REVISION TO AIRCRAFT PUBLICATION: EC 155 B1

PUBLICATION CONCERNED: FLIGHT MANUAL

CUSTOMIZATION AIRCRAFT S/N:

Regulatory Part	**RN**	**22**	**Date code**	**23-06**	**Certification code**	**A**
SUP.62	**RN**	**2**	**Date code**	**23-06**	**Certification code**	**A**

- The outline of the revision is given below:
  - Pages affected (added or modified),
  - Major points of the revision.
- Check that pages in each section or supplement are those specified in the list of effective pages.
- Withdraw old and insert new pages affected by this revision.
- Return the acknowledgement card.
- This list of amended pages may be filed (apart from the manual).

THE CONTENT OF THE FLIGHT MANUAL REVISION MUST BE BROUGHT TO THE ATTENTION OF FLIGHT CREWS.

UPDATE GUIDE

	UPDATE GUIDE					
	DELETED PAGES			INSERTED PAGES		
	SECTION / SUP / APP	PAGES	DATE CODE	SECTION / SUP / APP	PAGES	DATE CODE
Flight Manual Revisions Status	-	1	November 12, 2021	-	1	June 05, 2023
NORMAL REVISION	**Regulatory Part**		**RN22 23-06**			
	0.0.P3	1	18-10	**0.0.P3**	**1**	**23-06**
	-	-	-	**0.0.P3**	**2**	**23-06**
	0.0.P5	1 to 5	20-50	**0.0.P5**	**1 to 6**	**23-06**
	2.3	1	02-20	**2.3**	**1**	**23-06**
	2.3	2	12-16	**2.3**	**2**	**23-06**
	2.3	3 to 5	04-36	**2.3**	**3 to 5**	**23-06**
	2.3	6	16-25	*2.3*	*6*	*16-25*
	3.2	5	12-16	*3.2*	*5*	*12-16*
	3.2	6	14-28	**3.2**	**6**	**23-06**
	3.3	1	12-16	**3.3**	**1**	**23-06**
	3.3	2	02-50	**3.3**	**2**	**23-06**
	3.3	3 to 4	02-20	**3.3**	**3 to 4**	**23-06**
	3.3	5	14-28	**3.3**	**5**	**23-06**
	3.3	6	14-28	*3.3*	*6*	*14-28*
	3.3	7 to 8	14-28	**3.3**	**7 to 8**	**23-06**
	3.3	9	14-28	*3.3*	*9*	*14-28*
	3.3	10 to 11	14-40	**3.3**	**10 to 11**	**23-06**
	3.3	12	18-44	*3.3*	*12*	*18-44*
	4.0.P6	1	12-16	**4.0.P6**	**1**	**23-06**
	4.0.P6	2	12-16	*4.0.P6*	*2*	*12-16*

	UPDATE GUIDE (CONT'D)					
NORMAL REVISION	**Regulatory Part**		**RN22 23-06**			
	4.2	1	09-04	**4.2**	**1**	**23-06**
	4.2	2 to 3	12-16	**4.2**	**2 to 3**	**23-06**
	4.3	1 to 5	18-10	**4.3**	**1 to 5**	**23-06**
	4.3	6	18-10	*4.3*	*6*	*18-10*
	4.3	7	18-10	**4.3**	**7**	**23-06**
	4.3	8	14-28	**4.3**	**8**	**23-06**
	4.3	9 to 10	12-16	**4.3**	**9 to 10**	**23-06**
	-	-	-	**4.3**	**11**	**23-06**
	4.4	1 to 2	12-16	**4.4**	**1 to 2**	**23-06**
	5.0.P6	1	04-36	**5.0.P6**	**1**	**23-06**
	SUP.62		**RN2 23-06**			
	SUP.62.P1	1	16-25	*SUP.62.P1*	*1*	*16-25*
	SUP.62.P5	1	18-45	**SUP.62.P5**	**1 to 2**	**23-06**
	SUP.62	1	16-25	*SUP.62*	*1*	*16-25*
	SUP.62	2	18-45	**SUP.62**	**2**	**23-06**
	SUP.62	3	16-25	*SUP.62*	*3*	*16-25*
	SUP.62	4	18-45	*SUP.62*	*4*	*18-45*
	SUP.62	5 to 6	18-45	**SUP.62**	**5 to 6**	**23-06**
	SUP.62	7 to 9	16-25	*SUP.62*	*7 to 9*	*16-25*
	SUP.62	10 to 12	18-45	*SUP.62*	*10 to 12*	*18-45*
	SUP.62	13 to 18	16-25	*SUP.62*	*13 to 18*	*16-25*
CONDITIONAL REVISION	**Regulatory Part**					
	4.3	2 *RC*	18-10	**4.3**	**2 *RC***	**23-06**
	4.3	4 *RC*	18-10	**4.3**	**4 *RC***	**23-06**
	4.3	7 *RC*	18-10	**4.3**	**7 *RC***	**23-06**

SECTION / SUP / APP	PAGES	DESCRIPTION OF THE REVISION
Regulatory Part		**RN22 23-06**
	All	- "DGAC APPROVED" and “EASA APPROVED” replaced by “APPROVED” in page footers.
0.0.P3	1 to 2	- Update of the CAUTION regarding Conditional Revisions management. - Update of 4.3 pages 2*RC*, 4*RC* and 7*RC* date-code.
0.0.P5	1 to 6	- Update of the List of approved effective pages and Log of normal approved revisions.
2.3	1 to 5	- Wording improvement. Data remain unchanged.
3.2	6	- In the ENG CHIP emergency procedure, "procedures" is replaced by "activations".
3.3	1	- Addition of item numbers. Data remain unchanged.
3.3	5	- "ALARM" warning light is corrected by "WARN" warning light in both procedures.
3.3	7	- Correction: "EMERG" is replaced by "EMER". - Addition of L/G operating light pictures.
3.3	8	- Addition of the FIRE/FAIL light picture.
3.3	10	- Spelling correction.
3.3	11	- Spelling corrections.
4.0.P6	1	- Section 4.3 §3 page number is corrected.
4.2	1	- Addition of Fuel tank purge procedure before First Flight of the Day.
4.2	2	- Wording improvement. Data remain unchanged.
4.3	1	- Wording improvement. Data remain unchanged.
4.3	2	- In NOTE 3, correction of section number (7.4 instead of 4.7).
4.3	2 *RC*	- Any information not relative to the Conditional Revision is deleted from this page.
4.3	2 and 3	- From item 22 to item 24, items order is modified, and several items regarding Flight controls check are gathered in the item 23.
4.3	3	- From item 25, item renumbering.

SECTION / SUP / APP	PAGES	DESCRIPTION OF THE REVISION (CONT'D)
4.3	4	- Item 34: Update of Fuel booster pumps check. - Item renumbering from item 35 to item 37. - In §2, the pitch centering procedure is deleted, as it is moved in §1, item 23.
4.3	4 *RC*	- Any information not relative to the Conditional Revision is deleted from this page.
4.3	5	- Spelling correction. - In the last bullet of item 2, "LH and RH" is replaced by "LH or RH".
4.3	7 *RC*	- Any information not relative to the Conditional Revision is deleted from this page.
4.3	7	- Addition of item 15 for RADAR test. - Item 16: Update of booster pumps check.
4.3	8	- Spelling correction. - Pictures improvement.
4.3	9 to 11	- Pictures improvement.
4.4	2	- "MTOP" is replaced by "TOP".
5.0.P6	1	- Update of page numbers.
SUP.62		**RN2** **23-06**
SUP.62.P5	1 to 2	- Update of the List of approved effective pages and Log of normal approved revisions.
SUP.62	2	- "B1" (RNAV 5 GNSS) and "C1" (RNAV 2 GNSS) indicators are corrected by "B2" and "C2".
SUP.62	5 and 6	- The AFCS APM 2000 picture is corrected in both diagrams.

AIRBUS HELICOPTERS

Issue dated: **June 05, 2023**

EC 155 B1

FLIGHT MANUAL REVISIONS STATUS

EASA CERTIFICATION

This manual must contain the normal revision (RN) and rush revisions (RR) listed under the relevant issue (EDIT).

PRESCRIBED PART Volume 1			
SECTION / SUP.	EDIT	DATE	
0 → 5	RN 22	23-06	R
SUP 0	RN 20	17-13	
SUP 1	RN 8	15-15	
SUP 6	RN 1	16-10	
SUP 11	RN 5	17-10	
SUP 14	RN 8	20-11	
SUP 15	RN 4	15-12	
SUP 17	RN 2	14-04	
SUP 18	RN 0	05-41	
SUP 19	RN 1	20-50	
SUP 20	RN 0	02-20	
SUP 21	RN 1	02-47	
SUP 22	RN 0	02-20	
SUP 23	RN 1	14-04	
SUP 24	RN 2	03-41	
SUP 25	RN 1	03-41	
SUP 27	RN 0	02-39	
SUP 28	RN 1	03-41	
SUP 29	RN 2	03-38	
SUP 31	RN 1	02-45	
SUP 32	RN 1	06-28	
SUP 33	RN 6	19-19	
SUP 34	RN 0	02-20	
SUP 35	RN 1	15-28	
SUP 36	RN 0	02-20	
SUP 37	RN 1	05-14	

PRESCRIBED PART Volume 1			
SECTION / SUP.	EDIT	DATE	
SUP 38	RN 0	06-39	
SUP 39	RN 5	14-42	
SUP 39.1	RN 0	17-13	
SUP 40	RN 1	14-07	
SUP 51	RN 1	03-04	
SUP 52	RN 3	20-14	
SUP 53	RN 2	11-48	
SUP 54	RN 1	06-49	
SUP 55	RN 1	02-47	
SUP 56	RN 4	06-14	
SUP 57	RN 5	15-02	
SUP 58	RN 1	05-32	
SUP 59	RN 1	10-28	
SUP 60	RN 3	15-28	
SUP 61	RN 0	13-09	
SUP 62	RN 2	23-06	R
SUP 63	RN 1	17-43	

COMPLEMENTARY PART Volume 2		
SECTION / APPENDIX	EDIT	DATE
0, 6 → 10	RN 20	21-35
APP.9.1	RN 1	12-08

COMPOSITION

OF CONDITIONAL REVISIONS (RC)

This Manual assigned to the helicopter mentioned on the title page, contains the following pink pages except those cancelled when the conditions are complied with.

CAUTION

- **THE READER WILL HAVE TO INSERT THE PINK PAGES INCORPORATING THE PARAGRAPH(S) AFFECTED BY THE CONDITIONAL REVISION SO AS THE PARAGRAPH(S) COVER(S) THE PARAGRAPH(S) OF THE STANDARD VERSION.**
- **IF A NORMAL REVISION (RN) MODIFIES THE PAGE NUMBER FOR ANY INFORMATION MENTIONED HERE BELOW, THE READER WILL HAVE TO CHANGE THE PINK PAGE NUMBER BY HAND, SO THAT THE PARAGRAPH(S) AFFECTED BY THE CONDITIONAL REVISION REMAIN(S) IN ACCORDANCE WITH THE CORRESPONDING PARAGRAPH(S) OF THE STANDARD FLIGHT MANUAL.**

NOTE

The date code includes the last two digits of the year
followed by the week number in that year.

(1) PAGE REVISION CODE:

- R ..... Revised, to be replaced
- N ..... New, to be inserted

RC	SECTION	PAGE	DATE CODE	APPLICABLE BEFORE CONDITION IS MET:	(1)
RC A	3.2	5*RC*	09-04	Mod. 07-22B52: Auto Pilot software vers. N8.30.	
RC B	2.3	2*RC*	04-29	Mod. 07-53C49: Superior reinforced guiding rail.	
RC C	2.2 2.3 4.2 4.8 5.1	1*RC* 3*RC* 3*RC* 1*RC* 1*RC*	CANCELED	Mod. 07-62C17, Mod. 07-67B62 and Mod. 07-39C30. RC C is canceled. The Modifications are incorporated in the RN5 04-36	
RC D	2.1	1*RC*	04-15	Mod. 07-67B62	
RC E	3.2	6*RC*	04-15	Mod. OP-79B31: Chip pulse system	

RC	SECTION	PAGE	DATE CODE	APPLICABLE BEFORE CONDITION IS MET:	(1)
RC F	4.3	2*RC*	23-06	Mod. 07-71C16 (TU 93C): FADEC software update.	R
	4.9	3*RC*	06-14		
	4.9	4*RC*	06-14		
	4.9	5*RC*	06-14		
	4.9	7*RC*	06-14		
	4.9	8*RC*	06-14		
RC G	3.2	18*RC*	17-07	Mod. 07-24C49: Automatic shedding of Secondary Bus 1 after loss of one generator.	
RC H	4.3	4*RC*	23-06	Mod. No. 07-31B89: CVFDR MOPS ED 112.	R
	4.3	7*RC*	23-06		R

LIST OF APPROVED EFFECTIVE PAGES

EASA CERTIFICATION

(1) Page Revision Code

- R : Revised, to be replaced
- N : New, to be inserted

SECTION	PAGE		DATE	(1)
0.0	P1	1	14-28	
0.0	P1	2	02-20	
0.0	P1	3	02-20	
0.0	P2	1	02-20	
0.0	P3	1 to 2	23-06	R
0.0	P4	1	02-20	
0.0	P5	1 to 6	23-06	R
1.0	P6	1	02-20	
1.1		1	02-20	
1.1		2	02-20	
1.2		1	02-20	
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2.0	P6	1	04-36	
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2.1		1	14-40	
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2.3		2	23-06	R
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2.4		1	12-16	
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3.3	1	23-06	R
3.3	2	23-06	R
3.3	3	23-06	R
3.3	4	23-06	R
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3.3	6	14-28	
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3.3	11	23-06	R
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4.2	1	23-06	R
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4.3	3	23-06	R
4.3	4	23-06	R
4.3	5	23-06	R
4.3	6	18-10	
4.3	7	23-06	R
4.3	8	23-06	R
4.3	9	23-06	R
4.3	10	23-06	R
4.3	11	23-06	N
4.4	1	23-06	R
4.4	2	23-06	R
4.5	1	18-10	
4.5	2	12-16	
4.6	1	14-28	
4.7	1	18-10	
4.8	1	12-16	
4.9	1	14-28	
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LOG OF NORMAL APPROVED REVISIONS

BASIC RFM REVISIONS

NORMAL REVISION 0 date code 02-20	
NORMAL REVISION 1 date code 02-29	
NORMAL REVISION 2 date code 02-50	
NORMAL REVISION 3 date code 03-18	
NORMAL REVISION 4 date code 04-07	
NORMAL REVISION 5 date code 04-36	
NORMAL REVISION 6 date code 04-49	
NORMAL REVISION 7 date code 05-25	
NORMAL REVISION 8 date code 06-14	
NORMAL REVISION 9 date code 07-06	
NORMAL REVISION 10 date code 09-04	
NORMAL REVISION 11 date code 10-35	
NORMAL REVISION 12 date code 12-16	EASA approval No 10041911 on October 24, 2012
NORMAL REVISION 13 date code 13-48	EASA approval No 10048194 on February 19, 2014
Main Points	Modification of the authorized fuel
Revised information	0.0.P5, 2.5 page 4
Deleted information	None.

