

REVISION TO AIRCRAFT PUBLICATION : 355 N**PUBLICATION CONCERNED : FLIGHT MANUAL SUPPLEMENTS****CERTIFICATION CODE : A**

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

SUP. No.	TITLE	REVISION No.	DATE-CODE
SUP.0	LIST OF SUPPLEMENTS	17	00-28
SUP.24	CAMERA CARRYING INSTALLATION	0	00-26

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SUP. No.	TITLE	REVISION No.	DATE-CODE
SUP.0	LIST OF SUPPLEMENTS	16	00-27
SUP.55.2	GPS KLN 89B	0	00-27

EUROCOPTER**REVISION TO AIRCRAFT PUBLICATION : 355 N****PUBLICATION CONCERNED : FLIGHT MANUAL SUPPLEMENTS****CERTIFICATION CODE : A**

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SUP. N°	TITLE	REVISION N°	DATE-CODE
0	LIST OF SUPPLEMENTS	15	00-25
23.1	BREEZE ELECTRIC HOIST 204 kg (450 lb) HANDLE WITH SUPPORT BRACKET	0	00-25

0.0.P0

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SUP. N°	TITLE	REVISION N°	DATE-CODE
SUP 0	LIST OF SUPPLEMENTS	13	99-38
SUP 23	BREEZE ELECTRIC HOIST 204 kg (450 lb)	0	99-38
	<u>NOTE</u> : SUP 23 Supersedes SUP 19		



FLIGHT MANUAL

AS 355 N

DGAC TYPE CERTIFICATE No 168

REGISTRATION No

SERIAL No

APPROVED BY :

The DIRECTION GENERALE DE
L'AVIATION CIVILE (DGAC)

Date of approval : 13 JUIN 1989



"This Rotorcraft Flight Manual is the translation of an approved French flight manual. The note "DGAC approved" on certain pages means that these pages are an integral translation of the French issue approved by DGAC".

The Rotorcraft Flight Manual consists of all pages marked "DGAC approved" and coded **A** .

IMPORTANT NOTE

The practical value of this manual depends entirely upon its being correctly up-dated. The effectivity of the manual at the latest revision is specified on the List of Effective Pages.

This manual supports the helicopters delivered by both AEROSPATIALE and EUROCOPTER FRANCE.
Revisions to this manual are made by EUROCOPTER FRANCE using the same procedures as AEROSPATIALE.

THIS DOCUMENT SHALL BE CARRIED IN AIRCRAFT AT ALL TIMES.



EUROCOPTER FRANCE Etablissement de Marignane
Direction Technique Support - 13725 Marignane Cedex - France

DGAC Approved:

355 N

0.0.P1

A

91-50

Page 1

CUSTOMIZATION :

A/C : 355 N

- S/N :

LIST OF ADDITIONAL APPROVED PAGES

SECTION	PAGE	CODE	DATE	SECTION	PAGE	CODE	DATE
<p>THIS AIRCRAFT DOES NOT OFFER ANY PARTICULAR FEATURES REQUIRING THE CUSTOMIZATION OF THE FLIGHT MANUAL ON GREEN PAGES.</p>							

<p>LIST OF THE LATEST NORMAL APPROVED REVISIONS</p>				<p>NORMAL REVISION : 0 DGAC APPROVED DATE : 13 06 1989</p>	
No	Date	No	Date		
0	89-24				

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0.0.P1

A B D E F G H

89-24

Page 3

PARTIE 1 - PART 1

GENERALITES
GENERAL



1

LIMITATIONS
LIMITATIONS



2

PROCEDURES DE SECOURS
EMERGENCY PROCEDURES



3

PROCEDURES NORMALES
NORMAL PROCEDURES



4

PERFORMANCES
PERFORMANCE



5

SUPPLEMENTS
SUPPLEMENTS



S
P
C
S

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

IF A NORMAL REVISION (RN) MODIFIES THE PAGE NUMBER FOR ANY INFORMATION CONCERNED BELOW, THE READER WILL HAVE TO CHANGE THE NUMBER OF THE PINK PAGE BY HAND, SO THAT THE INFORMATION REMAINS IN ACCORDANCE WITH THE PARAGRAPH CONCERNED.

Section	Page	Date	Applicable before condition is met :

NOTE : The date is coded and consists of the last two digits of the year followed by the number of the week in this year.

DGAC Approved:

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0.0.P3

A | B | D | E | F | G | H

89-24

Page 1

COMPOSITION
OF RUSH REVISIONS (RR)

The Manual contains the following additional yellow page(s) :

No	SECTION - PAGE	DATE	No	SECTION - PAGE	DATE

DGAC Approved:

355 N

0.0.P4

A	B	D	E	F	G	H
---	---	---	---	---	---	---

LIST OF APPROVED EFFECTIVE PAGES
DGAC CERTIFICATION

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

SECTION	PAGE	DATE	(1)	SECTION	PAGE	DATE	(1)	
0. 0	P1	1		3. 1	3	91-50		
0. 0	P1	3		3. 1	4	94-24		
0. 0	P2	1		3. 1	5	94-24		
0. 0	P3	1		3. 1	6	89-24		
0. 0	P4	1		3. 1	7	89-24		
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1. 0	P6	1	R	3. 2	2	89-24		
1. 1		1	N	3. 2	3	94-24		
1. 1		2	N	3. 3	1	96-20	R	
1. 2		1	N	3. 3	2	96-20	R	
1. 2		2	N	3. 3	3	94-24		
1. 3		1	N	3. 3	4	94-24		
2. 0	P6	1		3. 3	5	91-20		
2. 1		1	R	3. 3	6	94-24		
2. 1		2	R	3. 3	7	96-20	R	
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SECTION	PAGE	DATE	(1)	SECTION	PAGE	DATE	(1)
4. 2	6	94-24					
4. 2	7	94-24					
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5. 1	3	89-24					
5. 1	4	96-20	R				
5. 1	5	89-24					
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5. 1	8	96-20	R				
5. 1	9	96-20	R				
5. 1	10	96-20	R				
5. 1	11	96-20	R				
5. 1	12	96-20	R				

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	89-24	5	96-20
1	91-20		
2	91-50		
3	92-45		
4	94-24		

NORMAL REVISION : 5
 DGAC APPROVED
 DATE : 04 OCT. 1996



DGAC Approved:

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355 N

0.0.P5

96-20

Page 2

SECTION 1

GENERAL

CONTENTS

1.1 PRELIMINARY NOTES

1.2 UPDATING

1.3 SYMBOLS AND ABBREVIATIONS

SECTION 11 PRELIMINARY NOTES1.1 General

To achieve the required degree of safety, this manual must be used in conjunction with the relevant regulations covering aircraft operation, such as aerial navigation laws in the operator's country. It is essential for the crew to become familiar with the contents of this manual, special certification requirements and any information specific to customized configurations, and to check all revisions and related requirements.

1.2 Description of manual

This manual contains legally approved information, together with additional manufacturer's information not subject to approval ; the entire manual complies with the recommendations of the Helicopter Association International (HAI).

- The approved information is contained in PART 1 "FLIGHT MANUAL", in sections 1,2,3,4,5 and in the Supplements.
- The information not subject to Approval is contained in PART 2 "COMPLEMENTARY FLIGHT MANUAL", as a Supplement to PART 1. This information is covered by sections 6,7,8,9 and 10.

Each PART of Manual makes up a whole and, for this reason, incorporates its own List of Pages and is revised separately.

1.2.1 Basic Aircraft

The basic helicopter specifications are covered by sections 1 through 10.

1.2.2 Special Systems and Procedures

Information concerning optional equipment systems and operational procedures is covered by Supplements. These are mini Flight Manuals covering any differences from the basic aircraft information, section by section. The supplements are approved on an individual basis.

1.3 Adaptation of manual to certification requirements

Specific certification requirements may necessitate modifications to the text or layout of certain pages. Therefore, a specific Flight Manual (PART 1) is drawn up for each certification. Each Flight Manual includes its own particular title page ; the alphabetical code, corresponding to relevant certification, appears in the lower left-hand corner of each page of the approved PART 1.

1.4 CUSTOMIZATION MODIFICATIONS (printed on green paper)

Special features of a particular helicopter may justify priority addenda to the information on certain manual and supplement pages. These pages, printed on green paper, are filed in the manual over the corresponding white pages.

The information contained in the green pages supersedes or supplements the information covered by the relevant white page. No white page is deleted.

Page 0.0.P1 page 3 gives the list of green pages.

2 UPDATING

2.1 General

This Manual is updated periodically through rush revisions (RR) or normal revisions (RN).

2.2 Revisions

The manufacturer makes every effort to keep this manual updated by revisions to complete the user's information and capabilities. Each revision is accompanied by instructions summarizing the major points affected by the change and advising the person responsible for incorporating the revised pages in the manual. (The instruction sheet can be filed separately from the manual).

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R
R
R
R

2.2.1 Normal revisions (printed on white paper)

Normal revisions fully or partially update the manual. The pages may be new pages or may supersede the existing pages. They are printed on white paper.

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2.2.2 Rush revisions (printed on yellow paper)

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2.2.3 Conditional revisions RC (printed on pink paper)

The revised manual issued on white pages, corresponds to the recommended standard.

For helicopters authorized to fly at an earlier standard, the conditional revision (RC) retains the previous standard.

The user is responsible for embodiment of the aircraft modification(s) required for compliance with the recommended standard, after which the pink pages may be deleted under the user's responsibility.

The pink pages are specified on a separate list(0.0.P3 page 1).

NOTE : These pages are unaffected by normal and rush revisions or by customization.

3 SYMBOLS AND ABBREVIATIONS

SYMBOLS

	<u>English</u>	<u>French</u>
<u>Speeds :</u>		
- Rate of climb – or rate of descent -----	R/C-R/D	Vz
- Indicated air speed -----	I.A.S.	Vi
- True air speed -----	T.A.S.	Vp
- Calibrated air speed -----	C.A.S.	Vc
- Optimum climbing speed -----	Vy	Vy
- Take-off safety speed -----	V.TOSS	VSD
- Critical decision speed -----	V1	V1
- Never exceed speed -----	VNE	VNE
- Wind velocity -----	Vw	Vw
<u>Altitudes :</u>		
- Take-off or landing height -----	h	h
- Critical decision height -----	h1	h1
- Pressure altitude -----	Hp	Zp
- Density altitude -----	Hσ	Zσ
<u>Weights :</u>		
- Weight -----	Wt	M
- Maximum take-off weight -----	M.TOW	m
- Empty weight -----	E.W	M.V
- Equipped empty weight -----	E.E.W	M.V.E.
- Operating empty weight -----	E.O.W.	M.O.E.
- All-up weight -----	A.U.W.	M.T
<u>Temperature :</u>		
- Outside air temperature -----	OAT	θ s
<u>Miscellaneous :</u>		
- Power -----	W	W
- Torque -----	C	C
- Barometric pressure in millibars -----	Po	Po
- Degrees Celsius -----	°C	°C
- Rotor speed -----	NR	NR
- Engine generator speed -----	Ng	Ng
- Free turbine speed -----	Nf	Nf
- Tail pipe temperature -----	t4	t4
- Out of ground effect -----	O.G.E	H.E.S
- In ground effect -----	I.G.E	D.E.S
- Engine -----	ENG.	G.T.M
- Main gearbox -----	M.G.B	B.T.P
- Tail gearbox -----	T.G.B	B.T.A

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2.4 The "ERRATUM" procedure

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In the case of minor errors (typing errors, bad printing) likely to affect the understanding of the text, the "ERRATUM" procedure is used to make quick corrections between revisions. In this case, the pages affected by the procedure are re-issued completely and the date code is underlined for identification. These pages are summarized on an accompanying sheet which is not identified.

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SECTION 1.3

SYMBOLS AND ABBREVIATIONS

	SYMBOL or French	ABBREVIATION English
<u>ATMOSPHERE</u>		
Relative air density - - - - -	σ	σ
Outside air temperature - - - - -	θ s	OAT
Outside air pressure - - - - -	p	P
Standard atmosphere - - - - -	Atm. Std.	ISA
<u>ALTITUDE/HEIGHTS</u>		
Pressure altitude - - - - -	Zp	Hp
Density altitude - - - - -	Z σ	H σ or DA
Height - - - - -	h	h
<u>WEIGHTS</u>		
Empty weight - - - - -	MV	EW
Equipped empty weight - - - - -	MVE	EEW
Operating empty weight - - - - -	MOE	OEW
All-up weight - - - - -	MT	AUW
Maximum take-off weight - - - - -	M	MTOW
<u>SPEEDS</u>		
Indicated air speed - - - - -	V _i	IAS
Calibrated air speed - - - - -	V _c	CAS
True air speed - - - - -	V _p	TAS
Never exceed speed - - - - -	VNE	VNE
Optimum climbing speed - - - - -	V _y	V _y
Rate of climb - Rate of descent - - - - -	V _z	R/C
Wind velocity - - - - -	V _w	V _w
Take-off or landing safety speed - - - - -	VSD	VTSS
Rotor speed - - - - -	NR	NR
<u>NOTE</u> : Unless otherwise specified, the air speed values used refer to indicated air speeds		
<u>HOVER/TAKE-OFF/LANDING</u>		
In ground effect - - - - -	DES	IGE
Out of ground effect - - - - -	HES	OGE
<u>ENGINE (or POWER) PARAMETERS</u>		
Power - - - - -	W	W or PWR
Torque - - - - -	C	T or T _q
Engine generator speed - - - - -	Ng	Ng or N1
Ng difference - - - - -	Δ Ng	Δ Ng
Free turbine speed - - - - -	NTL	Nf
Tail pipe temperature - - - - -	t4	t4
<u>MISCELLANEOUS</u>		
Engine - - - - -	GTM	ENG
Main gear box - - - - -	BTP	MGB
Intermediate gear box - - - - -	BTI	IGB
Tail gear box - - - - -	BTA	TGB

SECTION 2
LIMITATIONS
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2.1	<u>OPERATING LIMITATIONS</u>	Page	
1	TYPES OF OPERATION APPROVED -----	1	
2	BASIS OF CERTIFICATION -----	1	
3	WEIGHT LIMITS -----	1	
4	CENTRE OF GRAVITY LIMITS -----	1	
5	MAXIMUM SPEED -----	2	
6	APPROVED FLIGHT ENVELOPE -----	4	R
7	MANOEUVRING LIMITATIONS -----	4	
8	MAIN ROTOR SPEED -----	4	
9	ROTOR BRAKE LIMITATION -----	4	
10	TORQUE LIMITATIONS -----	5	
11	ENGINE LIMITATIONS -----	5	
12	LUBRICATION SYSTEMS LIMITATIONS -----	7	
13	ELECTRICAL AND HYDRAULIC POWER SYSTEMS LIMITATIONS --	8	
14	LANDING AND STOPPING LIMITATIONS ON SLOPES -----	9	
15	RESTRICTIONS -----	9	
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17	TRANSPORT OF PERSONNEL -----	9	
18	OPTIONAL EQUIPMENT LIMITATIONS -----	9	
19	HEATING AND DEMISTING SYSTEMS LIMITATIONS -----	9	R
20	LIFED COMPONENTS -----	9	R
21	MANDATORY CHECKS -----	10	R
2.2	<u>PLACARDS AND INSTRUMENT MARKINGS</u>		
1	PLACARDS -----	1	
2	INSTRUMENT MARKINGS -----	2	

COMPLIANCE WITH THE LIMITATIONS PRESCRIBED IN THIS SECTION IS IMPERATIVE

SECTION 2.1

OPERATING LIMITATIONS

1 TYPES OF OPERATION APPROVED

Operating the helicopter is approved, out of icing conditions, for :

- Day VFR flight
- Night VFR flight, when the required equipment items are installed and serviceable and in accordance with the flight regulations of the country concerned.

2 BASIS OF CERTIFICATION

The helicopter is approved in the "NORMAL" category of FAR PART 27.

