Gama Aviation

Operations Manual

Part B1

King Air B200

(EASA)

Issue 7
Revision 1

May 2019

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UK Civil Aviation Authority

OPERATIONS MANUAL - NOTICE OF PROPOSED AMENDMENT (NPA)
Applicable to Air Operator Certificate (AOC) Holders

Operator Name:...Gama Aviation (UK) Limited.....

NPA Number:..... **AOC No:** 1068.....

OM Part/ Section	Amdt/ Rev No.	Reason for Amendment	Effective Date	Approval Ref.(Note 5)
Part B1	Issue 7 – Revision 1	Following a review of sections 2 and 3. NTA 002/18/F NTA 021/18/F NTA 002/18/F NTA 021/18/F NTA 001/19/F NTA 004/19/F	May 2019	
Section 2	-	Updated Minor text amendments (Para 2.3.3, 2.3.4, 2.3.8, 2.3.12, 2.3.13, 2.3.14) Text amendments (Para 2.3.5, 2.3.6, 2.3.11.2) Checklist update (Para 2.4.9.1, 2.4.9.2, 2.4.9.3, 2.4.9.4) - NTA 001/19/F Flight Profiles and SOP Flows (Para 2.4.10)	May 2019	
Section 3	-	Updated Minor text amendments (Para 3.1, 3.8, 3.11.3.2, 3.14.1) Diagram updates (Para 3.8.1)	May 2019	
Section 6	-	Table Updated (Para 6.1.2) - NTA 004/19/F	May 2019	
Section 7	-	Diagram added (Para 7.2.1) - NTA 021/18/F Para 7.4 Text added - NTA 002/18/F	May 2019	
Section 10	-	Diagram Added (Para 10.1.1) - NTA 021/18/F	May 2019	
Section 11	-	Passenger Safety Card Added (Para 11.3.5) - NTA 021/18/F	May 2019	

AOC Declaration:(Note 1)

I hereby submit this Operations Manual NPA for approval. I confirm that I am satisfied this submission has been satisfactorily prepared and that I have checked the contents for accuracy.

Name: G. BRAIN Date: 9-5-19.

Signature: ..... Position: DPO

Notes:

1) This form should be signed by the person responsible for maintaining the Operations Manual content that this NPA is applicable to.

2) This form is available as a Microsoft Word document to enable it to be filled in electronically and submitted by e-mail.

3) The Operator Name and AOC Number at the top of the table must be completed.

4) Additional rows in the table can be inserted as required, in order to fully summarise the amendment.

5) The 'Approval Ref.' column is to indicate that text has been added/altered in the Operations Manual that directly affects Approvals as listed on the current AOC 'Operations Approval' document or the 'Operations Approval Checklist', which is available on the CAA website. When this is applicable, the Regulatory reference (e.g. SPA.RVSM.100) should be included.

6) Amended or new text must be clearly indicated as such in the Operations Manual.

7) Further guidance on what is required for aeroplane and helicopter AOC holders can be found in Chapter 2 of **CAP 789**, Requirements and Guidance Material for Operators. For balloon AOC holders, further guidance can be found in **CAP 611**.

8) This form should be submitted by email to the following addresses:

   - For aeroplane and helicopter AOC holders: **NPA@caa.co.uk**
   - For balloon AOC holders: **ga@caa.co.uk**

   The assigned Lead Inspector should also be included in email correspondence.

9) Alternatively, this form may be submitted by post to:

   - NPA Co-ordinator (FOD)
     Shared Services Centre
     Aviation House, GE
     Gatwick Airport South
     West Sussex
     RH6 0YR

     for aeroplane and helicopter AOC holders.

   - General Aviation Unit
     Aviation House, 2E
     Gatwick Airport South
     West Sussex
     RH6 0YR

     for balloon AOC holders.

This page is for CAA use only.

AOC No: [redacted]

CAA Comment, Acceptance and/or Approval (delete as appropriate).

Applicability: Paragraphs 1 2 3 (circle one or more as applicable).

Paragraph 1 – Not Affecting an Operations Approval

The proposed amendment affects material that **does not** affect the continued validity of the AOC holders Operations Approval.

The amendment is accepted for incorporation into the Operations Manual effective from *(date)* ....., but may be subject to future comment.

Paragraph 2 – Affecting an Existing Operations Approval

The proposed amendment affects material relating to an **existing Approval**, as listed on the cover page and/or the AOC holders Operations Approval.

The amendment is approved for incorporation into the Operations Manual effective from *(date)* ..... and the Operations Approval has been re-issued / remains effective *(delete as appropriate.)*

Paragraph 3 – Application for a New Operations Approval

The proposed amendment affects material relating to an application for a **new Approval**, as listed on the cover page and/or the master Operations Approval Document.

The amendment is approved for incorporation into the Operations Manual effective from *(date)* ..... and the Operations Approval has been issued / re-issued / remains effective *(delete as appropriate.)*

Name: P Stroud Date: 08/05/2019

Signature: P D Stroud Position: Flight Operations Inspector

Preface

This manual forms part of the Operations Manual of Gama Aviation (UK) Limited.

The Management responsibilities and supporting procedures referred to in this Manual are approved and must be adhered to.

Nothing in this manual overrides the need to comply with International Air Navigation requirements and Airworthiness Requirements endorsed by the relevant Aviation Authority for the State of Registry.

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REVISION HISTORY

This part of the Operations Manual provides a detailed history of the revisions to the manual. It also specifies the effective revision state of each of the manual's constituent parts. This page is to be kept in the front of the Operations Manual.

1. General

This revision contains updates following a complete review of sections 2 and 3 and the inclusion of the following Notacs:

- NTA 002/18/F
- NTA 021/18/F
- NTA 002/18/F
- NTA 021/18/F
- NTA 001/19/F
- NTA 004/19/F

1.1 Part B1 editorial changes and inclusions:

Header - Amended to reflect current revision status.

LOEP - Amended to reflect current revision status.

Section 2 - Minor text amendments *(Para 2.3.3, 2.3.4, 2.3.8, 2.3.12, 2.3.13, 2.3.14)*
Text amendments *(Para 2.3.5, 2.3.6, 2.3.11.2)*
Checklist updated *(Para 2.4.9.1, 2.4.9.2, 2.4.9.3, 2.4.9.4) - NTA 001/19/F*
Flight Profiles and SOP Flows *(Para 2.4.10)*

Section 3 - Minor text amendments *(Para 3.1, 3.8, 3.11.3.2, 3.13.3, 3.14.1)*
Diagram updates *(Para 3.8.1)*

Section 6 - Table updated *(Para 6.1.2) - NTA 004/19/F*

Section 7 - Diagram added *(Para 7.2.1) - NTA 021/18/F*
Para 7.4 Text added - *NTA 002/18/F*

Section 10 - Diagram added *(Para 10.1.1) - NTA 021/18/F*

Section 11 - Passenger Safety Card added *(Para 11.3.5) - NTA 021/18/F*

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List of Effective Pages

Sections	Revision	Date
Header	**1**	**May 2019**
Preface	Original	December 2017
Revision History	**1**	**May 2019**
LOEP	**1**	**May 2019**
TOC	Original	December 2017
0	Original	December 2017
1	Original	December 2017
2	**1**	**May 2019**
3	**1**	**May 2019**
4	Original	December 2017
5	Original	December 2017
6	**1**	**May 2019**
7	**1**	**May 2019**
8	Original	December 2017
9	Original	December 2017
10	**1**	**May 2019**
11	**1**	**May 2019**
12	Original	December 2017

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Table of Contents

Section 3 – Abnormal and/or Emergency Procedures

Section 4 – Performance

Section 10 – Survival and Emergency Equipment Including Oxygen

Section 11 – Emergency Evacuation Procedures

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Section 0 - General Information and Units of Measurement

0.1 General

It is intended that this Part B will contain all the B200 and B200C specific information required to operate the aircraft safely and to the required standards. The aircraft flight manual forms part of this section. Pilots should be familiar with the AFM and Raisbeck POH Supplement and where conflict arises the most restrictive case must be used.

0.2 The Units of Measurement

a. Aircraft Measurements	Feet and Inches	
b. Fuel	(a) Gauged (b) Volume (c) Weight (d) Flow	Pounds Litres Pounds Pounds/Hour
c. Engine Gauges	(a) Torque (b) ITT (c) Propeller Speed (d) N1 Speed (e) Engine Oil Temp (f) Engine Oil Pressure	Ft/lbs Deg C RPM Percent Deg C lb/in2
d. Quantities	(a) Oil (a) (b) Hydraulic Fluid	U/S Gallons U/S Gallons

The units of measurement used in this manual are those laid down for the United Kingdom in the UK ATP GEN 1-16 with the exception of weight/mass which for Gama Aviation purposes will be expressed in pounds (lbs) Also see Jeppessen Flight Guide *(Air Traffic Control - United Kingdom - Rules and Procedures)*

Long distances i.e. airways	Nautical Miles and tenths	nm
Short distances i.e. runways	Feet	ft
Altitudes, elevations and heights	Feet	ft
Horizontal speed inc: wind speed	Knots	kts
Vertical speed	Feet/Minute	ft/min
Visibility inc RVR/ CMV	Kilometres or Metres	km or m
Altimeter setting	Millibars or Hectopascals	mb / HPa
Temperature	Degrees Celsius	° C
Weight/mass	Pounds	Lbs
Wind direction for landing and take-off	Degrees magnetic	°M
Wind direction except for landing and take-off	Degrees true	°T
Date/Time	Hours and minutes. The day 24 hours begins at midnight UTC	Hr, min

0.2.1

Capacities		
Main tanks	PORT	1293 lbs
Main tanks	STARBOARD	1293 lbs
Aux Tank	PORT	529 lbs
Aux Tank	STARBOARD	529 lbs
TOTAL		*3645 lbs*

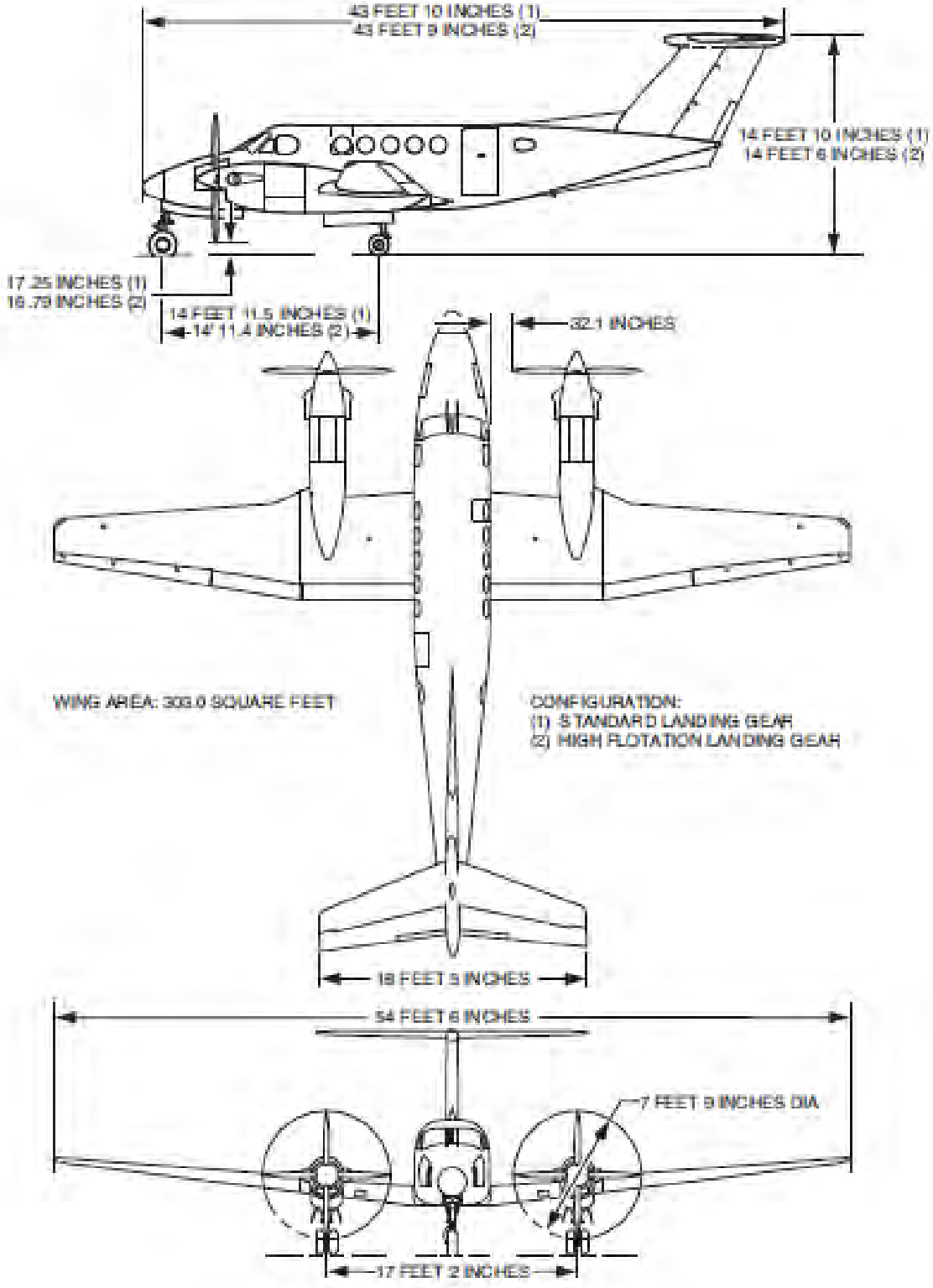
Engine Oil	
Total Engine oil capacity (each engine)	3.5 U/S Gallons

Oxygen	
Total Oxygen Cylinder capacity	115 bic Feet

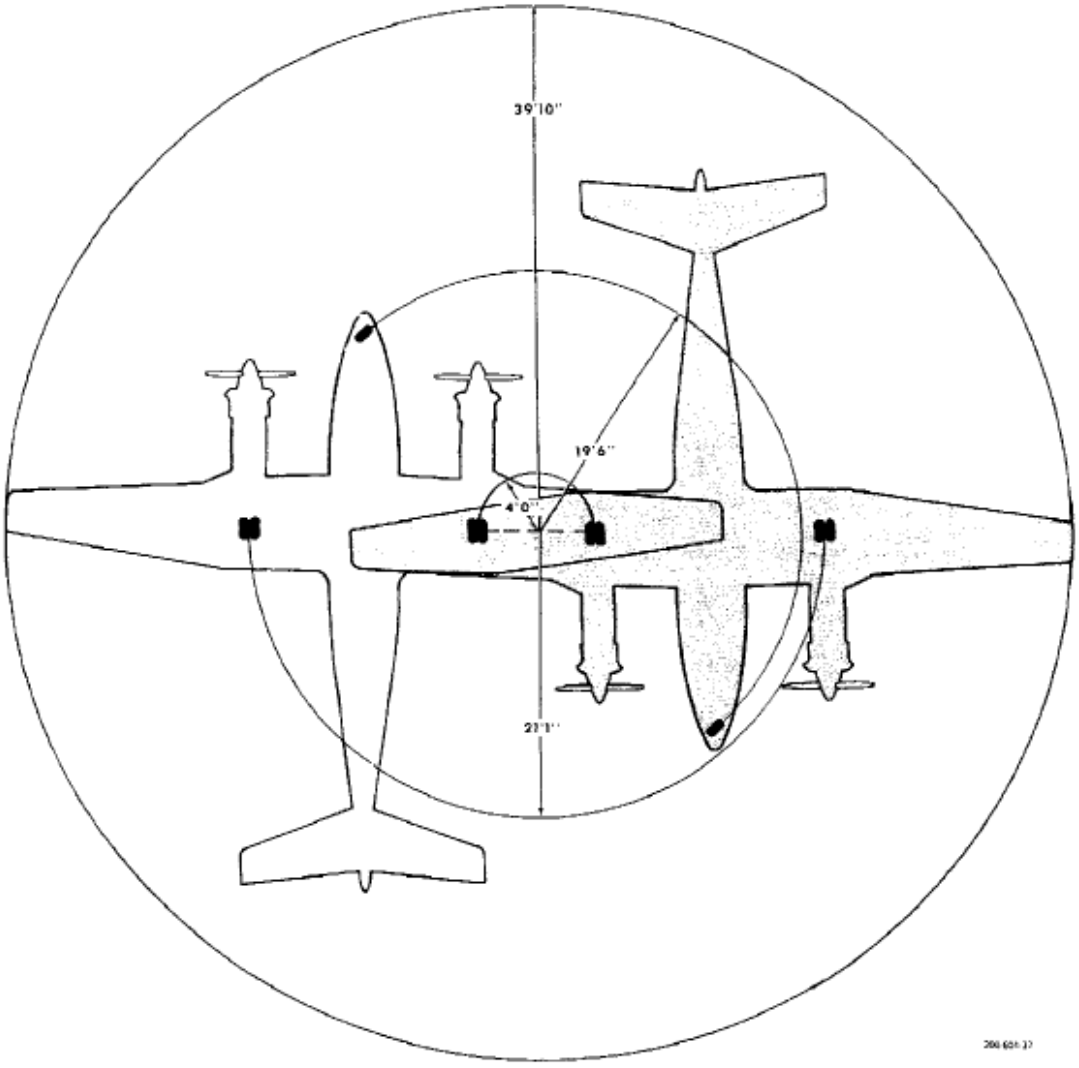
0.2.2 Fuel Conversion Factors - Jet A1 (Specific gravity 0.815)

Liter ⟶	Lbs	Liter ⟶	Lbs
05-7	10	18	
11	20	36	
17	30	54	
23	40	72	
28	50	90	
34	60	110	
40	70	130	
45	80	140	
51	90	160	
57	100	180	
110	200	360	
170	300	540	
230	400	720	
280	500	900	
340	600	1100	
400	700	1300	
450	800	1400	
510	900	1600	
570	1000	1800	

0.3 External Dimensions



0.4 Radius of Turn



Radius for inside Gear	-	4 Feet 0 inches
Radius for Nose Wheel	-	19 feet 6 inches
Radius for Outside Gear	-	21 feet 1 inch
Radius for Wing Tip	-	39 feet 10 inches

0.5 Cabin Dimensions

Cabin Width	-	54 inches
Door Width	-	27 inches
Door Height	-	51 inches

0.6 Cabin Layout

Refer Section 7 of this manual.

0.7 Aircraft Towing Procedures

When the aircraft is likely to be towed crews will:

a. Install the Elevator / Aileron control locks
b. Leave the Rudder control lock OUT (removed)
c. Ensure the aircraft is chocked
d. Parking Brake OFF
e. Place the GREEN “Brakes OFF / Control Locks REMOVED / OK to tow” sign in the pilot’s windshield

NOTE – If the aircraft is not to be moved. Place the RED – “Brakes ON/ Control Locks IN / Do NOT tow” sign in the pilot’s windshield

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Section 1 - Limitations B200

The Aircraft Flight Manual forms part of this section. Full details of aircraft systems are given in the Aircraft Flight Manual (AFM). Listed below are the limitations relevant to the B200 *(G-PCOP and G-GMAE)* and B200C *(G-SASC and G-SASD),* the latter two aircraft being Raisbeck modified B200s.

1.1 Certification Status

EASA
TYPE-CERTIFICATE
DATA SHEET
IM.A.277

Type Certificate Holder:

BEECHCRAFT CORPORATION
10511 East Central
Wichita, KS 67206
USA

For aircraft:

B200
B200C
B200GT
B200CGT
B300
B300C

1.2 Passenger Seating Configuration

The maximum occupancy limit *(including two crew)* is 11, as stated in the Beechcraft B200 Pilot's Operating Handbook. This allows for a maximum certified cabin passenger seating configuration of 9 passengers. - *Please refer to section 7.1 for specific a/c configurations*

1.3 Types of Operation

Approved Operations of the aircraft are: VFR/IFR Day/Night, flights in icing conditions. P-RNAV approved *(G-GMAE, G-SASC and G-SASD only).* G-PCOP is not P-RNAV approved.

1.4 Crew Composition

Two pilots are required for all public transport flights.

1.5 Mass

Maximum Take-Off weight	-	12,500 lbs
Maximum Landing weight	-	12,500 lbs
Maximum Ramp weight	-	12,590 lbs
Maximum Zero Fuel weight	-	11,000 lbs
Maximum baggage compartment	-	550 lbs

1.5.1 Centre Of Gravity Limitations

(Landing Gear – Down)

Aft - 196.4" aft of datum.
Fwd -185.0" aft of datum at 12500 lbs.
181.0" aft of datum at 11279 lbs or below.
C of G datum 190.0" forward of mould line main (forward) spar.

1.6 Maximum Operating Speeds

LIMITING AIRSPEED (KIAS)	B200/200C
Vmo	259
Mmo	0.52
Va	181
FLAP APP	200
FLAP APP-DN	157
GEAR EXTENSION AND DOWN	181
GEAR RETRACT	163

1.7 Flight Envelope

Maximum pressure altitude	35,000 ft
Yaw Damp System	Dual Aft Strakes fitted to both G-SASC and G-SASD – no requirement for operative yaw damper up to 35,000 ft. G-GMAE and G-PCOP have single aft strake – yaw damper must be operative above 17,000 ft.

1.7.1 Altitude and Temperature Operating Limits

Maximum temperature - Sea Level to 25,000 ft – ISA + 37 ºC
Above 25,000 ft – ISA + 31 ºC

1.7.2 Minimum Operating Speed Limits

Display	KIAS or Range		Significance
	Raisbeck	Non Raisbeck	
Red Line	91	86	Air Minimum Control Speed (VMCA)
Solid Red Bar (bottom of scale)			ISS LSC* Marker. The top of the marker changes with flap position to reflect the following stall speeds.
	71	75	Stalling Speed (VSO) at maximum weight with flaps down and idle power.
	83	85	Stalling Speed (VSI) at maximum weight with flaps approach and idle power.
	91	99	Stalling Speed (VSI) at maximum weight with flaps up and idle power.

1.7.3 Load Factors

LOAD FACTORS	
FLAPS UP	+ 3.17g to - 1.27g
FLAPS DOWN	+ 2.00g to – 0.00g

1.8 Wind Limitations

Company aircraft will not operate (taxy, take-off or land) when the surface wind velocity is greater than 60kts. The following CROSSWIND limitations will apply:

Note: When gusts are reported and expected for take-off or landing the average between gusts and the steady wind is used for establishing crosswind limits.

CONDITIONS OF RUNWAY	DRY and WET	SLIPPERY and CONTAMINATED
TAKE-OFF and LANDING	25 KTS	15 KTS
TAXYING	60 KTS	30 KTS

1.9 Performance Limitations for Aircraft Configurations

Max Gear Extension (V_{LO}) & Extended (V_{LE})	181 Kts IAS
Max Gear Retraction (V_{LO})	163 Kts IAS
Max Flap Extension V_{FE} - 40% APP	200 Kts IAS
Max Flap Extension V_{FE} -100% DN	157 Kts IAS
Two-Engine Best-Angle-of-Climb (V_X)	121 Kts IAS
OEI En-Route Climb	121 Kts IAS
Emergency Descent	181 Kts IAS
Maximum Range Glide	135 Kts IAS
Air Nav Order - Nominated Over Water Speed	250 Kts TAS
Recommended Minimum Speed for use of Reverse	40 Kts IAS

1.10 Runway Slopes

a	Runway Slope	Max 2% (Up or Down)

1.11 Runway Contaminations for Take-Off & Landing

b	Airframe Contamination	All traces of contamination must be removed before flight.
c	Snow banks	After snow clearance the minimum strip width shall be 20metres
d	The maximum height of snow banks alongside the strip is 1.5 metres	
e	The maximum distance over a route which contains a point further from an adequate aerodrome is 330 nautical miles	

1.12 Airframe Contamination & Icing Limitations

Minimum Ambient Temperature for Operation of De-icing Boots	-40°C
Minimum Airspeed for Sustained Icing Flight	140 knots
Max Effective Windshield Anti-Ice Speed	226 Knots

Sustained flight in icing conditions with flaps extended is prohibited except for approach and landings.

Non Raisbeck modified B200 ***(G-GMAE and G-PCOP):***
ENGINE ANTI-ICE, LEFT / RIGHT, shall be ON for operation in ambient temperatures of +5°C or below when flight free of visible moisture cannot be assured.

ENGINE ANTI-ICE, LEFT / RIGHT, shall be OFF for all takeoff and flight operations in ambient temperatures of above +15°C.

Raisbeck modified B200 ***(G-SASC and G-SASD):***
ENGINE ANTI-ICE, LEFT / RIGHT, shall be ON for operation in ambient temperatures of +5°C or below when flight free of visible moisture cannot be assured.

ENGINE ANTI-ICE, LEFT / RIGHT, can be ON during ground and flight operations, at ambient temperatures up to, and including ISA + 27°C, below 13,650 feet or + 15°C above 13,650 feet, provided:

1) All other engine limits are observed;
2) During ground operations, oil temperatures are monitored closely. If the oil temperature limits are reached, the ENGINE ANTI-ICE must be stowed until the oil temperatures return within limits

Approved Airplane De-icing/Anti-icing Fluids

- IS0 11075 Type I
- IS0 11078 Type I I
- SAE AMS 1424 Type I
- SAE AMS 1428 Type II
- SAE AMS 1428 Type III
- SAE AMS 1428 Type IV

1.12.1 During flight, severe icing conditions that exceed those for which the airplane is certificated shall be determined by the following visual cues. If one or more of these visual cues exists, immediately request priority handling from Air Traffic Control to facilitate a route or an altitude change to exit the icing conditions.

a. Unusually extensive ice accumulation on the airframe and windshield in areas not normally observed to collect ice.

b. Accumulation of ice on the upper surface of the wing, aft of the protected area.

c. Accumulation of ice on the engine nacelles and propeller spinners farther aft than normally observed.

2. Since the autopilot, when installed and operating, may mask tactile cues that indicate adverse changes in handling characteristics, use of the autopilot is prohibited when any of the visual cues specified above exist, or when unusual lateral trim requirements or autopilot trim warnings are encountered while the airplane is in icing conditions.

3. All wing icing inspection lights must be operative prior to flight into known or forecast icing conditions at night. [NOTE: This supersedes any relief provided by the Master Minimum Equipment List (MMEL).]

CRACKED OR SHATTERED WINDSHIELD

The following limitations apply when continued flight is required with a cracked outer or inner ply of the windshield.

1. Continued flight with a cracked windshield is limited to 25 flight hours.

2. Windshields which have a shattered inner ply will have numerous cracks which will obstruct forward vision and may produce small particles or flakes of glass that can break free of the windshield and interfere with the crew's vision.

3. Crack(s) must not impair visibility.

4. Crack(s) must not interfere with the use of windshield wipers for flights requiring the use of the wipers.

5. Windshield Anti-ice must be operational for flights in icing conditions.

6. The following placard must be installed in plain view of the pilot:

MAXIMUM AIRPLANE ALTITUDE IS LIMITED TO 25,000 FEET. CABIN DIFF MUST BE MAINTAINED BETWEEN 2.0 AND 4.6 PSI DURING FLIGHT.

Windshields that have cracks in both the inner and outer plies must be replaced prior to the next flight.

CRACK IN ANY SIDE WINDOW *(COCKPIT OR CABIN)*

The following limitations apply when continued flight is required with a cracked outer or inner ply in any side window. These limitations do not apply to minor compression-type chips (Clamshell) which may occur on the milled edge of cockpit side windows. Refer to the maintenance manual for the disposition of such chips.

1. Continued flight is limited to 25 flight hours.

Brake Deice *(not installed on G-SASC and G-SASD, installed on G-GMAE and G-PCOP)*

Brake Deice system is not to be operated above 15°C.

1.13 Electrical

Generator Limits		
Height	**N_1**	**Maximum Generator Load**
Sea Level To 31,000 Ft	-	100%
Above 31,000 Ft	-	88%
On Ground	61% To 62%	0 to 80%
On Ground	65%	80%-85%

External Power Limits

External power carts will be set to 28.0 to 28.4 volts and be capable of generating a minimum of 1000 amps momentarily and 300 amps continuously.

Starter Limits

Starter Limits			
Starter use limited to:	40	Seconds	ON
	60	Seconds	OFF
	40	Seconds	ON
	60	Seconds	OFF
	40	Seconds	ON
	30	Minutes	OFF

1.14 Cabin Differential Pressure Limits

Maximum cabin differential pressure 6.6 PSI

1.15 Landing Gear Cycle Limits

Landing gear cycles (1 up - 1 down) are limited to one every 5 minutes for a total of 6 cycles, followed by a 15-minute cool-down period.

1.16 Engine Operating Limits (PT6A – 42)

TYPE 42 (Pratt and Whitney PT6A)

Operating Condition	SHP	Torque Ft Lbs (1)	Max ITT	Gen Rpm	N1 %	Prop Rpm	Oil Press	Oil Temp
Starting			1000 (5)					-40 (min)
Low Idle			750 (6)	22,875	56 (min)	1180	60 (min)	-40 to 99
High Idle					(7)			-40 to 99
T/O (7)	850	2230	800	38,100	101.5	2000	100 to 135	0 to 99
Max Cont /Cruise	850	2230 (8)	800	38,100	101.5	2000	100 to 135	0 to 99
Cruise Climb/Rec cruise	850	2230 (8)	770	38,100	101.5	2000	100 to 135	0 to 99
Max reverse (9)	800		750		88	1900	100 to 135	0 to 99
Transient		2750 (5)	850	38,500 (10)	102.6 (10)	2200 (5)	200	0 to 104 (11)

Engine Notes:

(1) Torque Limit applies within the range of 1600 -2000 propeller RPM (N2). Below 1600 RPM, torque is limited to 1100 ft-lbs.

(2) When gas generator speeds are above 2700 RPM (72% N1) and oil temperatures are between 60° and 71°C, normal oil pressures are:

- 100 to 135 psi below 21,000 feet; 85 to 135 psi at 21,000 feet and above.

During extremely cold starts, oil pressure may reach 200 psi. Oil pressure between 60 and 85 psi is undesirable, it should be tolerated only for the completion of the flight, and then only at a reduced power setting not exceeding 1100 ft-lbs torque.

Oil pressure below 60 psi is unsafe; it requires that either the engine be shut down, or a landing made as soon as possible, using the minimum power required to sustain flight. Fluctuations of plus or minus 10 psi are acceptable.

(3) A minimum oil temperature of 55°C is recommended for fuel heater operation at take-off power.

(4) Oil temperature limits are -40° and 99°C. However, temperatures of up to 104°C are permitted for a maximum time of 10 minutes.

(5) These values are time-limited to 5 seconds.

(6) High ITT at ground idle may be corrected by reducing accessory load and/or increasing N1 RPM.

(7) At approximately 70% N1.

(8) Cruise torque values vary with altitude and temperature.

(9) This operation is time-limited to one minute.

(10) These values are time-limited to 10 seconds.

(11) Values above 99°C are time limited to 10 minutes.

(12) To account for power setting accuracy and steady state fluctuations, inadvertent propeller excursions up to 2040 rpm are time limited to 7 mins.

1.17 Pro-Line 21 Airspeed Indicator Display

Display	KIAS or Range	Significance
Red Line	86	Air Minimum Control Speed (VMCA)
Solid Red Bar (bottom of scale)		ISS LSC* Marker. The top of the marker changes with flap position to reflect the following stall speeds.
	75	Stalling Speed (VSO) at maximum weight with flaps down and idle power.
	85	Stalling Speed (VSI) at maximum weight with flaps approach and idle power.
	99	Stalling Speed (VSI) at maximum weight with flaps up and idle power.
◄ DN (white)	157	Maximum speed permissible with flaps extended beyond approach.
◄ APP (white)	200	Maximum speed permissible with flaps in approach position..
Blue Line	121	One-engine-inoperative Best Rate-of –Climb Speed.
Solid Red Bar (at top of airspeed scale)	259 or value equal to .52 Mach which ever is lower	VMO marker. The bottom of the marker represents the Maximum Operating Speed. These speeds may not be deliberately exceeded in any flight regime.

*** Impending Stall Speed Low Speed Cue**

Warning

With one engine either at idle or inoperative, flaps up and propeller windmilling, VMCA may be as high as 108 KIAS

1.18 Power Plant Instrument Markings

Instrument	Green Display Normal Operating Range	Yellow Display Caution Range	Red Display Minimum/Maximum
ITT (starting) ºC	≤800 or >800 ≤850 ≤20 sec or >850 ≤1000 ≤5 sec	---	>800 ≤850 ≤20 sec or >850 ≤1000 ≤5 sec or >1000
ITT (running) ºC	≤800	>800 ≤850 ≤5 sec	>800 ≤850 ≤5 sec or >850
Torque Ft-lbs (Prop RPM > 1600)	≤ 2230 or >2230 ≤2075 For ≤ 5 min	>2275 ≤2750 ≤5 sec or >2230 ≤2275 For >5 min and ≤7 min	>2275 ≤2750 >5 sec or >2230 ≤2275 >7 min or >2750
Torque Ft-lbs (Prop RPM <1600	≤1100	>1100 ≤2750 ≤5 sec	>1100 ≤2750 >5 sec or >2750
Prop RPM (starting)	≤2000 or >2000 ≤2040 ≤5 min	>2040 ≤2200 ≤5 sec or >2000 ≤2040 For >5 min ≤7 min	>2040 ≤2200 >5 sec or >2000 ≤2040 >7 min or >2200
Prop RPM (running)	≥1180 ≤2000 or >2000 ≤2040 ≤5 min	>2040 ≤2200 ≤5 sec or >2000 ≤2040 For >5 min ≤7 min or <1180	>2040 ≤2200 >5 sec or >2000 ≤2040 >7 min or >2200
% N1 (starting)	≤101.5	>101.5 ≤102.8 ≤10 sec	>102.6 or >101.5 ≤102.6 >10 sec
% N1 (running)	≥61 ≤101.5	<61 or >101.5 ≤102.6 ≤10 sec	>102.6 or >101.5 102.6 >10 sec

Power Plant Instrument Markings (cont)

Fuel Flow	≥0 ≤800	---	---
Oil Temp (starting)ºC	≥-40 ≤99	>99 ≤104 ≤10 min	>99 ≤104 >10 min or <-40 or >104
Oil Temp (running) ºC	≥0 ≤99	>99 ≤104 ≤10 min or <0	>99 ≤104 >10 min or >104
Oil Press (psi)	≥100 ≤135	≥60 <100 or >135 200	<60 or ≥200

The pilot is responsible for monitoring all engine limits, including transient limits not accounted for by the EIS as defined in Engine Operating Limits.

1.19 Fuel Limits

Crossfeed is only permitted for single engine operation. Crossfeed will not be available from the side of an inoperative standby pump.

Minimum fuel for take-off is 265 lbs per side main tanks or above yellow sector gauges.

Maximum imbalance between wings - 1000 lbs.

Auxiliary tanks not to be filled unless main tanks are full.

FUEL SYSTEM CAPACITY			
CAPACITY	IMP GAL	LITRES	LBS (0.8)
Main Tanks	392	1485	2586
Aux Tanks	160	608	1058
TOTAL	553	2092	3644

Use of Fuel Anti Ice Additive

Additive for the concentration by the volume	Minimum 0.10 %
	Maximum 0.15 %

Operation with Aviation Gasoline

Both Standby Fuel Pumps Operative	- 35,000 feet
Either Standby Fuel Pump Inoperative	- Flight Prohibited
Climbs without Cross-feed Capability	- 20,000 feet

1.20 Pneumatic Pressure

- Minimum - 12 psi
- Maximum - 20 psi

1.21 Vacuum Gauge

Narrow Green Arc (Normal from 35,000 to 15,000 ft)	2.8 to 4.3 in/Hg
Wide Green Arc (Normal from 15,000 ft to Sea Level)	4.3 to 5.9 in/Hg
35K marked on face of gauge at	3.0 in/Hg
15K marked on face of gauge at	4.3 in/Hg

1.22 Oxygen System

Bottle Capacity	115 Cubic Feet
Maximum Pressure	1850 PSI at 15ºC

To calculate consumption rate, use the following table:

	No. OF OCCUPANTS						
PRESS	**2**	**4**	**6**	**8**	**10**	**12**	**14**
1800	260	130	87	66	52	43	37
1500	216	108	72	54	43	36	31
1000	144	72	48	36	29	24	20
500	72	36	24	18	14	12	10

Note: Crew should always use 100% oxygen. For each pilot add one to the total number of persons on board,

i.e. 2 crew + 6 pax = 10 total. Resultant figure gives oxygen duration in mins.

1.23 Propeller

Propeller RPM	Transients not exceeding 5 seconds	2040-2200 rpm
	Reverse	1900 rpm
	All other conditions	2000 rpm
	Take-Off	2000 rpm

Propeller Auto-feather

The propeller auto-feather system must be operable for all flights and must be armed for takeoff, climb, approach and landing.

Propeller De-Ice Ammeter

Green Arc (Normal operating Range) - 18 to 24 amps

1.24 Autopilot

Minimum Altitude

During autopilot operations, a pilot must be seated at the controls with the seat belt and shoulder harness fastened.

An autopilot pre-flight check must be conducted and found satisfactory prior to each flight on which the autopilot is to be used.

Normal Operation - 1000 feet AGL
When coupled to ILS - 200 feet AGL

In the event of engine failure during a coupled approach, disengage the autopilot, re-trim and re-engage the autopilot if required.

Do not extend the landing gear above 15,000 feet with the autopilot engaged.

King Air B200 Pro-Line aircraft

Autopilot

- The autopilot minimum engage height after takeoff is 400 feet AGL.;
- The autopilot minimum use height during cruise is 1000 feet AGL;
- The autopilot minimum use height during approach is 79 feet AGL.

Maximum airspeed for autopilot operation is unchanged from the airplane maximum airspeed (VMO/MMO). The autopilot and yaw damper must not be used for takeoff and landing. Operation of the autopilot system with a pitch trim malfunction is prohibited. Do not manually override the autopilot during normal flight.

WARNING

Overriding the autopilot in pitch does not cancel the autopilot automatic trim. If a force is applied to the control column with the autopilot engaged, then automatic trim will run to oppose the applied force. This can lead to a severe out-of-trim condition during any phase of flight.

The maximum coupled intercept angles are:

- Nav and Localizer - Less than 90° Back Course - 70°

1.25 RVSM Compliance

The King Air B200C aircraft (*Serial Number's BL-150, G-SASC and BL-151, G-SASD)* are RVSM capable, however, neither are compliant.

The Company does not hold RVSM approval for the Beech 200C aircraft therefore crews are not permitted, under any circumstances to enter RVSM airspace.

The King Air B200 aircraft *(Serial Number's BB-1860, G-PCOP and BB-1957, G-GMAE)* are not RVSM capable.

1.26 Avionics Limits

The following guides must be immediately available to the pilot at all times:

- Operators Guide, Collins Pro Line 21 Avionics System;
- Operators Guide, Collins FMS-3000 Flight Management System;
- Pilot's Guide for the Electronic Standby Instrument System;
- Pilot's Guide for the Skywatch HP Traffic Alert/Advisory System;
- Enhanced Ground Proximity Warning System Pilot's guide;
- Operating in the composite mode is limited to training and display failure conditions;
- POH/AFM is approved for use with Collins FMS-3000 software version;
- The pilot's and co-pilot's Air Data Computers must be operative for takeoff;
- AHRS 1 and 2 must be operative for takeoff;
- The pilots PFD and MFD and co-pilot PFD must be installed and operational in the normal mode for takeoff;
- The MFD must be operational prior to engine start.

1.27 Terrain Awareness & Warning System Plus (TAWS+)

- Navigation must not be predicated upon use of the Terrain *(or Obstacle)*, Awareness Display. The terrain display is intended to serve as a situational awareness tool only, and may not provide the accuracy and/or fidelity on which to solely base terrain avoidance manoeuvring;
- The Terrain Awareness and Display (TAD) must be inhibited by selecting the TERR INHIBIT switch when within 15 nm of takeoff, approach, or landing at an airport not contained in the EGPWS Airport Database;
- When the FMS is operating in the DR mode, the Terrain Awareness alerting must be inhibited by selecting the TERR INHIB switchlight.

1.28 Flight Management System (FMS)

- IFR enroute and terminal navigation is prohibited unless the pilot verifies either the currency of the database or the accuracy of each selected waypoint and navaid by reference to current approved data.

- The FMS position must be checked for accuracy prior to use as a means of navigation.
- During periods of dead reckoning, the FMS shall not be used for navigation.
- All FMS navigation operations are approved within latitudes bounded by 60° North latitude and 60° South latitude at any longitude.
- Operation to 70° North latitude is acceptable East of 75° West longitude and West of 120° West longitude.
- Operation to 80° North latitude is acceptable East of 50° West longitude and West of 70° East longitude.
- Operation to 70° South latitude is acceptable except for the 45° between 120° East and 165° East longitude.
- The WGS-84 coordinate reference datum in accordance with the criteria of AC 20-130A, AC 91-49 CHG 1, and AC 20-138 must be used. Satellite navigation data is based upon use of only the Global Positioning System (GPS) operated by the United States.
- FMS based instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the FMS-3000 database.
- GPS instrument approaches must be conducted with GPS integrity monitoring (RAIM) and must be available by the Final Approach Fix.
- During FMS instrument approaches, the FMS annunciator APPR (green) or the FMS annunciator GPS APPR (green) must be displayed on the PFD at the FAF to indicate that the FMS is in the Approach Mode.
- Use of FMS guidance for conducting instrument approach procedures is prohibited with the FMS annunciator N0 APPR (white or amber) displayed on the PFD.
- Accomplishment of ILS, LOC, LOC-BC, LDA and SDF approaches are not authorized utilizing the FMS from the FAF to the MAP.
- When an alternate airport is required by the applicable rules, it must be served by an approach based on other than GPS navigation, the airplane must have operational equipment capable of using that navigation aid, and the required navigation aid must be perational.
- FMS based approaches that are retrieved from the navigation database with an approach name of RNVxxx or VORxxx may be flown provided the VHF navigation receiver is tuned to the reference facility.
- IFR Non-Precision Approach is limited to published approaches. Approaches to airports in other airspace are not approved unless authorized by the appropriate governing authority.
- Provided the FMS is receiving adequate usable sensor inputs, it has been demonstrated capable of, and has been shown to meet the accuracy specifications for:
  - **a)** VFR/IFR enroute RNAV operation in accordance with the criteria of AC 20-130A.
  - **b)** VFR/IFR enroute, terminal, and approach operations.

c) GPS primary means of navigation in oceanic and remote airspace in accordance with AC 20-130A, If the following conditions are met;

1. Dual FMS-3000 Flight Management Systems and dual GPS-4000A receivers are installed and operable.

or

2. A single FMS-3000 Flight Management System and a single GPS4000A receiver are installed and operable when operating along routes approved for single GPS navigation, and, in either case a Prediction Program, "Pre-departure GPS Coverage Predictor (FDE Tool), has been run with satisfactory results.

Compliance with the above does not constitute operational approval to operate in oceanic and remote airspace.

- Operation in European P-RNAV airspace in accordance with JAA TGL-10 and AC 90-96A provided that the FMS is not Dead Rekoning ("FMS DR" displayed on the PFD, MFD or CDU) and is receiving usable singals form one of the following;
  1. One GPS.
  2. Multiple DMS's.
  3. A single DME with outo-tune selected.

Note: Some terminal areas may require dual, operating FMS and GPS equipment.

Operations on a P-RNAV routes require that;

- The flight crew must select a P-RNAV route from the FMS navigational database.
- The navigation datebase supplier has a Type 2 LOA that is currently valid for the intended operations. Navigation database alerts and NOTAM's may be associated with the intended operations and the Type 2 LOA.

This does not constitute an operational approval to operate in such airspace.

- Operation in European B-RNAV airspace in accordance with AC 90-96, AC 20-130A, and JAA TGL 2 Rev 1,

This does not constitute an operational approval to operate in such airspace.

- Minimum Navigation Performance Specification (MNPS) airspace for each of the following Configurations:

  1. When dual FMS-3000 Flight Management Systems and dual GPS4000A GPS receivers are installed and operable.

  2. When a single FMS-3000 Flight Management System and a single GPS-4000A receiver are installed and operable when operating along routes approved for single GPS navigation.

Availability of the above equipment does not constitute operational approval to operate in MNPS airspace.

- Use of FMS to capture and track a DME arc outside the published end points is prohibited;
- Fuel management parameters are advisory only and must not replace the primary fuel quantity indications.

1.29 Integrated Flight Information System IFIS-5000

- When using the IFIS-5000, the Collins IFIS-5000 Integrated Flight Information System Operators Guide, Document 523-0806347-003117, dated 7 June 2005, or later revision, must be available to the flight crew.
- When using Universal Weather, the Collins Coporate Datalink System CMU-4000 / RIU-40X 0 Operators Guide, Document 523-07090499, dated 14 July 2003, or later revision, must be available to the flight crew.
- The IFIS-5000 system provides supplemental airplane situational awareness information. It use as a means for navigational or weather avoidance is not approved.
- Display ranges less than 50 miles must not be used when the GOE-POL data is selected for display. At shorter ranges, the situational picture provided by this data (i.e. rivers, lakes, oceans and political boundaries) may be erroneous.
- The use of the aeroplane symbol on the Electronic Charts is prohibited for navigation.
- The database utilised for the Electronic Charts must incorporate the current update cycle.
- When using the Electronic Charts, a paper equivalent (or electronic flight bag) must be on board and accessible to the flight crew.
- Data-linked graphical weather (either XM Radio or Universal Weather) is for information purposes and should not be used for tactical deccision making. By its nature, graphical weather is delayed from real time weather conditions. Use the aircrafts primary weather radar for all tactical decisions about weather avoidance.
- Digital Automatic Terminal Information Service (available only when universal weather is installed):

    1. The flight crew shall verify that the D-ATIS numeric and alpha altimeter setting values are identical, e.g. “ALTIMETER SETTING 29.95 (TWO NINER NINER FIVE)”.
    2. If the D-ATIS numeric and alpha altimeter setting values are different, the flight crew must not accept the D-ATIS Altimeter Setting nor rely on any other D-ATIS information.

1.30 Traffic Alert And Collision Avoidance System (TCAS II)

Pilots are authorized to deviate from their current ATC clearance to the extent necessary to comply with a TCAS II resolution advisory (RA);

If the pilot is advised by Air Traffic Control to disable the altitude reporting function of the transponder, the TCAS II System must be placed in STBY.

1.31 VNAV

When using the VNAV system, the barometric altimeters must be used as the primary altitude reference for all operations.

Use of VNAV guidance for a V-MDA approach that includes a step-down fix between the final approach fix and missed approach point is prohibited.

VNAV altitudes must be displayed on the MFD map page or CDU legs page when utilizing VNAV for flight guidance.

Use of VNAV while conducting a missed approach procedure is prohibited.

Provided the FMS is receiving adequate usable sensor inputs, it has been demonstrated capable of and has been shown to meet the accuracy specifications of VNAV operation in accordance with AC 20.129. Such VNAV approaches must be flown utilizing either the flight director or autopilot

VNAV approach guidance to a DA is not authorized if the reported surface temperature is below the Baro-VNAV minimum temperature limitation specified on the applicable RNAV approach procedure chart.

Note: Barometric VNAV guidance during approach including the approach transition, final approach segment and the missed approach procedure is not temperature compensated. Operating at uncompensated minimum IFR altitudes will not provide expected terrain and obstacle clearance for temperature below ISA.

1.32 Weather Radar

WARNING

The area within the scan arc and within 2 feet of an operating TWR-852 system can be a hazardous area. Do not operate the systems in any mode other than standby (STBY) or test (TEST) when the antenna might scan over personnel within that range. Turning the transmitter on while inside the hangar is not advisable.

1.33 External Power Limits

External power carts will be set to 28.0 – 28.4 volts and be capable of generating a minimum of 1000 amps momentarily and 300 amps continuously

1.34 Position Error Correction

The position error correction that must be added to operating minima is 15 feet.

1.35 Altimeter Limits

Number 1 altimeter (left) - plus 30 feet minus 50 feet, number 2 altimeter (right) - plus 50 feet minus 75 feet

1.36 ACN / PCN

- The ACN for the B200 is 5 at MTOW and 5 at 11200 lbs.

1.37 Aerodrome Fire Category

The fire category for the B200 is:

- Civil Category 3;
- Military Category 4.

1.38 Single Engine Over Water Speed

- 189 Kts TAS;
- 120 minute range from a suitable airfield 378 nm.

1.39 Runway Line-Up Distances

- 90^0 Entry - 45 Feet
- 180^0 Turnaround - 50 Feet

Note: The quick reference Cards at Section 4 includes the worst case (180^0 Turnaround) Line-up distance (feet) in the distances provided.

1.40 Steep Approach Limitations *(Information Only – Gama Aviation does not hold approvals for Steep Approaches on the B200)*

The following limitations are applicable for approach angles of 4.5^0 to 5.5^0:

1. The maximum approved approach angle is 5.5^0.
2. One-Engine-Inoperative steep approaches are not approved.
3. Flaps Up steep approaches are not approved.
4. Steep approaches are approved only when the following configuration is established no later than the final approach fix, or 3 nm from the runway during visual approaches:

a. Both Engines – Operative;
b. Flaps - Full Down
c. Prop Levers - Full Forward
d. Approach Speed - V_{REF}, or V_{REF} + 15 with residual ice.

5. Steep approaches are approved only when using vertical guidance provided by an approved:

a. Flight Management System
b. Instrument Landing System
c. Ground Based Visual Reference System.

6. Flight Management System defined approaches are not approved using the autopilot; however, use of the Flight Director is approved.
7. The maximum tail wind for steep approaches is 5 knots.
8. The presentation of steep approach limitations, procedures, and performance in this manual reflects the capability of the airplane to perform steep approaches, but does not constitute operational approval.
9. Airplanes equipped with a Terrain Awareness and Warning System (TAWS) must have an operational steep approach override function associated with the system.

1.41 Wake Turbulence

The B200 is categorized as being LIGHT for the purposes of wake turbulence notification on ICAO flight plans.

See **Part A** for Wake Turbulence - minima, characteristics avoidance and procedures.

1.42 Aircraft Category

The B200 is categorized as 'B' as the landing V_{AT} is from 91 Kts to 120 Kts

1.43 P-RNAV

P-RNAV European Airspace Operations: Provided the FMS is receiving adequate usable sensor inputs, it has been demonstrated capable of and has been shown to meet the accuracy specifications of Operation in European P-RNAV airspace in accordance with JAA Temporary Guidance Material, Leaflet No. 10. Refer to Section 2 - LIMITATIONS of the Airplane Flight Manual for the required P-RNAV equipment list.

1.43.1 P-RNAV Terminal Procedures - Pre-Flight Planning

1.43.1.1 Crew Qualification

Company flight crew must be trained, qualified and current for the intended P-RNAV operations. For an aircraft with P-RNAV approval, a 'P' shall be inserted in the FPL at Item 10, in addition to the 'R' for BRNAV approval.

NOTAMS must be checked for lack of availability of a navigation aid that might affect the navigation infrastructure required for the intended operation, including any non-RNAV contingencies and must be confirmed for the period of intended operation.

1.43.1.2 MEL

The MEL must be consulted for relevant system deficiencies prior to dispatch.

1.43.1.3 Flight Planning

The Gama Aviation P-RNAV checklist must be consulted prior to any P-RNAV operations.

The Company operations department will confirm availability of the onboard navigation equipment necessary for the route to be flown. In certain areas this may include the availability of an autopilot and/or a flight director to maintain accuracy in track keeping. Where the responsible airspace authority has specified in the AIP that dual P-RNAV systems are required for a specific Terminal Area P-RNAV procedure, the availability of dual systems must be confirmed. In this case 2 independent Flight Management Systems, an Autopilot or Flight Director and 2 sensors (i.e. 2 GPS and/or 2 DME and/or 2 VOR) must be available. This typically will apply where procedures are effective below the applicable minimum obstacle clearance altitude or where radar coverage is inadequate for the purposes of supporting P-RNAV. This will also take into account the particular hazards of a Terminal Area and the feasibility of contingency procedures following loss of P-RNAV capability.

For terminal procedures requiring P-RNAV capability, radio navaid coverage will support RNP-1 accuracy, unless promulgated in NOTAMs. Otherwise, the procedure may specify that GPS equipment is required (refer to the published procedure chart). The minimum equipment required to fly a P-RNAV procedure is:

One RNAV system, which means:

a) One Flight Management System (Flight Director Coupled).
b) One FMS Control Display Unit.
c) One GPS receiver or one VOR and one DME.
d) One IRS.
e) Flight Plan Data on two Navigation Displays, and
f) One autopilot.

1.43.1.4 Before Start

At system initialisation, company flight crew must confirm that the navigation database is current, includes the relevant navigation aids, waypoints and coded Terminal Area procedures for the departure, arrival and alternate airfields and verify that the aircraft position has been entered correctly.

The active flight plan should be checked by comparing the charts, SID or other applicable documents, with the map display. This includes:

a) Confirmation of the correct waypoint sequence.
b) Reasonableness of track angles and distances.
c) Any altitude or speed constraints.

d) Correct identification, where possible, of waypoints as fly-by or fly-over waypoints.
e) Check GPS is available for procedures where GPS is stipulated.

Company flight crew must particularly focus on any segment of the PRNAV procedure which is below MSA. RNP flight operations are subject to GPS satellite availability and / or navaid coverage for the selected route. Navigation based on VOR/DME updating modes is permitted but may be restricted by the availability or performance of the applicable ground navaids. Crews should deselect (NOTAM) ground navaids that are not to be used for navigation. A procedure must not be used if doubt exists as to the validity of the procedure in the navigation database.

Company flight crew must not modify the procedure that is loaded from the navigation database, although speed and altitude constraints that are missing in the database but are shown on the chart may be entered. This will not affect P-RNAV accuracy requirements. Waypoints and routing must not be altered as this may change the leg type and subsequent FMS behaviour.

Permissible route modifications in the Terminal Area may take the form of radar headings or 'direct to' clearances and the flight crew must be ready to react promptly. This may include accepting an ATC clearance ‘direct to’ a waypoint which is in the database; in this case the aircraft must be above MSA to ensure obstacle clearance because crew are responsible for terrain clearance following a “Direct To” instruction.

1.43.1.5 Take-Off, Departure and Climb

Recommended modes for Take Off are Go Around with ASEL and the Pilot Flying side FMS armed with Speed Mode being selected shortly after takeoff. If the first P-RNAV waypoint is predicated on ILS DME, company flight crew should:

a) Use HDG until past the waypoint.
b) Then re-engage FMS NAV.
c) Monitor raw data.
d) Set the initial procedure altitude/flight level.
e) Check the relevant altitude constraint on the PFD.
f) After departure and when established on a P-RNAV SID monitor cross track error on the PFD.

1.43.1.6 Before Descent

Prior to the arrival phase, Company flight crew should consult the Gama Aviation P-RNAV Checklist at, verify that the correct terminal procedure has been loaded and check the active flight plan by comparing the charts with the map display. This includes:

a) Confirmation of the waypoint sequence.
b) Reasonableness of track angles and distances.
c) Any altitude or speed constraints.
d) Where possible, which waypoints is fly-by and which is fly-over.

Some P-RNAV procedures, called open procedures, are terminated by means of a heading segment to assist sequencing and to prevent automatic turns onto final approach. Company flight crew must particularly focus on any segment of P-RNAV procedures which is below MSA. If required, a check must be made to confirm that updating will include or

exclude a particular navigation aid as appropriate. A procedure must not be used if doubt exists as to the validity of the procedure in the navigation database.

If the P-RNAV procedure extends beyond 30 NM of the destination airfield 'TERMINAL' must be manually selected to ensure correct information on position uncertainty.

The crew briefing must include reversion to a conventional procedure and the go around procedure.

As for departure, the creation, alteration or deletion of waypoints, by manual entry into the FMS Flight Plan by the flight crew, is not permitted as it would invalidate the P-RNAV procedure.

1.43.1.7 Descent and Arrival

The lateral path must be flown using FMS NAV and company flight crew must monitor cross track error on the PFD carefully.

The recommended Vertical mode is VNAV. The selected altitude should be set to the platform altitude constraint in the procedure and the crew must monitor intermediate altitudes carefully. If VS or SPD is required for operational purposes, intermediate step-down altitudes must be selected. Note that once the aircraft has levelled at the platform altitude suitable modes must be selected to complete ILS, non precision or visual approach. Observe altimeter setting requirements.

Company flight crew should be aware that ATC may provide QNH when giving the transition clearance but not in all cases. If applicable, the change from STD to QNH is initiated on passing a designated fix and not on ATC instruction. QNH setting must be included in the approach brief. On passing the fix, PF will initiate the change to QNH.

The crew must monitor speed constraints carefully and use configuration and manually selected speed if necessary.

In case of deviation from the published procedure e.g. due to weather, observe MSA and reset selected altitude.

1.43.1.8 Go Around

In the event of a go-around Company flight crew should use standard procedures

1.43.1.9 Contingencies

System Failures

The FMS has a large library of messages and those associated with GPS, FMS difference anomalies (on those aircraft with dual FMS) and RAIM may impact on the ability to remain PRNAV compliant.

As an indication, if one of the following messages appears prior to entry or whilst in the P-RNAV SID or STAR environment the crew must inform ATC of the loss of P-RNAV/RNP-1 capability and follow ATC instructions. An immediate assessment of MSA should be made and a climb initiated if necessary. Reversion to conventional navigation should be included

in the briefing. These messages are also included on the reverse of the P-RNAV Checklist.

a) GPS INTEG (will illuminate if the GPS Horizontal Integrity Limits for the current phase of flight have been violated. Will also illuminate if RAIM is unavailable for which an approach for which GPS is being used.
b) DR (will illuminate if the FMS is not receiving nav sensor input from any other source and the FMS is determining its position solely from dead reckoning).
c) DGR (will illuminate if the position accuracy for present phase of flight cannot be guaranteed).
d) Loss of FMS CDI needles immediately replaced by red X's indicates that the FMS has NOT passed the RAIM check.
e) GPS # FAILED (Fail status from indicated GPS).
f) GPS OR GNSS NOT NAV.
g) GPS OR GNSS FAIL.
h) GPS OR GNSS DESELECT.
i) NO RAIM at FAF/NO RAIM at MAP.
j) NO GPS INT at FAF/NO GPS INT at MAP (no response is received from the sensor).
k) POS UNCERTAIN.

1.43.1.10 Communications Failures

In the event of communications failure, the flight crew should continue with the P-RNAV procedure in accordance with the standard published lost communication procedure.

1.43.1.11 Incident Reporting

Significant incidents associated with the operation of the aircraft which affect or could affect the safety of P-RNAV operations, need to be reported by the submission of a Company Safety Report as detailed in Operations Manual Part A Section 11.

Specific examples may include aircraft system malfunctions during P-RNAV operations which lead to:

a) Navigation errors (e.g. map shifts) not associated with transitions from an inertial navigation mode to radio navigation mode.
b) Significant navigation errors attributed to incorrect data or a navigation database coding error.
c) Unexpected deviations in lateral or vertical flight path not caused by pilot input.
d) Significant misleading information without a failure warning.
e) Total loss or multiple navigation equipment failure.
f) Problems with ground navigational facilities leading to significant navigation errors not associated with transitions from an inertial navigation mode to radio navigation mode.

When completing the Company Safety Report, flight crew should include the FMS make/model and the effective dates of the Navigation Database used.

1.43.1.12 Company P-R NAV Checklist

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P-RNAV Procedures Checklist

PRE P-RNAV PROCEDURE
1) Check MEL for relevant system failures
2) Are the flight crew qualified in accordance with Operations Manual Part D.
3) Check NOTAMS/ATIS for any relevant navaid failures (sensors window for navaid de-select)
4) Confirm all Required Equipment is available and functioning
5) Verify Aircraft Position has been entered in the FMS correctly
6) Check FMS Flight Plan against Jeppesen SID chart to include: i) Correct STAR / SID and RWY entered ii) Confirmation of the correct waypoint sequence iii) Reasonableness of track angles and distances iv) Any altitude or speed constraints v) Identification of fly-by or fly-over waypoints vi) Absence of discontinuities vii) GPS selection and RAIM check. Departure / Arrival RNP settings (1.00 check)

REQUIRED EQUIPMENT
1) Navigation Database current for date of flight
2) 1 RNAV system* which means: i) One FMS (Flight Director Coupled) ii) One VOR or one GPS receiver for FMS navigation update** iii) One DME or one GPS receiver for FMS navigation update** iv) One IRS v) Flight Plan Data on 2 Navigation Displays vi) One autopilot * Dual P-RNAV systems or GPS may be required by certain airport Authorities - check on Jeppesen charts **If Dual P-RNAV systems are required, FMS must be in synchronous mode

P-RNAV SID
1) Recommended Take-Off Mode is FMS NAV and SPD as required
2) Check VNAV altitude constraint(s) on PFDs & FMSs
3) If first Waypoint is based on ILS/DME, use HDG mode followed by FMS after the waypoint
4) Set intermediate/next SID Altitude in ASEL
5) Monitor cross-track error
6) Monitor for contingencies

P-RNAV STAR
1) Recommended Approach Mode is FMS NAV and VNAV as required
2) Set Platform Altitude in ASEL. Caution step down altitudes if VS or SPD is selected
3) Monitor cross-track error
4) Monitor for contingencies

Owner DFO
Date January 2016

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P-RNAV Procedures Checklist		

If one of the following messages appears prior to entry or whilst in the P-RNAV SID or STAR environment, the crew must inform ATC of the loss of P-RNAV/RNP-1 capability and follow ATC instructions. An immediate assessment of MSA should be made and a climb initiated if necessary.

a) GPS INTEG (will illuminate if the GPS Horizontal Integrity Limits for the current phase of flight have been violated. Will also illuminate if RAIM is unavailable for which an approach for which GPS is being used.

b) DR (will illuminate if the FMS is not receiving nav sensor input from any other source and the FMS is determining its position solely from dead reckoning).

c) DGR (will illuminate if the position accuracy for present phase of flight cannot be guaranteed).

d) Loss of FMS CDI needles immediately replaced by red X's indicates that the FMS has NOT passed the RAIM check.

e) GPS # FAILED (Fail status from indicated GPS)

f) GPS OR GNSS NOT NAV

g) GPS OR GNSS FAIL

h) GPS OR GNSS DESELECT

i) NO RAIM at FAF/NO RAIM at MAP

j) NO GPS INT at FAF/NO GPS INT at MAP (no response is received from the sensor)

k) POS UNCERTAIN

1.44 Maintenance Support

1.44.1 Maintenance Contracts

- **Aircraft G-SASC**
- **Aircraft G-SASD**
- **Aircraft G-GMAE**
- **Aircraft G-PCOP**

Notes: Refer to Gama Aviation's Part M for maintenance details and regulatory requirements.

