LIPS)

TABLE OF LIPS CAS CAUTIONS

CAS Caption on MFD	Page	Failure/System State
ICING	LIPS-2	Displayed when LIPS selected OFF and OAT less than or equal to +4°C or first time ice detected (caution remains for 5 seconds)
ICE LIMIT	LIPS-3	Displayed when TIME in ICE limit (5 minutes) is reached in flight or flight into icing VACATE ZONE.
ICE 5 MIN	LIPS-2	Displayed when in LIMIT LIMITED Zone (Ice Severity Indicator Amber)
IPS DATA	LIPS-4	Displayed when the LIPS system has failed.
1 ICE DET FAIL	LIPS-4	Displayed when Ice Detector 1 has failed
2 ICE DET FAIL	LIPS-4	Displayed when Ice Detector 2 has failed
1-2 ICE DET FAIL	LIPS-5	Displayed when Ice Detector 1 & 2 have failed
1 IPS OAT FAIL	LIPS-4	Displayed when OAT 1 sensor has failed
2 IPS OAT FAIL	LIPS-4	Displayed when OAT 2 sensor has failed
1-2 IPS OAT FAIL	LIPS-5	Displayed when OAT 1 & 2 sensors have failed
1 WSHLD HTR FAIL	LIPS-4	Displayed when W/S 1 heating has failed and/or LIPS ICB failed
2 WSHLD HTR FAIL	LIPS-4	Displayed when W/S 2 heating has failed and/or LIPS ICB failed
1-2 WSHLD HTR FAIL	LIPS-5	Displayed when W/S 1 & 2 heating has failed and/or LIPS ICB failed
1(2) INTAKE FAIL	LIPS-6	Associated heated engine air intake failure
ENG A/ICE OFF	LIPS-6	IPS selected ON, ice severity indicator positive indication, OAT less than 5°C and engine anti icing not selected to ON.
1(2) INTAKE FAIL	LIPS-6	Associated engine anti ice bleed valve closed with engine anti icing selected ON.

PILOT ACTION IN CASE OF SEVERE ICE ENCOUNTER

If severe icing conditions are encountered:

1.	**Flight condition**	**— Vacate icing conditions immediately**
2.	**Airspeed**	**— 80 KIAS**
3.	**PI**	**— Up to 116%**
4.	Systems	— Check for failures

Severe icing conditions are indicated by:

- High PI rise (>30% above normal for flight condition)
- High LWC (>1.5 g/m^3)
- Heavy amounts of water streaming across windscreens
- Evidence of SLD (ice forming on sides of aircraft and SLD Marker ice accretion)
- Increase in vibration
- Tendency for significant speed loss

END

ICING CAUTION

ICING

IPS selected OFF and OAT less than 4°C or icing conditions encountered for the first time (Caution illuminates for 5 seconds)

- Confirm LIPS selected ON

END

ICING CONDITION

ICE 5 MIN

Caution illuminated when Time limited icing zone entered

- Continue flight monitoring TIME IN ICE, PI values, SLD marker, Vernier (if fitted) and aircraft vibrations. Prepare to change flight condition to reduce ice severity or vacate icing

END

TIME LIMIT IN ICE

ICE LIMIT

Maximum Time in Limited Ice reached
or flight in the 'VACATE ZONE'

- When cautions remains illuminated
Manoeuvre to a reduced icing condition
or vacate icing as soon as possible

END

VACATING THE ICING ENVIRONMENT

Vacating the icing environment, due to expiry of the maximum "TIME LIMITED ZONE" of 5 minutes or entry into the "VACATE ZONE" requires the aircraft to manoeuvre into a less severe ambient OAT and LWC icing zone.

When vacating into the "NO-ICE ZONE" ice shedding will take place and after a period of approximately 2 minutes in this zone the aircraft should be clear of ice and it is possible to re-enter the "TIME LIMITED ZONE", if required.