LOG OF NORMAL APPROVED REVISIONS (CONT'D)

NORMAL REVISION 14 date code 14-28	Approved on October 28, 2014 under the authority of EASA Design Organization Approval No.21J.056
Main Points	Incorporation of new brand "Airbus Helicopters" instead "Eurocopter" Incorporation of customer remarks.
Revised information	0.0.P1 - 0.0.P5 - 3.0.P6 - 3.1 p.2 - 3.2 p.4, 6, 7, 9, 11, 14, 18, 23, 29, 30, 31 - 3.3 p.5 to 11 - 4.3 p.8 - 4.6 p.1 - 4.9 p.1
Deleted information	None.
NORMAL REVISION 15 date code 14-40	EASA approval No 10052224 on February 10, 2015
Main Points	Incorporation of new prohibited maneuvers. Limitation duration of 2 min for high amperage in yellow range. Paragraph “Emergency exit” moved to section 3.3 § 9.
Revised information	0.0.P5 - 2.0.P6 p.2 - 2.1 p.1 - 2.3 p.6 - 2.5 p.6 - 2.7 p.2 - 3.0.P6 p.1 - 3.3 p.10 & 11
Deleted information	None.
NORMAL REVISION 16 date code 16-25	EASA approval No.10059787 on October 17, 2016
Main Points	Addition of "Dual GTN 750H GNSS RNAV system" in the Single Pilot IFR requirement.
Revised information	0.0.P5 pages 1 to 4; 2.3 page 6.
Deleted information	None.
NORMAL REVISION 17 date code 17-07	EASA approval No.10063226 on September 22, 2017
Main Points	Incorporation of Mod. 07-24C49 "Automatic shedding of Secondary Bus 1 after loss of one generator". Data transfer from 0.0.P3 *RC* pink page to 0.0.P3 white page. The page 0.0.P3 *RC* is deleted (no longer necessary).
Revised information	0.0.P3 pages 1, 0.0.P5 pages 1 to 4, 3.2 pages 17 and 18.
Deleted information	None.

LOG OF NORMAL APPROVED REVISIONS (CONT'D)

NORMAL REVISION 18 date code 18-10	Approved on May, 2nd 2018 under the authority of EASA Design Organization Approval N°EASA.21.J.700.
Main Points	Incorporation of Mod. 07-31B89 "CVFDR MOPS ED 112" with addition of RC H, distribution of CVFDR/M'ARMS items along the Normal procedures, updates for comprehension improvements.
Revised information	0.0.P3 page 1; 0.0.P5 pages 1 to 5; 4.3 pages 1 to 7; 4.3 page 2 *RC*, page 4 *RC* and 7 *RC*; 4.5 Page 1 and 4.7 page 1.
Deleted information	None.
NORMAL REVISION 19 date code 18-41	Approved on December 13, 2018 under the authority of EASA Design Organization Approval No. EASA.21.J.700.
Main Points	Addition of "No stow under an energy-absorbing seat" information.
Revised information	0.0.P5 pages 1 to 5, 2.0.P6 page 2 and 2.6 page 2.
Deleted information	None.
NORMAL REVISION 20 date code 18-44	Approved on January 31, 2019 under the authority of EASA Design Organization Approval No. EASA.21.J.700.
Main Points	Addition of "After cockpit/cabin fire extinguishers use" emergency procedure.
Revised information	0.0.P5 pages 1 to 5, 3.0.P6 page 1 and 3.3 page 12.
Deleted information	None
NORMAL REVISION 21 date code 20-50	EASA approval No. 10076345 On April 28, 2021
Main Points	Addition of Maximum Take-Off and landing Weight limitation for aircraft with 10 installed passager seats or more. EASA APPROVED is replaced by APPROVED.
Revised information	0.0.P5 pages 1 to 5, 2.2 page 1.
Deleted information	None

LOG OF NORMAL APPROVED REVISIONS (CONT'D)

NORMAL REVISION 22 date code 23-06	Approved on May 26, 2023 under the authority of EASA Design Organization Approval No. EASA.21.J.700.
Main Points	Update of the Booster Pump test procedure in section 4.3. Addition of Fuel Tank Purge procedure before First Flight of the Day. “EASA APPROVED” replaced by “APPROVED” on updated pages.
Revised information	0.0.P3 pages 1 to 2; 0.0.P5 pages 1 to 6; 2.3 pages 1 to 5; 3.2 page 6; 3.3 pages 1 to 5, 7, 8,10 and 11; 4.0.P6 page 1; 4.2 pages 1 to 3; 4.3 pages 1 to 11; 4.4 pages 1 to 2; 5.0.P6 page 1.
Deleted information	None

SECTION 2.3

FLIGHT ENVELOPE LIMITS

1 AIRSPEED LIMITS (IN FLIGHT)

1.1 POWER-ON FLIGHT

- Absolute VNE power-on..... 175 kt (324 km/h).
- VNE power-on changes with altitude:
  - -1500 ≤ Hp ≤ 2000 ft..... 175 kt (324 km/h).
  - 2000 ≤ Hp ≤ 4000 ft..... 175 kt less 1.5 kt per 1000 ft (324 km/h - 9 km/h per 1000 m).
  - Hp ≥ 4000 ft..... 172 kt less 3 kt per 1000 ft (318.5 km/h - 18 km/h per 1000 m).

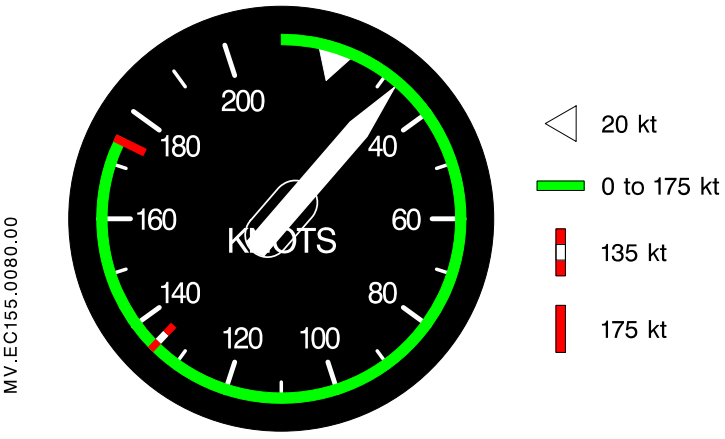
1.2 POWER-OFF FLIGHT

- Absolute VNE power-off..... 135 kt (250 km/h).
- VNE power-off changes with altitude:

  VNE POWER-OFF = VNE POWER-ON - 40 kt (74 km/h).

NOTE

When the VNE is exceeded in power-on flight, the PFD speed scale marking is enhanced with a red band.



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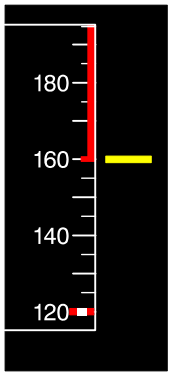

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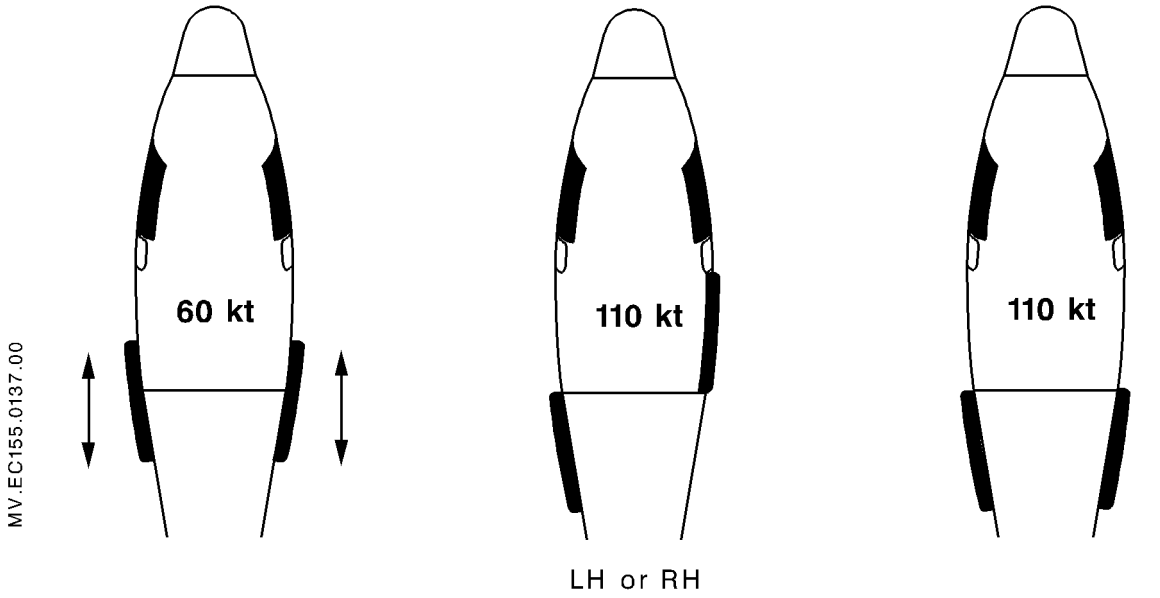
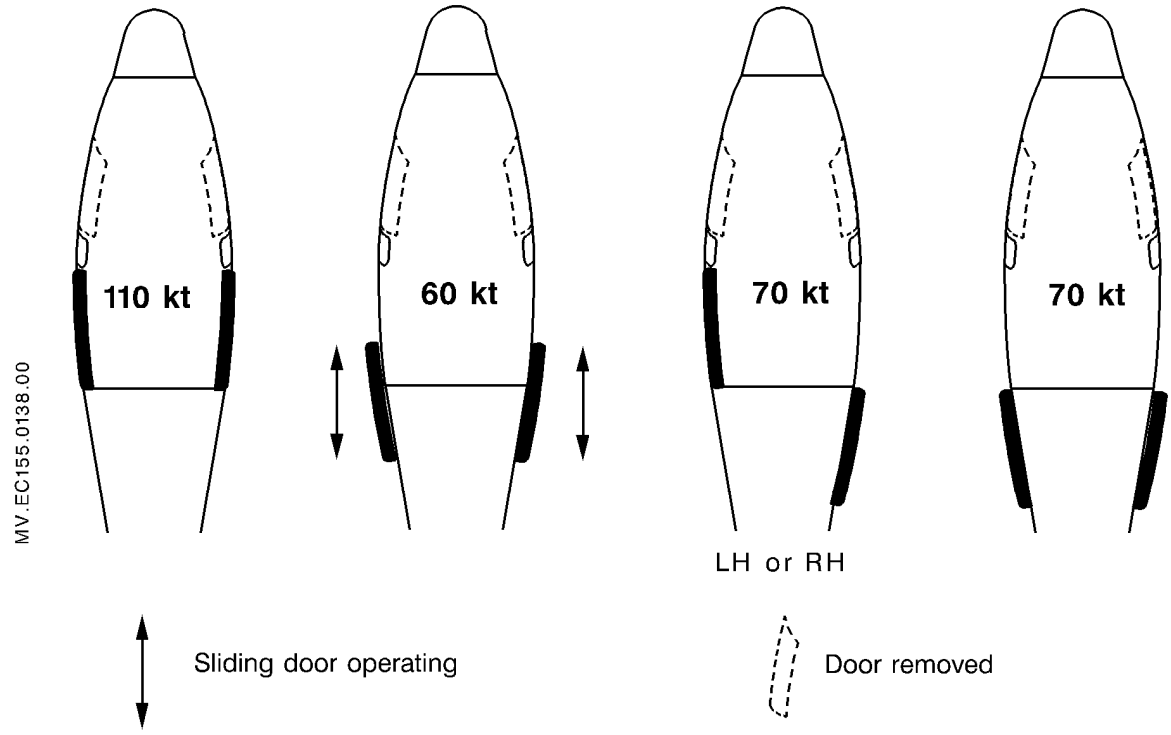
1.3 DOORS OPEN OR REMOVED

The VNE to be taken into account is the value given on either drawing hereafter adapted to the doors configuration.

- Cockpit doors installed.



- Cockpit doors removed.