Section 5 of the Technical Log explains the procedures of who to contact.

The first point of contact will be Company Operations who will provide the details of the on-duty engineer.

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2 Section 2 - Normal Procedures

2.1 General

The following section describes the procedures required during normal Company (Operator) operations for the B200 Aircraft.

G-SASC & G-SASD are Proline 21, Raisbeck modified aircraft *(refer Raisbeck Manual)* whilst G-GMAE & G-PCOP are Proline 21, but NOT Raisbeck modified.

2.1.1 Crew Manuals

All Company (Operator) pilots are to refer to the Company manual suite in Q-Pulse or on the aircraft EFB's the Aircraft Flight Manual (AFM), Quick Reference Handbook *(QRH).*

2.1.2 Crew Positions

During taxiing, take-off, climb, descend, approach and landing, there shall be two pilots at the controls. A take-off shall not be considered complete until the aircraft has settled into a normal climb phase. An approach shall be considered as starting at the top of descent or the top of the last descent if the descent has been phased.

Pilots shall wear safety harness for take-off and landings. In the cruise, one pilot must have his seat belt properly secured at all times.

2.1.3 Radio Altimeters and Altimeter Calls

Radio altimeters on Company (Operator) aircraft must be referred to as a secondary aid to assist in situational awareness. Standard Altimeter calls must be adhered to at all times, refer to Company (Operator) SOP's.

2.1.4 First Officer as Pilot Flying (PF)

At the discretion of the Commander, a First Officer may fly selected flight sectors. In certain weather conditions, the experience of the First Officer must be taken into account (Refer Part OMA). Whenever a First Officer is handling the aircraft, the Commander may take control at any time, clearly indicating that he has done so.

2.1.5 Flight Mode Annunciator

All verbalised "white" modes are regarded as "armed". All verbalised "green" modes are regarded as "captured" or "engaged".

2.2 Basic Definitions

The definitions herein exist for the sole purpose of making the text in this manual unequivocal and clear. They do not replace or invalidate any operating rules in force. Should there be differences between these definitions and the Regulations, the Regulations must prevail.

2.2.1 Pilot-in-Command/Commander

For the purposes of this document the Pilot-in-Command is considered to be the Commander and is the pilot legally responsible for the operation and safety of the aircraft, without regard to whether or not he is manipulating the controls. He is normally responsible for the operation of the aircraft from the pre-flight through to the post-flight stages i.e. he is responsible for implementing all the company's policies with regard to FTL, fuel, aerodrome operations, aircraft performance and loading etc.

He will normally occupy the left-hand seat, exceptions to this being if he is a qualified trainer and is required to occupy the right-hand seat for such purposes.

2.2.2 First Officer

The First Officer is a pilot that is not in command but can carry out the duty of flying the aircraft under circumstances well established by the company rules. If the Commander should become incapacitated, the First Officer will assume command of the aircraft and its occupants until the aircraft is safely back on the ground.

2.2.3 Flight Crew

These are Crewmembers that conduct the flight operation of the aircraft.

2.2.4 Flight Operation

An operation where the intention is to fly the aircraft under Commercial Air Transport category.

2.2.5 Challenge & Response

A Checklist usage technique that consists of completing all the checklist actions by memory and verifying them item-by-item afterwards by reading and replying is applied. Some checklist items are read and responded to by the PM alone, however, there are some items on the checklist requiring response from both pilots e.g. ALTIMETER SETTING cross-check.

Wherever "AS REQUIRED" is used, the responding pilot has to describe a system setting, e.g." Ice protection & Windshield – Ice Protection – Standard 5 + Props / Windshield Heat - On".

2.2.6 In-Flight "Non-Normal"

A situation that, if not handled with the appropriate procedures, may develop into an imminent risk to the safety of flight.

2.2.7 In-Flight Emergency

A situation where there is an imminent risk to the safety of flight.

2.2.8 LOFT (Line Oriented Flight Training)

Simulator training session where the focus is on reproducing an environment as similar as possible to the company's operating environment with similar workload, including all tasks that are part of the normal flight routine. The objective of these sessions is to identify areas f difficulty related to crew co-ordination and ergonomics. LOFT sessions may include non--normal and emergency situations that require rule-based action or knowledge-based action by the crew.

2.2.9 Memory Items

Items of the Check List that must be committed to memory by the Flight Crew and whose execution must be carried out in a controlled and timely manner should the corresponding Check List become applicable.

2.2.10 Pilot Flying (PF)

The PF will be the pilot manipulating the controls of the aircraft. This designation will apply to either the Commander or the First Officer, depending on who is controlling the aircraft.

2.2.11 Pilot Monitoring (PM)

The PM will be the pilot not actively flying the aircraft by manipulating the controls. This designation will apply to either the Commander or the First Officer, depending on who is controlling the aircraft.

2.2.12 Read & Do

Checklist usage technique, that consists of reading and accomplishing each item of the checklist.

2.2.13 Reference to crewmembers

PF:	Pilot-Flying
PM:	Pilot-Monitoring (Non-Flying).
PIC:	The Pilot-in-Command.
PIC/S:	Pilot-in-Command, under supervision.
F/O:	The First Officer.
Paramedic:	The person responsible for patients in an Air Ambulance.
C/A:	Cabin Attendant (those members, other than flight crew, who carry out their respective duties in the aircraft's cabin.

2.2.14 Sterile Cockpit

The principle of restricting cockpit and cockpit/cabin talk strictly to what is required for the Flight Operation and for the safety of the occupants. A sterile cockpit policy is adopted when the aircraft is at or below 10,000ft (FL100) or within 1,000ft of a level-off altitude/flight level.

2.3 Normal Operating Procedures B200C and B200 (Pro-line 21)

The following tables outline the standard operating procedures for two pilot operations for which effective command management and delegation of duties should be the general approach.

2.3.1 Crew Assembly

On first arrival at the airfield, an aircraft and Electronic Flight Bag (EFB) pre-flight check must be actioned by the crew, by either the Commander or delegated First Officer, or both. If actioned by the First Officer alone he will report to the Commander that their particular duties in preparation for the flight have been completed.

Commander or Delegated First Officer, or Both	
Check MET and AIS briefing, decide fuel requirements against FPLN route and payload.	Check EFB for updates and battery power. Collect necessary flight documents, navigation data, file or check flight plan. Check all operational and administrative notices. Arrange handling and catering.

Proceed to aircraft at least **15 minutes** prior to departure time or earlier to achieve a punctual departure.

2.3.2 Preliminary Aircraft Checks

If first flight of the day of the aircraft a “Check A” of the aircraft must be completed. This will include a fuel drain check.

Checks should be made of the aircraft both external and internal. The aircraft cabin as well as the cockpit must be checked. This should include a check of aircraft safety equipment including the First Aid Kit, that all equipment is correctly located and in date. If the aircraft has been parked and unsupervised at a location other than a home base be alert for strange unfamiliar items not usually associated with this aircraft which may be stored in any part of or around the aircraft. Antiseptic wipes are available for use in setting up the aircraft cockpit.

If the aircraft is away from home base and unattended for a period of time it is usual the propeller straps and aircraft bungs have been placed on the aircraft. These must be removed and stowed and verified by both crew members.

PILOT FLYING	PILOT MONITORING
Complete Cockpit Safety Check and Pre-flight aircraft (possibly delegate to suitably qualified person), Check Aircraft Documents	Check cabin safety equipment, emergency exit locking removed (if applicable), and arrange cabin. Load luggage and passengers and give ‘Passenger Brief’ regarding safety on-board aircraft.
Remain at station pending start.	

2.3.3 Starting

The central pedestal cover should remain in place until after the gust locks have been removed and stowed and crew seat belts have been put on.

The Pilot Monitoring (PM) will obtain the latest weather and departure clearance. For those aircraft with a Ground Use Battery the performance data and flight plan can then be programmed into the Flight Management System (FMS). For those aircraft with no Ground Use Battery this will normally take place after engine start.

Battery voltage must be above 23 Volts for starting engines (20 Volts for GPU connection).

Departure Briefing

A General Approach to the emergency and departure brief is to make it interactive. Not simply a one-sided statement from the Pilot Flying (PF), but involving both pilots.

Before every Take-Off, a briefing will be given to cover all the relevant aspects of that and subsequent departure. A full list of those items which should be covered can be found in OMA, section 8.4.1.2.1.

The brief should commence with consideration of any potential “Threats” or “Risks” for the departure / sector to be flown.

Emergency brief on Engine Fire on Start and Brake Failure during Taxy must be included.

Some of this brief may be given whilst still in the Crew Room, prior to entering the aircraft.

After covering the normal and emergency handling techniques before start-up, other briefings such as departure clearance should be given as the information becomes available.

The PF should brief the taxy and departure making use of the Primary Flight Display (PFD), Multi Function Display (MFD) and FMS, whilst the Pilot Monitoring (PM) should be referencing the appropriate Jeppesen Plates.

For those aircraft where PFD data is retained after the battery is switched off and where a Ground Use Battery is also available: the PF will set the cockpit up, including the performance data as required. He will then commence a brief identifying what has been set on the instruments i.e. the PFD, MFD, RTU and what has been programmed into the FMS.

The PM is to refer to the Jeppesen departure Plate / Charts and Company PLOG in order to confirm as appropriate the waypoints, the altitude constraints and the speed restrictions etc. during this briefing.

If the sector to be flown is short (for example, less than 30 minutes) the departure briefing should also include an arrival brief.

For those aircraft where PFD data is NOT retained after the battery is switched off the above PF cockpit set up should be actioned after Engine Start.

The use of the phrase “Standard Emergency Briefing” avoids repetition during a series of flights, but it should be used with discretion, bearing in mind that airport conditions during a series of flights are constantly changing.

Carry out the ‘Flight deck Preparation’ and ‘Before Start’ checklist (Challenge & Response).

If starting with a Ground Handler or Engineer standing in front of the aircraft make use of hand signals to advise starting. The PM should make use of a stop watch during the start-up.

Start-ups will be silent. Start-up parameters should only be voiced by either crew member if / when an abnormality to the Start-up process is identified by either pilot.

PF should then set up the flight director, check the FMS and input Performance data before calling for the ‘After Start’ checklist.

Complete the ‘After Start’ checklist (Challenge & Response) and call for Taxy clearance.

Functional Checks: Refer to Aircraft’s QRH Expanded checklist or cockpit checklist for Functional Checks which must be completed on the first aircraft flight of the day and also whenever there has been a complete change of flight crew.

PILOT FLYING	PILOT MONITORING
Complete Flight Deck Preparation.	Confirm ‘Cockpit Safety Check’ complete.
	Obtain departure ATIS/Clearance/Start. Both pilots listen to clearance/readback
Programme route and Performance into FMS, cross checking against MFD Example info required will be: Check FMS database date is current, GPS or stand location / Route / RWY / SID / Destination STAR / Fuel / Stop Altitudes. For PFD and RTU enter QNH / Refs / Baro Min / NAV Aids / Stop altitude for departure / confirm FMS is Nav source / heading bug on runway for departure.	

PILOT FLYING	PILOT MONITORING
Brief PM with normal Take-Off procedures, to include performance requirements, RWY, SID, Emergencies, any emergency turns. Check fuel contents against planned requirements.	
	From Flight PLOG and EFB confirm and cross check PF's brief i.e. waypoints, altitude and speed restrictions.
Brief in event of Engine Fire on Start and Brake Failure on taxy.	
Call for 'Before-Start' Checklist.	
	Carry out 'Before-Start' Checklist, Challenge and Response.
	State "Before-Start Checklist complete".
Start engines using flow procedure. (LHS pilot will start the engines, RHS pilot is PM during engine start)	
Engine start is a silent process UNLESS abnormality identified and voiced by either pilot.	Monitor start check for engine fire, hung / hot, or no light start on start-up.
In case of fire during start, LHS pilot actions emergency checks (if necessary Commander calls for evacuation).	In event of an emergency on start-up PM to warn ATC and evacuate aircraft if necessary.
After engine start and current limiter checks and switching on both generators the commander will then switch on: avionics master, transponder, cabin sign, cabin temp, bleed air valves to open.	
Read out PFD set-up to PM: coupled as required/FMA set with Heading and Pitch "green", FMS Nav Source on both PFDs/FD set 10 degrees for Raisbeck (8 degrees non-Raisbeck)/Heading bug on departure Runway/confirm heading cross-check both PFDs, MFD, ESIS and Magnetic Compass/Confirm Baro Min setting/QNH setting and Stop	

PILOT FLYING	PILOT MONITORING
Altitude or FL for departure.	
Call for the 'After Start' checklist and, If required, the functional checks.	From check list PM is to call challenge and wait for the PF's response. State "After Start Check list complete".
Request taxy clearance.	Call ATC for Taxy clearance.

2.3.4 Taxying

The Jeppesen airport plate should be open for taxying.
Before leaving the parking area, pilots are to ensure that all ground equipment has been removed from the immediate vicinity of the aircraft. A brake check by both pilots should be actioned as soon as able after start of taxy. Only select flap when clear of the Apron area. Delay the selection of flap when in contaminated conditions.

As turns allow a compass/DI, instrument tracking and balance ball check should be actioned aloud by the PM.

Due regard for passenger comfort and the technical limitations of the aircraft are to be considered when taxying.

Use a mixture of idle power and beta range to assist in controlling taxy speed. Differential power may be used to assist tight turns if necessary.

During the taxy, the PF will maintain a good lookout and will only look in at a point to confirm the correct SID has been entered in the FMS as the clearance is given by ATC.

Reverse taxying should only be undertaken if absolutely necessary and then with extreme caution, using the engines and not the brakes to stop the aircraft. Turning circle diameters are 80 feet (outside wing tips) and 42 feet 2 inches (outside undercarriage).

The PF should give a PEDS review (Performance, Emergency Turn, Departure, Stop Alt/FL) before calling for the 'Before Take-Off' Checklist (Challenge and Response). At unfamilair airfields or in low visibility do not action the checklist unless the aircraft is stationary.

Prior to departure and at the holding area a take-off review is required. This will include any changes to the departure clearance given by ATC, which are changed from the original ATC departure clearance received.

The confirmation of Mode Control Panel (MCP) selection by way of reviewing the Flight Mode Annunciator (FMA) is required at this point i.e. call HDG/NAV and FMS/VOR etc.

PILOT FLYING	PILOT MONITORING
Taxy the aircraft and operate Power levers. Confirm brake check. Handover control to PM to confirm brake check. PF takes control and actions flying controls "full and free".	Confirm brake check.
Maintain a lookout. Initiate checks as required.	
Request PM to action instrument taxy checks.	Carry out Instrument checks on taxy: DI and compass direction/Balance ball/Instrumentation tracking, for example: "turning left, slipping right, RMIs and Compass checked, Instrumentation tracking".
Verbalise PEDS and ask for 'Before Take Off' checks. **(Performance, Emergency Turn, Departure, Stop Alt/FL)**	Read 'Before Take-Off' checklist when asked for. Challenge and Response. Copy down and read back ATC clearance, confirm RWY and SID from the FMS with the PF against the clearance given by ATC.
Carry out functional checks at the hold if not already done.	Maintain listening watch on frequency.

2.3.5 Take-off

Having programmed the FMS, prior to line up, a departure review should take place (runway direction and condition, departure routing etc) and HDG or NAV must be selected and confirmed with FMA (Flight Management Annunciator).

If however there is a requirement to monitor weather, the Pilot Monitoring PFD will display weather on his PFD and the terrain will be monitored on the MFD.

Prior to take off check compass aligned with runway and heading bug plus or minus drift and FD erect.

Company SOP's for a normal flap UP take off require a stop for any malfunction up to 80 knots but will only stop between 80 knots and rotate for an engine failure, engine fire, master warning, smoke in the cockpit, blocked runway, loss of directional control or any other malfunction deemed serious enough to endanger the continuation of flight.

For performance limiting runways and when using the 60 knot incapacity check, between 60 knots and rotate only stop for a physical failure. That is, when using the 60 knot incapacity check, between 60 knots and rotate In the event of a Master Warning or Master Caution you would continue. As power is applied, monitor the auto-ignition and the auto-feather systems for correct operation. Set 2000 RPM to check the governors and check engine instruments before releasing brakes.

For all take-offs:
On the take off run, the PF will power up to approx 2000ft lbs Tq "set power" keeping his hands just forward of the power levers so that he can abort a take-off by closing the power levers up to the decision speed 'VR'.

The PM will trim the power and confirm set. PM must then call "Autofeather Armed", "Airspeed Alive and Cross checked", "80 kts" (incapacity check) and "Rotate" at VR. At the point of rotation the PF places both hands on the control wheel and rotates.

If a performance limiting airfield is being used and the requirement for APP flap is to be selected for take-off, the 80 kt call is replaced with a 60 kt incapacity call which must be acknowledged.

For maximum performance, take-off set just below full power and hold on brakes. Torque will rise by about 80 lbs. ft during take-off run. VMCA is 91 KIAS (Raisbeck), VMCA 86 KIAS (non Raisbeck).

VR may be used as a convenient decision point as to continue or abandon take-off in the event of engine failure. If distances are marginal, then call stop up to 80 knots (flap UP) for any malfunction, but only call stop up to VR for emergencies where the continuation of flight will be unsafe.

For normal take-off, use 2230 lb / ft torque. Flap as required.

Note: the APG calculated Take-Off Performance for the Raisbeck version of the B200 (G-SASC/G-SASD) provides engine out obstacle performance data from 50 ft AGL. V2 for all weights is calculated by APG as being 103 KIAS (reference Raisbeck manual).

The take-off procedure for the **Raisbeck B200** *(G-SASC and G-SASD)* is as follows:

- At VR initiate a gentle rotation to achieve 103kts minimum by 50ft, continue a clean rotation to 13° to 15° pitch using the PTCH SYNC button and accelerate to 130 KIAS until 1500ft agl.

The take-off procedure for the **Non-Raisbeck B200** *(G-GMAE and G-PCOP)* is as follows:

- At VR gently rotate to 8° pitch attitude, continue a clean rotation pitch to 13° to 15° using the PTCH SYNC button and accelerate to 130 KIAS, whilst cleaning up, then 'Normal climb speeds for both engines operating.

After Take-Off the PM calls "Positive Climb". The PF will call for "Gear UP", flaps up by 400 feet AGL. PF should then call for "Auto Pilot", PM engages Auto Pilot and confirm "AP-YD Green" HDG or NAV selected. The PF calls for "FLC 130 KIAS" PM selects FLC and speed bug to 130 KIAS. The PF should then confirm "FLC Green & Speed Checked.

At 1000 feet AGL or above PF calls for "Climb Power", PM sets climb power. (When setting climb power, reduce torque to 2000 before reducing RPM to 1900 to avoid exceeding 2230 lb / ft limit.). On reaching 1500 feet AGL PF accelerates the aircaft to enroute climb speed of 160 KIAS initially.

Complete the 'After Take-Off' check list (Challenge and Response).

The PF will be responsible for all Lateral and Vertical Navigation and inputs to the FMS after AP engaged.

No change of route or performance data can be actioned until the PM agrees and confirms the pressing of the FMS execute button.

The PM may enter data or clear discontinuities as the PF's workload increases but the crosscheck of the execute button still remains part of the management procedure.

PILOT FLYING	PILOT MONITORING
Review departure brief, if no change call "Departure as briefed", include weather radar and terrain. Call for 'before take-off' checklist.	Complete 'Before Take-Off' checklist, challenge and response, and confirm complete. When cleared onto the runway, confirm approach clear, holding point stop bars not illuminated and nothing seen on TCAS, and runway designator.
Action Memory Flow items for Runway Checklist. Ask for Runway Checks.	On request complete Runway check list, challenge and response and confirm complete.
Cleared for Takeoff.	
Advance power levers and call "Set power".	Set take-off power, call "Power Set".
	Call "Auto feather armed, Airspeed alive and cross checked" and monitor engine instruments.
Confirm 80 Knots respond "Check".	Call "80 knots".
	Call "Rotate" at VR
Rotate at VR to 10º pitch (8º Non Raisbeck) and increase pitch with a smooth transition all the way to 13º to 15º pitch using the Sync button.	Call "Positive Climb".

PILOT FLYING	PILOT MONITORING
Call "Gear Up".	Select and confirm "Gear up".
If Flap App used for departure, wait for Safe Height, Safe Speed, and call "Flaps Up" (by 400 feet a.g.l).	Check Speed, Select and call "Flaps Up".
At or above 400 feet minimum call "Autopilot" as required.	Select Auto Pilot.
Confirm "Auto Pilot green".	Monitor power levers throughout the take off in case of roll back.
Call "FLC" and requested speed.	
	Set FLC with requested speed set.
Confirm "FLC green and speed checked".	
Call "Set climb power".	Reduce torque/RPM. Call "Climb Power Set".
	Confirm speed selected, monitor SID and call any deviations from track/chart.
Accelerate in accordance with profile.	Cross check route and altitude constraints, monitor speed 160 Kts.
Call for "After take-off checklist".	Challenge and Response 'After Take-Off' checklist.
	Call "After take-off checks complete".

2.3.6 Climb

After 1500ft, 'Normal climb speed' is 160 knots at SL, reducing 1½ knot / 1000 feet. Operate engines up to a max of 750 ITT. 130 knots is initial minimum climb speed, bearing in mind icing minimum speed limitation of 140 knots.

If ice vanes are required, restore torque within N1 and ITT limits. Monitor the engine gauges and pressurisation. After raising flaps and landing gear, set Climb power on passing 1000 feet AGL.

The PM is to call every 5,000 feet, 1000 feet "One to go". This will be a trigger for the PF to initiate altimeter/systems check. The PF will call FMA changes and assigned Altitudes and Flight levels.

Complete the 'Climb' checklist *(Challenge and Response).*

PILOT FLYING	PILOT MONITORING
Manage and monitor the flight.	
When cleared to a Flight Level	
Select STD (1013mb) and call "Set Standard Altimeter Check".	Select STD and call "Standard Set passing FL …. climbing FL……"and Cross-check.
Confirm Cleared Level to close the procedure.	
Call "Climb Checks".	'Challenge and Response' checklist.
	Call "Climb checks complete".
	Call passing every 5000 ft. For example: "Passing 5000ft, climbing FL120 which is safe"
Carry out system checks silently: electrical load, pressurisation, fuel, icing.	
Call passing TL	
	Call "**One to go**" 1000 ft to go.
Confirm "one to go" and "ALT Armed" **Reduce climb rate to less than 1500fpm**	
	Monitor altitude/FL capture.
Call "Alt Cap green".	
Call "Alt green" and FL/Altitude.	

PILOT FLYING	PILOT MONITORING
	Call **'passing FL100'**
Check pressurisation, O2 armed and icing. **Recog and tail flood lights off (if used)**	
Set standard on the ESIS.	
ALT SEL – Set by pilot flying. **(Note: only when autopilot selected).**	ALT SEL – Confirm Flight Level selected on the PFD and that it is sector safe and agrees with the clearance.

Note:

ESIS will remain on area QNH until passing 10,000 feet then selecting standard pressure. QNH can be reselected at TOD when the latest destination airfield ATIS has been obtained.

MFD range during take-off and departure should be a minimum of two sequential waypoints

in order to maintain spatial awareness when using navigational tracks and/or TCAS proximate traffic.

2.3.7 Cruise

Normal cruise is recommended, max 750°C ITT, or 2000 lb / ft torque at lower levels. Higher values may be used if flight profiles require but careful monitoring of limits is imperative. Monitor engine gauges and pressurisation.

The Company will provide Flight Plans with fuel requirements based on actual or forecast conditions. Pilots must continually check actual performance against the planned criteria.

Reference to Flight Manual tabular data may be required. Speed schedules at various weights, temperatures and altitudes can be found in this Manual.

Monitor engine gauges and cabin pressure.

The PM will update the weather information for route and destination.

Note: Auto Feather is left on in the climb and only de-selected once established in the cruise. Carry out an Engine Trend Monitor once per day.

PILOT FLYING	PILOT MONITORING
Set cruise power, autofeather OFF, and carry out an engine Trend Monitor once per day	Monitor Cruise power set.
Monitor power setting and speed Manage flight and fuel consumption.	Update flight log.
Specify weather information required.	Obtain weather (ATIS) as requested.
Brief for fuel checks as appropriate.	Liaise with Paramedic.

2.3.8 Descent

At an appropriate point prior to descent the PF will give control of the aircraft to the PM. The PF will set up the PFD, FMS (referencing the MFD), ESIS and RTU.

The PF will then pass the EFB to the PM and will then brief from the FMS and MFD, with the PM checking the EFB charts.

The objective of the brief is to achieve a crew “shared mental picture” of descent, approach, landing and taxi.

This brief should start with interactive discussion on “Threats” or “Risks” associated with the approach, landing and taxy. It should also include among other items: the go around procedure and brake failure on landing or taxy. Please refer to *OMA Section 8.4.1.2.5* Approach and Landing Briefing for items which should be covered in the brief. This brief

should also agree a fuel quantity at which the crew WILL divert to a planned alternate airfield should an initial approach be unsuccessful.

Reset the pressurisation, to destination Airfield (airfield elevation +500ft, then + or – pressure differential from standard). During descent FLC or VS mode may be used for descent profiling. If VS mode is used strict speed control at a PF nominated speed must be used. VS mode will be used on 2-D CDFA approach descent profiles.

VPATH may be used in the VNAV mode for the descent subject to Air Traffic Control requirements. Enter VNAV altitude constraints, speed constraints and descent angle as required.

Cross check MSA prior to descent to ensure intial FL/altitude is “safe”.

In all weather conditions the PM shall monitor all stages of the approach. If the aircraft is deviating from the planned approach, PM is to inform the PF.

Complete the ‘Descent’ checklist *(Challenge and Response).*

PILOT FLYING	PILOT MONITORING
	Acquire destination airfield ATIS.
Once destination airfield ATIS obtained, review arrival procedures and check aircraft landing performance criteria.	
(CRM: PF will hand control to PM while setting up for approach and landing and preparing for briefing)	
Set up cockpit and programme FMS, PFD, RTU and ESIS. Prepare for approach brief against planned arrival.	
FMS. Set arrival routing, height / speed constraints, approach to be carried out and missed approach.	
Handover EFB to PM.	
	Monitor Plate on EFB while PF briefs from instruments and screens referencing the approach plate cross check arrival routing, height / speed constraints, approach to be carried out and missed approach on FMS.
Brief for the arrival and approach: discuss Threats or Risks for approach, landing and taxy. Brief from FMS using MFD; include ‘who does what’ during landing and in the	**Note:** Independently review approach and confirm landing performance,

event of a missed approach. **After brief complete PF resumes control of the aircraft.**	weights and speeds.
PILOT FLYING	**PILOT MONITORING**
Call for descent checks.	'Challenge and Response' checklist. Call "Descent checks complete".
Select Cleared altitude/FL	Confirm Cleared altitude and that it is safe for the sector and agrees with clearance/procedure
For descent select FLC or VS with specified speed. Check FMA and confirm mode selected and "green".	Confirm Modes selected on FMA.
Monitor temperatures and pressures **Comply with ATC clearances and speed controls.**	Set pressurisation when instructed by PF Call passing every 5000 ft. Call "One to go" at 1,000 ft to go.
Reduce descent rate to less than 1500fpm **Call "ALT CAP green" when capturing a cleared FL/Altitude. Call "ALT green" when maintaining selected FL/altitude.**	Acknowledge the "Alt Cap green" / "Alt green" call by PF by stating "Check".
When cleared to an altitude, PF calls "Set QNH, Altimeter Check". **PF confirms cleared altitude to close procedure.**	PM Selects and calls "QNH Set", "passing altitude …… descending …….." and Cross-check.

2.3.9 Holding

When a holding procedure is to be flown, both pilots shall check the holding pattern has been entered into the FMS correctly as well as the following:

- The minimum safe Altitude for the holding pattern;
- Method of entry;
- Airspeed (150 KIAS) giving approx. 10lbs a minute fuel burn;
- Wind speed and direction.

2.3.10 Diversion

The Commander is to ensure that the crew is prepared at all times for a diversion either en-route or from a destination, and that the relevant information covering diversion routing and airfields is available.

If, in marginal weather conditions, an unsuccessful approach has been made, provided that fuel margins in excess of the diversion requirement exist and no deterioration in the airport weather has occurred, a second approach may be carried out. If this second approach is unsuccessful, the aircraft may, at the Commander's discretion, provided that an airfield weather improvement is forecast, hold as directed by ATC for the period of time permitted by the fuel margin in excess of the diversion fuel requirements. If no substantial improvement occurs within the available time or by the fuel remaining limitation agreed by the crew during the Approach Brief, the aircraft shall divert to a designated alternate airfield. In any event the Commander should endeavour to land at a diversion airfield with a minimum Final Reserve Fuel.

2.3.11 Approach

Set prop levers to Max rpm before selecting gear down. This will avoid a "Reverse Not Ready" amber caution.

Select flap on schedule. On 'one engine' approaches normally delay use of more than APP Flap until committed to landing.

For those airfields where ATC offer radar 'vectors' to the crew the associated Jeppessen Airfield Radar plate must be referenced to ensure ATC descent altitudes/FLs are 'safe for the sector'.

2.3.11.1 RNP Approaches

Introduction

This sub section is intended to provide background information and guidance for normal operations and abnormal avionics indications when conducting RNP APCH approaches in King Air aircraft equipped with Pro Line 21 with LPV avionics *(G-SASC, G-SASD and G-GMAE)* in order that crews are equipped to conduct the above approaches safely.

Note: G-PCOP is not equipped with Proline 21 with LPV avionics.

In all instances the relevant AFM/POH *(Aircraft Flight Manual or Pilots Operating Handbook),* attendant Flight Manual Supplements, Collins Pro Line 21 Avionics Operator Manual and Collins FMS-3000 v4 Operator Manual are to take precedence over this document.

This Document does not consider the use of RNAV equipment as an alternative or substitute means of navigation for departure, arrival or approach procedures using ground based navaids.

Abbreviations

GBAS – Ground Based Augmentation System

GNSS – Global Navigation Satellite System

GPS – Global Positioning System

LAAS – Local Area Augmentation System

LNAV – Lateral Navigation

LPV - Localiser Precision with Vertical Guidance

RNAV – Area Navigation

PBN – Performance Based Navigation

PSA – Preselector Altitude

RF – Radius to Fix

RNP - Required Navigation Performance

SBAS – Space Based Augmentation System

VNAV – Vertical Navigation

1) PBN and RNAV Introduction

a) Introduction to PBN and some Definitions

PBN (Performance-based Navigation)

PBN is a concept whereby aircraft operating along certain ATS routes, on an instrument approach procedure or in designated airspace are required to meet specified performance-based standards for on-board area navigation.

RNAV (*Area Navigation*) & RNP *(Required Navigation Performance).*
RNAV *(Area Navigation*) is method of navigation which permits operation of an aircraft along any desired flight path and allowing the aircraft position to be continuously determined wherever it is.
RNP relates to an RNAV navigation solution that requires some sort of on-board monitoring and alerting function of the nav. system performance (such as RAIM). An RNAV specification requires no such monitoring or alerting function.
A number of RNAV and RNP specifications exist with the suffix number denoting the precision required *(for 95% of the time and double for the remaining 5%.)*
Certain RNAV or RNP specifications may require specific sensors or more complex capabilities *i.e RNAV 10.*

B-RNAV *(Basic Area Navigation)* & ICAO RNAV 5. These are identical and the standard is now required for operation on all ATS routes in UK airspace (en-route). The term B-RNAV has been replaced with “RNAV 5”. The performance standard for a RNAV 5 compliant system is that it maintains a track-keeping accuracy of +/- 5nm for at least 95% of the time and +/- 10nm for the remaining 5%.

PRNAV *(Precision Area Navigation).* Similar to ICAO RNAV 1 but some slight differences with relation to the use and application of ground-based navaids. PRNAV is effectively a European application of the RNAV 1 specification. This is the standard required for RNAV operations in the terminal area where RNAV procedures (SIDS and STARS) are to be flown. The required performance standard for a RNAV 1 compliant

system is that it maintains a track-keeping accuracy of +/- 1nm for at least 95% of the time and+/- 2nm for the remaining 5%.

RNP APCH is a set of PBN specifications relating to instrument approaches.

The determination of whether a particular aircraft is equipped to meet a particular RNP or RNAV standard, and is compliant with the requirements, will be contained in an Aircraft Flight Manual/Pilots Operating Handbook or aircraft Flight Manual Supplement. This will specify which of the RNP/RNAV standards the aircraft is certified to meet, together with the types of operation that are enabled and approved and some guidance to pilots.

For clarification, refer to Gama Aviation Operations Manual Part A and relevant Operations Manual Part B.

A requirement of RNAV and RNP capable avionics is that they are able to retrieve procedures *(departure, arrival or approach)* and waypoints from a database. RNAV procedures should not be modified by the crew, however "Direct To" operations may be acceptable.

b) Approach Terminology

RNP APCH procedures may have several minima depending the types of approach available.

RNP APCH – LPV Minima
Localiser Performance with Vertical guidance (LPV) is similar to an ILS with lateral and vertical guidance increasing in sensitivity towards the runway. Both LPV and ILS are 3-D approaches. LPV requires the availability of SBAS (see GPS section below), SBAS VNAV capability, a suitable receiver and a specifically designed LPV procedure. System minima (DH) can be as low as 200ft (LPV 200) although many of the older approaches are 250ft (LPV 250).

LPV approaches have their Final Approach Segment (FAS) defined by a set of values called the FAS data block. This contains all the information required for LPV equipped aircraft to fly the approach including, but not limited to: SBAS Provider; Airport Identifier; Glidepath Angle; Reference Path Identifier Landing; Threshold Point coordinates.

The FAS data block values are input into an algorithm that outputs a number. This number is included with the FAS data block and allows the LPV capable aircraft to check the integrity of the data (This is a requirement for LPV capable avionics.) Should any element of the FAS data block be incorrect, the LPV approach will not be available to the crew.

A RAIM prediction is not required for LPV approach as the SBAS performs the requisite monitoring and alerting functions automatically. However, it is prudent to perform a RAIM prediction anyway as, in the event of SBAS failure an approach to LNAV-only minima may be conducted provided the aircraft can be configured and stabilised by the FAF (In the absence of any further warning flags or messages)

RNP APCH – LNAV/VNAV minima
Laterally this is the same as the LNAV-only approach above (i.e. parallel +/- 0.3nm) but where the GNSS navigation computer uses the system QNH and lateral positioning to calculate a VNAV glidepath indication (VGP) from the FAF to the runway. This is known as BARO-VNAV and is not an LPV. The Gama King Airs are equipped and approved for BARO-VNAV.

RNP APCH – LNAV minima
A 2-D approach with a distance/altimeter-based "CDFA" descent profile. The final lateral guidance is parallel, providing a full-scale deflection indication on the HSI of +/- 0.3 nm, all the way from the FAF to the runway.

Where available it may be suitable to use Baro-VNAV down to LNAV minima provided all existing "Step Down Fixes" or "Minimum Segment Altitudes" can be complied with.

RNP AR APCH
An approach that may make use of Radius to Fix (RF) legs and have reduced lateral and vertical obstacle clearance on approach as well as missed approach.
These procedures make use of specific aircraft/avionics capabilities and also specific operational procedures.

They may only be conducted by operators with a specific approval.

Gama Aviation is not approved to conduct RNP AR APCH procedures.

GPS Overlay Approach
An approach allowing GPS guidance to be used to conduct an existing ground based navaid instrument approach (i.e. VOR/DME, NDB/DME, VOR, NDB.) The Approach Title takes the format "VOR or GPS Rwy 05"

For LPV, LNAV/VNAV and LNAV approaches where SBAS is available, RAIM is not required.

BARO VNAV is subject to temperature error. Temperatures below ISA cause the geometric approach angle to be shallower. Consequently BARO VNAV approaches have a minimum temperature limitation printed on the chart.

Also, some aircraft have the facility to correct the Baro-VNAV path for temperature.

For more detailed information on GNSS approach and PBN operations see CAA CAP 773.

c) Some Clarification on GPS and GNSS

GPS (Global Positioning System) is generally not as accurate vertically as it is laterally. Lateral referencing is all related to WGS 84 and, provided the charting and procedure database coding are similarly referenced, the accuracy is standardised around the globe and generally considered accurate to around 20 metres. This magnitude of error is far more critical in the vertical than it may be laterally. More importantly, GPS altitude is referenced to an MSL (Mean Sea Level) 'geoid' model but the geoid varies in accuracy and, consequently, not all charted MSL references are standardised around the globe.

This can give rise to variable accuracy in the vertical and GPS altitude may well be critically less accurate than local barometric altimetry.

GNSS (Global Navigation Satellite System) is a generic term for Satellite Based navigation systems (e.g. GPS, GLONASS, Galileo etc.) including various Augmentation and Integrity Monitoring Systems (e.g. WAAS, EGNOS, RAIM etc.)

SBAS & EGNOS

Whereas RAIM is a receiver-based monitoring system, the Space-Based Augmentation System (SBAS) comprises a network of ground stations and geostationary satellites that not only provides an alternative integrity monitor but can quantify certain errors from the satellites and provide corrections to be applied by the receivers. This improves both accuracy and availability by compensating for some errors and potentially returning otherwise 'unusable' satellites to service.

In Europe the SBAS system is the European Geostationary Navigation Overlay Service (EGNOS). This consists of 4 geostationary satellites sitting over Europe above the GNSS orbits and a series of some 39 ground stations called Ranging Integrity Monitoring Stations (RIMS) spread across Europe, 2 Central Processing Facilities (CPFs) each located in a mission control centre, 8 Navigation Land Earth Stations (NLES) and 2 Central Control Facilities (CCF).

The RIMS monitor the satellite transmissions and send data to the CPFs from where correction data can be sent to the NLES' which relay the correction to the EGNOS satellites and, in turn, back down to the SBAS enabled receivers in aircraft; enabling improved accuracy of the GPS to around 3 metres, and integrity messages (regarding the level of trust and usability of the system). The entire system is monitored and controlled from the CCFs.

For more information refer to the "EGNOS Safety of Life Service Definition Document".

EGNOS enables the necessary accuracy (including vertical accuracy) to fly the LPV approaches as low as 200ft above the runway.Service status and forecasts for EGNOS are available at https://egnos-user-support.essp-sas.eu/new_egnos_ops/index.php

There are similar systems over the USA (WAAS), JAPAN (MSAS) and India (GAGAN).

RAIM

RAIM (Receiver Autonomous Integrity Monitoring) is the (aircraft) receiver-based monitor that enables GPS to meet the monitoring and alerting function of the RNP requirements. The aircraft receiver's RAIM will monitor the GPS signals and alert the pilot if the integrity and or the accuracy of the navigation solution is in doubt.

A RAIM warning means the monitor is not working. It does not mean the GPS is necessarily in error; it may be working well but the system is not monitored – a bit like switching off the ident and the monitor in a working VOR station.

There are essentially two types of RAIM:

- Fault Detection (FD) RAIM requires 5 satellites to be "in view" by the receiver and will put out an integrity warning if one of them has a fault. An integrity warning prohibits the use of GPS for navigation and approach operations.
- Fault Detection and Exclusion (FDE) RAIM requires an additional (6th) satellite to be visible to determine which one is faulty. An FDE RAIM receiver can then exclude the faulty satellite from the solution. This increases the level of availability by leaving the GPS working, having excluded the faulty satellite, instead of disabling the whole system because of a single satellite failure.

The Gama King Airs have FDE RAIM receivers.

The availability of RAIM depends on the relative positions and serviceability of the satellites. Although the system should provide at least 6 serviceable satellites most of the time, a 'hole' in the service where the constellation cannot provide enough serviceable satellites can, to some extent, be predicted. Such a RAIM prediction can be obtained by visiting the ECAC "Augur Tool" website at www.augur2.ecacnav.com/augur/app/npa. Here you enter the destination airport, make sure the "Mask Angle" is set to 'Default' (or 7.5 degrees), "Algorithm" is set to 'FDE' and "Mode" is set to 'APPROACH'. The result can be selected as graphic or textual. Graphic provides red lines or blocks on a time line where a RAIM hole exists. Textual will tabulate any 'outages' with detailed times.

Jetplan can generate a RAIM forecast based on a flight plans ETA. This is selected on the 'Dispatch' page from the relevant Drop-down menu in the 'Actions' column.

GALILEO is the EU's GNSS constellation and is nearing completion. The last of the satellites are planned for launch in 2017 and the system should be operational by 2019-20. This will be fully interoperable with GPS, effectively doubling the constellation and improving availability and integrity.

GBAS and LAAS refer to ground based augmentation systems. These consist of a ground station at a surveyed location which monitors the GPS precision and broadcasts an augmentation signal providing similar information to SBAS systems. The augmentation signal is usually broadcast on VHF. Specific receiver equipment or an appropriate Multi-Mode Receiver is required to use GBAS.

2) RNAV and PBN approaches: Jeppesen Charts

This section is intended to highlight any differences on RNP APCH procedure charts. For a comprehensive chart legend refer to the "Chart Legend" chapter in the "Introduction" section of the Jeppesen "General Airway Manual".

a) Heading

Currently RNP Instrument Approach Procedures (IAPs) using may have differing Procedure Identifications depending on which nation publishes them.

The titles will be standardised by 2022 to the format "RNP Rwy XX" see *Figure 2.1.1*

For exceptional conditions the Procedure Identification will include a suffix, for example:

"RNP Rwy XX (AR)" for Authorisation Required IAPs;

"RNP Rwy XX (LPV only)" for approaches with only LPV minima.

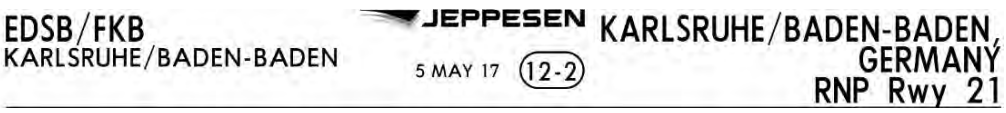


Figure 2.1.1

In the meantime titles may take the form:

"RNAV (GPS) Rwy XX";

"RNAV (GNSS) Rwy XX" see *figure 2.1.2*;

"RNAV (RNP) Rwy XX".

Figure 2.1.2

Where more than one approach for a given runway exists an extra letter to differentiate the approaches will be used e.g. :

"RNP Z Rwy 23";

"RNP Y Rwy 23".

Where the IAP is an approach to circle (i.e. not aligned with a runway) the "Rwy XX" designator is replaced with a letter designator e.g. : "RNP A"

b) Briefing Strip

The chart Approach Briefing Information for RNP instrument approaches appears much the same as for approaches using ground based navaids:

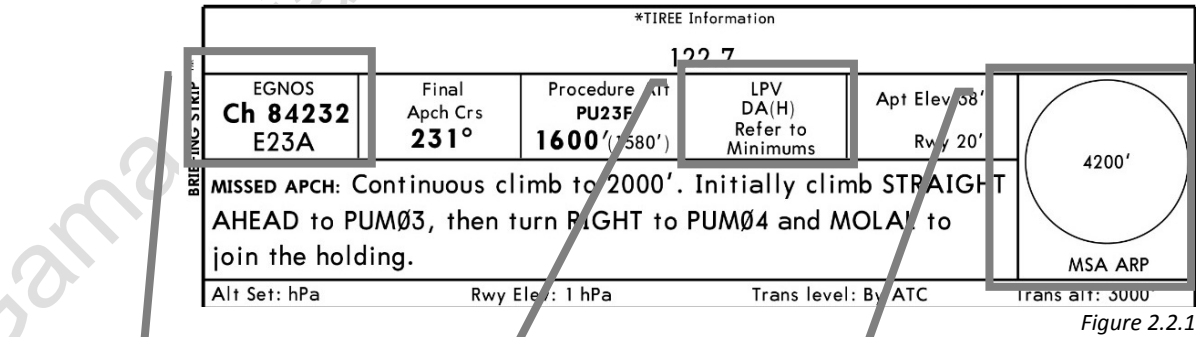


Figure 2.2.1

Approach primary navaid

Lowest DA(H)

MSA or TAA

The approach primary navaid for RNP approaches will detail:

- Augmentation system used;

- Facility Channel Number;
- System approach ID.

For RNP approaches with LPV, LNAV/VNAV or LNAV only minima the augmentation system depends on geographic location *(i.e EGNOS for Europe, WAAS for North America)*

The Facility Channel Number is used to select the approach on some legacy avionics suites.

The System Approach ID differentiates an approach at airfields with several RNP approaches: for example in Figure 2.2.1 the System Approach ID: E23A implies that:

"E" the approach uses EGNOS;

"23" the approach is to runway 23;

"A" is used to allow multiple approach procedures to any given runway.

The MSA or TAA (Terminal Area Altitude) is given as the greatest figure. Minimum Segment Altitudes are depicted on the Approach Planview.

The Altimeter Setting and Notes section, immediately below the Missed Approach section, may contain important information (i.e specific equipment requirements, restrictions, speed requirements.) regarding the approach.

Be aware that such notes may also be in the Approach Planview section of the Approach Chart.

c) Approach Planview

The Approach Planview section (*Figure 2.c.1*) is, again, similar to that found on approaches using ground based navaids. There are a few differences to note, however.

RNP Approaches MUST be retrieved from a valid database, as such the waypoints are **NOT** expressed as either Lat/Long or Radial/Distance from navaids.

Approach Restrictions and equipment requirements may be included as notes in the Planview section.

Primary Navaid (as per briefing strip)

Approach Restriction Note

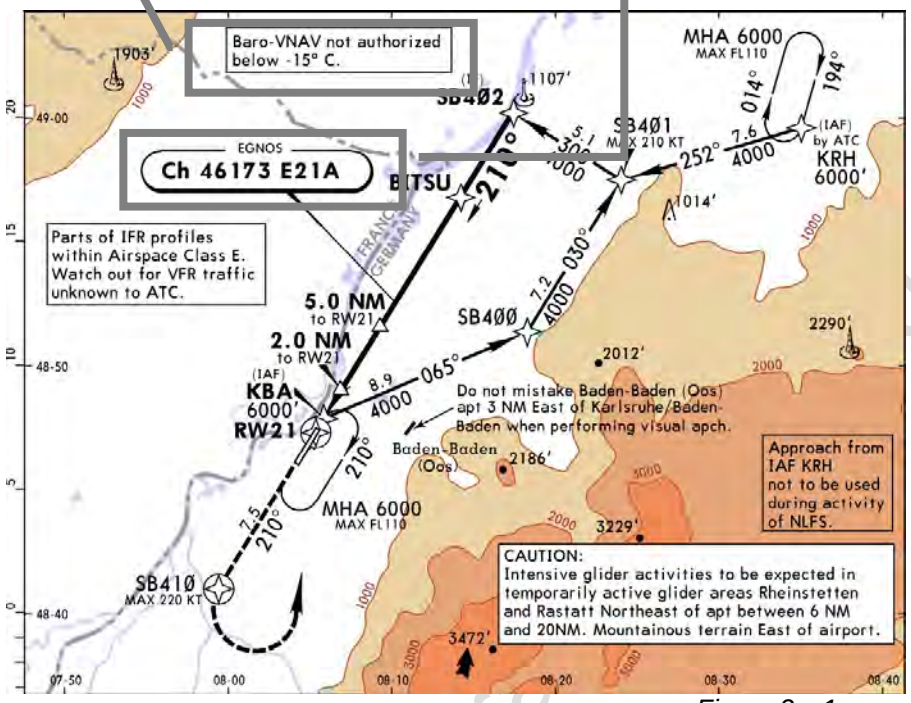


Figure 2.c.1

Terminal Area Altitude

Initial Approach Fix (IAF)

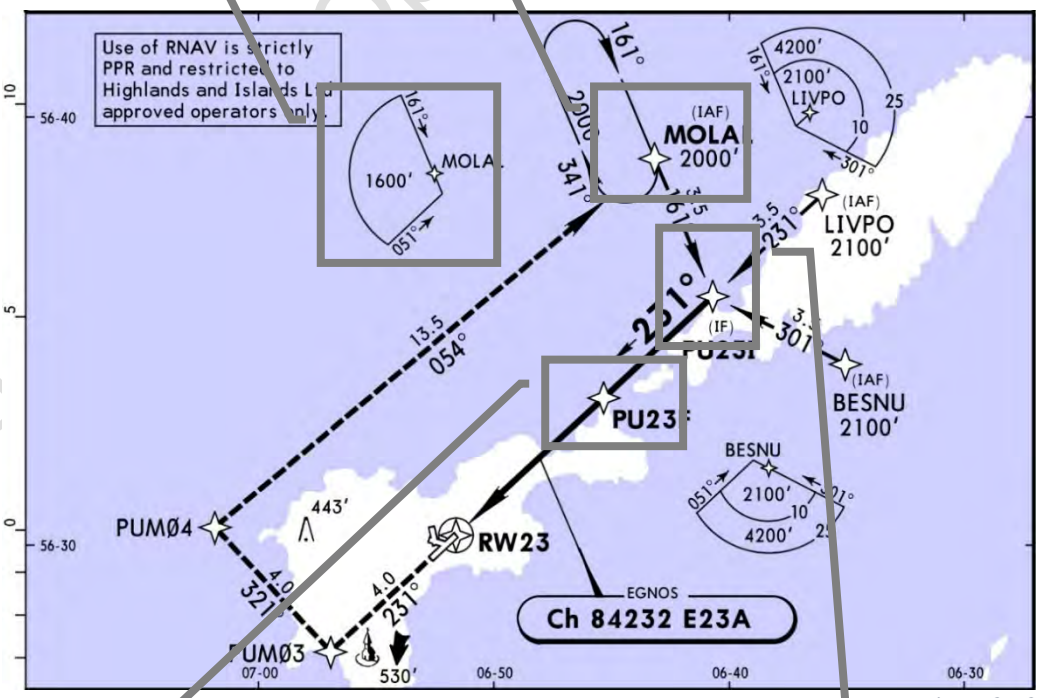


Figure 2.c.2

Final Approach Fix

Intermediate Fix

Terminal Arrival Altitudes give the minimum safe arrival altitudes with reference to a given waypoint.

d) Minima

A given Approach Chart may include several minima (i.e. LPV, LNAV/VNAV, LNAV.) These minima may also depend on the aircraft achievable Missed Approach Climb Gradient or equipment capabilities.

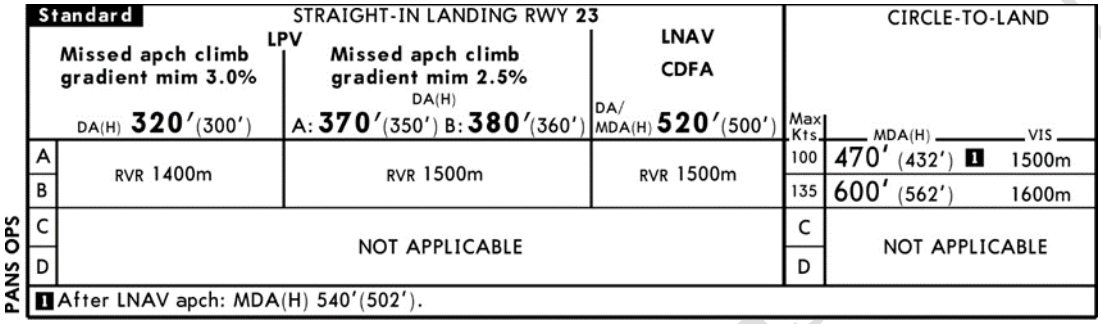


Figure 2.d.1

NOTE: Aircraft avionics may have more restrictive minima.

For further information refer to the "Chart Legend" chapter in the "Introduction" section of the Jeppesen "General Airway Manual".

3) Proline 21 (King Air) VNAV

This is a basic outline of the essential principles of VNAV descent and approach and is not intended to supplant the available manuals and training material from Hawker Beechcraft, Collins Avionics and the various training providers. The use of VNAV in the climb is not considered in this article.

You can arm VNAV at any time by pressing the VNAV button on the Flight Guidance Panel (FGP). This adds a prefix "V" to any vertical mode (ALTS, VS, FLC, PTCH) which then become VALTS, VVS, VFLC or VPTCH, indicating that VNAV is enabled. Once active (green in the Flight Mode Annunciator (FMA) panel at the top of the PFD) the prefix "**V**" indicates the VNAV system is armed whilst the FD follows the selected vertical mode (i.e. tracking an altitude/FL (**VALT**), vertical speed (**VVS**), IAS (**VFLC**) or pitch attitude (**VPTCH**) respectively. The flight director issues pitch commands to maintain the selected altitude, vertical speed, IAS or pitch attitude respectively.

This is the same as operating without VNAV until the aircraft captures the vertical profile (VPATH) to the next Flight Plan Target Altitudes (FPTA). In a descent using either VPTCH VVS or VFLC the aircraft will descend according to the attitude, VS or IAS selected until reaching the VPATH, at which point the aircraft will pitch as necessary to follow the Vertical Path Angle (VPA) this may be set in the IDX > DEFAULTS or PERF > VNAV SETUP pages on the CDU.

NOTE: the VPA value does NOT revert to a default when the avionics are powered down and restarted.

a) Descending without VNAV

In the diagram Fig 1, the aircraft is descending manually before the calculated TOD point to the pre-selector altitude. The armed vertical mode is ALTS. Note; the VPATH is calculated but ignored when VNAV is not selected.

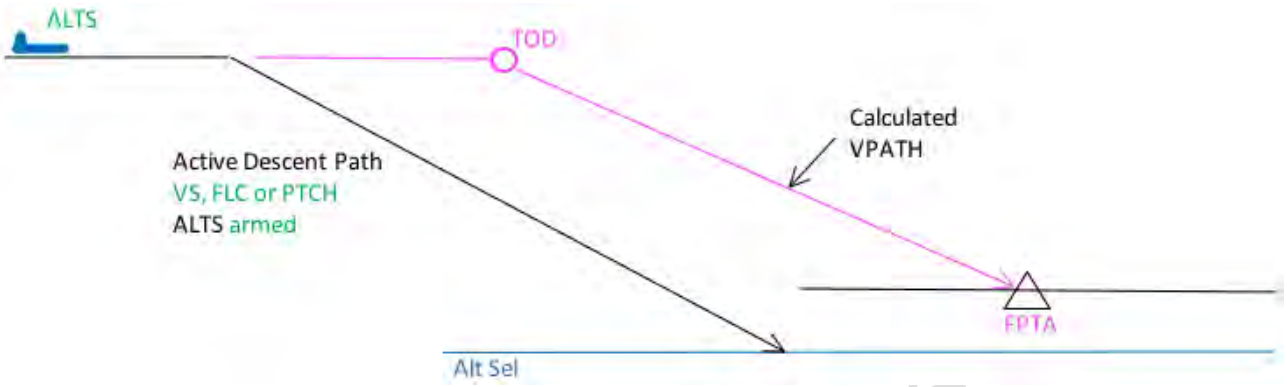


Figure.1

b) Descending with VNAV Selected

In Fig 2 VNAV is selected. The altitude pre-selector is set below the next FPTA allowing the aircraft to descend from the calculated TOD point. The aircraft will follow the flight plan vertical profile until it reaches the altitude selected in the pre-selector.

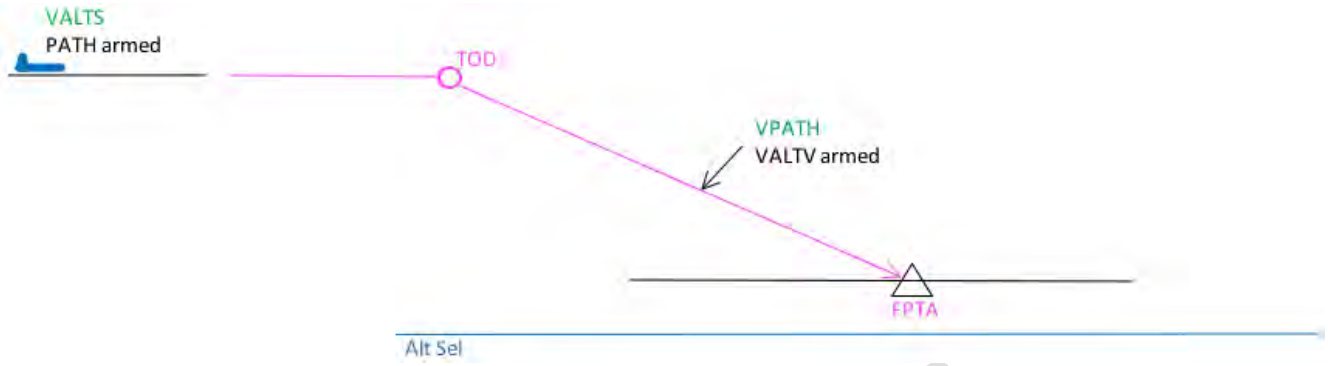


Figure 2

c) Manual Descent to Intercept the VPATH

In Fig 3 the aircraft is descending before the TOD in VS, FLC or PTCH mode but with VNAV selected. The armed vertical mode is PATH which becomes VPATH when captured.

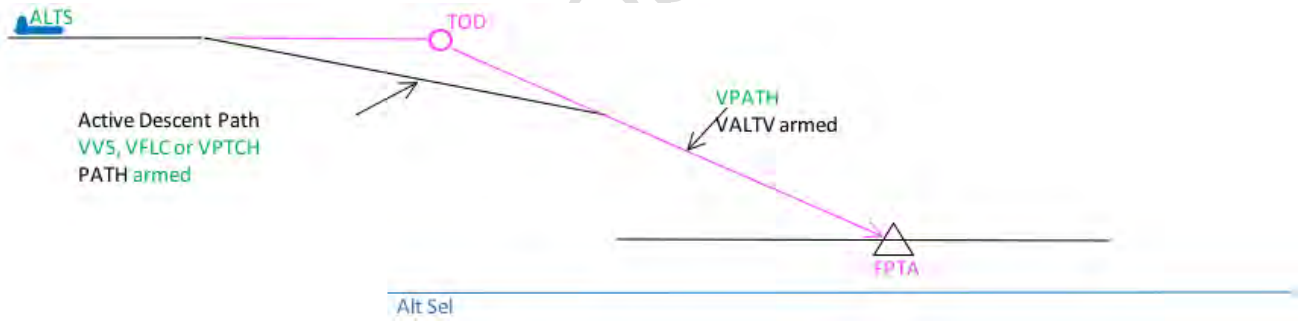


Figure 3.1

If there are several FPTA, VNAV will attempt to descend the aircraft all the way to the last FPTA in the active flight plan (or a discontinuity) by constructing a descent profile that connects all the FPTA, and observes any altitude constraints on the way. To avoid intermediate level segments, when the FPTA constraints are aligned so a smooth path can be flown through the constraints, VNAV will calculate a continuous VPA. VNAV will not level at the intermediate altitudes (unless the resulting VPA is less than 1 degree). All 'AT', 'AT OR ABOVE', AT OR BELOW' and 'BETWEEN' ALTITUDE constraints in the flight plan will be honoured.

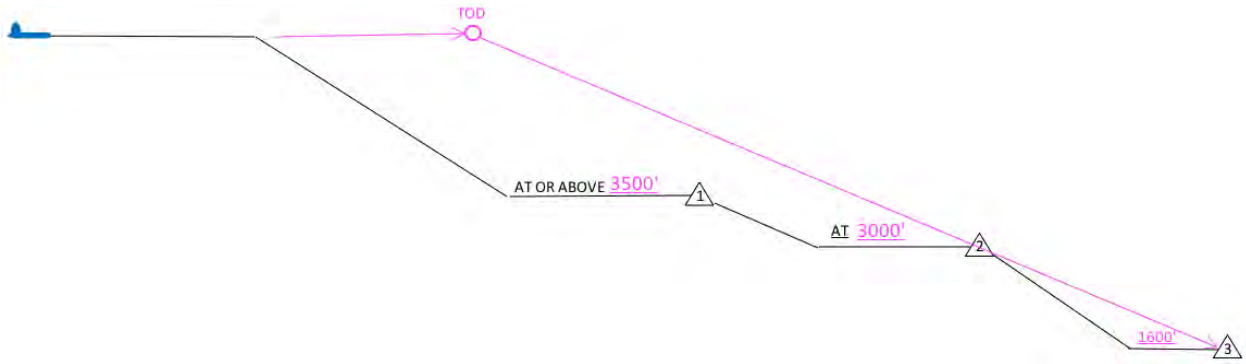


Figure 3.2

Except with APCH as the active lateral mode and an approach glidepath is available, (see "Final Descent on Approach" below), the altitude pre-selector will be honoured whenever it is reached.

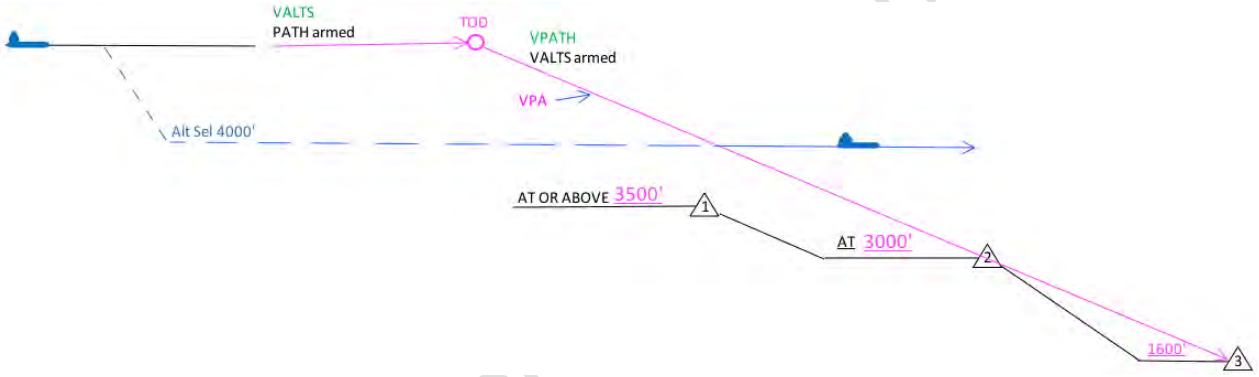


Figure 3.3

During VNAV descent, the PFD shows the next altitude constraint (displayed in magenta above the VSI tape). The ARM field indicates that VNAV will do one of 3 things:

1 ALTV armed = Level at the FPTA -

2 ALTV not shown = Continue the descent to cross the FPTA and/or:-

3 ALTS armed = Capture the pre-selector altitude when it is reached.

d) Final Descent on Approach

Whilst conducting an ILS, LPV or LNAV/VNAV approach, with **APPR** mode active, once the vertical path is intercepted (i.e **GS** or **VGP** green) VNAV will ignore the altitude pre-selector which may then be set for the Missed Approach Procedure.