When vacating into the "NO-LIMIT ZONE" there is no ice shedding but no increase in ice accumulation so these ambient conditions can be maintained with no time limit, however, re-entry into the "TIME LIMITED ZONE" is only permitted if a total time of 5 minutes in the "TIME LIMITED ZONE" has not occurred.

END

AC GENERATOR FAILURE

An AC generator fail will cause the loss of the Engine Intake Heater, the Windscreen Heater and the Ice Detector heating of the associated engine. Vacate Icing conditions whilst completing the relevant Generator Failure Procedures in the Basic RFM Section 3.

When the AC power has been restored carry out the following:

1. Select LIPS system OFF and back to ON to re-activate the windscreen heating and Ice detector heating.
2. Select the associated ENG A/ICE-INTAKE switch to OFF and back to FULL to re-activate the intake anti-icing.
   If this cannot be carried out within approximately 2 minutes of the failure the aircraft should first be flown in a zone of positive air temperature long enough to assure the intake will not have ice accretion before selecting ENG A/ICE-INTAKE switch to OFF and back to FULL.

CAUTION

If INTAKE anti-ice cannot be restored vacate icing conditions. Do not select the ENG A/ICE-INTAKE system OFF and ON again on affected engine.

Note

Ensure APU loads under 100%.

END

LIPS

LIPS SYSTEM FAIL

IPS DATA

AMMC not receiving ICB
CH A and CH B information

- Vacate the icing condition
as soon as possible

END

SINGLE ICE DETECTOR FAILURE

1 ICE DET FAIL

Ice Detector N°1 failed

Continue flight

or

2 ICE DET FAIL

Ice Detector N°2 failed

Continue flight

END

SINGLE WINDSHIELD HEATER FAILURE

1 WSHLD HTR FAIL

Copilot windshield heater failure

Continue flight

or

2 WSHLD HTR FAIL

Pilot windshield heater failure

Continue flight

END

SINGLE OAT SENSOR FAILURE

1 IPS OAT FAIL

OAT N°1 information to
ICB invalid

Continue flight

or

2 IPS OAT FAIL

OAT N°2 information to
ICB invalid

Continue flight

END

DOUBLE ICE DETECTOR FAILURE

1-2 ICE DET FAIL + Loss of Ice Severity meter arrow on PFD

Both Ice Detectors failed

- Do NOT enter icing conditions
or
- Vacate icing conditions as soon as possible

END

DOUBLE OAT SENSOR FAILURE

1-2 IPS OAT FAIL + Loss of Ice Severity meter arrow on PFD

Both OAT sensors failed

- Do NOT enter icing conditions
or
- Vacate icing conditions as soon as possible

END

DOUBLE WINDSHIELD HEATER FAILURE

1-2 WSHLD HTR FAIL

Pilot and copilot windshield heater failure or LIPS ICB communication failure

Continue flight
Confirm, by touching windshields they are being heated.
Vacate icing conditions if visibility through windscreen unacceptable

END

AIR INTAKE HEATER FAILURE

1(2) INTAKE FAIL

Associated engine heated air intake failure

- Select ENG A/ICE-INTAKE to A/ICE then, back FULL to re-activate Intake Heater

If caution clears

Continue flight

If caution remains

Vacate icing conditions

CAUTION

Select the ENG A/ICE-INTAKE switch from FULL to A/ICE to de-activate Intake heater sysyem.

Note

An INTAKE FAIL caution will illuminate if the system is selected ON and the engine NG is below 79%.