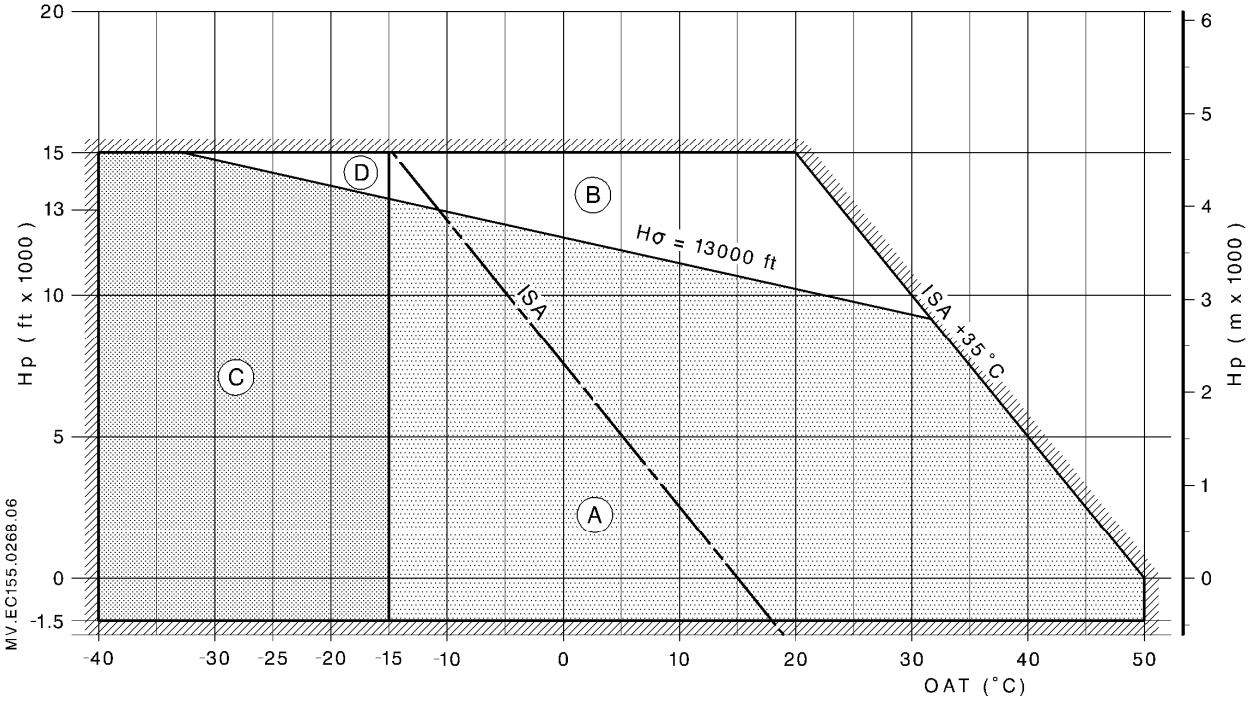


CAUTION

THE OPERATOR MUST HOLD THE SLIDING DOOR WHEN OPERATING IT

2 APPROVED ALTITUDE/TEMPERATURE ENVELOPE

Refer to Figure 1 below for approved altitude/temperature envelope.



A + C - Approved envelope for takeoff and landing
(A + B) + (C + D) - Approved envelope in flight

C + D authorized with extreme cold weather kit including
– 62C17 : torque increase for main rotor screws.
– 67B62 : reduction of collective full flat pitch value.
– 39C30 + 39C37 : addition of a relay on servo controls seizing detection circuit.
– 22B55 : AFCS improvements.
– 29B62 : accumulator connected to aft left servocontrol.
– 29B64 : auxiliary hydraulic circuit at 125 bars.
– 11B62 : tag for new procedure to eject windows.

Figure 1 - Approved Envelopes

3 HEIGHT/VELOCITY DIAGRAM

Refer to Figure 2

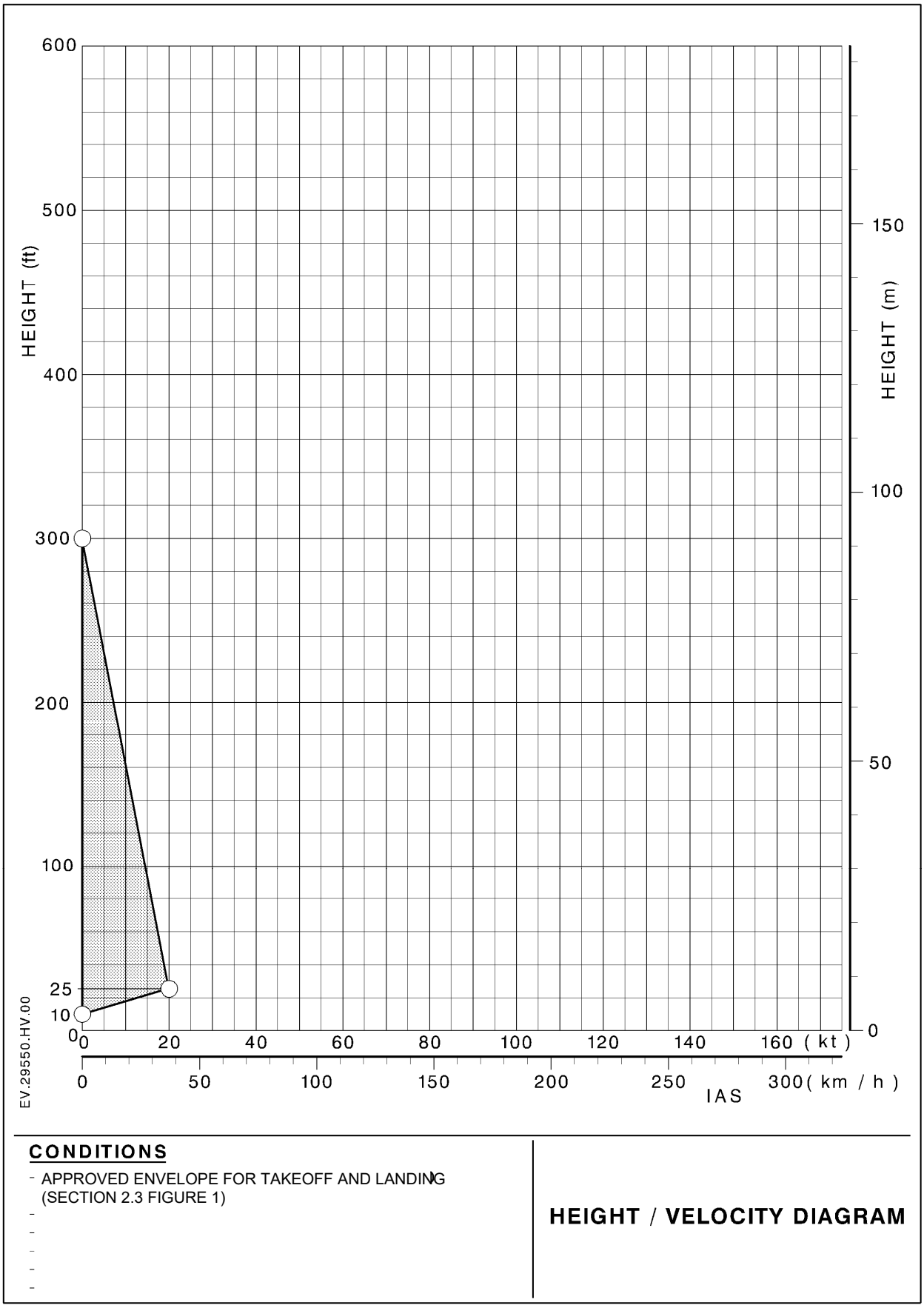
4 LOAD FACTOR

To limit the load factor, do not stabilize the turns at more than 45° bank. Avoid abrupt pull outs for:

- AUW > 4400 kg.

and/or

- OAT < -15°C.



CONDITIONS

- APPROVED ENVELOPE FOR TAKEOFF AND LANDING (SECTION 2.3 FIGURE 1)

HEIGHT / VELOCITY DIAGRAM

Figure 2

5 IFR FLIGHT

5.1 MINIMUM FLIGHT AND NAVIGATION EQUIPMENT REQUIRED FOR IFR FLIGHT

5.1.1 Two pilots

- A standby horizon - Backup altimeter and air speed indicator.
- Two radio-communication units.
- Two radio-navigation units.
- AP.
- SAS.

5.1.2 Single pilot

Equipment in paragraph 5.1.1 plus:

- Radio magnetic indicator (RMI) or DUAL GPS 400 W installation or dual GTN 750H GNSS RNAV system.
- DME indicator.

NOTE

Communication and navigation systems must be suited to the ground installations. The operational regulations in force must be observed. They may call for additional equipment which must be approved and operational.

5.2 IFR OPERATING ENVELOPE

5.2.1 Fully operational autopilot

- With 4 axis upper modes: V min. = 30 kt.
- Other cases: V min. = 70 kt.

5.2.2 SAS mode (After AP failure)

- IMC
  - V min. = Vy or 70 kt (IAS), whichever is greater.
  - VNE = 120 kt (IAS).

5.3 MAXIMUM APPROACH GRADIENT ON GLIDE SLOPE

Glide slope approaches are authorized up to 6.5°.

5.4 DECISION HEIGHT

Decision height must be selected according to applicable requirements, and not below 100 ft.

	CORRECTIVE ACTIONS
DIFF N1 + Audio warning + HI Difference of N1 > 6% between both engines	Partial power loss on engine with low N1. 1 - Attain single-engine flight conditions. 2 - OEI rating.....Selected as required. 3 - Engine parameters.....Monitor. 4 - Prepare for possible engine failure. **LAND AS SOON AS PRACTICABLE** **CAUTION** **THE FLI POINTER REPRESENTS THE ENGINE AT THE HIGHEST POWER SETTING. THERE IS A POWER LOSS. PERFORM A PRECAUTIONARY LANDING WITHOUT HOVERING.**
FADEC FAIL + Reminding light on cockpit overhead panel + HI + FF + END Major governor Failure **NOTE** • Metering unit frozen at fuel flow value upon failure.	1 - OEI limit .....Select as required. 2 - NORMAL/BACKUP switch.....BACKUP. **WARNING** **WHEN THE ENGINE IS SWITCHED TO BACK-UP MODE, IT IS FORBIDDEN TO MOVE THE OTHER ENGINE TO IDLE OR TO OFF** **NOTE** Avoid rapid collective pitch movements. **CONTINUE THE FLIGHT** **CAUTION** **THE BACKUP MODE MUST BE KEPT UNTIL THE END OF THE FLIGHT. IT IS FORBIDDEN TO REVERT TO NORMAL. PERFORM A CAUTIOUS APPROACH AT LOW SPEED (AROUND 40 kt).**

	CORRECTIVE ACTIONS
GOV Minor governor failure.	• Avoid rapid collective pitch movements **CONTINUE THE FLIGHT** **NOTE** • In this case, governing is ensured by back-up laws which may cause the governed RPM to vary. • Upon return from flight, display the failure on the system status page before switching off the battery.
ENG CHIP RH or LH Chip detected on engine 1 or 2	1- Chip pulse system ..... Activate ENG CHIP → **ENG CHIP** **CONTINUE THE FLIGHT** 2 - Wait 30 s ..... Activate ENG CHIP → **ENG CHIP** **CONTINUE THE FLIGHT** 3 - Attain single-engine flight conditions – Affected engine 4 - ENG # ..... IDLE (Refer to SECTION 3.3 § 2.4) 5 - Engine parameters ..... Monitor Unsteady → **LAND AS SOON AS PRACTICABLE** Steady → 6 - ENG # ..... OFF (Refer to SECTION 3.3 § 2.5) → **LAND AS SOON AS PRACTICABLE** During approach: • ENG # ..... FLT **NOTE** • In case of second **ENG CHIP** on the same engine, apply procedure from item 1. A maximum of 2 chip pulse activations is possible during the flight. • In case of third **ENG CHIP** on the same engine during the flight, apply procedure from item 3. • In any case, after landing, apply the instructions in the Maintenance Manual.
ENG CHP CT RH or LH Engine 1 or 2 chip detection fault	**NOTE** One or both engine chip detectors systems have failed. **CONTINUE THE FLIGHT**

SECTION 3.3

EMERGENCY PROCEDURES

1 AUTOROTATION LANDING

1.1 ON LAND

1. Collective pitch.....Quickly reduce to maintain NR within green range.

2. IAS .....Vy (head into the wind).

3. Landing gear.....Down and locked.

4. Parking brake .....Released.

5. Nose wheel castoring lock .....Locked.

6. Fuel shutoff control levers .....Aft.

7. Booster pumps .....OFF.

8. Passenger ordinance lights .....ON (if necessary).

AT ABOUT 120 ft ABOVE GROUND

9. Pull up the aircraft between 15° and 20° to reduce ground speed and increase RPM.

AT ABOUT 20 ft ABOVE GROUND

10. Establish the landing attitude while increasing the collective pitch to cushion the touchdown.

ON GROUND

11. Return the cyclic stick to neutral, reduce the collective pitch and apply the wheel brakes.

12. Once stopped, rotor brake .....Apply.

13. EMERGENCY CUT OFF.....OFF.

14. Evacuate the aircraft.

1.2 ON WATER

The procedure is the same as for ground landing (ITEMS 1 to 8), except for the following points:

AT ABOUT 120 ft ABOVE WATER

9. Pull up the aircraft to reduce speed to a minimum.

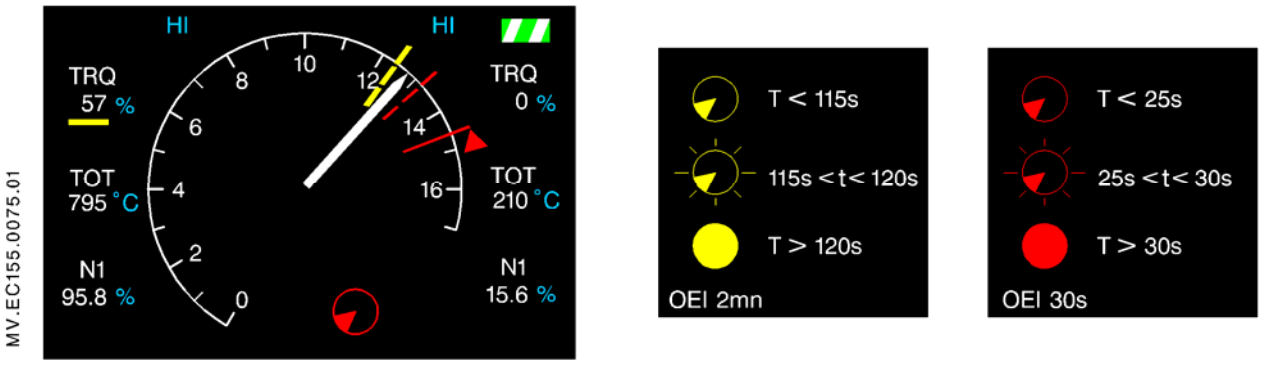
AT ABOUT 20 ft ABOVE WATER

10. Restore the aircraft to level attitude and cushion the touchdown with the collective pitch lever and head, if required, the aircraft with the yaw pedals according to the sea state.
11. Do not reduce the collective pitch and apply the rotor brake.
12. Unfasten seatbelts.
13. Jettison the windows and escape.

2 ENGINE FAILURE

2.1 SYMPTOMS

- Yaw surge, dependent on flight configuration.
- Illumination of lights: ENG # DIFF N1 + Audio warning.
- OEI page displayed on the FLI.
- Setting of OEI 30 s.
- RPM drop, dependent on the pitch value.