Note: on an RNP APCH with LPV minima the VNAV will transition from Baro-VNAV to SBAS- VNAV, dependant on the temperature this may cause a vertical path adjustment.

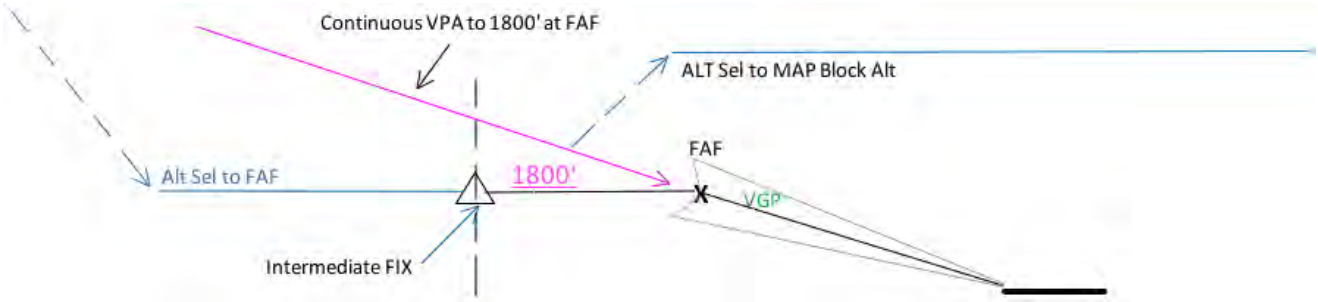


Figure 3.4

4) Limitations and Capabilities (King Air Pro Line 21 with LPV)

a) General

Pro Line 21 Installations in King Air aircraft are of a modular nature. As such they are available with a large number of options and aftermarket upgrades. On any airframe the Aircraft Flight Manual and relevant Flight Manual Supplements must be consulted with regard to Limitations and Capabilities.

Notwithstanding the above, the following refers to King Air Proline 21 installations with the LPV upgrade as installed in *G-SASC, G-SASD and G-GMAE.*

The relevant revision of the Avionics Manuals are accessible in the Content App on the aircraft EFB devices.

b) Capabilities and Limitations

King air Pro Line 21 with LPV aircraft are capable of the following:

- P-RNAV
- RNP-APCH with LPV minima
- RNP-APCH with LNAV/VNAV minima, RNP-APCH with LNAV minima.
- Baro-VNAV (**without** temperature compensation)

Gama Aviation Pro Line 21 with LPV equipped King Airs are **NOT** approved for:

- RNP-AR APCH operations;
- RF Required approaches;
- GLS approaches;
- GBAS required approaches.

Minima
Minimum Decision Height (DH) for LPV approaches is 250ft

Equipment
LPV approaches require functioning TAWS/EGPWS, be aware that TAWS/EGPWS requires functioning Radar Altimeter.

Planning considerations
Alternate airfields must have an available ground based approach procedure.

c) Characteristics

The King Air Pro Line 21 with LPV is a multi-sensor avionics suite capable of area navigation and compliant with the following navigation specifications:

It is capable of monitoring navigation sensor precision and selecting the most accurate. In normal operations the order of preference would be: GNSS with SBAS; GNSS with RAIM; GPS only; DME/DME; VOR/DME; VOR; DR mode.

Via the IDX > VOR CTL and IDX > GNSS CTL pages on the CDU it is possible for the crew to enable and disable various sensors, functions of sensors *(i.e. RAIM, SBAS providers)* and exclude specific navaids *(i.e. where NOTAMed as unserviceable)* for further details, refer to the Rockwell Collins FMS-3000 v4.0 Operators Guide *(accessible via the Content App on the aircraft EFBs.)*

Where unable to achieve the requisite navigation performance on an RNAV or RNP procedure the system will alert the crew via messages displayed in the locations shown in *Fig 5.1 - 5.4*

5) Abnormal

a) Annunciators Location

Alerts indicating abnormal conditions of the Proline 21 avionics system may be displayed in several positions including:

Flight Guidance System (FGS) Annunciators on the PFDs

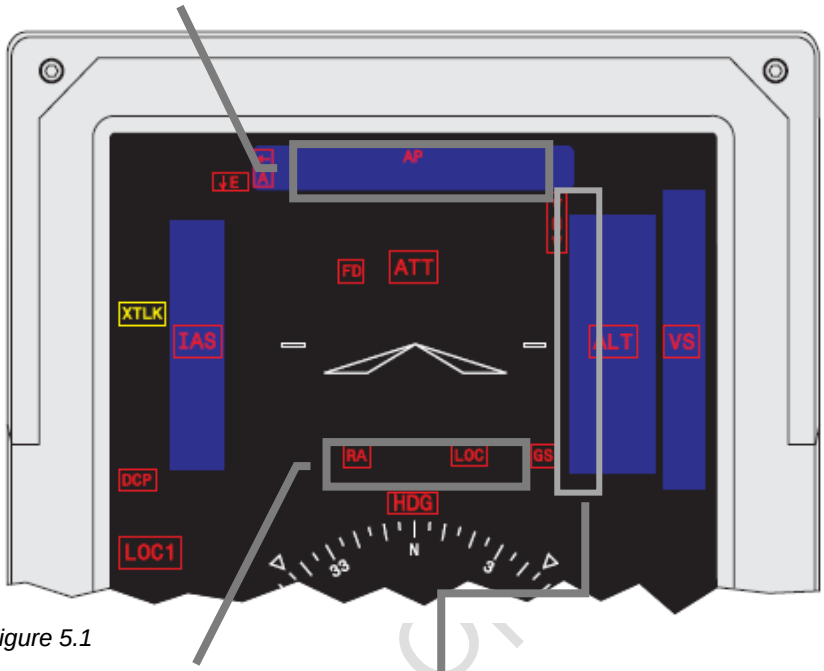


Figure 5.1

Lateral and Vertical deviation indicators on the PFDs

PFD FMS Annunciators;

Figure 5. 2

MFD FMS Annunciator

Figure 5.3

CDU FMS Annunciator

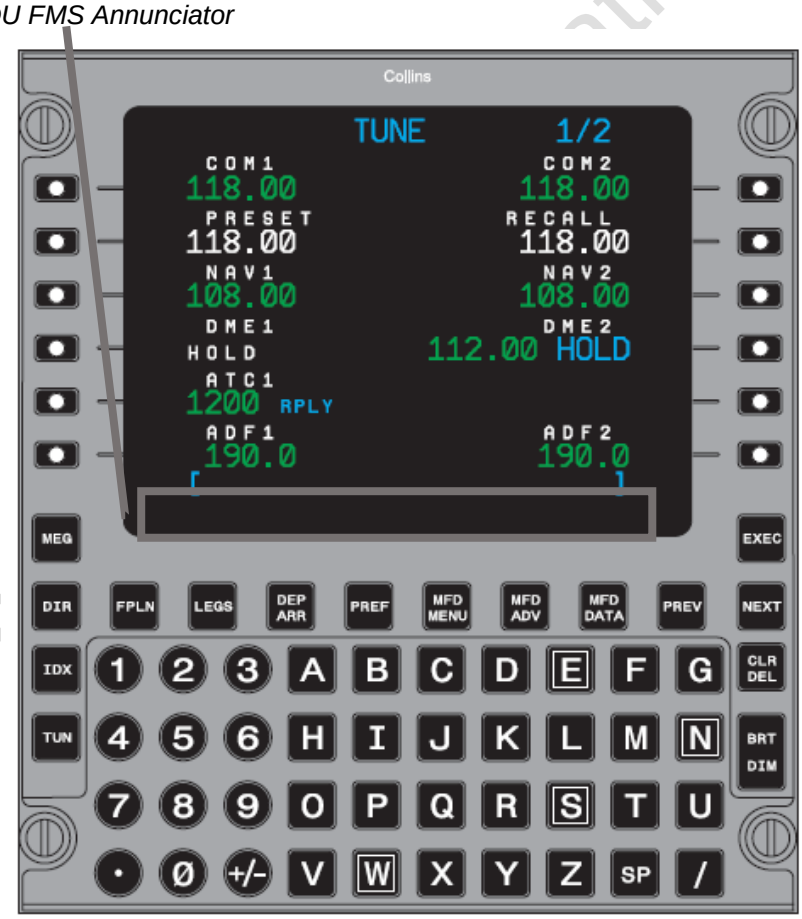


Figure 5.4

b) Annunciations and Warnings

The guidance below is with respect to avionics warnings only and is not exhaustive.

Broadly speaking, beyond the IAF any Red or Yellow Flag or Alert should cause the approach to be discontinued and a climb to safe altitude initiated.

Flight Phase	Location	Message / Flag	Action
Terminal Area to IAF	Lat/Vert Deviation	FMS / GPWS	Climb to safe altitude
	FGS Annunciator	~~FMS~~ ~~APPR FMS~~	
	MFD FMS	LOI FMS DR CHK POS NO APPR NO NPA RAIM	

Flight Phase	Location	Message / Flag	Action
Terminal Area to IAF	Lat/Vert Deviation	VNV	Troubleshoot as time and workload allow (PM)
	FGS Annunciator	~~PATH~~	
	MFD FMS	LOI TERM SPD MSG MSG	

Flight Phase	Location	Message / Flag	Action
IAF to DA	Lat/Vert Deviation	FMS VNV GPWS	Discontinue Approach Climb to safe altitude
	FGS Annunciator	~~FMS~~ ~~GP~~ ~~VGP~~	
	PFD FMS	LOI LOI TERM NO APPR NO NPA RAIM	

Flight Phase	Location	Message / Flag	Action
Go Around	Lat/Vert Deviation	FMS	Climb to safe altitude
	FGS Annunciator	~~FMS~~	
	MFD FMS	LOI	

Where conditions allow, crew may also elect to continue on a visual approach to land given any abnormal indications.

6) Normal

This section is intended as a guide to normal operation whilst conducting RNP APCH procedures.

a) General

Use of Pre-Selected Altitude
The Pre-Selected Altitude (PSA) window shall be used to select procedural or vectored safe altitudes in order to control the descent in a safe manner. This is especially important when using VNAV mode with 'Vertical Direct To' operations.

Once a vertical path is captured on final approach (VGP or GS displayed), the PSA should be set to Missed Approach Altitude.

Flight Guidance System Modes
PF shall be responsible for selecting, monitoring and calling of FGS modes and annunciations.

PM shall be responsible for monitoring the selected FGS modes and calling any discrepancies.

Primary Flight Display Messages and Alerts
Both Crew shall monitor and call any change in PFD/MFD FMS messages. *Fig.5.2 and Fig.5.3*

b) Considerations:

Use of ground based aids to aid situational awareness is encouraged. However, waypoints on RNAV/RNP procedures are NOT referenced to NAVAID radials and distances and MUST be retrieved from a valid database.

RNAV/RNP procedures and waypoints should NOT be altered, this includes waypoint minimum altitudes.

Where direct-to and vertical direct-to operations are carried out Minimum Segment Altitudes or Terminal Area Arrival Altitudes shall be observed and must be set in the PSA window.

Vertical direct-to operations beyond the FAF (Final Approach Fix) are PROHIBITED.

For calculation of minima:
LPV and LNAV/VNAV approaches should be considered '3D' or 'Precision' approaches.
LNAV approaches should be considered '2D' or 'Non-Precision' approaches

When being vectored or routeing Direct-To the FAF, the aircraft must have a track within 45deg of the Final Approach Track.

c) FMS annunciations:

FMS annunciations are displayed in three locations:

- PFD FMS annunciator (*Figure 5.2*);
- MFD FMS annunciator (*Figure 5.3*);
- CDU message line (*Figure 5.4*).

The closest to the main instrument scan is the PFD FMS annunciator.
During normal operation these annunciations relate to the Lateral and Vertical Deviation scales as follows:

FMS Annunciation	Full Scale Lateral Deflection	Full Scale Vertical Deflection
TERM, **LPV TERM**, **L/V TERM**, **LOI TERM**	±1 nm	±500 ft (Baro VNAV)
NO APPR	±1 nm	±500 ft (Baro VNAV)
APPR	±0.3 nm	±250 ft (Baro VNAV)
GPS APPR	±0.3 nm	±250 ft (Baro VNAV)
L/V APPR	±0.3 nm	Angular (SBAS VNAV)
LPV APPR	Angular	Angular (SBAS VNAV)

NOTE: where L/V APPR is displayed the FMS is providing an enhanced LNAV/VNAV approach using SBAS. In this case LNAV/VNAV minima still apply. This is an avionics specific term.

d) Pre-flight

Flight Crew shall ensure that:

- FMS database is current and that the required RNP procedures are selectable;
- required RNP procedures are not notified by NOTAM as unavailable;
- required navaid (GNSS, SBAS, RAIM etc.) availability is not affected by any NOTAM.

Flight Crew may make use of the following website for information regarding availability of EGNOS and RAIM:

- https://egnos-user-support.essp-sas.eu/new_egnos_ops/index.php
- www.augur2.ecacnav.com/augur/app/npa

Crew may also choose to carry out a RAIM prediction using the Pro Line 21 system. This is accessed through IDX > GNSS CTL > NPA RAIM and provides RAIM availability forecast for an input Destination and ETA.

e) Not Currently Used

f) En-Route

Flight Crew shall conduct a briefing as per any approach and also including:

- waypoint names and altitude limitations (read from CDU, confirmed against chart);
- tracks between waypoints and along-track distances (read from CDU, confirmed against chart) including missed approach;
- Minima, dependant on equipment and missed approach climb gradient.
- FGS modes to be used;
- FMS and FGS annunciations expected including missed approach (See 6.7.1 and 6.7.2)
- Descent Planning with altitude and speed targets;
- actions in case of abnormal conditions (see Section 5);
- availability of alternative ground based aids and approaches.

Note: Waypoints on RNP approaches are not defined by radials and distances from ground aids, procedures MUST be retrieved from a valid database and NOT altered

Selecting Procedures

RNP APCH procedures are selected from the DEP ARR > ARR for the relevant airfield.

With an RNP APCH procedure selected the CDU will display a screen similar to Figure 6.6.1:

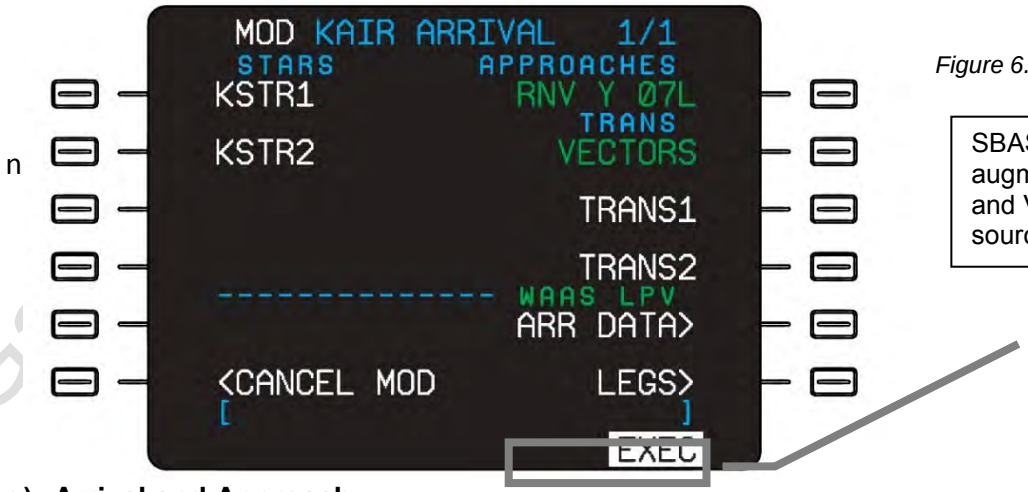


Figure 6.6.1

n

SBAS augmentation and VNAV source

g) Arrival and Approach

Altimeter Setting Procedures are as per Gama Aviation Operations Manual Part A and in this Operations Manual Part B1.

The PSA Window shall be used to set safe altitudes.

FMS as NAV Source, FGS NAV mode with APPR armed/ active and VNAV mode are required to conduct RNP approaches to LNAV/VNAV and LPV minima.

Baro-VNAV may be used on RNP APCH with LNAV minima, provided that all Minimum Segment Altitudes and Step Down Fixes are complied with.

The Glide Path on RNP APCH procedures using Baro-VNAV or SBAS VNAV (LPV) may be intercepted prior to the FAF (in the same manner as an ILS).

(i) LPV or LNAV/VNAV approach:

Terminal Area is considered 31nm with regard to Pro Line 21 avionics. *(NOTE: PANS OPS is 25nm)*

For RNP APCH with LPV minima the PFD FMS annunciator should read LPV TERM or LPV APPR with the colour depending on flight phase as described in the table below.

For RNP APCH with LNAV/VNAV minima the PFD FMS can read either L/V TERM, L/V APPR or GPS TERM, GPS APPR.

Flight Phase	FGS Mode Lateral	FGS Mode Vertical	PFD FMS Annunciator
Terminal Area to IAF	FMS or APPR FMS or HDG	As required	LPV TERM or L/V TERM or GPS TERM

NOTE: Confirm SEQUENCE is AUTO on CDU

IAF to IF	APPR FMS or HDG with APPR FMS	VPATH or VVS / VFLC	LPV APPR or L/V APPR or GPS APPR

NOTE: When receiving ATC vectors to final for an RNP approach, APPR mode should not be armed until heading is within 90 degrees of final approach track. (In order to avoid early waypoint sequencing.)

Flight Phase	FGS Mode Lateral	FGS Mode Vertical	PFD FMS Annunciator
IF to 2NM before FAF	APPR FMS	VGP or VALTS / VVS / VFLC with GP	LPV APPR or L/V APPR or GPS APPR

NOTE: with GP indicated as the vertical mode, the PSA may be set for the missed approach

2NM before FAF to FAF	APPR FMS	VGP or VALTS / VVS / VFLC with GP	LPV APPR or L/V APPR or GPS APPR
FAF to DA	APPR FMS	VGP	LPV APPR or L/V APPR or GPS APPR

NOTE: 'SEQUENCE' is forced to 'INHIBIT' (displayed on CDU) during Final Approach Segment until the Go Around button is pressed.

Flight Phase	FGS Mode Lateral	FGS Mode Vertical	PFD FMS Annunciator
Go Around to Climb Configured	GA	GA	TERM
Climb Configured	FMS	FLC with ALTS	TERM

NOTE: Confirm SEQUENCE is AUTO on CDU

(ii) LNAV approach:

Flight Phase	FGS Mode Lateral	FGS Mode Vertical	PFD FMS Annunciator
Terminal Area to IAF	FMS or APPR FMS or HDG	As required	GPS TERM

NOTE: Confirm SEQUENCE is AUTO on CDU

IAF to IF	APPR FMS	As required	GPS APPR

NOTE: When receiving ATC vectors to final for an RNP approach, APPR mode should not be armed until heading is within 90 degrees of final approach track. (In order to avoid early waypoint sequencing.)

IF to 2NM before FAF	APPR FMS	As Required	GPS APPR

NOTE: with ALTS displayed as the vertical FGS mode PSA should be set above platform altitude, changing the vertical FGS mode to ALT in order to allow VS to be selected as the vertical FGS mode.

2NM before FAF to FAF	APPR FMS	VS or VALT	GPS APPR
FAF to DA	APPR FMS	VS	GPS APPR

NOTE: 'SEQUENCE' is forced to 'INHIBIT' (displayed on CDU) during Final Approach Segment until the Go Around button is pressed.

Go Around to Climb Configured	GA	GA	TERM
Climb Configured	FMS	FLC with ALTS	TERM

NOTE: Confirm SEQUENCE is AUTO on CDU

7) References

- EGNOS Safety of Life, Service Definition Document
- CAA CAP 773
- EASA OPS GM1 SPO.IDE.A.220
- Jeppesen General Airway Manual
- Rockwell Collins Operators Guide FMS-300v4.0 for King Air Series
- Rockwell Collins Operators Guide Pro Line 21 Avionics System for King Air Series

2.3.11.2 ILS 3-D Approach

Note: Position Error Correction of 15 feet added to published DA to acheive DA for approach.

PHASE	LOCATION / CONDITION	CALL BY PM	RESPONSE BY PF
Final Approach	Positive movement inward of localiser bar and flag cleared	"Localiser alive"	"Check"
	Rad Alt appears on PFD	"Rad Alt Alive and sensible"	"Check"
	Positive movement of G/S pointer and flag Cleared	"Glide slope alive"	"Check"
	Final Approach Fix	"Final Approach Fix", check QNH	"Check"
	1000 ft above airfield elevation	"1000 AGL"	"Check"
	500 ft to airfield elevation	"500 above Airfield"	"Stable, Continue"
	100 ft to decision altitude	"100 above DA"	"Check"
	Approaching Decision altitude	"Approaching Minimums"	"Visual Continuing" or "Going Around, Flaps Approach"

Standard Speeds and Gear/Flap Configurations on Approach

STAGE OF APPROACH	IAS	GEAR	FLAP
Intermediate Approach	180	UP	UP
FAF to 4 Nm	160 *(Note 1)*	Down	APP *(Note 3)*
Inside 4 miles.	130	Down	DN

Note 1: ATC may request specific speeds for accurate spacing purposes.
Note 2: If the runway becomes visible before DA is reached, the approach may be continued as a visual approach.
Note 3: For a 2-D approach 130kts, and flap DN will be set by the FAF.

Flight Director

The Flight Director System, when available, may be used in the Approach Mode for ILS approaches with a serviceable glide slope.

PILOT FLYING	PILOT MONITORING
When QNH set call for "Approach checks".	Complete approach 'Challenge and Response' checklist. Confirm "approach checks complete".
Check FMA/FD for approach, cross check instruments.	Crosscheck FMA/FD for approach.
Identify approach beacons and landing aids crosscheck with PFD/MFD.	ILS/VOR/NDB re-check facility. Identify the established inbound course on QDM/Localiser crosscheck PFD.
Approach to be flown using data programmed in FMS.	2-D approaches to be crosschecked with RMI
Select HDG/NAV/APPR for approach	Lateral and Vertical path to be monitored against approach plate.
Call "APPR Loc white" mode when cleared for the ILS.	Check FMA for APPCH LOC (white).
Call "Glideslope white",	Check G/S is armed after APPCH mode selected (white).
	Monitor speed recommended 160 kts to 4 nm.
Call "FLAP Approach".	Check speed and select and call "Speed check, Approach flap set".
	Call "Localiser Alive"
Call "APPR LOC green".	Check FMA for Engaged LOC.

PILOT FLYING	PILOT MONITORING
Check Altitude, confirm QNH set and cross check, DA set.	Call “RAD ALT Alive” passing 2,500 feet check sensible altitude. Confirm QNH set.
Call for Max RPM to be set.	Set Max RPM.
Call for gear at or before Glideslope capture. **Call “Gear down, Landing Checks”**	Call “Glideslope alive”.
	Confirm “speed checks” and select gear down and call “Gear down-three greens, no reds”.
Call “Glideslope green”.	
	Check FMA for G/S engaged.
Set G/A altitude on Alt Sel	
	Confirm GA altitude set on ALT SEL.
	Complete ‘Challenge and Response’ Landing checks.
	Confirm “Landing checks complete”.
Check all instruments, no flags, on course, on glide-path and FMA/FD agree.	Call “FAF” cross check ALT.
	Monitor ROD on VSI, Call errors “Sink”, “Heading” and “Speed”. Call “1000ft above airfield” in order to continue approach (approach ban limit).
Call “check, RVR within limits, continuing”.	
Call “Flaps Down”.	Speed Checked
	Select Flaps Down and call “Flaps Down”.
	Monitor gauges and instruments.
	Monitor speed recommended 130 kts to DA.
Continue to fly by reference to instruments. Do not transition to visual flight until runway is sighted.	Prepare for go-around.
	Call “500 above Airfield”.

Respond 'check, stable, continue' or 'going around, flaps approach'

Call "100 above DA".

Respond 'check'

Call "Approaching Minimums".

Call 'Visual Continuing' or 'Going around, flaps approach'.

Note: If conducting a visual approach at any time PF should state "Visual". PM should call "500 aal", PF's response should be to call "stable".

2.3.11.3 2-D approach minima and missed approach point (MAPT)

When carrying out any 2-D approach *(with or without distance information)* in the King Air the following procedure is to be followed:

All 2-D approaches are to be flown Continuous Descent Final Approach (CDFA).

Pilots add **50** feet to the published MDA for a 2-D approach and use this figure as they would a Decision Altitude i.e. it is the altitude at which a missed approach is initiated and the aircraft is allowed to descend below this altitude as it transitions to a climb. By adding **50** feet to the MDA and initiating a missed approach from the revised altitude the aircraft will not descend below the MDA during transition to a climb.

The aircraft should be fully configured (Prop RPM set to max, Gear Down, Flap DN), checklist and 'stable' check complete, before descent at the Final Approach Fix. This will allow both crew to monitor the descent profile. During the descent the PM will read off the Jeppessen plate distance and altitude to allow both PF and PM to monitor approach profile and for the PF to modify rate of descent as required. When using FMS as an overlay ensure the raw data navaid is serviceable, tuned and identified. Continuous monitoring and reference should be made to the appropriate RMI needle throughout the approach.

On 2-D approaches the PF is to initiate a missed approach as soon as he/she reaches the revised minimums if the PF does not have the required visual references to continue the approach.

The aircraft is not to be flown level at MDA to the published missed approach point or time. However, the published missed approach track is to be followed.

On a 2-D approach the aircraft is not to descend below Minimum Descent Altitude at any stage.

Note: 50 feet additions are only required for the MDA "Minimum descent Altitude". There is no requirement for a 50 feet addition to "circling approach" minima.

2.3.12 Go-around

Commencing a Go-Around, increase to maximum power *(2000 RPM / 2230 lb / ft torque)* whilst simultaneously rotating to 8° on the FD *(the FD is programmed for 8º in GA mode)*; using the SYNC button to increase to 13° to 15° pitch if two engined or 10° (Raisbeck)/8° (non Raisbeck) for a one engine go around.. Call "going around, flaps approach" and "gear up" with the "positive climb" call, followed by flaps fully retracted by 400 feet a.g.l. If the Go-Around procedure is programmed in the FMS, ask for FMS reset on the PFD, followed by NAV, Auto-Pilot and FLC 130kts, in that order, checking the Go-Around altitude has been correctly set. If the Go-Around procedure is NOT programmed in the FMS, ask for Heading, Auto-Pilot and FLC 130kts, in that order, checking the Go-Around altitude has been set correctly. The Go Around profile is then the same as for a normal two engine take-off.

PILOT FLYING	PILOT MONITORING
Select GA button and call "Going Around, Flap Approach", Check auto-pilot disengaged, full power applied/maximum RPM.	Confirm power set trim as required. Select approach flap Check GA modes on FMA
Call FMA **Check transition to the climb.**	Confirm FMA G/A set.. Call "Positive Climb"
Call "Gear Up"	Select and confirm "Gear up" Check in-transit light out monitor power levers in case roll back.
Call 'Heading, FLC130Kt' **Note: if missed approach is programmed in the FMS the PF call will be "Nav source FMS"**	Select HDG and FLC 130Kt Confirm FMS is NAV Source both sides
Call for A/P above 400ft agl	
Call "AP green, Nav/Heading green, FLC green".	
	Advise ATC going around
Check speed and altitude and call "flaps up" by 400ft a.g.l.	Check speed and altitude and select flaps UP
Call for Missed approach checks	Complete 'Challenge and Response' 'Missed approach' checks. Call "Missed approach checks complete".

2.3.13 Landing

Prior to landing complete the 'Landing' checklist *(Challenge and Response).*

Cross the 50 feet threshold at Vref to Vref, + 10 max, using power as necessary. After touchdown it is advisable to use full reverse initially to ensure working, with feet off the brakes. This also reduces the chances of flat spotting and bursting tyres. Reverse can be cancelled as required.

Use single engine reverse with caution.

Low idle is recommended for normal use. If High Idle is used (air condiion low or short field landing) then the Condition Levers should be left in High Idle position until engine shutdown.

For Flaps Up landings, the LDA should be at least 1.4 x (Non-Raisbeck) or 1.7 x (Raisbeck) normal LDR. For Short Field Landing refer to Aircraft Flight Manual.

After landing, when safe to do so, the PF requests the 'After Landing Checks' where PM 'Reads and Does'. When on stand the engine 'Shutdown' checks should be carried out using 'Read and Do'.

Short Field Landing

Conditions that must be met for a short field landing technique:

- Both engines operating
- Fully configured landing configuration at 1000' AAL
- Props - max (2000 RPM)
- Condition Levers – High Idle
- 100 KIAS at 500' AAL and Vref at Threshold

PILOT FLYING	PILOT MONITORING
	Call approach speeds. Rate of descent power settings.
Keep aircraft straight with rudder and fine steering. Apply brakes as necessary. Reverse thrust as applicable (not below 40 kts).	Call "40 kts".

If overrun is likely the Commander will call "Imminent Overrun" and action Emergency Engine Shutdown checks immediately as per QRH. After aircraft has stopped, decide whether to call for aircraft evacuation.

2.3.14 After landing

In contaminated conditions delay the raising of the flap until they can be visually inspected.

Exercise caution when taxying around in areas of congestion and complete all post flight duties. Action a post flight walkround of the aircraft. Leave aircraft secure with gust locks in place and when necessary with blanks/bungs in place, arrange fuel for next flight. Advise operations of any aircraft requirements.

PILOT FLYING	PILOT MONITORING
Taxy aircraft, maintaining look out. Call for after landing checks.	Complete 'After landing' checks using a Read out loud and Self Check flow technique. Confirm "After Landing checklist complete". Monitor taxying.
When parked note the fuel quantities and call for "Shut Down checklist".	Complete 'Shut down' checks using 'Read and Do' approach.
Consider the use of Ground Use Battery.	
Apply Parking brake, maintain during chocks in place. Release when ready for towing.	Record landing times, complete flight log and note remaining fuel.
Switch power off and secure aircraft.	See to the disembarkation of passengers and liaise with the Handling Agent.
Collate and put away aircraft library.	Request fuel if required. Tidy aircraft cabin.
Complete Post Flight Check/walkround.	
Complete and sign the tech log and other paperwork.	Place EFBs into EFB Cabinet and plugged in.

Crew should leave the aircraft chocked, parked into wind if possible, control locks in place. If aircraft to be left unsupervised put bungs and blanks in place, and props secured.

Aircraft to be locked at unsecured locations.

2.3.15 Operating on Contaminated Runways

Please reference the Contaminated Runway supplement found in the back of the aircraft POH for operating on contaminated runways.

Experience with operations conducted from wet or contaminated runways has shown that standing water, slush, snow or ice cause a deteriorating effect on take-off and landing performance.

Braking effectiveness is reduced due to low tyre-to-runway friction and is further reduced if tire hydroplaning occurs.

During take-off on a contaminated runway, aircraft acceleration is reduced. Energy normally available for acceleration is dissipated in compression or displacement of the contaminant, and the resulting impingement of the contaminant onto the aircraft can aggravate this energy loss.

Landing on a contaminated runway, on the other hand, increases the stopping distance of the aircraft, and may present directional control difficulties.

The following supplement is provided to serve as a guideline when operating under such conditions:

Definitions:

1. **DAMP**
   A runway is said to be damp when it is not perfectly dry, and when the water on it does not give it a shiny appearance.

   NOTE *There should be no performance penalties on a damp runway.*

2. **WET**
   A runway is said to be wet when it has a shiny appearance due to a thin layer of water on it, not leading to hydroplaning. There should be no standing water covering large areas of the runway.

3. **STANDING WATER**
   Standing water is usually caused by heavy rainfall and/or insufficient runway drainage, with a depth of more than 3 millimetres (1/8 inch), and covering more than 25% of the runway surface.

4. **SLUSH**
   Slush is snow saturated with water, which displaces with a splatter when stepped firmly on. It is encountered at temperatures around 5°C (41°F), and has a density of approximately 800 kg per cubic meter (50 pounds per cubic foot), and a specific gravity of 0.85.

5. **WET SNOW**
   Wet snow will easily stick together and tend to form a snowball if compacted by hand. It has a density of approximately 400 kg per cubic meter (25 pounds per cubic foot).

6. **DRY SNOW**
   Dry light snow is loose and can easily be blown. If compacted by hand, it will readily fall apart again. It has a density of approximately 192 kg per cubic meter (12 pounds per cubic foot). The coverage is more than 25% of the runway surface.

7. **DRY ICE**
   Ice covered runway having a dull weathered appearance. The temperature range is from –40°C to –5°C (–40°F to 23°F).

8. **WET ICE**
   Ice covered runway having a shiny wet appearance. The temperature range is from –5°C to 4°C (23°F to 40°F).

Limitations & Recommendations

Limitations

The maximum depths of runway contaminants covering an appreciable part of the runway are:

Contaminated Take-Off & Landing

SLUSH/STANDING WATER	6.4 mm (0.25 in)	12.7 mm (0.5 in)
WET SNOW	12.7 mm (0.5 in)	25.4 mm (1.0 in)
DRY SNOW	30.5 mm (1.2 in)	61.0 mm (2.4 in)

Slippery Runways

On slippery runways a rolling start is recommended. In the event of an abandoned take-off, the stopping distance is greatly increased. The effect on accelerate-stop of a surface with a braking coefficient of friction of 0.15, assuming the normal procedure of using reverse thrust to assist braking, is given in the Flight Manual.

Take-off on a Slush Covered Runway

A layer of slush exerts a large drag on the wheels, particularly at the higher speeds. This drag increases the distance required to accelerate and may cause difficulty in rotation. The recommended technique, in these conditions, is to take-off with flaps Approach and to rotate at the normal VR. After take-off, the landing gear should be retracted and extended several times before final retraction, in order to shake-off any accumulated slush. (Unless Brake Deice system is fitted to the aircraft in which case leave the gear retracted and activate the Brake Deice system for approximately 10 minutes).

Aquaplaning - All Aircraft

If aquaplaning should occur the pressure on the brake pedals should be reduced temporarily to regain control then reapplied.

2.3.15.1 After Landing Procedures

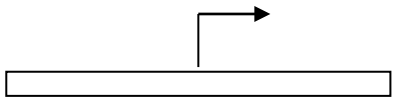
In contaminated conditions delay the raising of the flap until they can be visually inspected. Exercise caution when taxying around in areas of congestion and complete all post flight duties. Leave aircraft secure and, where practicable, arrange fuel for next flight. Advise operations of any aircraft requirements.

2.3.16 Arrester Cables`- Operations from Runways with Arrester Cables

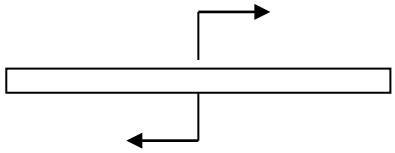
A number of military aerodromes are equipped with arrester cables designed to catch a hook lowered by fighter aircraft. These cables can damage the propellers or the underside of an aircraft if trampled at high speed when rigged i.e. approximately 4" above the runway surface.

The position of the cables will be notified on the Jeppessen Flight Guide Approach Plates by arrows on the runway diagram indicating:

Unidirectional arrester gear



Bi-directional arrester gear



A note stating cable position will be found below the aerodrome runway diagram. In either case, the appropriate controller should inform the aeroplane of the arrester cable status. B200 aircraft are cleared to trample de-rigged cables at any speed, but should cross rigged cables only at walking pace. If a rigged cable is trampled at speed, the underside of the aeroplane must be thoroughly inspected.

2.3.16.1 Effect on Runway Length

Rigged cables will affect the available runway length in the following ways:

a) Both cables rigged:

Landing - Only the distance between the cables is to be used when calculating L.D.A. The aeroplane must be landed past the approach end rigged cable and be slowed to walking pace before trampling the overrun cable.

Take-off - Only the distance between the cables is to be used for calculating T.O.R.A but the distance beyond the overrun cable to the end of the stopway may be used to calculate A.S.D.A.

b) Approach end cable rigged, overrun cable de-rigged:

The entire runway beyond the approach cable may be used for take-off and landing.

c) Approach end cable de-rigged, overrun cable rigged:

The whole length of runway, before the overrun cable may be used for landing and take-off.

2.4 Expanded Normal Procedures

2.4.1 Checklists Concept

The purpose of this manual is to serve as a guideline for the implementation of a safe and efficient operation of Beechcraft King Air B200 aircraft in the company. The use of this manual is mandatory. It is not a replacement for any of the Operational Manuals required by the applicable regulations.

The underlying philosophy behind the operating framework in this Manual is based on reducing, as much as possible, the operating shortcomings related to human factors, namely:

- Improper co-ordination among flight crew members;
- Improper co-ordination between flight and cabin crew staff;
- Distraction from basic flying tasks;
- Misunderstandings;
- Perplexity;
- Tunnelling;
- Obsession.

Although the aircrew on this aircraft have undergone professional training and the aircraft manufacturer has endeavoured to put in place adequate documentation on the operation of the aircraft, its systems and subsystems, it is still necessary to put standard operating procedures in place that will cover Gama Aviation in commercial operations and operating environment specific conditions and procedures.

The flight procedures listed in this document are the situations that the crew member will be exposed to during training and normal line operations. It must be noted that these procedures are not constructed as limiting but have been found to optimise safety margins during normal operating conditions.

- The Commander is the final authority for the safe operation of the aircraft and may find it necessary to alter the procedure to assure the continued safe operation of that aircraft;
- All departures from the SOP should be first discussed between the crew and agreed upon by both pilots, before any action takes place;
- Any departure from the SOP which has not been agreed to by both crewmembers, and which will become known after 48 hours from taking place, will consider both pilots equally responsible.

This SOP is optimised for passenger-carrying operations in commercial air transportation environment. A Cabin Attendant/Paramedic may be on-board in addition to the passengers.

The checklist is to be routinely used on-board and its conception was based on the following principles:

- The use of the on-board checklist is based on the assumption that both pilots have been properly trained on the type of aircraft and therefore have a thorough knowledge of the aircraft systems and procedures, and that they know the consequences of their actions (or the consequences of not performing the correct actions at the right time);
- The two on-board checklists are an aid to ensure that the pilots do not forget actions that, if not carried out, can in one way or another result in some type of risk to the aircraft, to the operational environment, to any of its systems, to its occupants or to the passengers' comfort;
- The procedures to be carried out in each phase are not restricted to the checklist. These procedures are explained in detail after each phase checklist and are

consistent with the procedures set forth in the AFM. Should any discrepancy between the SOP and the AFM be detected, the AFM prevails;

- All Flight Crew must develop the habit of pointing at or looking at an item that is being mentioned in the Checklist as they read it. This technique helps to prevent the loss of attention due to absent-minded, mechanical reading of procedures. Flight Crew members reading a checklist must also make sure that the other pilot heard and became aware of each read item. Should any doubt persist, the item must be called out again until it is clear that it was grasped;
- Full knowledge of the Memory Items is mandatory. Flight Crew unable to recall Memory Items of the Checklist cannot be considered proficient.

2.4.2 Areas of Responsibility - Task Sharing

Operating procedures and flight crew duties in this manual are organised according to the area of responsibility concept. Areas of responsibility are areas of the cockpit panels and consoles that are operated by a specific pilot. These areas exist for the sake of crew co-ordination and a pilot must always advise the other pilot if he is intending to operate something at the other pilot's Area of Responsibility.

Duties are also assigned according to the mission phase. Pre- and post-flight duties are shared between the Commander and the First Officer, while in-flight phases are shared between the Pilot Flying (PF) and the Pilot Monitoring (PM), or both pilots.

The Commander retains final responsibility and authority for all actions directed and performed throughout the flight. The sequence of normal procedures is derived from a scan-flow, for the sake of standardisation. However, certain items may derive from the scan-flow to be handled in the most logical sequence if required by the associated condition.

In-flight, the responsibilities are as follows:

PF is responsible for:

- The Power Levers;
- Controlling the flight path and speed;
- Carrying out the required actions in his/her areas of responsibility *(normal, non-normal and emergency procedures);*
- Aircraft configuration;
- Navigation;
- Annunciating the mode of operation displayed in the *FMA (Flight Mode Annunciator)* on the PFD *(Primary Flight Display).*

PM is responsible for:

- Reading of checklists;
- Carrying out all the required actions in his/her areas of responsibility *(normal, non-normal and emergency procedures);*
- ATC communications;
- Monitoring the flight and alerting the PF of any non-normal condition;
- Callouts;

- Updating the flight log, including obtaining en-route and destination weather reports.

The normal procedures rely on the checklist philosophy as a follow up to the actions that have already been performed, normally by following a flow procedure, and as a means of confirming that the aircraft is in proper configuration for that phase of operation.

All the normal procedures must be carried out using the Challenge and Response checklist technique. The PM calls the checklist items and cross checks whilst the PF responds.

The AFTER LANDING checklist is actioned by the PM once asked to do so by the PF. The AFTER LANDING checklist is **Read by the PM and Do by the PM**, only calling PF for such items which may be out of reach *(e.g. Auto Ignition and Auto Feather switches for PM seated on RHS).*

The SHUTDOWN CHECKS checklist is a "Read and Do" checklist. The checklist is read out loud by the PM, whilst the PF carries out the actions, whilst being cross checked by the PM.

Note:

1. Any communication with Cabin Attendant or with the passengers is a prerogative of the Commander. He may however delegate this task to the First Officer if he finds it appropriate.
2. All the Abnormal and Emergency procedures other than the Memory Items are to be carried out using the 'Read and Do' technique.

2.4.3 Automation

The Flight Director, if used, must be consistent with the aircraft's status or must be removed from view.

2.4.4 FMS usage

Any significant programming made by PF (approaches, runways, missed approaches) should be only actioned after the PF gives control to the PM. If ATC directs the aircraft to an unexpected runway, approach or holding procedure, the reprogramming of the FMS shall be carried out by the PM, at the PF's request.

Whenever any data is entered into the FMS, the other pilot must cross check the new data, provided that this cross checking does not distract him from more important flying tasks. There must never be two pilots' heads down entering data into the FMS at the same time.

2.4.5 Autopilot

The Company recommends that the autopilot be used as soon as practicable after take-off to enhance flight path management and monitoring by both crewmembers. The aircraft shall, however, be flown with the autopilot engaged during IMC and night- time departures and arrivals/approaches when passengers, either private or commercial, are carried on-board.

Pilots must never try to counteract the autopilot. Should any undesirable autopilot behaviour develop it must be immediately disconnected. If, during the autopilot-engaged flight, the aircraft flies out of the FD commanded attitude, the autopilot must be immediately disconnected.

The PF shall keep one hand on the control column anytime the autopilot is coupled below 3000ft AGL.

If the aircraft is being hand flown, then selecting heading or course, pre-selecting altitude, switching to another FD mode or changing the configuration of the aircraft must be asked for by the PF and executed by the PM. Any system management action, such as activating switches or adjustment of knobs desired by the PF, must be asked for by him and acted upon by the PM.

2.4.5.1 Autopilot Mode Selection

Monitor the Flight Mode Annunciator (FMA).

The Autopilot can be selected at 400 feet a.g.l after take-off but the minimum cruise height is 1000 feet a.g.l and for a coupled approach 79 feet a.g.l. The autopilot must be disengaged following an engine failure, but may be re-engaged after trimming, if required.

2.4.6 Admission to the Cockpit

No one, with the exception of the designated flight crewmembers, is allowed into the cockpit without the express permission of the Commander. Cabin Attendant/ Paramedic (if applicable) should not interrupt the crew during phases of flight below 10,000ft, unless it is absolutely necessary.

2.4.7 Altimeter Setting SOP's

The SOP for the management of altimeter change over from QNH to Standard requires a procedure driven by the Pilot Flying (PF).

In a climb from a altitude to a flight level the following procedure is required:

- PF selects cleared Flight Level, sets STD on their altimeter and announces "SET STANDARD, ALTIMETER CHECK";
- PM selects STD on their altimeter and announces "STANDARD SET , PASSING FL ….. climbing FL ….." & Cross-Checked
- PF checks his Flight Level against this call and confirms the CLEARED LEVEL.

In a descent the same procedure is required where the word STANDARD is replaced with QNH.

The Standby Altimeter (i.e. ESIS) will only be changed to STANDARD during the climb after passing 10,000 feet or FL100 and changed at Top of Descent to airfield QNH when the latest information is aquired from the destination airfield's ATIS.

2.4.8 Use of External Lights

The primary functions of external lights are to see and be seen. All lights will be used as per the Commander's discretion in the interest of safety. **When crossing an active runway, the STROBES must be on.**

EVENT	DAY	NIGHT
ELEC PWR ON or GND PWR ON	Nav - ON	Nav & Logo - ON
ENGINE START	Beacon - ON	Beacon - ON
TAXY	Taxy & Recog - ON	Taxy & Recog - ON
LINING UP	Strobes - ON	Strobes - ON
CLEARED FOR TAKE-OFF	Landing Lights - ON	Landing Lights - ON
VACATING RUNWAYS	Strobe Light – OFF Landing Lights - OFF	Strobe Light – OFF Landing Lights - OFF
PARKING	Taxy & Recog - OFF Nav & Beacon - OFF once engines shut down	Taxy & Recog - OFF Nav & Beacon - OFF once engines shut down

Note: In reduced visibility conditions, during daylight hours, the external lights must be used as specified for night operations, as specified by the Commander.

2.4.9 Checklists

2.4.9.1 G-SASC/G-SASD Checklist

Gama Aviation — B200 Proline 21 - Raisbeck NORMAL CHECKLIST — GAL323

BEFORE START
- Passenger Briefing ..... COMPLETED
- Control Locks / Covers ..... STOWED
- Chocks ..... REMOVED
- Parking Brake ..... SET
- Doors ..... SECURE
- Fuel Quantity ..... CHECK [...] lbs
- Engine Anti-Ice ..... ON
- Oxygen System ..... ON
- Power Console ..... SET
- Cabin Temp Mode ..... OFF
- Bleed Air Valves ..... ENVIR OFF
- ESIS ..... TESTED / ON
- Avionics Master ..... OFF
- Batteries ..... MAIN ON / GROUND OFF
- DC Volts ..... >23v
- Ground Equipment ..... CLEAR
- Beacon & Lights ..... ON

♦ FUNCTIONAL
- Auto-Feather ..... CHECK
- Primary Gov & Rudder Boost ..... CHECK
- Ice Protection ..... CHECK
- Pressurisation ..... CHECK
- Bleed Air Valves ..... CHECK

KEY

Items marked ♦ may be omitted after the crew's first flight of the day

BEFORE TAKE-OFF
- Brakes ..... CHECKED
- Instruments & Flight Controls ..... CHECKED
- Flaps ..... SET [...]
- Frictions & Trims ..... SET
- Transponder ..... ON
- Departure Brief (PEDS) ..... REVIEWED
- Cabin ..... SECURE

AFTER-START
- Loadmeters ..... PARALLEL ~10%
- Avionics Master ..... ON
- Cabin Temp Mode ..... AS REQ
- EMS Power ..... AS REQ
- Ground Use Battery ..... CHARGE
- Instruments / Flt-Dir / REF's ..... SET
- FMS & Fuel ..... SET
- Bleed Air Valves ..... OPEN
- Cabin Pressurisation ..... PRESS & SET
- Transponder ..... ON
- Cabin Sign ..... ON
- ESIS ..... INITIALISED
- Taxy Light ON ..... (With Taxy Clearance)

RUNWAY
- Strobes ..... ON
- Ice Protection ..... AS REQ
- Auto-Ignition ..... ARM
- Engine Anti-Ice ..... AS REQ
- Auto-Feather ..... ARM
- Annunciator Lights ..... CONSIDERED
- Landing Lights ON ..... (With T/O Clearance)

PEDS
- P = PERFORMANCE
- E = EMERGENCY TURN
- D = DEPARTURE
- S = STOP ALT / FL

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AFTER TAKE-OFF
- Landing Gear ..... UP, NO RED
- Landing & Taxy Lights ..... OFF
- Flaps ..... UP
- Yaw Damper ..... ENGAGED
- Climb Power ..... SET
- Engine Instruments ..... CHECK

CLIMB
- Altimeters ... STANDARD SET X CHECKED
- Engine Anti-Ice ..... AS REQ
- Ice Protection ..... AS REQ
- Cabin Signs ..... AS REQ
- Pressurisation ..... CHECK
- Lights ..... AS REQ

DESCENT
- Pressurisation ..... SET
- REF's / NAV-Aids / FMS ..... SET
- ESIS ..... SET
- Fuel ..... CHECK
- Briefing ..... COMPLETED

APPROACH
- Altimeters ..... QNH SET X CHECKED
- Auto-Feather ..... ARMED
- Engine Anti-Ice ..... ON
- Ice Protection ..... AS REQ
- Cabin Signs ..... ON

LANDING
- Cabin ..... SECURE
- Landing Gear ..... DOWN 3 GREEN NO RED
- Missed Approach Altitude ..... SET
- Props ..... MAX RPM
- Flaps ..... DOWN
- Yaw Damper ..... OFF

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MISSED APPROACH
- Landing Gear ..... UP
- Landing & Taxy Lights ..... OFF
- Flaps ..... UP
- Altimeters ..... CHECK
- Fuel ..... CHECK
- FMS & Flt Director ..... AS REQ

AFTER LANDING
- Radar ..... STANDBY
- Press Diff ..... VERIFY 0
- Bleed Air Valves ..... ENVIR OFF
- Flaps ..... UP
- Trims ..... RESET
- Transponder ..... STANDBY
- Ice Protection ..... OFF
- Lights ..... AS REQ
- Auto-Ignition ..... OFF
- Engine Anti-Ice ..... ON
- Auto-Feather ..... OFF

SHUTDOWN
- Parking Brake ..... SET
- Taxy Light ..... OFF
- Cabin Temp Mode ..... OFF
- ESIS ..... OFF
- Avionics Master ..... OFF
- ITT ..... STABLE
- Condition Levers ..... CUTOFF
- Props ..... FEATHER
- Oxygen System ..... AS REQ
- Fuel Quantity ..... [...] lbs
- Cabin Signs ..... OFF
- EMS Power ..... AS REQ
- DC Volts ..... CHECK
- Ground-Use Battery ..... AS REQ
- Beacon & Lights ..... AS REQ
- Main Battery & Generators ..... OFF
- Headsets ..... OFF
- Control Locks ..... AS REQ

♦ COCKPIT SAFETY

- Fire Extinguisher .... CHECK
- Oxygen System.... CHECK, CONTENTS [...]
- Static Air Source .... NORMAL
- Landing Gear .... DOWN
- Alternate Extension Handle .... SECURE
- Trims .... ZERO
- Rudder-Boost .... ON
- ELT .... ARM
- Starter Switches .... OFF
- Ground-Use Battery .... ON
- DC Volts .... CHECK
- Ground-Use Battery .... OFF
- Main Battery .... ON
- DC Volts .... > 23V
- External Power (if available) .... ON
- DC Volts (GPU) .... 28.0 - 28.4V
- Circuit Breakers LHS & RHS .... CHECK
- Annunciators .... CHECK
- Fire Detectors / Extinguishers .... CHECK
- Stall Warning .... CHECK
- Land Gear Handle Light .... CHECK
- Hydraulic Fluid Sensor .... CHECK
- Flaps .... CHECK
- CVR .... CHECK
- Fuel System .... CHECK
- Avionics Master .... ON
- Electric Pitch Trim .... ON, CHECK
- Radios, Radar, TCAS, EGPWS .... CHECK
- Audio Panels .... SET
- Autopilot .... CHECK
- EMER Frequency .... EXTINGUISHED
- Avionics Master .... OFF
- Reversion Panel .... NORM / CENTRE
- Ice Protection (Hot 5) .... CHECK
- External Lights .... CHECK
- Main & Ground Use Batteries .... OFF

Take-Off Speeds – Raisbeck (Sea Level, ISA)

LBS x 1000	12.5	12.0	11.5	11.0	10.5
VR Flap UP	94	94	94	94	94
VR Flap APP	96	92	88	87	87
V2 Flap UP	103	103	103	103	103
SEERC	121	119	118	117	116

Landing Speeds – Raisbeck (Sea Level, ISA)

LBS x 1000	12.5	12.0	11.5	11.0	10.5
Vref Flap DN	97	95	93	90	88
Vref Flap UP	121	119	116	113	110
SEERC	121	119	118	117	116

Useful Frequencies

- Gama Glasgow FBO 131.965
- Signature Handling 122.350
- Far North Wick 131.560
- Scottish Volmet 125.725
- London Volmet North 126.600
- London Volmet South 128.600

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Expanded Procedures

Auto-Feather

- Condition Levers .... LOW IDLE
- Prop Levers .... FULL FORWARD
- Power Levers .... ~500 ft.lb
- Auto-Feather Switch .... HOLD TO TEST
  L AUTOFEATHER | R AUTOFEATHER ILLUMINATED
- Power Levers .... RETARD INDIVIDUALLY
- ~410 ft-lbs – OPPOSITE ANNUNCIATOR EXTINGUISHED
- ~260 ft-lbs – BOTH ANNUNCIATOR EXTINGUISHED (Prop Starts to Feather)
- Power Levers .... IDLE
  L AUTOFEATHER | R AUTOFEATHER EXTINGUISHED (Neither Prop Feathers)
- Auto-Feather Switch .... RELEASE

Primary Governors, Over-Speed Governors & Rudder-Boost

- Rudder-Boost .... ON
- Prop Levers .... FULL FORWARD
- Prop Governor Test Switch .... Hold to Test

On Each Engine Individually

- Power Lever .... Increase Until Stable 1800 – 1910 RPM
- Prop Lever .... Retard to Detent Then Full Forward
- Power Lever .... Continue to Increase Until Rudder Movement Noted (observe ITT & torque limits)
- Power Lever .... IDLE

On Completion of Both Engine Check

- Prop Governor Test Switch .... RELEASE

Aircraft Emergency Equipment

Aircraft Emergency Equipment	
Flight Deck O2 Mask	2
Smoke Goggles	2
Fire Gloves	1
TORCHES	2
PBE Smoke Hood	1
Fire Extinguisher	2
Crew Life Vest	2
Passenger Life Vest	6
Infant Life Raft	1
First Aid Kit	1
Crash Axe	1
Passenger Safety Cards	6
FUEL Sampling Kit	1
Emergency Gear Handle	1
Demo Kit	1
Extension Seat Belt	1
QRH	1
POH/AOM	1
Aircraft Checklist	2

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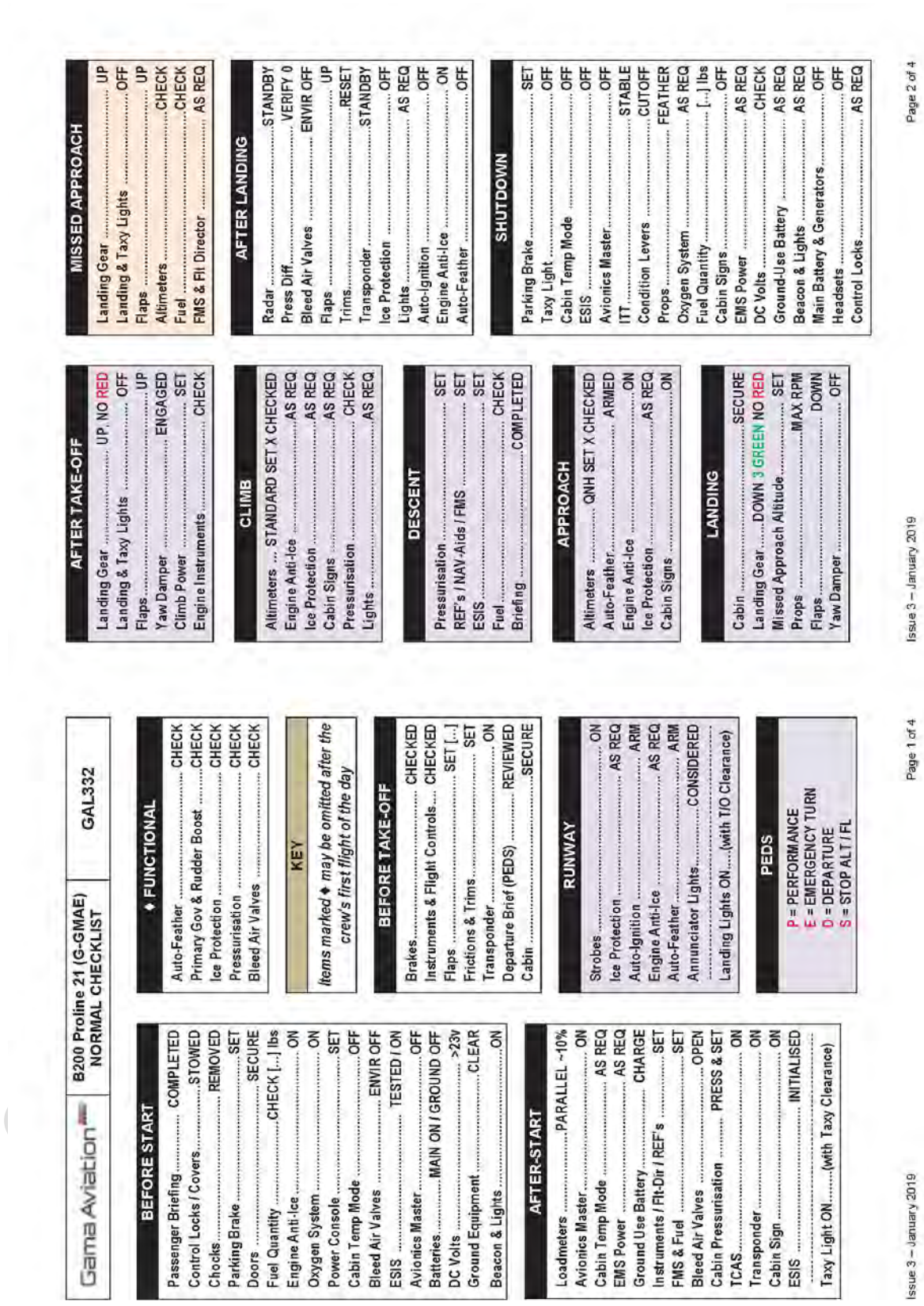
2.4.9.2 G-GMAE Checklist



Gama Aviation | B200 Proline 21 (G-GMAE) NORMAL CHECKLIST | GAL332

BEFORE START
Passenger Briefing ..... COMPLETED
Control Locks / Covers ..... STOWED
Chocks ..... REMOVED
Parking Brake ..... SET
Doors ..... SECURE
Fuel Quantity ..... CHECK [...] lbs
Engine Anti-Ice ..... ON
Oxygen System ..... ON
Power Console ..... SET
Cabin Temp Mode ..... OFF
Bleed Air Valves ..... ENVIR OFF
ESIS ..... TESTED / ON
Avionics Master ..... OFF
Batteries ..... MAIN ON / GROUND OFF
DC Volts ..... >23v
Ground Equipment ..... CLEAR
Beacon & Lights ..... ON

AFTER-START
Loadmeters ..... PARALLEL ~10%
Avionics Master ..... ON
Cabin Temp Mode ..... AS REQ
EMS Power ..... AS REQ
Ground Use Battery ..... CHARGE
Instruments / Flt-Dir / REF's ..... SET
FMS & Fuel ..... SET
Bleed Air Valves ..... OPEN
Cabin Pressurisation ..... PRESS & SET
TCAS ..... ON
Transponder ..... ON
Cabin Sign ..... ON
ESIS ..... INITIALISED
Taxy Light ON ..... (with Taxy Clearance)

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♦ FUNCTIONAL
Auto-Feather ..... CHECK
Primary Gov & Rudder Boost ..... CHECK
Ice Protection ..... CHECK
Pressurisation ..... CHECK
Bleed Air Valves ..... CHECK

KEY
Items marked ♦ may be omitted after the crew's first flight of the day

BEFORE TAKE-OFF
Brakes ..... CHECKED
Instruments & Flight Controls ..... CHECKED
Flaps ..... SET [...]
Frictions & Trims ..... SET
Transponder ..... ON
Departure Brief (PEDS) ..... REVIEWED
Cabin ..... SECURE

RUNWAY
Strobes ..... ON
Ice Protection ..... AS REQ
Auto-Ignition ..... ARM
Engine Anti-Ice ..... AS REQ
Auto-Feather ..... ARM
Annunciator Lights ..... CONSIDERED
Landing Lights ON ..... (with T/O Clearance)

PEDS
P = PERFORMANCE
E = EMERGENCY TURN
D = DEPARTURE
S = STOP ALT / FL

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AFTER TAKE-OFF
Landing Gear ..... UP, NO RED
Landing & Taxy Lights ..... OFF
Flaps ..... UP
Yaw Damper ..... ENGAGED
Climb Power ..... SET
Engine Instruments ..... CHECK

CLIMB
Altimeters ... STANDARD SET X CHECKED
Engine Anti-Ice ..... AS REQ
Ice Protection ..... AS REQ
Cabin Signs ..... AS REQ
Pressurisation ..... CHECK
Lights ..... AS REQ

DESCENT
Pressurisation ..... SET
REF's / NAV-Aids / FMS ..... SET
ESIS ..... SET
Fuel ..... CHECK
Briefing ..... COMPLETED

APPROACH
Altimeters ..... QNH SET X CHECKED
Auto-Feather ..... ARMED
Engine Anti-Ice ..... ON
Ice Protection ..... AS REQ
Cabin Signs ..... ON

LANDING
Cabin ..... SECURE
Landing Gear ..... DOWN 3 GREEN NO RED
Missed Approach Altitude ..... SET
Props ..... MAX RPM
Flaps ..... DOWN
Yaw Damper ..... OFF