END

ENGINE ANTI ICING SELECTED OFF

ENG A/ICE OFF

LIPS selected ON, Ice Severity meter positive indication and OAT is equal or less than 5°C and either one or both engine INTAKE and ANTI ICE switches selected OFF

- Select ENG A/ICE-INTAKE switches to FULL

Continue flight

END

ENGINE ANTI ICING FAIL

1(2) ENG A/ICE FAIL

Associated engine anti ice bleed valve closed with ENG ANTI ICE switch selected to A/ICE or FULL

Continue flight
Vacate icing conditions

SECTION END

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ICE PROTECTION SYSTEM (IPS)

TABLE OF CAS WARNING/CAUTIONS

CAS Caption on MFD	Page	Failure/System State
IPS MR FAIL	IPS-3	Main rotor blades heating critical failure (IPS automatically selected to OFF and tail rotor heating also lost).
ICING	IPS-4	IPS OFF and OAT less than/equal to +4°C Or Displayed for 5 seconds when the IPS system ON and ice detected from at least one Ice detector
IPS OVRD MODE	IPS-4	IPS selected to Override mode
IPS TEMP	IPS-5	IPS set to MANual mode and OAT > 4°C
IPS AC GEN FAIL	IPS-3	IPS AC GEN off line when selected ON
IPS DATA	IPS-7	Both ICB ARINC lines invalid or loss of data
IPS CH B FAIL	IPS-11	ICB Channel B failure/loss or redundancy
IPS MR DEGR	IPS-5	Main rotor blade heating non critical failure
IPS TR DEGR	IPS-6	Loss of one pair of tail rotor blade heaters
IPS TR FAIL	IPS-6	Loss of both pairs of tail rotor blade heaters
ICE LIMIT	IPS-3	Icing conditions in VACATE zone for Main Rotor/Tail Rotor heating failure
1 ICE DET FAIL	IPS-7	Displayed when Ice Detector 1 has failed
2 ICE DET FAIL	IPS-7	Displayed when Ice Detector 2 has failed
1-2 ICE DET FAIL	IPS-8	Displayed when Ice Detector 1 & 2 have failed
1 IPS OAT FAIL	IPS-8	Displayed when OAT 1 sensor has failed
2 IPS OAT FAIL	IPS-8	Displayed when OAT 2 sensor has failed
1-2 IPS OAT FAIL	IPS-9	Displayed when OAT 1 & 2 sensors have failed
1 WSHLD HTR FAIL	IPS-7	Displayed when W/S 1 heating has failed
2 WSHLD HTR FAIL	IPS-7	Displayed when W/S 2 heating has failed
1-2 WSHLD HTR FAIL	IPS-9	Displayed when W/S 1 & 2 heating has failed
1(2) INTAKE FAIL	IPS-10	Associated heated engine air intake failure
ENG A/ICE OFF	IPS-10	IPS selected ON, Ice severity meter positive indication and OAT less than 5°C and engine anti icing not selected to ON.
1(2) ENG A/ICE FAIL	IPS-11	Associated engine anti ice bleed valve closed with engine anti icing selected ON.

PILOT ACTION IN CASE OF SEVERE ICE ENCOUNTER

If severe icing conditions are encountered:

1.	**Flight condition**	**— Vacate icing conditions immediately**
2.	**Airspeed**	**— 80 KIAS**
3.	**PI**	**— Up to 116%**
4.	Systems	— Check for failures

Severe icing conditions are indicated by:

- High PI rise (>30% above normal for flight condition)
- High LWC (>1.5 g/m^3)
- Heavy amounts of water streaming across windscreens
- Evidence of SLD (ice forming on sides of aircraft and SLD Marker ice accretion on red band)
- Increase in vibration
- Tendency for significant speed loss

END

IPS MR SYSTEM FAILURE

IPS MR FAIL + **IPS TR FAIL** + Voice Warning

+ possible **IPS AC GEN FAIL**

Main Rotor blades heating failure and
automatic deactivation of tail rotor blade heating

1.	**IPS** (ECDU ICE PROTECTION page)	**— OFF**
2.	**IPS GEN** (ECDU ICE PROTECTION page)	**— OFF**
3.	**APU**	**— Start**

After APU GEN on-line

- Select IPS to ON
  (ECDU ICE PROTECTION page)

If warning and caution clear and **IPS MR DEGR** caution illuminates

Continue flight
When IPS is powered by the APU GEN, the MRB non critical zones will not be heated. Consider vacating icing conditions as soon as practicable.