3 WEIGHT LIMITS

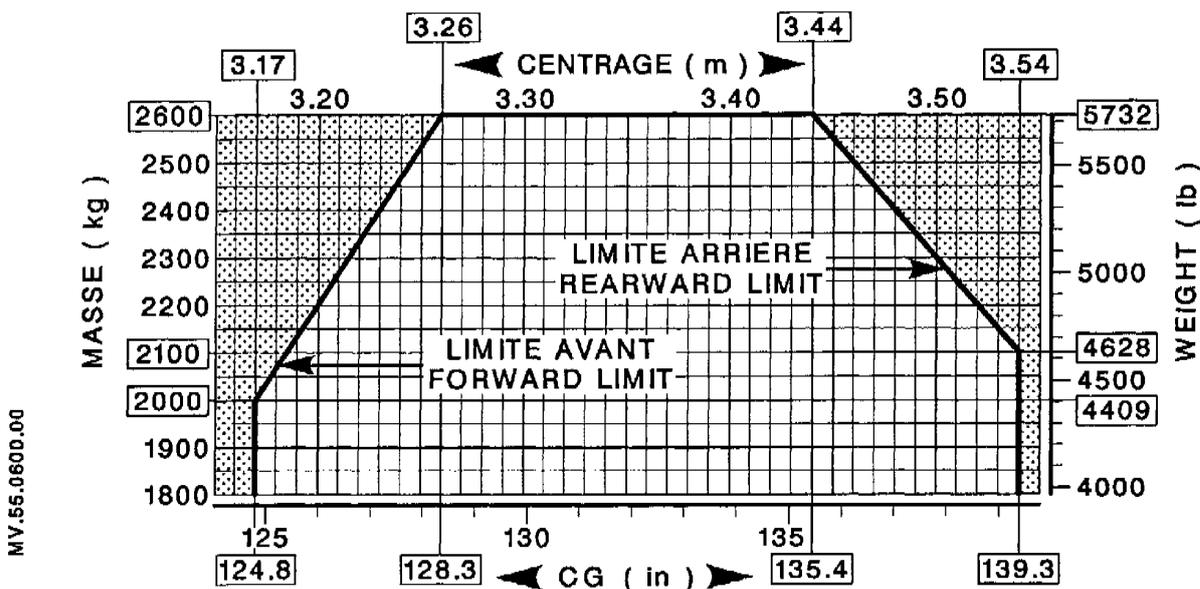
- Maximum permissible weight : ----- 2600 kg (5732 lb) R

4 CENTRE OF GRAVITY LIMITS

4.1 Longitudinal c.g.

The C.G. datum is located 3,40 m (133.8 in) forward of the main rotor head centre line.

The longitudinal c.g. limits are given by the graph below :



4.2 Lateral c.g.

- L.H. limit : ----- 0.16 m (6.30 in)
- R.H. limit : ----- 0.09 m (3.54 in)

The datum is the aircraft symmetry plane

5 MAXIMUM SPEED

5.1 VNE with doors closed

5.1.1 VNE Power-on

- Absolute VNE is 150 Knots (278 Km/hr-173 MPH) at zero pressure-altitude
- At higher altitudes this speed is to be reduced by 2.5 Knots per 1000 ft (15 Km.hr per 1000 m - 2.9 MPH per 1000 ft)
- In cold weather, when OAT is less than - 35°C, subtract 10 kt (19 Km/hr-12 MPH) from the VNE specified above.

5.1.2 VNE Power-off

- Absolute VNE is 120 Knots (222 Km/hr-138 MPH) at zero pressure-altitude
- At higher altitudes this speed is to be reduced by 2.5 knots per 1000 ft (15 Km/hr per 1000 metres - 2.9 MPH per 1000 ft)
- In cold weather, reduce the VNE as follows :
 - . 20 Knots (37 Km/hr-23 MPH) when OAT is below - 25°C, without dropping below 65 knots (120 km/hr-75 MPH).

5.2 VNE with doors open or removed

5.2.1 VNE with standard doors removed

VNE is limited to 70 knots (130 km/h-81 MPH) for the following permissible configurations :

- . 4 doors removed
 - . 2 R.H. doors removed
 - . 2 L.H. doors removed
-] Any other configuration is prohibited

5.2.2 VNE with sliding * doors open

VNE is limited, as indicated in the following tables, according to the aircraft configuration.

NOTE : If all four doors have been removed, VNE is limited to 70 Knots (130 Km/h-81 MPH). R
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* Optional

Aircraft fitted with a sliding door on LH side and two standard doors on RH side

		BOTH RH DOORS	
		Closed	Removed
LH SLIDING DOOR	Closed	VNE	PROHIBITED
	Open or removed	135 kt (250 km/h-155 MPH) or VNE *	70 kt (130 km/h - 81 MPH)

Sliding door operation : Opening 110 kt (204 km/h - 127 MPH)
 Closing 80 kt (148 km/h - 92 MPH)

Aircraft fitted with a sliding door on RH side and two standard doors on LH side

		RH SLIDING DOORS	
		Closed	Open or removed
BOTH LH DOORS	Closed	VNE	110 kt (204 km/h - 127 MPH) or VNE *
	Removed	PROHIBITED	70 kt (130 km/h - 81 MPH)

Sliding door operation : Opening 60 kt (111 km/h - 69 MPH)
 Closing 60 kt (111 km/h - 69 MPH)

Aircraft fitted with two sliding doors

		RH SLIDING DOOR	
		Closed	Open or removed
LH SLIDING DOOR	Closed	VNE	110 kt (204 km/h - 127 MPH) or VNE *
	Open or removed	60 kt (111 km/h - 69 MPH)	110 kt (204 km/h - 127 MPH) or VNE *

Sliding door operation : Opening 60 kt (111 km/h - 69 MPH)
 Closing 60 kt (111 km/h - 69 MPH)

* Whichever is the lowest.

ANY OTHER CONFIGURATION IS PROHIBITED

6 APPROVED FLIGHT ENVELOPE

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6.1 Altitude

Maximum pressure-altitude (substantiated) ----- 20 000 ft (6096 m)

6.2 Temperature

- Minimum temperature ----- - 40°C
For O.A.T. lower than - 25°C, see special instructions in SUP.1.
- Maximum temperature ----- ISA + 35°C limited to + 50°C

7 MANOEUVRING LIMITATIONS

Do not exceed the load factor causing the "LIMIT" warning light to come on.

8 MAIN ROTOR SPEED8.1 Power-on

- . two engines running (stabilized r.p.m.) ----- 390 (+ 4,-5) rpm
For IAS lower than 55 kt (102 km/h- 63 MPH) ----- 390 (+10,-5) rpm
- . one engine running (stabilized r.p.m.) ----- from 375 to 394 rpm

8.2 Power-off

- . maximum ----- 425 rpm
- . minimum ----- 330 rpm

NOTE : The warning horn sounds when the rotor speed is :

- . below 360 rpm (continuous sound)
- . above 410 rpm (intermittent sound)

9 ROTOR BRAKE LIMITATION

- Maximum rotor speed for rotor brake application ----- 170 rpm
Both engines must be shut down beforehand..

10 TORQUE LIMITATIONS

10.1 Maximum torque with 2 engines operative

- Max. continuous torque ----- 73 % per engine
- Max. takeoff torque (IAS lower than 55 kt - 102 km/h - 63 MPH)
 - . Before Mod.072157 ----- 78 % per engine R
 - . After Mod. 072157 ----- 80 % per engine R

The LIMIT warning light illuminates when the sum of torque 1 + torque 2 is greater than :

- . Before Mod.072157 ----- 2 times 78 % R
- . After Mod. 072157 ----- 2 times 80 % R

- Max. transient torque for 10 seconds (IAS lower than 55 kt - 120 km/h - 63 MPH) ----- 83 % per engine

10.2 Maximum torque with 1 engine inoperative

- Continuous torque ----- 100 %
- 30-min (intermediate contingency) torque ----- 115 %
- 2-min 30-sec (maximum contingency) torque ----- 131 %
- 15-sec (transient) torque ----- 140 %

NOTE : 100 % torque corresponds to 328 kw for a rotor speed of 394 rpm.

11 ENGINE LIMITATIONS

This aircraft is equipped with 2 TURBOMECA ARRIUS 1A engines. Operating limitations are determined by Gas Generator Rotational Speed (Varying with altitude and OAT and display on an analog (Δ Ng) and digital (Ng) indicator), by Exhaust Gas Temperature (t4) or by Free Turbine Speed (Nf) according to operating conditions.

11.1 Gas Generator Speeds

- Max. Continuous Power Limit :
 - . IAS equal to or lower than 65 kt (120 km/h - 75 MPH)
 - Ng difference on indicator : - 2.6 %
 - . IAS higher than 65 kt (120 km/h - 75 MPH)
 - Ng difference on indicator : - 2.6 % for OAT equal to or higher than 0°C
 - 3.6 % for OAT lower than 0°C
- Max. Takeoff Power limit :
 - Ng difference on indicator : 0 % and illumination of LIMIT warning light.
- Intermediate Contingency Power limit :
 - Ng difference on indicator : + 1.1 %
- Max. Contingency Power limit :
 - Ng difference on indicator : + 2.7 %

Absolute values are determined by the computer.

The Intermediate Contingency and Max. Contingency Power limits are ensured by the computer when the corresponding function is engaged.

- . In the Intermediate Contingency Power function, the red "Ng DIFF." warning light is on.
 - . In the Max. Contingency Power function, the red "Ng DIFF." warning light is out.
- Before embodiment of Mod. 2158, this light flashes to indicate that the maximum time authorized for the function (2 min 30 s.) is exceeded.

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11.2 Max. exhaust gas temperatures (t4)

- On starting :
 - . 5 s. maximum ----- 870°C
 - . without time limit ----- 750°C
- With 2 engines operative :
 - . 5 minutes (Max. Takeoff Power) ----- 800°C
 - . continuous (Max. Continuous Power) ----- 765°C
- With 1 engine inoperative :
 - . 2 min. 30 s. (Max. Contingency Power) ----- 870°C
 - . 30 minutes (Intermediate Contingency Power)----- 800°C
- For training purposes :
 - . 2 min. 30 s. (Max. Contingency Power) ----- 800°C
 - . 30 minutes (Intermediate Contingency Power)----- 765°C

11.3 Free turbine speed (Nf)

- Transient power rating (5 s. max.)
 - . Maximum ----- 425 rpm
 - . Minimum ----- 327 rpm
- Continuous power rating
 - . Maximum ----- 410 rpm
 - . Minimum ----- 358 rpm

NOTE : 394 rpm read on indicator corresponds to a free turbine speed of 45438 rpm.

11.4 Fuels

11.4.1 Normal use

Without restrictions :

- MIL-T-83133 (JP8)
- ASTM-D-1655 (JET A)
- ASTM-D-1655 (JET A1)

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With restrictions :

- MIL-T-5624 (JP5)
- Minimum temperature for starting : - 30°C

11.4.2 Emergency use

Pending

11.5 Fuel pressure

- Maximum ----- 1.5 bar (21.7 psi)
- Minimum (Starting sequence) ----- 0.8 bar (11.6 psi)

11.6 Fuel additives

11.6.1 Anti-ice additive

For operation at temperatures below - 20°C an anti-ice additive is mandatory.

The additive must be in conformance with MIL-I-27686 specification or equivalent specifications : AIR 3652-D, Eng RD 2451, S 748, PHILLIPS PFA/55MB.

Maximum concentration must be 0.15 % by volume.

Minimum concentration must be 0.10 % by volume.

11.6.2 Anti-static additive

SHELL anti-static additive ASA-3 is approved.

Normal concentration must be 0.0001 % by volume.

12 LUBRICATION SYSTEMS LIMITATIONS

12.1 Lubricants approved for use in MGB and TGB

- Synthetic oil 3 cst ----- NATO 0 148 or MIL-L-7808
- Synthetic oil 5 cst ----- NATO 0 156 or MIL-L-23699
- Synthetic oil 5 cst ----- NATO 0 160 or D Eng RD2497
- Mineral oil ----- NATO 0 155 or MIL-L-6086

Mineral and synthetic oils must not be mixed.

In the event of any change in oil specification refer to operations laid down in the Maintenance Manual.

12.2 M.G.B. oil pressure and temperature

- Minimum oil pressure (red warning light on) : 1 bar (14.5 psi)
- Maximum oil temperature (red warning light on) : 115°C

In flight these warning lights must be off.

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12.3 Lubricants approved for use in engines

OIL Authorized temperature range	TYPE	NATO SYMBOL	SPECIFICATIONS		
			FRENCH	U.S.	U.K.
NORMAL USE OIL -30 to + 50°C	Synthetic 5 cst	0 156	-	MIL-L 23699	-
OTHER OILS - 40' to + 30' C					
	Synthetic 3 cst	0 148	-	MIL-L 7808	-
		0 150	AIR 3514		
	Synthetic 3.9 cst				

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NOTE : Commercial designation of oils authorized for engines is specified in TURBOMECA TM 319 document.

Restricted use

For starting, the 5-CST oil is authorized for use only if its temperature is higher than - 30°C.

12.4 Engine oil pressure and temperature

12.4.1 Oil pressure

- . Minimum for Ng equal to or greater than 65 % -- 1.7 bar (24.6 psi)
- . Maximum ----- 10 bar (145 psi)

12.4.2 Oil temperature

- . Minimum temperature before collective
pitch application ----- + 10°C
- . Maximum temperature for continuous operation -- 107°C

13 ELECTRICAL AND HYDRAULIC POWER SYSTEMS LIMITATIONS

13.1 Hydraulic system

13.1.1 Fluid used

- Specifications ----- MIL-H-83282 (recommended)
- MIL-H-5606 (AIR 3520)

13.1.2 Hydraulic system pressure

- Nominal pressure ----- 35 bar
- Low pressure warning light comes on at ----- 24 bar

In flight the warning light must be off.

13.2 Electrical system (direct current)

- Maximum voltage ----- 32 V
- Maximum current ----- 150 A per generator

14 LANDING AND STOPPING LIMITATIONS ON SLOPES

- Nose-up ----- 10°
- Nose-down ----- 6°
- Sideways ----- 8°

15 RESTRICTIONS

The following are prohibited :

- Flying in icing conditions
- Aerobatics
- Intentional landing in full autorotation

16 MINIMUM CREW

One pilot, in starboard seat.

17 TRANSPORT OF PERSONNEL

Number of persons carried : 6 maximum (pilot included)

18 OPTIONAL EQUIPMENT LIMITATIONS

If optional equipment items are installed they may involve additional, specific limitations (See Section SUPPLEMENTS).

19 HEATING AND DEMISTING SYSTEMS LIMITATIONS

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The use of the heating and demisting systems is authorized, with 2 engines operative, when the power is not greater than the Max. Continuous Power and the O.A.T. is not greater than + 10°C.

20 LIFED COMPONENTS

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Lifed components, and the corresponding S.L.L. are indicated in the Master Servicing Recommendations (P.R.E), SECTION 5, and must be replaced in accordance therewith.

21 MANDATORY CHECKS

The mandatory checks to be performed are specified in Section 5.99 of the Master Servicing Recommendations and included in the daily operating checks.

SECTION 2.2

PLACARDS AND INSTRUMENT MARKINGS

1 PLACARDS

- Operating limitations plate

LES REPERES ET PLAQUETTES INDICATRICES INSTALLES SUR CET HELICOPTERE CONTIENNENT LES LIMITATIONS D'UTILISATION QUI DOIVENT ETRE RESPECTEES LORS DE L'UTILISATION DE CE GIRAVION. LES AUTRES LIMITATIONS D'UTILISATION QUI DOIVENT ETRE RESPECTEES LORS DE L'UTILISATION DE CE GIRAVION SONT CONTENUES DANS LE MANUEL DE VOL DU GIRAVION. LA SECTION LIMITATIONS DE NAVIGABILITE DU MANUEL D'ENTRETIEN DU GIRAVION DOIT ETRE RESPECTEE

THE MARKINGS AND PLACARDS INSTALLED ON THIS HELICOPTER CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS ROTORCRAFT. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS ROTORCRAFT ARE CONTAINED IN THE ROTORCRAFT FLIGHT MANUAL THE AIRWORTHINESS LIMITATIONS SECTION OF THE ROTORCRAFT MAINTENANCE MANUAL MUST BE COMPLIED WITH.