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MISSED APPROACH
Landing Gear ..... UP
Landing & Taxy Lights ..... OFF
Flaps ..... UP
Altimeters ..... CHECK
Fuel ..... CHECK
FMS & Flt Director ..... AS REQ

AFTER LANDING
Radar ..... STANDBY
Press Diff ..... VERIFY 0
Bleed Air Valves ..... ENVIR OFF
Flaps ..... UP
Trims ..... RESET
Transponder ..... STANDBY
Ice Protection ..... OFF
Lights ..... AS REQ
Auto-Ignition ..... OFF
Engine Anti-Ice ..... ON
Auto-Feather ..... OFF

SHUTDOWN
Parking Brake ..... SET
Taxy Light ..... OFF
Cabin Temp Mode ..... OFF
ESIS ..... OFF
Avionics Master ..... OFF
ITT ..... STABLE
Condition Levers ..... CUTOFF
Props ..... FEATHER
Oxygen System ..... AS REQ
Fuel Quantity ..... [...] lbs
Cabin Signs ..... OFF
EMS Power ..... AS REQ
DC Volts ..... CHECK
Ground-Use Battery ..... AS REQ
Beacon & Lights ..... AS REQ
Main Battery & Generators ..... OFF
Headsets ..... OFF
Control Locks ..... AS REQ

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♦ COCKPIT SAFETY

Fire Extinguisher .... CHECK
Oxygen System.... CHECK, CONTENTS [...]
Static Air Source .... NORMAL
Landing Gear .... DOWN
Alternate Extension Handle .... SECURE
Trims .... ZERO
Rudder-Boost .... ON
ELT .... ARM
Starter Switches .... OFF
Ground-Use Battery .... ON
DC Volts .... CHECK
Ground-Use Battery .... OFF
Main Battery .... ON
DC Volts .... > 23V
External Power (if available) .... ON
DC Volts (GPU) .... 28.0 - 28.4V
Circuit Breakers LHS & RHS .... CHECK
Annunciators .... CHECK
Fire Detectors .... CHECK
Stall Warning .... CHECK
Land Gear Handle Light .... CHECK
Hydraulic Fluid Sensor .... CHECK
Flaps .... CHECK
CVR .... CHECK
Fuel System .... CHECK
Avionics Master .... ON
Electric Pitch Trim .... ON, CHECK
Radios, Radar, TCAS, EGPWS .... CHECK
Audio Panels .... SET
Autopilot .... CHECK
EMER Frequency .... EXTINGUISHED
Avionics Master .... OFF
Reversion Panel .... NORM / CENTRE
Ice Protection (Hot 5) .... CHECK
External Lights .... CHECK
Main & Ground Use Batteries .... OFF

Take-Off Speeds (Sea Level, ISA)

LBS x 1000	12.5	12	11	10	9
VR Flap UP	95	95	95	95	95
VR Flap APP	94	94	94	94	94
V2 Flap UP	121	119	115	111	108
SEERC	121	119	117	114	111

Landing Speeds (Sea Level, ISA)

LBS x 1000	12.5	12	11	10	9
Vref Flap DN	103	102	99	96	93
Vref Flap UP	132	130	126	122	117
SEERC	121	119	117	114	111

Useful Frequencies

Gama Glasgow FBO 131.965
Signature Handling 122.350
Far North Wick 131.560
Scottish Volmet 125.725
London Volmet North 126.600
London Volmet South 128.600

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Expanded procedures

Auto-Feather

Condition Levers .... LOW IDLE
Prop Levers .... FULL FORWARD
Power Levers .... ~500 ft.lb
Auto-Feather Switch .... HOLD TO TEST
L AUTOFEATHER R AUTOFEATHER
ILLUMINATED
Power Levers .... RETARD INDIVIDUALLY
~410 ft-lbs – OPPOSITE ANNUNCIATOR EXTINGUISHED
~260 ft-lbs – BOTH ANNUNCIATOR EXTINGUISHED (Prop Starts to Feather)
Power Levers .... IDLE
L AUTOFEATHER R AUTOFEATHER
EXTINGUISHED (Neither Prop Feathers)
Auto-Feather Switch .... RELEASE

Primary Governors, Over-Speed Governors & Rudder-Boost

Rudder-Boost .... ON
Prop Levers .... FULL FORWARD
Prop Governor Test Switch .... Hold to Test
On Each Engine Individually
Power Lever .... Increase Until Stable 1800 – 1910 RPM
Prop Lever .... Retard to Detent Then Full Forward
Power Lever .... Continue to Increase Until Rudder Movement Noted (observe ITT & torque limits)
Power Lever .... IDLE
On Completion of Both Engine Check
Prop Governor Test Switch .... RELEASE

Aircraft Emergency Equipment

Flight Deck O2 Mask	2
Smoke Goggles	2
Fire Gloves	1
TORCHES	2
PBE Smoke Hood	1
Fire Extinguisher	2
Crew Life Vest	2
Passenger Life Vest	6
Infant Life Raft	1
First Aid Kit	1
Crash Axe	1
Passenger Safety Cards	6
FUEL Sampling Kit	1
Emergency Gear Handle	1
Demo Kit	1
Extension Seat Belt	1
QRH	1
POH/AOM	1
Aircraft Checklist	2

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2.4.9.3 G-PCOP Checklist

♦ COCKPIT SAFETY

Fire Extinguisher .... CHECK
Oxygen System.... CHECK, CONTENTS [...]
Static Air Source .... NORMAL
Landing Gear .... DOWN
Alternate Extension Handle .... SECURE
Trims .... ZERO
Rudder-Boost .... ON
ELT .... ARM
Starter Switches .... OFF
Main Battery .... ON
DC Volts .... > 23V
External Power (if available) .... ON
DC Volts (GPU) .... 28.0 - 28.4V
Circuit Breakers LHS & RHS .... CHECK
Annunciators .... CHECK
Fire Detectors .... CHECK
Stall Warning .... CHECK
Land Gear Handle Light .... CHECK
Hydraulic Fluid Sensor .... CHECK
Flaps .... CHECK
CVR .... CHECK
Fuel System .... CHECK
Avionics Master .... ON
Electric Pitch Trim .... ON, CHECK
Radios, Radar, TCAS, EGPWS .... CHECK
Audio Panels .... SET
Autopilot .... CHECK
EMER Frequency .... EXTINGUISHED
Avionics Master .... OFF
Reversion Panel .... NORM / CENTRE
Ice Protection (Hot 5) .... CHECK
External Lights .... CHECK
Main & Ground Use Batteries .... OFF

Take-Off Speeds (Sea Level, ISA)

LBS x 1000	12.5	12	11	10	9
VR Flap UP	95	95	95	95	95
VR Flap APP	94	94	94	94	94
V2 Flap UP	121	119	115	111	108
SEERC	121	119	117	114	111

Landing Speeds (Sea Level, ISA)

LBS x 1000	12.5	12	11	10	9
Vref Flap DN	103	102	99	96	93
Vref Flap UP	132	130	126	122	117
SEERC	121	119	117	114	111

Useful Frequencies

Gama Glasgow FBO 131.965
Signature Handling 122.350
Far North Wick 131.560
Scottish Volmet 125.725
London Volmet North 126.600
London Volmet South 128.600

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Expanded procedures

Auto-Feather

Condition Levers .... LOW IDLE
Prop Levers .... FULL FORWARD
Power Levers .... ~500 ft.lb
Auto-Feather Switch .... HOLD TO TEST
L AUTOFEATHER R AUTOFEATHER ILLUMINATED
Power Levers .... RETARD INDIVIDUALLY
~410 ft-lbs – OPPOSITE ANNUNCIATOR EXTINGUISHED
~260 ft-lbs – BOTH ANNUNCIATOR EXTINGUISHED (Prop Starts to Feather)
Power Levers .... IDLE
L AUTOFEATHER R AUTOFEATHER EXTINGUISHED (Neither Prop Feathers)
Auto-Feather Switch .... RELEASE

Primary Governors, Over-Speed Governors & Rudder-Boost

Rudder-Boost .... ON
Prop Levers .... FULL FORWARD
Prop Governor Test Switch .... Hold to Test
On Each Engine Individually
Power Lever .... Increase Until Stable 1800 – 1910 RPM
Prop Lever .... Retard to Detent Then Full Forward
Power Lever .... Continue to Increase Until Rudder Movement Noted (observe ITT & torque limits)
Power Lever .... IDLE
On Completion of Both Engine Check
Prop Governor Test Switch .... RELEASE

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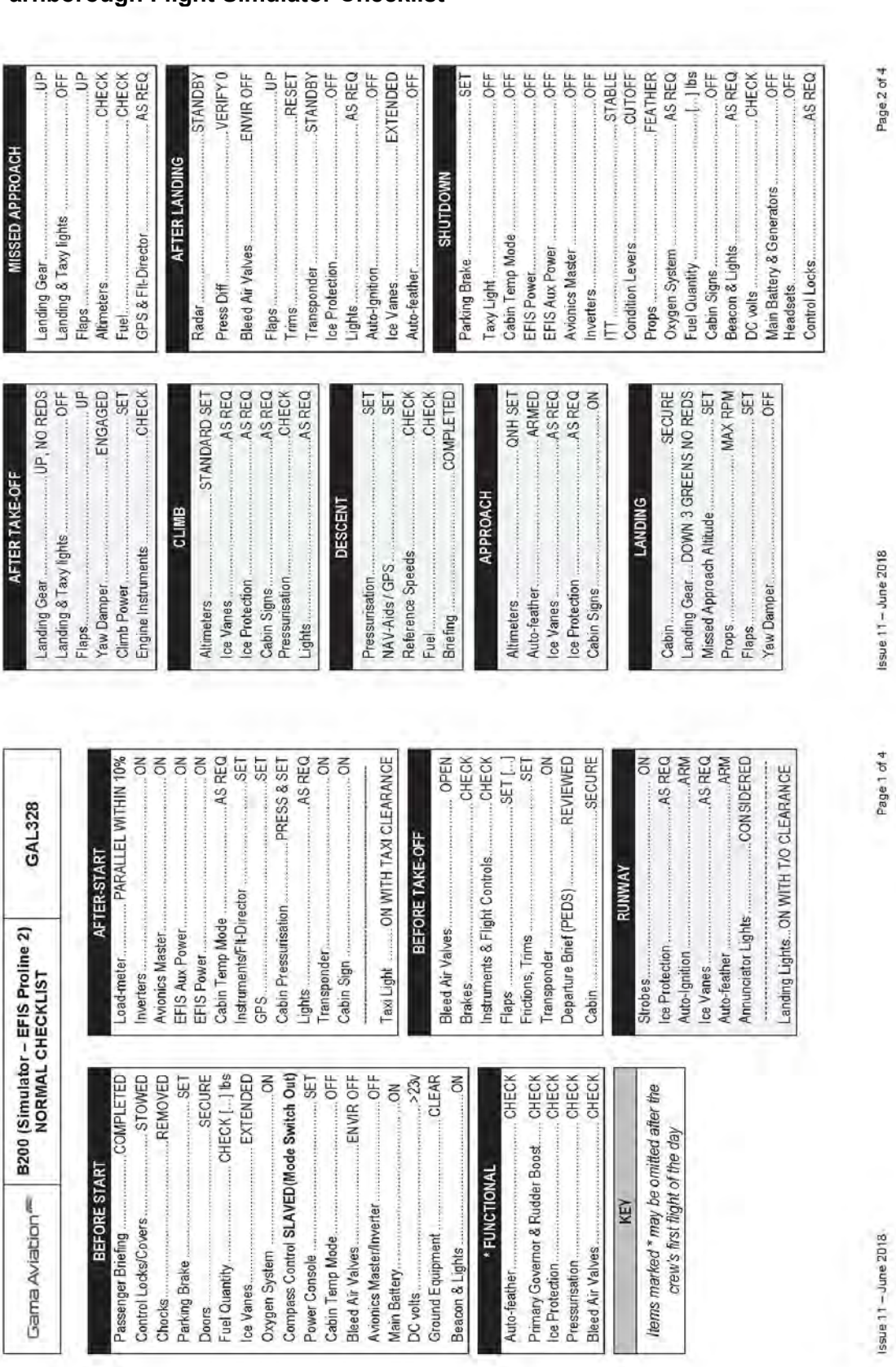
2.4.9.4 Farnborough Flight Simulator Checklist



Gama Aviation

B200 (Simulator – EFIS Proline 2)
NORMAL CHECKLIST

GAL328

BEFORE START

- Passenger Briefing ..... COMPLETED
- Control Locks/Covers ..... STOWED
- Chocks ..... REMOVED
- Parking Brake ..... SET
- Doors ..... SECURE
- Fuel Quantity ..... CHECK [...] lbs
- Ice Vanes ..... EXTENDED
- Oxygen System ..... ON
- Compass Control **SLAVED (Mode Switch Out)**
- Power Console ..... SET
- Cabin Temp Mode ..... OFF
- Bleed Air Valves ..... ENVIR OFF
- Avionics Master/Inverter ..... OFF
- Main Battery ..... ON
- DC volts ..... >23V
- Ground Equipment ..... CLEAR
- Beacon & Lights ..... ON

*** FUNCTIONAL**

- Auto-feather ..... CHECK
- Primary Governor & Rudder Boost ..... CHECK
- Ice Protection ..... CHECK
- Pressurisation ..... CHECK
- Bleed Air Valves ..... CHECK

KEY

*Items marked * may be omitted after the crew's first flight of the day*

AFTER-START

- Load-meter ..... PARALLEL WITHIN 10%
- Inverters ..... ON
- Avionics Master ..... ON
- EFIS Aux Power ..... ON
- EFIS Power ..... ON
- Cabin Temp Mode ..... AS REQ
- Instruments/Flt-Director ..... SET
- GPS ..... SET
- Cabin Pressurisation ..... PRESS & SET
- Lights ..... AS REQ
- Transponder ..... ON
- Cabin Sign ..... ON
- ---
- Taxi Light ..... ON WITH TAXI CLEARANCE

BEFORE TAKE-OFF

- Bleed Air Valves ..... OPEN
- Brakes ..... CHECK
- Instruments & Flight Controls ..... CHECK
- Flaps ..... SET [...]
- Frictions, Trims ..... SET
- Transponder ..... ON
- Departure Brief (PEDS) ..... REVIEWED
- Cabin ..... SECURE

RUNWAY

- Strobes ..... ON
- Ice Protection ..... AS REQ
- Auto-Ignition ..... ARM
- Ice Vanes ..... AS REQ
- Auto-feather ..... ARM
- Annunciator Lights ..... CONSIDERED
- ---
- Landing Lights ..... ON WITH T/O CLEARANCE

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AFTER TAKE-OFF

- Landing Gear ..... UP, NO REDS
- Landing & Taxy lights ..... OFF
- Flaps ..... UP
- Yaw Damper ..... ENGAGED
- Climb Power ..... SET
- Engine Instruments ..... CHECK

CLIMB

- Altimeters ..... STANDARD SET
- Ice Vanes ..... AS REQ
- Ice Protection ..... AS REQ
- Cabin Signs ..... AS REQ
- Pressurisation ..... CHECK
- Lights ..... AS REQ

DESCENT

- Pressurisation ..... SET
- NAV-Aids / GPS ..... SET
- Reference Speeds ..... CHECK
- Fuel ..... CHECK
- Briefing ..... COMPLETED

APPROACH

- Altimeters ..... QNH SET
- Auto-feather ..... ARMED
- Ice Vanes ..... AS REQ
- Ice Protection ..... AS REQ
- Cabin Signs ..... ON

LANDING

- Cabin ..... SECURE
- Landing Gear ..... DOWN 3 GREENS NO REDS
- Missed Approach Altitude ..... SET
- Props ..... MAX RPM
- Flaps ..... SET
- Yaw Damper ..... OFF

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MISSED APPROACH

- Landing Gear ..... UP
- Landing & Taxy lights ..... OFF
- Flaps ..... UP
- Altimeters ..... CHECK
- Fuel ..... CHECK
- GPS & Flt-Director ..... AS REQ

AFTER LANDING

- Radar ..... STANDBY
- Press Diff ..... VERIFY 0
- Bleed Air Valves ..... ENVIR OFF
- Flaps ..... UP
- Trims ..... RESET
- Transponder ..... STANDBY
- Ice Protection ..... OFF
- Lights ..... AS REQ
- Auto-Ignition ..... OFF
- Ice Vanes ..... EXTENDED
- Auto-feather ..... OFF

SHUTDOWN

- Parking Brake ..... SET
- Taxy Light ..... OFF
- Cabin Temp Mode ..... OFF
- EFIS Power ..... OFF
- EFIS Aux Power ..... OFF
- Avionics Master ..... OFF
- Inverters ..... OFF
- ITT ..... STABLE
- Condition Levers ..... CUTOFF
- Props ..... FEATHER
- Oxygen System ..... AS REQ
- Fuel Quantity ..... [...] lbs
- Cabin Signs ..... OFF
- Beacon & Lights ..... AS REQ
- DC volts ..... CHECK
- Main Battery & Generators ..... OFF
- Headsets ..... OFF
- Control Locks ..... AS REQ

*COCKPIT SAFETY

Fire Extinguisher.......CHECK
Oxygen system....... CHECK, CONTENTS [...]
Static Air source.......NORMAL
Landing Gear.......DOWN
Alternate Extension handle.......SECURE
Trims.......ZERO
Rudder-Boost.......ON
ELT.......ARM
Starter switches.......OFF
Main Battery.......ON
DC volts.......> 23V
External power (*if available*).......ON
DC volts (GPU)....... 28.0 - 28.4V
Circuit breakers LHS & RHS.......CHECK
Annunciators.......CHECK
Fire detectors/extinguishers.......CHECK
Stall warning.......CHECK
Land gear handle light.......CHECK
Hydraulic fluid sensor.......CHECK
Flaps.......CHECK
CVR.......CHECK
Fuel system.......CHECK
Avionics master.......ON
Electric Pitch Trim.......ON, CHECK
Radar, TCAS, GPWS.......CHECK
Audio panels.......SET
Autopilot.......CHECK
Avionics master.......OFF
EFIS Reversionary Switches.......NORMAL
Main Battery.......AS REQ

B200 SPEEDS – non Raisbeck

LBS x 1000	12.5	12.0	11.5	11.0	10.5
VR (flap 0)	95	95	95	95	95
VR (flap 40)	94	94	94	94	94
V2 (flap 0)	121	119	117	115	113
SEERC	121	119	117	114	111
VREF					
Flap 100%	103	102	99	96	93
Flap 0%	132	130	126	122	117

Expanded procedures

Auto-feather

Condition Levers.......LOW IDLE
Prop Levers.......FULL FORWARD
Power Levers....... **~ 500 ft.lb**
Auto-feather switch.......hold to TEST
Power Levers.......retard individually

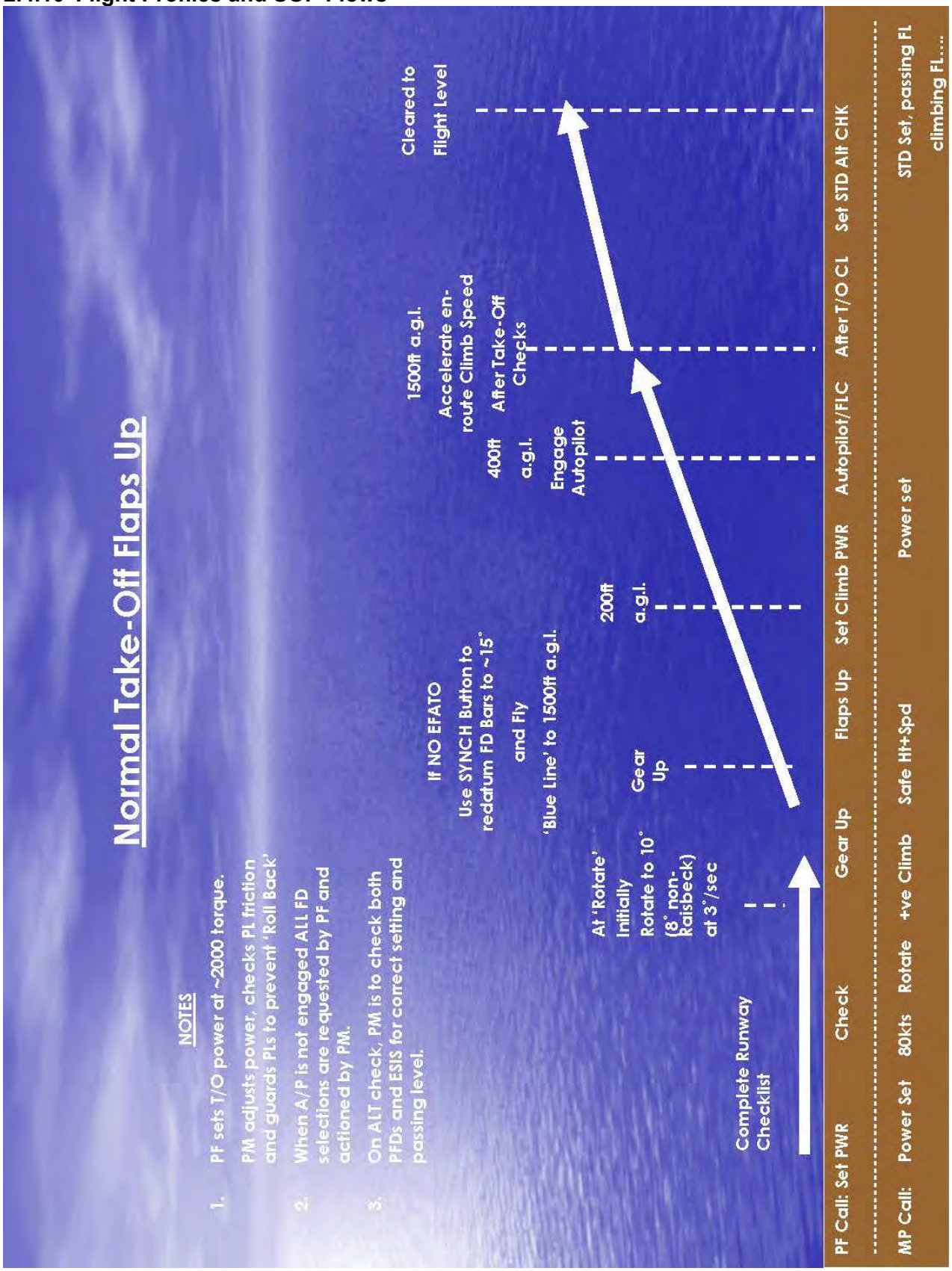
at ~ **410** ft.lb – Opp annunciator extinguished
at ~ **260** ft.lb – both annunciators extinguished & prop starts to feather

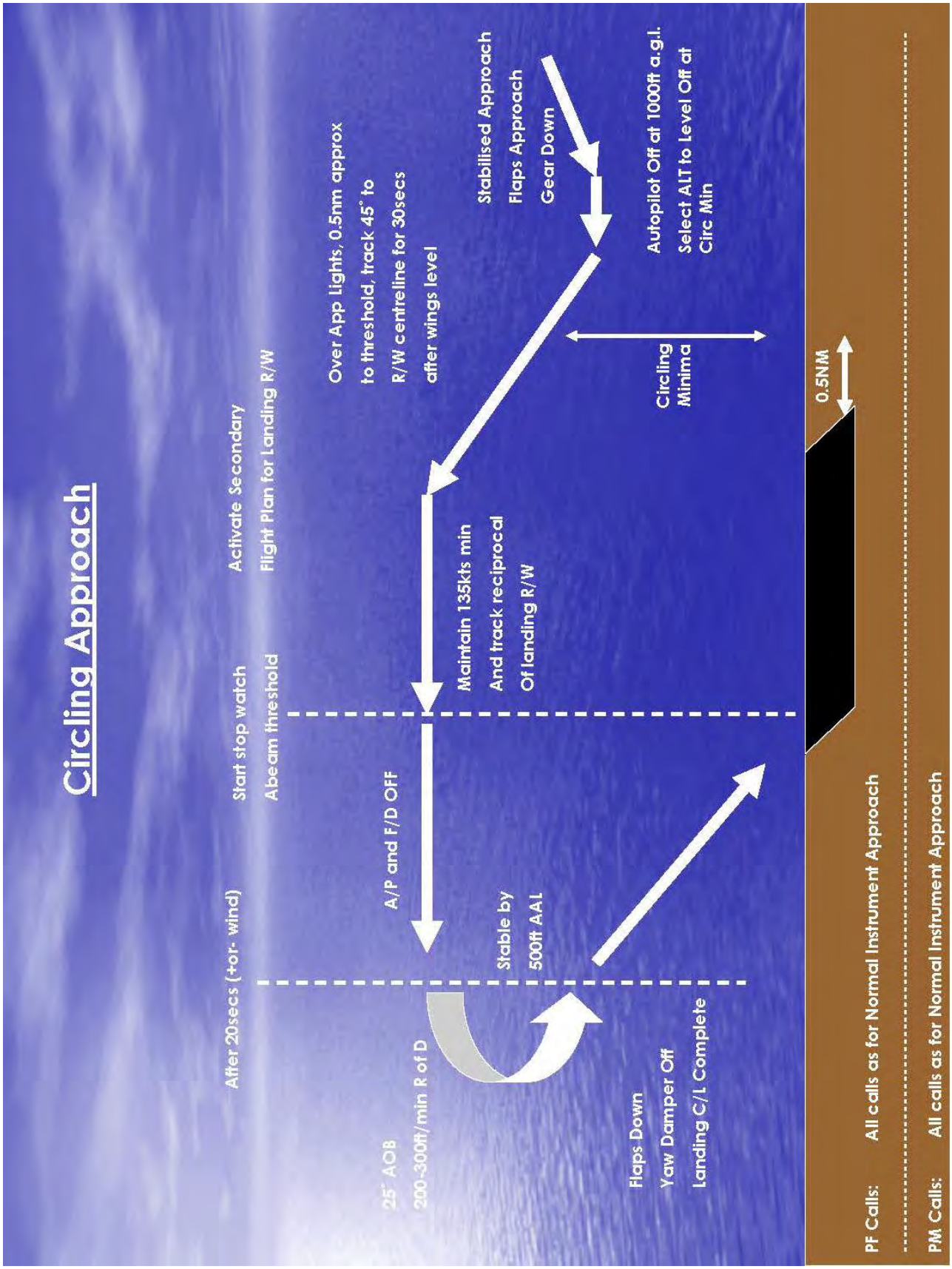
Power Levers.......IDLE
(neither prop feathers)
Auto-feather switch.......RELEASE

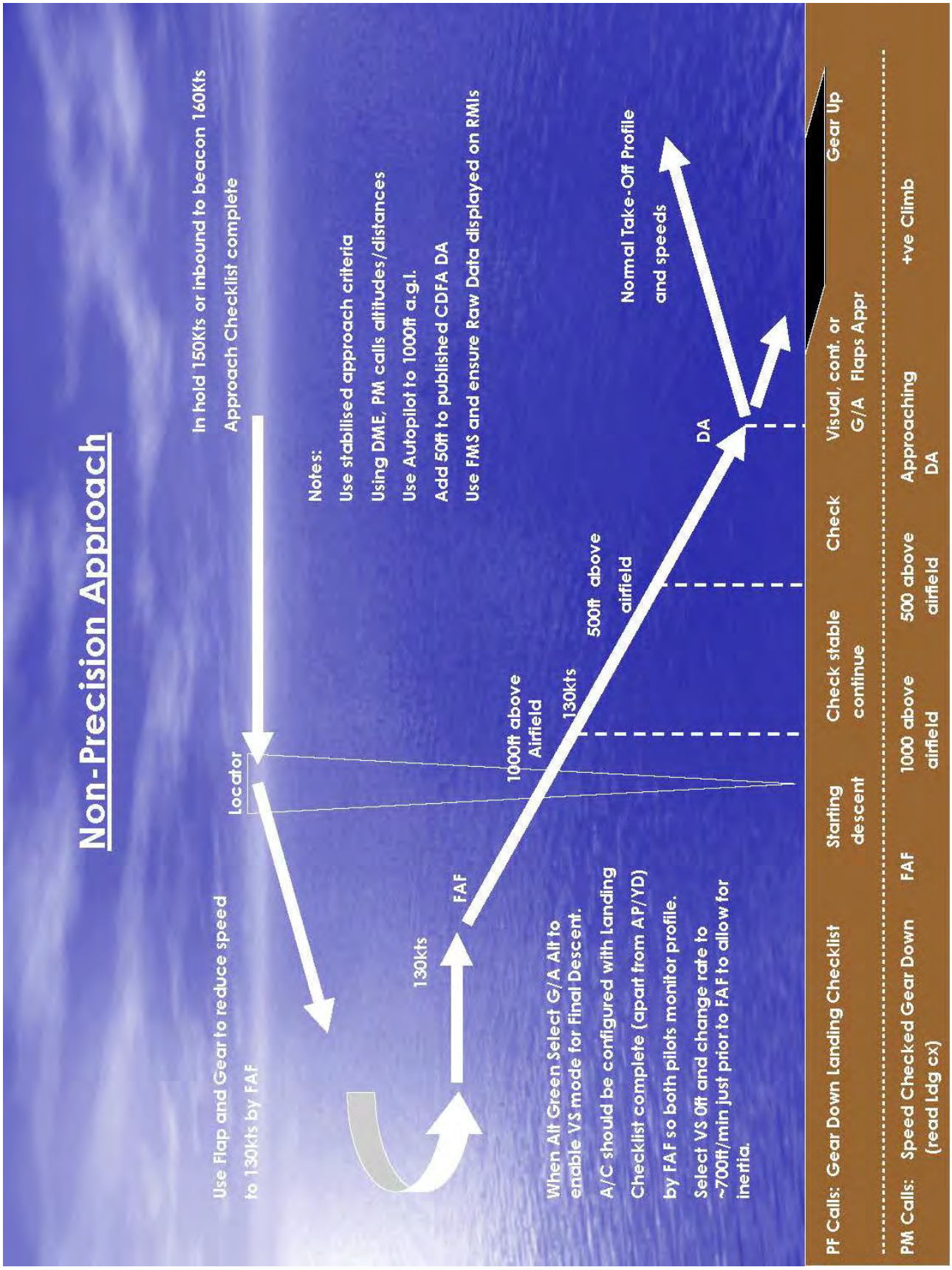
Primary Governors, Over-Speed Governors & Rudder-Boost

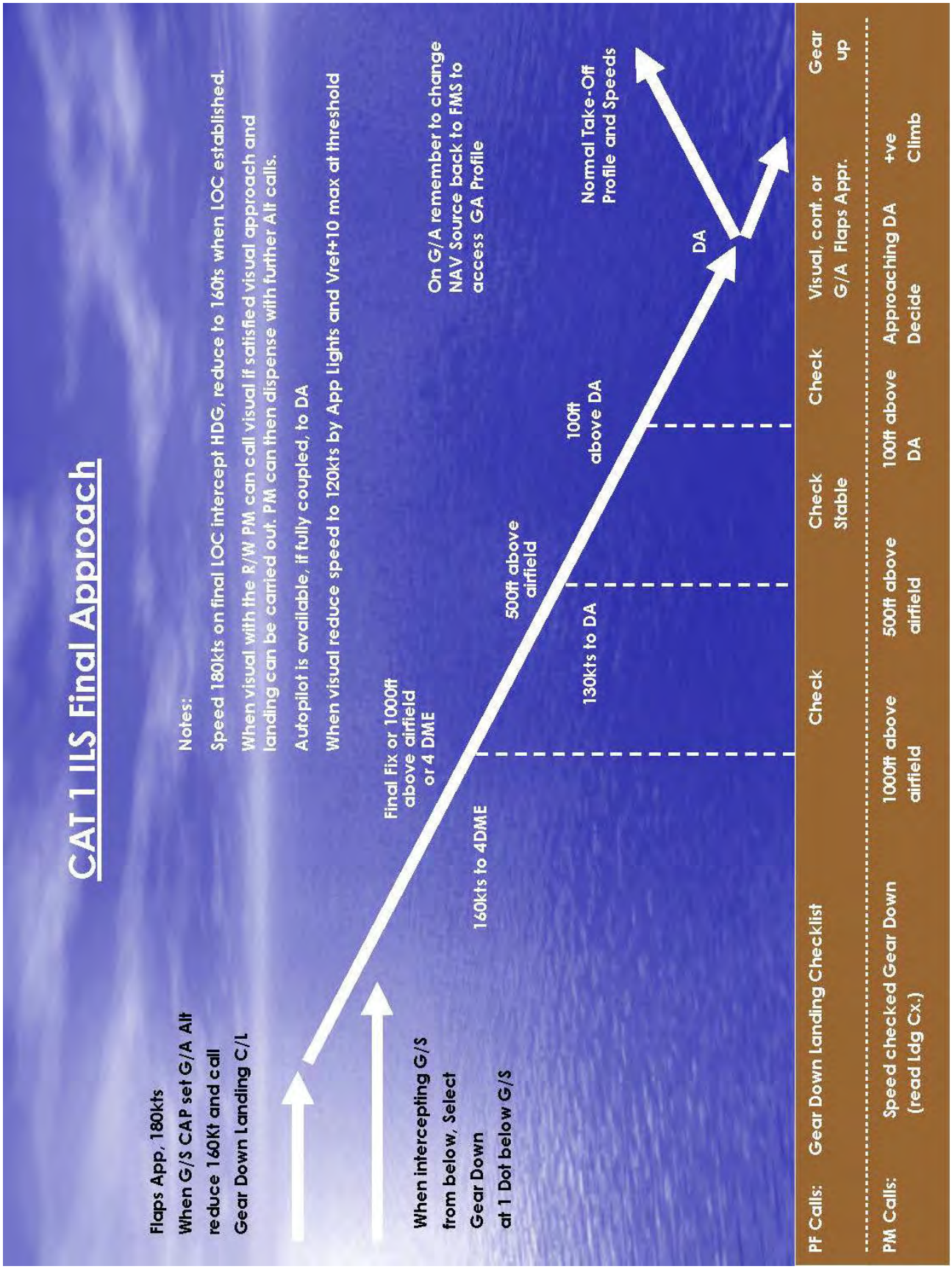
Rudder-Boost.......ON
Prop Levers.......FULL FORWARD
Prop Governor test switch....... **hold to GOV**
On each engine individually:
Power Levers.......increase until stable **1800 – 1910** RPM
Prop Levers.......retard to detent, **1600** RPM **(observe ITT & torque limits)**
Power Lever.......continue to increase until rudder movement noted
Power Lever.......IDLE
Prop Governor test switch.......RELEASE

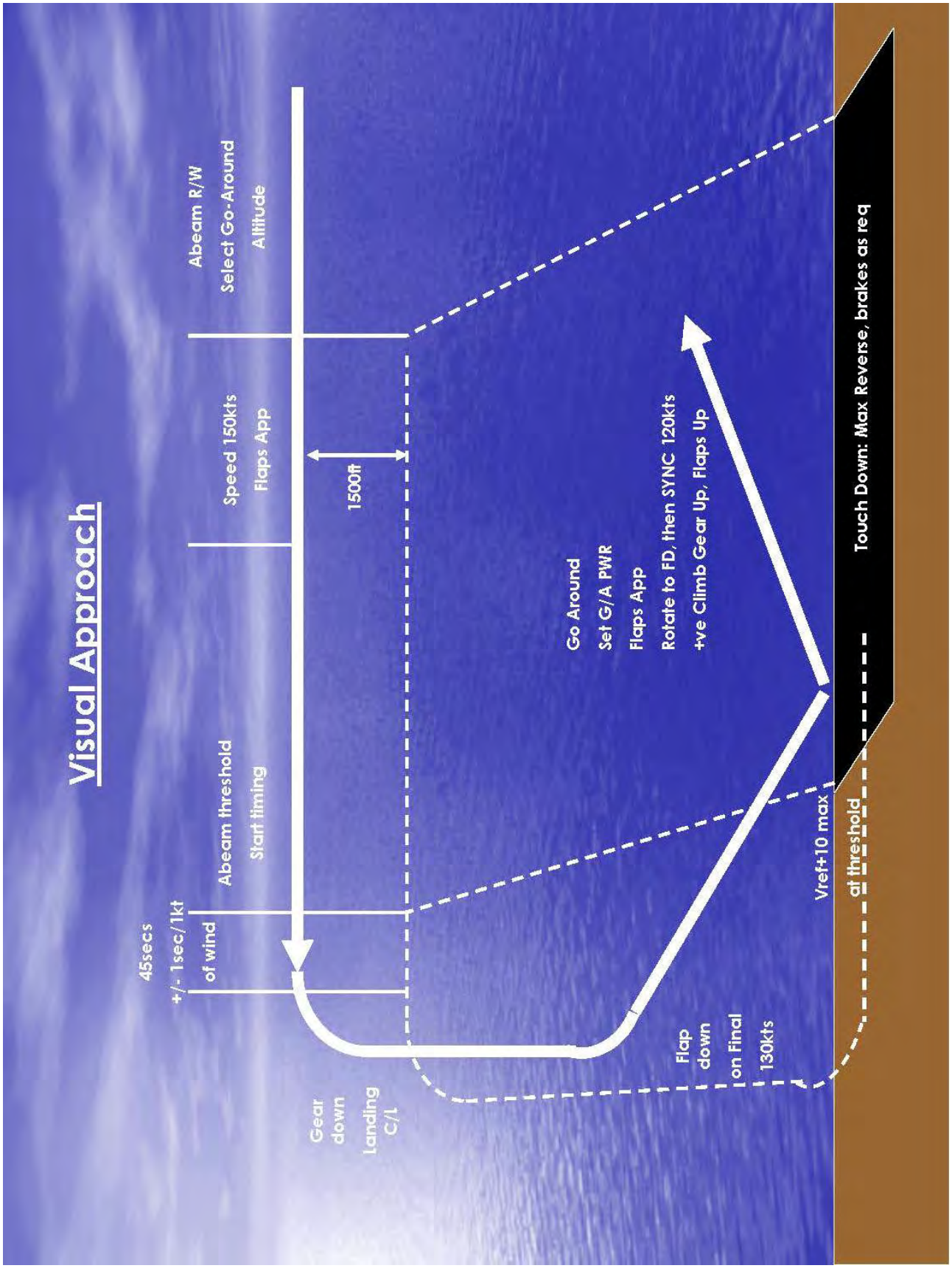
2.4.10 Flight Profiles and SOP Flows




Circling Approach
Start stop watch
Abeam threshold
Activate Secondary
Flight Plan for Landing R/W
Over App Lights, 0.5nm approx
to threshold, track 45° to
R/W centreline for 30secs
after wings level
Stabilised Approach
Flaps Approach
Gear Down
Autopilot Off at 1000ft a.g.l.
Select ALT to Level Off at
Circ Min
Circling
Minima
0.5NM
Maintain 135kts min
And track reciprocal
Of landing R/W
A/P and F/D OFF
After 20secs (+or- wind)
Stable by
500ft AAL
25° AOB
200-300ft/min R of D
Flaps Down
Yaw Damper Off
Landing C/L Complete
PF Calls: All calls as for Normal Instrument Approach
PM Calls: All calls as for Normal Instrument Approach


Non-Precision Approach
In hold 150Kts or inbound to beacon 160Kts
Approach Checklist complete
Locator
Use Flap and Gear to reduce speed
to 130kts by FAF
130kts
FAF
1000ft above Airfield
130kts
500ft above airfield
DA
Nomal Take-Off Profile and speeds
Notes:
Use stabilised approach criteria
Using DME, PM calls altitudes/distances
Use Autopilot to 1000ft a.g.l.
Add 50ft to published CDFA DA
Use FMS and ensure Raw Data displayed on RMIs
When Alt Green Select G/A Alt to enable VS mode for Final Descent.
A/C should be configured with Landing Checklist complete (apart from AP/YD) by FAF so both pilots monitor profile.
Select VS Off and change rate to ~700ft/min just prior to FAF to allow for inertia.
PF Calls: Gear Down Landing Checklist
Starting descent
Check stable continue
Check
Visual, cont. or G/A Flaps Appr
Gear Up
PM Calls: Speed Checked Gear Down (read Ldg cx)
FAF
1000 above airfield
500 above airfield
Approaching DA
+ve Climb


CAT 1 ILS Final Approach
Notes:
Speed 180kts on final LOC intercept HDG, reduce to 160ts when LOC established.
When visual with the R/W PM can call visual if satisfied visual approach and landing can be carried out. PM can then dispense with further Alt calls.
Autopilot is available, if fully coupled, to DA
When visual reduce speed to 120kts by App Lights and Vref+10 max at threshold
On G/A remember to change NAV Source back to FMS to access GA Profile
Flaps App, 180kts
When G/S CAP set G/A Alt
reduce 160Kt and call
Gear Down Landing C/L
When intercepting G/S
from below, Select
Gear Down
at 1 Dot below G/S
Final Fix or 1000ft above airfield or 4 DME
160kts to 4DME
130kts to DA
500ft above airfield
100ft above DA
DA
Normal Take-Off Profile and Speeds
PF Calls:
Gear Down Landing Checklist
Check
Check Stable
Check
Visual, cont. or G/A Flaps Appr.
Gear up
PM Calls:
Speed checked Gear Down (read Ldg Cx.)
1000ft above airfield
500ft above airfield
100ft above DA
Approaching DA Decide
+ve Climb


Visual Approach
45secs
+/- 1sec/1kt
of wind
Abeam threshold
Start timing
Speed 150kts
Flaps App
1500ft
Abeam R/W
Select Go-Around
Altitude
Gear
down
Landing
C/L
Flap
down
on Final
130kts
Go Around
Set G/A PWR
Flaps App
Rotate to FD, then SYNC 120kts
+ve Climb Gear Up, Flaps Up
Vref+10 max
at threshold
Touch Down: Max Reverse, brakes as req

2.4.11 B200 Flight Deck Layout and SOP Flows


Beech 200 Scan Flows
Engine Start Flow
1. Obtain Start Clearance
2. Doors Locked
3. Fuel Quantity Checked
4. Avionics Master and Ground-Use Battery OFF
5. Main Battery ON
6. DC VOLTS 23 MIN
7. Bleed Air Valves Environment Off
8. Ground Equipment Clear
9. Beacon and Lights On
10. Normally No 2 first (unless GPU connected)
11. Check Current Limiter before starting No 1
12. Afterstarting No1 Check Current Limiter before bringing No1 Generator on line


Beech 200 Scan Flows
After Engine Start Flow
1. Current limiter check
2. Check both generators on line
3. Avionics master on
4. Transponder on (Box 1 for LHS & Box 2 for RHS)
5. Condition levers low idle
6. Environmental system on
7. Ground Use Battery to charge, Check below 60amps (3min max)
8. Cabin Sign on


Beech 200 Scan Flows
Flight Director Set-Up
1. Couple switch
2. Hdg button
3. Pitch 10°
4. Alt Sel cleared Alt or FL or Baro min
5. FMS nav source
6. QNH check


Beech 200 Scan Flows
Before Take-Off Checklist
1. Lights as required
2. Check brakes
3. Power Levers Check BETA Mode
4. Check Flight Instruments during turns and Flight Directors set
5. Check Flight Controls are 'full and free'
6. Check Frictions and Trims
7. Review Take-Off Brief using PEDS
8. Carry out Functional Checks at the hold


Beech 200 Scan Flows
Runway Checks
Left Hand Seat Pilot
1. Lights and strobes on
2. Anti-icing 'Standard 5', Propeller anti-ice & Windscreen Heat if required
3. Auto-Ignition armed
4. Auto-Feather armed
5. Radar if required
Right Hand Seat Pilot to monitor


Beech 200 Scan Flows
After Take-Off Scan Flow
PM will call "positive climb"
PF will call "gear up"
PM will
• Select Gear up and LDG/Taxy Lights off
• Check Engine Torque and Power Lever frictions.
PF will call "Flaps up" (if deployed) and "Set Climb Power"
PM will
• Check safe height and speed and select flaps up and set climb power
PF will call for the Autopilot & FLC(400ft a.g.l. min)
PM will select Autopilot on & FLC and check annunciated
PF will call "Autopilot Green" and "FLC Green, speed checked"
Carry out After Take-Off Checklist


Beech 200 Scan Flows
After Landing Checklist Flow
PF will call for After Landing Checklist
PM will:
1. Select Flaps up (PF to monitor)
2. Environmental System off
3. Transponder standby
4. Trims reset
Left Hand Seat Pilot will (when safe to do so):
1. Lights and Strobes as required
2. Anti-Icing off
3. Auto-Ignition off
4. Auto-Feather off

BEFORE START CHECKLIST

Either Battery on for checking Lights & Fuel

1. Doors.....**LOCKED**
2. Fuel Quantity.....**CHECK**
3. Bleed Air Valves.....**ENVIR OFF**
4. ESIS.....**Tested ON**
5. Avionics Master.....**OFF**
6. Batteries.....**Main ON/ Ground OFF**
7. DC Volts.....**23Volts MIN**
8. Ground Equipment.....**CLEAR**
9. Beacon & Lights.....**ON**

Start Engines

Note:- Before bringing Left Gen on Line

Check Current Limiter

AFTER-START CHECKLIST

1. Loadmeter..... **PARALLEL WITHIN 10%**
2. Avionics Master..... **ON**
3. Cabin Temp Mode..... **ON**
4. EMS switches..... **AS REQ**
5. Gnd Use Battery..... **CHARGE**
6. Instruments/FLT Dir/ Refs..... **SET**
7. FMS & Fuel ..... **SET**
8. Bleed Air Valves..... **OPEN**
9. Cabin Pressurisation..... **PRESS & SET**
10. Transponder..... **ON**
11. Cabin Sign..... **ON**
12. ESIS..... **INITIALISED**
13. Taxi Light..... **ON with TAXI Clearance**

BEFORE TAKE-OFF CHECKLIST

1.Brakes.....CHECK
2.Instruments & Flight Controls.....CHECK
3.Flaps,Frictions and Trims.....SET
4.Transponder.....ON
5.Dep Brief (PEDS).....REVIEWED
6.Cabin.....SECURE

Runway Checks

1. Strobes ..... ON
2. Ice Protection ..... ON
3. Auto Ignition ..... ARM
4. Engine Anti-ice ..... ON
5. Autofeather ..... ARM
6. Annunciator Lights ..... Considered
7. Landing Lights on **with T/O Clearance**

AFTER TAKE-OFF CHECKLIST

1.Gear.....**UP**
2.Ldg / Taxy Lights.....**OFF**
3.Flaps.....**UP**
4.Yaw Damper.....**ENGAGED**
5.Climb Power.....**SET**
6.Engine Instruments.....**CHECK**

AFTER LANDING CHECKLIST

1.Radar.....STANDBY
2. Press Diff.....VERIFY 0
3. Bleed Air Valves.....Envir OFF
4.Flaps.....UP
5.Trims.....RESET
6.Transponder.....STANDBY
7.Ice Protection.....OFF
8.Lights.....AS REQ
9.Auto-Ignition.....OFF
10.Engine Anti-Ice.....ON
11.Autofeather.....OFF

SHUT DOWN CHECKLIST

1.Brakes .....ON
2.Taxi Light .....OFF
3.Cabon Temp Mode.....OFF
4.Avionics Master and ESIS..... OFF
5.Check ITTs.....STABLE
6.Condition Levers.....CUTOFF
7.Props.....FEATHER
8. Oxygen.....OFF
9.Fuel Quantity.....CHECK
10.Beacon & Lights.....OFF
11.Control Locks.....AS REQ

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Section 3 - Abnormal and/or Emergency Procedures

3.1 General

Emergency drills and procedures shall be carried out in accordance with Company SOP's, checklists and Aircraft Flight Manual. If an abnormality occurs that is not covered by a procedure the Commander must exercise his/her judgement in resolving the issue.

Each pilot will carry out the drills appropriate to his position on the flight deck. Where a checklist is published, it must be used for that particular failure or event. At the discretion of the Commander, the assistance of any Cabin staff member if carried or even a passenger may be enlisted. Clear and concise orders shall be given and co-ordinated action must be taken during emergency procedures. If an abnormal or emergency flight condition arises during the absence of the Commander, he/she is to be summoned to the Flight Deck immediately.

3.1.1 Memory Items

Some items are required to be memory items but most abnormalities should be analysed before taking action. All procedures must not be rushed. Any MEMORY items in the relevant checklist will be carried out by Pilot Monitoring (PM). All memory item actions must be checked and confirmed by the Pilot Flying (PF) before any control or switch is moved by PM. Upon completion of the memory items and when requested by PF, the PM will read the checklist and confirm when checks are complete.

Follow up actions will be decided by the Commander, at the time, dependent upon the nature of the failure or emergency.

3.1.2 Master Warning

When the master warning system activates the PF will ask the PM to confirm the problem and then cancel the warning. Procedures will then be followed as appropriate.

3.1.3 Emergency Checklist (QRH)

When the emergency checklist is called for, the PM will establish the correct procedure and will read out loud the appropriate item including the response.

The PF where possible will listen to the procedure being read and fully understand the problem before the drill is to be actioned.

All switches and levers are to be positively identified by both crewmembers before being changed and performance must be monitored ensuring the correct effect of the action has been achieved.

3.1.4 Medical Emergencies during Flight

The handling of a medical emergency during flight depends on the nature of the problem, the duration of flight and where the aircraft is.

The problem must never distract from the primary requirement to fly the aircraft. Careful analysis is important in order to pass good information in order to assist in obtaining an accurate diagnosis.

There could be a number of problems like travel sickness and in these circumstances make the passenger as comfortable as possible and even finding smooth air by changing levels maybe all that is required. Other conditions may require an emergency diversion to obtain instant medical care.

The Company use the services of First Call in order to obtain airborne assistance via satellite phone. Company Operations must be notified at the earliest opportunity in order to assist in the event.

The following details must be obtained:

1. Full name.
2. Age.
3. Nationality.
4. Symptoms.
5. First Call info.
6. Passport Number if applicable.

The Commander must consider Public Health and radio ahead via radio, Satcom etc. with any suspicion of infectious cases.

3.1.5 Use of On-board Defibrillators

Mobile phones may well affect on-board defibrillators. It is important to be aware of this potential problem and have all mobile phones switched off during their operation.

3.2 Crew Incapacitation

Incapacitation can be gradual or sudden, subtle or overt, partial or complete and may not be preceded by any warning.

3.2.1 Partial or Gradual Incapacitation

The following procedures are to be used if a pilot suffers any medical symptoms in flight which might impair his ability to handle the aeroplane such that he/she would hand over control. These symptoms include severe pain (*especially sudden severe headache or chest pain),* dizziness, blurring or partial loss of vision, disorientation, vomiting or diarrhoea. The procedures must be followed even if the pilot has apparently recovered, as temporary symptoms are often a warning of more severe illness to follow, and self-diagnosis is notoriously unreliable.

<u>Two pilot crew</u>

If the affected pilot is handling the aeroplane, he is immediately to inform the other pilot and hand over control to him. The destination, base or appropriate agency, is to be informed of the problem and a diversion made to the nearest suitable landing place,

bearing in mind the nature and severity of the symptoms and the availability of medical facilities.

The affected pilot is not to take control again for the remainder of the flight and is to (if possible) lock his shoulder harness to prevent him falling on to the controls if the illness becomes more severe. The affected pilot is not to fly again as a crew member until he has been medically examined or, in the case of diarrhoea or vomiting, has had no symptoms for 24 hours.

Sudden or Complete Incapacitation

Complete incapacitation may be subtle or overt, and may not be preceded by any warning. While incapacitation may occur at any stage of flight, fatal collapse among flight crew has most commonly occurred in the critical stages of approach and landing when ground proximity presents a direct hazard. Where the pilot handling the aeroplane is incapacitated, an accident is inevitable, unless the other pilot detects the collapse and is able to assume control in sufficient time.

Detection of the incapacitation in the subtle case may be indirect, i.e. only as a result of the pilot not taking some expected action. If, for example, the pilot conducting the approach to land collapses without any overt sign and the body position is maintained, the other pilot will not be aware of his colleague's collapse until the expected order of events becomes interrupted.

In the context of pilot incapacitation it is essential that crew members closely monitor the aeroplane's flight path in the critical stages of take-off, initial climb, final approach and landing, and immediately question any deviation from the norm.

Normal crew duties require that during all stages of the flight, crew members call the handling pilot's attention to any deviation from the normal flight path or ATC clearance. Adherence to this procedure should assist early detection of the incapacitation of the handling pilot.

Where the pilot handling the aeroplane has collapsed, the other pilot will assume control. Taking control presupposes that the collapsed pilot's body does not interfere with the essential primary flying controls and for this reason the requirement to wear full harness whilst occupying a pilot seat is a safeguard.

Once incapacitation has been detected, the first requirement is to ensure that the affected pilot does not interfere with any controls. It is therefore essential that his harness should be locked and, if possible, the seat slid back. Consideration should be given, if practical, to the briefing and use of passengers for this task, but caution must be observed due to the risk of the seat moving forward when it becomes unlocked. The next priority is to re-plan the flight, including consideration of diverting to the nearest suitable destination.

Medical advice indicates that immediate first aid is not essential or necessary in cases of sudden incapacitation. Therefore, any attempts at first aid should be delayed until after the immediate operational problems have been dealt with. Aircraft flight safety is priority number one.

The 'Two Communication' rule *(Two Pilot Crew)*

The 'Two communication' rule of thumb should be invoked to assist in detecting incapacitation. This states that a flight crew member should suspect the onset of incapacitation any time when a pilot does not respond appropriately to a second verbal communication associated with a significant deviation from a standard operating procedure or flight profile.

3.3 Lightning Strikes

Lightning can occur both within and away from cumulonimbus clouds, with discharges taking place either within the cloud, or between neighbouring clouds, commonly between a cloud and the ground and less commonly from the top of a cloud upwards.

Investigations have shown that most recorded lightning strikes occur at levels where the temperature is between + 10º C and -10º C, i.e. within about 5,000 ft above or below the freezing level. Some risk also exists outside this band, particularly in the higher levels.

The brilliant flash, the smell of burning and the accompanying explosive noise may be alarming and distracting to the pilots of an aircraft struck by lightning, but fatal accidents due to lightning strikes have fortunately been very few and most aircraft receive only superficial damage when struck.

Thunderstorms

Although flight through areas of thunderstorm activity should be avoided wherever possible, provided that the recommended techniques are employed, such flight may be carried out where no alternative course of action is possible.

Recommended technique for flying through areas of thunderstorm activity, irrespective of the equipment fitted, is to use the latest meteorological forecasts and actual weather reports to plan routes along which the risk of a thunderstorm encounter is low. If, despite these precautions, the commander finds himself committed to flying through an area of thunderstorm activity, the following procedures are to be adopted.

(a) Approaching the thunderstorms area:

(i) Ensure that crew members' and passengers' safety belts or harnesses are firmly fastened and any loose articles are secured.
(ii) One pilot should control the aeroplane and the other monitor the flight instruments and electrical supplies continuously.
(iii) Select an altitude for penetration whilst ensuring adequate terrain clearance.
(iv) Set the power to give the recommended speed for flight in turbulence, adjust the trim and note its position so that any excessive changes due to autopilot trim can be quickly assessed.
(v) Ensure that the pitot heaters are switched on.
(vi) Check the operation of all anti-icing and de-icing equipment and operate all these systems in accordance with manufacturer's (POH) instructions.
(vii) Disregard any radio navigation indications subject to interference from static, e.g. ADF.
(viii) Turn the cockpit lighting fully on and lower the crew seats and sun visors to minimise the blinding effect of lightning flashes.

(ix) Continue monitoring the weather radar in order to select the safest track for penetration.
(x) Avoid flying in close proximity to a thunderstorm whenever possible.

(b) Within the Storm Area:

(i) Maintain control of the aeroplane whilst concentrating on maintaining a constant pitch attitude appropriate to climb, cruise or descent, by reference to the attitude indicators, avoid harsh or excessive control movements. Do not be misled by conflicting indications on other instruments. Do not allow large attitude excursions in the rolling plane to persist.
(ii) Attempt to maintain the original heading.
(iii) Do not correct for altitude gained or lost through up and down draughts unless absolutely necessary.
(iv) Maintain the trim settings and avoid changing the power setting except when necessary to restore margins from stall warning.
(v) If trim variations due to the autopilot (auto-trim) are large, the autopilot should be disengaged. Check that the yaw-damper remains engaged.
(vi) If negative 'G' is experienced, temporary warnings (e.g. low oil pressure) may occur. These should be ignored.
(vii) On no account climb in an attempt to get over the top of the storm.

c) Air Traffic Control Considerations:

A pilot intending to detour round observed weather when in receipt of an Air Traffic Service which involved ATC responsibility for separation should obtain clearance from or notify ATC so that separation from other aircraft can be maintained. If for any reason the pilot is unable to contact ATC to inform the controller of his intended action, any manoeuvre should be limited to the extent necessary to avoid immediate danger and ATC must be informed as soon as possible.

(d) Take-off and Landing:

(i) The take-off, initial climb, final approach and landing phases of flight in the vicinity of thunderstorms may present the pilot with additional problems because of the aeroplane's proximity to the ground. The maintenance of a safe flight profile in these phases can be very difficult.
(ii) Do not take off if a thunderstorm is overhead or approaching.
(iii) At destination hold clear if a thunderstorm is overhead or approaching. Divert if necessary.
(iv) Avoid severe thunderstorms even at the cost of diversion or an intermediate landing. If avoidance is impossible, the procedures recommended in these paragraphs should be followed.

<u>Static Electricity</u>

This phenomenon will generally first be noticed as noise on the High and Medium frequency radio bands and also, to a lesser intent, on VHF receivers. As the static electricity increases in severity, the noise will Increase and In extreme cases a visible discharge known as St Elmo's fire will be seen on some parts of the aircraft, particularly around the edges of windscreen Static electricity is not associated only with thunderstorms but such conditions are particularly favourable to Its creation. Although it is

not normally dangerous, there have been rare incidents when a static discharge across a windscreen or plastic has caused a crack or breakage.

If Aircraft Is Struck By Lightning

If the aircraft is struck by lightning the following precautions should be observed:

1) Regard with suspicion all magnetic compass indications,
2) Regard with suspicion all other electrical instrument and navigation equipment indications,
3) Consider the possibility of a diversion if systems reliability cannot be guaranteed,
4) Attend to welfare of passengers when and if time permits,
5) On completion of flight enter fact that aircraft has been struck in technical log, do not proceed with further flight until aircraft is cleared by engineering.

Further information regarding thunderstorms and their effects may be found in AIC Pink129.

3.4 Emergency and Distress Communications

Pilots are urged to request assistance from an Air Traffic Service (ATS) unit as soon as there is any doubt about the safe conduct of their flight. The ATC unit will then be better placed to offer guidance and information that will expedite the passage of the aircraft to an airfield where it may land safely.

No ATS unit will know that an aircraft is in difficulty unless this information is communicated in terms that make the situation immediately and clearly apparent.

The extent to which the ATS unit will be able to offer assistance will depend both on the amount of information that the pilots provide and on it being transmitted at the earliest moment following the realisation that a potentially hazardous situation has arisen, or is in the process of developing.

3.4.1 Procedures for Use by Pilots

In the Air

Pilots should give thought, as soon as possible after they recognise that a problem has occurred, to declaring to an ATS unit that a hazardous situation has arisen or could arise.

The correct method of communicating this information to ATC is by using the prefix “MAYDAY, MAYDAY, MAYDAY” or “PAN, PAN, PAN” as appropriate. This procedure, which is an international standard, is the single most effective means of alerting the controller to the need to give priority attention to the message that will follow.

Reluctance by pilots to use the prefix “MAYDAY” or “PAN” in situations when either might be appropriate could introduce ambiguity and deny them information that could otherwise improve their situational awareness, thus helping them decide on the course of action to follow.

Air traffic controllers will have information available to them that might not be known on the flight deck and will offer this to the crew, but only when they have been told that an emergency exists.

If pilots do not use the prefix 'MAYDAY' or 'PAN' before transmitting details of technical or procedural difficulties, the controller may ask the pilot whether or not he 'wishes to declare an emergency, since the response he receives will, thereafter, directly affect the manner in which that aircraft is handled. However, pilots should not rely upon ATC to interpret messages without either prefix as being indications of distress or urgency but, rather, should use "MAYDAY" or "PAN" as the means most likely to produce immediate assistance.

If, subsequent to the transmission of "MAYDAY, MAYDAY, MAYDAY" or "PAN, PAN, PAN" the nature of the emergency changes to the extent that the pilots consider the problem appears not to have been as serious as was first thought and they no longer wish to receive priority attention, they may, at their discretion, cancel the emergency condition.

In addition to the services provided on the VHF International Emergency Service frequency of 121.500 MHz, pilots should be aware that all ATC units within the United Kingdom provide an alerting service for aircraft in emergency. Controllers will offer as much assistance as possible to any aircraft considered to be in an emergency situation. Assistance can include the provision of information on the availability of aerodromes and their associated approach aids, directional guidance, weather information and details of terrain clearance.

Where a controller considers that another ATS unit may be able to give more assistance and that in the circumstances it is reasonable to do so, pilots may be asked to change to another frequency. In this event, pilots should ensure that the appropriate prefix is included in the initial message to the new ATS unit whilst the emergency state continues to exist. If communication cannot be established on the new frequency, pilots should revert immediately to the transferring controller.

3.4.2 On the Ground

If an emergency occurs on the ground, pilots should notify ATC on the frequency in use at the time of the incident. ATC may then at their discretion, deal with the situation on that frequency, or may transfer the aircraft to 121.60 MHz for communication with the ground emergency services.

3.5 Serious Technical Failure

In the event of a serious technical failure which in the opinion of the Commander constitutes, or could deteriorate to, a situation which might threaten the safety of the aircraft, the Commander must ensure that:

a) An alerting call is made to ATC, either PAN or MAYDAY as appropriate,
b) Assistance is sought to land at the nearest suitable airfield, taking into account the physical properties of the airfield, the type of emergency services available and the actual and forecast weather for the estimated time of arrival at the airfield.

It is stressed that, safety of the aircraft and passengers is the priority consideration when choosing the diversion airfield in such a situation. Commercial or Engineering considerations must not influence the judgement of the Commander in determining the course of action taken.

3.6 Exceeding Structural Limits

The maximum landing weight (12,500lbs) is the same as the maximum take-off weight (12,500lbs) so it is not possible to land above the maximum landing weight.