If warning and caution remain

IPS system failure

If APU GEN not available

- *If* Ice severity meter in green band consider vacating icing conditions as soon as possible

- *If* **ICE LIMIT** caution illuminates

Vacate Icing conditions as soon as possible with speed not exceeding 100 KIAS

END

IPS

ICING CAUTION

ICING

OAT equal or less than +4° C
and IPS selected OFF

- Select IPS GEN ON
- Select IPS to AUTO
  (ECDU ICE PROTECTION page)
- Confirm caution extinguishes

Icing condition encountered
for first time with IPS in AUTO
(Caution illuminates for
5 seconds)

END

IPS MANUAL MODE CAUTION

IPS OVRD MODE

IPS selected to OVERRIDE MODE

Continue flight

CAUTION

Pilot should be aware that prolonged use of IPS in Override Mode can cause “runback ice”, which can give steady torque rise. In this case reduce speed to 80 KIAS and vacate icing condition as soon as possible.
Monitor PI, A/C vibrations, OAT and SLD marker.
IPS OVRD mode is prohibited if temperature is above +4°C.

END

IPS TEMPERATURE CAUTION

IPS TEMP

IPS selected to MAN MODE
with OAT greater than 4°C

- Select IPS to AUTO
(ECDU ICE PROTECTION page)

If caution clears

Continue flight

If caution remains

- Select IPS to OFF
(ECDU ICE PROTECTION page)

Continue flight
Operation in icing conditions not permitted

END

IPS MAIN ROTOR DEGRADE CAUTION

IPS MR DEGR

Main Rotor Blade heating non critical failure and/or ICB Ch A failure

Continue flight

The MRB non critical zones will not be heated, consider vacating icing conditions as soon as practicable

Note
A higher than usual increase in PI can be expected.

END

IPS TAIL ROTOR DEGRADE CAUTION

IPS TR DEGR

Failure of 2 tail rotor blade heaters

If Ice severity meter in green band consider vacating icing conditions as soon as practicable.

Note

Loss of TR heating can result in a noticeable increase in TR vibration due to asymmetric shedding of ice accumulations. After TR heating failure in icing, the vibration can increase even after having exited icing conditions, due to the natural shedding that occurs resulting in TR unbalance.

END

IPS TAIL ROTOR FAIL CAUTION

IPS TR FAIL

Failure of 4 tail rotor blade heaters

If Ice severity meter in green band consider vacating icing conditions as soon as practicable.

Note

Loss of TR heating can result in a noticeable increase in TR vibration due to asymmetric shedding of ice accretion. After TR heating failure in icing, the vibration can increase even after having exited icing conditions, due to the natural shedding that occurs resulting in TR unbalance.
Be prepared to leave icing conditions as soon as possible if the **ICE LIMIT** caution illuminates.

END

IPS DATA CAUTION

IPS DATA

Both ICB ARINC lines invalid or loss of data
Loss of Ice Severity arrow on PFD

- Select IPS to OFF then to ON (ECDU ICE PROTECTION page)

If caution clears

Continue flight

If caution remains

Reduce speed to 100 KIAS and vacate icing condition as soon as possible.
Monitor PI, A/C vibrations, OAT and SLD marker whilst in icing conditions

END

SINGLE ICE DETECTOR FAILURE

1 ICE DET FAIL

Ice Detector N°1 failed

Continue flight

or

2 ICE DET FAIL

Ice Detector N°2 failed

Continue flight

END

SINGLE WINDSHIELD HEATER FAILURE

1 WSHLD HTR FAIL

Copilot windshield heater failure

Continue flight

or

2 WSHLD HTR FAIL

Pilot windshield heater failure

Continue flight

END

SINGLE OAT SENSOR FAILURE

1 IPS OAT FAIL

OAT N°1 information to ICB invalid

Continue flight

or

2 IPS OAT FAIL

OAT N°2 information to ICB invalid

Continue flight

END

DOUBLE ICE DETECTOR FAILURE

1-2 ICE DET FAIL + Loss of Ice Severity Meter arrow on PFD

Both Ice Detectors failed

- Select IPS to OFF then ON
(ECDU ICE PROTECTION page)