NOTE

When the power is set at OEI 2 min rating, the display shows a needle flickering slightly above the red broken marking.
This has no effect on the actual stop monitored by the FADEC which remains valid.

2.2 PROCEDURES

2.2.1 On Takeoff

By applying the takeoff procedure defined in SECTION 4 and depending on the ground configuration, pilot should abort takeoff when IAS < 40 kt (75 km/h).

Beyond this speed, the following are possible:

- Abort takeoff if ground permits.
- Continue takeoff if the single-engine climbing performance permits (Refer to SECTION 5).

2.2.1.1 Aborted Takeoff

1. Reduce airspeed by reducing the collective pitch to prevent RPM from dropping.
2. When the aircraft starts to sink, restore it to level attitude and increase the collective pitch to cushion main landing gear touchdown.

2.2.1.2 Continued Takeoff

1. RPM ..... ≥ 330 rpm.
2. IAS..... Vy.
3. OEI rating ..... 2 min.

Climb at Vy and RPM = 340 rpm.

4. Landing gear ..... Retract.

5. OEI rating, as soon as possible..... CT .

Continue climbing.

6. Inoperative engine..... Identify.
7. Affected engine ENG #..... OFF.
8. Affected engine booster pumps..... OFF.

2.2.2 In Hover

2.2.2.1 Height ≤ Height/Velocity Diagram Low Point

1. Maintain the collective pitch and counter yaw surge.
2. As the aircraft nears the ground, increase the collective pitch to cushion touchdown.

2.2.2.2 Height ≥ Height/Velocity Diagram High Point

Simultaneously:

- Decrease the collective pitch to regain RPM > 330 rpm (audio warning stops sounding).
- Nose-down attitude..... ≃ 20°.

As the aircraft nears the ground, flare out.

When the aircraft starts to sink, restore it to level attitude and increase the collective pitch to cushion touchdown.

2.2.3 In Cruising Flight

1. Attain single-engine flight conditions
2. OEI rating ..... CT

3. Inoperative engine ..... Identify.
4. Affected engine ENG # ..... OFF.
5. Affected engine booster pumps ..... OFF.

LAND AS SOON AS PRACTICABLE

NOTE 1

Optimum climb performance configuration:
landing gear retracted, airspeed at Vy.

NOTE 2

Prior to fuel transfer operation, first switch on the inoperative engine booster pumps to use up all available fuel.

2.2.4 Approach - Landing

1. Landing gear ..... Down and locked.
2. Parking brake ..... Released.
3. Nose wheel castoring lock ..... Locked.
4. OEI ..... HI .

Maintain RPM > 330 rpm.

Maintain airspeed at 45 kt (83 km/h).

Maintain a sink rate below 500 ft/min (150 m/min).

As aircraft nears the ground:

- Reduce airspeed.
- Increase collective pitch to cushion touchdown.

2.3 IN-FLIGHT ENGINE RESTARTING PROCEDURE

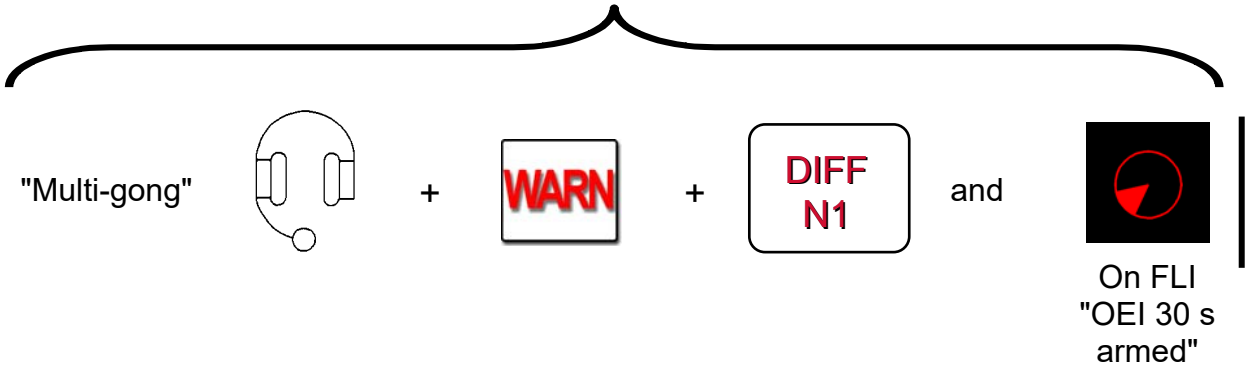
Restart the engine by following the standard ground starting procedure.

CAUTION

CHECK THAT THE HEATING SYSTEM IS OFF AND SET A POWER RATING NOT EXCEEDING THE MAXIMUM OEI CONTINUOUS RATING BEFORE OPERATING THE STARTER.

2.4 ACTIONS REQUIRED FOR SELECTING AN ENGINE TO IDLE

1. Single-engine flight conditions .....Attain.
2. Collective pitch.....Adjust in accordance with OEI limitations (Minimum Power Airspeed = Vy).
3. FLT-IDL-OFF .....IDLE.



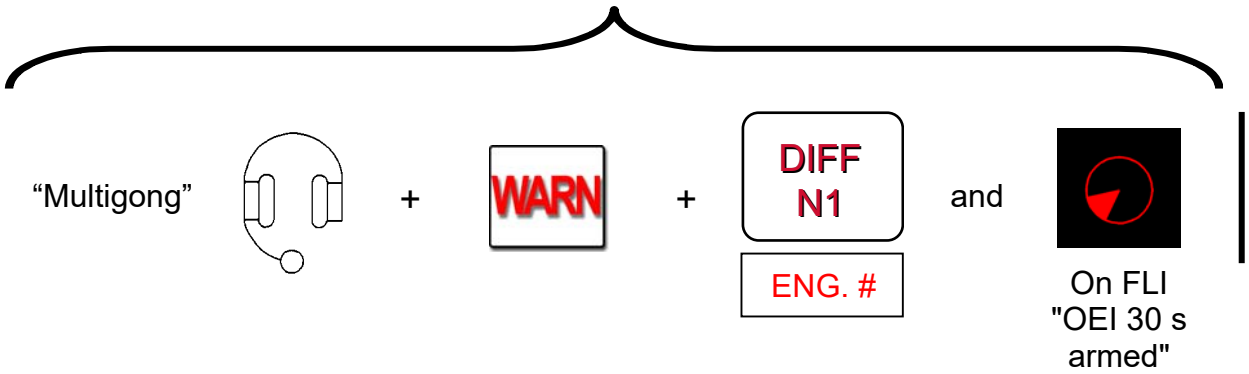
4. Disarm OEI 30s.
5. Collective pitch.....NR ≥ 330 rpm.
6. Monitor the parameters of the engine selected to IDLE.

2.5 ACTIONS REQUIRED FOR SHUTTING DOWN AN ENGINE

1. Single-engine flight conditions .....Attain.
2. Collective pitch.....Adjust in accordance with OEI limitations (Minimum Power Airspeed = Vy).

On affected engine:

3. FLT-IDL-OFF.....OFF.



4. Disarm OEI 30 s.
5. Collective pitch.....NR ≥ 330 rpm
6. Booster pumps.....OFF

NOTE 1

If fuel transfer is required, first switch the booster pumps back on in order to fully consume the available fuel in the fuel tank group for the inoperative engine.

NOTE 2

It is recommended that the doors be closed if the flight is to be continued.

3 TAIL ROTOR FAILURE

A tail rotor failure in power-on flight is indicated by a yawing motion. The rate of turn depends on the aircraft power and airspeed at the time of failure. Depending upon the type of failure a high vibration level may appear.

3.1 FAILURE IN HOVER OR AT LOW AIRSPEED IN GROUND EFFECT

Quickly reduce the collective pitch and

LAND IMMEDIATELY

3.2 FAILURE OUT OF GROUND EFFECT

3.2.1 Failure During Climb at Altitude

Reduce the collective pitch and maintain the heading by roll control.
Increase the airspeed and select the power setting to maintain adequate flight control.
Look for a landing site that will permit a running landing.

LAND AS SOON AS PRACTICABLE

- Landing procedure

1. Landing gear ..... Down and locked.
2. Parking brake ..... Released.
3. Nose wheel castoring lock ..... Locked.

Approach the landing site with the aircraft slipping to the left with an airspeed ≥ 60 kt (111 km/h).
Slowly reduce airspeed at ground level while using the collective pitch to maintain the helicopter airborne.
Land when the nose swings into alignment (IAS should be between 45 and 55 kt (83 and 102 km/h)).
After touchdown, slowly reduce the collective pitch and steer the aircraft with the wheel brakes.

CAUTION

LANDING IS EASIER WHEN THE AIRCRAFT WEIGHT IS LOWER AND WIND COMES FROM THE RIGHT.

WARNING

BELOW 40 kt (74 km/h), GO-AROUND IS NO LONGER POSSIBLE DUE TO TAIL FIN EFFICIENCY LOSS.

3.2.2 Failure in Level Flight

Yawing motion will be minimum in level flight due to the low thrust component of the shrouded tail rotor. For landing, proceed as described in para. 3.2.1

LAND AS SOON AS PRACTICABLE

4 LANDING GEAR SYSTEM FAILURES

4.1 EMERGENCY LANDING GEAR EXTENSION PROCEDURE

1. Landing gear control ..... DOWN.
2. LG PUMP..... EMER

Wait 1 min approximately:

- 3 green lights ..... On.
- L/G operating light..... Out.

When LG PUMP light comes on:

3. LG PUMP..... NORM.

CAUTION

IF THE LANDING GEAR RETRACTS AGAIN WHEN LG PUMP SWITCH IS SET TO NORM, THERE IS A LANDING GEAR SWITCH MALFUNCTION. EXTEND THE LANDING GEAR JUST BEFORE LANDING AND LEAVE LG PUMP ON EMER UNTIL ROTOR SHUT DOWN.

NOTE 1

In cold weather, emergency landing gear extension may require more than 3 min.

NOTE 2

After emergency extension, wait at least 3 min before retracting the landing gear (in training flights).

4.2 LANDING GEAR RETRACTION FAILURE

1st POSSIBILITY

- L/G operating light does not come on
- The 3 green lights remain on

1. Landing gear control ..... DOWN.
2. "TOUCH AND GO" ..... Perform (To center the nose wheel).
3. Landing gear control ..... UP.

If the landing gear fails to retract:

4. Landing gear control ..... DOWN.

CONTINUE THE FLIGHT

2nd POSSIBILITY

- L/G operating light remains on.

1. Landing gear control ..... DOWN.

CONTINUE THE FLIGHT

4.3 LANDING GEAR EXTENSION FAILURE

- One or more green lights remain out.

NOTE

In case of green lights failure the L/G units are correctly locked if:

- The amber operating light is off.

- The L / G alarm remains off when IAS is below 55 kt (101 km/h).

In this case, apply the following procedure:

1. Landing gear control .....UP.
2. Landing gear control .....DOWN.

If the landing gear fails to extend:

3. Emergency landing gear extension procedure.....Perform.

If the landing gear fails to extend in emergency mode:

- Enter low hover and attempt to achieve downlock by ground personnel pulling on the L/G struts.
- If all 3 L/G units are normally extended, land cautiously and leave the LG PUMP switch in EMER until final shutdown. Chock the aircraft as soon as possible.

4.4 BELLY LANDING

CAUTION

- ORDER THE EVACUATION OF ALL PERSONS TRANSPORTED.
- BEFORE TOUCHDOWN, MAKE SURE THAT THERE IS NOBODY IN THE AREA OF THE ROTOR.

5 FIRE DETECTION SYSTEM FAILURE

- A FIRE / FAIL light comes on on the cockpit overhead panel.

Fire detection and therefore affected system inoperative.

LAND AS SOON AS PRACTICABLE

6 SMOKE IN CABIN

1. Affected system ..... OFF

2. Bad-weather windows ..... Open

3. Heating system ..... OFF

If the origin of the smoke cannot be identified or if affected system switch off is impossible

4. EMERGENCY CUT OFF ..... PWR OFF.

5. GEN 1 and 2 ..... OFF.

SMOKE DOES NOT DISAPPEAR

6. EMERGENCY CUT OFF ..... EMER SHED

- On breaker panel below collective pitch. first and second left column (Yellow labels)

7. One by one, breakers ..... OFF then ON (to identify smoke origin)

SMOKE DISAPPEARS

- On breaker panel below collective pitch.

6. Except those in first and second left column(Yellow labels)

All breakers……OFF

7. EMERGENCY CUT OFF .....EMER SHED

8. One by one, breakers .....ON (to identify smoke origin)

- When the origin of the smoke is identified.

- Corresponding system .... OFF(if possible)

System OFF

- Emergency Cut Off..... PWR ON
- GEN 1 and 2..... ON

LAND AS SOON AS PRACTICABLE

System without ON/OFF switch

- Corresponding breakers.....OFF
- All other breakers .....ON
- Landing gear emergency.....Down (EMER LG PUMP switch)

- The power supply is provided by the battery. The flight time is > 30 min with a battery charged to 80%

LAND AS SOON AS POSSIBLE

7 ICING CONDITIONS

The appearance of ice on the windshield wipers is the first indication that the helicopter has entered icing conditions.

If unexpected icing conditions are encountered, fly out of the icing zone as quickly as possible.