In the event that the pilot suspects that the aircraft has exceeded the structural limitations (e.g. heavy landing/excessive G loading/severe turbulence) all such excesses must be reported and recorded in the Technical Log. The aircraft must be inspected and repaired by an appropriate maintenance organisation prior to the next flight.

Note: The B200C has no onboard equipment or systems to indicate any structural limitation exceedances.

3.7 Exceeding Cosmic Radiation Limits

Refer to OM A. For procedures for monitoring radiation doses of Gama Aviation crewmembers.

3.8 Rejected Take-Off (RTO)

PILOT FLYING	PILOT MONITORING

If it becomes necessary to Reject the take-off:

The call is "***STOP, STOP, STOP"*** from either crewmember.

The Pilot Monitoring will call 'STOP' if he/she observes any warning light or malfunction before reaching 80 kts (60kts if runway is limiting).

Between 80 kts and up to 'VR' the call "stop, stop, stop" will only be for: **ENGINE FIRE, ENGINE FAILURE, LOSS OF DIRECTIONAL CONTROL, SMOKE IN AIRCRAFT, BLOCKED RUNWAY, POSSIBLE WINDSHEAR, MASTER WARNING. The Commander will hold overall responsibility whether to stop or continue the take-off.**

Close power levers, apply maximum braking, select reverse thrust if available.	Assist the Pilot Flying. Once stopped advise ATC that the take-off has been rejected, either with a Mayday or Pan call, giving aircraft position when in poor visibility. Identify malfunction.
When the aircraft has stopped (turn into wind if possible), apply parking brake, analyse the reason for stopping and call for appropriate emergency drills.	Action emergency drills. Complete memory items followed by checklist.
Consider evacuation.	

Note: if evacuation is required the Commander must stop the First Officer completing his duties and call for the evacuation. The Commander will then complete the emergency and securing drills.	Commence evacuation if required.

3.8.1 Engine Failure at or above VR

The take-off procedure for the **Raisbeck B200** *(G-SASC and G-SASD*) is as follows:

In the event of an engine failure hold and maintain 10° pitch attitude. This will give you a speed in excess of but not less than 103KIAS (V2), until reaching acceleration altitude, normally 1500 feet AGL thereafter accelerating toward 121KIAS SEERC.

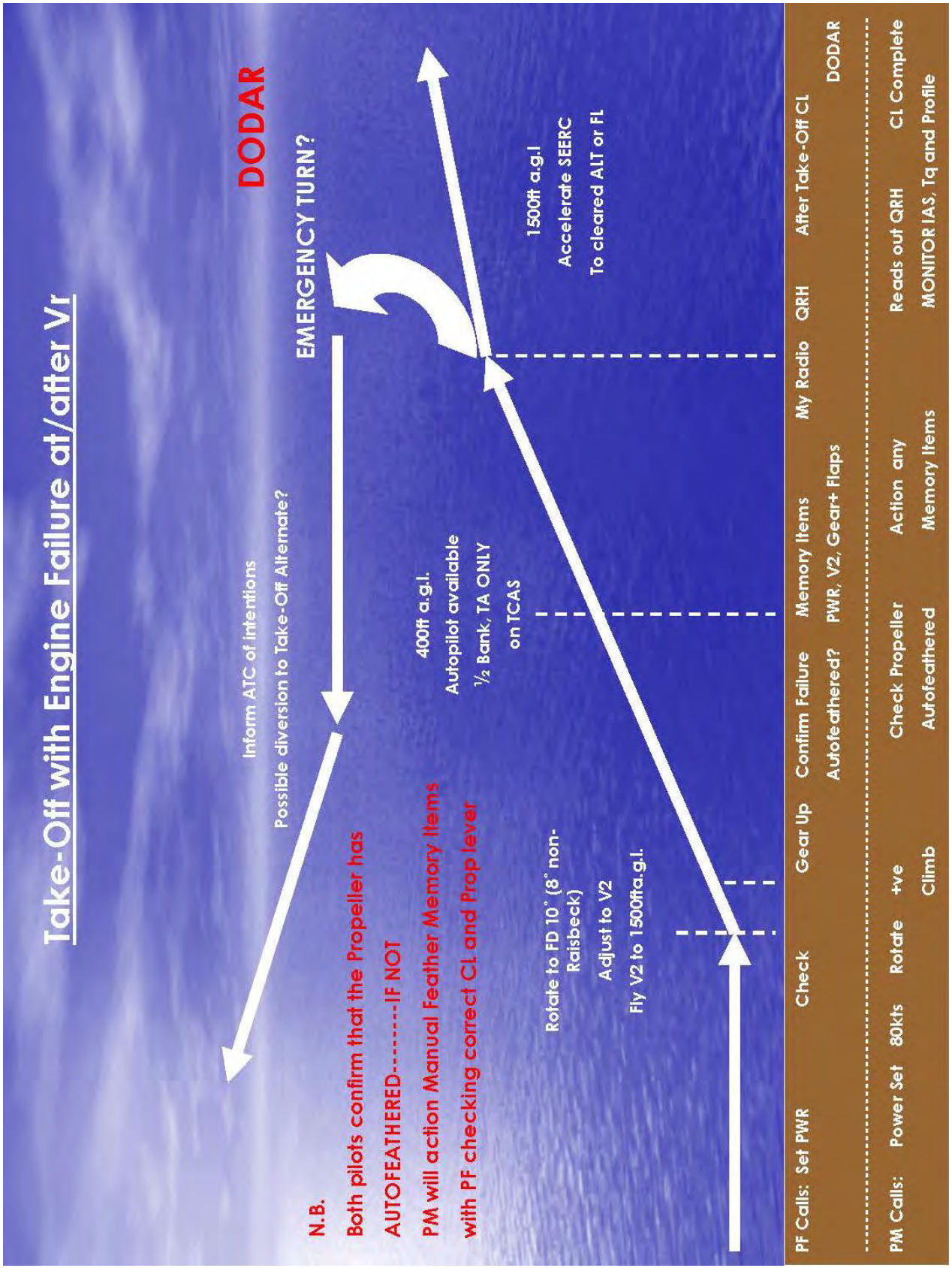
- There is no climb gradient penalty for climbing at any speed above 103kt up to 121kt.
- Then carry out the standard "Engine Failure During Take off (At or Above V1) – Take off continued" as per Red Tab 2 in the aircraft QRH.

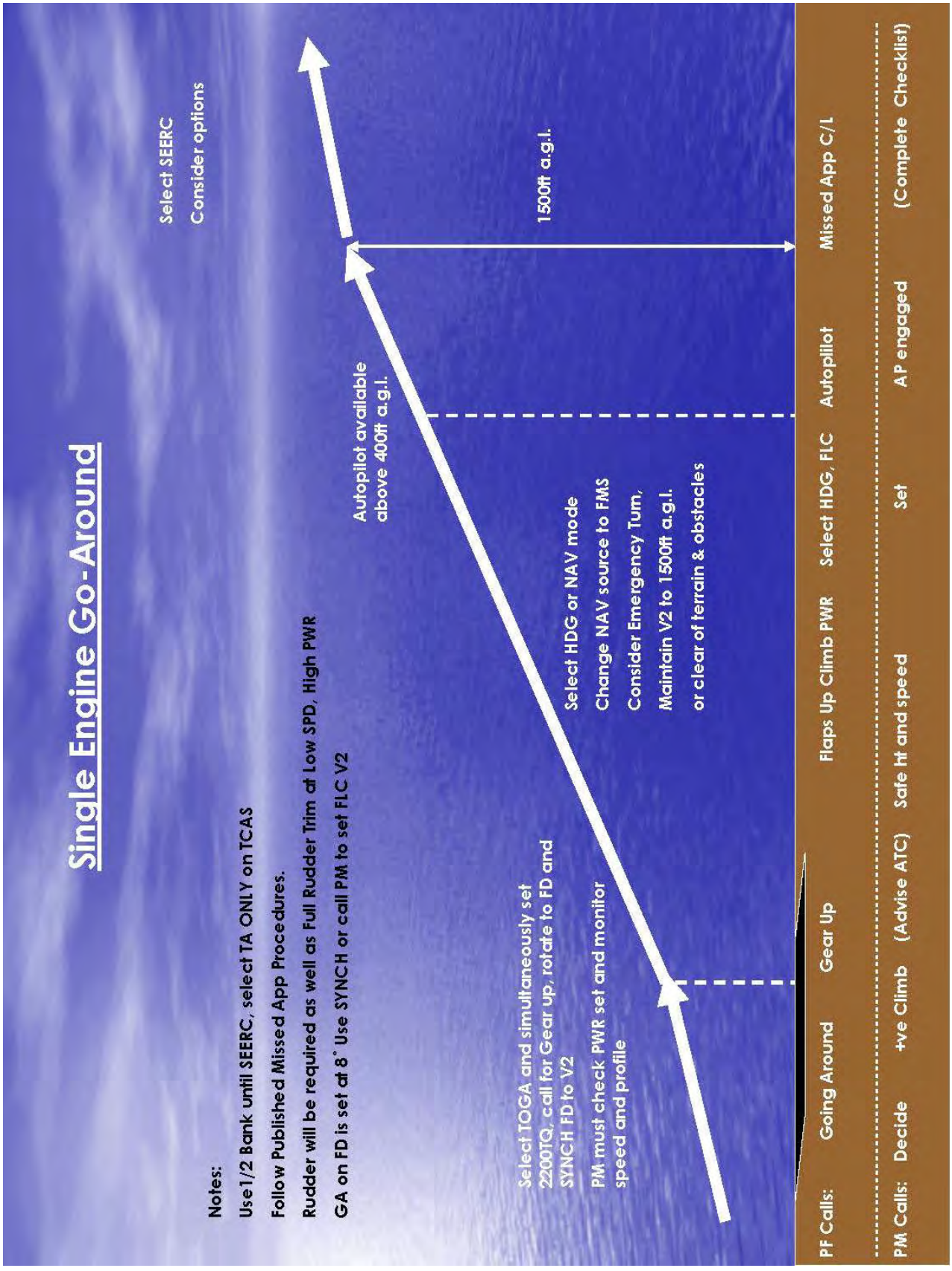
The take-off procedure for the **Non-Raisbeck B200** *(G-GMAE and G-PCOP)* is as follows:.

- In the event of an engine failure hold and maintain 8° pitch attitude, use V2 speed for immediate obstacle avoidance until reaching acceleration altitude, normally 1500 feet AGL, thereafter accelerating toward 121KIAS SEERC.
- Carry out the standard "Engine Failure During Take off (At or Above V1) – Take off continued" as per Red Tab 2 in the aircraft QRH.

PILOT FLYING	PILOT MONITORING
Keep aircraft straight.	Call "Rotate" at 'VR'
Rotate to 10º pitch (8º for non Raisbeck) at 'VR'	Confirm "Positive climb".
Call "Gear up"	Select and confirm "gear up", check transit red light out and gear indicating up.
Confirm "engine failure. Has it auto-feathered?"	Confirm propeller has auto-feathered.
If flaps used for take-off, at safe height and speed (by 400ft and V2 Flaps UP)	Monitor speed, height and select flaps up.
Climb at 10˚ nose up pitch. (8˚ for non Raisbeck).	Confirm max power live engine and the auto-feather is working.

PILOT FLYING	PILOT MONITORING
Call for "Autopilot" at 400a.g.l. min	Select AP.
Confirm "Autopilot green".	
Call "HDG / NAV, FLC speed, half bank", and "TCAS set to TA Only".	Select requested modes and speed.
Confirm all requested modes selected engaged.	
Ask PM to declare an emergency	Declare an emergency using standard RT phraseology.
At acceleration altitude, normally 1500 feet a.g.l, call/select FLC SEERC. Continue en-route climb speed.	Confirm appropriate SEERC speed set. Monitor engine instruments, speed and check flaps up.
Call for Emergency Checklist followed by after take off checklist	Action Emergency 'Read and Do' Checklist (QRH), followed by 'After Take-Off' checklist
Climb to MSA or above.	


Take-Off with Engine Failure at/after Vr
DODAR
EMERGENCY TURN?
Inform ATC of intentions
Possible diversion to Take-Off Alternate?
N.B.
Both pilots confirm that the Propeller has
AUTOFEATHERED------IF NOT
PM will action Manual Feather Memory Items
with PF checking correct CL and Prop lever
Rotate to FD 10° (8° non-Raisbeck)
Adjust to V2
Fly V2 to 1500ft a.g.l.
400ft a.g.l.
Autopilot available
½ Bank, TA ONLY
on TCAS
1500ft a.g.l
Accelerate SEERC
To cleared ALT or FL
PF Calls: Set PWR Check Gear Up Confirm Failure Memory Items My Radio QRH After Take-Off Cl
Autofeathered? PWR, V2, Gear+ Flaps DODAR
PM Calls: Power Set 80kts Rotate +ve Check Propeller Action any Reads out QRH Cl Complete
Climb Autofeathered Memory Items MONITOR IAS, Tq and Profile


Single Engine Go-Around
Notes:
Use 1/2 Bank until SEERC, select TA ONLY on TCAS
Follow Published Missed App Procedures.
Rudder will be required as well as Full Rudder Trim at Low SPD, High PWR
GA on FD is set at 8° Use SYNCH or call PM to set FLC V2
Select TOGA and simultaneously set 2200TQ, call for Gear up, rotate to FD and SYNCH FD to V2
PM must check PWR set and monitor speed and profile
Select HDG or NAV mode
Change NAV source to FMS
Consider Emergency Turn,
Maintain V2 to 1500ft a.g.l.
or clear of terrain & obstacles
Autopilot available above 400ft a.g.l.
1500ft a.g.l.
Select SEERC
Consider options
PF Calls: Going Around Gear Up Flaps Up Climb PWR Select HDG, FLC Autopilot Missed App C/L
PM Calls: Decide +ve Climb (Advise ATC) Safe Ht and speed Set AP engaged (Complete Checklist)

3.9 Unpressurised and Partially Pressurised Flight

The correct operation of the aircraft systems to achieve unpressurised or partially pressurised flight are detailed in the MEL 'O' procedures *(Section 9)*

Note 1 - The aircraft is limited to 10,000ft MSL.
Note 2 - Pilots are to be aware that the fuel consumption will increase considerably should a descent be required.

3.10 Windshear

Wind shear may be defined as a rapid change in wind direction and/or velocity that results in airspeed changes greater than 15 knots.

3.11.1 Evaluate the Weather

Flight crew members should develop an awareness of the causes and danger signals of wind shear to successfully avoid it.

As shown in Table 1, convective weather conditions have produced the majority of known wind shear accidents. Thus the most dangerous form of wind shear is a convective weather microburst of either the dry or wet type (Tables 2 and 3).

Table 1	**CAUSES OF WIND SHEAR**
Cause of wind shear	Approximate Percentage of Wind shear Accidents
Convective Conditions (thunderstorms, rain and snow showers)	35
Frontal Systems	15
Low-Altitude Jet Streams	5
Strong or Gusty Surface Winds	5
All other Causes (temperature inversions, mountain waves, sea breeze circulation, unknown causes)	10

Table 2	**DANGER SIGNALS OF DRY MICRO BURSTS**
PIREPS	Caution – Due to the rapid intensification of micro-bursts, actual winds hear may be up to twice as severe as the PIREP.
LLWAS	Caution – LLWAS, in its present state of development, is not completely accurate detecting micro-bursts and is prone to false alarms.
Virga	Rain falling from high-based convective clouds, evaporating before it reaches the ground.
Temperature/Dewpoint	Watch for a spread of 1º to 10ºC.
Localised Strong Winds	Blowing dust, rings of dust, dust devils, other tornadic features, and other evidence of strong, local outflow near the surface.
Turbulence	Moderate or greater turbulence may be associated with the outflow from a microburst.
Airborne Weather Radar	Indications of weak cells with bases from 5,000 to 15,000 feet AGL, indicate weak precipitation, usually Virga.
Weather Forecast	The potential for a microburst is indicated by, mid-level moisture, very dry surface conditions, and a 1º to 10ºC temperature/dew point spread.

Table 3	DANGER SIGNALS OF WET THUNDERSTORM MICRO-BURSTS
PIREPS	Caution – Due to the rapid intensification of micro-bursts, actual wind shear may be up to twice as severe as the PIREP.
LLWAS	Caution – LLWAS, in its present state of development, is not completely accurate detecting micro-bursts and is prone to false alarms.
Thunder storms	In addition to the well-known hazards of thunderstorms, an estimated 5% of thunderstorms accompanied by heavy rain and/or lightning contain embedded micro-bursts.
Local Strong Winds	Blowing dust, rings of dust, dust devils, other tornadic features, and other evidence of strong, local outflow. (Caution – Visual clues may be obscured by low-visibility in wet thunderstorm microburst situations.)
Turbulence	Moderate or greater turbulence may be associated with the outflow from a microburst.
Airborne Weather Radar	Search the area above and along the takeoff and approach paths for heavy precipitation.
Weather Forecast	Although there are currently no techniques to forecast wet micro-bursts, crews should consider the thunderstorm forecasts contained in the terminal forecasts and severe weather advisories as a possible indication of the presence of wet micro-bursts.

3.11.2 Avoid Known Wind Shear

The policy is to avoid areas of known wind shear. Consider one or more of the following actions as appropriate:

- Delay take-off until conditions improve.
- In flight, divert around the area of known wind shear.
- If wind shear is indicated during approach, initiate a go-around or hold until conditions improve

3.11.2.1 Consider Precautions

Precautions are recommended whenever probability of windshear exists but avoidance action is not necessary.

The following precautions are for take-off:

- Use T/O Thrust.
- Use the longest suitable runway away from potential wind shear.

Table 4, is designed specifically for convective weather conditions, and provides a subjective evaluation of various observations to aid in making appropriate avoidance decisions. Although encountering weather conditions described in the table above 1,000ft AGL may be less critical in terms of flight path, such encounters may present other significant weather-related risks.

Wind shear clues should be considered cumulative. The probability of each single observation is given. However, if more than one wind shear clue is observed, the probability rating may be increased to reflect the total set of observations. Use of the table does not replace sound judgment when making avoidance decisions. Crew members are urged to exercise caution when determining a course of action.

Table 4 MICROBURST WIND SHEAR PROBABILITY GUIDELINES	
Observation	Probability of Wind shear
Presence of convective weather near intended flight path:	
With localised strong winds *(tower reports or observed blowing dust, rings of dust, tornadic features, etc.)*	HIGH
With heavy precipitation *(observed or radar indications of contour)*	HIGH
With rain-shower	MEDIUM
With lightning	MEDIUM
With Virga	MEDIUM
With moderate or greater turbulence *(reported or radar indications)*	MEDIUM
With temperature/dew-point spread of –1 to 10ºC	MEDIUM
Onboard wind shear detection system alert:	
Reported or observed	HIGH
PIREP or airspeed loss or gain:	
20 KIAS or greater Less than 20 KIAS	HIGH MEDIUM
Forecast of convective weather	LOW

HIGH	Critical attention needs to be given to this classification. A decision to avoid *(i.e., divert or delay)* is appropriate.
MEDIUM	Consideration should be given to avoiding. Precautions are appropriate.
LOW	Consideration should be given, but a decision to avoid is not generally indicated
Note:	These guidelines apply to operations in the airport vicinity *(within 3 miles of the point of takeoff or landing along the intended flight path and below 1,000 feet AGL).* The hazard increases with proximity to the convective weather. Weather assessment should be continuous.
Caution:	Currently no quantitative means exists for determining the presence or intensity of microburst wind shear. Crewmembers are urged to exercise caution when determining a course of action.

3.11.2.2 The Following Precautions Are For Approach:

- Achieve a stabilised approach not later than 1,000 feet AGL.
- Avoid large thrust reductions or trim changes in response to sudden airspeed increases, as these may be followed by airspeed decreases.
- Use the longest suitable runway away from potential wind shear.

- Consider using increased approach speed up to a maximum of 20 knots.
- Use autopilot for the approach to provide more monitoring and recognition time.

3.11.2.3 Following Standard Operating Techniques

Certain procedures and techniques can prevent a dangerous situation from developing if wind shear is inadvertently encountered. These procedures and techniques are of such importance that they should be incorporated into each crew member's personal standard operating techniques and practiced on every take-off and landing, whether or not wind shear is anticipated. Develop a cockpit atmosphere, which encourages awareness and effective crew coordination, particularly at night and during marginal weather conditions.

The Following are Take-Off Standard Operating Techniques:

- Be alert for any airspeed fluctuation during take-off and initial climb.
- Minimise reductions from the initial climb pitch attitude until terrain and obstruction clearance is assured.
- Develop an awareness of normal values of airspeed, attitude, vertical speed, and airspeed build up.
- The PM closely monitors the vertical flight path instruments, such as vertical speed and altimeters, and call out any deviation from normal.

The Following Are Approach Standard Operating Techniques:

- Develop an awareness of normal values of vertical speed, thrust, and pitch.
- Crosscheck flight director commands, using vertical flight path indications.
- Know the go-around decision criteria, and be prepared to execute an immediate go-around if the parameters are exceeded.
- The pilot non flying closely monitors the vertical flight path instruments, such as vertical speed, altimeters, and glide slope displacement, and calls out any deviations from normal.

3.11.3 Windshear Recovery Techniques

The wind shear escape manoeuvre below should be performed whenever severe wind shear is experienced or when flight path control becomes marginal below 1,000 ft AGL. Marginal flight path control may be indicated by uncontrolled changes from normal, steady state flight condition in excess of any one or more of the following:

- 15 KIAS/ Minimum speed VREF.
- 500 fpm vertical speed/Maximum rate of descent in approach phase 1,200 fpm
- 5° pitch attitude
- One (1) dot displacement from the glide slope

3.11.3.1 Wind Shear Prevention/Recovery

- Power Levers 2230 ft/lb Torque

- Disengage the autopilot by activating the go-around mode, and rotate smoothly at a normal rate toward a target pitch attitude of 15º to minimise altitude loss.

  Note: Pitch attitude may be well above normal angles.

- Adjust pitch attitude smoothly and in small increments to control vertical speed and altitude. Pilots should be aware that speed may decay below reference speeds and that stick forces necessary to maintain increased pitch attitude may be well above normal.
- Maintain present configuration (gear and flaps) until terrain contact is no longer a factor.

3.11.3.2 Take-Off Into Suspected Wind Shear

Take-off into known severe wind shear is prohibited. However, use the following procedure when taking off into suspected wind shear:

- Use the longest runway available with the least possibility of wind shear encounter.
- Monitor airspeed closely during take-off roll to detect early signs of wind shear.
- Rotate to normal initial climb attitude, and maintain this attitude. This technique produces a higher initial climb speed.
- After establishing a positive rate of climb, accelerate and configure to en-route climb as soon as possible, but do not retract flaps until terrain and obstacle clearance is assured.
- The PM should closely monitor the vertical flight path instruments, such as vertical speed and altimeters, and call out any deviation from normal.
- If wind shear is detected on the runway, the take-off should be aborted prior to VR.
- If wind shear is detected after lift-off, initiate the wind shear escape manoeuvre.

3.11.3.3 Approach and Landing into Suspected Windshear

Approach and landing into known severe wind shear is prohibited. However, use the following procedure when making an approach and landing into suspected windshear:

If an airspeed increment is appropriate it should not exceed that allowed by the AFM.

- Avoid large thrust reductions or trim changes in response to sudden airspeed increases, since these may be followed by airspeed decreases.
- Consider the use of autopilot to provide more monitoring and recognition time.
- Stabilise the approach no later than 1,000ft AGL.
- The PM should closely monitor the vertical flight path instruments, such as vertical speed and altimeters, and glide-slope displacement, and call out any deviation from normal.
- Know the go-around decision criteria, and be prepared to execute an immediate go-around if the parameters are exceeded.

3.11.4 Reporting Windshear

It is the duty of every pilot to report the occurrence of windshear, these reports may help prevent an incident with following aircraft. Also listening out for reports will forewarn you of a potential hazard and action can be taken accordingly. The UK AIP (GEN 3-5-21) contains guidance on windshear reporting, which for convenience is repeated below.

3.11.4.1 'Windshear Reporting Criteria'

Pilots using navigation systems providing direct wind velocity readout should report the wind and altitude/height above and below the shear layer, and its location. Other pilots should report the loss or gain of airspeed and/or the presence of up or down draughts or a significant change in cross wind effect, the altitude/height and location, their phase of flight and aircraft type.

Pilots not able to report windshear in these specific terms should do so in terms of its effect on the aircraft, the altitude/height and location and aircraft type, for example: 'Abrupt windshear at 500ft QFE on finals, maximum thrust required, King Air 200'.

Pilots encountering windshear are requested to make a report even if windshear has previously been forecast or reported'.

3.12 Terrain Avoidance after Take-off and Departure Contingency Procedures

Crews need to be aware that terrain and obstacle avoidance on Take-off must be considered for every departure. However operations from all Category A airfields will not require specific calculation. Category B and C airfields may require calculation on a case by case basis. See Part B Section 4 Performance (Net Take-off Flight Path) and Part A Section C Route and Aerodrome Instructions and Information (Airfield categorisation)

Takeoff alternate requirements, if a re-land at departure is unavailable, are set out in part A Criteria for determining usability of aerodromes.

Performance should be calculated such that in the event of a malfunction affecting climb performance (e.g. engine failure) the aircraft will still meet the climb and flight path requirements of the departure being used. If the requirements are not met the departure cannot be accepted.
The crew should be aware of the appropriate action to be taken in the event of a failure affecting Navigation performance. The area plate should be reviewed taking note of high ground, obstacles and safe areas that can be avoided or used in emergency. All navigation sources should be backed up whenever possible to provide redundancy and add to situational awareness.

3.13 EGPWS Alert

Pilots are authorised to deviate from their current ATC clearance to comply with an EGPWS warning e.g. GPWS warning (RED) 'PULL UP' on the PFD and continuous 'PULL UP' 'PULL UP' voice warning or EGPWS Terrain Warning (RED) 'PULL UP' on PFD and 'TERRAIN' 'TERRAIN' 'PULL UP' or 'OBSTACLE' OBSTACLE' 'PULL UP' voice warning.

3.13.1 Execute the following:

1. Wings – Level;
2. Power – Max Allowable;
3. Pitch – Increase:
   a) Promptly and smoothly increase pitch towards an initial pitch attitude of 20 º to 25º.
   b) Adjust as required to avoid continuous buffeting and/or stall warning.
   c) Adjust to maintain 121kts.
4. Gear and Flaps –UP.

3.13.2 Ditching or Off Airport Landing

Inhibit the visual and voice alerts using the following procedure:

1. TERR INHIB –Select

3.13.3 The following information is taken directly from the Aircraft Flight Manual. The response to a warning as outlined below may be limited to that appropriate to an alert only if:

- The aeroplane is being operated by day in conditions which enable it to remain 1nm horizontally and 1,000ft vertically from cloud, and an in flight visibility of at least 5nm; and it is immediately obvious to the Commander that the aeroplane is in no danger in respect of it configuration, proximity to terrain or current flight manoeuvre;

- GPWS Alert (Amber (GND PROX) and Voice Alert). The following standard procedures have been formulated to handle the majority of cases; however, it is the crew's responsibility to analyse all available instruments and information to determine the best course of action. ATC should be notified as necessary:

Mode	Voice Alert	Action
1	'SINK RATE'	Level wings and reduce rate-of-descent until visual and voice alerts cease.
2	'TERRAIN, TERRAIN'	Immediately adjust flight path away from terrain
3	'DON'T SINK, DON'T SINK'	Level wings and immediately establish a positive rate of climb
4a	'TOO LOW GEAR'	Execute go-round if proper terrain clearance or landing gear position cannot be immediately verified
4b	'TOO LOW FLAPS'	Execute go-round if proper terrain clearance or landing flap position cannot be immediately verified
4c	'TOO LOW TERRAIN'	Adjust flight path to recover safe terrain clearance until visual and voice alerts cease
5	'GLIDESLOPE'	Immediately climb to re-establish proper glideslope of execute a go-round
6	'BANK ANGLE, BANK ANGLE'	Reduce bank angle (There will be no amber GND PROX annunciator with the caution)

EGPWS TERRAIN or OBSTACLE ALERT (Amber (GND PROX) and 'CAUTION TERRAIN' 'CAUTION TERRAIN' or 'CAUTION OBSTACLE' 'CAUTION OBSTACLE' Voice Alert)

NOTE: In the event of a terrain alert, the MFD will automatically switch to display terrain, if not displaying terrain. The pilots PFD and the MFD will auto range to 10 miles. Stop descending or climb and /or turn as necessary, based on analysis of all available instruments and visual observations, in order to cancel the alert. Advise ATC as necessary.

3.14 TCAS Alert

Aircraft fitted with airborne collision and avoidance systems (ACAS) provide flight crew with an independent back up to visual search and the ATC system by alerting the crew to collision hazards, independent of any ground-based aids which may be used by air traffic control for such purposes.

3.14.1 Alert system

G-GMAE and G-PCOP are both fitted with TCAS I giving only TA Alerts.

G-SASC and G-SASD are fitted with TCAS II giving TA and RA Alerts. Respond to TAs by commencing an immediately visual search on that part of the sky where the TA indicates the conflicting traffic to be.

If the potential threat cannot be seen and gives cause for concern the pilot should manoeuvre his aeroplane as necessary to avoid it, making sure that the area into which he is manoeuvring is clear. Once clear of the potential threat, and any other subsequent conflicts, the pilot should resume his previously cleared flight path and advise ATC of any deviation from his clearance.

The following instruction is to be completed with by the operating crew:

- Disconnect the autopilot using prompt smooth control inputs and manoeuvre in the direction required by the vertical rate TCAS(normally 1500 ft per minute);
- Follow the pitch command provided by the Flight Director for TCAS RA displays for initial, increase and weakening RAs;
- For TCAS to provide safe vertical separation, the PF is expected to initiate the appropriate RA manoeuvre within 5 seconds of when the RA is first displayed. Deviations from assigned altitude, when responding to an RA, typically will be no more than 300 to 500 ft;
- RA maneuvers should use vertical speeds within the green areas, or the indicated pitch angle, and avoid red areas on vertical speed indicators or tapes, or outlined pitch avoidance areas;
- The PM should provide updates on the traffic location and monitor the response to the RA. Proper crew resource management should be applied;
- Respond immediately to any "increase" or "reversal" RA or 'level off'

- RA manoeuvre is expected within 2-1/2 seconds after issuance of the advisory. Again, fly to the green area or indicated pitch angle and avoid red areas or outlined pitch avoidance areas;
- If an RA is weakened, such as a “climb” RA weakened to a “do not descend” RA, respond to the weakening RA by adjusting the aircraft’s vertical speed or pitch angle as required by the RA display;
- Pilots are reminded that prompt and correct reaction to the weakened RA will minimize altitude deviations and disruptions to ATC. This will also reduce the possibility of additional RAs against the intruder or other traffic;
- Excessive responses to RAs are disruptive to ATC and may result in additional RAs.

During such a maneuver the PM must advise ATC with aircraft ‘Call Sign’ followed by ‘**TCAS RA’**. When returning to assigned clearance then the PM is to inform ATC ‘Returning to _____ft/FL _____’.

3.14.2 Refer to the following table for TCAS II – Voice messages and pilot response:

- TCAS II Version 7.1 - VOICE MESSAGES AND PILOT RESPONSE

VOICE MESSAGE	TYPE of MESSAGE	PILOT RESPONCE
'TRAFFIC, TRAFFIC'		**Gain visual contact with traffic, Check the TACS II display for range and bearing of the traffic if necessary. Assess the threat and prepare to execute the evasive manoeuvre if a Resolution Advisory (RA) is subsequently issued.**
'CLIMB, CLIMB'	**Corrective**	**Change vertical speed to 1500FPM climbing. Or as indicated by the GREEN band on the IVSI**
'CLIMB, CROSSING CLIMB, CLIMB, CROSSING CLIMB'	**Corrective**	**Change vertical speed to 1500FPM climbing. Or as indicated by the GREEN band on the IVSI. This message indicates that flight paths will cross at some altitude.**
'INCREASE CLIMB, INCREASE CLIMB	**Corrective**	**This follows a CLIMB voice massage. The climbing vertical speed is typically increased to 2500FPM as shown by the GREEN band on the VSI**
'LEVEL OFF, LEVEL OFF'	**Corrective**	**Reduce the vertical rate to 0 ft/min (i.e. level off)**
'DESCEND, DESCEND NOW, DESCEND, DESCEND NOW'	**Corrective**	**This follows a CLIMB voice message. This message indicates that a reversal of vertical speed from a climb to a descent is needed to provide adequate separation**
'DESCEND, DESCEND'	**Corrective**	**Change vertical speed to 1500FPM descending. Or as indicated by the GREEN band on the IVSI**
DESCEND, CROSSING DESCEND, DESCEND, CROSSING DESCEND'	**Corrective**	**Change vertical speed to 1500FPM descending. Or as indicated by the green band on the IVSI. This message indicates that flight paths will cross at some altitude.**
'INCREASE DESCENT, INCREASE DESCENT'	**Corrective**	**This follows a DESCENT voice massage. The descending vertical speed is typically increased to 2500FPM as shown by the GREEN band on the VSI**
'CLIMB, CLIMB NOW, CLIMB, CLIMB NOW'	**Corrective**	**This follows a DESCENT voice message. This message indicates that a reversal of vertical speed from a descent to a climb is needed to provide adequate separation**
'CLEAR OF CONFLICT'		**Resume normal flight. Apparent conflict of airspace has been resolved**
'MONITOR VERTICAL SPEED'	**Preventative**	**Be alert for approaching traffic. Ensure that the IVSI needle does not enter the area of the RED band**
'MAINTAIN VERTICAL SPEED, MAINTAIN'	**Preventative**	**Maintain present vertical speed and direction. Ensure that the IVSI needle does not enter the area of the RED band**
'MAINTAIN VERTICAL SPEED, CROSSING, MAINTAIN'	**Preventative**	**A flight path crossing is predicted, but being monitored by the TCAS II. Maintain present vertical speed and direction. Ensure that the IVSI needle does not enter the area of the RED band**

3.15 Emergency Evacuation Procedures

3.15.1 Emergency Landing/Ditching

Ditching instructions will need to be referenced from the recommendations by the manufacturer.

Surface winds are normally 2/3rds the 2,000 feet wind and the wind backs in the Northern Hemisphere and veers in the South.

Wind effect on the surface varies between ruffled surfaces at light winds increasing to white capped waves at wind speeds of 15kts or more to spray appearing on the crests at 30+ kts to gale force.

3.15.2 Ditching Techniques

It is preferable to land along the crest of the wave rather than across to reduce the risk of braking up on impact.

Keep a small amount of fuel in order to fly the aircraft and keep systems operating in order to affect a positive landing.

It is recommended to keep the undercarriage up but use of full flap or partial flap is required.

Complete the following actions prior and post ditching in water:

- ELT – Activate;
- Prior to ditching select cabin pressurization – DUMP;
- Passengers to don lifejackets - do not inflate until clear of aircraft;
- Seat backs upright;
- Seat belts tight;
- Non-handling pilot to inform passengers 'BRACE, BRACE, BRACE' prior to impact;
- Seat belts to remain fastened until aircraft comes completely to rest;
- Undo seat belts;
- Non-handling pilot to open main cabin door;
- Handling pilot to emergency exit;
- Dinghy (if carried) to be deployed and inflated;
- Non-handling pilot to take the First Aid Kit;
- Passengers and crew to leave aircraft;
- Inflate lifejackets when clear of aircraft;
- Board dinghy (if carried);
- Roll call;
- Initiate distress beacon.

3.16 Departure & Enroute contingency procedures.

Please refer to Operations manual Part A – Section 8 (Operating Procedures), for Takeoff / Departure Alternate aerodrome suitability.

In addition please also refer to Operations Manual Part A, for Enroute alternate planning and suitability.

Complete the following actions prior and post forced landing:

- ELT – Activate;
- Seat backs upright;
- Seat belts tight;
- Non handling pilot to inform passengers 'BRACE, BRACE, BRACE' prior to impact;
- Position aircraft on ground so that the main door is upwind;
- Seat belts to remain fastened until aircraft comes completely to rest;
- Undo seat belts;
- Non-handling pilot to open main cabin door;
- Handling pilot to emergency exit;
- Passengers and crew to leave aircraft;
- Non-handling pilot to take the First Aid Kit;
- Roll call.

3.17 Operating Abnormalities

Memory Items

Some items are required to be completed from memory. While these items by nature are time critical, the procedure must not be rushed. In the case of an engine failure after take-off where the Autofeather system has failed to operate, proper communication, accuracy and execution of the procedure is vital to continued flight safety. A review of actions should be carried out in the pre-departure brief.

Below is a list of the memory items from the Quick Reference Handbook. In most cases there are additional items to be completed. These must be referenced from the Quick Reference Handbook.

Engine Failure

Emergency Engine Shutdown

UNSCHEDULED TORQUE INCREASE IN FLIGHT (Not responsive to power lever movement)
ENGINE FIRE IN FLIGHT
ENGINE FAILURE IN FLIGHT

Affected Engine:	
Condition Lever	**FUEL CUTOFF**
Prop Lever	**FEATHER**
Firewall Shutoff Valve	**CLOSE**
Fire Extinguisher (If fire warning persists)	**ACTUATE**

ENGINE FIRE ON GROUND

Condition Lever	**FUEL CUT OFF**
Fuel Firewall Valve	**CLOSE**
Starter Switch	**STARTER ONLY**
Fire Extinguisher	**ACTUATE**

ENGINE FAILURE DURING TAKE OFF (AT OR BEFORE V_R) – TAKE OFF ABORTED

Power Levers	**GROUND FINE**
Brakes	**AS REQD TO ACHIEVE STOPPING DISTANCE**
Operative Engine	**MAXIMUM REVERSE***

***WARNING – Extreme caution must be exercised when using single engine reverse on surfaces with reduced traction.**

ENGINE FAILURE DURING TAKE OFF (AT OR ABOVE $V_{R)}$ – TAKE OFF CONTINUED

Power	**MAX ALLOWABLE**
Airspeed	**MAINTAIN (take off speed or above)**
Landing Gear	**UP**
Propeller	**VERIFY FEATHERED (If prop doesn't autofeather then must be Manually feathered)**
Airspeed	**(After obstacle clearance altitude is Reached) – Vyse**

ENGINE FAILURE IN FLIGHT BELOW AIR MINIMUM CONTROL SPEED (V_{MCA})

Power	**REDUCE AS REQD TO MAINTAIN CONTROL**
Nose	**LOWER TO ACCELERATE ABOVE V_{MCA}**

ENGINE FLAMEOUT (2ND ENGINE)

Power Lever	**IDLE**
Prop Lever	**DO NOT FEATHER**
Conditon Lever	**FUEL CUTOFF**

Conduct Air Start Procedures in ABNORMAL PROCEDURES

Fuel System

FUEL PRESSURE LOW

Standby Pump (failed side)	**ON**

Smoke and Fume Removal

ELECTRICAL SMOKE OR FIRE	
Oxygen Masks	**DON**
Mask Selector Switches	**EMERG POSITION**
Headsets	**DON, OR AUDIO SPEAKERS – ON**
Mic Switches	**OXYGEN MASK**

ENVIRONMENTAL SYSTEM SMOKE OR FUMES	
Oxygen Masks	**DON**
Mask Selector Switch	**EMERG POSITION**
Headsets	**DON, OR AUDIO SPEAKERS – ON**
Mic Switches	**OXYGEN MASK**

Airstair Door/Cargo Door Unlocked

AIRSTAIR DOOR/CARGO DOOR UNLOCKED	
All Occupants	**SEATED WITH SEATBELTS SECURELY FASTENED**

Emergency Descent / Glide

EMERGENCY DESCENT	
Power Levers	**IDLE**
Prop Levers	**FULL FORWARD**
Flaps (200kts Maximum)	**APPROACH**
Landing Gear (181kts Maximum)	**DN**
Airspeed	**181kts Maximum**

GLIDE	
Landing Gear	**UP**
Flaps	**UP**
Propellers	**FEATHERED**
Airspeed	**135 Knots**

Electrical

DUAL GENERATOR FAILURE	
Generators	**RESET, THEN ON**
If either Generator will Reset:	
Operating Generator	**DO NOT EXCEED 100% (88% ABOVE 31,000 feet)**

Flight Controls

UNSHEDULED ELECTRIC ELEVATOR TRIM

Airplane Attitude	**MAINTAIN USING ELEVATOR CONTROL**
AP/Trim Disconnect Switch	**DEPRESS FULLY**

UNSCHEDULED RUDDER BOOST ACTIVATION

Directional Control	**MAINTAIN USING RUDDER PEDALS**
Rudder Boost	**OFF**
If condition persists	
Rudder Boost Circuit Breaker	**PULL**

Environmental Systems

USE OF OXYGEN

Oxygen Masks	**DON**
Headsets	**DON, OR AUDIO SPEAKERS – ON**
Mic Switches	**OXYGEN MASKS**

PRESSURISATION LOSS

Oxygen Masks	**DON**
Headsets	**DON, OR AUDIO SPEAKERS – ON**
Mic Switches	**OXYGEN MASK**
Passenger Manual Drop-out	**PULL ON [PASS OXY ON] ILLUMINATED**
Descend	**AS REQUIRED**

HIGH DIFFERENTIAL PRESSURE

If Cabin Differential Pressure exceeds 6.6psi:

Bleed Air Valves	**ENVIR OFF**
Oxygen (crew and passengers)	**AS REQUIRED**
Descend	**AS REQUIRED**

AUTO-DEPLOYMENT OXYGEN SYSTEM FAILURE

[ALT WARN] ILLUMINATED AND [PASS OXY ON] EXTINGUISHED

Passenger Manual Drop-Out **PULL ON**

BLEED AIR FAIL

Bleed Air Valve (affected engine) **INST & ENVIR OFF**

SPINS

Control Column	**FULL FORWARD, AILERONS NEUTRAL**
Full Rudder	**OPPOSITE TO DIRECTION OF SPIN**
Power Levers	**IDLE**
Rudder	**NEUTRALISE WHEN ROTATION STOPS**
Execute a smooth pullout	

Section 4 - Performance

4.1 General

This section covers the following:

(a) Performance classification

(b) Terminology of the terms and relevant to individual operations: and

(c) Restrictions to operation imposed by performance classifications,

(d) Performance data from the Aircraft Flight Manual (AFM), which forms part of this section. The Operations Manual (OM) contains cross reference to data contained in the AFM where such data is not likely to be used often or in an emergency. The performance data in the AFM and OM shall be used to ensure compliance with the requirements of the authority. Due account should be taken of the aircraft configuration environmental conditions and the operation of systems which have an adverse effect on performance.

4.2 The Beechcraft B200 and B200C is classified as a 'Performance Class B'.

4.3 Definition of V1

Not relevant to B200/B200C aircraft as they are operated as Performance Class B

4.3.1 Landing Distances Required

Refer to graphs in the Aircraft Flight Manual for Landing Distance Required. These graphs include the performance factors required by EASA. The landing distance required must not exceed the landing distance available.

4.3.2 Accelerate stop distance available (ASDA)

The length of the take-off run available plus the length of the stopway, if such stopway is declared available by the appropriate authority and is capable of bearing the mass of the aeroplane under the prevailing operating conditions.

4.3.3 Contaminated runway

A runway is considered to be contaminated when more than 25% of the runway surface area (whether in isolated areas or not) within the required length and width that being used, is covered by the following:

(a) Surface water more than 3mm deep, or by slush, or loose snow, equivalent to more than 3mm of water;

(b) Snow which has been compressed into a solid mass which resists further compression and will hold together or break into clumps if picked up (compacted snow) or

(c) Ice, including wet ice.

4.3.4 Damp runway

A runway is considered damp when the surface is not dry, but when the moisture on it does not give a shiny appearance. For the purposes of performance calculations damp runways can be considered dry, unless the commander believes wet runway performance calculations better represent the performance achievable on the day.

4.3.5 Dry runway

A dry runway is one which is neither wet nor contaminated, and includes those paved runways which have been specially prepared with grooves or porous pavement and maintained to retain 'effectively dry' braking action even when moisture is present.

4.3.6 Landing distance available (LDA)

Is the length of the runway which is declared available by the appropriate authority and suitable for the ground round of the aeroplane landing.

4.3.7 Maximum approved passenger seating configuration

The maximum passenger seating capacity of an individual aeroplane, excluding pilot seats or flight deck seats and cabin crew seats as applicable, used by the operator, approved by the authority and specified in the operations manual.

4.3.8 Take-off distance Available (TODA)

The length of the Take-off run available plus the length of the clearway available.

4.3.9 Take-off distance Required (TODR)

The distance required for the aircraft to reach 35ft AGL following the failure of the critical engine at V1, unless the all engines operating is more critical.

4.3.10 Take-off mass

The take-off mass off the aeroplane shall be taken to be its mass, including everything and everyone carried at the commencement of the take-off run.

4.3.11 Take-off and run available (TORA)

The length of the runway which is declared available by the appropriate authority and suitable for the ground run of the aeroplane taking off.

4.3.12 Wet runway

A runway is considered wet it when the runway surface is covered with water, or equivalent, less than specified in paragraph 4.3.3 above or when there is sufficient moisture on the runway surface to cause it to appear reflective, but without significant areas of standing water.

Note: The terms accelerate distance, take off distance, take-off run, and net take off flight path, one engine inoperative en-route net flight path and two engines inoperative en-route net flight path as relating to the aeroplane have their meanings defined in the airworthiness requirement under which the aeroplane was classified all as specified by the Authority if it finds that definition inadequate for showing compliance with the performance operating limitations

4.4 EN-ROUTE (One Engine Inoperative) CAT.POL.A.315

(a) The Aircraft, in forecasted or actual IMC, and in the event of an engine failure, with the remaining engine at Max continuous power. An operator shall ensure aircraft performance capability of continuing the flight at or above the minimum altitudes for safe flight (MSA) to a point 1000' above the aerodrome at which the performance requirements can be met.

(b) It should be assumed at the point of engine failure:

(1) The aircraft is not at an altitude exceeding the rate of climb of 300'/min with all engines operating within the maximum continuous power settings

(2) The en-route gradient (OEI) shall be the gross gradient of descent or climb as appropriate. Respectively increased by 0.5% or decreased by the same value.

4.5 Landing - Destination and Alternate Aerodromes

(a) A Commander shall ensure the that the landing mass of the aeroplane, does not exceed the maximum landing mass specified for the altitude and the ambient temperature expected for the estimated time of landing at the destination and alternative aerodrome

4.5.1 Landing - Dry Runway

(a) A Commander shall ensure where that the landing mass of the aeroplane for the estimated time of landing, at the destination aerodrome and at any alternate aerodrome allows a full stop landing from 50 feet above the threshold, within a 70% of the landing distance available.

1) The altitude at the aerodrome,

2) Not more than 50% of the Headwind component, or not less than 150% of the tailwind component

3) The Runway surface condition

4) The Runway slope

(b) For Steep Approaches: (Not Approved – CAT.POL.A.345 Required)

(c) For Short field landings, operators shall use landing distance data factored in accordance with (a) and short Landings operations approval (CAT.POL.A.350)

(d) For Dispatching the aircraft in accordance with (a) or (c)

1) The aeroplane will land on the most favourable runway, in still air; and

2) The aeroplane will land on the runway most likely to be assigned considering the probable wind speed and direction and the ground handling characteristics of the aeroplane, and considering other conditions such as landing aids and terrain.

(e) If an operator is unable to comply with the sub-paragraph (d)(2) above for the destination aerodrome, the aircraft shall only be dispatched if an alternate aerodrome is designated which permits full compliance with (a) to (d)

4.5.2 Landing - Wet and Contaminated Runways

(a) An operator shall ensure that when the appropriate weather reports or forecasts, or a combination thereof indicate that the runway at the estimated time of arrival may be wet the landing distance available is at least 115% of the required landing distance, determined in accordance with the limitations laid down in 4.5.1 above

(b) When the appropriate weather reports or forecasts indicate that the runway at the ETA may be contaminated, the landing distance shall not exceed LDA

(c) A landing distance on a wet runway shorter than that required by sub-paragraph (a) above, but not a less than that required on a dry runaway may be used if the aeroplane flight manual includes specific additional information about landing distances on wet runways

4.6 Contaminated Runway Operations General

All contaminated runway performance is based on analytical corrections of dry, hard surface flight data. The analytical corrections are based on guidance provided by Acceptable Means of Compliance. The contaminated runway performance assumes that:-

1. The contaminant is spread over the entire runway surface to and even depth and density and does not exceed 0.5 inch in depth (although rutting for example, may have taken place)
2. The contaminant is of a uniform specific gravity as listed below
3. If the specific gravity is not reported then the valve that gives the longest TODR should be used.

Contaminant Assumed Specific Gravity

Dry Snow	0.20 Specific Gravity
Wet Snow	0.50 Specific Gravity
Slush	0.85 Specific Gravity
Standing Water	1.00 Specific Gravity

Where the contaminant has been sanded, graded (mechanically levelled) or otherwise treated before use, that it has been done in accordance with agreed national procedures.

Operations on runways contaminated with standing water, slush, wet snow, dry snow, or other contaminants implies uncertainties with regard to runway friction and contaminant drag and therefore to the achievable performance and control of the airplane during take-off, since the actual conditions not completely match the assumptions on which the performance is based. Where ever possible, every effort should be made to ensure that the runway surface is cleared of any significant contamination.

The provision of performance information for contaminated runways should not be taken as implying that ground handling characteristics on these surfaces will be as good as can be achieved on dry or wet runways, in particular following engine failure, operating in crosswinds or when using reverse thrust.

Tests on contaminated runways have not identified clear, consistent trends with respect to the effect of ambient temperature on braking action for specific runway contaminant. The case where the surface temperature is at the melting point (i.e. about 0º C) may be an exception as a water film may form by surface melting and result in reduced friction and consequently braking performance.
The guidance provided does not address surfaces comprised of multiple contaminant types such as loose snow, slush, standing water covering compacted snow or any other cases where multiple contaminant types are present.

Actual runway conditions that differ from the definitions in this section may lead to performance that is different from that shown. Interpolation between tabulated contaminated runway depths is not permitted. For conservative performance, contamination depths that lie between the values provided should be rounded up (for take-off performance) and rounded down (for landing performance) to the closest value for which performance is shown.

The contaminated runway performance information does not in any way replace or amend the Operating Limitations and Performance information listed in the Pilots Operating Handbook / Aircraft Flight Manual unless otherwise stated in this section.

4.7 Definitions

4.7.1 VNO

Normal operating limit = maximum cruising speed

4.7.2 Gradient of Climb

The ratio, in the same units, and expressed as a percentage of:

$$\frac{\text{Change in Height}}{\text{Horizontal distance travelled}}$$

The gradients of climb shown on the charts are true gradients*, i.e. they are derived from true (not pressure) rates of climb.*

4.7.3 Gross Performance

The average performance which a fleet of aeroplanes can be expected to achieve if satisfactorily maintained and flown in accordance with the associated techniques described in the manual.

4.7.4 Net Performance

Net performance is the gross performance, diminished by amounts specified in the British Civil airworthiness requirements to allow for various contingencies which cannot be directly accounted for operationally i.e. the need to manoeuvre, unavoidable variations in piloting technique, the temporary below-average performance, etc. Providing that the aeroplane is flown in accordance with the recommended procedures it is extremely unlikely that the performance will be worse than the net performance scheduled.

4.8 Validity of Performance Information

The performance information is not valid if:

1) The total loaded weight exceeds the relevant maximum permissible (take-off and landing) weight appropriate to the altitude and temperature.
2) The aeroplane is flown when the outside air temperature exceeds the appropriate maximum temperature for which operational suitability has been established.
3) Readings from the charts are obtained by extrapolation (i.e. using the values of parameters outside the range given on the charts) except as and when specifically permitted. At temperatures below the lowest range scheduled the performance shall be assumed to be not better than that appropriate to the lowest temperature scheduled.

4.9 Flight with Landing Gear Down

Hawker Beechcraft do not publish data for flight in this configuration. Approval for Ferry Flight may be sought by the relevant Authorities (EASA).

4.10 Flight in Icing Conditions

The AFM provides limited performance information for flight in icing conditions. For flight in icing conditions the pitot heat, engine anti-ice, and windshield anti-ice must be on. A regular visual check of the wing leading edges should be carried out so the wing/stab de-ice system can be cycled at the appropriate time. Extra fuel checks should be carried out every 15 minutes to ensure sufficient is remaining at destination. Diversion fuel should be recalculated and extra fuel allowed if required.

If severe icing is present:

(a) Efforts must be made immediately to exit the icing conditions

(b) Leave flaps in current position (do not extend or retract until icing is clear)

(c) Hold control wheel firmly and disengage autopilot. Expect control wheel force and maintain as necessary to achieve desired flight path.

(d) Avoid abrupt and excessive manoeuvring that may aggravate control problems

(e) If unusual or uncommanded roll is encountered, reduce angle of attack

4.11 Landing with Ice Accumulation on the Wings

WARNING Due to distortion of the wing airfoil, ice formations on the wing leading edges can cause significant losses in rate of climb, cruise speed and range as well as increases in buffet and stall speeds. The stall warning system should not be relied upon. However, with ice accumulations on the wing leading edges, significant aerodynamic buffet will occur well in advance of the actual stall. Do not attempt flight at speeds below the onset of aerodynamic buffet.

If any ice accumulation is visible on the wing leading edges, the following approach and landing procedures must be followed:

1. Airspeed MAINTAIN 200-250 KIAS
2. Fuel Management CHECK
3. VREF, LDG DISTANCE CONFIRM

NOTE: Increase final approach airspeed to VREF + 15 KIAS. Landing Distance will increase approximately 25%.

4.12 Failures

For failures of anti-ice equipment refer to the MEL and the appropriate checklist.

4.13 Flights under the Provisions of the CDL

See Section 8

4.14 Effects of De-Icing/Anti-Icing Fluids

Ops manual Part A section 8.2.4 contains information on the use of and holdover times of de-icing/anti-icing fluids.

4.15 APG:

4.15.1 Introduction

Runway Analysis provides the means to determine maximum allowable takeoff and landing weights based upon the following:

Airport characteristics consisting of airport elevation, runway gradient and length, runway contaminants, and the obstructions within the takeoff flight path, Environmental conditions consisting of temperature, wind, and pressure altitude.

Aircraft Configurations consisting of power settings, flap settings, bleed configurations, and Minimum Equipment List (MEL) inoperative components. The performance and limitations are as outlined in the Approved Airplane Flight Manual (AFM) for the specific aircraft considered. All takeoff and landing airport analysis data provided by Aircraft Performance Group complies with EU-OPS regulations.

4.15.2 Take-off (*CAT.POL.A.305)*

(a) The take-off mass shall not exceed the maximum take-off mass specified in the AFM for the pressure altitude and the ambient temperature at the aerodrome of departure.

(b) The unfactored take-off distance, specified in the AFM, shall not exceed:

(1) when multiplied by a factor of 1,25, the take-off run available (TORA); or
(2) when stop way and/or clearway is available, the following:
(i) the TORA;
(ii) when multiplied by a factor of 1,15, the take-off distance available (TODA); or
(iii) when multiplied by a factor of 1,3, the ASDA.

(c) When showing compliance with (b), the following shall be taken into account:
(1) the mass of the aeroplane at the commencement of the take-off run;
(2) the pressure altitude at the aerodrome;
(3) the ambient temperature at the aerodrome;
(4) the runway surface condition and the type of runway surface;
(5) the runway slope in the direction of take-off; and
(6) not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component.

RUNWAY SLOPE

Unless otherwise specified in the AFM, or other performance or operating manuals from the manufacturer, the take-off distance should be increased by 5 % for each 1 % of upslope except that correction factors for runways with slopes in excess of 2 % should only be applied when the operator has demonstrated to the competent authority that the necessary data in the AFM or the operations manual contain the appropriated procedures and the crew is trained to take-off in runway with slopes in excess of 2 %.

RUNWAY SURFACE CONDITION

(a) Due to the inherent risks, operations from contaminated runways are inadvisable, and should be avoided whenever possible. Therefore, it is advisable to delay the take-off until the runway is cleared.

(b) Where this is impracticable, the commander should also consider the excess runway length available including the criticality of the overrun area.

Take-off obstacle clearance — multi-engined aeroplanes (*CAT.POL.A.310)*

(a) The take-off flight path of aeroplanes with two or more engines shall be determined in such a way that the aeroplane clears all obstacles by a vertical distance of at least 50 ft, or by a horizontal distance of at least 90 m plus 0,125 × D, where D is the horizontal distance travelled by the aeroplane from the end of the TODA or the end of the take-off distance if a turn is scheduled before the end of the TODA, except as provided in (b) and (c). For aeroplanes with a wingspan of less than 60 m, a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m plus 0,125 × D may be used. It shall be assumed that:

(1) the take-off flight path begins at a height of 50 ft above the surface at the end of the takeoff distance required by *CAT.POL.A.305(b)* and ends at a height of 1 500 ft above the surface;
(2) the aeroplane is not banked before the aeroplane has reached a height of 50 ft above the surface, and thereafter the angle of bank does not exceed 15°;
(3) failure of the critical engine occurs at the point on the all engine take-off flight path where visual reference for the purpose of avoiding obstacles is expected to be lost;
(4) the gradient of the take-off flight path from 50 ft to the assumed engine failure height is equal to the average all-engines gradient during climb and transition to the en-route configuration, multiplied by a factor of 0,77; and

(5) the gradient of the take-off flight path from the height reached in accordance with (a)(4) to the end of the take-off flight path is equal to the OEI en-route climb gradient shown in the AFM.

(b) For cases where the intended flight path does not require track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:
(1) 300 m, if the flight is conducted under conditions allowing visual course guidance navigation, or if navigational aids are available enabling the pilot to maintain the intended flight path with the same accuracy; or
(2) 600 m, for flights under all other conditions.

(c) For cases where the intended flight path requires track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:
(1) 600 m, for flights under conditions allowing visual course guidance navigation; or
(2) 900 m, for flights under all other conditions.

(d) When showing compliance with (a) to (c), the following shall be taken into account:

(1) the mass of the aeroplane at the commencement of the take-off run;
(2) the pressure altitude at the aerodrome;
(3) the ambient temperature at the aerodrome; and
(4) not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component.

(b) The requirements in (a)(3), (a)(4), (a)(5), (b)(2) and (c)(2) shall not be applicable to VFR operations by day.

TAKE-OFF FLIGHT PATH — VISUAL COURSE GUIDANCE NAVIGATION

(a) In order to allow visual course guidance navigation, the weather conditions prevailing at the time of operation, including ceiling and visibility, should be such that the obstacle and/or ground reference points can be seen and identified. For VFR operations by night, the visual course guidance should be considered available when the flight visibility is 1 500 m or more.

(b) The operations manual should specify, for the aerodrome(s) concerned, the minimum weather conditions that enable the flight crew to continuously determine and maintain the correct flight path with respect to ground reference points so as to provide a safe clearance with respect to obstructions and terrain as follows:

(1) the procedure should be well defined with respect to ground reference points so that the track to be flown can be analysed for obstacle clearance requirements;
(2) the procedure should be within the capabilities of the aeroplane with respect to forward speed, bank angle and wind effects;
(3) a written and/or pictorial description of the procedure should be provided for crew use; and
(4) the limiting environmental conditions should be specified *(e.g. wind, cloud, visibility, day/night, ambient lighting, obstruction lighting).*

TAKE-OFF FLIGHT PATH CONSTRUCTION

(a) For demonstrating that the aeroplane clears all obstacles vertically, a flight path should be constructed consisting of an all-engines segment to the assumed engine failure height, followed by an engine-out segment. Where the AFM does not contain the appropriate data, the approximation given in (b) may be used for the all-engines segment for an assumed engine failure height of 200 ft, 300 ft, or higher.

(b) Flight path construction

(1) All-engines segment (50 ft to 300 ft)
The average all-engines gradient for the all-engines flight path segment starting at an altitude of 50 ft at the end of the take-off distance ending at or passing through the 300 ft point is given by the following formula:

$$Y_{300} = \frac{0{\cdot}57(Y_{ERC})}{1+(V_{ERC}^{\ 2} - V_2^{\ 2})/5647}$$

The factor of 0.77 as required by *CAT.POL.A.310* is already included where:
Y300 = average all-engines gradient from 50 ft to 300 ft;
YERC = scheduled all engines en-route gross climb gradient;
VERC = en-route climb speed, all engines knots true airspeed (TAS);
V2 = take-off speed at 50 ft, knots TAS;

(2) All-engines segment (50 ft to 200 ft)

This may be used as an alternative to (b)(1) where weather minima permit. The average allengines gradient for the all-engines flight path segment starting at an altitude of 50 ft at the end of the take-off distance ending at or passing through the 200 ft point is given by the following formula:

$$Y_{200} = \frac{0{\cdot}51(Y_{ERC})}{1+(V_{ERC}^{\ 2} - V_2^{\ 2})/3388}$$

The factor of 0.77 as required by CAT.POL.A.310 is already included where:
Y200 = average all-engines gradient from 50 ft to 200 ft;
YERC = scheduled all engines en-route gross climb gradient;
VERC = en-route climb speed, all engines, knots TAS;
V2 = take-off speed at 50 ft, knots TAS.

(3) All-engines segment (above 300 ft)
The all-engines flight path segment continuing from an altitude of 300 ft is given by the AFM en-route gross climb gradient, multiplied by a factor of 0.77.
(4) The OEI flight path
The OEI flight path is given by the OEI gradient chart contained in the AFM.

OBSTACLE CLEARANCE IN LIMITED VISIBILITY

(a) Unlike the Certification Specifications applicable for performance class A aeroplanes, those for performance class B aeroplanes do not necessarily provide for engine failure in all phases of flight. It is accepted that performance accountability for engine failure need not be considered until a height of 300 ft is reached.

(b) The weather minima given up to and including 300 ft imply that if a take-off is undertaken with minima below 300 ft, an OEI flight path should be plotted starting on the all-engines take-off flight path at the assumed engine failure height. This path should meet the vertical and lateral obstacle clearance specified in *CAT.POL.A.310*. Should engine failure occur below this height, the associated visibility is taken as being the minimum that would enable the pilot to make, if necessary, a forced landing broadly in the direction of the take-off. At or below 300 ft, a circle and land procedure is extremely inadvisable. The weather minima provisions specify that, if the assumed engine failure height is more than 300 ft, the visibility should be at least 1 500 m and, to allow for manoeuvring, the same minimum visibility should apply whenever the obstacle clearance criteria for a continued take-off cannot be met.