- Loading instruction plates

. On side face of control pedestal

. In rear cargo compartment

CHARGES REPARTIES MAXI	
DISTRIBUTED LOADS MAXI	
SUR PLANCHER CABINE ARRIERE	310 kg
ON REAR CABIN FLOOR	682 lb
SUR PLANCHER AVANT GAUCHE	150 kg
ON L.H. FORWARD CABIN FLOOR	330 lb

. In port cargo compartment

CHARGE REPARTIE MAXI	80 kg
DISTRIBUTED LOAD MAXI	176lb

. In starboard cargo compartment

CHARGE MAXI. 120 kg
MAX. LOAD 264 lb

CHARGE MAXI. 100 kg
MAX. LOAD 220 lb

- Fuel placard

A placard on the instrument panel displays the correspondence between the fuel contents gauge percentage and the fuel quantity for the selected units.

2 INSTRUMENT MARKINGS

Colour code :

- Red ----- Safety Limit
- Red with white hatching ----- VNE, power-off
- Yellow ----- Caution range
- Green ----- Normal operating range
- White ----- Equipment operating limit
- Red dotted line ----- Max. Contingency Power
- Yellow dotted line ----- Intermediate Contingency Power

INSTRUMENTS		MARKINGS	RANGE	
AIRSPEED INDICATOR		Red with white hatching Red line Green arc	120 Kt - 222 Km/h - 138 MPH 150 Kt - 278 Km/h - 173 MPH 0 to 150 Kt or 0 to 278 Km/h- 0 to 173 MPH	
TORQUE	ON ONE ENGINE	Yellow arc Red line Red dotted line Red triangle	100 to 115 % 115 % 131 % 140 %	
IN-DICATOR	ON TWO ENGINE	Green arc Yellow arc Red line Red triangle	Before Mod. 072157 0 to 73 % 73 to 78 % 78 % 83 %	After Mod. 072157 0 to 73 % 73 to 80 % 80 % 83 %
ROTOR AND FREE TURBINE TACHOMETER	ROTOR	White triangle Red line Yellow arc Green arc Yellow arc Red line	170 rpm 330 rpm 330 to 375 rpm 375 to 394 rpm 394 to 425 rpm 425 rpm	
	FREE TURBINE	Red triangle Red line Yellow arc Green arc Yellow arc Red line Red triangle	327 rpm 355 rpm 355 to 375 rpm 375 to 402 rpm 402 to 410 rpm 410 rpm 425 rpm	
NG DIFFERENCE DUAL TACHOMETER		Green arc Yellow dotted line Yellow arc Red line Yellow dotted line Red dotted line	- 8 to - 3.6 % - 3.6 to - 2.6 % - 2.6 to 0 % 0 % + 1.1 % + 2.7 %	

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INSTRUMENTS		MARKINGS	RANGE
EXHAUST GAS TEMPERATURE (t4) INDICATOR		Green arc Yellow arc Red line Red dotted line	300 to 765°C 765 to 800°C 800°C 870°C
ENGINE OIL PRESSURE INDICATOR		Red line Green arc Red line	1.7 bar (24.6 psi) 1.7 to 10 bar (24.6 to 145 psi) 10 bar (145 psi)
ENGINE OIL TEMPERATURE INDICATOR		Yellow arc Green arc Red line	0 to 75°C 75 to 107°C 107°C
FUEL PRESSURE INDICATOR		Green arc	0.5 to 1.5 bar (7.2 to 21.7 psi)
VOLTMETER		Green arc Yellow arc Red line	26 to 29 volts 29 to 32 volts 32 volts
FUEL CONTENTS GAUGE	FRONT	White line	45 %
	REAR	White line	55 %
AMMETER		Red line	150 Amps

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SECTION 3
EMERGENCY PROCEDURES

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SECTION 3.1EMERGENCY PROCEDURE1 INTRODUCTION

The procedures outlined in this section deal with the common types of emergencies ; however the actions taken in each actual emergency must relate to the complete situation.

Throughout this section "Land immediately", "Land as soon as possible" and "Land as soon as practicable" are used to reflect the degree of urgency and are to be interpreted as follows :

- Land (on land or water) immediately
- Land as soon as possible : land at the nearest site at which a safe landing can be made.
- Land as soon as practicable : extended flight is not recommended. The landing site and duration of the flight are at the discretion of the pilot.

2 AUTOROTATIVE LANDING

The following procedures are to be applied where necessary (unlikely) :

2.1 On land or on water with emergency floatation gear

- Reduce collective pitch to obtain an NR near to the nominal speed (380 to 400 rpm). Do not exceed 425 rpm.
- Fly at an IAS of 65 Kt (120 Km/h - 75 MPH) into wind
- Set OFF-FLT (ARRET-VOL) selector switches to OFF (ARRET)
- Close fuel shut-off cocks
- Switch OFF booster pumps
- Engage EMERGENCY CUT-OUT (COUPE TOUT) switch (on final approach)
- At a height of between 50 and 100 feet (15 and 30 m), depending on the weight and external conditions (wind, terrain), start to flare out to a nose-up attitude of 15 to 20° to reduce the forward speed and the rate of descent. Monitor NR.

- At a height of between 10 and 15 feet (3 and 5 m) reduce the nose-up attitude to approximately 5° and start to apply collective pitch.
- Immediately prior to touch-down apply collective pitch progressively up to the high pitch stop if necessary whilst holding back slightly on the cyclic pitch control.
- After touch-down, reduce the collective pitch slowly to prevent an abrupt stop if any forward speed is present
- Carry out the safety procedures if necessary (emergency cut-out switch, fire extinguisher)
- Apply the rotor brake
- Evacuate the aircraft by jettisoning the doors if necessary.

2.2 On water (without emergency floatation gear)

If an autorotative landing is made on water, apply the same procedures as for landing on ground with the following additions :

- Land into wind
- Jettison the doors before flaring-out
- Allow the forward speed to drop as much as possible during the flare-out
- After touch-down, hold the aircraft level as long as possible by keeping the collective pitch against the high pitch stop
- Release the seat belts when the cabin is submerged
- Evacuate the aircraft and then inflate the life vests (if appropriate)

3 ENGINE FAILURES

- Reminder :
- 1) The LIMIT warning light comes on if the Max. Takeoff Power (Ng Diff. = 0) on one engine is exceeded. The Ng corresponding to Max. Contingency Power is automatically protected by the governor.
 - 2) When the MAX.POWER (PIU-PMU) push-button (located under the collective pitch lever) is engaged, the power is automatically limited to the Intermediate Contingency Power (Ng Diff. = + 1.1) by the governor computer. The red warning light of the Ng. Diff. indicator is on. A second press on the push-button allows the Max. Contingency Power limit to be reached. The red warning light goes off.

3.1 Single-engine failure on take-off

There is no unsafe area up to 7000 feet and 2250 Kg. For heavier weights refer to section 5.1 paragraph 3.

Depending on the terrain and when applying the take-off procedure defined in section 4, it is recommended to abort take-off if the IAS is less than 30 kts (56 Km/h - 35 MPH). At higher speed, the take-off may be aborted if the terrain permits, or it may be continued if single-engine climb performance permits (see section 5). In this case an IAS of 40 Kts (74 Km/h - 46 MPH) should be attained for clearing obstacles, observing the restrictions imposed for single-engine flight. As soon as conditions permit, continue to climb at an IAS of 55 Kts (102 Km/h - 63 MPH) and look for an area to land.

3.2 Single-engine failure in flight

The flight may be continued on one engine : the flight restrictions must be observed.

The symptoms are :

- Slight jerk in the yaw axis
- Change in the noise level
- Loss of synchronization of : torques - Ng- Nf- t4- Ng difference
- "GEN" (GENE) light comes on for defective engine
- Drop in oil pressure
- "ENG. OIL PRESS." (P.H. MOT) light, if fitted, comes on.
- Audible warning operates if NR is 360 rpm or less.

Under these conditions :

- On the remaining engine :
 - . Reduce the hot air bleed if appropriate
- On the defective engine, proceed as follows :
 - . FLT-OFF (ARRET-VOL) selector to ----- OFF
 - . Booster pump ----- OFF
 - . Generator ----- OFF

If necessary open the fuel tank crossfeed valve.

Depending on the origin of the failure, attempt to re-light the engine in accordance with the normal procedure.

3.3 Single-engine failure on approach

- The symptoms are the same as for a failure in flight : the jerk in the yaw axis may not be noticed.
- Approach at an IAS of 60 kts (111 Km/h - 69 MPH) down to 200 ft (60 m)
- Check that the "Ng. DIFF." red warning light is either out or flashing
- Below 200 ft steadily reduce the forward and vertical speeds to perform a spot landing, if necessary using power from the remaining engine.

4 PROCEDURE FOR INTENTIONAL ENGINE SHUTDOWN IN FLIGHT

- Select 40 % torque (approx.) on each engine.
- For the engine to be shut down, set :
 - . FLT-OFF (ARRET-VOL) selector to ----- OFF
 - . Booster pump ----- OFF
 - . Generator ----- OFF

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If necessary :

- . Shed load from the electric systems
- . Open the fuel tank crossfeed valve

5 PROCEDURE FOR RELIGHTING AN ENGINE IN FLIGHT

Identical with the normal start-up procedure defined in SECTION 4.1.

NOTE : When setting the FLT-OFF (ARRET-VOL) selector to the middle TRNG (ECOLE) position, a transient hunting of the Ng difference indicator pointer of the other engine may be observed.

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6 GOVERNOR FAILURES

Governor failures are indicated by the illumination of the red REG warning light.

The failure is confirmed by the illumination of the red warning light on the corresponding fuel flow control lever. Upon an action on the collective pitch, the Ng, t4 and torque values of the affected engine do not vary : its fuel metering unit is locked.

The other engine maintains the rotor speed while keeping within its own power limits.

It is advisable to adjust approximately 40 % torque on the failed engine, using the fuel flow control lever.

NOTE : The Ng diff. information corresponding to the affected engine is to be disregarded when :

- the red REG warning light is on,
- the fuel flow control lever is out of the "Flight" gate

After landing, when lowering the collective pitch, check that the NR is not greater than 394 rpm ; if it is, bring the fuel flow control lever of the failed engine against the retractable stop.

7 FIRE IN FLIGHT

7.1 Fire in the engine compartment

Fire in the engine compartment is indicated by the corresponding "FIRE" (FEU) warning light.

If this light comes on, apply the following procedure :

- Reduce power if necessary

Proceed as follows for the engine affected :

- Fuel shut-off control lever ----- closed position gate
- Booster pump ----- off
- Generator ----- off
- Heating and air conditioning ----- off

- If the FIRE (FEU) light does not go out
SET OFF THE FIRST EXTINGUISHER (if fitted) when Ng is below 50 %

- If the FIRE (FEU) light remains on
SET OFF THE SECOND EXTINGUISHER (if fitted)

- After the extinguisher(s) has(have) been set off (as indicated by an easily audible clack), the relevant push-button(s) must be released (returned to the "rest" position). R
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- If the fire does not go out, land as soon as possible.

7.2 Fire in the M.G.B. compartment

Fire in the MGB compartment is indicated by the red MGB FIRE (FEU BTP) warning light.

If the MGB FIRE (FEU BTP) warning light comes on :

LAND IMMEDIATELY

Monitor the engine oil temperature during this manoeuvre.

If the temperature exceeds 107°C, shut down the engines (fire in the MGB compartment may cause failure of the engine and MGB oil cooling systems).

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8 SMOKE IN THE CABIN

8.1 Source of smoke identified

- Shut off the corresponding system
- Use the extinguisher if necessary (if fitted)
- Ventilate the cabin by means of :
 - . Front vent
 - . Ventilation nozzles
 - . Clear vision window

8.2 Source of smoke not identified

- Shut off the heating and demisting systems
- Switch on the emergency overhead lights if necessary
- Engage the EMERGENCY CUT-OUT (COUPE TOUT) push-button

If electrical power is required for continuing the flight, proceed as follows :

- . Switch off all power consumers and release all push-buttons, except the Emergency Horizon (if fitted) and Direct Battery push-buttons.
- . Engage the BUS SHED RH and LH (DELEST BUS D and G) push-buttons
- . Release the EMERGENCY CUT OUT (COUPE TOUT) push-button
- . Perform the following actions, in the prescribed order, while checking correct operation of each function before the next action :
 - a) Engage the LH generator GEN.LH (GENE.G) push-button ; if required, reset the generator (GEN REARM push-button)
 - b) Engage the LH EXT PWR BATT (PARC BATT G) push-button
 - c) Switch on all the power consumers which are essential to flight
 - d) Engage the R.H. generator GEN.RH (GENE.D) push-button ; if required reset the generator (GEN REARM push-button)
 - e) Engage the RH EXT PWR BATT (PARC BATT D) push-button
 - f) Release the BUS SHED RH and LH (DELEST BUS D and G) push-buttons
 - g) Switch on any other power consumers as advisable

9 TAIL ROTOR MALFUNCTION

9.1 Tail rotor drive shaft failure

Loss of the tail rotor in power-on flight results in a yaw movement to the left, the extent of which will depend on the power and speed configuration at the time the failure occurs.

9.1.1 Loss of tail rotor in hover or at low speed near the ground

Land quickly to prevent excessive rotating occurring.

9.1.2 Loss of tail rotor in cruising flight

- In cruising flight reduce the power as much as possible and maintain forward speed (weathercock effect), select a suitable landing area for a steep approach at a power enabling a reasonably coordinated flight.
- On final approach, shut down the engines and make an autorotative landing at the lowest possible speed.

9.2 Tail rotor control failure

- Set IAS at 60 to 70 kt (111 Km/h to 130 Km/h – 69 to 81 MPH)
- Shut off the yaw servocontrol hydraulic system using the switch on the collective pitch lever.
- Press the ACCU push-button to discharge the yaw servo accumulator
- Make a shallow approach to a clear landing area with a slight side slip to the left. Perform a run-on landing ; the side slip will be reduced progressively as power is applied.

10 ICING

If unexpected icing conditions appear, move away from the icing area as quickly as possible.

The first visible effect of icing is the formation of deposits on the windscreen wiper.

Check that the Pitot head heating system is operating.

11 FAILURE OF PILOT'S AIR DATA INSTRUMENTS

11.1 Complete failure

Should the pilot's air data instruments fail, go by the indications of the co-pilot's instruments if fitted.

- Set the STBY STATIC selector to STBY.
In so doing static pressure can be taken from inside the cabin.
- Close the front vent, the ventilation nozzles and the clear vision window.

If failure is confirmed :

- Reduce power
- Land as soon as practicable.

11.2 Airspeed indicator failure

Should the pilot's airspeed indicator fail, go by the indications of the co-pilot's airspeed indicator if fitted.

- Check pitot heating system for correct operation.
- Land as soon as practicable.

SECTION 3.2SYSTEMS MALFUNCTION1 FUEL SYSTEM FAILURES

Low or zero fuel pressure.

- Check the quantity of remaining fuel on the appropriate gauge
- Check the corresponding PUMP ENGINE (POMPE MOT.) push-button.
- Continue the flight

2 ENGINE SYSTEM FAILURES2.1 Low or zero engine oil pressure

Check the engine oil pressure red warning light on the Warning-Caution panel :

- . If the light is on, shut the engine down.
 - . If the light is off, the failure is confirmed if an anomaly is observed on the torquemeter, since the torquemeter functions with the oil pressure.
- Should the failure be confirmed, shut the engine down.

2.2 Excessive engine oil temperature (107°C or more)2.2.1 On one engine

The affected engine may have to be shut down for continuing the flight depending on the pressure readings and the flight conditions.

2.2.2 On two engines

When the engine oil temperatures reach 107°C LAND IMMEDIATELY. R

3 TORQUE - Ng - t4 - Ng DIFF. INDICATOR FAILURES3.1 Torquemeter failure

Equalize Ng or Ng difference readings, using the trim without exceeding 65 % on the other torquemeter.