Check:

1. All PITOT ..... ON.
2. Windshield deicing system (if installed) ..... ON.

8 STATIC SYSTEM FAILURE

Incorrect pitot-static indications:

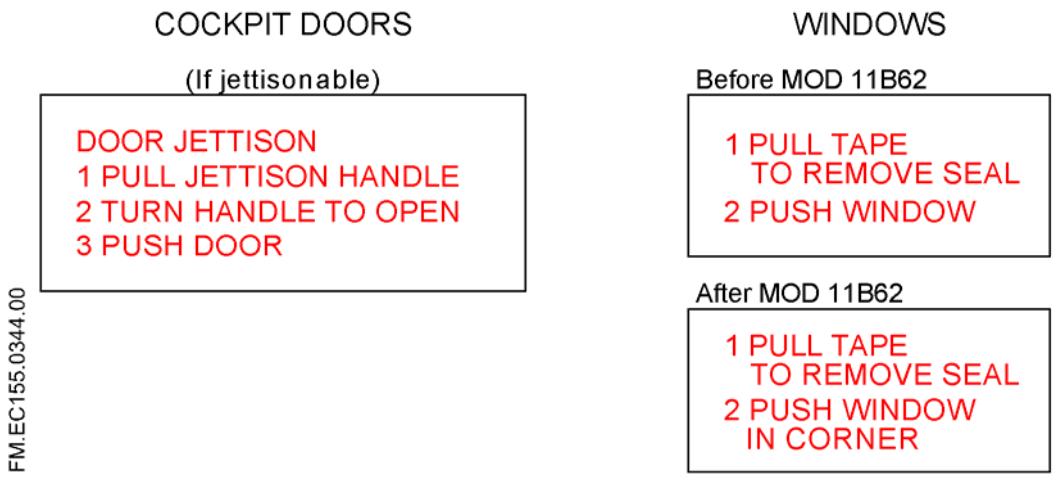
1. Windows .....Closed.
2. STATIC-PRESS.....STAND BY.

CAUTION

PILOT MUST CHECK STATIC PRESSURE CORRECTIONS ON THE PLACARD INSIDE THE COCKPIT.

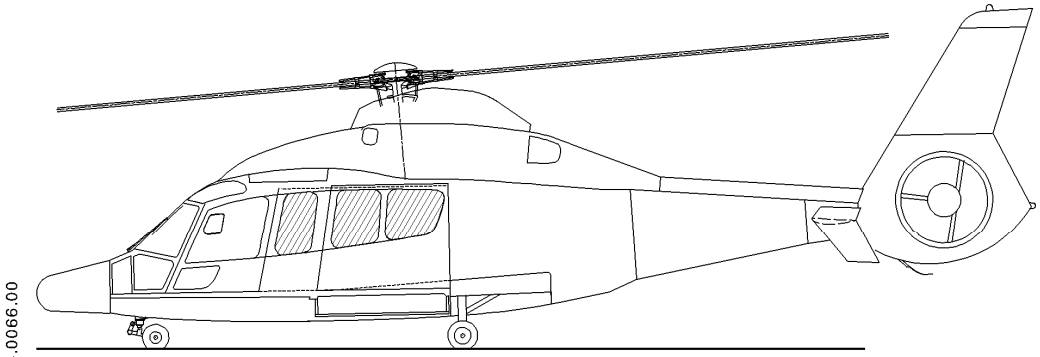
CONTINUE THE FLIGHT

9 EMERGENCY EXIT



10 EMERGENCY EVACUATION

- In the event of an emergency landing, jettison the windows and the front doors (if jettisonable) after impact.
- In the event of ditching without emergency floatation gear, jettison the windows and the front doors (if jettisonable) at low speed just prior to impact to prevent them from striking the rotor blades.



- Jettisoning should be done by pushing in the corner of the window, especially at cold temperatures.

11 ABNORMAL VIBRATION IN FLIGHT

If a severe deterioration is noted in the vibration level:

- Reduce power.
- Check that the yaw control is efficient.
- **LAND AS SOON AS PRACTICABLE.**

CAUTION

IN CASE OF DOUBT CONCERNING YAW CONTROL EFFICIENCY, APPLY TAIL ROTOR FAILURE LANDING PROCEDURE (SECTION 3.3 § 3).

12 ROTOR BRAKE INOPERATIVE

In high wind:

1. Aircraft .....INTO the WIND.
2. Cyclic stick .....Slightly FORWARD.

WARNING

WAIT UNTIL THE ROTOR HAS FULLY STOPPED BEFORE LEAVING THE AIRCRAFT.

13 AFTER COCKPIT/CABIN FIRE EXTINGUISHERS USE

- Avoid as much as possible extinguisher agent inhalation.
- Ventilate cockpit/cabin (open bad weather windows...).

SECTION 4

NORMAL PROCEDURES

CONTENTS

4.8 SPECIAL OPERATING PROCEDURES

4.9 ENGINE POWER AND THERMAL CHECK

SECTION 4.2

PRE-FLIGHT INSPECTIONS

1 EXTERIOR INSPECTION

NOTE

- Pay particular attention to the operations marked " * ".
- Check that area is clean and clear.
- Remove the picketing equipment where applicable (covers, blade socks, mooring lines, etc.).
- Perform the following checks.

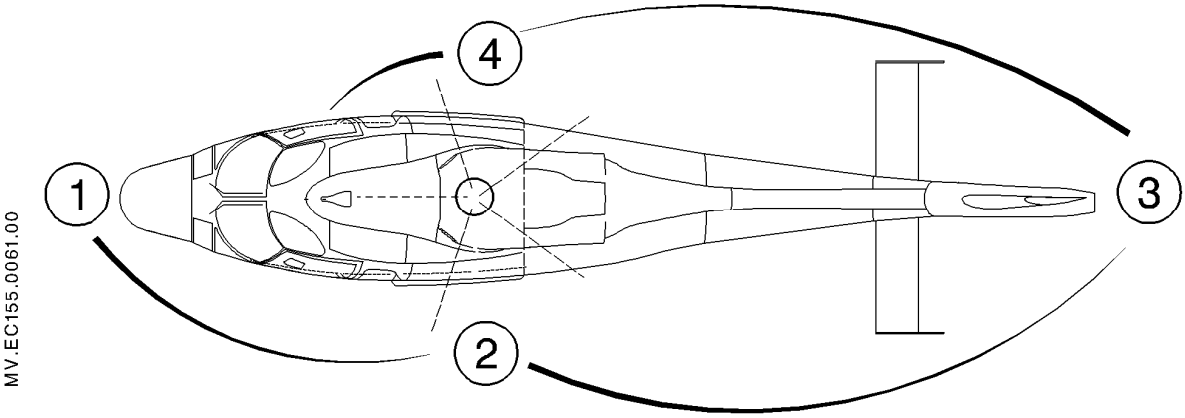


Figure 1: Exterior Inspection

PRE-REQUIREMENTS

Before the first flight of the day:

- Purge fuel tanks before moving the aircraft.
  This task can be done whether by a mechanic or by a pilot who received sufficient training.
- Check that the bleeders are closed once the purge is done.

STATION 1

- General appearance..... Condition - No traces of leakage.
- Transparent panels ..... Cleanliness.
- Air intakes (MGB and engine) ..... Check cleanliness; clean if necessary. On snow-covered ground, refer to SECTION 4.8.*
- Main blades and main rotor hub..... Condition - General visual check from ground level.
- Pitot..... Condition - No foreign object.

- Radome ..... Condition - Closed and locked.
- Nose landing gear ..... Visual examination.
- Battery compartment door ..... Locked.

STATION 2

- Main blades and main rotor hub ..... Condition - General visual check from ground level.
- Hydraulic reservoir ..... Level.
- Engine oil tank ..... Level (max oil consumption: 0.2 l/h).
- Cowlings (MGB and engine) ..... Closed - Locked.
- Fuel tank filler caps ..... Closed - Locked. Compartment door locked after checking caps.
- L/G units ..... Visual examination.
- Fire extinguisher ..... Pressure correct.
- Static ports ..... Condition - No foreign object.
- Luggage compartment ..... Door closed (if installed).
- Engine exhaust nozzle ..... No foreign object.

STATION 3

- Horizontal and vertical stabilizers ..... General condition.
- Shrouded tail rotor ..... No chafing of blades on structure. Condition of blades: leading edges and root in particular.
- TGB ..... Level.
- Tail skid ..... No distortion.

STATION 4

- Tail gearbox cowlings ..... Closed and locked.
- Static ports ..... Condition - No foreign object.
- Engine exhaust nozzle ..... No foreign object.
- Fire extinguisher ..... Pressure correct (If pressure gauge installed).
- Luggage compartment ..... Loads lashed, door closed
- L/G unit ..... Visual examination.
- Cowlings (MGB and engine) ..... Closed - Locked.
- Engine oil tank ..... Level (max oil consumption: 0.2 l/h).

- Hydraulic reservoir ..... Level.
- Main blades and main rotor hub ..... Condition - General visual check from ground level.
- Ground power receptacle door ..... Locked (if starting with battery).

2 INTERIOR INSPECTION

- Cabin ..... General check (condition, freight tied down, seat arrangement, etc.).
- Fire extinguisher and first aid kit ..... In place (safety pin snap-wired).
- STATIC-PRESS selector ..... NORM - Snap-wired.
- Power-assisted brake accumulator ..... Pressure > 100 bar (1450 psi). If it is less, recharge the accumulator by means of the electric pump of the emergency system.

NOTE

If the copilot's seat is unoccupied, check that the harness is fastened.

SECTION 4.3

STARTING PROCEDURE

1 PRE-STARTING CHECKLIST

Check the following points:

1. Doors ..... Closed and locked.
2. Seats, Yaw pedals ..... Adjusted.
3. Seatbelts and harnesses..... Fastened.
4. Circuit breakers ..... All engaged.
5. Switches:
   - LG PUMP..... NORM.
   - HYD ISOL ..... NORM.
   - SHEDBUS ..... AUTO (guarded).
   - RPM..... NORM.
   - TNG ..... FLT.
   - ENG 1 and ENG 2 NORMAL / BACKUP ..... NORMAL (guarded).
   - ENG 1 and ENG 2 FLT / IDLE / OFF ..... OFF.
   - Others ..... All Off.
   - S/B HRZ..... ON - Check amber light On (supplied by the emergency battery).
6. M'ARMS (if installed)..... Memory card installed in DTU.
7. BAT/ESS ..... ON.
   - Check..... BAT (Aircraft supplied by battery), BAT (Aircraft supplied by GPU).
   - Voltmeter reading ..... Checked ≥ 23 V.
   - Electrical power application starts the self-test of the engine computer.
   - Upon completion of the test, check..... FADEC FAIL and GOV.

NOTE 1

OAT value may not be available on the VEMD during self-test of the system.

NOTE 2

GOV upon self-test completion, scroll to SYSTEM STATUS page and check the displayed failure message:

- T0.DISC A or B: Difference of more than 5°C between the two FADEC thermal probes due to sun exposure.
  Continue start up procedure.
  Before takeoff, check that the temperature difference is less than 15°C; otherwise cancel takeoff and refer to Maintenance Manual.
- Any other message: Abort start up procedure and refer to Maintenance Manual.

NOTE 3

- OEI HI usage is available on the SYSTEM STATUS page (refer to SECTION 7.4),
- If on CAD: INP FAIL (CAD input(s) failure)
  + any of HYD GEN MGB AUX P MGB P SERVO ,
  apply appropriate maintenance before start up.

8. Brightness, PFD and ND .....Adjusted.
9. Heating and ventilation .....Off (all the levers backward).
10. Fuel shutoff control levers .....Forward and snap wired. Red lights out.
11. Rotor brake control lever .....Released, fully forward ROTOR BRK.
12. Position lights .....ON (if necessary).
13. Anti-collision light.....ON.
14. Emergency lighting system.....Test performed, then ARMED.

NOTE

For aircraft fitted with single emergency battery (post MOD 07-24C25), ARMED position supplies standby horizon from main battery.

15. Passenger ordinance lights .....ON (if passenger on board).
16. Indicator light test function.....Test (to be performed on DAY position **ONLY**).
17. Instrument lighting .....As required.
18. Ventilation selector .....OFF.
19. MISSION selector (if installed) .....OFF.
20. ELT (if installed) .....ARMED.
21. AUDIO WARN .....ON AUDIO WARN.
22. TRIM FEEL.....ON.

In paragraph 1 PRE-STARTING CHECKLIST, Item 7 is supplemented with the following:

CAUTION

IF THE RED LIGHT  **(OEI HI USED) IS DISPLAYED ON FLI PAGE,**

REFER TO THE ENGINE MAINTENANCE MANUAL.

CAUTION: THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL MODIFICATION No.07-71C16 HAS BEEN EMBODIED TO THE AIRCRAFT.

23. Flight controls ..... Travel check and centering :
    - LG PUMP ..... TEST,
      (Do not exceed a duration of 2 min.)
      (post MOD 07-29B64 HYD).
    - Control travel on cyclic and collective ..... Check LMT,
    - Collective lever ..... Secured in low pitch position,
    - Cyclic stick ..... Centered,

    Use AP centering function if needed:
    - AP ..... ON,
    - Centering pushbutton
      (Upper mode release) ..... Press more than 2 sec. (cyclic stick moves to neutral position),
    - AP ..... OFF,

    - LG PUMP ..... NORM.
24. SERVO TEST pushbutton ..... When pressing, check SERVO.
25. GEN 1, GEN 2 and ALT (if installed)..... ON.
26. EMERGENCY CUT OFF ..... PWR ON (forward and snap wired).
27. ENG# FIRE / FAIL control switch..... Perform engine fire system test :
    - FIRE position..... FIRE/FAIL + ENG FIRE + Fuel shutoff control lever red light On + WARN flashing,
    - FAIL position ..... FIRE/FAIL (failure detection).
28. LC FIRE FIRE/FAIL control switch..... Perform cargo fire system test :
    - FIRE position..... CAR FIRE + OVERHEAT + FIRE/FAIL + WARN flashing,
    - FAIL position ..... FIRE/FAIL (failure detection).
29. Standby magnetic compass ..... Checked.
30. Lights illuminated on Red Warning Panel ..... Check:
    ENG 1 + ENG 2 + MGB P + FUEL Q (refer to NOTE in item 34).
31. Clocks ..... Wound and set.
32. Altimeter..... Set.
33. Landing Gear ..... Down with safety pin removed.

34. Fuel management panel:
    - FUEL TEST pushbutton ..... Press: Fuel level at 0 on CAD,
    - Test transfer pump ..... Green arrow + characteristic noise,
    - All booster pumps ..... ON,
    - For each engine ..... Check fuel pressure ≥ 0.4 bar on CAD.

NOTE

If feeder tank is not full, the FUEL Q + QTY (feeder tank level) lights may come on. Lights will go out only when jet pumps have filled the feeder tank.

35. Parking brake ..... Applied.
36. Nose wheel castoring lock (if fitted) ..... As required.
37. Flight Data Recorder (if fitted):

- CVFDR CP ..... CVR , FDR and MFDAU ,

or

- M'ARMS: . On Menu Zone ..... FLIGHT DATA / DATA TRANSFER
  . Press IND LTS pushbutton ..... CVR , FDR and HUMS ,
  . Depress IND LTS pushbutton ..... CVR , FDR and HUMS .