If caution clears

Continue flight

If caution remains

IPS will operate with default settings

Note

The default setting may give a heating schedule not optimised for the atmospheric conditions. The Pilot should be aware of the possibility of Runback ice and should monitor PI, OAT, A/C vibrations and SLD marker, to understand the type of ice encountered and should consider minimizing time in icing conditions.
If the OAT is below -15°C, selecting OVRD mode may help to reduce PI increase.

END

DOUBLE OAT SENSOR FAILURE

1-2 IPS OAT FAIL + Loss of Ice Severity Meter arrow on PFD

+

subsequent **1-2 ICE DET FAIL**

Both OAT Sensors failed

- Select IPS to OFF then ON
  (ECDU ICE PROTECTION page)

If caution clears

Continue flight

If caution remains

IPS will operate with default settings

Note

The default setting may give a heating schedule not optimised for the atmospheric conditions. The Pilot should be aware of the possibility of Runback ice and should monitor PI, OAT, A/C vibrations and SLD marker, to understand the type of ice encountered and should consider minimizing time in icing conditions.

If the OAT is below -15°C, selecting OVRD mode may help to reduce PI increase.

END

DOUBLE WINDSHIELD HEATER FAILURE

1-2 WSHLD HTR FAIL

Pilot and copilot windshield heater failure

Continue flight
- Confirm, by touching windshields, they are being heated.
  Vacate icing conditions if visibility through windshield unacceptable

END

AIR INTAKE HEATER FAILURE

1(2) INTAKE FAIL

Associated engine heated air intake failure

- Select ENG A/ICE-INTAKE to A/ICE then, back FULL to re-activate Intake Heater

If caution clears

Continue flight

If caution remains

Vacate icing conditions

CAUTION

Select the ENG A/ICE-INTAKE switch from FULL to A/ICE to de-activate Intake heater sysyem.

Note

An INTAKE FAIL caution will illuminate if the system is selected ON and the engine NG is below 79%.

END

ENGINE ANTI ICING SELECTED OFF

ENG A/ICE OFF

IPS selected ON, an LWC value is being measured by the IPS and the OAT is equal or less than 5°C and either one or both engine INTAKE or ANTI ICE switches selected OFF

- Select ENG A/ICE-INTAKE switches to FULL

Continue flight

END

ENGINE ANTI ICING FAIL

1(2) ENG A/ICE FAIL

Associated engine anti ice bleed valve closed with ENG ANTI ICE switch selected to A/ICE or FULL

Continue flight
Vacate icing conditions

IPS CHANNEL B FAILURE

IPS CH B FAIL

Loss of IPS redundancy

On ground

- Shutdown aircraft for maintenance action

In flight

Continue flight

END

SINGLE ENGINE PROCEDURE

In OEI conditions, after the revelant engine failure procedures and single engine procedures in the Basic RFM Section 3 have been followed:

CAUTION

Do not select associated ENG SOV to OVERRIDE/OPEN when in icing conditions.

END

ENGINE AC GENERATOR FAILURES

A single or double engine AC generator fail will cause the loss of the Engine Intake Heater, the windshield Heater and the Ice Detector heating of the associated engine. Complete the relevant Generator Failure Procedures in the Basic RFM Section 3.

When the AC power has been restored carry out the following:

1. Select IPS system OFF and back to ON to re-activate the windshield heating and Ice detector heating.
2. Select the associated ENG A/ICE-INTAKE switch from FULL to ENG A/ICE and back to FULL to re-activate the intake anti-icing. Confirm caution clears.

CAUTION

If the INTAKE anti-ice cannot be restored vacate icing conditions. Do not select the ENG A/ICE-INTAKE system to FULL on the affected engine.

Note

APU loads should be monitored and equipment selected OFF to maintain load under 100%.

SECTION END