3.2 Ng indicator failure

- Continue the flight
- To do so, refer to the Ng difference indicator

3.3 t4 indicator failure

Equalize the torques using the trim without exceeding 720°C on the other t4 indicator.

3.4 Ng difference indicator failure

Equalize the torques, using the trim, without exceeding, on the other Ng diff. indicator, - 4 % in forward flight and - 2 % during the landing phase.

4 HYDRAULIC SYSTEM FAILURES4.1 HYD (HYDR.) - SERVO - LIMIT lights come on

Refer to SECTION 3.3 § 2 "WARNING CAUTION ADVISORY PANEL" (amber lights).

4.2 Yaw control servo-unit slide valve jammed

- In hover : if the angular speed is zero, land normally. Otherwise switch off the hydraulics using the button on the collective pitch lever.
- In cruising flight : Reduce the speed, with side slip if necessary, and then switch off the hydraulics using the button on the collective pitch lever.

4.3 Yaw control servo-unit hydraulic lost
(R.H. hydraulic system failure)

This is indicated by :

- the illumination of the HYD (HYDR.) + SERVO lights
Refer to Section 3.3 paragraph 2 : WARNING CAUTION ADVISORY PANEL.
- the presence of low friction and continuous load on the yaw control right pedal in L.H. cross-wind.

Do not press the "ACCU" push-button on panel 15 ALPHA, as this would cause the compensator accumulator to discharge and control loads might become significant (R.H. foot).

5 ELECTRICAL POWER SYSTEM FAILURES

5.1 D.C. power system failures

5.1.1 Failure of a generator

- Check the relevant push-button
- Attempt to reset by depressing the GEN RESET (REARM.GEN.) push-button R

If this does not work :

- Release the push-button for the relevant generator.
- Check that the current from the other generator is below the limit value.

If above this value, shed load.

- Continue the flight

Above 16000 ft (4880 m), avoid applying pitch abruptly (as this may cause t4 to rise transiently).

5.1.2 Failure of two generators

- Check the generator push-buttons.
- Attempt, to reset by depressing the GEN RESET (REARM.GEN.) push-button.R

If this is impossible :

- Release the generator push-buttons.
- Press the BUS SHED RH and LH (DELEST BUS D and G) push-buttons.
- Land as soon as practicable.

Maximum endurance on battery using minimum equipment required :

- . Day : 45 minutes
- . Night : 30 minutes

5.1.3 System voltage over 29 Volts

- Check output from generators.
- Switch off the generator with highest output.

5.1.4 Abnormally high output from one generator (current over the maximum permissible limit outside the starting phase)

- Release the push-button for the generator concerned.

5.1.5 Abnormally high output from both generators (current over the maximum permissible limit outside the starting phase)

- Release the RH EXT.PWR/BATT and LH. EXT. PWR/BATT (BATT.PARC D and G) push-buttons

If necessary :

- Release the push-button for the generator still giving an abnormal output.

5.1.6 DIRECT BATT push-button illuminated

- If aircraft electrical system is not supplied :
DIRECT BATT push-button is engaged.
- If aircraft electrical system is supplied :
Direct battery circuit has gone off-line.
Check that DIRECT BATT push-button is engaged.
Under these conditions, the engine governor computers are supplied only from the engine internal power systems.

SECTION 3.3WARNING CAUTION ADVISORY PANEL AND AURAL WARNING1 AURAL WARNING

The warning horn sounds to indicate :

- that the rotor speed NR is below 360 rpm (continuous sound)
- that the rotor speed NR is above 410 rpm (intermittent sound)

It will operate only if the HORN (KLAXON) push-button is pressed in. Otherwise, at nominal rotor speed the HORN (KLAXON) light illuminates on the Warning-Caution-Advisory panel.

Proceed as follows if the horn sounds :

- Check NR :
 - . If NR below 360 rpm (continuous sound)
Reduce collective pitch.
This can only occur in the event of an engine failure. Check the engine parameters by pulling slowly on the collective pitch lever.
 - . If NR above 410 rpm (intermittent sound)
Slightly increase collective pitch in order not to exceed 425 rpm.

2 WARNING CAUTION ADVISORY PANEL

The Warning-Caution-Advisory panel located on the instrument panel incorporates lights of different colours :

- Red to indicate a failure requiring immediate action.
- Amber to indicate a failure which does not require immediate action.

One (or two) WARN (ALARM) light(s) provided on the instrument panel, in front of the pilot (and the copilot if the 2nd light is fitted) will flash, should one of the red failure warning lights illuminate.

2.1 Red lights

Indicator lights	Fault indicated	Pilot action
M.G.B P (PH BTP)	Minimum MGB oil pressure warning	<ul style="list-style-type: none"> - Reduce power - Test the indicator lights to verify that the M.G.B T (TH BTP) lights come on. - Land as soon as possible <p><u>NOTE</u> : The MGB has successfully passed a bench test consisting in running the gearbox for 45 minutes with zero oil pressure, at the power corresponding to minimum power in level flight (at 55 kt).</p>
M.G.B T (TH BTP)	Maximum MGB oil temperature warning	<ul style="list-style-type: none"> - Test the lights to verify that the M.G.B P (PH BTP) light comes on - Reduce power - Land as soon as possible
FIRE ENG. LH (FEU MOT G) or FIRE ENG. RH (FEU MOT D)	Fire in engine compartment	Refer to SECTION 3.1 § 7.1
M.G.B FIRE (FEU BTP)	Fire in MGB compartment	<ul style="list-style-type: none"> - LAND IMMEDIATELY Refer to SECTION 3.1 § 7.2
BATT T (T BATT)	Maximum battery temperature warning	<ul style="list-style-type: none"> - Switch off the battery - Land as soon as possible

2.1 Red lights (Cont'd)

Indicator lights	Fault indicated	Pilot action
REG.	The fuel flow of one engine is blocked at a fixed rate. A red warning light is illuminated on the associated fuel flow control lever.	<ul style="list-style-type: none"> - It is advisable to adjust 40 % torque on the failed engine, using the fuel flow control lever. - LAND AS SOON AS PRACTICABLE - After landing reduce the fuel flow by means of the manual control before lowering the collective pitch fully.
ENG. P (PH MOT.)	Minimum oil pressure warning for one engine	<ul style="list-style-type: none"> - Have the failure confirmed by the engine oil pressure reading. - If the failure is confirmed shut the engine down.

2.2 Amber lights

Indicator lights	Fault indicated	Pilot action
BAT RH <u>and</u> BAT LH (BATT D <u>and</u> BATT G)	Cutting out of battery (charging is no longer guaranteed)	- Check that RH EXT PWR BATT and LH EXT PWR BATT (PARC BATT D and G) push-buttons are engaged.
BAT RH <u>or</u> BAT LH (BATT D <u>or</u> BATT G)	Opening of the RH or LH battery contactor	- Check that the corresponding push-button is engaged. - Continue the flight
FUEL (COMB)	Light comes on when one of the gauges has reached 6 %	- Avoid large attitude changes - Equalize the tanks if necessary - Close the crossfeed valve when the tanks are equalized <u>NOTE</u> : Below 20 % the rear tank (RH indicator) tends to empty into the front tank. Equalizing is obtained with 4 % difference e.g. 10 % front - 6 % rear. - With both tanks at 6 %, 18 min flying time remains in level flight at maximum continuous power. - When the gauge reads zero : LAND IMMEDIATELY
GEN. LH (GENE G) or GEN. RH (GENE D)	DC power supply failure	Refer to SECTION 3.2 § 5 "Electrical power system failures"
CHIP ENG. LH (LIMAILLE MOT G) or CHIP ENG. RH (LIMAILLE MOT D)	Metal particles in the engine oil system concerned	- Monitor oil pressure and temperature for the engine concerned - Depending on the flight conditions, shut down the engine and land as soon as practicable. - Relight the engine for landing if necessary

2.2 Amber lights (continued)

Indicator lights	Fault indicated	Pilot action
FILTER LH (FILTRE G) or FILTER RH (FILTRE D)	Pre-clogging of fuel filter	<ul style="list-style-type: none"> - Reduce power on the engine concerned by means of : <ul style="list-style-type: none"> . the collective pitch or . the engine trim - If the light goes out, continue the flight - If the light stays on, shut down the engine. Relight for landing if necessary. <p><u>NOTE</u> : If both lights come on, land as soon as possible.</p>
DOORS (PORTES)	One or both of the baggage compartment side doors not locked.	<ul style="list-style-type: none"> - Reduce IAS (Max. 120 kt - 222 km/h - 138 MPH) - Check visually that doors are closed - Land if possible or continue the flight at reduced speed - Make a descent at low rate and terminate with a shallow approach
PITOT	No supply to pitot heating system	<ul style="list-style-type: none"> - Check push-button (in) - Monitor ASI readings
CHIP MGB (LIM BTP)	Metal particles in the MGB oil	<ul style="list-style-type: none"> - Reduce power - Monitor MGB P. (PH BTP) and MGB.T (TH BTP) lights <ul style="list-style-type: none"> . If OUT, continue the flight . If ON, refer to : illumination of MGB.P and MGB.T lights

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2.2 Amber lights (continued)

Indicator lights	Fault indicated	Pilot action
CHIP TGB (LIM BTA)	Metal particles in the TGB oil	<ul style="list-style-type: none"> - Continue the flight - Avoid prolonged hover flights
BATT FUSE (FUSIBLE BATT)	Battery isolated from dc power system. Charging will not occur (battery short-circuit)	<ul style="list-style-type: none"> - Check the battery temperature light - Check the voltage (normally 0.5 to 1 volt above nominal voltage)
HORN (KLAXON)	Horn not set	<ul style="list-style-type: none"> - Press HORN (KLAXON) push-button on overhead panel - If the light stays on, the aural warning system is defective.
HYD (HYDR) + SERVO	Loss of hydraulic pressure in one of the systems	<ul style="list-style-type: none"> - If no load on control pedals the LH hydraulic system is defective. At high collective pitch the LIMIT light should then also be on - If load is present on control pedals, the RH hydraulic system is defective (See Section 3.2 paragraph 4.3) <p>In both cases land as soon as practicable and limit manoeuvres.</p>
SERVO	Main servo-unit slide valve jammed.	Continue the flight

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2.2 Amber lights (continued)

Indicator lights	Fault indicated	Pilot action
LIMIT	Main servo-unit stall point reached or power limit reached : . Δ Ng greater than zero on one engine at least ; . Sum of engine 1 torque + engine 2 torque greater than 2 times 78 % before Mod.072157 or 2 times 80% after Mod.072157	In cruise flight : - lower the collective pitch. - Reduce the load factor In hover flight : - If applicable, equalize the engines. - Check the weight calculation - Refer to the paragraph covering the failure.
REG.	<ul style="list-style-type: none"> - The computer of one engine operates in accordance with a fallback law by lack of information from one of its sensors, or - the fuel flow lever is not in the "normal" gate, or - the t4 regulation is faulty which causes the fuel flow to be limited 	<ul style="list-style-type: none"> - Avoid abrupt power variations - If applicable, bring the fuel flow lever into the "normal" gate. - During the starting phase with low or zero t4, bring the fuel flow lever slightly forward, while observing the t4 limits. Bring the lever back into the "normal" gate when the Ng rises above 68 %.

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SECTION 4
NORMAL PROCEDURES
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SECTION 4.1

OPERATING PROCEDURES

1 EXTERNAL CHECKS

NOTE : Make sure that the checks before the first flight, or the "turnaround" checks, and the checks after the last flight of the day have been performed either by the pilot referring to Section 8 of the Flight Manual, or by the mechanic, complying with the Master Servicing Recommendations.

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The checklist specified in the Flight Manual complies with the procedure given in the Master Servicing Recommendations.

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- Check that the ground around the aircraft is clean and unobstructed.
- Carry out the following checks :

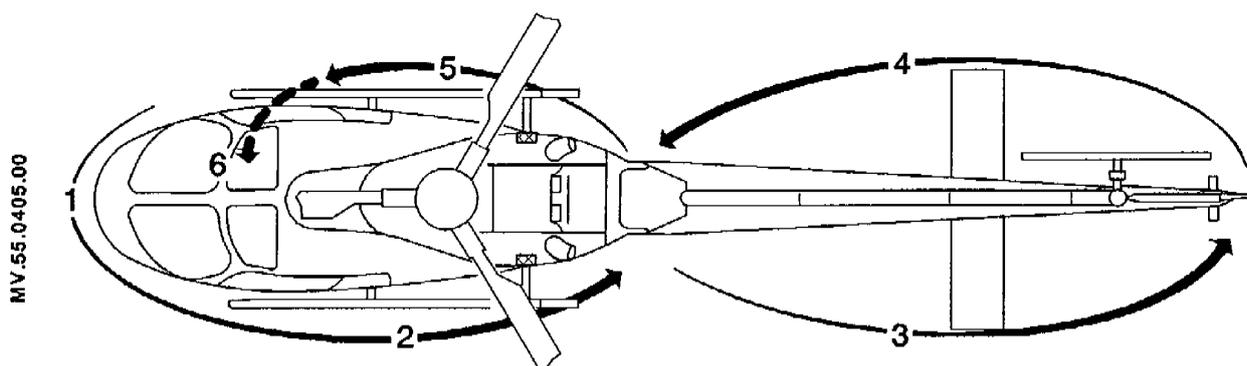


Figure 1

Position 1

- Total pressure head (pitot) Cover removed - Check for cleanliness
- Side slip indicator Wool thread fitted
- Windshield wiper (optional) Visual check
- Door Condition
- Landing gear (cross-members, skids, wear-resistant plates) Secure, visual check

Position 2

- L.H. hold Door opening action. No loose objects. Closing. Latching.
- Fuel tanks and systems Filler caps closed
- M.G.B. cowling Cowling closed
 - . Check engine oil level
 - . Check M.G.B. oil level
 - . Check hydraulic fluid level
- Engine air intake Clear
- All lower fairings Closed
- L.H. engine cowling Closed, tail pipe condition
- Rear hold If applicable : open door, net hooked in place. If applicable, test overspeed (battery on). Close door.
- Blades Secure, visual check from ground, no impact damage.

EXTERNAL CHECKS (continued)Position 3

- Oil leaks No oil under scuppers
- T.G.B. and tail boom fairings Secure
- T.G.B. Level
- Tail unit Secure - condition

Position 4

- Tail rotor blades Condition of skin, no impact damage, laminated stops (bond failure)
- Tail skid (guard)..... Secure, Condition.
- Tail boom and T.G.B. fairings Secure

Position 5

- R.H. hold Door opening action. No loose objects.
Battery : attachment, connection, condition.
- R.H. engine cowling Closed, Tail pipe condition.
- All lower cowlings Closed
- External power receptacle flap Closed
- R.H. engine air intake Clear
- M.G.B. cowling Check engine oil level
Check hydraulic oil level
- Rotor head Visual inspection, star, sleeves (bond failure), spherical thrust bearings, frequency adapters (delamination), swashplates, flying controls.
- Landing gear (cross-members, skids, wear-resistant plates) Secure, visual checks
- R.H. door Condition

2 INTERNAL CHECKS

- Cabin Clean
- Fire extinguisher..... Fitted
- Fuses Fitted
- Objects carried Stowed
- Door jettison Checked

3 CHECKS BEFORE STARTING THE ENGINES

Determine aircraft performance limits for the expected flying conditions (see PERFORMANCE section).

Ensure that the weight and C.G. limits are observed.

- Seats and yaw pedals Adjusted
- Seat belts Fastened
- NOTE** : Particularly check that the co-pilot seat belt is fastened when this seat is not occupied.
- "STAND-BY STATIC" switch Set to NORMAL position
- Battery On. Voltage : 24 volts approx.

NOTE : 1) Lights on, using external power
 GEN.LH (GENE G), GEN.RH (GENE D), BAT.LH (BATT.G), BAT.RH (BATT.D),
 AC LH (CONV G)*, AC RH (CONV. D)*, HYD., HORN (KLAX), SERVO, PITOT
 PIL, PITOT AUX*, ENG. P (PH MOT), M.G.B P (PH BTP), red REG.