2 ENGINE STARTING

CAUTION

CHECK THAT THE CYCLIC STICK IS IN NEUTRAL POSITION AND THE COLLECTIVE PITCH LEVER LOCKED IN LOW PITCH POSITION.

DO NOT MOVE THE CONTROLS IF HYDRAULIC POWER IS NOT SUPPLIED (LG PUMP SWITCH SET TO TEST POSITION).

If needed, use the AP centering function to center the cyclic stick (refer to §1, item 23).

NOTE

- When OAT ≤ 0°C, in case of aborted start, when TOT > 120°C, perform a cranking operation before attempting another start.
- Engines may be started in any order.
- For OAT ≤ 0°C, start up procedure is identical as § 2.1 but the corresponding ENG # FLT / IDLE / OFF switch must be held on IDLE until engine oil temperature reaches:
  - 0°C for 5 cSt oil,
  - -10°C for 3 to 3.9 cSt oil.

  Then set the corresponding ENG # FLT / IDLE / OFF switch to FLT.

In paragraph 1 PRE-STARTING CHECKLIST, Item 37 is replaced by the following:

37. Flight Data Recorder (if fitted):

- CVFDR CP ..... 

,

or

- M'ARMS: . On Menu Zone ..... FLIGHT DATA
DATA TRANSFER

. Press IND LTS pushbutton..... 

,

. Depress IND LTS pushbutton..... 

.

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2.1 STARTING FIRST ENGINE

1. ENG # NORMAL / BACKUP ..... NORMAL.
2. ENG # FLT / IDLE / OFF..... FLT,
   - Check battery voltage: if battery voltage < 17 V, stop starting sequence (battery insufficiently charged),
   - On VEMD, for the corresponding engine:

     - OEI ..... HI ,

     - START ..... Flashes,

     - Monitor the TOT and N1 numerical values,

     - OEI select..... LO then CT .

CAUTION

ABORT THE STARTING PROCEDURE BY SETTING THE ENG# SWITCH TO OFF IF:

- **IGNITION IS NOT EFFECTIVE AFTER 30 S, OR,**
- **THE TOT NUMERICAL VALUE IS UNDERSCORED, OR,**
- **THE ENG # LIGHT IS STILL ON AT N1 = 70 %, OR,**
- **THE ROTOR DOES NOT RUN AT N1 = 25 %, OR,**
- **FADEC FAIL , OR,**
- **IF FREE TURBINE SPEED POINTER MOVES BEYOND ROTOR SPEED POINTER ON TRIPLE INDICATOR (FREEWHEELING).**

   - Check: . ENG # and GEN LH or RH, N1 ≤ 70%,

     . HYD LH and RH and SERVO at N2 ≤ 80 rpm (NR equivalent),

     . MGB P at N2 ≤ 120 rpm (NR equivalent).

   - Audio warning sounds when NR is between 165 and 330 rpm,
   - Check PRS LH or RH.
3. ENG # FLT / IDLE / OFF red safety cover ..... In position to guard.

CAUTION

IN ORDER TO PREVENT OVERHEATING OF THE STARTER-GENERATOR, DO NOT ATTEMPT MORE THAN 5 CONSECUTIVE ENGINE STARTS OR CRANKING CYCLES. AFTER 5 UNSUCCESSFUL ATTEMPTS, WAIT 20 MINUTES BEFORE TRYING AGAIN.

2.2 STARTING SECOND ENGINE

Proceed as for § 2.1, except for disarming of the OEI stops.

- Check that triple indicator pointers (NR, N2) are superimposed.
- Check ENG # and GEN RH or LH, N1 ≤ 70%.
- Check that the VEMD is switched to the AEO mode when N1 > 60%.
- Check DIFF N1 and PRS RH or LH.

2.3 CRANKING

The cranking procedure can be performed for verification purposes.

Proceed as follows:

- Check:
  - ENG # FLT / IDLE / OFF .....OFF,
  - ENG # NORMAL / BACKUP .....NORMAL.
- Booster pumps .....ON,
- ENG # CRANK pushbutton .....Press for 20 s max.

CAUTION

DO NOT CRANK THE ENGINE WITH THE MANUAL FUEL SHUTOFF VALVE CLOSED AS THIS COULD DAMAGE THE ENGINE FUEL PUMP.

3 POST-STARTING CHECKLIST

3.1 OVERALL CHECKS

1. Ground power unit.....Disconnected.
2. Exterior lights .....As required.

NOTE

In some operational circumstances (clouds, dark night or others), the white strobe (if fitted) may disturb the pilot. Switch to red position if needed.

3. Windshield wiper selector.....As required.
4. Heating/Ventilation .....As required.
5. PITOT 1, 2 and EMER PIT.....ON.
6. S/B HRZ power light.....Check amber light Off (normal aircraft DC power supply).

In paragraph 3.1 OVERALL CHECKS, Item 17 is replaced by the following:

17. Flight Data Recorder (if fitted)..... Perform Test:
    - On CVFDR CP..... Press TEST pushbutton:
      . With HONEWELL equipment:
      

      lit for 10 s, then
      

      goes out and
      

      and
      

      remain off.
      . With L3-COM equipment:.....
      

      and
      

      and
      

      remain off.

    or,

    - On M'ARMS..... Press
    

    pushbutton:
      . With HONEWELL equipment:
      

      lit for 10 s, then
      

      goes out and
      

      remains off.
      . With L3-COM equipment:.....
      

      and
      

      remain off.

CAUTION: THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL MODIFICATION MOD No.31B89 HAS BEEN EMBODIED TO THE AIRCRAFT.

7. Perform Tail Rotor servocontrol isolation test:
   - HYD ISOL ..... CUT OFF: HYD LEV RH then SERVO ,
   - HYD ISOL ..... NORM: HYD LEV RH and SERVO .
8. SERVO test ..... Performed: SERVO .
9. Electrical parameters ..... Checked.
10. Perform Chip Pulse System test:
    - CHIPS control switch ..... TEST: ENG CHIP .
11. Perform Chip detection system test:
    - CHIP TEST control switch ..... GB: MGB CHIP + TGB CHIP ,
    - CHIP TEST control switch ..... ENG: ENG CHIP .
12. Red Warning Panel and CAD ..... All lights out.
13. Temperature and pressure readings ..... Checked.
14. Engines and flight instruments ..... Checked.
15. RADAR test ..... Performed (refer to the equipment manufacturer's technical publication).

NOTE

If the copilot's seat is unoccupied, switch off the left screens.

16. Engine fuel pressure check:
    - Booster pumps..... All OFF, check PRS LH + RH,
    - Test each booster pump:
      - PUMP # ..... ON,
      - Normal pressure ..... Check on CAD,
      - PUMP # ..... OFF,
    - Booster pumps..... All ON.

17. Flight Data Recorder (if fitted):
    - CVFDR CP ..... CVR + FDR + MFDAU ,

    or,
    - M'ARMS..... CVR + FDR .

3.2 SPECIAL CHECKS (FIRST FLIGHT OF THE DAY)

3.2.1. P2 valve and Heating system automatic switch-off test

1. VENT selector .....HEAT  .
2. Heating control .....Aft.
3. Heating system off.....Check.
4. Engine associated with
   the valve to be tested .....IDL# (TNG mode).
5. Heating control .....Forward: check heating system on.
6. Check that the t4 temperature of the normally operating engine increases more than 10°C.

NOTE

If the t4 temperature does not increase, the P2 valve of the idling engine is probably seized in the open position. Confirm the failure by applying the same procedure with collective pitch increased.

7. SOV CUT. .....Press: check heating system off +  + reset.

NOTE

If SOV CUT test fails, automatic heating system switch off will not operate in case of engine failure.

8. Perform the same checks on the other engine.

3.2.2. Test of Autopilot

- Collective pitch .....Unlocked.
- Hands and feet.....Off.
- BEEP TRIM.....Check.
- AP .....OFF:  .
- TEST .....ON:  flashes.

Successive flashing of:

- On PFD strip: C YR P + AP + WARN
- On CAD: TRIM
  ACTUATOR
  AHRS DISC
  SAS
  AP
- On PFD strip: / / /

Slight movement of cyclic stick, collective pitch and pedals then:

- Upon completion of the test:

TEST : [ ]

On CAD : AP TEST OK

- AP..... ON: AP TEST OK .
- AP..... OFF (cyclic).
- SAS ..... ON: SAS .
- AP..... ON: SAS .

CAUTION

TAKEOFF WITH AUTOPILOT INOPERATIVE IS FORBIDDEN.

3.2.3 Miscellaneous AP failures

3.2.3.1 AP degraded

- "AP TEST OK" message on CAD:
  - Abnormal load on yaw control

    On PFD.....▲ flashing.

    On CAD .....AP TEST OK.

    AP can normally be engaged. In flight, monitor yaw axis and push respective pedal to extinguish ▲.

- No "AP TEST OK" message on CAD:
  - Yaw trim failure

    On CAD .....TRIM.

    On PFD.....Y.

    On AP box .....A.TRIM YAW OFF.

    AP can normally be engaged. In flight, monitor yaw axis and push respective pedal to extinguish ▲.
  - Collective trim failure

    On CAD .....TRIM.

    On PFD.....C.

    Switch off the collective button on overhead panel. AP can be engaged. The 4th axis is not operative.
  - Minor AP failure

    On AP box .....TEST ON flashes.

    On PFD.....▭.

    AP can be engaged. Upper mode can not be used. Attitude hold only.

3.2.3.2 AP inoperative

- No "AP TEST OK" message on CAD:
  - Pitch or roll trim failure

    On CAD .....TRIM.

    On PFD.....R or P.

    On AP box .....A.TRIM CYC OFF.

    AP must not be used (only SAS function on cyclic).

- Loss of AP module

  On AP box ..... TEST ON steady and AP .

  On PFD ..... OFF OFF OFF.

  AP cannot be engaged.

- Loss of actuator

  On AP box ..... TEST ON steady and AP .

  On CAD ..... ACTUATOR.

  On PFD ..... + x on relevant axis.

  AP cannot be engaged.

SECTION 4.4

TAXIING - TAKEOFF

1 PRE-TAXIING CHECKLIST

1. Radioaltimeter ..... ON – Tested – DH set.
2. Radionavigation systems ..... Set and tested.
3. Radiocommunication systems..... Set and tested.
4. Collective pitch lever ..... Released.
5. Pressure and temperature readings..... Normal.
6. Warning lights ..... All out.
7. Autopilot ..... ON.

NOTE

- If on PFD strip **OFF OFF OFF**

  – AP / SAS..... RESET.
  – Autopilot..... ON.

8. Heating and ventilation..... As required.
9. Parking brake ..... Released.
10. Nose wheel castoring lock..... Release (if necessary).

2 TAXIING - TAKEOFF

2.1 TAXIING

- Increase collective pitch, then move cyclic stick forward moderately to initiate low-speed taxiing.
- Brakes, (collective pitch set to full low pitch) ..... Checked.
- Attitude indicators stability..... Checked.
- Headings..... Checked.
- Steer the aircraft with the yaw pedals and not the wheel brakes, which are normally used only to slow down and stop the aircraft.

CAUTION

- **IF LMT + GONG, RECENTER THE CYCLIC STICK.**
- **ON GROUND, IN ORDER TO PREVENT ANY RISK OF VERTICAL OSCILLATIONS, THE TRIM LOADS MUST BE RELEASED BY DEPRESSING THE COLLECTIVE TRIM RELEASE TRIGGER WHENEVER THE COLLECTIVE LEVER IS MOVED.**

2.2 TAKEOFF AND HOVERING

- Warning and caution lights .....All out.
- Engine parameters .....Normal.
- Heating .....Switch off.
- Enter hover IGE at 6 ft.

NOTE

DG may appear temporarily on the PFD

Check:

- Warning and caution lights .....All out.
- Pressure and temperature readings .....Normal.
- Take off while adjusting the collective pitch so as to maintain constant height up to 30 kt (55 km/h), then allow the aircraft to climb.
- Reduce power below TOP before reaching 40 kt (74 km/h).

CAUTION

THE TAKEOFF PATH MUST REMAIN OUTSIDE THE HEIGHT/VELOCITY DIAGRAM DEFINED IN SECTION 2.

- Retract landing gear at Vy.

2.3 CLIMBING

- Gear .....Retracted.

The best rate of climb speed (Vy) is 80 kt (TAS).
For practical purposes, it will be assumed here that Vy(IAS) = 80 kt (148 km/h) less 1 kt per 1000 ft of altitude (3 km/h per 500 m).

- Heating .....As required.

NOTE

The climb is done with about 2° bank right.

SECTION 5
PERFORMANCE
CONTENTS

PAGE

AIRBUS HELICOPTERS

FLIGHT MANUAL

EC 155 B1

SUPPLEMENT

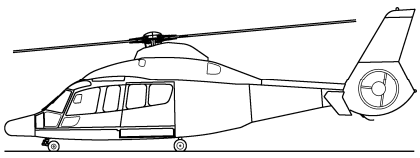
DUAL GTN 750H GNSS RNAV SYSTEM

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or Supplements listed in Supplement 0.

The effectivity of the Supplement at the latest revision is specified on the List of Approved Effective Pages.

THIS SUPPLEMENT MUST BE INCLUDED IN THE FLIGHT MANUAL WHEN THE EQUIPMENT MENTIONED ABOVE IS INSTALLED ON THE AIRCRAFT.



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APPROVED **EC 155 B1** **SUP.62.P1**

LIST OF APPROVED EFFECTIVE PAGES

EASA CERTIFICATION

(1) Page Revision Code:
- R: Revised, to be replaced,
- N: New, to be inserted.