TAKE-OFF FLIGHT PATH CONSTRUCTION

(a) This GM provides examples to illustrate the method of take-off flight path construction given in *AMC2 CAT.POL.A.310*. The examples are based on an aeroplane for which the AFM shows, at a given mass, altitude, temperature and wind component the following performance data:

— factored take-off distance – 1 000 m;

— take-off speed, V2 – 90 kt;
- en-route climb speed, VERC – 120 kt;
- en-route all-engines climb gradient, YERC – 0.2;
- en-route OEI climb gradient, YERC-1 – 0.032.

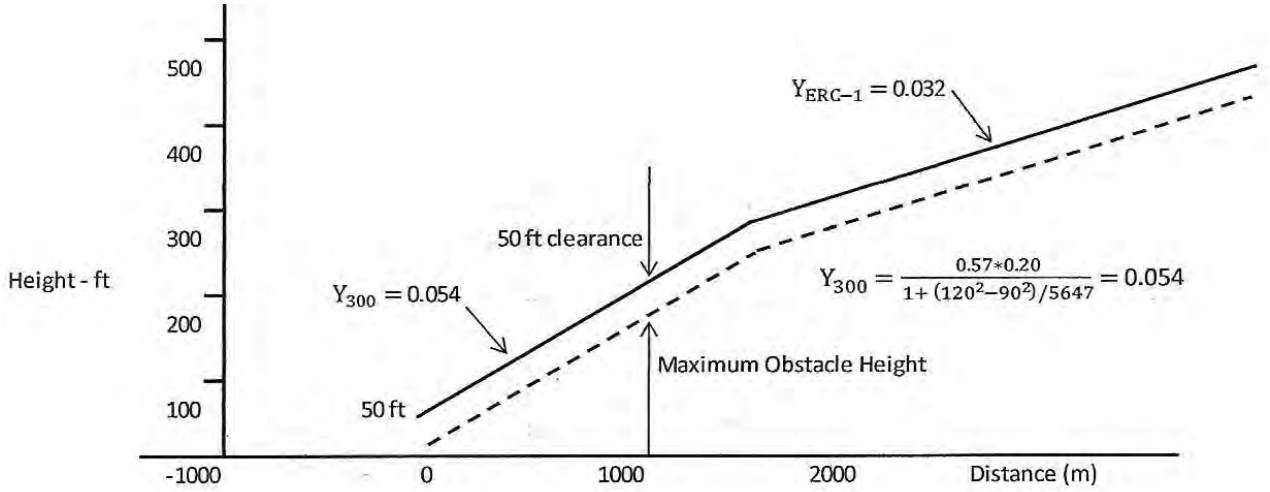
(1) Assumed engine failure height 300 ft

The average all-engines gradient from 50 ft to 300 ft may be read from Figure 1 or calculated with the following formula:

$$Y_{300} = \frac{0{\cdot}57(Y_{ERC})}{1+(V_{ERC}^{\,2} - V_2^{\,2})/5647}$$

The factor of 0.77 as required by CAT.POL.A.310 is already included where:
Y300 = average all-engines gradient from 50 ft to 300 ft;
YERC = scheduled all engines en-route gross climb gradient;
VERC = en-route climb speed, all engines knots TAS; and
V2 = take-off speed at 50 ft, knots TAS.

Figure 1
Assumed engine failure height 300 ft



(2) Assumed engine failure height 200 ft

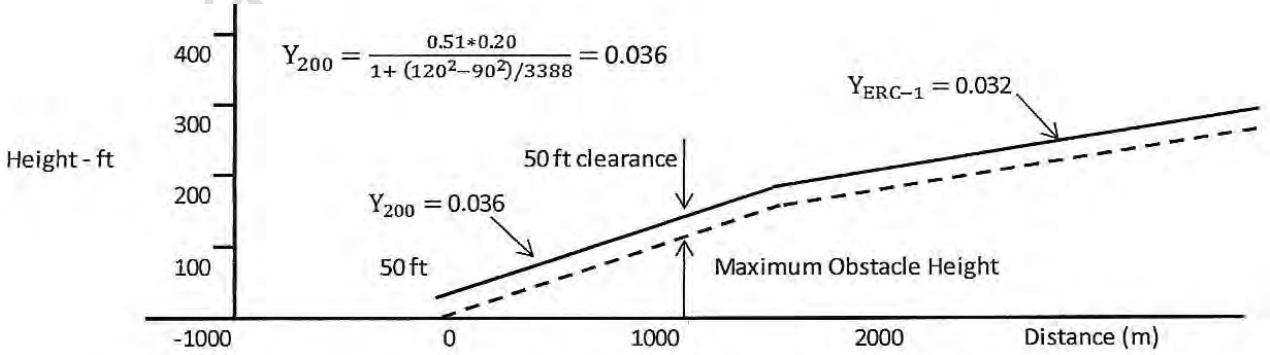
The average all-engines gradient from 50 ft to 200 ft may be read from Figure 2 or calculated with the following formula:

$$Y_{200} = \frac{0{\cdot}51(Y_{ERC})}{1+(V_{ERC}^{\ 2} - V_2^{\ 2})/3388}$$

The factor of 0.77 as required by CAT.POL.A.310 is already included where:
Y200 = average all-engines gradient from 50 ft to 200 ft;
YERC = scheduled all engines en-route gross gradient;
VERC = en-route climb speed, all engines, knots TAS; and

V2 = take-off speed at 50 ft, knots TAS.

Figure 2
Assumed engine failure height 200 ft



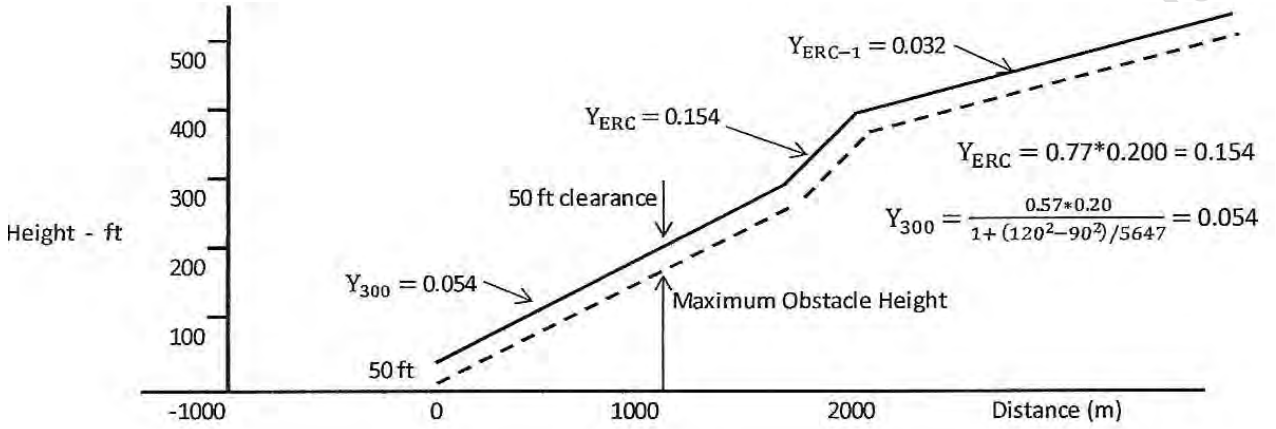
(3) Assumed engine failure height less than 200 ft

Construction of a take-off flight path is only possible if the AFM contains the required flight path data.

(4) Assumed engine failure height more than 300 ft

The construction of a take-off flight path for an assumed engine failure height of 400 ft is illustrated below.

Figure 3
Assumed engine failure height less than 200 ft



Note: In APG some runways/airports require a "Special Departure Procedure" in order to optimize takeoff weight in terrain sensitive areas. The specific description of the Special Departure Procedure is outlined on a separate page attached to the takeoff airport analysis. These procedures describe the non-standard, one engine inoperative, departure flight path. The maximum allowable takeoff weights, presented in the subsequent analysis, are based upon following the specific procedure(s) outlined.

4.15.3 Landing *CAT.POL.A.325*

LANDING — DESTINATION AND ALTERNATE AERODROMES

The landing mass of the aeroplane determined in accordance with *CAT.POL.A.105(a)* shall not exceed the maximum landing mass specified for the altitude and the ambient temperature expected at the estimated time of landing at the destination aerodrome and alternate aerodrome.

ALTITUDE MEASURING

The operator should use either pressure altitude or geometric altitude for its operation and this should be reflected in the operations manual.

Landing — dry runways *CAT.POL.A.330*

(a) The landing mass of the aeroplane determined in accordance with *CAT.POL.A.105(a)* for the estimated time of landing at the destination aerodrome and at any alternate

aerodrome shall allow a full stop landing from 50 ft above the threshold within 70 % of the LDA taking into account:

(1) the altitude at the aerodrome;
(2) not more than 50 % of the headwind component or not less than 150 % of the tailwind component;
(3) the runway surface condition and the type of runway surface; and
(4) the runway slope in the direction of landing.

(b) For steep approach operations, the operator shall use landing distance data factored in accordance with (a) based on a screen height of less than 60 ft, but not less than 35 ft, and comply with *CAT.POL.A.345.*

(c) For short landing operations, the operator shall use landing distance data factored in accordance with (a) and comply with *CAT.POL.A.350.*

(d) For dispatching the aeroplane in accordance with (a) to (c), it shall be assumed that:

(1) the aeroplane will land on the most favourable runway, in still air; and
(2) the aeroplane will land on the runway most likely to be assigned considering the probable wind speed and direction, the ground handling characteristics of the aeroplane and other conditions such as landing aids and terrain.

(e) If the operator is unable to comply with (d)(2) for the destination aerodrome, the aeroplane shall only be dispatched if an alternate aerodrome is designated that permits full compliance with (a) to (d).

RUNWAY SLOPE

Unless otherwise specified in the AFM, or other performance or operating manuals from the manufacturer, the landing distances required should be increased by 5 % for each 1 % of downslope.

LANDING MASS

CAT.POL.A.330 establishes two considerations in determining the maximum permissible landing mass at the destination and alternate aerodromes.

(a) Firstly, the aeroplane mass will be such that on arrival the aeroplane can be landed within 70 % of the LDA on the most favourable (normally the longest) runway in still air. Regardless of the wind conditions, the maximum landing mass for an aerodrome/aeroplane configuration at a particular aerodrome cannot be exceeded.

(b) Secondly, consideration should be given to anticipated conditions and circumstances. The expected wind, or ATC and noise abatement procedures, may indicate the use of a different runway. These factors may result in a lower landing mass than that permitted under (a), in which case dispatch should be based on this lesser mass.

(c) The expected wind referred to in (b) is the wind expected to exist at the time of arrival.

Landing — wet and contaminated runways (***CAT.POL.A.335)***

(a) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be wet, the LDA shall be equal to or exceed the required landing distance, determined in accordance with CAT.POL.A.330, multiplied by a factor of 1,15.

(b) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be contaminated, the landing distance shall not exceed the LDA. The operator shall specify in the operations manual the landing distance data to be applied.

(c) A landing distance on a wet runway shorter than that required by (a), but not less than that required by *CAT.POL.A.330(a),* may be used if the AFM includes specific additional information about landing distances on wet runways.

Take-off and landing climb requirements ***(CAT.POL.A.340)***

The operator of a two-engined aeroplane shall fulfil the following take-off and landing climb requirements.

(a) Take-off climb

(1) All engines operating

(i) The steady gradient of climb after take-off shall be at least 4 % with:

(A) take-off power on each engine;

(B) the landing gear extended, except that if the landing gear can be retracted in not more than seven seconds, it may be assumed to be retracted;

(C) the wing flaps in the take-off position(s); and

(D) a climb speed not less than the greater of 1,1 VMC (minimum control speed on or near ground) and 1,2 VS1 (stall speed or minimum steady flight speed in the landing configuration).

(2) OEI

(i) The steady gradient of climb at an altitude of 400 ft above the take-off surface shall be measurably positive with:

(A) the critical engine inoperative and its propeller in the minimum drag position;

(B) the remaining engine at take-off power;

(C) the landing gear retracted;

(D) the wing flaps in the take-off position(s); and

(E) a climb speed equal to that achieved at 50 ft.

(ii) The steady gradient of climb shall be not less than 0,75 % at an altitude of 1 500 ft above the take-off surface with:

(A) the critical engine inoperative and its propeller in the minimum drag position;

(B) the remaining engine at not more than maximum continuous power;

(C) the landing gear retracted;

(D) the wing flaps retracted; and

(E) a climb speed not less than 1,2 VS1.

(b) Landing climb

(1) All engines operating

(i) The steady gradient of climb shall be at least 2,5 % with:

(A) not more than the power or thrust that is available eight seconds after initiation of movement of the power controls from the minimum flight idle position;

(B) the landing gear extended;

(C) the wing flaps in the landing position; and

(D) a climb speed equal to VREF (reference landing speed).

(2) OEI

(i) The steady gradient of climb shall be not less than 0,75 % at an altitude of 1 500 ft above the landing surface with:

(A) the critical engine inoperative and its propeller in the minimum drag position;

(B) the remaining engine at not more than maximum continuous power;

(C) the landing gear retracted;

(D) the wing flaps retracted; and

(E) a climb speed not less than 1,2 VS1.

4.16 Effects of Engine or Pressurisation Failure - Fuel Planning

Provided that engine failure occurs not before the halfway points, there will be no reduction in range up to 25 knots headwind component. Flight should continue at the highest available drift down level. Normal holding and diversion fuel will be available at destination. If pressurisation fails, descend so as to maintain maximum cabin altitude of 10,000 feet, recalculate fuel required using fuel planning table and forecast winds and if required divert to ERA for uplift of fuel. Flights may be continued unpressurised.

4.17 Effects of using Ice Vanes

At medium to high levels, ice vanes, when extended, will reduce rate of climb, ceiling and cruise TAS (by about 25 knots). However, in the cruise, fuel flow is also reduced and there is no net loss of range. Torque will reduce about 100 lb / ft per side and ITT increase about 20°. At low levels, the power can be restored within engine limits by opening the throttles. Use of ice vanes can be ignored for planning purposes. Use 720° ITT (B200 770°) when climbing with the ice vanes extended, if rate of climb is insufficient at 700° ITT (B200 750°).

4.18 Cabin Environment Control

Cabin, heating is provided by bleed air assisted, in some aircraft, by radiant heating. Air conditioning is controlled by the normal temperature controls, but requires 60% N1 min on the right engine. Selection of the cabin fan to the high speed position is recommended in extremes of either high or low temperature. For maximum cooling on the ground the bleed air valves may be selected to ENVIR OFF INSTR ON.

4.19 Gradient Losses for Banked Climb Outs

In accordance with *AMC OPS 1.495(c)(4)*

1. The Aeroplane Flight Manual generally provides a climb gradient decrement for a 15° bank turn. For bank angles of less than 15°, a proportionate amount should be applied, unless the manufacturer or Aeroplane Flight Manual has provided other data.
2. Unless otherwise specified in the Aeroplane Flight Manual or other performance or operating manuals from the manufacturer, acceptable adjustments to assure adequate stall margins and gradient corrections are provided by the AFM

4.20 Stabilising Height on One Engine

LBS	12000	11000	10000
ISA	18000	20000	22000
ISA + 10	17000	18000	20000

4.21 Speeds and Power Settings

CONDITION	POWER	SPEED KTS	CONFIGURATION
TAKE-OFF	2000/2230	VR 94 IAS	GEAR DOWN FLAP APP CLEAN
CLIMB	1900/2230	121-160 IAS	CLEAN
CRUISE	1700/2230	265 TAS	CLEAN
HOLDING	1700/ As req	160 IAS	CLEAN
PATTERN	1900/800	150 IAS	FLAP APP
GLIDEPATH	1900/550	130 IAS	GEAR DOWN 1 dot above the glide FLAP DN ON GLIDE
THRESHOLD	1900/ As req	85/97 IAS	
ONE ENGINE			
CRUISE	2000/2230	189 TAS	CLEAN
PATTERN	1900/1600	160 IAS	FLAP APP
GLIDEPATH	1900/800	130 IAS	GEAR DOWN on glide FLAP DN when committed to land
THRESHOLD	2000/ As req	103 IAS	

Although these will depend on circumstances, the following are suggested as a guide:

In the event of an engine failure, doubling torque (with-in limits) will maintain speed approximately for any configuration at about 150 knots.

- Gear + 300 lb / ft torque each engine
- FLAP APP + 200 lb / ft torque each engine
- 500 ft/min +/-200 lb / ft torque each engine
- 10 knots +/-100 lb / ft torque each engine

4.22 Simplified Take-Off and Landing Performance

The data in the table below is calculated for 1000 feet AMSL, ISA+10°C, nil wind, nil slope, a hard-surface runway and 40% take-off flap. For Landing Distance calculations Full Flap must be selected. If the TODA/LDA are less than the quoted values for the planned operating weight or if the temperature, altitude or slope are more adverse, then a full calculation of TODR/LDR is to be made using the correct inputs in the AFM charts.

TODA	TOW	LDA	LW	LW (short field)
		1125	12500	
		1050	12000	
990	12500	1025	11500	
840	12000	980	11000	
780	11500	940	10500	
720	11000	900	10000	
680	10500	850	9400	
		800	8700	12500
		750	8000	12000

4.23 Short Field Landings

- UK only, by day, minimum cloud base 500 feet, minimum visibility 1 nm.
- Both engines must be operative, Condition Levers High Idle, with reverse available.
- Use normal approach speed. Vref at threshold.
- Cross landing threshold at 30 feet.

Section 5 - Flight Planning

5.1 Fuel Planning and Management

Jeppesen flight planning software is used for all flight planning. This system will calculate the required fuel for each flight. This figure is generally the absolute minimum required to safely complete the flight using the minimums given below. Commanders are to carry out a gross error check of the fuel figure provided on the PLOG, to ensure that the fuel figure given is correct and to add any additional fuel requirements as required before refuelling.

See Section 1 for fuel limitations / quantities / approved types.

See Operation Manual Part A - Section 8, for additional information on determining fuel quantities.

5.2 Minimum Fuel Requirements

Prior to the commencement of any flight the Aircraft Commander shall ensure that Calculation of fuel required for flight includes:

(a) Taxi Fuel (if significant)

(b) Trip Fuel

(c) Reserve Fuel, consisting of:

- Contingency fuel shall not be less than 5% of the fuel required to fly to the destination.
- Final reserve Fuel to fly for an additional period of 30 minutes for turbine engines.

(d) Alternative fuel to reach the destination alternate aerodrome via the destination, if a destination alternate aerodrome is required; and

(e) Extra fuel, if specified by the commander

5.3 Minimum Fuel Allowances

The following specifies the minimum fuel allowances to be carried in addition to destination fuel. The figures are based on Pilots Operating Manual information and operating experience. Under certain adverse conditions these figures will have to be increased e.g. flight with engine anti-ice on.

Start and Taxi	90 lbs
Flight to an alternate	300 lbs
30 minutes holding	350 lbs
Approach/Landing	50 lbs

Note: The alternate fuel allowance of 300 lbs is sufficient to fly to and land at an alternate aerodrome within 50 TRACK nm of the destination aerodrome at an average aircraft weight of 11,000lbs. This is assuming that still air and ISA conditions prevail, Maximum Range Power is used to cruise and the aircraft climbs to the F.L. Band FL 80/100.

Under adverse conditions an additional allowance should be made for, head winds and flight at low level. When flight to an alternate requires more than the minimum 300 lbs fuel allowance the fuel required should be calculated on the basis of 6lbs per/nm

Standard holding fuel is sufficient to hold for 30 minutes at an altitude of 1500 ft at an aircraft weight of 11,000 lbs.

1st hour	700 lbs (Includes taxi, T/O, App and Landing Fuel)
2nd hour and subsequent hours	600 lbs

5.4 Allowances When Eng Anti-Ice Is Used

If flight into conditions requiring the use of Eng anti-ice is expected then the following allowances for increased fuel consumption should be used:

Climb	9% increased fuel flow
Cruise and Descent	8% increased fuel flow
Holding	2% increased fuel flow

In addition to the minimum fuel requirements and allowances indicated above, aircraft commanders should consider carrying additional fuel whenever it is known or suspected that excessive delays are likely to be encountered en-route or at destination due to ATC problems i.e. traffic congestion warranting cruise at lower than planned levels or extended holding.

To comply with the foregoing all company flights terminating at Heathrow or Gatwick (or equivalent) are to carry additional fuel sufficient to hold at either of these airports for an additional 15 minutes. Minimum additional fuel allowance for this purpose will be 250lbs.

5.5 Fuel Uplifts

The aircraft Commander shall be responsible for refuelling the aircraft after flight. He shall ensure that the correct grade and quantity of fuel is uplifted and that the amount is recorded on the Technical Log in lbs. The fuel contents gauge readings should be checked to ensure they agree with the amount of fuel uplifted in relation to the previous flights total fuel and fuel burn off. All fuel and oil filter caps must be checked for correct location and fastening. The normal fuel used is JET AI with a spec of DERD 2494 or NATO spec F35.

5.6 In Flight

The company in flight fuel check is included in the navigation flight log. Calculations in flight should be made at the top of climb, or 45 minutes after takeoff if planned cruise level is not achieved, and thereafter every 30 minutes.

5.7 Minimum Fuel Level

By following the company procedures for fuel planning and monitoring crews should avoid reaching a position where the fuel remaining is estimated to have reduced to an

amount where an approach to land should be started without delay. However, this condition will be deemed to exist if a situation is reached where the total fuel remaining is indicated as being 700lbs and Commanders must act as follows.

If continuation of the flight would result in fuel levels below the minimum fuel level at

(a) Destination (700lbs)

(i) assess and take into account the traffic, operational and meteorological conditions prevailing and expected at the destination aerodrome; and

(ii) similarly along the diversion route to the alternate aerodrome; and

(iii) similarly at the destination alternate aerodrome;

When deciding whether to proceed to the destination aerodrome or to divert, so as to land with not less than Final Reserve Fuel.

(b) When the fuel remaining has reached a minimum total quantity of 350lbs. (Final Reserve Fuel). Then Commanders are to consider that an emergency exists and are to land immediately. When seeking assistance from ATC for priority landing it is not sufficient to use the term fuel emergency the emergency call must be prefixed by MINIMUM FUEL or MAYDAY as appropriate.

5.8 Fuel Management En-Route

During flight crews must at all times carefully monitor fuel consumption and flow rates so that any indications of the fuel levels remaining at destination being less than the Final Reserve Fuel as indicated below? Are recognised in sufficient time to consider a suitable course of alternative action. Fuel checks at not less than hourly intervals must be recorded on the PLOG.

5.9 Final Reserve Fuel

Final Reserve Fuel is that required to fly for 30 minutes at 1500 ft above aerodrome level in ISA conditions calculated at the estimated mass on arrival at the alternate or the destination, when no alternate is required (350 lbs).

For flights that use the normal company planning formula the fuel expected to remain at the Missed Approach Point (MAP) of the intended destination should not be less than the sum of:

(a) Fuel required to fly to acceptable alternate

(b) Fuel to hold for 30 minutes at 1500 ft ISA conditions

Every endeavour should be made to ensure that this figure does not fall below 700 lbs.

5.10 Fuel Balance

The B200 Fuel Crossfeed system is not to be used for fuel balance purposes. (OEI emergency situations only)

5.11 Insufficient Fuel Remaining *(refer to Part A Section 8.3.7)*

If in-flight calculations indicate that the fuel remaining at destination will be close to or less than the required alternate fuel plus the Final Reserve Fuel above? Then the aircraft commander must consider re-planning the flight to achieve a more economical fuel burn:

(a) Select and fly at the best speed/level for range. Request a more direct routing

(b) Maintain cruise altitude for as long as possible and use minimum power descent

(c) If available nominate an alternate aerodrome nearer to the destination so as to reduce the overhead destination fuel requirement.

(d) If insufficient economy of fuel burn can be achieved by applying (a) to (d) above then a refuelling stop must be considered.

If, using the above procedure the fuel expected at the destination will still be below the required alternate fuel plus the Final Reserve Fuel, the Commander will:

(a) assess and take into account the traffic, operational and meteorological conditions prevailing and expected at the destination aerodrome; and

(b) similarly along the diversion route to the alternate aerodrome; and

(c) similarly at the destination alternate aerodrome;

When deciding whether to proceed to the destination aerodrome or to divert, so as to land with not less than Final Reserve Fuel

5.12 Isolated Destination Aerodromes

See Part A, Section 8.3.7. Policy and Procedures for in-flight Fuel Management.

5.13 Oil Management and Monitoring

Commanders are to check oil levels and security of filler caps prior to the first flight of the day. Thereafter oil checks should be made at regular intervals. Levels should be checked within 10 minutes of engine shutdown. Any oil replenishment should be recorded on the aircraft Technical Log. The company's maintenance contractor will specify the type and make of engine turbine oil to be used (BP turbine oil 2380). All oil uplifts must be of the same make and type. NEVER mix engine from different manufacturers.

5.14 The PLOG

All flights will complete a PLOG.

This will either be via use of a set of Standard PLOGs or PLOGs prepared prior to flight by the Operations Department. PLOGSs will be contained in the flight brief envelope. Pilots are to complete the PLOG during the course of the flight:

1) As a written record of the flight, to be retained for quality and auditing purposes.

2) As a means of monitoring and recording the progress of the flight on the airways route.

3) As a means of monitoring and recording the actual fuel burn against planned usage.

4) As a means of recording performance information.

5) As a means of recording the members of the crew.

6) As a means of recording - Weather (T/O, Destination, Enroute) R/T frequencies, clearances, ATC instructions, route / height changes, times and any others pertinent information.

The PLOG must be completed in pen, all times are to be in Zulu, runway lengths in meters, weights in pounds, endurance, leg and sortie times in hours and minutes.

The various boxes on the PLOG are labelled as to the information contained within them or the information required to be written in. As a general rule every empty box should have the relevant information inserted by the completion of the flight. If some information is not required a line should be struck through the box to indicate that it has been considered and found to be not pertinent to the particular flight. Further detailed training as to the exact use of the PLOG will be carried out as part of the initial line training.

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6 Section 6 - Mass & Balance

6.1 Mass and Balance

The following data and procedures will allow the A/C to operate safely, and maintain mass and balance of the aircraft within the prescribed envelope. It is the responsibility of the Company (Operator) to ensure the aircraft is properly loaded.

Gama has been approved by the Authority to use Aircraft performance Group (APG) as a primary source for dispatch to establish C of G % Standard Mean Chord (SMC) positions and aircraft performance criteria.

The aircraft library will have calculation sheets in order to achieve a manual calculation if required.

6.1.1 Dry Operating Mass Calculation (DOM)

The Dry Operating Mass is calculated by taking the Basic Empty Mass (BEM) of the aircraft as weighed and adding the masses of the following:

a) Crew and crew hand baggage;
b) Catering and removable passenger service equipment;
c) Fully serviced water and lavatory systems;
d) Aircraft Manuals and iPads;
e) TKS deicing fluid *(as applicable);*
f) Other standard equipment as detailed *(e.g. tow bar, spare wheels, etc…)*

6.1.2 Dry Operating Mass (DOM)

A/C Registration	Serial Number	DOM	C of G
G-SASC	BL-150	9,747.40 lbs	190.68 ins
G-SASD	BL-151	9,747.40 lbs	190.30 ins
G-GMAE (VIP fit)	s/n: BB-1957	9,039.20 lbs	185.91 ins
G-GMAE (Ambulance fit)	s/n: BB-1957	9,339.10 lbs	189.12 ins
G-PCOP	s/n: BB-1860	8,817.00 lbs	184.00 ins

The weight as an Air Ambulance includes:

- Fwd Life Port units inc. stretcher;
- Aft Life Port units inc. stretcher;
- Overhead Serviplex;
- Pilot and Co-pilot seats;
- Fwd left and right partitions;
- Aft belted potty seat, un-serviced.

Note: All the variations include the weights of the following items:
- Crew;
- Lifejackets;
- Fire extinguishes;
- Smoke goggles;
- PBE;

- Flight Manuals;
- Catering unit stocks *(if applicable).*

6.2 C of G Limits (Gear Down) on all King Air B200's

Aft Limit is 196.4" aft of datum, Fwd limit is 185.0" aft of datum at 12500 lbs, with straight line variation to 181.0" aft of datum at 11279 lbs or below. The reference datum is 83.5 ins forward of the nose of the aircraft. The leading edge of the MAC is 171.23 ins aft of the datum.

The MAC length is 70.41 ins.

Additional limits:

- Baggage Compartment 550 lbs less any installed equipment;
- Foyer 150 lbs (clothing on hangers only);
- Floor loading 200 lb/sq ft.

6.3 C of G Calculation Sheet

The following table is an example of a manual calculation sheet. Should it be neccessary this form is to be completed when ever the Commander needs to verify the C of G of the aircraft or when the loading of the aircraft falls outside the standard loading criteria. The following procedure applies:

- The column on the left insert the weight figures as appropriate;
- Multiply the weights by the given arm positions;
- The column on the right is the resultant moments (wt x arm = moment);
- Add the weights in the left column;
- Add the moments in the right column;
- Divide the total moment by the total weight;
- Insert the calculated arm position for the ZFW, ramp. Take-off and landing position;
- Indicate passenger/baggage weights as standard or actual as applicable;
- Check all weights against the limitations indicated;
- The Commander is to sign, date and record the time at the bottom of the sheet.

The resultant weight and arm calculated is then to be checked using the moment limits versus weight chart (AFM) and check C of G position along the bottom of the chart.

Example Calculation Sheet

Gama Aviation	Gama Aviation (UK) Limited	GAL260-G-SASC

G-SASC Loadsheet

LOADSHEET **KingAir B200C**

DOM in Lbs 9659 Date .....

A/C G-SASC / GMA... From ..... To .....

Basic Empty Mass	**9082**	**191.25**	**1736916**
Crew	374	129.00	48246
Operating & Medical Equip:-			
Aerosled Stretcher FWD	39	239.00	9321
Aerosled Stretcher AFT	39	294.00	11466
Medical Cabinet (max 63lbs)	50.4	160.00	8064
Paramedic Kit	75	325.00	24375
DOM - Air Ambulance	**9659.4**	**190.32**	**1838388**
Left Seat Row 1		172.00	0
Left Seat Row 2		204.75	0
Left Seat Row 3		244.00	0
Patient on Forward Stretcher		200.00	0
Patient on Aft Stretcher		276.00	0
Aft Bagage		325.00	0
Aft Potty Seat		335.00	0
Zero Fuel Mass < 11,000 lbs	**9659.4**	**190.32**	**1838388**
Fuel - Fuselage and Wing Tanks			
Ramp Mass < 12,590 lbs	**9659.4**	**190.32**	**1838388**
Taxi Burnoff	90		17000
Takeoff Gross Mass < 12500 lbs	**9569.4**	**190.33**	**1821388**
Zero Fuel Mass < 11,000 lbs	9659.4	190.32	1838388
Landing Fuel			
Landing Mass < 12,500 lbs	**9659.4**		**1838388**

Passenger Masses are Standard / Actual* Male = 198 lbs, Female = 158 lbs, Child = 77 lbs
Baggage Masses are Standard / Actual*

Note: Hand baggage mass are already deducted from standard Male/Female weights.

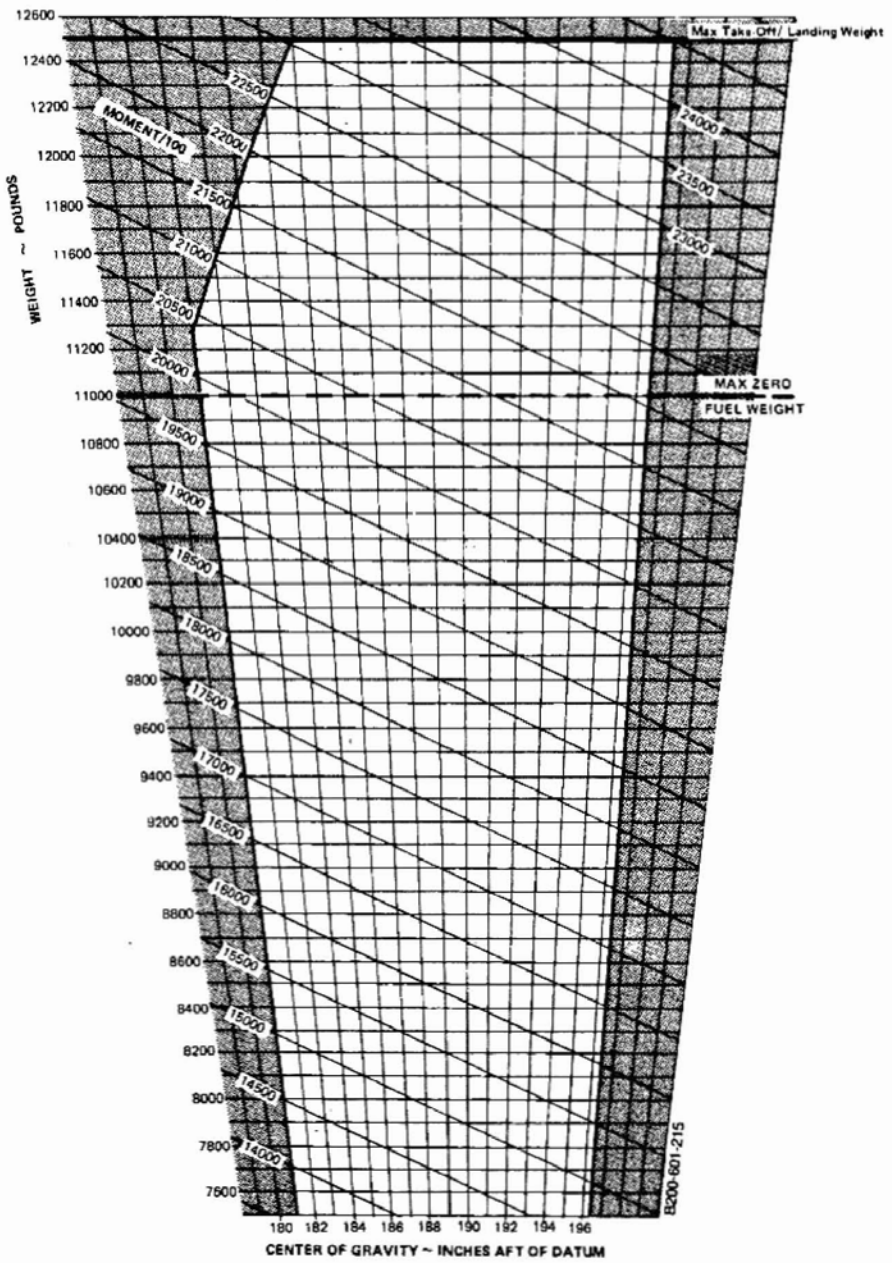
LOADING CERTIFICATE
I hereby certify that the loading of this aircraft is in accordance with the instructions contained in the Company's Operations Manual pursuant to the requirements in EASA-OPS

Centre of Gravity Limits refer to AFM

Commander's Signature ..... Date ..... Time .....

Owner DFO Page 1 of 1
Date December 2017 Revision Original

MOMENT LIMITS vs WEIGHT



6.4 Example Usable Fuel Chart (refer AFM)

USEFUL LOAD WEIGHTS AND MOMENTS
USABLE FUEL

GALLONS	6.4 LB/GAL		6.5 LB/GAL		6.6 LB/GAL		6.7 LB/GAL	
	WEIGHT	MOMENT 100	WEIGHT	MOMENT 100	WEIGHT	MOMENT 100	WEIGHT	MOMENT 100
10	64	99	65	100	66	102	67	103
20	128	197	130	200	132	203	134	206
30	192	305	195	310	198	314	201	319
40	256	423	260	430	264	436	268	443
50	320	542	325	550	330	559	335	567
60	384	662	390	672	396	683	402	693
70	448	782	455	794	462	807	469	819
80	512	904	520	918	528	932	536	946
90	576	1023	585	1039	594	1055	603	1071
100	640	1142	650	1160	660	1178	670	1196
110	704	1260	715	1280	726	1300	737	1319
120	768	1379	780	1400	792	1422	804	1443
130	832	1496	845	1519	858	1543	871	1566
140	896	1615	910	1640	924	1665	938	1690
150	960	1734	975	1761	990	1788	1005	1815
160	1024	1852	1040	1881	1056	1910	1072	1939
170	1088	1971	1105	2002	1122	2033	1139	2064
180	1152	2090	1170	2122	1188	2155	1206	2188
190	1216	2209	1235	2244	1254	2279	1273	2313
200	1280	2328	1300	2365	1320	2401	1340	2437
210	1344	2447	1365	2488	1386	2524	1407	2562
220	1408	2567	1430	2607	1452	2647	1474	2687
230	1472	2686	1495	2728	1518	2770	1541	2812
240	1536	2806	1560	2850	1584	2894	1608	2938
250	1600	2926	1625	2971	1650	3017	1675	3063
260	1664	3045	1690	3093	1716	3140	1742	3188
270	1728	3164	1755	3213	1782	3263	1809	3312
280	1792	3283	1820	3334	1848	3386	1876	3437
290	1856	3402	1885	3455	1914	3508	1943	3562
300	1920	3521	1950	3576	1980	3631	2010	3686
310	1984	3641	2015	3698	2046	3754	2077	3811
320	2048	3760	2080	3819	2112	3878	2144	3936
330	2112	3880	2145	3940	2178	4001	2211	4062
340	2176	3999	2210	4062	2244	4124	2278	4187
350	2240	4119	2275	4184	2310	4248	2345	4312
360	2304	4244	2340	4310	2376	4377	2412	4443
370	2368	4365	2405	4434	2442	4502	2479	4570
380	2432	4489	2470	4560	2508	4630	2546	4700
386	2470	4562	2509	4634	2548	4706	2586	4776
400	2560	4741	2600	4815	2640	4889	2680	4963
410	2624	4869	2665	4945	2706	5021	2747	5097
420	2688	4997	2730	5075	2772	5153	2814	5231
430	2752	5126	2795	5206	2838	5286	2881	5366
440	2816	5255	2860	5337	2904	5419	2948	5501
450	2880	5386	2925	5470	2970	5554	3015	5638
460	2944	5514	2990	5600	3036	5686	3082	5773
470	3008	5645	3055	5733	3102	5821	3149	5909
480	3072	5775	3120	5866	3168	5956	3216	6046
490	3136	5907	3185	5999	3234	6091	3283	6184
500	3200	6040	3250	6134	3300	6229	3350	6323
510	3264	6172	3315	6269	3366	6365	3417	6462
520	3328	6307	3380	6405	3432	6504	3484	6602
530	3392	6441	3445	6542	3498	6643	3551	6743
540	3456	6573	3510	6676	3564	6779	3618	6881
544	3482	6626	3536	6729	3590	6832	3645	6936

B808C
034493AA

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7 Section 7 – LOADING

7.1 Weight Limitations

LIMITING WEIGHT	B200/B200C
RAMP	12590
MTOW	12500
MLW	12500
MZFW	11000

7.2 Loading Information

When using a Company Loading Plan**,** providing that the stated configurations are used the C of G will fall between these values:

- AFT 194.86" aft of datum (at 11,279 lbs or below);
- FWD 182.54" aft of datum (at 11,279 lbs or below);
- AFT 195.26" aft of datum (at 12,500 lbs);
- FWD 186.14" aft of datum (at 12,500 lbs).

These restrictions have a 10% safety margin to allow for small variations.
If Pilots are in any doubt regarding the load they must complete a separate weight and balance calculation.

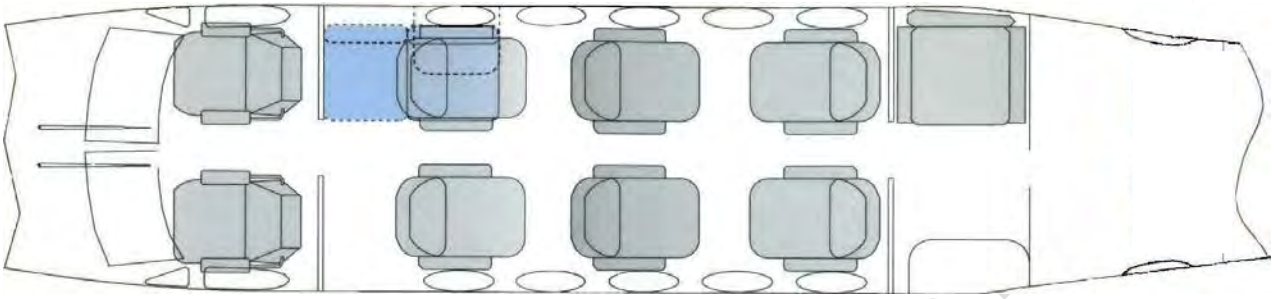
There are a number of variations of interior layouts and some King Air types can be modified to become Air Ambulances etc, however the configuration of the dedicated Air Ambulance aircraft *(G-SASC, G-SASD and G-GMAE)* will not change. Both G-SASC and G-SASD aircraft are fitted with a cargo door. The Main Exit is within the Cargo door construction. As a result of the Cargo fit, this has resulted in the C of G being further AFT. The weight of the Cargo door has also increased the basic weight of the aircraft and this will have an impact on the ZFW.

The aircraft will be in C of G position and need not be worked out if loading is within the following parameters:

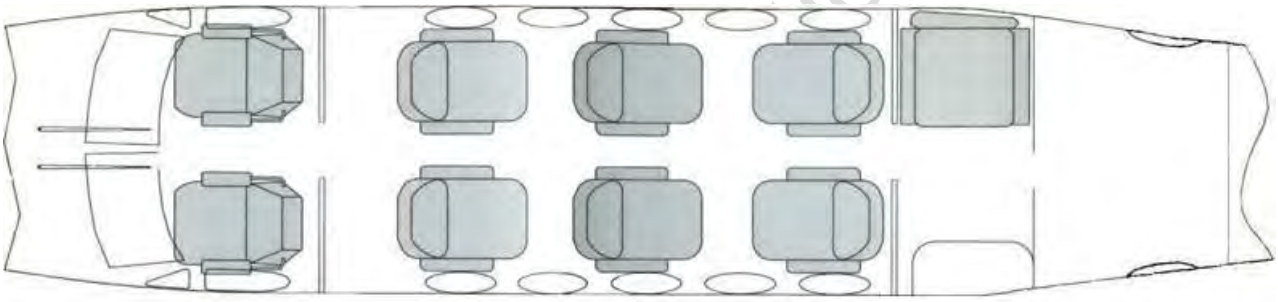
- G-SASC, G-SASD and G-GMAE;
  - The load in the cargo area including any passenger on the toilet seat MUST NOT exceed 300lbs.
  - The front stretcher MUST be used prior to the rear stretcher.
- G-PCOP;
  - The baggage area is limited to 550lbs.
  - Passengers seating refer to para 7.2.1.
- In all cases,
  - The statements are correct for all fuel load figures.
  - Passenger weights MUST NOT exceed 250lbs, including any hand baggage.

7.2.1 Executive Configuration

2 pilots, a maximum capacity of up to 7 passengers and up to a maximum of 550 lbs of baggage. When loading passengers, fill the club four seats first, then the rear facing 5th seat, then the rear facing 6th seat, then the (toilet) seat opposite the door. The 550 lbs baggage allowance includes the weight of stores in that area.



G-PCOP



G-GMAE

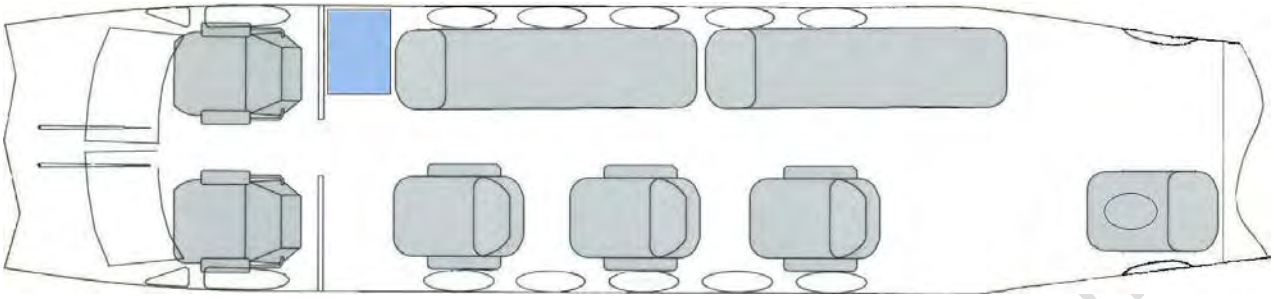
7.2.2 Air Ambulance Configuration

The King Air's G-SASC, G-SASD and G-GMAE are dedicated Air Ambulance aircraft.

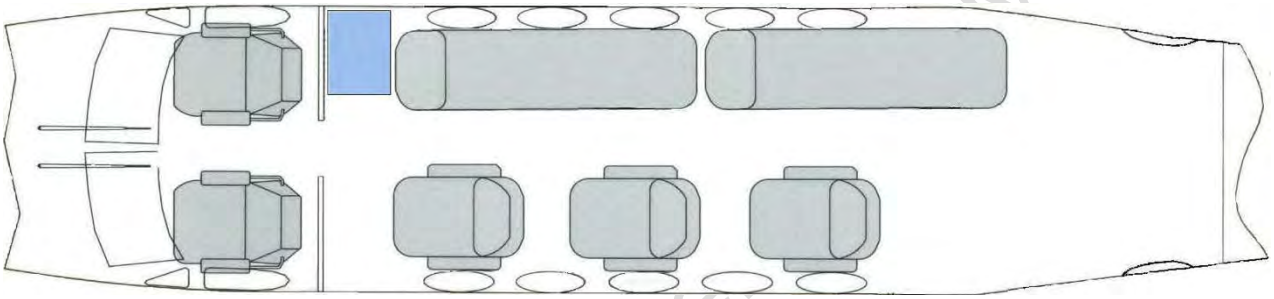
The aircraft are fitted with two stretchers as part of a Life Port system. The stretchers are placed one behind the other on the starboard side of the cabin. There are three seats on the port side, and in G-SASC and G-SASD one toilet/passenger seat in the rear baggage compartment. G-GMAE does not have a toilet/passenger seat in the rear baggage compartment. Storage units are available in the front section of the cabin for miscellaneous aircraft equipment. The ramp lifting system to load patients/incubator is stored in the overing wing lockers in both G-SASC and G-SASD, whislt in G-GMAE the pateint loading system is stored behind the 3rd of 3 passenger seats on the port side of the cabin.

Maximum capacitiy for these dedicated Air Ambulance aircraft (*G-SASC, G-SASD and G-GMAE)* is 2 pilots, up to 6 passengers in G-SASC and G-SASD, or 5 passengers in G-GMAE.

The standard operational layout is capable of 2 to 3 passengers, 2 stretcher patients or 2 Incubators and a Paramedic.



G-SASC / G-SASD



G-GMAE

7.3 Standard Passenger Weights

In accordance with EASA, the following standard passenger weights may be used in compiling the total weights for the load sheet:
(Annex IV AMC1 CAT.POL.MAB.100(e))

	Passenger Seats Available	
	1-5	**6 – 9**
Male Passenger (over 12 years of age) *(see note 1)*	229 *(216)*	211 *(198)*
Female Passenger (over 12 years of age) *(see note 1)*	190 *(177)*	171 *(158)*
Children (between 2-12 years) or infants under 2 years of age if occupying a separate seat	77	77
Infants under 2 years of age if sharing a seat with an adult	0	0

(Weights in lbs)

Notes:

1. The standard weights include hand baggage. On flights where no hand baggage is carried or where such hand baggage is accounted for separately, 13 lbs may be deducted from the weight of passengers over 12 years of age when using the above table.
2. The ACTUAL weight of hold baggage must be used on all flights.
3. The load sheet must specify whether actual or standard passenger weights are used.

7.4 Performance

The following airports in Scotland have been checked for maximum takeoff and landing weight performance, but only as long as the following criteria is met.

NOTE this applies only to the Raisbeck King Airs SASC and SASD. For non-Raisbeck King Airs the performace must be checked using APG or the POH before completing the loadsheet.

Hot	Cold
– Temperature <35degC	– Temperature <10 degC
– Pressure. >975hp	– Pressure. >975hp
– Flaps. Up	– Flaps. Up
– Longest Runway is used.	– Longest Runway is used.
– Tail Wind 5kts	– Tail Wind 10kts
– Antice Off	– Antice On

If this criteria is not met, or the airport used is not on this list, then Take-Off and Landing performance must be calculated using Company APG software. This software is found on Company Electronic Flight Board (EFB) IPads.

Airports covered by this are:

Aberdeen (EGPD)	Kirkwall (EGPA)
Benbecula (EGPL)	Lossiemouth (EGQS)
Campbeltown (EGEC)	Prestwick (EGPK)
Dundee(EGPN)	Stornoway (EGPO)
Edinburgh (EGPH)	Sumburgh (EGPB)
Glasgow (EGPF)	Tiree (EGPU)
Inverness (EGPE)	Wick (EGPC)
Islay (EGPI)	

7.5 The Fitting of Stretchers - Executive to Air Ambulance

The fitting of a stretcher to the Beechcraft King Air is to be completed by a Company authorised engineer due to the regulatory requirement of a MOD application for every role change.

The Layout is as follows:

One stretcher fit - Remove seats and bench seat (if fitted)on the starboard side and place stretchers FWD and AFT on existing seat rails. All four legs must be placed in the seat rails and secured with locking pins.

3 seats will then be placed on the port side.The two rear bulkheads and toilet are to be removed.

The stretchers must have the restraining harnesses attached. The position of the foot restraints will face rearwards. All existing placards must remain visible and those relating to ambulance configurations fitted.

Gama Aviation Engineering Ltd will provide the approval for authorised persons to do the re-configuration.

Each change of configuration must be recorded in the Technical Log in the "Action Taken" column and certify "Release to Service" by signing and dating the sign column and entering the authorisation number

Note: Refer to Part M for full procedures and quality control

7.6 King Air Load Statement

APG software is the chosen Company method for performance calculation and weight & balance. However, manual load sheets can be completed if the criteria at para 7.2 is met.

The paper Load Statement is to be completed in the following manner:

- Enter registration, to and from locations, date and call sign;
- Enter the DOM applicable to the tail number;
- Insert all the weights of crew, paramedic , catering and stores;

- Next insert patients or passengers as applicable;
- Finally insert baggage;
- Total these figures as the Zero Fuel Weight (ZFW);
- Check ZFW against the limitation;
- Insert fuel figure required for journey;
- Add ZFW and fuel weight and insert result as ramp weight;
- Check ramp weight against the limitation;
- Take taxy figure of 90 lbs from ramp weight;
- Insert resultant take-off weight;
- Check take-off weight against the limitation;
- Next insert planned estimated fuel burn;
- Take fuel burn off take-off figure;
- Insert resultant figure as the estmated landing weight;
- Check landing weight against the limitation;
- If there are any last minute changes reclaculate and insert as indicated;
- Indicate passenger/baggage weights as standard or actual as applicable;
- Record the maximum performance regulated take-off/landing weight where indicated;
- Finally the Commander is to sign, date and record the time.

A copy of the statement is to be left on the ground prior to dispatch with a responsible person.

Gama aviation

KINGAIR 200

G-	FROM	TO	DATE	FLIGHT No:

APS EXECUTIVE/AIR AMBULANCE/ COMMUTER/CARGO	
CREW	
PARAMEDIC*	
CATERING	
STORES	
PASSENGER WEIGHTS	
1 2	
3 4	
5 6	
7 8	
9	
BAGGAGE	
ZFW MAX 10400/11000*	
FUEL	
RAMP WEIGHT MAX 12590	
LESS TAXI FUEL	90
TAKE OFF WEIGHT MAX 12500	
SECTOR FUEL	
LANDING WEIGHT MAX 12500	
ALL WEIGHTS IN POUNDS	

REGULATED MAXIMUM WEIGHTS	
TOW AT	
LDG AT	

LMC 1	
+/−	
90	

LMC 2	
+/−	
90	

LAST MINUTE CHANGES		INITIALS
	+/− *	
	+/− *	

PASSENGER WEIGHTS ARE STANDARD/ACTUAL*

BAGGAGE WEIGHTS ARE STANDARD/ACTUAL*

* DELETE AS APPROPRIATE

LOADING CERTIFICATE

I Hereby certify that the loading of this aircraft is in accordance with the instructions contained in the Company's Operations Manual pursuant to the requirements in JAR Ops 1.

CAPTAIN'S SIGNATURE ..... DATE ..... TIME .....

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8 Section 8 - Configuration Deviation List

8.1 Refer to KingAir B200s AFM for CDL items and applicability

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9 Section 9 - Minimum Equipment List (MEL)

Refer to the Aircraft Library for the latest Revision for the MEL which forms part of the Appendix to King Air 200 series Part B Operations Manual

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Section 10 - Survival and Emergency Equipment Including Oxygen

10.1 Survival Equipment

The following survival and emergency equipment will be carried on B200 company aircraft:

Item (Number Of)	Location	Checking
Flight Deck Oxygen Mask (2)	Mounted in spring loaded receptacles the cockpit overhead panel	Accessibility
Smoke Goggles (2) and Fire Gloves (1)	Behind the pilots seats on the front of the cockpit partition	Accessibility / Sealed
Torches (2)	On the centre console forward	Accessibility / Charged
PBE - Drager (1)	Behind the Left hand pilot seat on the front of the cockpit partition	Accessibility / Sealed
Fire Extinguisher (2)	1. Under Copilots seat 2. Rear baggage area LHS wall	Accessibility / Sealed
Crew Life Vest (2)	In the seat backs of the pilots seats	Accessibility
Passenger Life Vest (6)	Under each passenger seat cushion and in each Lifeport life jacket stowage. Toilet - in small cupboard stowage at the front of toilet.	Accessibility
Emergency Light Switches	Mounted on the emergency lights. 1. Between the emergency exits 2. Above the main entrance door	Operation
First Aid Kit (1)	Between Rear Facing Club seat and cockpit partition RHS	Accessibility / Sealed
Emergency Gear Extension	Cockpit floor RHS of pilot	Stowed
Crash Axe	Behind the Co-pilots seat on the front of the cockpit partition	Accessibility / Stowed

The following is required for Commercial Air Transport operations:

- Safety Instruction Card
- Demonstration Life Jacket;
- Demonstration Oxygen Mask;
- Demonstration Seatbelt.

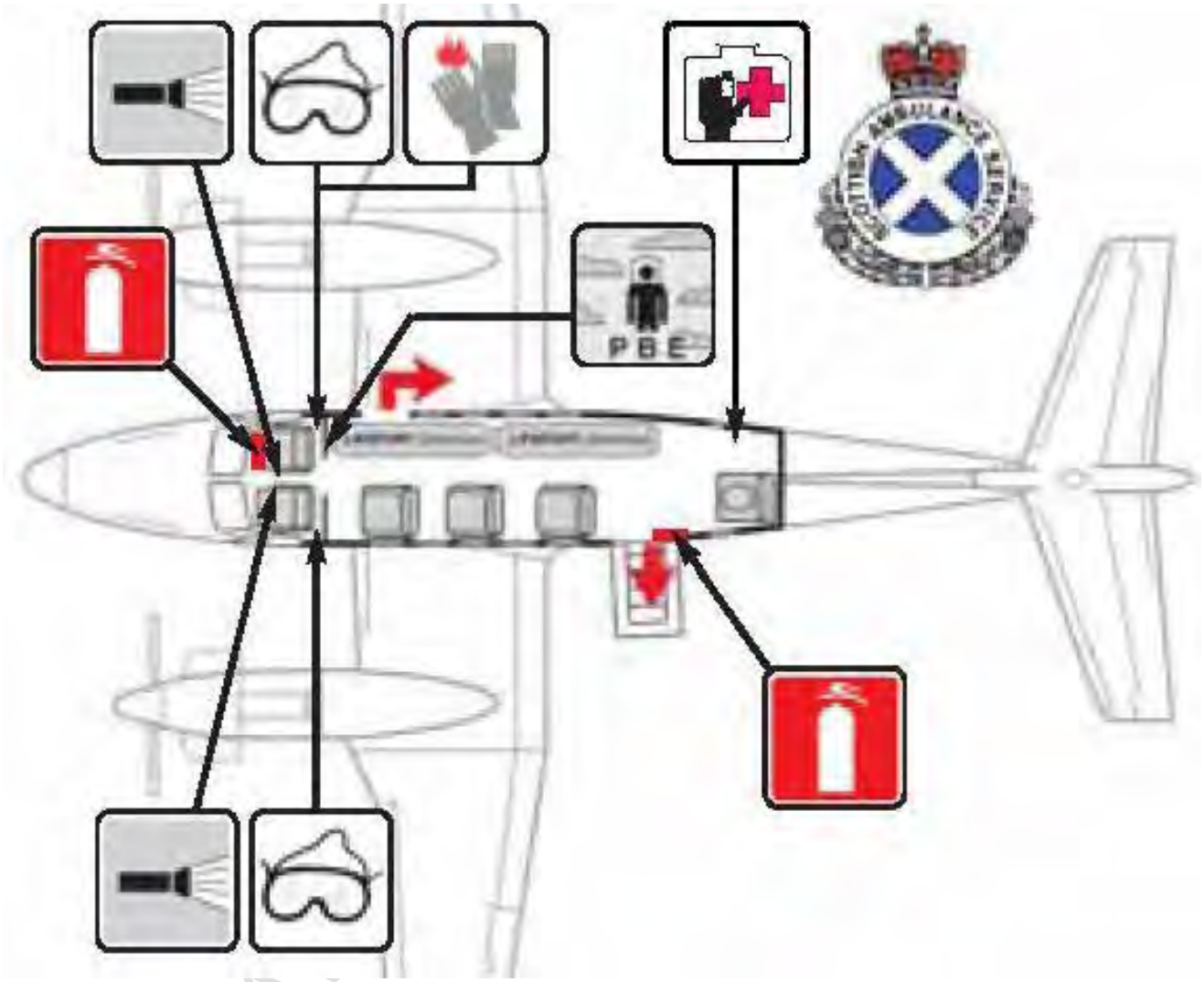
Crew members are to check the position and serviceability of the equipment listed above, they are to report any damage or missing items and must refer to Aircraft MEL for dispatch.

Note: Dinghies, capable of carrying all persons on board, must be carried if the aircraft is planned to be or is flown over water more than 400nm or 120 minutes at cruising speed, away from a suitable aerodrome for landing.

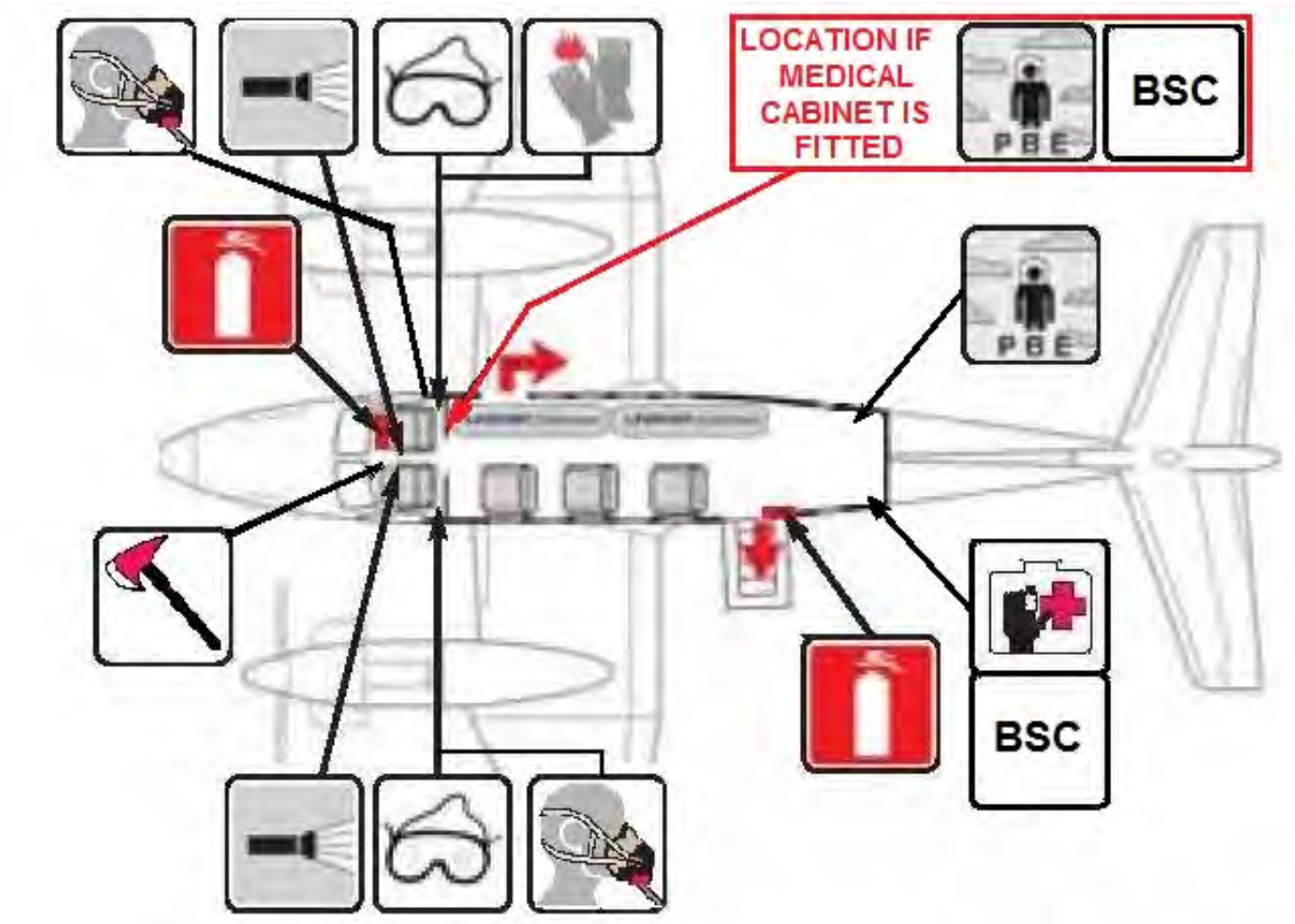
Note: Refer to aircraft document file and Aircraft Safety Leaflets for full inventory of type and location of specific safety equipment.