2) Lights on, using aircraft battery
 Identical with NOTE 1 except BAT.LH (BATT.G) and BAT.RH (BATT.D)

- Fuel flow levers In "Normal" gates.
- AUTO-MAN selectors Set to AUTO
- Starting selectors Off
- "Direct Battery" system Push-button engaged
- Check the engine computer test sequence :
 . Deflection of the Δ Ng indicator pointers.

R

Upon completion of the test sequence (10 s. approx.), check :

. Extinction of the following lights :
 MAX. POWER (PIU-PMU), TRNG (ECOLE), REG (red and amber) and warning lights on the fuel flow levers.

- Anti-collision and position lights On
- Fuel contents gauges Quantities checked
- Fuel tank crossfeed valve Closed or as required
- Warning-Caution-Advisory panel Test.
 All warning lights illuminate. The master alarm repeater light flashes
 . Dimmer as required.
- Instruments Checked. Readings correct
- Failure indicator Selector to "Ng"
- Overspeed systems "S" visible on alpha-numerical displays. R
- Heating* and demisting systems Off
- Rotors Clear
- Servo controls Test SERVO light : goes out
- Yaw control pedals recenter by pressing ACCU push-button. R
 Freedom of travel.
- Collective pitch control lever Freedom of travel. MAX. POWER (PIU-PMU) push-button on hand-grip released (associated light out)
- Collective pitch control lever Locked in low pitch position
- Cyclic pitch control stick Neutral. Friction clamp tight or artificial feel loads engaged
- Fuel shut-off control Levers forward. Snapwired
- Rotor brake Released. Front stop

* Optional

4 STARTING

4.1 Starting first engine

- REG (GOV) (red and amber) warning lights are out.
- Switch on the booster pump : pressure correct
- Switch on the generator
- Set the FLT-OFF (ARRET-VOL) selector to FLT (VOL)
 - . Watch the Ng rise
 - . Monitor the t4 rise which should stabilize at about 700°C.
 - . Check the engine oil pressure rise
 - . Check that the variation of engine and rotor parameters is normal
 - . Check that the HYD (HYDR.), M.G.B. P (PH BTP) and SERVO lights go out at about 200 r.p.m. and that the GEN (GENE) warning light also goes out (50 % Ng)
 - . Check that the HORN (KLAXON) warning light flashes above 250 r.p.m (NR warning system). R
 - . Check that the aural warning sounds before 360 r.p.m.
 - . If the t4 temp. rises above the prescribed limits, set the OFF-FLT (ARRET-VOL) selector switch to OFF (ARRET)
- Fold down the safety guard over the FLT-OFF (ARRET-VOL) selector switch.

4.2 Starting second engine

- Proceed as for No 1 engine
- Check that the ENG OIL PRESS (PH MOT) warning light goes out
- Switch on the a.c. power system (optional) --- lights out

5 CHECKS AFTER STARTING

- Ground power unit (if used) ----- Disconnected
- Voltage and current ----- Correct
- All engine and rotor parameters ----- Correct
- Instruments on instrument panel ----- Working
- Radio - Radio navigation equipment -- On
- Pitot heating system ----- On
- Hydraulics
 - . Yaw servo-unit ----- Cut-off test (button on collective pitch lever). Check loads on yaw control pedals are light.
 - . Yaw compensator ----- Press ACCU test push-button on overhead panel. Check loads on yaw control pedals are heavier.
 - . Yaw servo-unit ----- On
 - . Servo warning light test ----- Press the SERVO TEST pushbutton : R
check illumination of the SERVO R
warning light. R
- Aural warning system ----- On (Push-button pressed . Light out)

6 CHECKS BEFORE TAKE-OFF

- Cabin doors Closed
- Instruments Checked, readings correct
- All warning lights Off
- Safety guards of FLT-OFF (ARRET-VOL) selector switches Folded down
- Flying controls Free, friction clamps adjusted
- Heating, demisting systems Off
- Position lights On
- Engines Equalized (using the trim)

R
R

Engine power may only be applied when engine oil temperature is higher than 10°C.

7 TAKE-OFF AND CLIMB

- Establish hover I.G.E.
- Check :
 - . All indicator lights Out
 - . Pressures, temperatures Correct
 - . Limitations Observed
 - . NR 390 (+ 10, - 5) rpm
- Initiate forward flight in a slight climb to an IAS of 55 kt (102 km/h - 63 MPH) by steadily increasing collective pitch to reach Max. Take-off Power if required : observe the limitations.

NOTE : The optimum climbing speed (Vy) is 55 kt (102 km/h - 63 MPH)

- Adjust the power during the climb to remain within the limitations

8 CRUISING FLIGHT

- The maximum cruise speed is obtained by following the "maximum continuous" limitations. If necessary synchronize the engines using the trim.
- The recommended cruise is obtained by applying the following torque values :

Hp (ft)	0	4000	8000	12000	16000	18000
Torque % = 2 x	69	64	59	54	49	44

9 MANOEUVERS IN FLIGHTFuel transfer (by gravity)

When the rear tank is full, the two tanks can be equalized as soon as the front tank gauge indicates less than 40 %.

To do this :

- Open the crossfeed valve by means of the INTER COM - FUEL XFER push-button on the overhead panel.
- Check that transfer occurs by referring to the gauge readings.
- Close the crossfeed valve on completion of the transfer.

NOTE : Below 20 % the rear tank (R.H. indicator) tends to empty into the front tank. Equalizing is obtained with 4 % difference, e.g. 10 % front - 6 % rear.

Flight with doors open

It is advisable to check that objects, cushions, documents in the cabin are correctly secured before opening one or both of the sliding doors in flight.

R
R
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R

10 APPROACH AND LANDING

- On intermediate approach, check :
 - . Failure warning panel All lights out
 - . Pressures, temperatures and all parameters Checked
 - . Heating* and demisting systems Off
 - . Weight/performance Determined
- On final approach, fly at about 45 kt (83 km/h - 52 MPH)
- From the hover, reduce pitch slowly and control landing until touch-down
- Set collective pitch to full low pitch position (lock if necessary) and return other controls to neutral.

* Optional

11 ROTOR AND ENGINE SHUT-DOWN

- Collective pitch Locked, full low pitch position
- Cyclic pitch and yaw control pedals ... Neutral
- Flight idle Maintain for 1 minute
- Radio, radio navigation equipment Off
- All electrical equipment Off (Fuel Xfer, pitot, horn ...)
- OFF/FLT/TRNG (ARRET-VOL) selector Dwell in the TRNG position then set to OFF.
- Generators and booster pumps Off
- Rotor brake On when NR drops :
 - . to 140 rpm (normal condition)
 - . to 170 rpm max. (high wind condition)

- After complete rotor stopping : Press the ACCU push-button R and leave it in for 1-2 seconds, then press it out, in order to :
 - . depressurize the hydraulic accumulator,
 - . recenter the yaw pedals, if required.

- Failure indicator selector In FAIL (PANNE) position : if applicable, read the present failure codes.
 In MEMO position : if applicable, read the failure codes which have appeared during the flight.
- Direct battery switch Off
- Battery Off

SECTION 4.2

ENGINE CONDITION CHECK1 PROCEDURE FOR CHECKING THE ENGINE POWER IN HOVER

In hover flight at 5 ft, before initiating forward flight, pull the collective pitch lever slightly to ensure that the Ng can increase by 1 % at least. After a safe altitude has been reached, the engine condition check may be performed, using the normal procedure.

2 PROCEDURE FOR CHECKING ENGINE PARAMETERS

- Fly at max. continuous power in level flight.
(Hp less than 12000 ft (3657 m), heater and demister off)
- Keeping the pitch constant, increase power on each engine in turn by pushing the trim to the end of its travel or by stopping when the first of the following values is reached : C = 100 % Ng. diff. = 0, t4 temp. less than 800°C.
- Note the following parameters : torque, NR, pressure altitude, O.A.T, t4, Ng diff., Ng.

Perform two series of recordings, at a 30-second interval : the same values should be found.

3 INTERPRETATION OF RESULTS3.1 Engine power check (Figures 1, 2, 3)

- Determine points A and B as shown in the example given in each figure.

Point A is determined in Figure 1 :

NR, torque, Hp

Point B is determined in Figure 2 for the RH engine and in Figure 3 for the LH engine :

OAT, Ng

- . If the value found for point A is greater than the value found for point B, the engine power check result is satisfactory.
- . If the value found for point A is lower than the value found for point B, the engine power check result is doubtful; refer to the maintenance documentations.

3.2 Thermal load check (Figure 4)

Determine point C as shown in the example.

The engine condition is considered as satisfactory if the t4 temp. lies below critical line D.

The chart of figure 4 is applicable to both LH and RH engines.

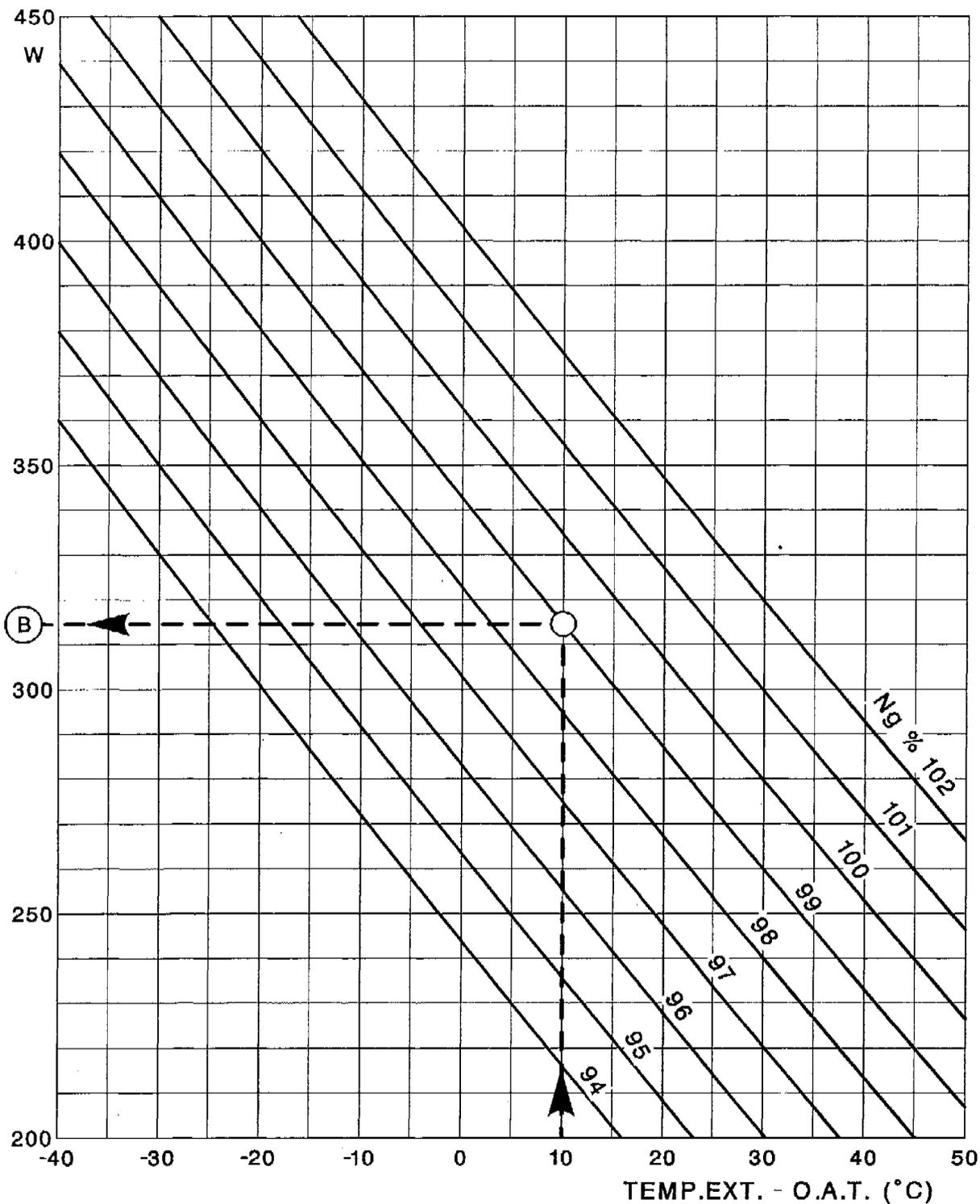
3.3 Ng difference check (Figure 5)

Using the table, determine the value of the NG. MAX. T/O PWR.

Ng. difference = Ng. MAX. T/O PWR - Ng read.

Check that this difference is equal to the Ng. difference read, within 0.2 % .

GTM GAUCHE - LEFT ENG.



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Figure 3

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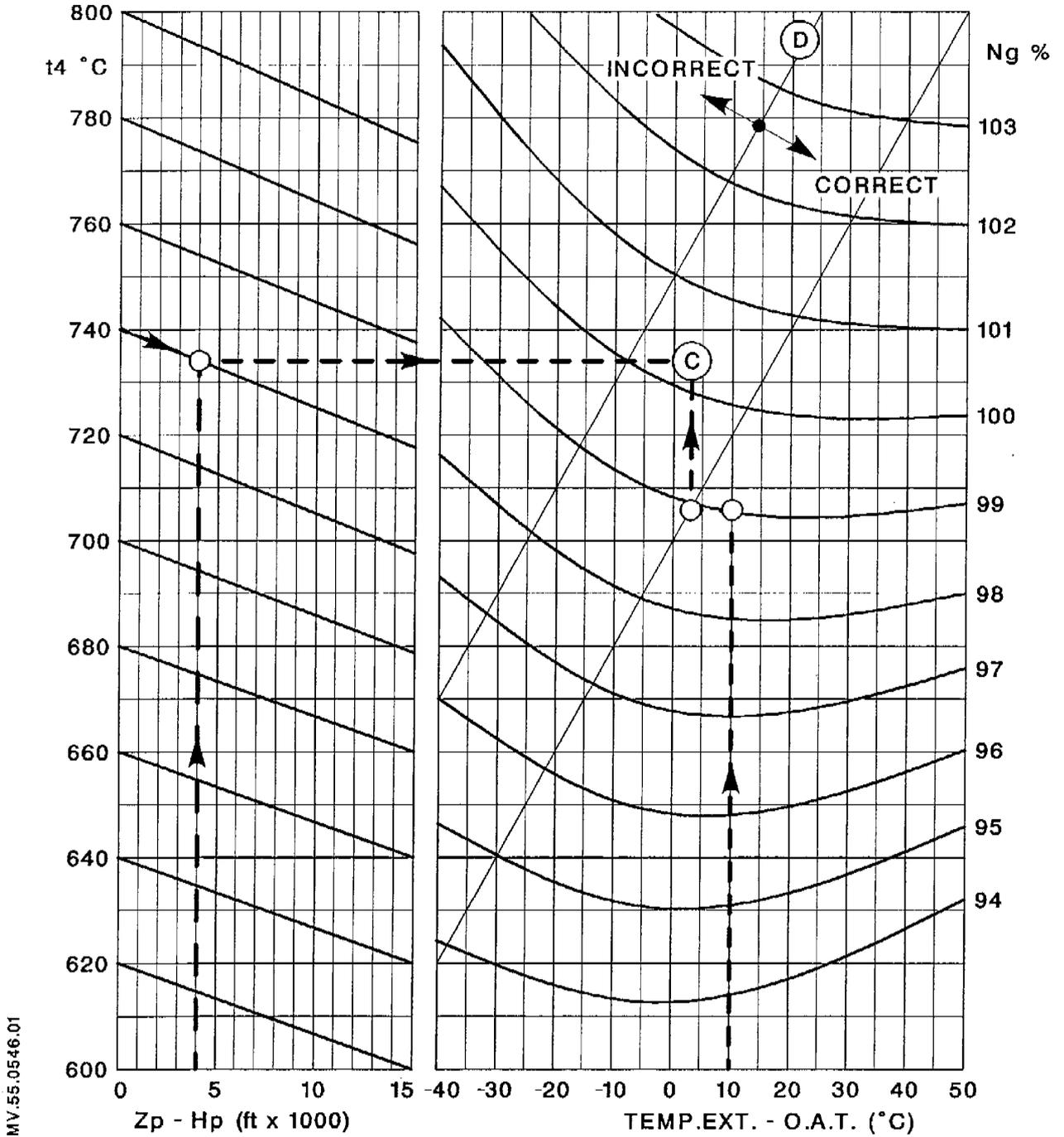
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MV.55.0546.01

Figure 4

VALUE OF THE NG MAX. T/O PWR

within 0.2 %

TEMP. EXT. OAT (°C)	- 40	- 30	- 20	- 10	0	+ 10
	- 35	- 25	- 15	- 5	+ 5	+ 15 à + 50
ZP-HP (ft) 20000	97,7	98,1	98,4	98,7	99,1	99,4
18000	97,9	98,3	98,6	98,9	99,3	99,6
16000	98,1	98,5	98,8	99,1	99,5	99,8
14000	98,3	98,7	99,0	99,3	99,7	100,0
12000	98,5	98,9	99,2	99,5	99,9	100,2
10000	98,7	99,1	99,4	99,7	100,1	100,4
8000	98,8	99,2	99,5	99,8	100,2	100,5
6000	98,9	99,3	99,6	99,9	100,3	100,6
4000		99,4	99,7	100,0	100,4	100,7
2000	LIMITE DE DEBIT FUEL FLOW LIMIT			100,1	100,5	100,8
0						100,9

FIGURE 5

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SECTION 5.1
REGULATORY PERFORMANCE DATA
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3 HEIGHT-VELOCITY DIAGRAM - - - - -	1	
4 A.S.I. AND ALTIMETER CALIBRATION- - - - -	1	
5 HOVER PERFORMANCE I.G.E. ON 2 ENGINES - - - - - (Height 6 ft - 2 m)	2	
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7 RATES OF CLIMB ON 1 AND 2 ENGINES - - - - -	2	
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SECTION 5.1REGULATORY PERFORMANCE DATA1 INTRODUCTION

The following performance curves apply to the basic version of the aircraft. Refer to Supplements when optional equipment is fitted.