SECTION	PAGE	DATE	(1)		SECTION	PAGE	DATE	(1)
SUP.62.P1	1	16-25			SUP.62	9	16-25	
SUP.62.P5	1 to 2	23-06	R		SUP.62	10	18-45	
					SUP.62	11	18-45	
SUP.62	1	16-25			SUP.62	12	18-45	
SUP.62	2	23-06	R		SUP.62	13	16-25	
SUP.62	3	16-25			SUP.62	14	16-25	
SUP.62	4	18-45			SUP.62	15	16-25	
SUP.62	5	23-06	R		SUP.62	16	16-25	
SUP.62	6	23-06	R		SUP.62	17	16-25	
SUP.62	7	16-25			SUP.62	18	16-25	
SUP.62	8	16-25						

LOG OF APPROVED NORMAL REVISIONS

NORMAL REVISION 0 date code 16-25	EASA approval No.10059787 on October 17, 2016.
Main points	Creation of Supplement No.62
Revised information	SUP.62.P1 page 1, SUP.62.P5 page 1 and SUP.62 pages 1 to 18.
Deleted information	None
NORMAL REVISION 1 date code 18-45	Approved on May 28, 2019 under the authority of EASA Design Organization Approval N°EASA.21.J.700.
Main points	Addition of a NOTE for touchscreen function with water, addition of a sentence for the Pilot Guide availability on board, addition of "if fitted" to DMAP EURONAV VII items.
Revised information	SUP.62.P5 page 1, SUP.62 pages 2, 4, 5, 6, 10, 11 and 12.
Deleted information	None
NORMAL REVISION 2 date code 23-06	Approved on May 26, 2023 under the authority of EASA Design Organization Approval No. EASA.21.J.700.
Main points	Update of indicator B2 and C2, picture and wording improvement.
Revised information	SUP.62.P5 pages 1 to 2; SUP.62 pages 2, 5 and 6.
Deleted information	None

1 GENERAL

The coverage of this Supplement is limited to general information and operating principles. For the complete description of the operating modes, refer to the following pilot's Guides: Garmin GTN 725/750 Pilot's Guide or Cockpit Reference Guide.

This supplement does not represent an authorization for operational use.

This supplement focuses on GNSS/GPS topics.

The GPS cannot be operated as long as the GTN 750H display is unavailable.

At very low cabin temperatures, the display of the GTN 750H may need 30 minutes after the device is powered-up to become operational.

1.1 NAVIGATION MODES AND OPERATIONS

The dual GTN 750H GNSS RNAV system complies with the requirements for the following navigation modes and operations:

GPS navigation mode (GNSS):

- Day and night VFR as a navigation supplement,
- IFR:
  . RNAV 2 (En Route),
  . RNP 1 excluding Radius to Fix (RF) leg capability (SIDs, STARs, initial and missed approaches),
  . RNP APCH (intermediate and final approaches without vertical guidance (LNAV)).

NOTE

- RNAV 2 covers RNAV 5 (B-RNAV) requirements,
- RNP 1 covers RNAV 1 (P-RNAV) requirements.

1.2 EQUIPMENT AND CAPABILITIES (ICAO 2012 FLIGHT PLAN FORM)

1.2.1 Equipment (Field 10-a)

The dual GTN 750H GNSS RNAV system corresponds to the following equipment to be included in field 10-a of ICAO 2012 Flight Plan form:

INDICATOR	EQUIPMENT
G	GNSS
R	PBN

1.2.2 PBN (Field 18)

The dual GTN 750H GNSS RNAV system provides the following Performance-Based Navigation (PBN) capabilities to be identified in field 18 of ICAO 2012 Flight Plan form:

INDICATOR	PBN / RNAV
B2	RNAV 5 GNSS
C2	RNAV 2 GNSS
D2	RNAV 1 GNSS
INDICATOR	**PBN / RNP**
O2	RNP 1 GNSS
S1	RNP APCH

1.3 DESCRIPTION

1.3.1 General

The dual GTN 750H GNSS RNAV system is composed of the 2 GTN 750H units, each linked to a GPS antenna, and additional external pushbuttons and annunciators.

The GTNs output the different navigation data to their CDU, the FCDS and the DMAP (if fitted).

The GTNs manage flight plans including the following patterns and procedures:

- Direct To Intercept,
- Holding patterns,
- Parallel track (offset),
- SIDs & STARs procedures,
- RNP approaches without vertical guidance,
- SAR patterns (if fitted) (expanding square, parallel track (ladder), sector and orbit).

The GTNs provide the following guidance data to the autopilot and/or to the FCDS displays:

- XTK - Cross track deviation,
- TKE - Track error,
- DA - Drift angle,
- DTK - Desired track,
- Bearing, time to go, distance to go to next waypoint,
- TO-FROM indication,
- Track change alert, end of route annunciators,
- Roll steering,
- Validity information (Integrity and DR).

The dual GTN 750H GNSS RNAV system includes the VHF1, VHF2, VOR/ILS1, VOR/ILS2 and Transponder functions.

1.3.2 GTN synchronization

The two GTNs operate in a synchronised manner with only the selected NMS providing navigation and guidance data to the avionics system. The selected NMS can be changed using the NMS1/2 selector. The active navigation is only synchronised if both units are set to Crossfill. The Pilot Guide provides further information on crossfilled data.

1.3.3 RNAV (GNSS) approach LNAV minima

RNAV (GNSS) approach procedures accessible with this system are those related to LNAV minima.

The IAC LNAV minima correspond to an RNAV (GNSS) approach without vertical guidance.

Only lateral guidance is provided. It is based on GNSS positioning.

Vertical flight management is exactly the same as for VOR-DME-based or NDB-based non-precision approaches.

RNAV (GNSS) final approach procedures are preceded by initial/intermediate approaches with transition waypoints or vector to final procedures (radar guidance).

1.3.4 Abbreviations used

ATC: ..... Air Traffic Control.
ADC: ..... Air Data Computer.
AFCS: ..... Automatic Flight Control System.
APCH: ..... Approach.
B-RNAV: .. Basic RNAV.
CDI: ..... Course Deviation Indicator.
DR: ..... Dead Reckoning.
FAF: ..... Final Approach Fix.
FCDS: ..... Flight Control Display System.
GLS: ..... GNSS Landing System.
GNSS: ..... Global Navigation Satellite System.
HSI: ..... Horizontal Situation Indicator.
IAC: ..... Instrument Approach Chart.
GPS: ..... Global Positioning System.
LDA: ..... Localizer type Directional Aid.
LNAV: ..... Lateral Navigation.
LOI: ..... Loss Of Integrity.
ND: ..... Navigation Display.
OBS: ..... Omni Bearing Selector.
PFD: ..... Primary Flight Display.
P-RNAV: .. Precision RNAV.
RAIM: ..... Receiver Autonomous Integrity Monitoring.
RF ..... Radius to Fix.
RNAV: ..... Area Navigation.
RNP: ..... Required Navigation Performance
RoD: ..... Rate of Descent.
SID: ..... Standard Instrument Departure.
STAR: ..... Standard Arrival Route.
VTF: ..... Vectors to Final.

1.4 ARCHITECTURE

The dual GTN 750H GNSS RNAV system interfaces to other equipment as follows:

- Flight Control Display System to display flight plan and navigation information,
- AFCS APM 2000 for coupling to Navigation and Hover modes,
- DMAP EURONAV VII (if fitted).

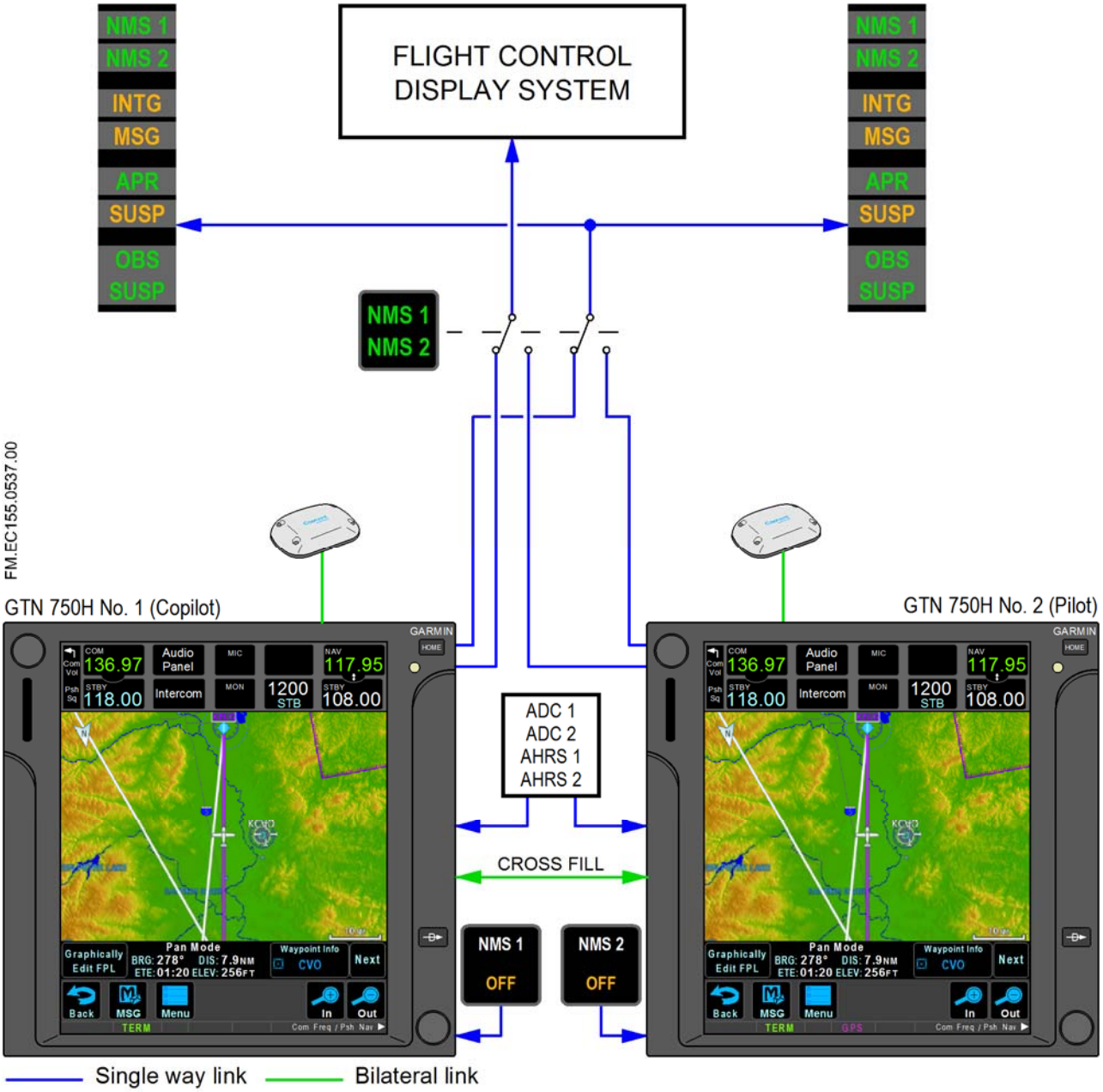

Figure 1: Dual GTN 750H GNSS RNAV system simplified diagram

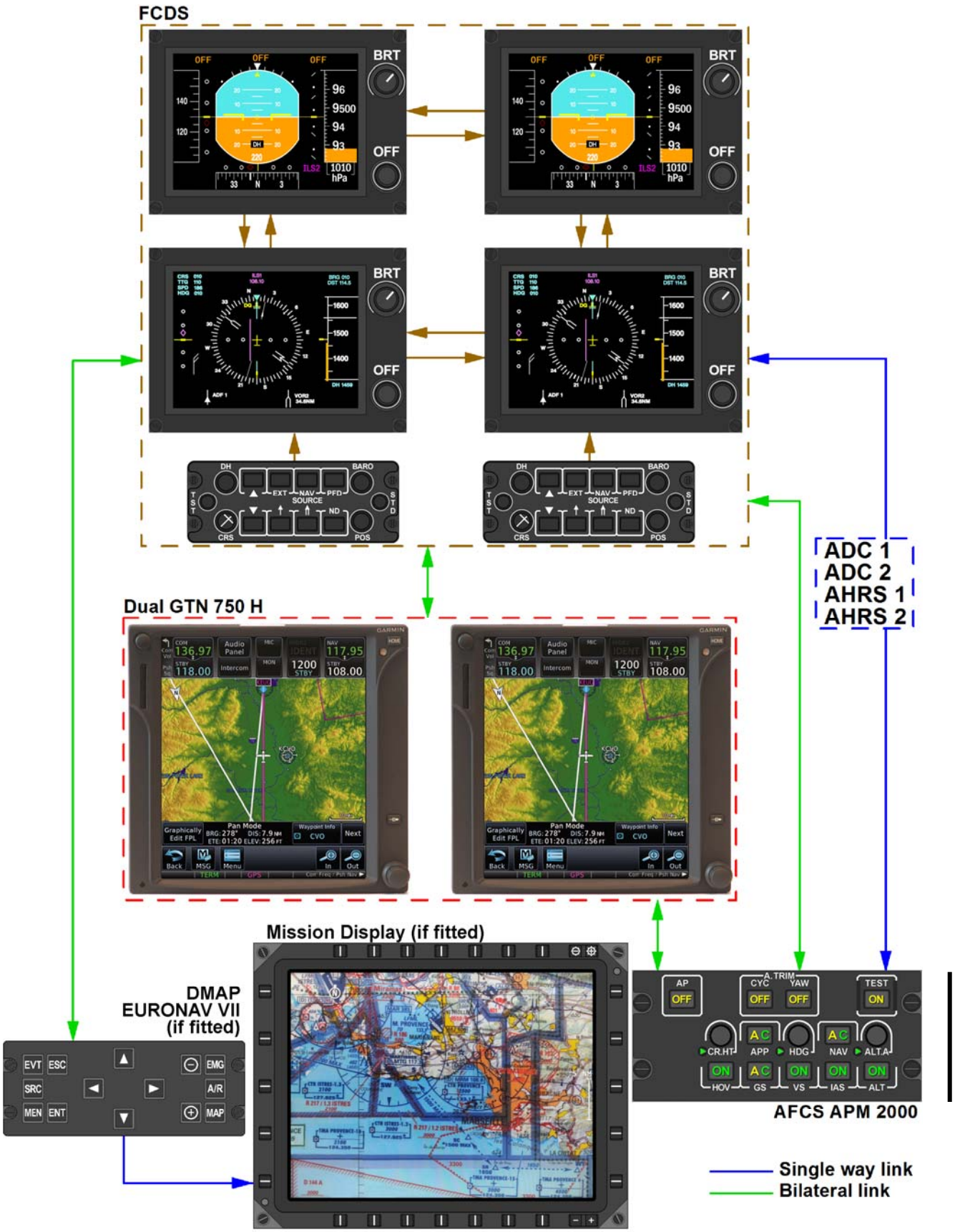

Figure 2: Dual GTN 750H GNSS RNAV system simplified integration diagram

1.5 CONTROLS AND DISPLAYS

Figure 3: Dual GTN 750H GNSS RNAV system controls and displays

Annunciator	Function
NMS 1	GTN 1 (copilot's side) is selected.
NMS 2	GTN 2 (pilot's side) is selected.
INTG	GPS receiver detects a position error, or is unable to calculate the integrity of the position.
MSG	Status message is available on the selected GTN. In case of new message, the annunciator flashes.
APR	Approach mode is active.
SUSP	GPS "suspend" mode of operation (i.e. flight plan automatic sequencing stopped).
OBS SUSP	GPS “OBS” mode of operation. When the OBS mode is engaged, the automatic flight plan sequencing is suspended, as indicated by the SUSP annunciator.