10.1.1 Emergency Equipment Locations

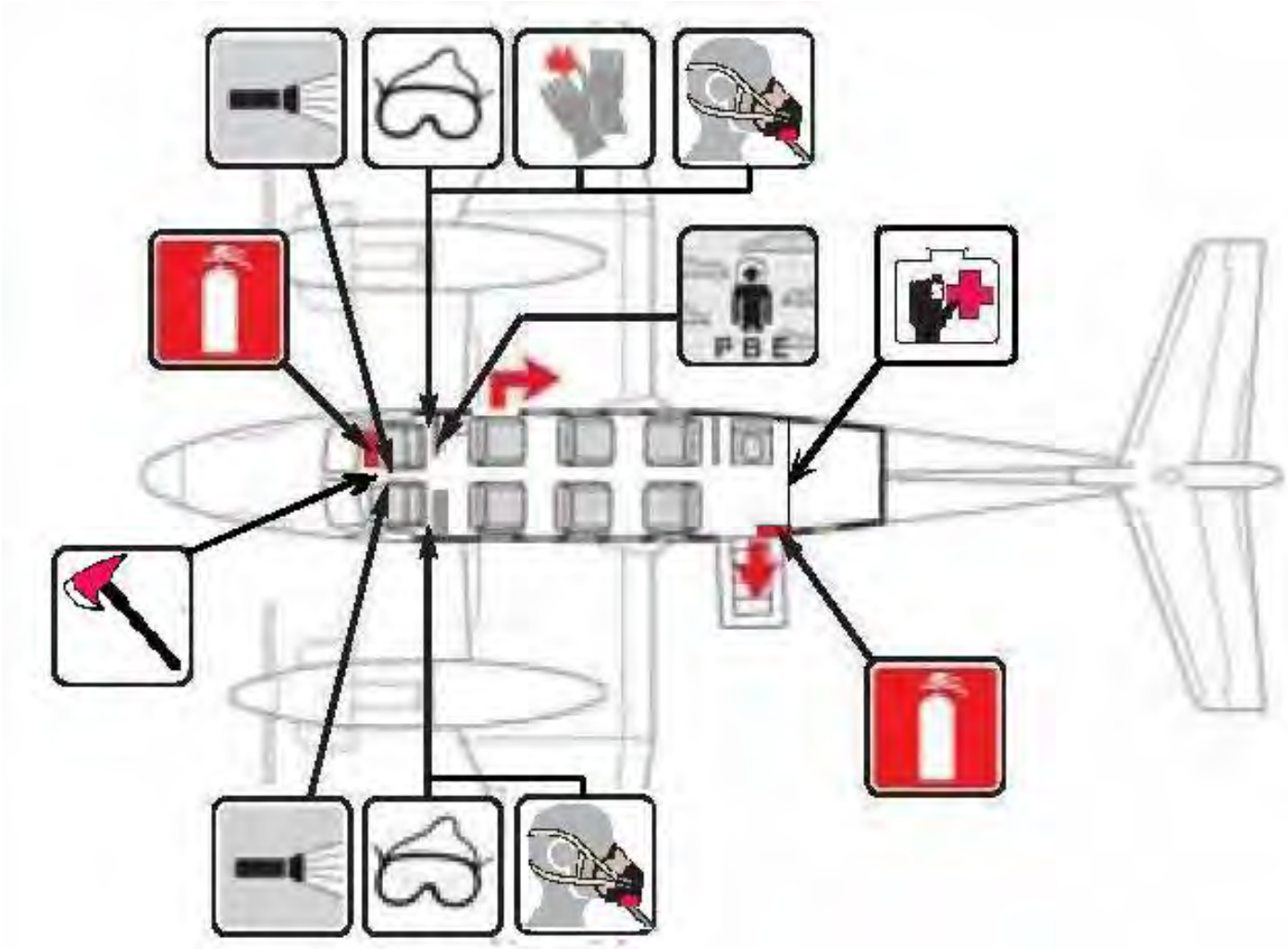
Air Ambulance - G-SASC *(s/n: BL-150)* and G-SASD *(s/n: BL-151)*



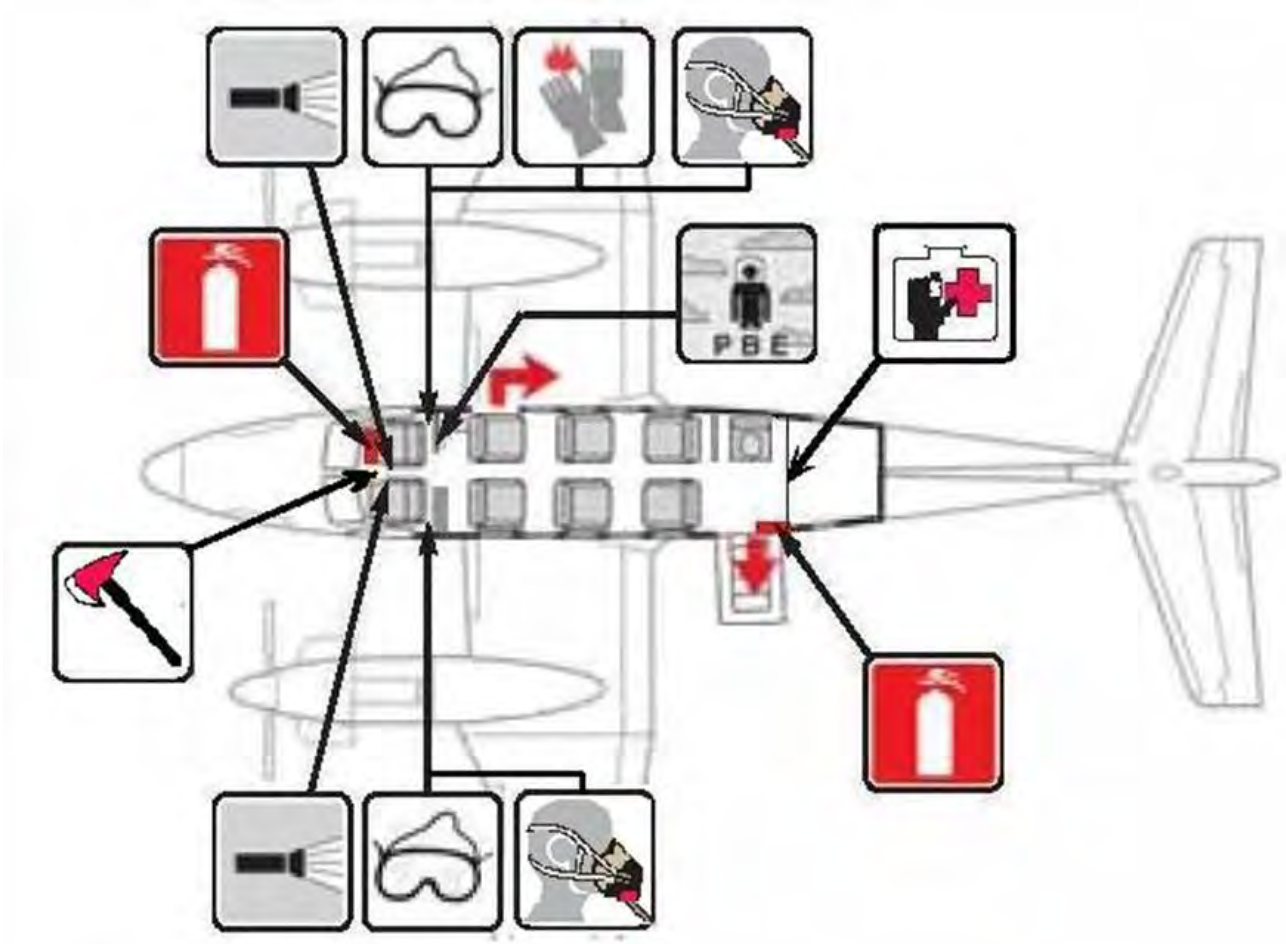
Air Ambulance - G-GMAE *(s/n: BB-1957)*



Executive - G-PCOP *(s/n: BB-1860)*



Executive - G-GMAE *(s/n: BB-1957)*



10.1.2 Seat Belts

Lap and shoulder strap only, adjustable, quick release seat belts are fitted to each passenger seat. Four point harnesses are fitted to each pilot's seat. The harnesses are adjustable at the lap straps. A single point release box is provided. The shoulder straps are fitted to an inertia reel mounted behind each pilot seat.

10.1.3 Life Jackets

A life jacket is provided for each passenger. The life jacket, which is in a valise, is either stowed under the seat cushion of each individual seat or under the seat itself. Except for the toilet seat where the life jacket is stowed adjacent on the wall.

A life jacket, exactly the same as that provided for passengers, is provided for each pilot, stowed under the First Officer (right) cockpit seat.

10.1.3.1 Serviceability Check

(a) Check the lifejacket for any signs of damage, contamination or evidence of having been opened, interfered with or inflated.

If suspicious that any of the above conditions prevail, reject the life jacket as being "unserviceable". A serviceable replacement must be obtained.

(b) The lifejackets are overhauled at annual intervals. At each overhaul an "expiry date" label is attached to the life jacket. The label should be checked and if the expiry date is later than the date on which the serviceability check is carried out, the lifejacket is considered 'serviceable' If the expiry date is seen to be on or earlier than the date on which the serviceability check is carried out, then the lifejacket is 'unserviceable'. A serviceable replacement must then be obtained.

10.1.3.2 Method of Donning and Inflating Life Jacket

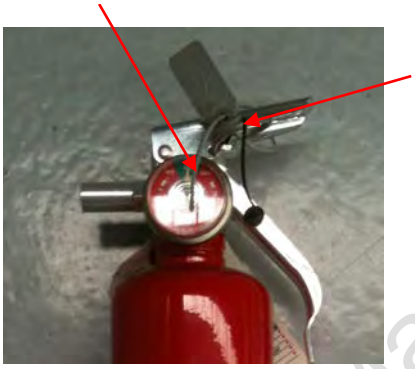
1) Remove Lifejacket from its stowage and then remove from container
2) Place life jacket overhead, equipment side away from body.
3) Pass the tapes around the waist, bring to the side and tie securely in a knot.
4) WHEN OUTSIDE THE AIRCRAFT, inflate the jacket by pulling the Red inflation toggle sharply downwards.
5) If the life jacket does not inflate automatically, it can be inflated or topped up by blowing through the mouthpiece. A light is fitted which will illuminate when the battery has been immersed in water.

Method of fitting adult life jacket to child *(An adult life jacket may be converted to fit a child 35 lbs (16 kg) and over)*

1) Remove Lifejacket from its stowage and then remove from container
2) Inflate away from the child
3) Partially deflate jacket
4) Place the lifejacket over the child's head, cross the tapes at the back and bring forward and cross them over the buoyancy chamber
5) Tie off at the back with a knot
6) Instruct parent or guardian to re-inflate the life jacket using the inflation tube, once outside the aircraft.

Caution: Oral inflation prior to using the Manual inflation Handle will cause excessive pressure which may burst the life jacket.

10.1.4 Fire Extinguishers



Halon Fire Extinguisher Passenger Cabin (2.21 Kilos)

Additional Pre-Flight Check:

- Safety Pin present and security locked and Gauge indicating in the GREEN segment

Description
Halon 1211 - This characteristic means that it is effective even if the exact source of the fire cannot be positively determined e.g. concealed fires. Its efficiency as an extinguisher is further enhanced by the fact that it also displaces oxygen.

Operation

- Remove extinguisher from stowage;
- Pull safety pin to unlock;
- Squeeze Handles together;
- Give a test squirt;
- Aim nozzle at flames;
- Attack fire in a sweeping motion.

Precautions
Halon is highly toxic when in contact with a fire or hot surface and fumes created during fire fighting may have an irritant effect on lungs; therefore care should be taken when used in a confined space. Consider the use of a smoke hood.

Note: The negligible harmful effects of Halon can be outweighed by the safety benefits of fighting fire immediately and aggressively. Therefore, so long as there is no danger from smoke or fumes, fighting the fire in advance of fitting a smoke hood should be considered.

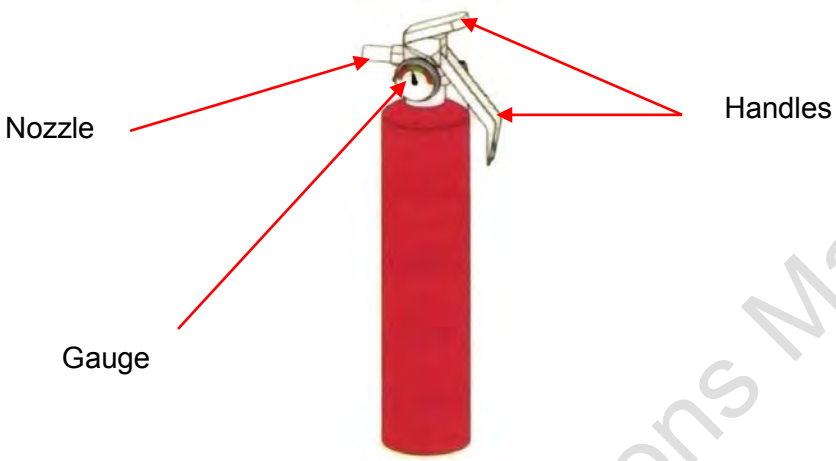
Not to be used as a Coolant
Always dampen down fire area with water after use to prevent re-ignition, except on electrical fires.

- On initial discharge, the force of extinguisher may scatter burning loose material.
-

Duration

Approximately 15 seconds

Note: Not a continuous discharge. Flow may be stopped when fire is extinguished by releasing trigger.



10.1.5 Crash Axe

A rubber handled insulated fire axe, with blade and spike, is carried on the flight deck. It is stowed on the bulkhead behind the co-pilots seat. It may be used for cutting into the aircraft structure in the event it is required to gain access to an electrical fire.
It may also be used to cut a way out of an aircraft in an emergency situation on the ground if all emergency exits are jammed shut.

Warning
Do not use the axe on plexiglass windows. The axe will not penetrate plexiglass it will only bounce off, probably causing severe injury to the operator or other persons who may be nearby.

10.1.6 First Aid Kit

A first aid kit is carried. It is stowed in the rear baggage area.

First Aid Kit Serviceability Check
Check the first aid kit as follows:

I. general condition for obvious damage and correct stowage
II. check that safety seal has not been broken, if seal has been broken consider first aid kit to be unserviceable until contents have been checked against contents list below in para 10.6.2. *(a contents list is also inside the first aid kit).*

First Aid Kit Contents
The First aid Kit contains the following items:

1. Contents List *(in English and Dutch, and First Aid Guidance notes)*
2. Bandages

3. Sterile burns dressings
4. Sterile wounds dressings
5. Adhesive tape, safety pins and scissors
6. Alcohol free wound cleansing wipes
7. Adhesive wound closures
8. Disposable resuscitation aid
9. Analgesic *(paracetamol)* tablets
10. Antiemetic
11. Nasal decongestant
12. Splints
13. Antacid *(tablets)*
14. Anti-diarrhoeal capsules *(Imodium)*
15. Ground / Air signalling code
16. Disposable gloves

Use of First Aid Kit

In the air, in the event of a passenger requiring first aid or medical attention, it is unlikely that a member of the crew will be able to leave his flight deck duties for more than short periods. It is therefore desirable to enlist the aid of a passenger who is able and willing to assist. It is also a wise move to ask any passenger with any medical experience or qualification to identify him/herself and invite them to assist.

The contents of the first aid kit should be used and dispensed in accordance with the guidance notes contained therein and using the knowledge gained from the first aid training received in initial conversion training. Obviously if any suitably qualified medical personnel have been identified, their advice should be heeded.

On the ground, it is likely that a member, or members, of the crew will be able to devote much more time to the rendering of first aid in the event of an emergency arising. The assistance of ground support services should be requested if the emergency is on an aerodrome.

If the first aid kit is used, the fact must be brought to the attention of the Senior Operations Controller as soon as possible after the event.

10.1.7 Passenger Emergency Lighting

Two emergency lights are fitted, one in the forward cabin above and between the emergency exits, and the other in the aft cabin roof, by the main entrance door. Each light is equipped with two light sources. One operates during normal operations, the other are powered by internal batteries and is controlled by a 3 position rocker switch, situated on the lights themselves, and placarded ON-TEST / OFF-RESET. The lights illuminate when the switch is momentarily placed in the ON-TEST position. The lights are extinguished when the switch is momentarily placed in the OFF-RESET position. An internal ‘g’ switch will automatically activate the lights if a rapid deceleration is sensed.

10.1.8 Illuminated Notices

Two “No Smoking” and “Fasten Seat Belt” illuminated signs are mounted in the cabin, one forward and one aft. The two elements of the notice are controlled by a switch on the flight deck.

10.1.8.1 Public Address System

The public address system, through loudspeakers in the cabin ceiling, may be operated by either pilot. Control is via the pilot individual “station box”, using the normal boom microphone of the pilots’ headsets.

10.1.9 Emergency Exits

There are two designated exits, they are:

a) The main passenger door, *(aft port side)*

b) One emergency overwing exit window, *(forward starboard side)*

Operation of Door and Emergency Exits

a) Main passenger door, to open from the inside:

I. Press the safety button in.

II. Turn handle anti clockwise door unlocks and rotates downwards.

b) Main passenger door, to open from the outside:

I. Press in the small button at the 3 O’clock position and rotate the handle clockwise lower the door downwards

c) Emergency exit overwing window starboard, to open from the inside:

I. Pull the Red handle in and downwards

II. Pull window into the cabin and down, turn the window so that it will pass back through the open hole and discard well clear of the exit, to prevent it interfering with the safe egress of the passengers.

10.1.10 Emergency Extension of the Landing Gear

An emergency system is provided for lowering the landing gear in the event of it failing to lower via the normal system. The system using the Emergency Checklists is activated using the red handle situated on the cockpit floor to the Right of the Commander.

10.1.11 Torches

Two torches for emergency use are available on the flight deck.
They are stowed on the sides of the centre console in the cockpit.

Serviceability Check
Before flight, both torches must be checked for serviceability.

10.1.12 Emergency Locator Transmitter (ELT)

Emergency Locator Transmitter is fitted to the aircraft. It can be activated manually by the red switch on the Pilots Right Hand instrument panel or will operate automatically in the event of the aircraft having an accident.

When activated, the ELT will automatically transmit on 406 MHz for 24 hours, sending the aircraft registration in digital form, every 50 seconds. The message is received by the rescue organisation via a satellite and is used to pinpoint the aircraft.

It will also, at the same time, transmit on 121.5 and 243.0 MHz. This signal will be transmitted for up to 100 hours from activation of the ELT. This signal is for "homing" rescue aircraft to the location in the latter stages of rescue operations.

Serviceability Check
A serviceability check is carried out by engineering.

Method of Use
Switch has a three position selector switch with positions:

OFF - (self explanatory)

ARM - (this is a stand by mode and is the mode which is normally -selected on panel, in order for the automatic mode to be active)

ON - (the locator is transmitting)

10.1.13 Drager - Portable Breathing Equipment (PBE)

Drager PBE smoke hood is attached to the rear of the RHS forward partition, within reach of the aircraft Commander.

Description
The Draeger smoke hood is a self-contained breathing apparatus which cycles air between the wearer's lungs and its breathing bag, without contact to the outside atmosphere. It provides an extremely high level of protection to the wearer.

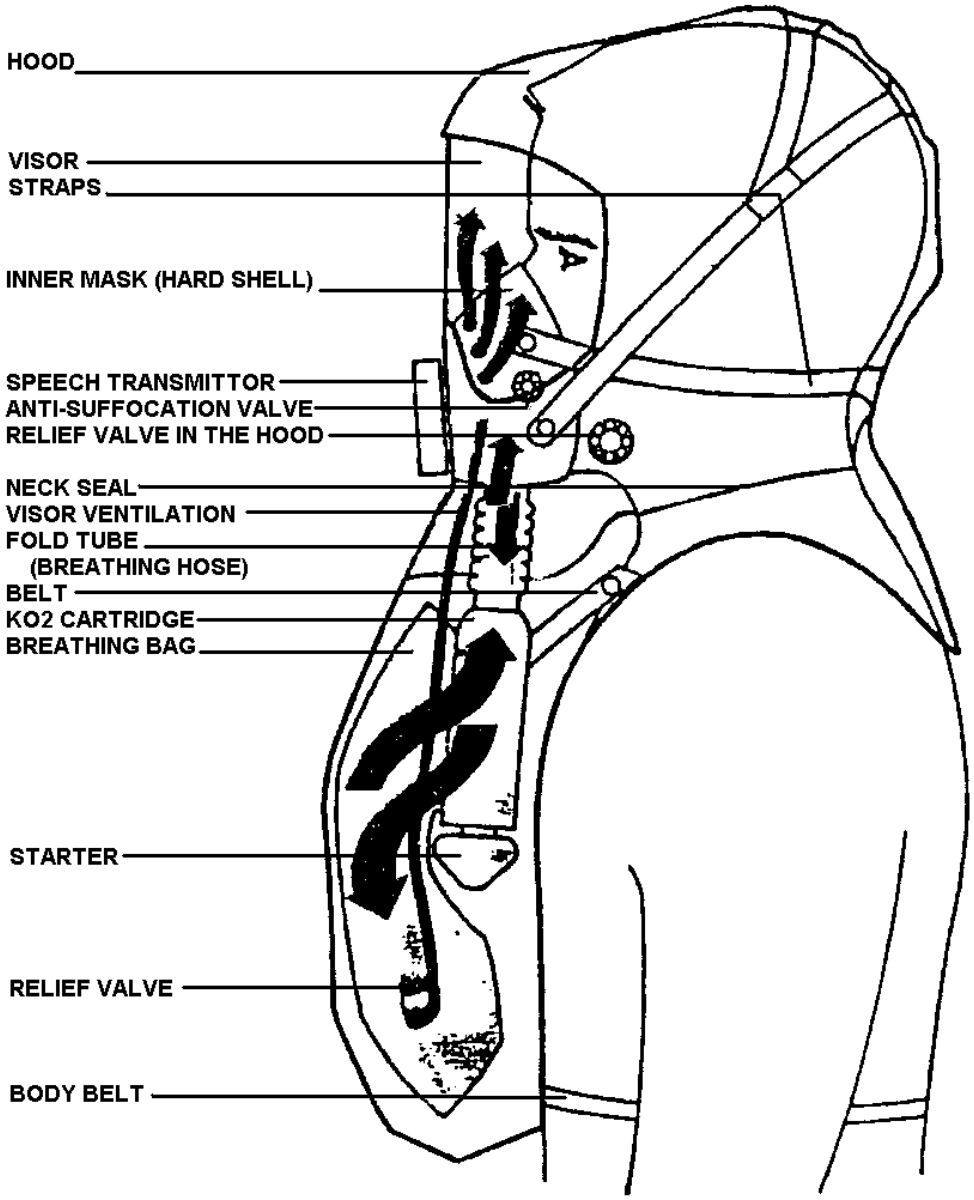
After use, stow the hood on a metal surface or in a metal container.

The smoke hood includes:

- **A heat protecting hood**
  Protects the head and chest from radiated heat and dripping plastics.
- **A latex neck seal**
  Provides secondary protection from smoke and fumes to the head area. The neck seal must not be damaged when putting on the smoke hood. Be especially careful with sharp edged earrings, hair slides and nails.
- **An oral/nasal mask**
  This is the means by which the hood is fitted to the face.
- **An oxygen producing cartridge**
- **A reservoir bag**
- **A speech diaphragm**
  Although this allows conversation while wearing the hood, the sound of their own breathing and the rustling of the hood during movement can make hearing and being heard very difficult for the wearer.
- **An anti-misting system**
- **An anti-suffocation valve**

This operates automatically for two to three minutes if the smoke hood fails or the reservoir bag becomes empty, allowing the wearer to use up the air surrounding their head.

- **A quick start cartridge and toggle**
  After just two or three breaths oxygen production begins, however it may take up to a minute for the reservoir bag to fill with enough air to allow comfortable breathing. To provide immediate oxygen, the quick start toggle is pulled down sharply,



Serviceability Check

- Check container is sealed.
- Yellow indicator is visible and not completely broken *(see picture below).*

NOTE 1: It may be necessary to remove the SH from its stowage in order to see the yellow indicator clearly. Care must be taken to re-stow it correctly.

NOTE 2: To comply with Dangerous Goods regulations, a SH that is either unserviceable, has its packaging or seal damaged, has passed its expiry date *(normally checked by Engineering)* or has been used, must be removed from the aircraft prior to flight.

Operation

- Open the container – the bag containing smoke hood may remain attached. **(Fig 1)**

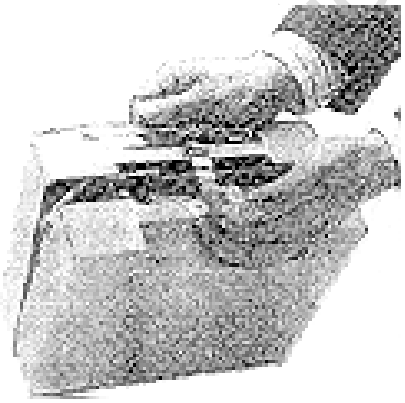


Fig 1

- Tear off red strip carefully to avoid cuts to wrists. As the hood is vacuum-sealed, this may require extra effort. **(Fig 2)**

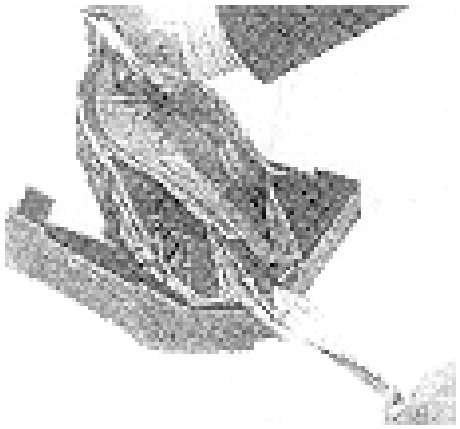


Fig 2

- Remove hood from bag and peel off plastic shield from visor, if applicable.
- Put both hands through the neck seal into the hood, widen the elastic straps and the neck seal with the back of your hands **(Fig 3)**. Pull the hood overhead from behind.
- Keep hands between head and elastic straps until mask covers nose and mouth.

Fig 3

- Ensure the elasticated straps fit correctly over and around the back of your head.
- Ensure clothing and long hair is not caught in seal. Pull hood down over shoulders.
- Start the unit by pulling on the quick start toggle. This comes completely away. This is the start of the breathing protection.
- Always tie tapes around the body. The position of the mask can be adjusted by moving the speech transmitter on the outside of the unit.

Duration
15 minutes.

Removal of Smoke Hood
The use of the smoke hood can be terminated at any time by removing from head. After removal, the generation of oxygen will slow down rapidly.

- Untie waist tapes. Grab the hood at the top of the visor and pull the hood to the front, away from the head.
- As the oxygen generator may be hot, place the hood on a stainless steel surface.
- Used hoods must be handed to Engineering for disposal.

10.1.14 Smoke Goggles

Smoke goggles provided for both flight crew members and are designed to be used in conjunction with the quick-donning crew oxygen mask. The goggles are equipped with a vent-valve, and provide smoke and toxic gas protection for crew members.

The goggles are composed of a polycarbonate moulded lens and coated with anti-misting and scratch resistant coatings. However, the goggles should be kept in a protective bag to minimize inadvertent scratching. The goggles are equipped with an adjustable headband and a flexible silicone moulded seal allows the wear of corrective eyewear or sunglasses. The goggles are located behind the pilots' seats.

Serviceability Check
Stowed in bag and accessible to crewmembers

10.1.15 Survival

10.1.15.1 General

Modern aircraft and efficient search and rescue services, together with extensive communication systems, make the need for long term survival highly unlikely. However, all crew members must be familiar with the basic techniques of survival. An unplanned emergency landing in inhospitable surroundings would require the principles of survival to be put into practice. Therefore, crew members must be familiar with the use of search and rescue aids and techniques.

10.1.15.2 Principles of Survival

Survival depends on 2 basic factors:

a) The will to survive, this is not automatic. Some people have a greater survival instinct than others. Discomfort, despair and deprivation may cause some people to give up more easily than others.

b) Knowledge in the correct use of survival aids and the understanding of the efforts of the search and rescue services. Knowledge builds confidence.

The essence of being able to survive is adaptability; not to put yourself against the environment, but use it.

You must keep yourself highly motivated and remain reasonably fit, this means getting proper rest and sleep, when tired and near exhaustion, you may make mistakes, simple mistakes can turn into accidents, so stop and rest.

First priorities are to protect against the hazards of the environment and then to alert rescue services. You can survive days without water and weeks without food.

- Protection – Location – Water – Food

10.1.15.3 Protection

In order to function properly, the body must be protected against the environment and the adverse effects of injury and shock.
Injured passengers and crew will require additional attention. One of the first priorities is to remain dry and warm, especially in a ditching situation.

10.1.15.4 Location

It is vital to ensure search and rescue services can locate the landing or ditching site. Signalling aids and beacons must be set as soon as practicable after landing/ditching. SAR beacons, fires, flares, wreckage and other materials that give colour contrast should be used. Stay within the vicinity of the aircraft unless rescue can be achieved quickly by limited movement away.

10.1.15.5 Water

Survival without water can vary between 3 days in a very hot climate to approximately 11 days in a cold climate. Dehydration sets in very quickly. Be aware of the early signs, urine very yellow, headaches and nausea. Sweating in hot climates causes the body to use more water. Therefore all possible sources of water must be explored. The aircraft stock may be able to provide initial sources. Avoid alcohol, do not drink sea water or urine.

10.1.15.6 Food

It is possible to survive for weeks without food. Two to three weeks would probably have no permanent ill effects and many people have survived much longer. Remember, food requires water to aid digestion. Sea fish require a lot of water to digest, only consider these if drinking water is plentiful. Meat should be cooked by boiling as the juices can be retained for consumption. If the meat is held over the fire and roasted, there is a risk of the meat not cooking thoroughly in the centre leading to food poisoning and the juices will be wasted in the fire.

10.1.15.7 Immediate Actions

Move survivors to a safe upwind location, well protected from the wind, rain and sun. Administer first aid to the injured. The aircraft may remain intact. When the risk of fire has passed, consider re-entering the aircraft to remove equipment and supplies, detach escape slides to be used as protection or location aids.

EQUIPMENT TO BE REMOVED - MINIMUM Time Available

a) Appropriate equipment

b) Water

EQUIPMENT TO BE REMOVED - SUFFICIENT Time Available

a) Everything useful for protection, location water and food.

AIRCRAFT EQUIPMENT - ALTERNATIVE USES

a) Flotation aid may be used for protection. Spread out on ground for use as a location aid.

b) Spare lifejackets can be used for water storage, cut a slit in the neck and fill, tie on either side of the slit with the lifejacket tapes to avoid spillage.

Cut off the top of the inflation tube to pour out water, the tube can then be folded over and tied with the whistle lanyard to re-seal.

Lifejackets can also be used to sit on providing an air layer as protection against a cold floor and as pillows. Scatter on the ground as a location aid.

c) Aircraft panels and carpets can be laid out to form an S.O.S. pattern.

d) Tyres and oil can be burnt to give off black smoke for location.

e) Mirrors and other shiny metal objects can be used to reflect the sunlight to signal when rescue services are in the vicinity.

f) Coffee pots can be used to collect water, also for cooking (boiling) food and water.

g) Extension seatbelts can be used to splint broken limbs.

h) Wire can be used for snares.

10.1.15.8 All Survival Situations

DO NOT ISSUE ANY RATIONS IN THE FIRST 24 HOURS

The body will already be fully hydrated and any additional water taken out on at this stage will be wasted. Only injured survivors may require water at this time.

After 24 hours, issue a full ration three times daily at sunrise, midday and sunset.

Note: In a prolonged survival situation wait until the fourth day before reducing the rations and then if absolutely necessary only by half.

Water required depends on the amount of physical exertion and on the average temperature, i.e.:

Temperature	Pints Per 24 Hours
35 C / 95F	9
32 C / 90F	6.5
30C / 85F	4.5
27C / 80F	2.5
24C / 75F	2

In additional to aircraft supplies of water, collect if possible:

I. Condensation from aircraft panels.

II. Rainwater.

III. Old ice (blue) in cold climates

IV. Roots of vegetation.

Do not drink alcohol, urine, water from fire extinguishers or sea water. Remember that food requires a plentiful water supply to aid digestion.

10.1.16 Sea Survival

General

Most aircraft are equipped with flotation aids which can be used in a ditching situation. If the route takes the aircraft over water for an extended period, additional life rafts will be carried to accommodate all passengers.

Stay as dry as possible, consider hypothermia when cold and wet. Dehydration may set in if people become sea sick. Before ditching, consider putting on extra clothes.

Immediate Actions:

a) Do not attempt to re-enter aircraft.

b) Cut any mooring lines and manoeuvre away from the aircraft.

c) Attach slide flotation aids together in a group.

Subsequent Actions: To reduce body fluid loss in hot climates:

a) Take sea sickness remedy.

b) Wet clothing during day, but ensure it is dry before evening as hot climates can become very cold at night.

c) Keep the entrances open to create a draught.

In Cold Climates

a) Keep as dry as possible

b) Remove wet clothing and allow too dry.

c) Stay warm and keep the life raft entrances closed.

d) Take sea sickness remedy.

e) Do not swim.

f) Do not drink sea water.

The four Basic Principles of Survival Apply:

- Protection – Location – Water – Food

10.1.17 Cold Weather Survival

The principle of cold weather survival must be applied to any region where low temperatures, high winds and a covering of snow prevail. The terrain can range from the bare ice cap to coniferous forests with some form of tundra between.

The four Basic Principles of Survival Apply:

- Protection – Location – Water – Food

10.1.17.1 Hypothermia

Hypothermia occurs when the vital core of the body is cooled as a result of exposure (the continual drainage of body heat without the actual freezing of any local area). If not checked it can lead to unconsciousness followed by heart failure and death.
Young people are more vulnerable as their physical and mental reserves are less than adults. Every year, thousands of people die because they fail to realise how lethal the cold can be, especially when there is also a wind.

Symptoms
Initially there is a feeling of cold and tiredness, bouts of shivering, lethargy, difficulty responding to questions and as the case becomes more serious, there may be unreasonable behaviour, lack of muscle co-ordination and blurred vision. Eventually the victim will stop shivering, the pulse and breathing will become weak and this will progress into unconsciousness and death. The symptoms are more readily noticed by other people and not the victim. It is important to continually watch for irrational behaviour in your fellow survivors.

Treatment
Immediately seek protection from the elements. If the victim is in the early stages, insulate with more clothing and give a hot drink and some food. If the condition has progressed, try to get the victim into a plastic bag if one is available and once again insulate with clothing (a sleeping bag is ideal but it is unlikely that you will have one). If there is enough room, fit a companion in with the victim to give more bodily warmth. The two should be naked and make skin to skin contact. Breathe warm air over the victim's nose and mouth and if possible try to give a sweet hot drink and some food, preferably hot.

The patient is not cured as soon as their body temperature returns to normal. Body heat reserves need to be built up. Eating and rest is essential.

Prevention
Protect from the cold, wet and wind. Keep extremities warm and dry. Body heat loss is greatest from the head and face and can be as much as 60% from a completely exposed head, 30% from the face alone and 15% from the hands. Therefore, wear hats, gloves or some form of improvised protection.

10.1.17.2 **Frostbite**

In arctic climates, temperatures can be so low that without proper protective clothing, just a few seconds of exposure can result in frostbite and possible death. To survive, the body must remain above a certain temperature. It is important to keep you hands, face and feet warm and dry. Frost bite is freezing or partial freezing of the body, usually the extremities and can occur without realisation until it is too late.

Wind Chill Effect

Wind speed - kts	TEMPERATURE Deg C						
	-10	-15	-20	-25	-30	-35	
5 kts	-15	-21	-27	-33	-39	-45	Wind chill equivalent temp
10 kts	-18	-24	-30	-36	-43	-59	
15 kts	-19	-26	-32	-39	-45	-52	
20 kts	-20	-27	-34	-40	-47	-54	
25 kts	-21	-28	-35	-42	-49	-55	
30 kts	-22	-29	-36	-43	-50	-57	
35 kts	-23	-30	-37	-44	-51	-58	
E.G. W/V 090/15, OAT –15C, WIND CHILL EQUIVALENT –26C							

Temperatures -18 to -28 deg C BITTER COLD

- Frostbite possible. Exposed skin can freeze in 5 minutes. Avoid outdoor activity

Temperatures -29 to -56 deg C EXTERAMLY COLD

- Frostbite likely. Exposed skin can freeze in one minute Outdoor activity is dangerous

Temperatures -57 deg C and below FRIDGIDLY COLD

- Frostbite certain. Exposed shin can freeze in 30 seconds

Symptoms

a) Small white or cream coloured patches will appear on the skin which will feel hard if touched.

b) When the skin is moved during the initial stages, a slight prickling sensation will be felt.

c) When frostbite is severe, small blisters may form and the areas will become swollen. If not treated, infection will occur.

Treatment

- Do not rub with snow, ice or for that matter, anything at all
- Do not apply direct heat.
- Do not pick or burst blisters.
- Move out of the cold and wind.
- Fingers and hands can be warmed under the armpits.
- Warms hands pressed lightly against affected areas can thaw the tissues.
- Hot drinks can be given if the symptoms are mild or if there is a definitive recovery from a major attack

10.1.17.3 **Snow Blindness**

Snow blindness is a temporary form of blindness caused by the sun's reflection, a burning sensation will be felt and the eyes may water. As the condition progresses, the vision will become blurred and the surrounding area will take on a pink glow. Gradually, the burning sensation increases until it is impossible to open the eyes because of the intense pain, which with the slightest amount of glare, increases.

Treatment consists of rest in a dark or shaded area. Apply a cool wet compress at intervals. Time and rest are the only cure. Wear sunglasses or make eye protectors to reduce the glare.

10.1.17.4 **Summary**

Cold regions present serious problems to survivors, the greatest of which is death from exposure. It is therefore essential to keep together in a confined space to conserve heat. Survival is then possible.

10.1.18 Search and Rescue

Rescue Co-Ordination Centres (RCC's) Linked Up with ATC Control Search and Rescue Operations.

When alerted, the RCC has at its disposal, military and civil aircraft plus other services. Search operations will be carried out until all survivors are found and rescued or all hope for survival has ceased. The search will continue for any wreckage.

There are three search and rescue phases:

a) Uncertainty phase (Doubt) 30 minutes after an aircraft fails to report a scheduled point or time.
b) Alert Phase (Apprehension) 1 hour after an aircraft fails to send a position report.
c) Distress Phase (Certainty) the aircraft is in imminent or grave danger.

The RCC is alerted at the Alert Phase but commencement of a search is delayed until the aircraft's destination ETA has passed or when a 'Mayday' call has been received.

In order to prevent false alerts, departure and arrival messages are always sent to ATC agencies and the aircraft operator.

Rescue will be carried out by helicopter, amphibian aircraft, mountain rescue, boat or ship, depending on the survival circumstances.

Ground / Air Visual Code
The full code is to be found in the Jeppesen supplement.

Message	Code Symbol
Require Assistance	V
Require Medical Assistance	X
No or Negative	N
Yes or Affirmative	Y
Proceeding in this Direction	>

Use any material or other items to form these symbols. Other ways of attracting attention are dye markers, torches, the heliograph, SOS, marked on the ground, signal fires using brushwood or other material burnt in a triangular pattern. Escape slides also make a good visual sign.

To acknowledge visual signals the search aircraft will rock its wings in daylight. At night, it will flash the landing or navigation lights twice

Droppable Survival Equipment
Survival equipment can be dropped by certain search and rescue aircraft. Contents will be marked on the outside of containers and may be colour coded.

MEDICAL SUPPLIES	Red or Red Cross on White background
FOOD / WATER	Blue
PROTECTIVE CLOTHING / BLANKETS	Yellow
MISCELLANEOUS ITEMS	Black
MIXED SUPPLIES	Combination of Colours

10.2 Oxygen

10.2.1 Oxygen to be Carried and the use of

The Hawker Beechcraft B200C is certified to 35,000 feet, but shall not be operated at altitudes exceeding 10,000 feet unless the supplemental oxygen system is charged and the system operational.

10.2.2 Introduction

Oxygen is available to the crew and passengers during pressurisation system malfunctions or when required.

The oxygen system includes the crew and passenger distribution systems. Oxygen is available to the crew at all times and is available to the passengers either automatically above a cabin altitude of approximately 12,500 feet, or manually at any altitude by pulling out the PULL ON SYSTEM READY control handle located on the LHS of the centre console.

10.2.3 Description

The Hawker Beechcraft 200 oxygen system is primarily for emergency use, but also allows limited duration non emergency use. It provides breathable low-pressure oxygen to crew and passengers through individual oxygen masks.

The system uses a single bottle of compressed oxygen to supply both crew masks and passenger masks. A regulator controls overall system pressure, and a shutoff valve (controlled by the PULL ON SYSTEM READY valve in the cockpit) enables or disables the system.

An oxygen gauge indicates the pressure (and indirectly, volume) of oxygen in the bottle. The oxygen duration chart of the emergency procedures section of the AFM will enable crew to decide whether there is sufficient oxygen on board for the planned flight.

Individual controls on crew masks adjust their oxygen flow.

10.2.4 Components and Operation

The system includes:

- Oxygen bottle (with integral shutoff valve and pressure regulator)
- Oxygen masks (crew and passenger)
- PASSENGER MANUAL DROP OUT control knob
- PULL ON SYSTEM READY control knob
- OXY NOT ARMED caption on the caution/advisory/status panel

WARNING: Strictly obey the procedures for the use of oxygen equipment. Do not use oil, grease, or other lubricants made from petroleum in the area of oxygen equipment. This can cause a dangerous fire hazard.

During pre-flight, ensure the PULL ON SYSTEM READY control knob is fully pulled out to open the shutoff valve in the oxygen bottle. Check that proper pressure is indicated on the OXYGEN gauge. Test each crew mask before flight using the PRESS TO TEST button to be sure that it is receiving oxygen from the system. Ensure that oxygen flows into the mask and to the pilot under positive pressure. In Flight, to operate the oxygen system, ensure there is adequate pressure in the system as indicated by these conditions:

- The OXYGEN gauge indicates adequate supply (refer to AFM)
- The PULL ON SYSTEM READY knob is pulled out

When those conditions are met, the oxygen system can be operated manually by pulling out the PASSENGER MANUAL DROP OUT knob and a white PASS OXYGEN ON light will illuminate on the caution/advisory/status panel.

10.2.5 Oxygen Bottle

A single bottle holds all the compressed oxygen for the system. It is mounted in the right avionics compartment and has a (115 cubic feet) useable capacity. Oxygen is stored in the bottle at a pressure up to 1850 psi at 15 Deg C.

A shutoff valve and pressure regulator on the bottle controls the flow of oxygen to the distribution system. The shutoff valve on the bottle is normally open in flight. It is mechanically controlled in the cockpit by the PULL ON SYSTEM READY control knob.

10.2.6 Overboard Discharge Indicator

A green overboard discharge indicator (disc) is on the right side of the nose section directly below the nose access door. If the disc is ruptured, the oxygen bottle has experienced overpressure and is now empty.

10.2.7 Flight Crew Oxygen Mask Stowage

Crew Oxygen Mask stowage (Cockpit roof - looking aft)

10.2.8 Crew Oxygen Mask

Each crewmember is supplied with a quick-donning mask with a built in microphone and regulator. Each oxygen mask is stowed in the cockpit roof in a spring loaded container and is equipped with an inline flow indicator. A flow indicator indicates to the crew that oxygen is received.

Flow Indicator (located within spring loaded roof stowage)

The mask is quick donning by pressing the red sides of the nosepiece, which causes the harness to inflate and easily slip over the head.

The mask is a diluter/pressure-demand type with 100% oxygen provided by pushing a lever/tab on the bottom-right corner of the mask to the 100% position.

To qualify as a quick-donning mask, the crew oxygen mask must be properly stowed in the receptacle outboard shoulder of each crewmembers seat back, and must be set to 100%.

NOTE: Headsets, eyeglasses or hats worn by the crew will interfere with the quick-donning capability of the oxygen masks.

The mask oxygen line plugs into the large valve port, and the mask microphone plugs into the MIC jack, both of which are on within the spring loaded container. Ensure both plugs are fully inserted before flight.

Standard Crew Oxygen Masks

10.2.9 Operation

Remove the crew oxygen mask from its container and squeeze the mask so the harness inflation plate is pressed against the mask to inflate the harness. Place the harness over

the head and position the mask over the face and nose, then release the harness inflation plate. The harness contracts to hold the mask in place.

The crewmember is assured that oxygen is being received when no restriction to breathing is present with the mask donned and the red N-100% diluter rocker switch is set to 100% (aft position). If the cabin altitude is at or below 25,000 feet, to conserve oxygen when using the mask, the diluter rocker switch may be set to normal (N).

Note: On crew masks, select 100% oxygen above 25,000 feet cabin altitude. At cabin altitudes of 25,000 feet and below, select normal (N).

For pressure breathing or smoke/fumes protection, rotate the emergency select knob on the underside of the mask clockwise toward the crewmember to the EMERGENCY position. This position provides a steady flow of pressurised oxygen to the face cone and the smoke goggles (if installed).

10.2.10 Passenger Oxygen System

Components and Operation Normal - Mode

When the oxygen system is enabled, *(PULL ON SYSTEM READY knob pulled)* passenger oxygen masks automatically drop down from the cabin ceiling anytime cabin pressure is greater than 12,500 feet.

Normally, the pressurisation system maintains an 8,000 foot cabin altitude up to the maximum certified altitude. However, if cabin altitude exceeds approximately 12,500 feet, a cabin altitude sensor energises the passenger oxygen solenoid valve open. Oxygen flows into the passenger distribution system and releases latches on the mask compartment doors. This allows the doors to open and the masks to fall out.

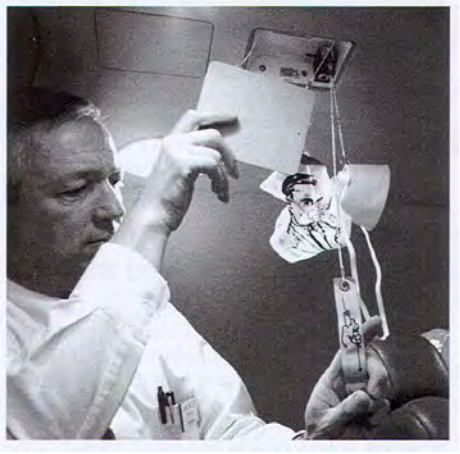
The pilot can bypass the automatic system by pulling the PASSENGER MANUAL DROP OUT control at any time thus deploying the masks.

Mask Containers

Each mask container consists of a door, two masks, and a latch mechanism. Containers are installed in the overhead lining. There is also a mask container in the headlining above the lavatory area.
The latch mechanism can be operated manually or automatically. When the latch mechanism is released, the door opens and the masks drop down.

Passenger Masks

In the cabin 14 passenger masks are in overhead containers and drop automatically or manually. A lanyard attached to the mask aids in pulling the mask down if it does not drop clear of the box.



Passenger Oxygen Mask

A short lanyard physically connects the mask to a pin in a valve inside the overhead oxygen line. Pulling this lanyard pulls put the pin to start the oxygen flow to the mask. The act of lowering the oxygen mask to the face also pulls free the lanyard and pin, enabling oxygen to flow. Passenger masks have no indicator.

Note: There is one passenger mask situated in the toilet area together with the First Aid oxygen outlet. There are 2 passenger masks situated in the baggage area (for use when the passenger baggage seat MOD is installed. There are 10 outlets located centrally in the main passenger compartment area (8 seats). The total number of passengers in this area must be limited to 10 (a maximum of 2 infants on laps), one infant in each club 4 area.

Limitations

The table below indicates approximate normal duration of oxygen supply with different numbers of users.

OXYGEN SUPPLY DURATION TABLE - 115FT3 CYLINDER

AVAILABLE TIME IN MINUTES (Based on 100% charge(1850 psi))														
NUMBER of PEOPLE USING THE SYSTEM														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
732	366	244	183	146	122	104	91	81	73	66	61	56	52	48

Note: The pilot and co-pilots masks are each counted as TWO people when the masks are selected to either 100% or EMERG modes.

Warning: Due to human physiological limitations, the passenger oxygen system is not satisfactory for continuous operation above 25,000 feet cabin altitude. Individual physiological limitations may vary. If crew or passengers experience hypoxia symptoms, descend to a lower cabin altitude.

Warning: No smoking when oxygen is being used or following use of passenger oxygen until lanyards have been reinstalled.

Caution: Oil, grease, soap, lipstick, lip balm, and other fatty materials constitute a serious fire hazard when in contact with oxygen.

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Section 11 - Emergency Evacuation Procedures

11.1 Instructions For Preparation For Emergency Evacuation

11.1.1 Commander's Duties on Onset of Emergency

Transmit distress call.
Set transponder code 7700.

The Commander will brief the First Officer *(if carried)* and the passengers for Emergency Landing or Ditching on the following points - *(N.I.T.S.)*.

a) The NATURE of the Emergency

b) The INTENTIONS *(i.e. Crash Landing or Ditching).*

c) Expected TIME remaining airborne.

d) SPECIAL CONSIDERATIONS, e.g. moving passengers from plane or to adjust the trim, escape routes, including which exits may be affected by fire, etc.

11.1.2 Communication

Communication between the Flight Crew and passengers is of the utmost importance in an emergency situation.

If time available:

a) Explain nature of emergency to passengers otherwise delegate this.

b) Select landing area and direction.

c) Stow loose objects.

d) Prepare portable oxygen if required, otherwise ensure OFF.

e) Remove sharp objects.

f) If ditching, put on life jacket.

g) Check altimeter setting.

11.1.3 Landing

If undercarriage up or one or more wheels not locked down, adjust passenger seating to achieve most suitable trim.

It is recommended that the landing is made on those parts of the landing gear that have been successfully lowered, rather than attempt a wheels up landing.

When the area that borders the edges is such that it would be hazardous for the aircraft to leave the runway, a diversion to a more suitable airfield should be undertaken.

Fire warnings must be considered genuine and warranting evacuation unless positively proved otherwise, i.e. visually or Air Traffic Control.

11.1.4 Ditching

Reduce the weight of the aircraft if possible by burning off fuel, retaining sufficient to enable power to be used throughout the approach.

Flaps should be extended fully to reduce forward speed at touchdown to a minimum. The landing gear should be retracted. Utilise available power to control rate of speed reduction and resultant altitude increase when near surface.

The final approach should be made with the aircraft straight and level. It is important that the aircraft is straight with wings level at impact.

If a pronounced sea is running at the time of ditching, the landing should be made parallel to, and not across the line of the crests.

At touch-down, the aircraft should be in a nose up attitude. This may best be achieved by touching down with the rate of descent at a minimum.

11.1.5 First Officers Duties *(If carried)*

The First Officer is responsible for:

a) Maintaining communications with the passengers.

b) Receiving the Commander's instructions.

c) Initiation of the appropriate emergency and evacuation procedures.

d) Passenger safety and welfare.

11.1.6 Preparation for Emergency Landing or Ditching

The amount of preparation will depend upon the time available. As thorough preparation as time will permit should be accomplished.

The general evacuation plan should be reviewed, including operation of doors, exits and seat belts.

It is extremely important that the passengers are given a thorough briefing in the methods of evacuation procedures in the event that all Crew members are incapacitated. The emergency evacuation should, if possible, be supervised by the Commander.

Able bodied passengers should be positioned close to an exit and briefed on the following:

a) Do not open exits until the aircraft comes to a complete stop.

b) Do not open any exit before checking for fire / smoke / hazard, if prevalent direct evacuation to a useable exit.

c) Operation of applicable doors and exits.

d) Precede other passengers to assist from outside.

Handicapped Passengers and any persons accompanying them should be given an individual briefing on emergency evacuation procedures. In order not to impede evacuation, cabin articles and hand baggage should be clear of the exits.

For Ditching, Life Jackets must be fitted, but must not be inflated until outside the aircraft.

Infant life jackets are to be inflated on infant inside aircraft.
Able bodied passengers should be assigned to each exit to help and aid the evacuation.

Competent persons should be assigned to aid all infants, children, elderly, disabled and infirm passengers.

Cabin seating should be modified to provide for the above.

- 1,000 feet “Take up forced landing / ditching positions.”
- 200 feet “Brace, Brace.”

If the alert time is extremely short, the Flight Deck Crew will make a Brace for Impact warning, i.e. “Brace, Brace”.

11.1.7 Evacuation

Any emergency landing, whether on land or water, may result in several violent deceleration surges. Do not unfasten seat belts until the aircraft has definitely come to a complete stop.

Passengers are to remain seated until the aircraft is stationary.

Commander	First Officer (If carried)
Give command “Evacuate Aircraft”. Proceed to supervise evacuation. Check all occupants are evacuated. Leave aircraft through nearest suitable exit.	Leave aircraft through nearest suitable exit. Check around aircraft for fire. Open exits from outside. Assist in evacuating passengers.
If First Officer not carried COMMANDER Check around aircraft for fire. Assist passengers as required	

11.1.8 Activate Exits

The basic philosophy of an emergency evacuation is to utilise all useable exits. Expect some exits to be jammed, under water, blocked by fire or otherwise unusable. If assigned exit is not safe, abandon attempts instantly and proceed to the other exit. Valuate each door and exit before opening. If the door opens normally, ensure the absence of hazards in the evacuation area. If useable, order evacuation and endeavour to evacuate two able bodied passengers first to assist in maintaining an even flow of passengers. If hazardous conditions become evident on the ground, re-direct passengers to an appropriate alternative exit.

Keep in mind that there are break-in areas, which may be used by rescue teams from outside the aircraft, and also that exits can be opened from the outside.

In all cases, execute the evacuation with aggressiveness. In a crash condition, delayed ignition is very possible and in ditching, the float time may be short. A Crew member assigned to direct the evacuation through an exit must:

1. Evaluate the escape potential of the emergency exit.
2. Open the exit if practicable.
3. Expedite passenger evacuation.

The forward left door and forward right emergency exit may be used for emergency evacuation on land. Only the over wing emergency exit should be used for a ditching, direct passengers to the nearest useable exit. If necessary, climb over the backs of unoccupied seats to clear any blockage that may restrict the flow

11.1.9 Directing Passengers from Unusable Exits

Inform passengers why exits will not be used, for example:

- FIRE OUTSIDE.
- DOOR JAMMED.

Should a partial undercarriage collapse occur, then use will be with the primary main exit.

After a landing with abnormal undercarriage configuration, it is essential passengers are warned to exercise all possible care in leaving. The easiest way to go through the right window emergency exit is to bring both legs over the sill, bring the head and shoulders through, finally jumping.

Great care should be taken when evacuating passengers, that the balance of the aircraft is not upset.

After an accident, the safety of the passengers is of paramount importance, however, it is not intended that Crews take unnecessary risks. When everything possible has been done to provide for passenger security, leave the area of the aircraft without delay.

11.1.10 Crowd Control

These procedures and techniques represent the best known methods for dealing with an emergency evacuation, however, the extremely variable nature of specific emergency conditions requires that all Crew members be prepared to initiate any action that judgement and evaluation would dictate.

The unexpected nature and swift progression of an emergency condition leads to confusion and delay. With few exceptions, passengers' initiative will be slow for effective self preservation. The motivation for such actions must be provided by the Crew.

The ranking Crew member is responsible for command of the entire group. In any particular area or situation, it is expected that the ranking Crew member present will assume control and exert forceful direction.

Additionally, any extra Crew members carried on the aircraft are, subject to command direction to provide assistance in an emergency.

It is desirable for the Commander to establish initial control of the passengers. Firm passenger control is of utmost importance. This can be best achieved by providing information and instructions in a calm, professional manner.

11.1.11 Passenger Control During an Emergency Evacuation

Evacuation will be completed more rapidly when danger is evident to passengers in the form of fire or smoke. Passengers will be more concerned with their possessions than with their safety unless the danger is immediately apparent, or unless they are made very conscious of the danger by the Crew.

Dispense with courtesy. Assert your authority quite firmly from the outset. Assess conditions to determine if normal escape routes are useable, doors and exits. Check there are no external fires.

Passengers may be reluctant to launch themselves through the exit, thus dangerously interrupting the flow of the evacuees. It is essential that the Crew adopt a firm attitude, even to the extent of using physical force to re-establish the flow.

11.1.12 Post Evacuation

When the passengers have vacated the aircraft, and if no problems are apparent, then quickly check that all necessary emergency equipment has been removed, FIRST AID Kits and torches. Once on the ground, direct the passengers to a secure and protected area upwind, away from the aircraft and supply any aid that may be necessary and practicable. Keep passengers grouped together. Do not forget that the passengers rely on your leadership; also they are your responsibility during any emergency.

After the evacuation, when the basic safety considerations have been completed, the Commander and Crew should immediately concern themselves with the general welfare of the passengers.

The care of injured passengers should be the first priority. Ascertain if there are doctors to assist with the first aid or render professional advice.

The comfort of all passengers, particularly in cold and inclement weather should be of next importance. The Crew should mix with the passengers to demonstrate an interest in them, reassuring them that the necessary arrangements for their welfare are being accomplished. The Crew should not group together or disassociate themselves from the passengers.

When rescue assistance arrives, ensure that there is an orderly transfer of responsibility for passenger handling from the Flight Crew to an adequate number of competent ground personnel. Until such time, the primary responsibility of the Commander and his Crew is the general welfare of the passengers. This shall have priority over all other duties and responsibilities.

11.1.13 Summary

<u>Keep Calm – Take Control</u>

1. Tell passengers to leave hand luggage.
2. Open nearest exit. If jammed, go to the next nearest exit.
3. Check for hazards, e.g. fire, moving parts.
4. Give clear and precise instructions - SIT - JUMP - MIND HEAD.
5. Establish an even flow of evacuation.
6. Do not argue with passengers - it wastes time.
7. Use force if necessary, e.g. push through exit.
8. Tell passengers to get away from the aircraft.
9. When all clear, assist the passengers.
10. Do not throw your life away to save trapped passengers.
11. Make a mental note of trapped passengers - tell firemen outside.
12. Check Flight Deck.
13. Leave when all clear, taking any useful equipment.
14. Assemble passengers upwind, well away from aircraft.
15. Ditching - assemble passengers and tie together.
16. Ensure NO SMOKING - fuel all over the place!

17. Administer First Aid.
18. Try to keep morale up until assistance arrives.

11.1.14 Doors and Exits

There is one forward door (main), and one right forward window emergency exit.

11.2 Full Explanation of Drill Duties – Landing

Sample passenger brief

May I have you full attention - Shortly it may be necessary to make an emergency landing. For your safety please listen carefully to the following instructions.

Remove any sharp objects from your pockets, dentures and spectacles and place these items in your seat pocket.

Ladies please remove high heeled shoes.

Ditching

Your lifejacket is stowed underneath your seat. Remove from the pouch and place over your head. To secure pass the tapes around your waist and tie them securely in a double knot on the left side. Do not inflate your lifejacket until you are outside the aircraft as this could impede your exit. To inflate, pull down sharply on the red toggle. There is a red mouthpiece for further inflation/deflation there is a whistle for attracting attention and a light, which will come on automatically when in contact with water.

Stow your tray tables, and place your armrests down, then fasten your seat belt tightly. Adopt the bracing position when you hear the command ‘brace, brace’. Place both feet firmly on the floor and put your knees together place your hands flat on top of your head, do not interlock your fingers. Tuck your forearms close to the side of your face. Lower your head with your body as close to your thighs as possible. You must remain in this position until the aircraft comes to a complete stop – there may be more than one jolt. Remain seated until the aircraft has come to a complete stop and when told to do so unfasten your seatbelt and follow the instructions of the crew.

Leave the aircraft by the exits indicated to you.

The exits onboard this aircraft are:

1. Two at the front of the cabin, one window emergency exit on the right hand side of the cabin and the main cabin door on the left hand side
2. Passengers seated close to these exits must study their safety card which details the method of their operation.
3. In the event of an evacuation being required leave hand baggage behind. After leaving move well away from the aircraft, and stay together.
4. Please study the safety instruction card carefully.

11.2.1 Prepared Emergency Landing/Ditching

COMMANDER		FIRST OFFICER *(If carried)*
1. Notify ground station of emergency as below a) Declare emergency b) Aircraft identification c) Position, Altitude and Heading d) Nature of emergency e) Action planned/taken f) Additional information - Number of people on board - Total Fuel on board - Choice of runway - Hazardous material on board (type and location) 2. Notify Passengers a) Situation b) Time available for preparation c) Landing Area d) Special Instructions (reseating etc.) 3. Call for Emergency Landing Checklist 4. 1000ft before landing: - Call Take up forced landing/ditching positions. 5. Give brace for impact order 200ft before landing. 6. In case of fire, position aircraft to provide the greatest number of fire free exits if possible.		1. Activate Transponder code 7700 2. Secure all loose equipment. 3. Prepare to take over the Commanders duties OBSERVER 1. Perform duties assigned by COMMANDER 2. Take seat prior to landing
Note if ditching: Life vest – ON If no First Officer - Transponder to 7700		Note if ditching: Life vest – ON

11.2.2 Un-Prepared Emergency Landing/Ditching

COMMANDER		FIRST OFFICER *(If carried)*
1. Notify Ground station of emergency 2. Notify passengers “Emergency, prepare for immediate landing”. 3. Give brace for impact order at 200 ft before landing 4. In case of fire, position aircraft to provide the greatest number of fire free exits if possible		1. Execute orders from the Commander 2. Activate Transponder code 7700 if time permits
If no First Officer - Transponder to 7700		

Note: Flight crew should be alert to signal passengers by voice or other means to commence evacuation or remain seated after landing when these preparations have been made. If the evacuation has started shut down all engines.

When Ditching or making an emergency landing *(except for emergency landing on manned airport)* switch on ELT approximately 5 minutes before landing.

11.2.3 Emergency Evacuation

It is recommended that evacuation checklist *(see para 11.2.4)* and procedures are drilled and known by heart.