2 SUBSTANTIATED WIND ENVELOPE2.1 Wind envelope for spinning and stopping the rotors

Spinning or stopping of rotors has been substantiated for winds of 40 kts from any direction and for 50-kt headwinds.

2.2 Wind envelope in hover

Hovering with wind from any direction has been substantiated over the entire flight envelope up to winds of 17 kts. although this is not to be taken as a limit. For example hover at sea level at maximum weight, for all c.g. locations, has been substantiated at 30 knots.

3 HEIGHT-VELOCITY DIAGRAM

For weights not exceeding 2250 kg (4960 lb), there is no unsafe area. For weights above 2250 kg, the height - velocity diagram is specified in Figure 1. An example of operation is given in page 3.

4 ASI AND ALTIMETER CALIBRATION4.1 Calibration of pilot's and copilot's airspeed indicators

The calibration curve is plotted on Figure 2

4.2 Calibration of pilot's and copilot's altimeters

The aircraft static ports have errors of less than ± 0.8 mb which gives a maximum error of ± 21 ft (7m).

4.3 Use of Standby static system

When using the "standby static", errors occur in the pilot's altimeter or ASI readings with respect to the normal readings.

To obtain the actual speed or altitude, deduct the values given in the following table from the indicated readings.

	Value to be deducted from	
	Indicated airspeed	Indicated altitude
Hover	0 (negligible effect)	0 (negligible effect)
Climb IAS = 55 kts (102 km/h)	7 kts (13 km/h)	0 (negligible effect)
Level flight at Max. Continuous Power	15 kts (28 km/h)	120 ft (36 m)

5 HOVER PERFORMANCE I.G.E. ON 2 ENGINES

These performance data are specified in Figure 3 of page 6

6 HOVER PERFORMANCE O.G.E ON 2 ENGINES

These performance data are specified in Figure 4, page 7.

7 RATES OF CLIMB ON 1 AND 2 ENGINES

The rates of climb on 1 and 2 engines are specified in Figures 5 and 6.

HOW TO USE THE FIGURE RELATED TO HEIGHT – VELOCITY

For an all-up weight above 2250 kg (4960 lb), the area to be avoided is defined by the three points A, B and C.

Determining point B

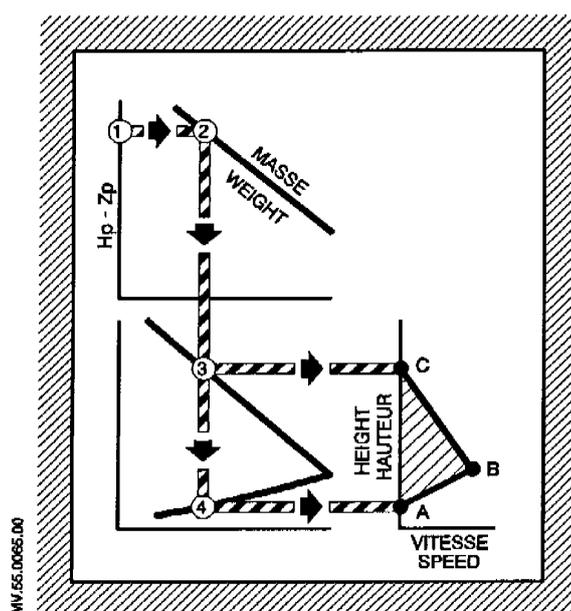
Point B is fixed and located at a 50 ft (15 m) height for a 30 kt (56 km/h – 35 MPH) velocity.

Determining points C and A

Points C and A are determined at a zero velocity and depend upon the actual weight and pressure – altitude.

- From the pressure – altitude (1), read across to the actual weight (2)
- Read vertically down to curves (3) and (4)
- From (3) and (4) read across to the height of points C and A

NOTE : When points C and A coincide, there is no unsafe area any longer
Example : 2000 ft and 2400 kg.



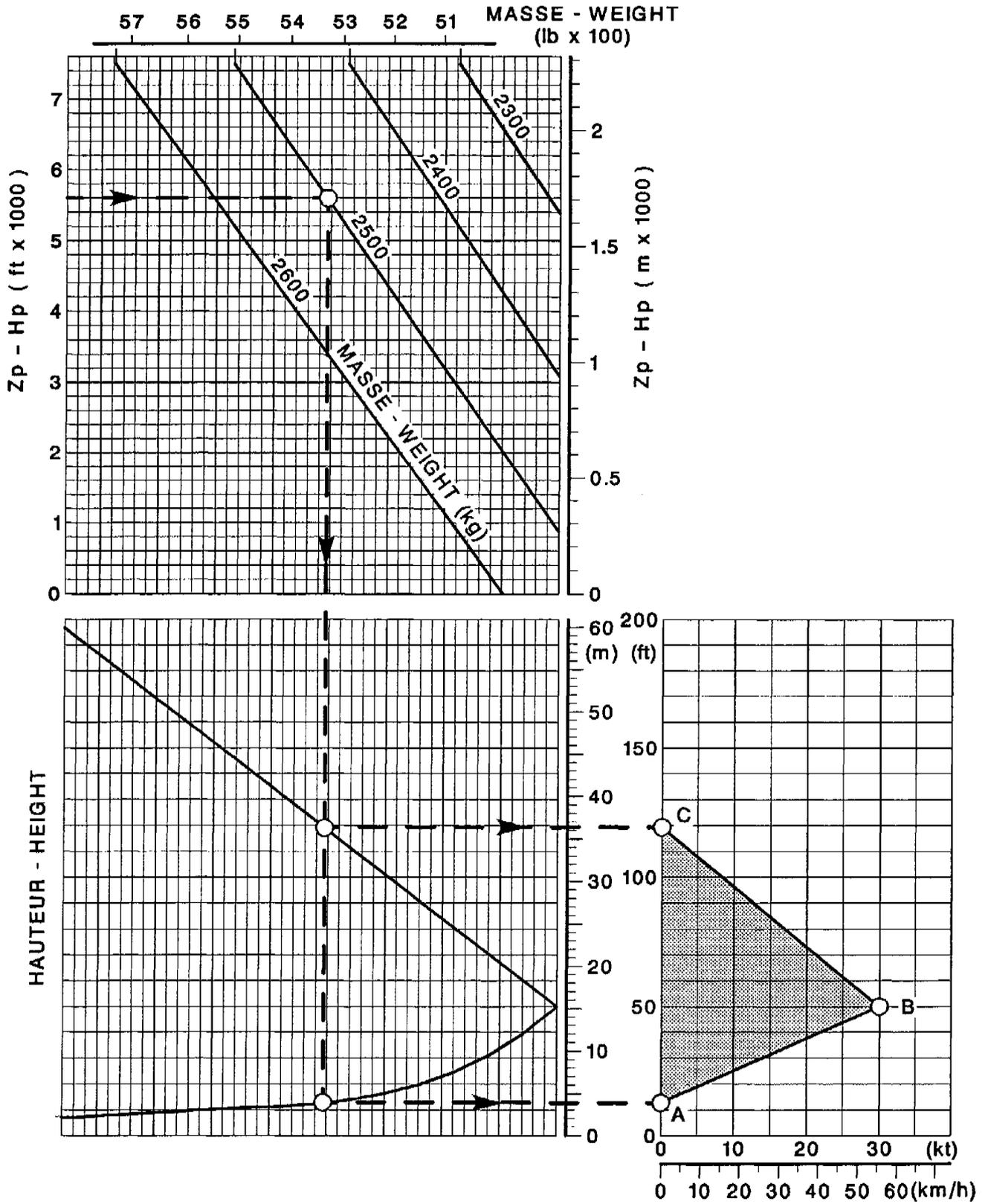


Figure 1

DETERMINING THE
HEIGHT - VELOCITY
DIAGRAM

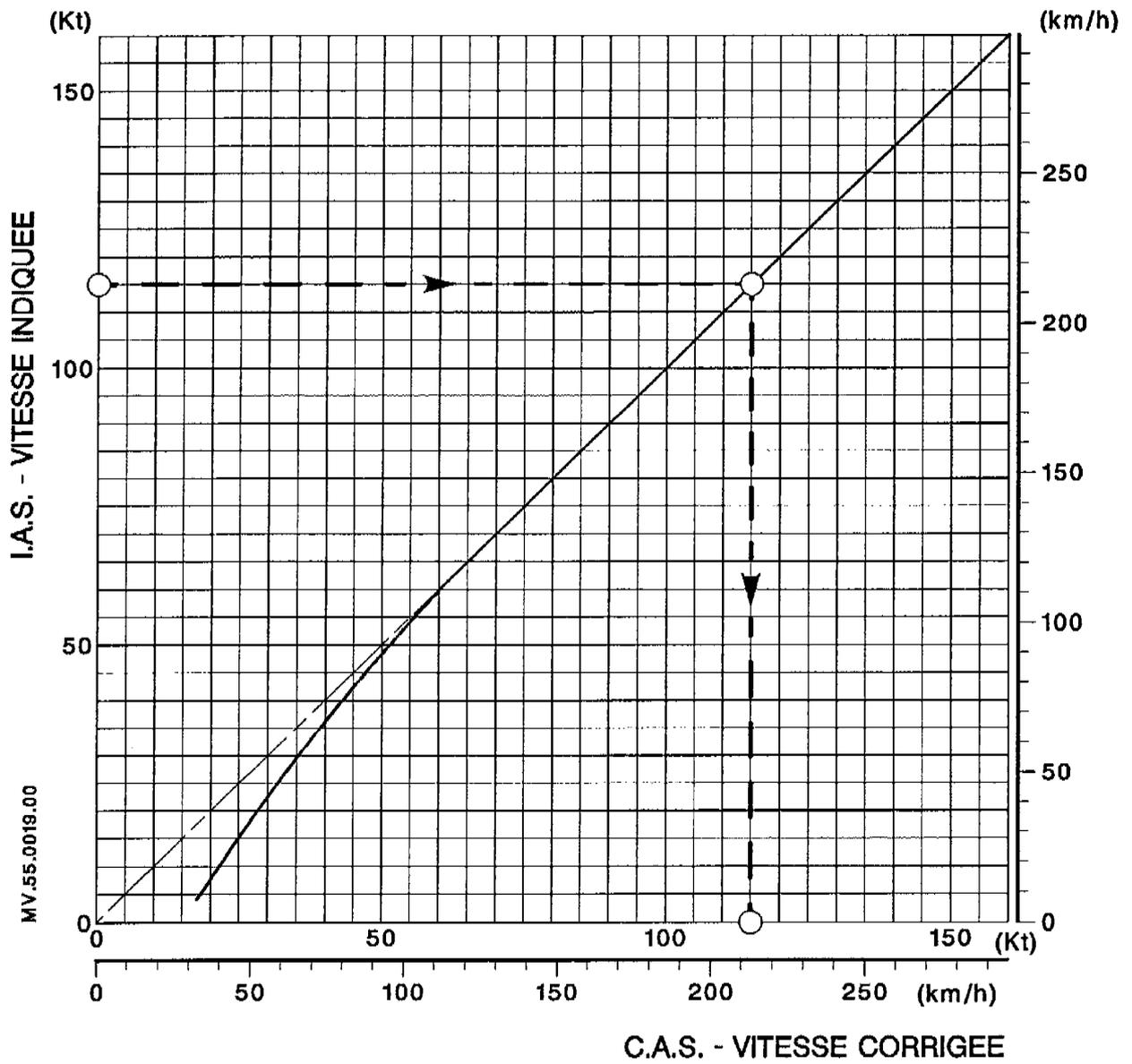


Figure 2

AIRSPED SYSTEM
CALIBRATION

DGAC Approved:

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5.1

A	B	D	E	F	G	H
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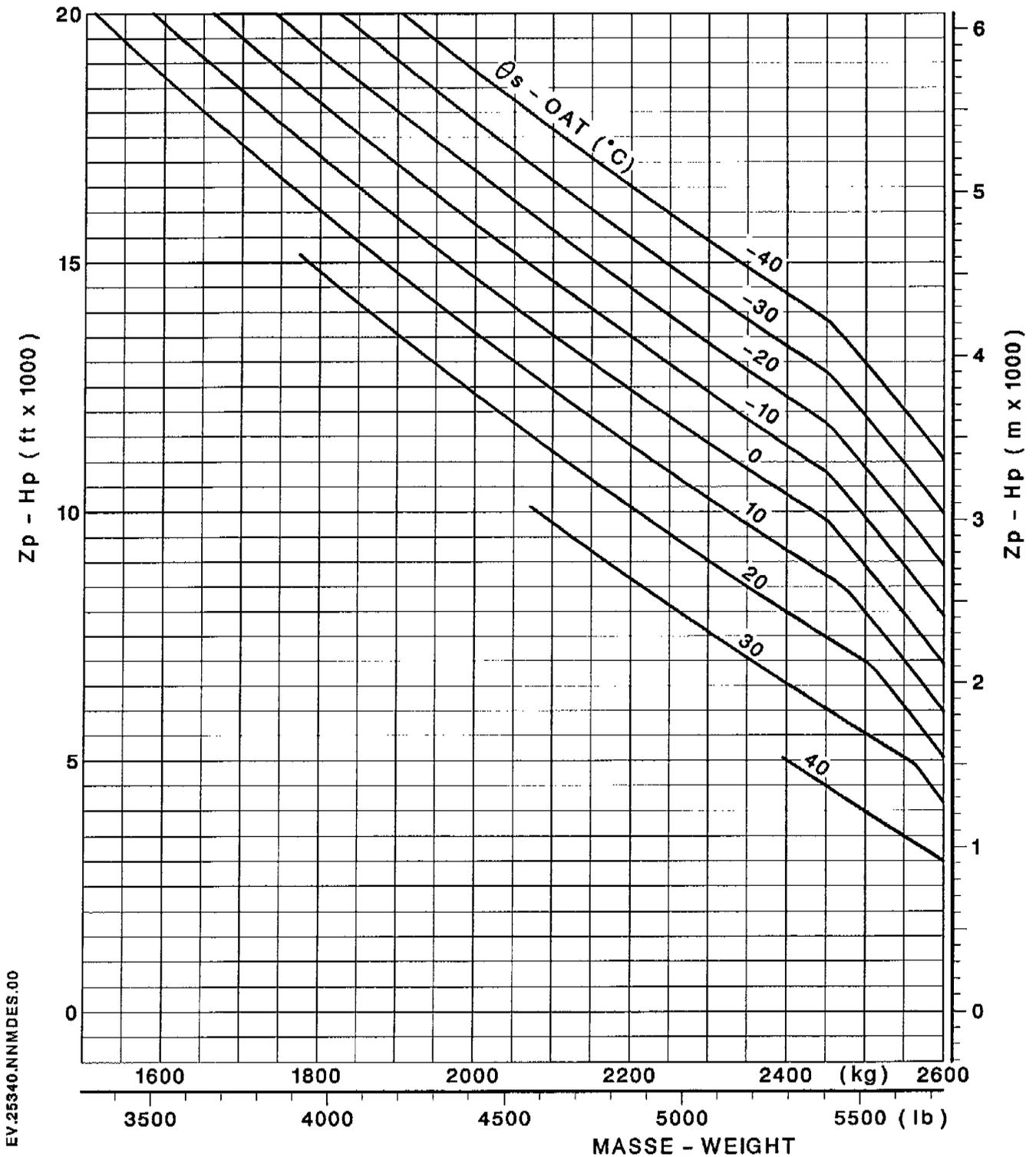