Pushbutton	Function
NMS 1 NMS 2	Select the navigation source (GTN 1 or GTN 2) for FCDS and AFCS.
NMS 1 OFF and NMS 2 OFF	Switches On/Off GTN 1 or GTN 2.

2 LIMITATIONS

The limitations specified in the Basic Flight Manual and in the Supplements used remain applicable and are supplemented or modified by the following limitations:

2.1 GENERAL

- RNP APCH is restricted to LNAV minima (without vertical guidance).
- RNP 1 Radius to Fix legs are not authorized.
- Maximum interception angle using Vectors to Final.....90°.
- The use of any SBAS mode (WAAS, EGNOS...) is prohibited. All available SBAS modes shall be disabled.
- Both GTN 750H shall be configured to Crossfill.
- Accomplishment of ILS, LOC, LOC-BC, LDA, SDF and MLS approaches with the GPS function of this system is not authorized,
- The Gloves Qualification Procedure in the Pilot's Guide must be completed prior to glove used: The procedure is specific to pilot / glove / GTN combination.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the Basic Flight Manual and in the Supplements used remain applicable and are supplemented or modified by the following procedures:

3.1 ABNORMAL PROCEDURES

The NMS annunciator on the NDs and the MSG and INTG indicators on the Instrument Panel Vertical Strip annunciators appear when failures related to the selected GTN/GPS occur.

INDICATION	CORRECTIVE ACTIONS
NMS on ND Selected GTN failure	- NMS 1 / NMS 2 selector ..... Press to select the other GTN. If problem continues: - NAV SOURCE pushbutton .... Press to select alternate navigation source. **CONTINUE THE FLIGHT**
LOI + MSG on GTN (GPS NAVIGATION LOST) and MSG + INTG on Vertical Strip	1. GPS navigation is lost only on selected GTN. - NMS 1 / NMS 2 selector ..... Press to select the other GTN. - AFCS coupling ..... recouple as required. If problem continues: - NAV SOURCE pushbutton .... Press to select alternate navigation source. 2. GPS navigation is lost on both GTN. - Use conventional navigation instruments, - In RNAV 2 airspace or RNP 1 procedure, contact ATC to revert to conventional navigation, - During the final phase of an instrument approach based on GPS, execute a missed approach procedure except if other navigation means approved for the approach are displayed and operational. Revert to conventional navigation for the missed approach. **CONTINUE THE FLIGHT**

LOI +  on GTN (LOSS OF INTEGRITY) and MSG + INTG on Vertical Strip	1. LOI only on selected GTN. - NMS 1 NMS 2 selector ..... Press to select the other GTN. 2. LOI on both GTN. - En Route, GPS navigation can still be used provided the position can be checked with the other means of navigation at least every 15 min. If the consistency check is impossible, revert to conventional navigation. In that case, if in RNAV 2 airspace, contact ATC to revert to conventional navigation, - In terminal area, revert to conventional navigation. If in RNP 1 airspace, contact ATC to revert to conventional navigation, - During the final phase of an instrument approach based on GPS, execute a missed approach procedure except if other navigation means approved for the approach are displayed and operational. Revert to conventional navigation for the missed approach. **CONTINUE THE FLIGHT**
LOI on non-selected GTN GPS NAVIGATION LOST or LOSS OF INTEGRITY on non-selected GTN	1. Continue flight using selected GTN. **CONTINUE THE FLIGHT**

DR +  on GTN and DR + MSG on ND The GTN is in Dead Reckoning navigation mode.	1. If DR on selected GTN only: -  selector.....Press to select the other GTN. 2. If DR on both GTNs: -  pushbutton .... Press to select alternate navigation source. **NOTE** Dead Reckoning is only allowed in En Route and Oceanic phases of flight. During Dead Reckoning, course guidance will be removed from the CDI. - Use conventional navigation instruments. - En Route, GPS navigation can still be used provided the position can be checked with the other means of navigation at least every 15 min. If the consistency check is impossible, revert to conventional navigation. In that case, if in RNAV 2 airspace, contact ATC to revert to conventional navigation. **NOTE** If in Terminal or Approach phase of flight when Dead Reckoning takes place; "No GPS Position" replaces the Dead Reckoning indications: (Use alternate Abnormal Procedure.) **CONTINUE THE FLIGHT**
Loss of non-selected GTN and  on selected GTN (CROSSFILL ERROR) and MSG on Vertical Strip	1. Continue flight using selected GTN. **CONTINUE THE FLIGHT**

 on selected GTN and MSG on Vertical Strip and MSG on ND or  on non-selected GTN	1. GTN .....Refer to the Message page. 2. GTN Procedure.....Conduct as required. **CONTINUE THE FLIGHT**
Partial or full loss of GTN function (for example frozen touch function)	1. If the problem is on selected GTN: - NMS 1 / NMS 2 selector..... Press to select the other GTN as required to maintain GPS information. 2. Affected GTN..... Reset using NMS 1 OFF or NMS 2 OFF On/Off pushbutton. **NOTE** The GTN touchscreen function can be lost if water falls on the screen. Removing the water and drying the screen with a clean cloth should return the touchscreen function. **CONTINUE THE FLIGHT**

4 NORMAL PROCEDURES

The normal procedures specified in the Basic Flight Manual and in the Supplements used remain applicable and are supplemented or modified by the following normal procedures.

4.1 GENERAL

NOTE

The GTN performance is not guaranteed
at cabin temperatures below - 20°C.

- The Pilot's Guide (190-01007-03 Rev. H or later appropriate references) or the Cockpit Reference Guide (190-01007-04 Rev. F or later appropriate references) must be up to date and readily available on board, for the complete operating mode of the system.

- Both GTN must have GPS version 5.0 and software version 6.11 or later approved versions.

- The crew must ensure that the information in the data base is up to date (28 days update cycle) and check it against the official documentation.

NOTE

Both GTN must contain the same databases to operate
correctly in synchronized mode.

- On GTN startup, verify and adjust the backlighting as required.

NOTE 1

- The GTN screen brightness is adjusted using the system/backlighting menu. During the day, the brightness is controlled by the photocell and the backlighting. In Night lighting mode, the GTN screen is adjusted with the Console integrated lighting control and the backlighting.
- It is recommended to set the backlighting to 0 to 5 % during the night.

NOTE 2

The following configuration of glareshield is recommended for night flight:

- Single pilot: left half of glareshield: first detent; right half: second detent
- Two pilots: left and right halves: second detent.

NOTE 3

Wearing of glasses having polarized lenses could jeopardise
the readability of the GTN display.

4.1.1 Navigation General

- Before starting navigation, check that all validities are present by reading the GTN messages.
- For En Route or terminal RNAV in GPS navigation mode, the availability of the RAIM should be confirmed for the intended flight (route and time).

Display

NOTE

Curved elements of navigation procedures and routes (for example: leg to a MAP, holding pattern, orbit search pattern), are not displayed on the ND or the Mission Display, but only on the GTN.

Waypoint Sequencing

The GTN will automatically sequence the waypoints in a navigation route. It is possible that the GTN will sequence past the initially selected waypoint. In this case, reset the waypoint using Activate Leg, or perform a Direct To the desired point. Always verify that the navigation is to the desired waypoint.

NOTE

The GTN normally provides automatic sequencing of selected route / IFR procedure.

When automatic sequencing is not available the 

key will appear above the SUSP indication on the GTN and the SUSP annunciator will be displayed on the Vertical Strip. Upon reaching the desired waypoint the pilot must manually sequence to the next leg by touching the 

key on the GTN.

4.1.2 Coupled navigation

NOTE

At high ground speed (at or above approximately 160 kt) during coupled navigation, overshoots of the trajectory during turns are possible.

End of Route / Direct To

NOTE

At the end of a route, the GTN continues to provide heading. The AFCS remains in NAV mode, and is guided on constant heading whilst the ND will have the needle pointing to the rear.

Steep Turn

NOTE

The GTN messages include "Steep Turn" (Aircraft may overshoot course during turn). The Pilot Guide indicates "No action is necessary; message is informational only. If desired, slow the aircraft to shallow the turn.". However, navigation may be unexpected if the aircraft speed is not reduced to enable the AFCS to follow the guidance.

4.1.3 OBS Function

The OBS function 

retains the current "active to" waypoint as the navigation reference even after passing the waypoint (i.e., prevents sequencing to the next waypoint). Touching the OBS key again returns to automatic sequencing of waypoints.

When OBS mode is selected, the desired course To/From a waypoint is set using the pop-up window on the GTN. The 

annunciator is displayed on the Vertical Strip.

For leg types that do not support OBS, this key will be shown as a SUSP key. This key will then also function as an Unsuspend key for legs that auto-suspend, such as holds, missed approaches, etc.

NOTE

With dual GTN 750H GNSS RNAV system with crossfill on, the OBS course will only be updated real time on the GTN that is receiving the new OBS course. The course will be transferred to the other GTN when OBS is exited.

When the AFCS is coupled to NAV, on passing the OBS waypoint, the aircraft remains on the heading, with ND indications being provided back towards the OBS waypoint.

NOTE

The OBS Navigation source annunciator on the NDs is not related to the GTN OBS function (it is for an Obstacle Detector if installed).

4.2 PRE-STARTING CHECKLIST

ADD:

- GTN screens..... Ensure clean,
- GTN 2 ..... On,
- GTN 2 database currency is correct during start ..... Check.

4.3 POST-STARTING CHECKLIST

ADD:

- GTN 1 ..... On,
- GTN 1 database currency is correct during start ..... Check.

4.4 IFR OPERATING PROCEDURES

4.4.1 Terminal area RNAV procedures

- Terminal area RNAV procedures performed with this system must be accomplished with procedures that are retrieved from the GTN navigation database and checked against the official Terminal Charts before starting the procedure.
- The terminal RNAV procedures must be conducted with the NMS navigation source selected on the ND,

Holding Pattern

Holding patterns can be flown as part of a procedure, or can be added to a waypoint within a route. If added to a route waypoint, the axis of the holding pattern should be set to be in the direction of travel. If not, the guidance provided when leaving the pattern may be unexpected (Steep Turn or S-Turn). If this occurs, either fly the exit manually, or perform a Direct To the next waypoint.

When in the holding pattern, SUSP is displayed on the GTN and SUSP on the Vertical Strip. The aircraft will remain in the holding pattern until the 

on the GTN is selected.

The holding pattern is only displayed on the GTN Map page.

4.4.2 RNAV (GNSS) approaches

4.4.2.1 General

- RNAV(GNSS) approaches performed with this system must be accomplished with approach procedures that are retrieved from the GTN navigation database and checked against the official Instrument Approach Charts before starting the approach.
- RNAV (GNSS) approaches must be conducted:
  - With the NMS navigation source selected on the ND,
  - According to the LNAV minima.
- The availability of GPS integrity monitoring (RAIM) should be confirmed for the intended approach (procedure and time).

4.4.2.2 AFCS-coupled intermediate approach using a transition waypoint

Prior to IF

- Check:
  - . NMS navigation source selected on the ND,
  - . AFCS NAV mode engaged,
  - . HSI selected on the ND,
  - . NMS navigation datafields displayed on the ND are correct.

After IF

- Check:
  - . Horizontal deviation scale displayed,
  - . Approach parameters in NMS navigation datafields are consistent with IAC.
- Monitor AFCS NAV mode tracking of approach axis.

Prior to FAF:

- Adjust RoD as required,
- Prepare vertical flight profile management as for VOR-DME-based or NDB-based non-precision approaches.

4.4.2.3 AFCS-coupled intermediate approach using Vector To Final (VTF)

NOTE

Following radar vectoring, ATC clearance to the FAF can be handled via the VTF function which allows direct-to navigation to intercept the extended final approach segment.

When coupled to an approach using VTF, the HDG mode should be used as necessary, or the aircraft flown manually, until the aircraft is in an appropriate position to resume NAV. The GTN will provide guidance to join the approach prior to the FAF, but the aircraft may align on the axis very close to the FAF point.

It is recommended to use a maximum intercept angle of 45 degrees at a minimum of 5 nm from the FAF, to minimize any overshoots.

During radar vectoring:

- Disengage AFCS NAV mode,
- Use, if desired, AFCS HDG mode as instructed by ATC,
- Select VTF,
- Check:
  . LNAV minima on IAC,
  . Horizontal scale displayed,

On intercept course to extended final approach segment:

- Engage AFCS NAV mode
- Monitor:
  . Interception of final axis,
  . NMS navigation datafields displayed on ND.

Before FAF:

- Adjust RoD as required,
- Prepare vertical flight profile management as for VOR-DME-based or NDB-based non-precision approaches.

4.4.2.4 AFCS-coupled final approach

- Vertical Strip.....Confirm APR at the FAF,
- Else.....Perform missed approach,
- AFCS mode tracking of approach axis.....Monitor,
- RoD.....Adjust as required.

4.4.2.5 Missed approach

NOTE

A missed approach can be activated via the GTN once past the MAP or via the Go Around pushbutton on the cyclic stick during the final approach or once past the MAP.

- No later than MAP, activate Go-Around,
- Check NMS sequencing to missed approach pattern.

5 REGULATORY PERFORMANCE DATA

The regulatory performance data specified in the Basic Flight Manual and in the Supplements used remain applicable.