- Pilots should also know the other crew members duties.
- Normally, but not necessarily, the COMMANDER will initiate an evacuation.
- Stop the aircraft if not already stopped, and set the parking brake.
- When the aircraft is parked, the COMMANDER calls ”Shut down engines, emergency evacuation checklist”, then both pilots should perform their check items, independent of each other. It is essential that the engines are shut down prior to the evacuation start.
- In windy conditions and if there is a fire near the aircraft, consider aligning the aircraft into the wind to keep flames away from both the fuselage and fuel vents.

11.2.4 Evacuation After Landing on Land

COMMANDER		FIRST OFFICER *(If carried)*
1. Order "Emergency Evacuation Checklist!" 2. Proceed to the cabin area with flashlight if necessary Assume command 3. Help to open Main door. 4. Direct and assist the passengers in evacuation as condition dictates 5. Check that all passengers have been evacuated 6. Leave aircraft through the main exit if possible. 7. Provide first aid and arrange for passenger comfort.		1. Leave through main door or if blocked, through right side emergency exit. Bring fire extinguisher if necessary 2. Supervise evacuation and if possible instruct able-bodied passengers to assist outside the exits 3. Designate assembly point to account for passengers and crew 4. Provide first aid, and arrange for passenger comfort.

Note: When NO First Officer is carried the Commander will carry out the duties of the First Officer as detailed above

11.2.5 Evacuation Plan

In case an evacuation is necessary, the command to start evacuation shall normally be given by the Commander by using the instruction: EVACUATE!

If the Commander decides that evacuation is not required after a prepared emergency landing or other emergency situation, he shall immediately make the appropriate announcement: REMAIN SEATED!

The passengers shall be ordered to inflate life vests only when outside the aircraft.

Infants may have their life vests inflated inside the aircraft but after impact.

Passengers leaving through the over-wing exit shall be instructed to jump rearward of the wing.

Off load the first aid kit and flashlights if time permits.

Direct passengers to the appropriate exit and face passengers when giving the order.

When outside, direct passengers away from aircraft and use passengers to help carry away injured passengers from the danger area. Keep passengers together and start first aid.

Do not allow anybody to re-enter the aircraft without permission from the Commander.

Evacuation of Incapacitated Passengers.

Generally speaking incapacitated passengers are to be evacuated after able bodied passengers; the best way for an incapacitated passenger to evacuate is via the main door.

Canes/crutches should be stowed along with other personal belongings.

If it is necessary to drag an incapacitated person to the exit the preferred method if possible, is to pull them to safety from the shoulders.

Every effort should be made to avoid twisting or bending their neck or torso.

11.2.6 Unprepared Emergencies

General

As previously stated it is the unexpected emergencies that cause most of the injuries to passengers and crew. It is therefore of outmost importance that the CREW and PASSENGERS know the operations of doors and emergency evacuation plan.

A sudden emergency situation requiring immediate evacuation of the aircraft may arise in connection with take-off, landing taxiing or even while the aircraft is stationary.

Evacuation

The evacuation procedures previously explained are the same for prepared and unprepared emergencies.

In case of an unprepared emergency the following will be vital actions which should be followed in order to assure a successful evacuation:

- Open available doors that are not in fire area. After ditching only the right hand side emergency window exit should be used.
- Start evacuation without delay.
- Order passengers to put on life vests in a ditching situation.
- Assist passengers out of the aircraft and order life vest to be inflated outside the aircraft.
- Direct passengers away from danger area.

Evacuation on the Apron

Aircraft parked: Start evacuation instantly and if practicable, use only the main door to avoid unnecessary injuries.

Aircraft taxiing: Commander to stop aircraft, and start the evacuation as soon as possible. If practicable, use only the main door to avoid unnecessary injuries.

11.2.7 Evacuation after Ditching

The following procedures apply when the aircraft is in water.

When an emergency condition is anticipated, the preparations for passenger evacuation should be carried out prior to landing.

Each crew member shall be thoroughly familiar with the duties of other members, so that he/she will be able to perform them if necessary.

COMMANDER		FIRST OFFICER *(If carried)*
1. Notify ATC if possible 2. All controls and switches in appropriate position according to Emergency checklist Ditching 3. Give evacuation order 4. Assist passengers to evacuate 5. Check that all passengers have been evacuated and leave the aircraft 6. Arrange for passenger comfort		1. Go to the cabin and assist with evacuation on right side 2. Order: "Release seatbelt! Life vest on! Get out Right Hand Window Exit! Inflate outside 3. Bring torch 4. Try to keep passengers together in water

Note: If unprepared Ditching, life vests – ON after stand-still.
Activate ELT prior to landing.

11.2.8 Emergency Duties – Flight Deck

Commander

Note: When NO First Officer is carried the Commander will carry out the duties of the First Officer as detailed below

- Preparation:

Order preparations for emergency landing *(ditching)* Inform passengers as appropriate Life vest on *(ditching)* Visual check that Cabin Secure. Order ELT switch on, if required.

- Evacuation:

When the aircraft has come to a complete stop, perform necessary cockpit emergency-checklist items. Order evacuation: "Emergency - Evacuate the aircraft!" Exercise overall command inside the aircraft; check all passengers and crew are out and leave aircraft through available exit.

- Ditching:

Exercise overall command inside the aircraft. Assist and take command in any available raft. *(Valid when raft is available).*

First Officer *(If carried)*

- Preparation:

Perform preparation as ordered by the Commander. Life vest on *(ditching).*

- Evacuation:

As directed by Commander, when the aircraft has come to a complete stop, perform necessary cockpit emergency checklist items. Assist the passengers evacuate the aircraft and leave through available exit.

- Ditching:

As directed by the Commander. Check the Emergency Exits are open and clear.

Assist in inflation of rafts. If necessary take command in raft. *(Valid when raft is available).*

11.3 Aircraft Evacuation

11.3.1 General

In the event of an aircraft evacuation, because no cabin crew are carried, the First Officer will, under the directions of the Commander, be responsible for conducting the evacuation procedure.

The Commander will be responsible for securing the aircraft before leaving the flight deck, whereupon he will assist with the evacuation or leave the aircraft, as circumstances demand.

Evacuation - Aircraft on The Water

When aircraft is at rest:

Commander	First Officer *(If carried)*
1. Give command to evacuate	1. Leave flight deck, proceed to cabin
2. Carry out securing drills	2. Ensure emergency exit is open
3. Leave flight deck, proceed to cabin	3. Ensure passengers all wearing life jackets
4. Assist with evacuation	4. Ensure all passengers leave aircraft via emergency exit. Head Count
5. Leave aircraft when all other personnel are clear of aircraft	5. Leave aircraft when all passengers are clear of aircraft
6. In the water, marshall passengers into group for security and location	6. In water, assist Commander with marshalling

Note: When NO First Officer is carried the Commander will carry out the duties of the First Officer as detailed above

Evacuation - Aircraft on Land

- Landing Gear All Locked Down

When aircraft is at rest:

Commander	First Officer *(If Carried)*
1. Give command to evacuate	1. Leave flight deck, proceed to cabin
2. Carry out securing drills	2. Ensure main door is open
3. Leave flight deck, proceed to cabin	3. Conduct passengers to main door, Instruct to evacuate to an upwind position.
4. Assist with evacuation	4. Ensure all passengers leave aircraft If necessary use emergency exit.
5. Leave aircraft when all other personnel are clear of aircraft	5. Leave aircraft when all passengers are clear of aircraft
6. Marshall all personnel to safe positions, Conduct head count.	6. Marshall all passengers to a safe position upwind of aircraft.

Note: When NO First Officer is carried the Commander will carry out the duties of the First Officer as detailed above

- Landing Gear Up or Partially Extended

When the landing gear is not fully down and locked, landing on any surface can cause severe distortion of the airframe. Crew members should therefore be ready for the possibility that any one or more of the emergency exits may be difficult or even impossible to open.

The ideal procedure above *(Para 11.2.1.)* may have to be modified at the time of the event for the above stated reasons. Crew members will have to use their initiative in determining which route of exit is to be used in the circumstances.

Use the above procedure where possible.

11.3.2 Standard Passenger Briefing

The Commander is to ensure that all passengers are briefed with regard to aircraft safety. This duty may be delegated to the First Officer. An actual demonstration in the use of the aircraft life jacket, oxygen mask and seatbelts is required. These items marked 'demonstration only' can be found as part of the aircraft equipment.

The Commander of the aircraft must announce using the aircraft PA, or directly to the passengers depending on type of aircraft, that all persons are to be seated prior to take-off and before landing.

The Commander must also state that all passengers are to remain in their seats after landing until the aircraft comes to a final stop and the seat belt signs are switched off.

The items to be covered must include the following:

- Exits and emergency exits.
- Life Jackets *(to include children and floatation cots).*
- The supply of oxygen.
- Smoking in aircraft.
- Seat belts.
- Brace position.
- Stowing of baggage.
- First aid box.
- Fire Extinguishers.
- Folding tables.
- Electrical items, including the use of mobile phones.

11.3.4 Example Emergency Brief

"It is a requirement that you listen carefully to the following safety matters.

There are two exits, the first is at the rear of the aircraft. The second exit is opened by pressing the button on the door, then turning the handle anti-clockwise and pushing the door outwards.

The second is an overwing emergency exit and is opened by pulling the red handle down, then pulling the door into the aircraft and stepping through the exit and on to the wing.

For flights over water there are life jackets provided. These can be found under your seats. Do not inflate until you have left the aircraft.

The aircraft will be pressurised. In the unlikely event of a system failure, oxygen masks will drop down automatically, place the mask over your face and breath normally.

There will be no smoking during take-off and landing, when oxygen is in use, in the toilet area when the partitions are closed (if applicable) or at any other time when instructed by the Commander.

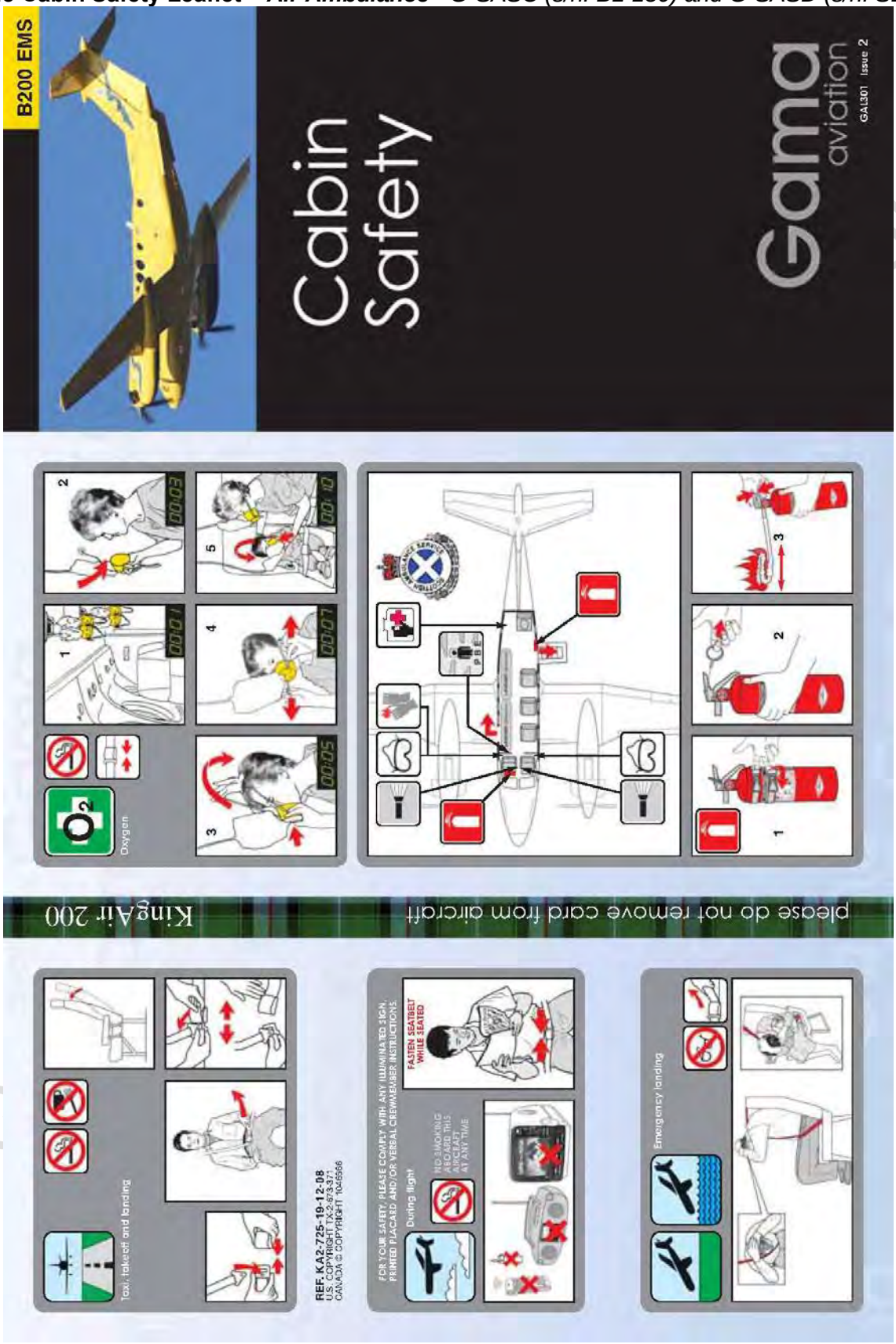
Seat backs must be upright and seat belts must be fastened for take-off and landing and when the signs are illuminated. It is recommended that you keep them fastened whilst in your seat.

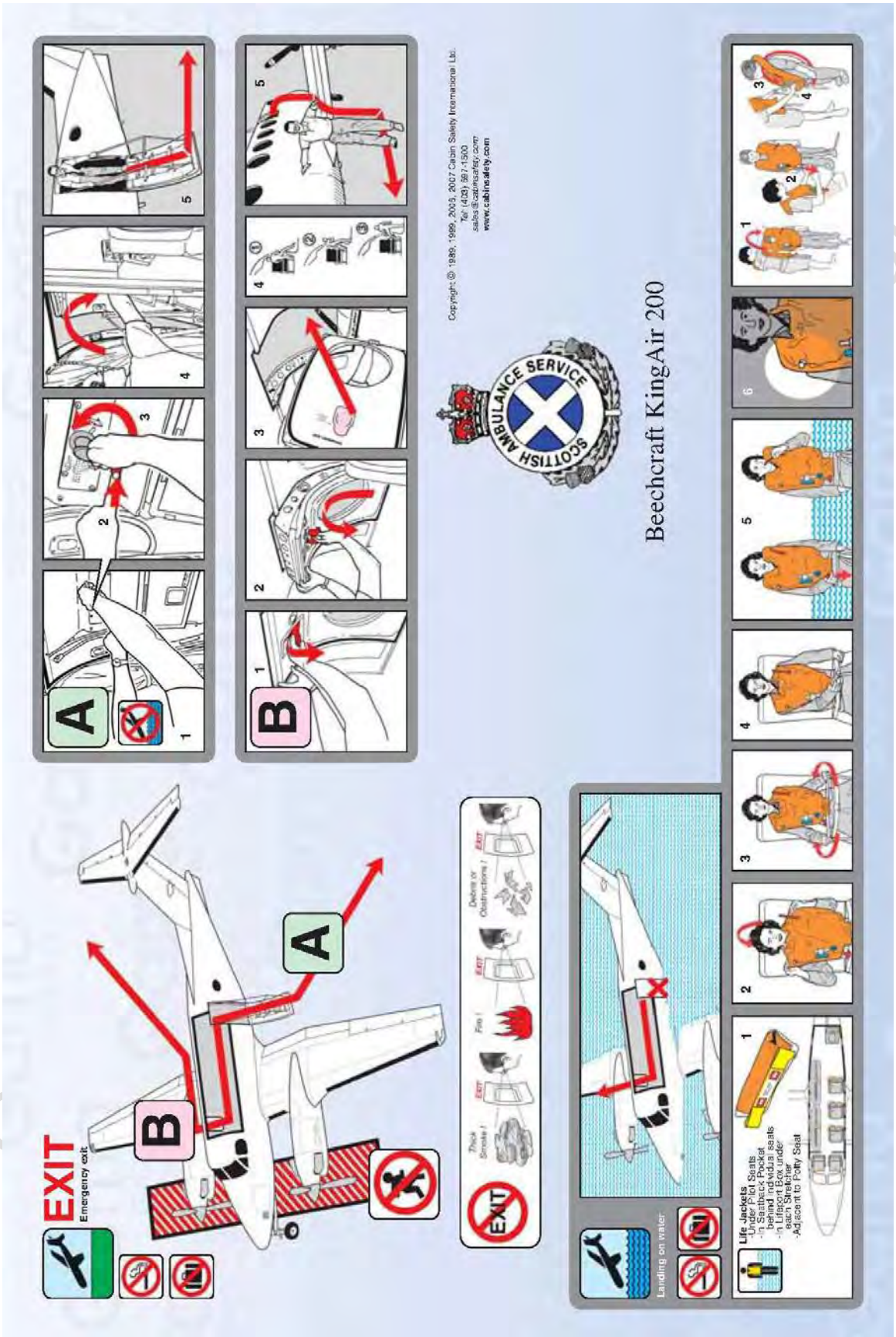
Tables and light baggage must be stowed during take-off and landing.

Portable phones are not to be used during flight and other electronic items may cause interference, please check with crew before use.

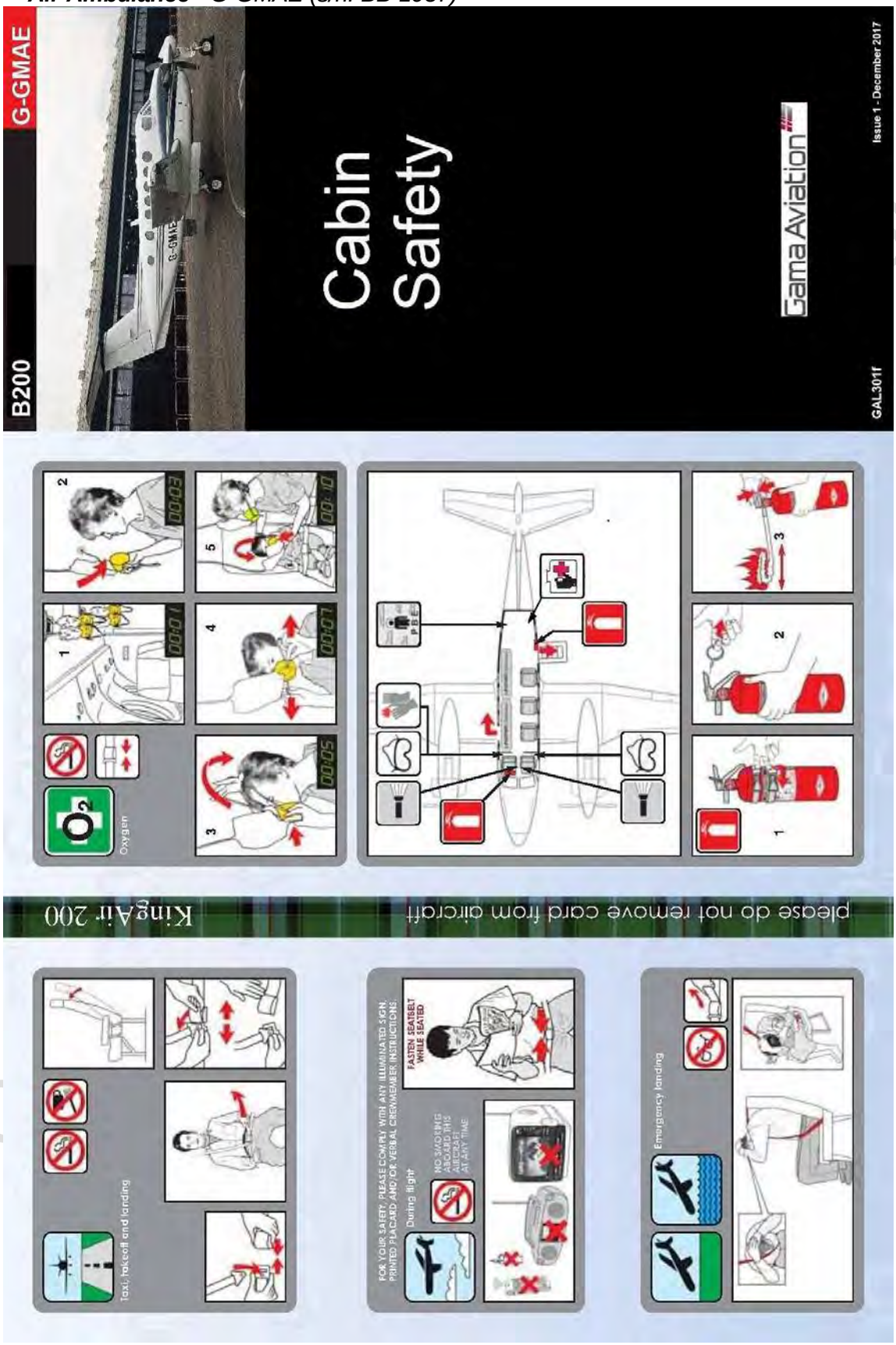
Would you please familiarise yourself with the contents of the safety leaflet".

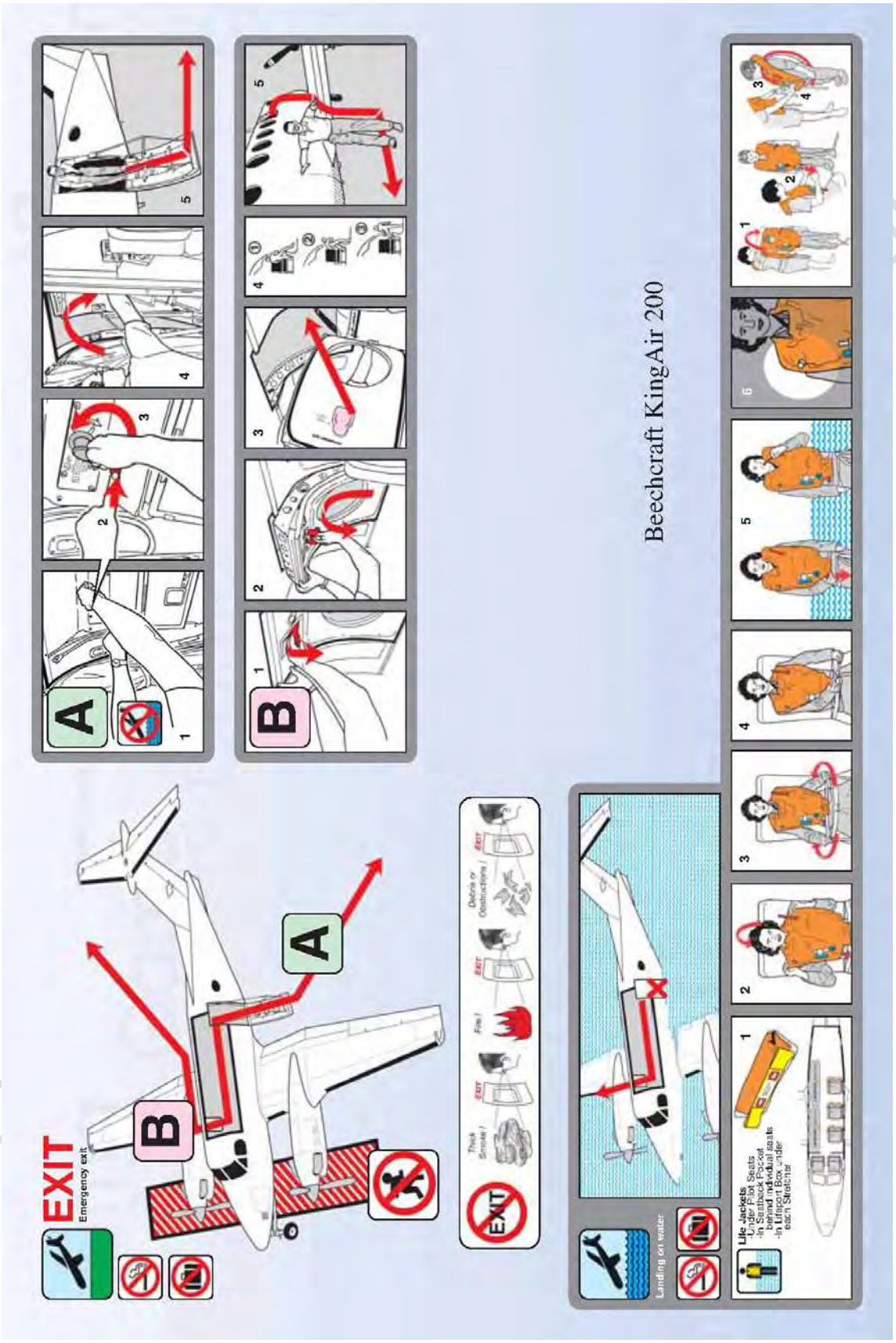
11.3.5 Cabin Safety Leaflet – *Air Ambulance* *- G-SASC (s/n: BL-150) and G-SASD (s/n: SL-151)*



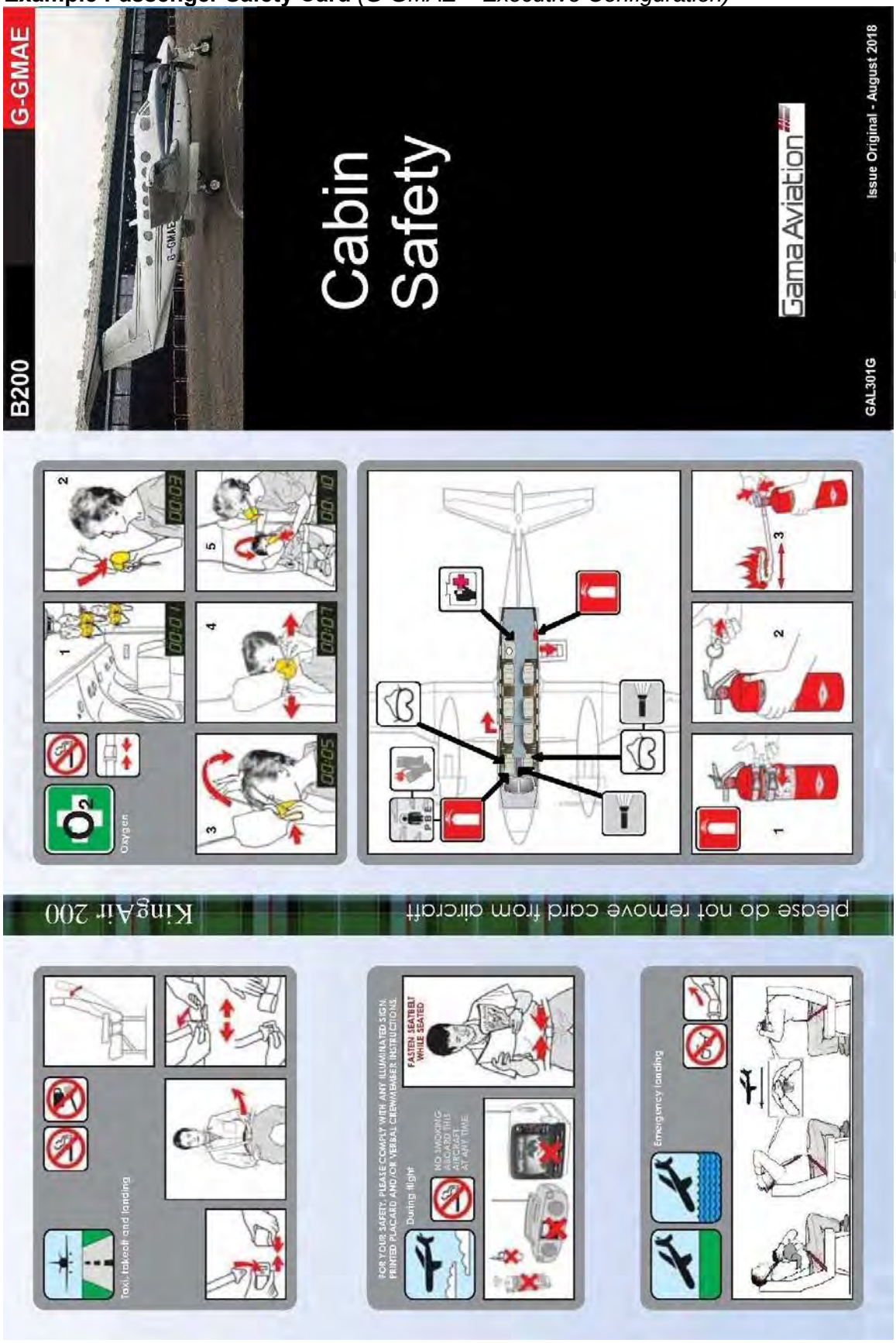

Beechcraft KingAir 200
SCOTTISH AMBULANCE SERVICE
EXIT
Emergency exit
A
B
Landing on water
Life Jackets
Under Pilot Seats
In Cabin Ceiling Pocket
behind individual seats
In Lifeport Box under
each Stretcher
Adjacent to Potty Seat

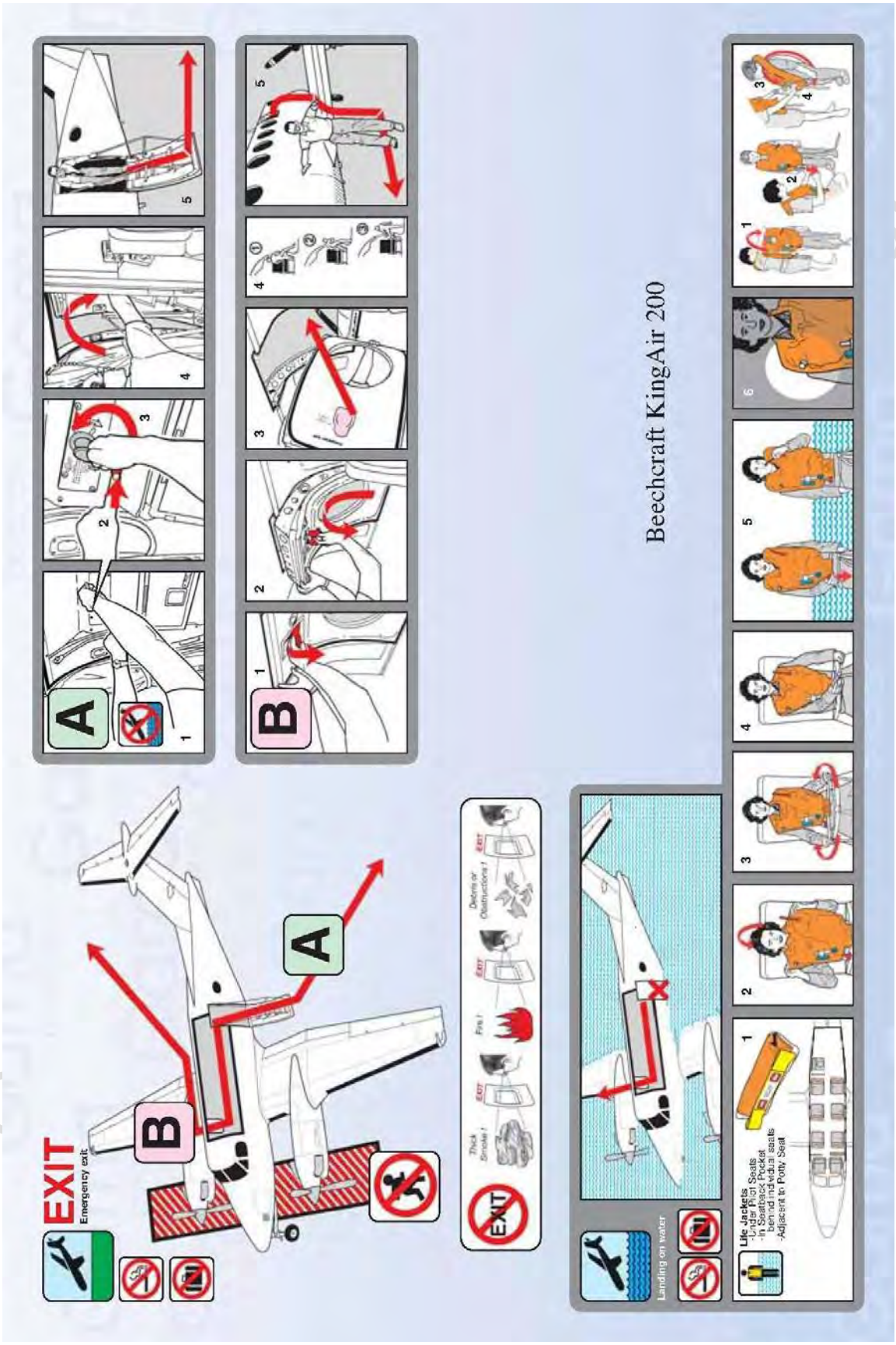
Air Ambulance - *G-GMAE (s/n: BB-1957)*



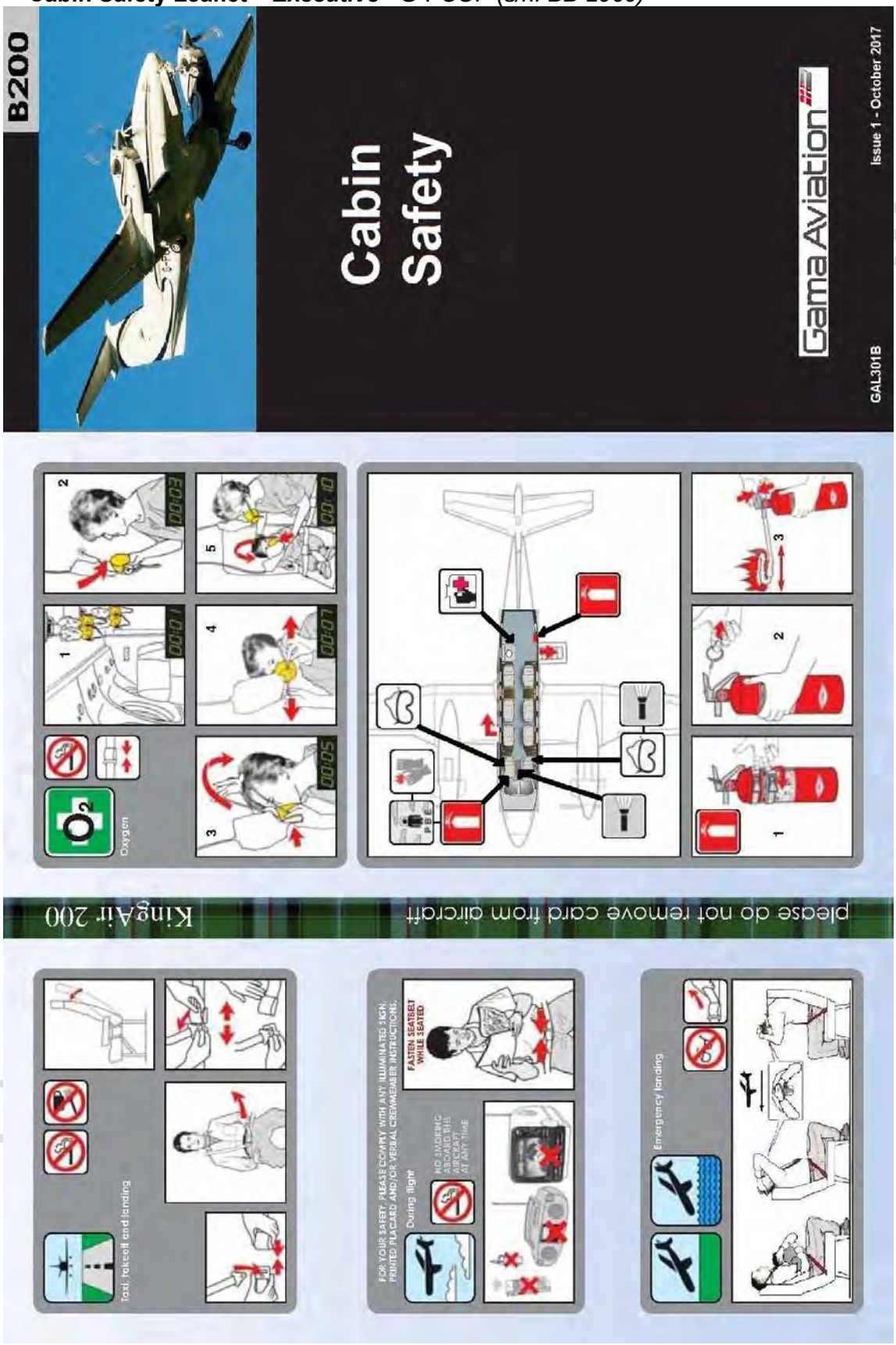

Beechcraft KingAir 200
A
B
EXIT
Emergency exit
Life Jackets
-Under Seats
-In Seatback Pocket
behind individual seats
-In Lifeport Box under
each Stretcher
Landing on water
Debris or Obstructions
Fire !
Thick Smoke !

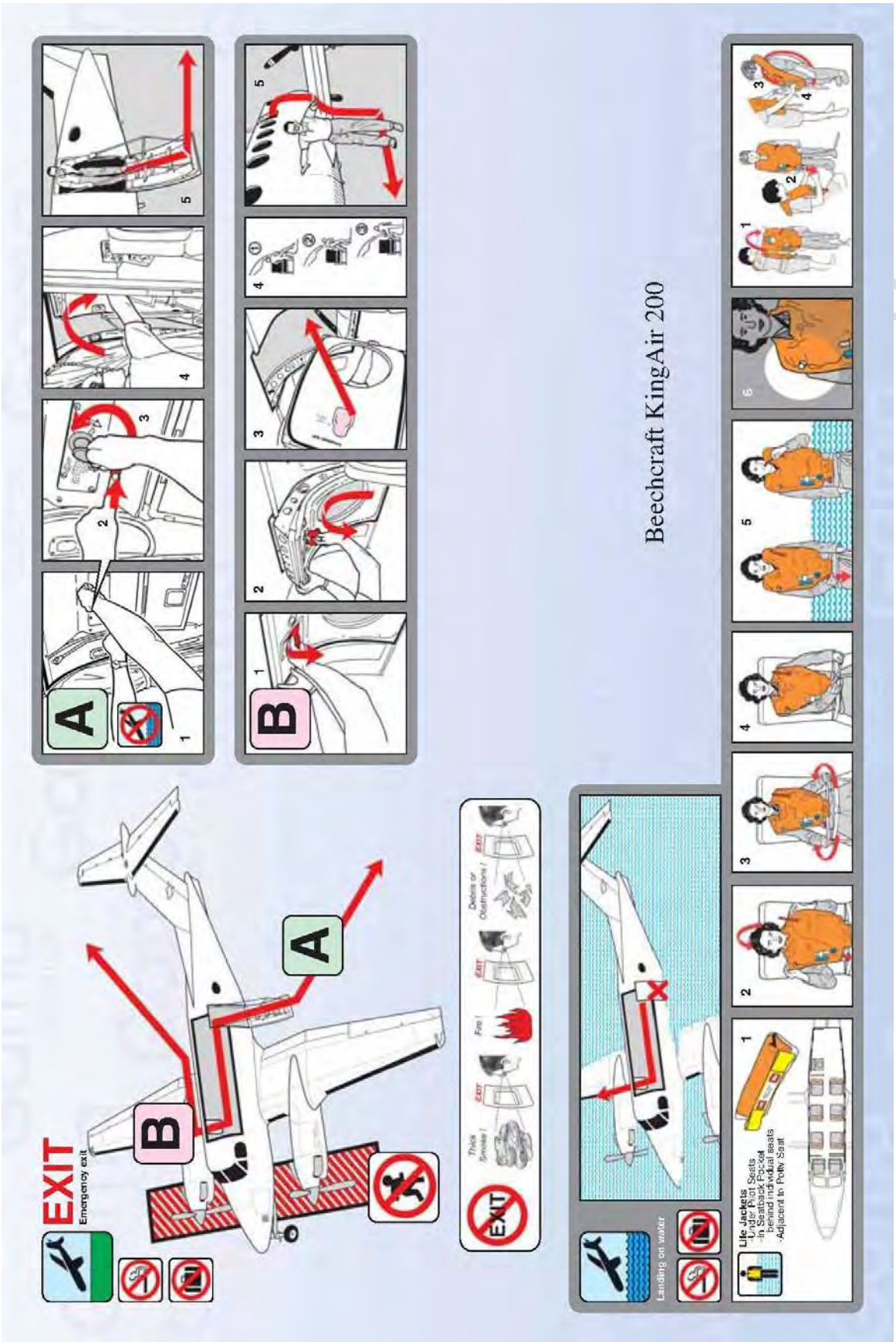
Example Passenger Safety Card *(G-GMAE – Executive Configuration)*




Beechcraft KingAir 200
A
B
EXIT
Emergency exit
Life Jackets
-Under Pilot Seats
-In Seatback Pocket
-Beneath Aft Facing Seats
-Adjacent to Potty Seat
Landing on water
Thick Smoke !
Fire !
Debris or Obstructions !
EXIT

Cabin Safety Leaflet – *Executive* - *G-PCOP (s/n: BB-1960)*



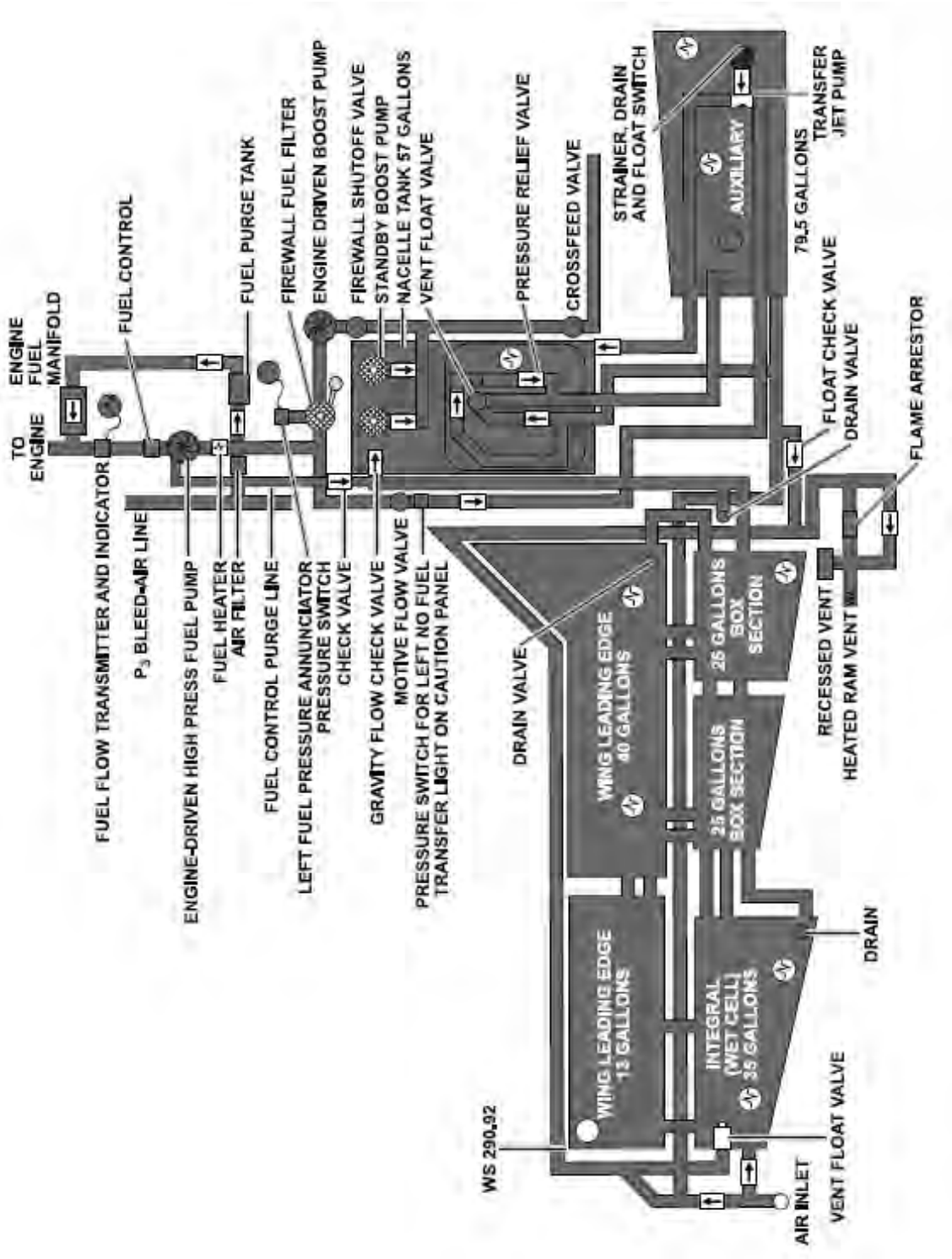

Beechcraft KingAir 200
A
B
EXIT
Emergency exit
Life Jackets
Under Pilot Seats
In Seattrack Pocket
Behind Individual Seats
Adjacent to Pilots Seat
Landing on water
Thick Smoke
Fire
Debris or Obstructions
EXIT

12 Section 12 - Aeroplane Systems

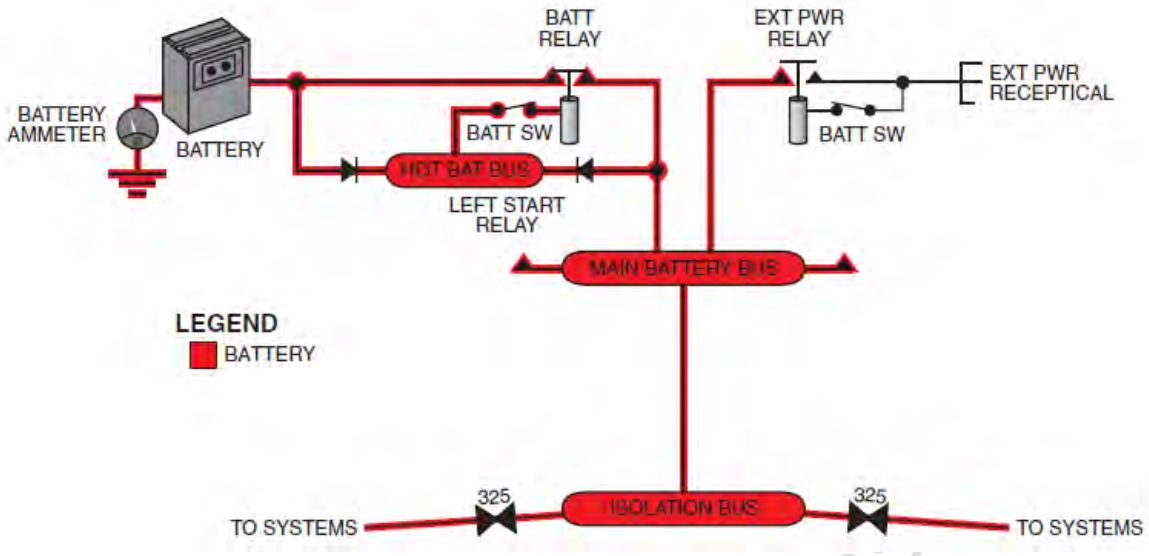
12.1 Aeroplane Systems

12.1.1 Fuel system

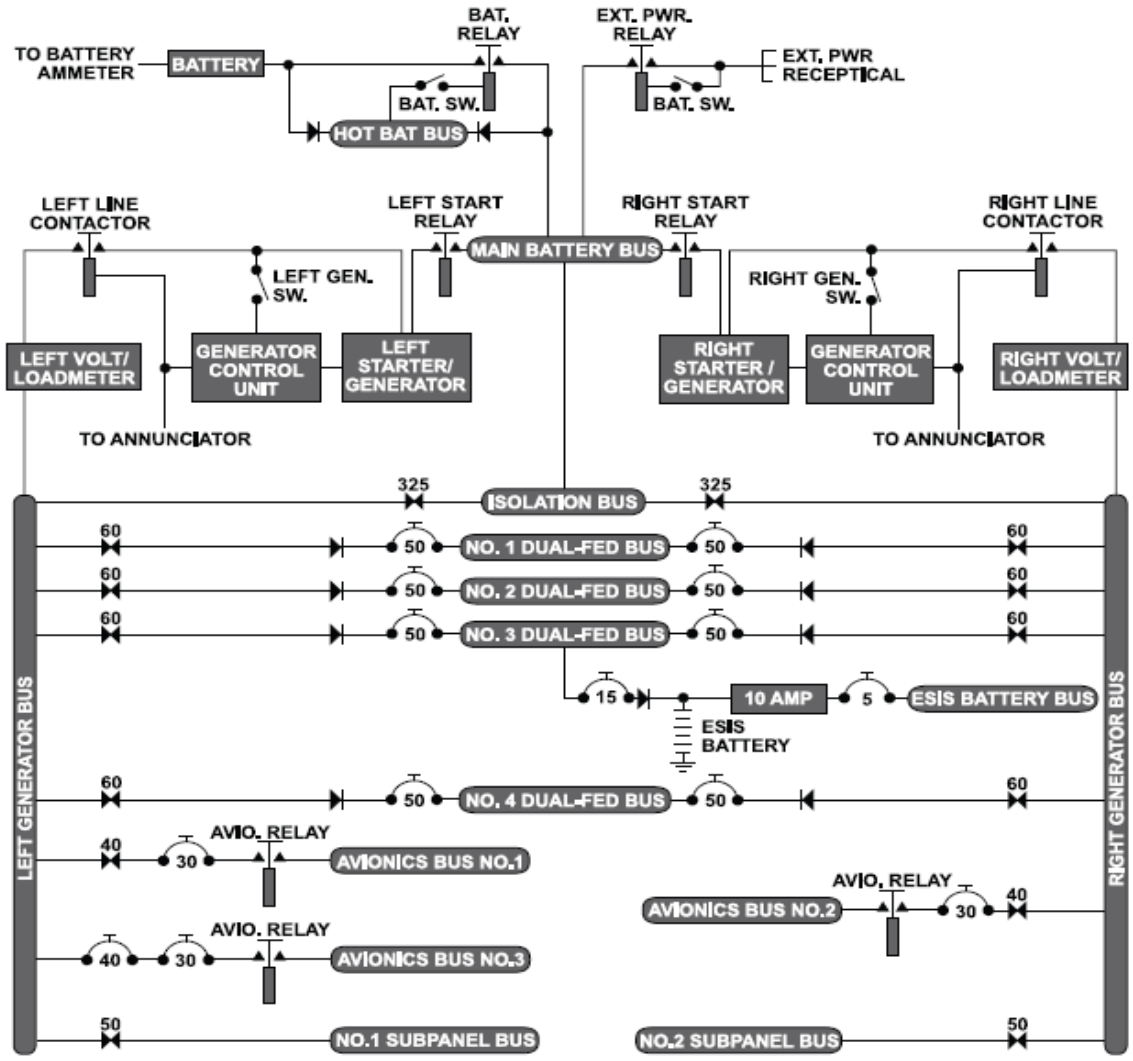
Left:



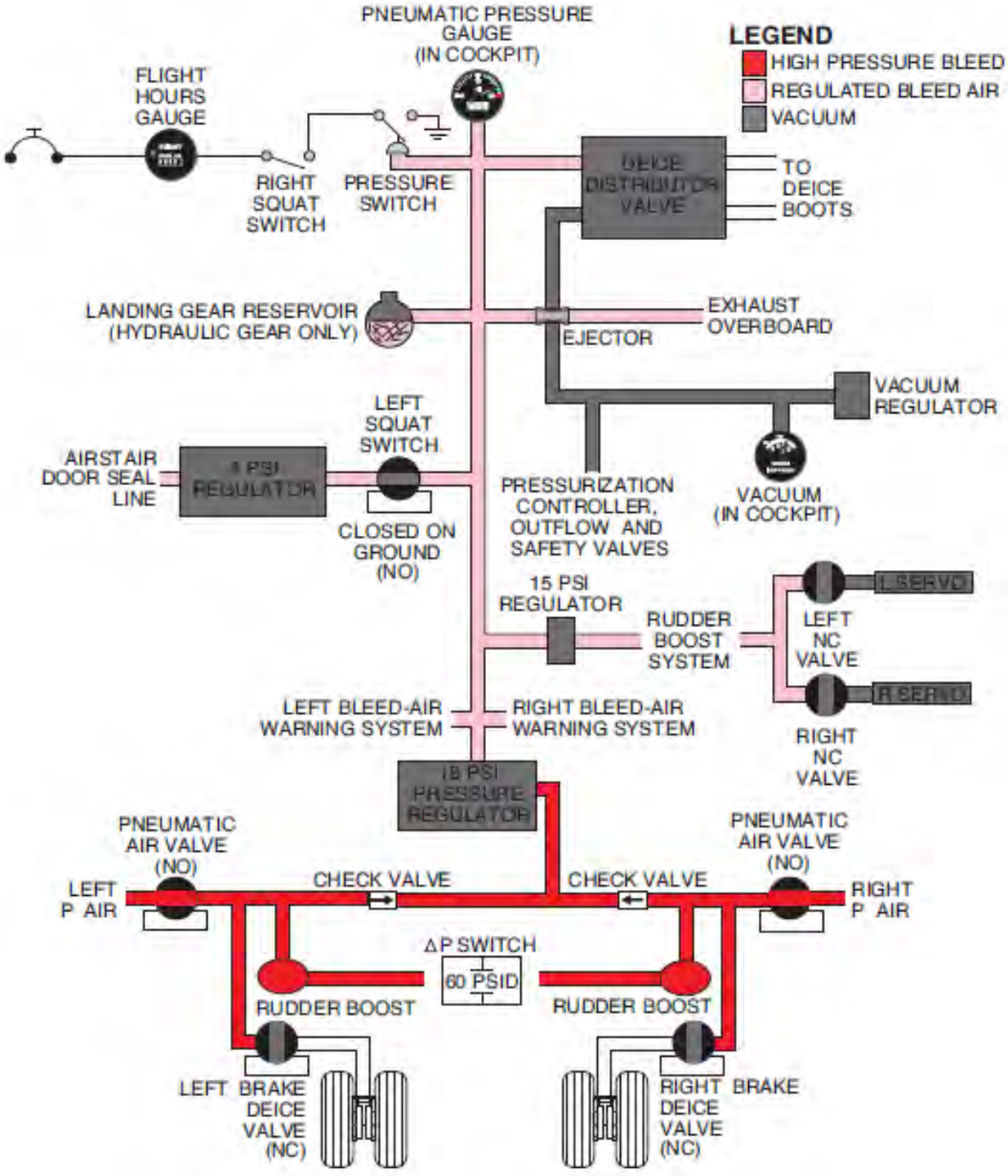
12.1.2 Electrical system DC



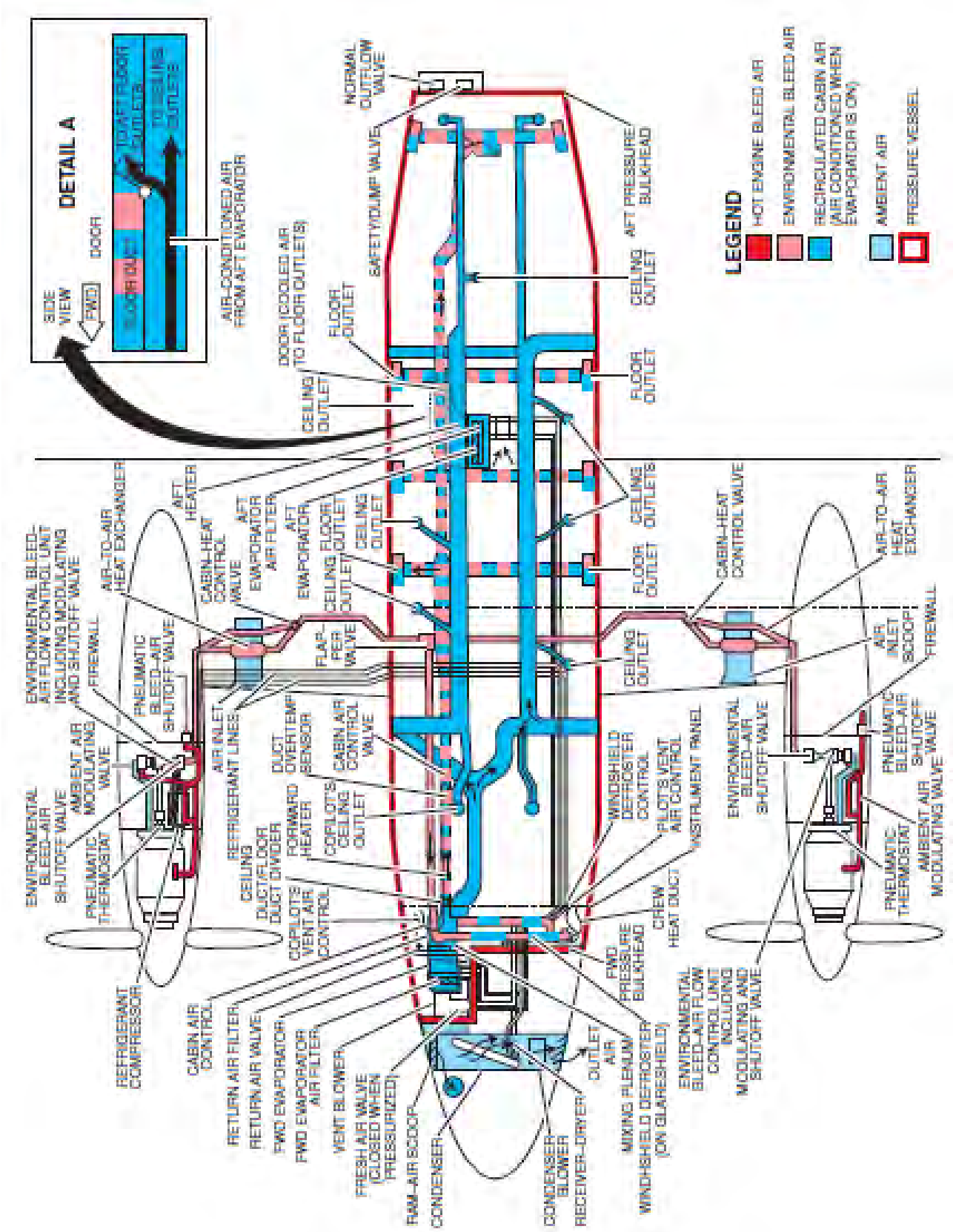
Electrical Distribution



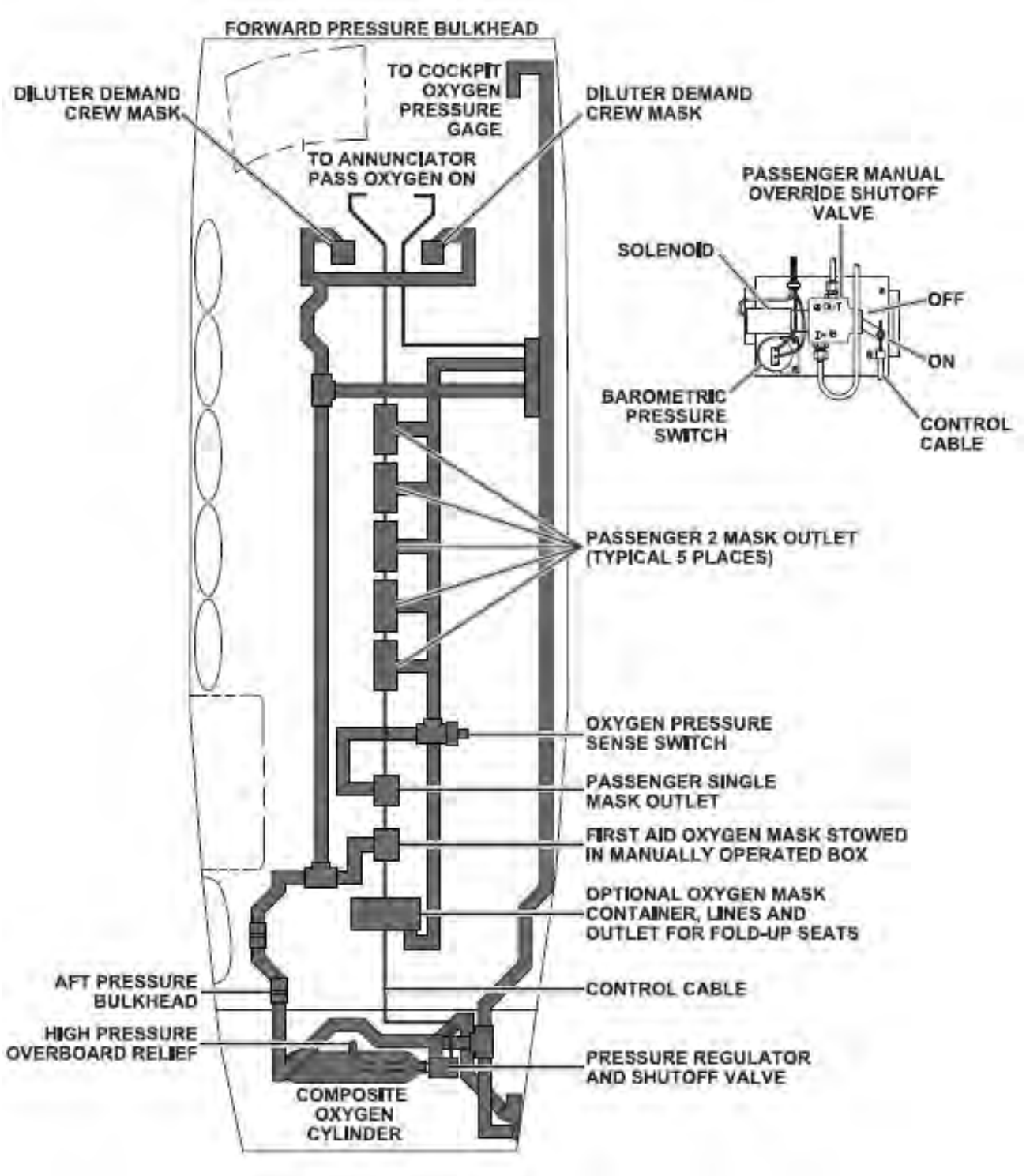
12.1.3 Pneumatics



12.1.4 Pressurisation



12.1.5 Oxygen system



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