Figure 3

CONDITIONS :

- Height : 6 ft (2 m)
- No P2 air bleed
- Clearance at yaw pedals allowing hover to be held with a 17-kt wind from any direction.
- Max. Take-off Power limit (torque or Ng difference)

HOVER PERFORMANCE IGE
ON 2 ENGINES

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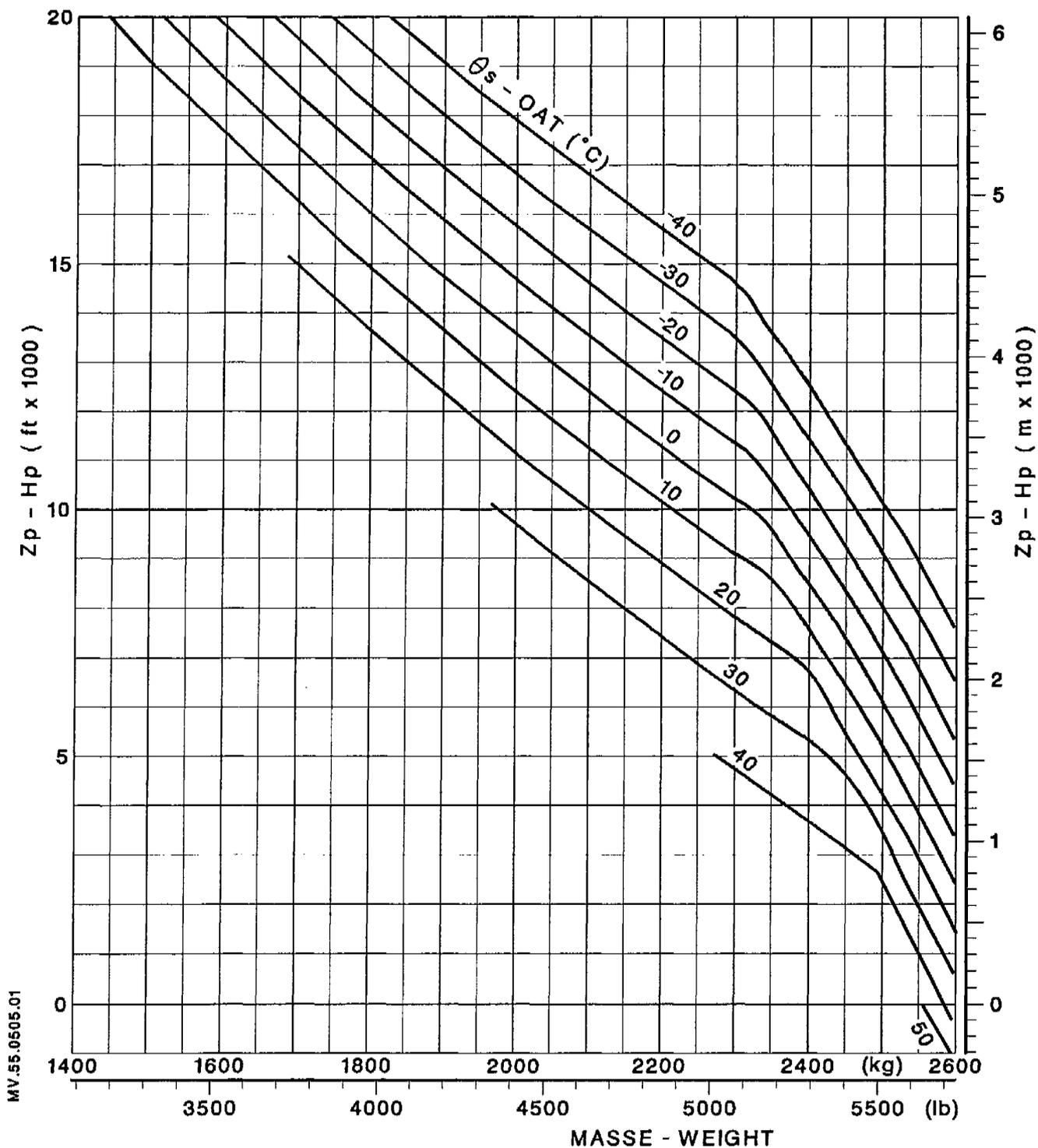


Figure 4

CONDITIONS :

- zero wind
- No P2 air bleed
- Max. Takeoff Power limit (torque or Ng difference)

HOVER PERFORMANCE
OGE ON 2 ENGINES

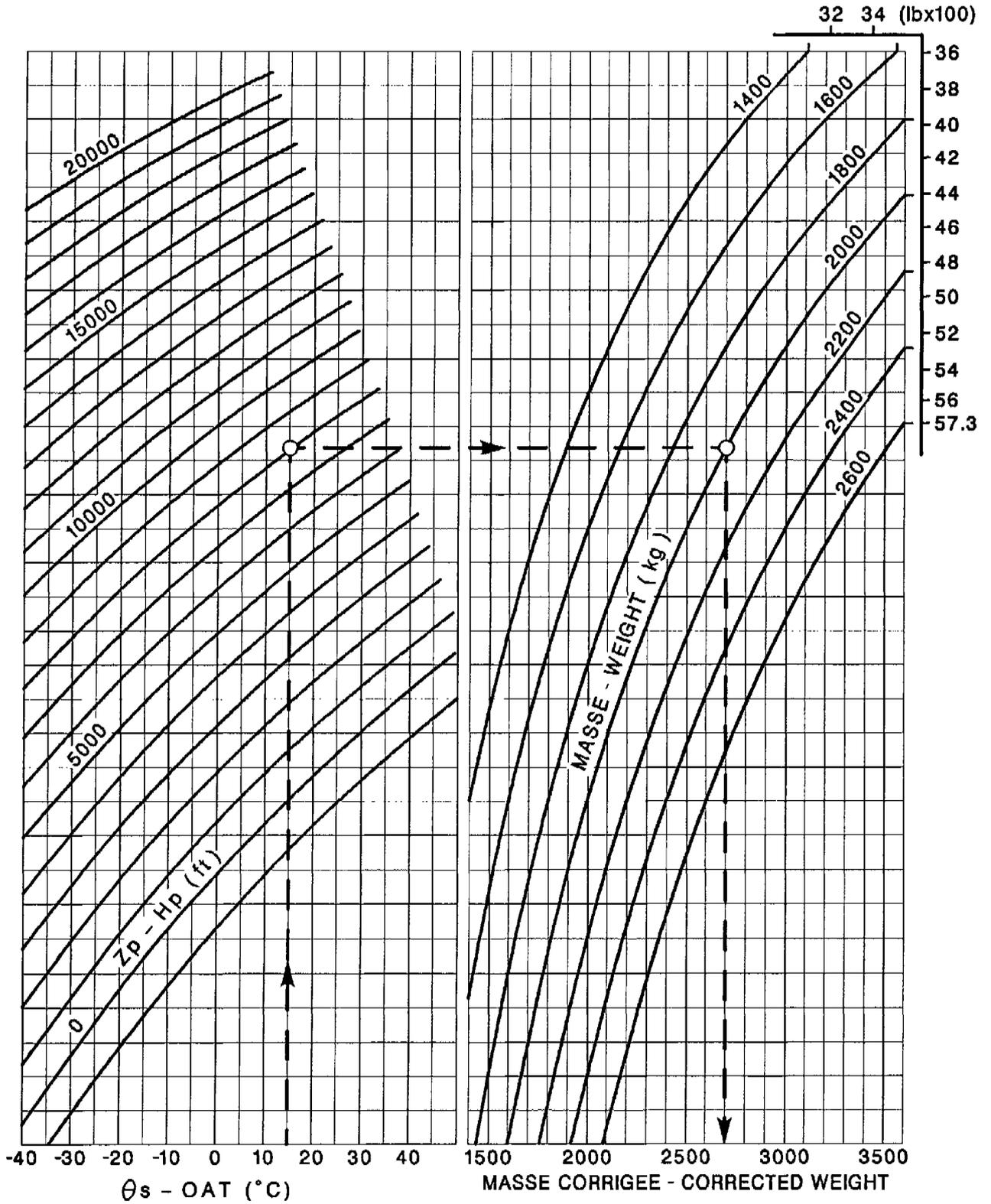
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CORRECTED WEIGHT FOR DETERMINING THE R/C (FROM THE FIGURE OPPOSITE)

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R
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R

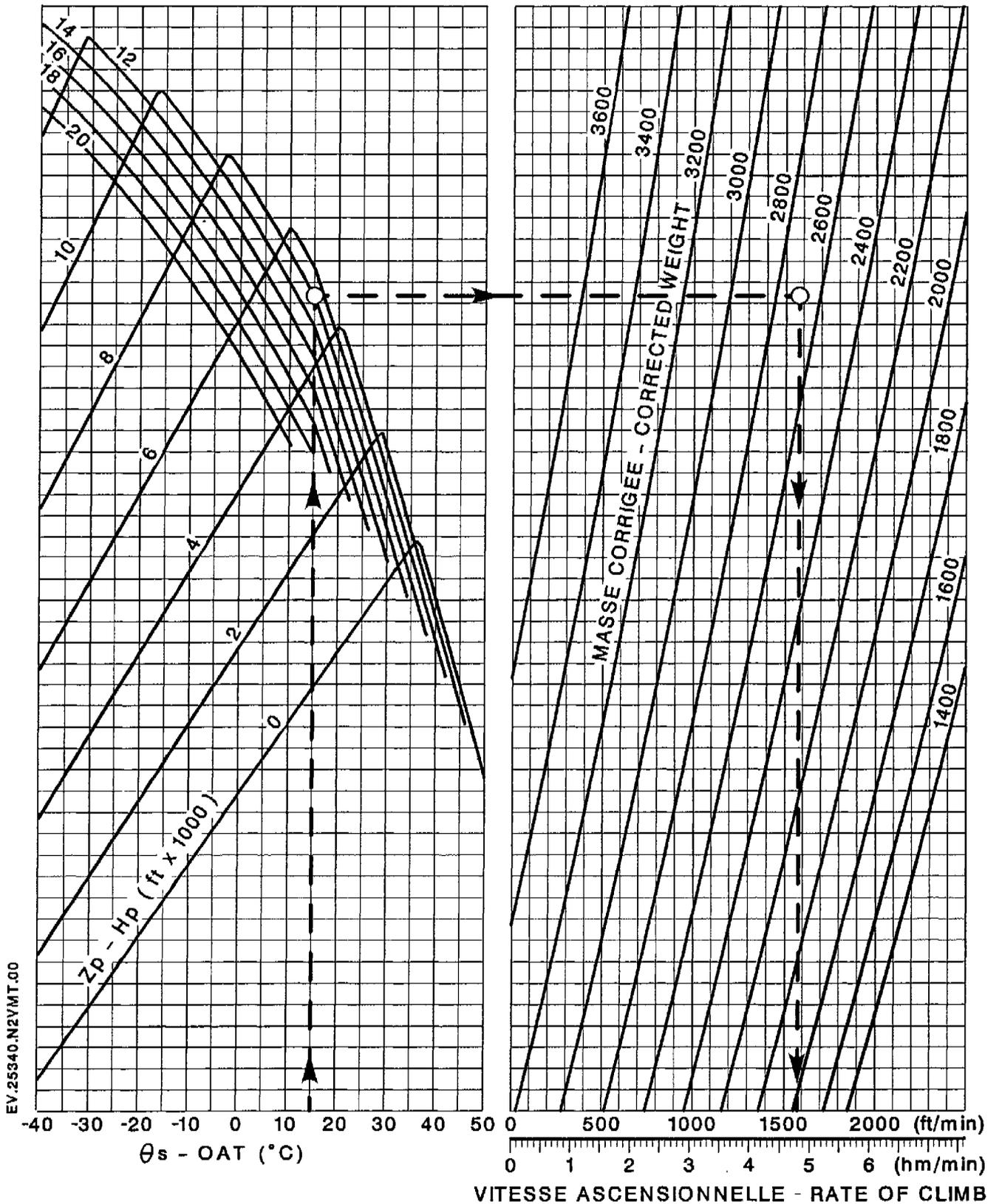


Figure 5

CONDITIONS :

- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister on or off

RATE OF CLIMB ON
2 ENGINES

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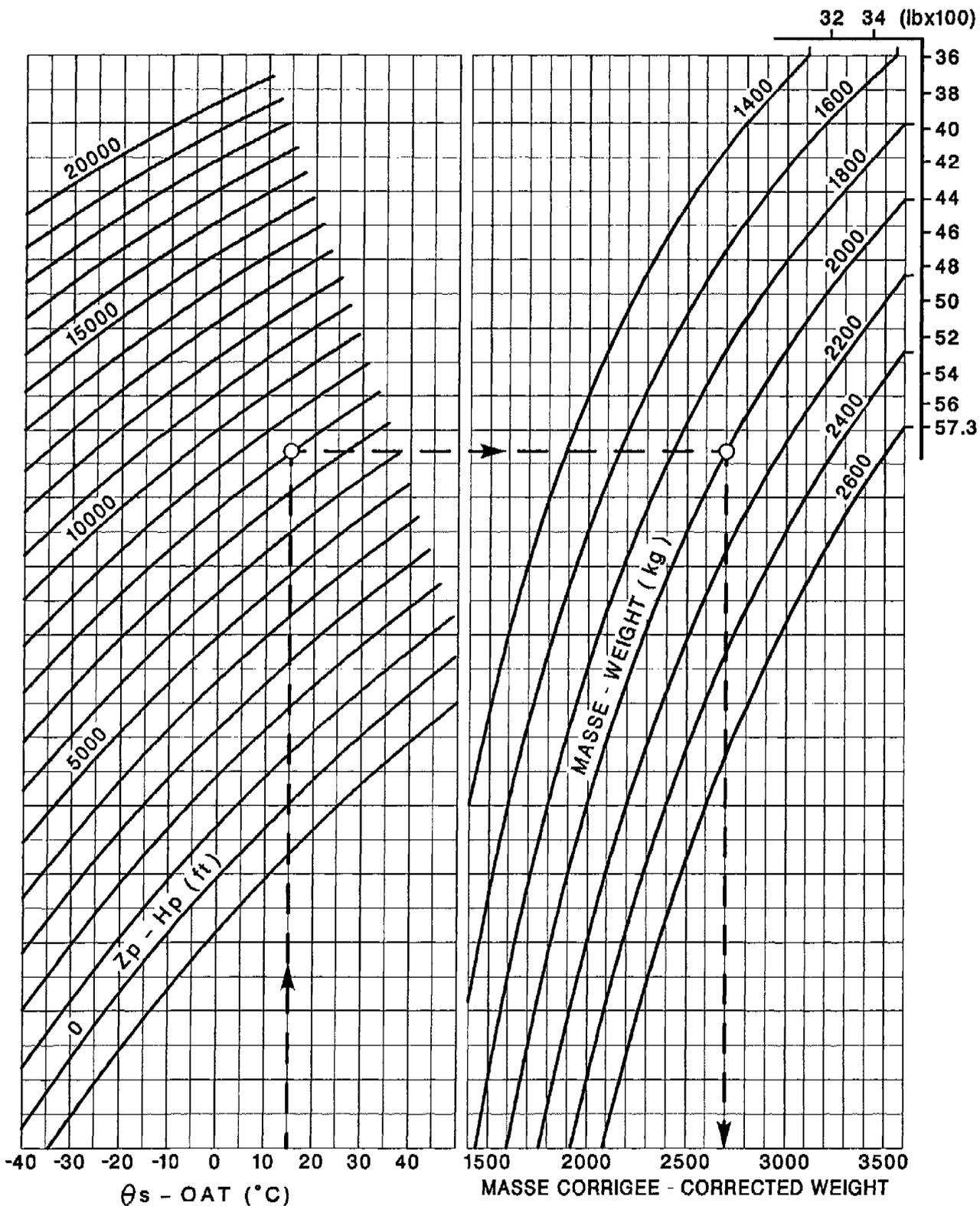
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R

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CORRECTED WEIGHT FOR DETERMINING THE R/C (FROM THE FIGURE OPPOSITE)

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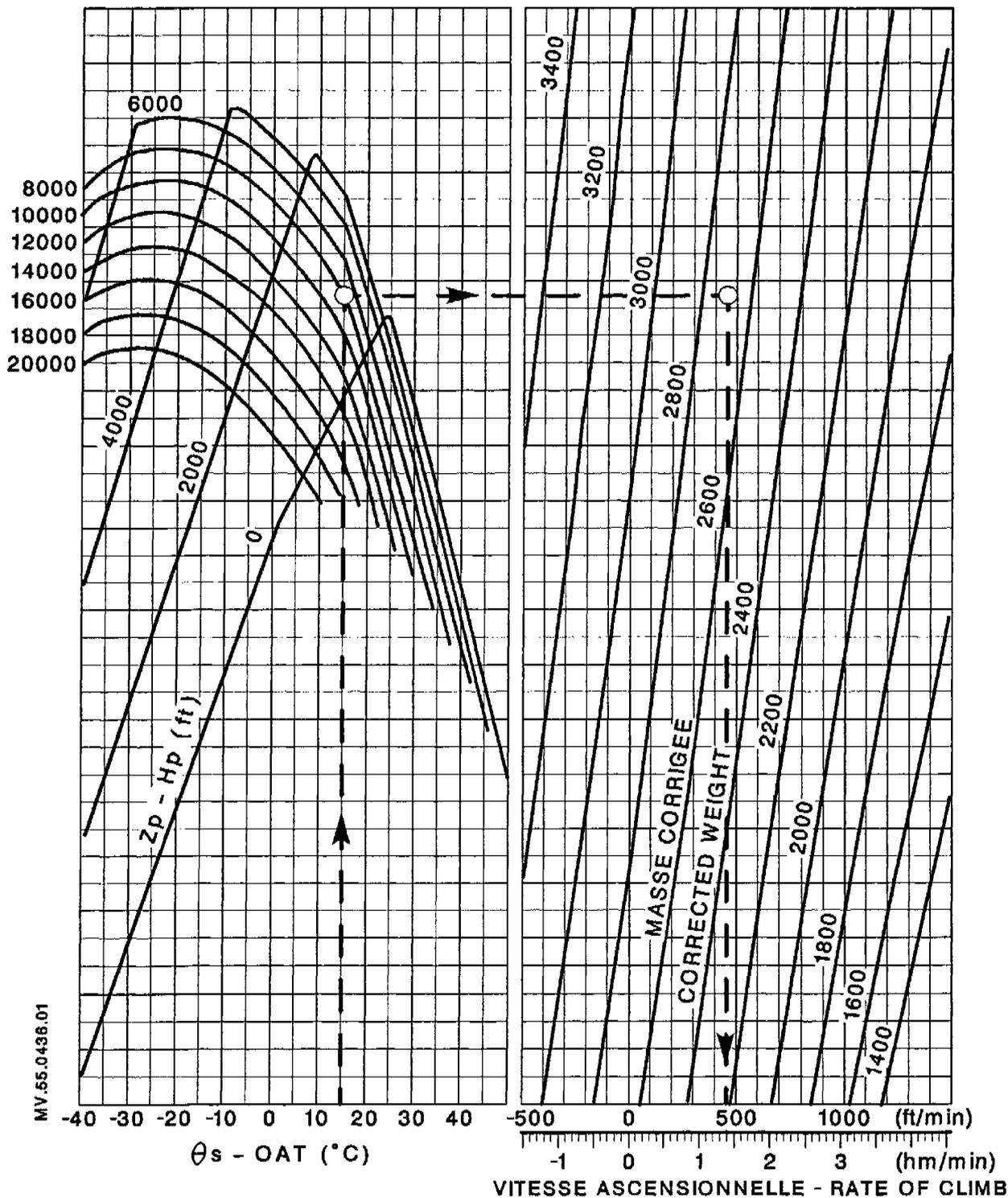


Figure 6

CONDITIONS :

- Intermediate Contingency Power or 115 % torque
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister off

RATE OF CLIMB
ON 1 ENGINE

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R

8 NOISE LEVELS

The noise levels determined under the conditions prescribed in Chapter 8 and Appendix 4 of Annex 16 of OACI, volume 1, are as follows :

Reference measurement configurations	Noise levels EPNdB	OACI max.noise levels EPNdB	
Take-off	89.0	94.4	R
Approach	92.9	95.2	R
Overflight	86.7	93.2	R



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

LIST OF SUPPLEMENTS
INCOMPATIBILITY OF UTILIZATION
EFFECT ON PERFORMANCE DATA

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 Effective Pages.

THIS SUPPLEMENT SHALL BE CARRIED IN AIRCRAFT AT ALL TIMES.



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CUSTOMIZATION :

A/C : AS 355 N No.:

LIST OF ADDITIONAL APPROVED PAGES

SUPP.	PAGE	CODE DATE	SUPP.	PAGE	CODE DATE
<p>THIS AIRCRAFT DOES NOT OFFER ANY PARTICULAR FEATURES REQUIRING THE CUSTOMIZATION OF THE SUPPLEMENTS ON GREEN PAGES.</p>					

1 LIST OF APPROVED SUPPLEMENTS

Some supplements covering installations or procedures not used on this helicopter may be withdrawn from this manual. The complete list of supplements appears on this page.

No	SUPPLEMENTS
0	OPTIONAL AND OPERATIONAL SUPPLEMENTS
1	INSTRUCTIONS FOR OPERATION IN COLD WEATHER
2	PROCEDURES AND PERFORMANCE DATA ON TAKE-OFF AND LANDING IN CASE OF ENGINE FAILURE
3	RESERVED
4	IFR FLIGHT
5	ENGINE FAILURE TRAINING PROCEDURES (TRAINING MODE)
6	TRAINING PROCEDURES FOR ENGINE GOVERNOR FAILURES
10	FORWARD TWO-PLACE SEAT
11	SKI INSTALLATION
12	AIR EQUIPMENT OR BREEZE (136 kg - 300 lb) ELECTRIC HOIST
13	EMERGENCY FLOATATION GEAR
14	TRANSPORT OF EXTERNAL LOADS "CARGO SWING"
15	FUEL JETTISONING SYSTEM
16	SAND FILTERS
17	3 - AXIS AUTOMATIC PILOT, SFIM 85 T31

R

SUPPLEMENTS (Cont'd)

No	DESIGNATIONS
18	FREON AIR CONDITIONER
19	CANCELLED
20	SPECTROLAB SEARCHLIGHT
21	FAURE HERMAN FUEL FLOWMETER
22	LONG AND SHORT FOOTSTEPS
23	BREEZE ELECTRIC HOIST 204 kg (450 lb)
23.1	BREEZE ELECTRIC HOIST 204 kg (450 lb) HANDLE WITH SUPPORT BRACKET
24	CAMERA CARRYING INSTALLATION

R

SPECIAL SUPPLEMENT

No	DESCRIPTIONS
51	FERRY TANK INSTALLATION
53	ABSEILING INSTALLATION
55	TNL 2101 APPROACH and TNL 2101 GPS
55.1	TNL 2101 APPROACH PLUS GPS
55.2	KLN 89B GPS

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Page 2

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

IF A NORMAL REVISION (RN) MODIFIES THE PAGE NUMBER FOR ANY INFORMATION CONCERNED BELOW, THE READER WILL HAVE TO CHANGE THE NUMBER OF THE PINK PAGE BY HAND, SO THAT THE INFORMATION REMAINS IN ACCORDANCE WITH THE PARAGRAPH CONCERNED.

Section	Page	Date	Applicable before condition is met :

NOTE : The date is coded and consists of the last two digits of the year followed by the number of the week in this year.

COMPOSITION
OF RUSH REVISIONS (RR)

The Manual contains the following additional yellow page(s) :

No	SECTION - PAGE	DATE	No	SECTION - PAGE	DATE

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A	B	D	E	F	G	H
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LIST OF APPROVED EFFECTIVE PAGES
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SUP. 0	P1	1	95-23				
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SUP. 0	P2	1	96-16				
SUP. 0	P2	2	00-28				R
SUP. 0	P3	1	90-15				
SUP. 0	P4	1	90-15				
SUP. 0	P5	1/01	00-28				R
SUP. 0		1	00-28				R
SUP. 0		2	91-20				

LIST OF THE LATEST NORMAL APPROVED REVISIONS						NORMAL REVISION : 17 DGAC APPROVED DATE : 06 AVR. 2001	
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0	89-24	8	97-10	16	00-27		
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6	95 30	14	00-10				
7	96-16	15	00-25				

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Page 1

2 INCOMPATIBILITY OF UTILIZATION BETWEEN OPTIONAL EQUIPMENT ITEMS

The following list is non-exhaustive and covers only the equipment items for which an incompatibility of utilization with one or more items exists, when there is no incompatibility of installation.

NOTE : Incompatibility of installation between items is stated in the Master Servicing Recommendations (PRE).

Operation of the following installations - - - - - : Make operation with the following equipment items impossible.

No.		SUPPL. No.		
01	Rear seat armrests	-	39	
02	Forward two-place seat	10	32 - 39	
24	Emergency floatation gear	13	32 - 39* - 66 - 71	R
27	Ski	11	66	
30	Ferry fuel tank	51	32 - 39 - 65	
32	Transport of external loads	14	02 - 30 - 33 - 39 - 24 - 66	
33	Dual air ambulance installation	-	32 - 39	
39	Electric hoist	12 - 23 23.1	01 - 02 - 30 - 32 - 33 - 24* - 66	
41	Drip pan	-	65	
65	TAP kit	-	30 - 41	
66	Abseiling installation	53	24 - 27 - 32 - 39	
71	Camera carrying installation	24	24	R

* Hoisting remain possible when the floats are folded.

3 INFLUENCE OF OPTIONAL EQUIPMENT ITEMS ON PERFORMANCE DATA

Where several optional equipment items are used simultaneously, the basic performance data must be reduced by the value corresponding to the influence of each optional item. R
R

3.1 REGULATORY PERFORMANCE DATA

- Take-off weights

When the installation of the optional equipment item modifies the take-off weights specified in the basic Flight Manual, the take-off weights are indicated on new charts.

- Rates-of-climb

When the rates-of-climb are modified, the relevant Supplement either provides a new chart or prescribes a reduction with respect to the basic performance.

3.2 ADDITIONAL PERFORMANCE DATA

- The reduced performance data are given in a recapitulating table in Section 10.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

INSTRUCTIONS FOR OPERATION IN COLD WEATHER

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or applicable flight manual supplements. The effectivity of the supplement at the latest revision is specified on the List of Effective Pages.

————— * —————
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Revisions to this supplement are made by EUROCOPTER FRANCE using the same procedures as AEROSPATIALE.



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SUP. 1	P1 1	94-05	R				
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SUP. 1	2	94-05	R				
SUP. 1	3	94-05	R				
SUP. 1	4	94-05	N				

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1 GENERAL

This supplement details all the procedures to be followed when the aircraft is used in particular climatic conditions, such as cold weather and snow. Aircraft servicing does not require any special tools or systematic replacement.

2 GENERAL RECOMMENDATIONS

For rational operation of the aircraft in cold weather and snow, it is recommended to carry out the following basic operations :

- Remove ice or snow deposits from the whole of the aircraft, particularly at hinges and movement transmitting items (main rotor, rotor mast, tail drive and tail rotor, flight controls, engine controls).

- When the aircraft has been subjected to very low temperatures, it is recommended that :

- . either regular ground runs be carried out every two hours for temperatures of about -20°C and every hour for lower temperatures.
- . or preheating of the engines, transmission assemblies and cabin be effected before take-off (although the helicopter is capable of carrying out engine start up and rotor spinning at temperatures down to -40°C).

During the preheating operation, carefully wipe out the deicing water to avoid all water accretion on the aircraft and water re-icing as soon as preheating is over, particularly on the AIR INTAKES and components located above the air intakes.

PRATICAL ADVICES

- For the preheating and deicing operations, use appropriate heaters in good condition only. Do not refuel the aircraft while the heaters are functioning.
- During the preheating operation, do not leave the aircraft unwatched. Keep an extinguisher available at hand.
- Avoid directing hot air towards the following parts of the aircraft : tanks and fuel, oil and hydraulic fluid lines.

3 LUBRICANTS TO BE USED FOR TRANSMISSION ASSEMBLIES

Below -25°C , do not use AIR 3525 (0 155) oil for transmission assemblies without initial preheating.

The other oils authorized in Section LIMITATIONS of the basic Flight Manual may be used down to -40°C without preheating.

NOTE : It should be remembered that when changing the oil, the system is first to be flushed in accordance with the recommendations in the maintenance publications.

Tail rotor

- Remove the blade sockets, then remove ice from the TRH assembly (blades, pitch rods...).
- Manually rotate the tail rotor so that the main rotor performs 1 turn at least, then check:
 - . the swashplate rotation (rotor brake not blocked),
 - . the TRH rotation,
 - . the freewheel operation.

Structure

- Remove the cabin cover once the inspection is completed.
- Make sure that the windshield wiper has not remained stuck on the canopy

Flight controls – Engine controls

- Before operating the controls, it is recommended to heat-up the inside of the cabin.
- Operate the controls progressively, then operate the rotor brake controls, fuel flow control and collective pitch control over their complete travel.

It is recommended not to perform extensive travel of the cyclic and tail rotor controls.

Fuel system bleeding

Do not bleed the fuel system under a temperature equal to or lower than -10 °C where valve seals prove inefficient.

6 START-UPEngine start-up when oil temperature is below - 30°C

- . move the fuel flow control lever on to the rear stop (retractable)
- . perform the normal procedure
- . when the oil temperature rises above 0°C, move the fuel flow control level forward into the "FLIGHT" gate.

After starting the engines, switch on the demisting and cabin heating systems.

7 AFTER START-UP

- Check :
 - . rotor speed
 - . lights out
 - . pressures correct

REMINDER : Power shall only be applied when the engines oil temperature is over + 10°C.

8 CHECK AFTER LAST FLIGHT OF THE DAY

R
R
R
R
R
R
R
R
R
R
R

The operations described in the Basic Normal are to be completed by the following actions :

- Observe the general recommendations mentioned above.
- When the rotor stops rotating, place the cyclic pitch stick close to the neutral position and the collective pitch lever secured at full low pitch, with tail rotor blades in the horizontal position.
- Care must be taken not to leave doors open.
- Install the air intake cover and exhaust nozzle blank.
- When the aircraft is parked in an unsheltered area it is recommended to apply anti-icing materials and to carry out the aircraft parking and mooring.

NOTE : ANTI-ICING MATERIALS

- Anti-icing fluid - isopropyl alcohol as per AIR 3660 or deicing as per AIR 3565 (MIL-A-6091).
- Anti-icing sealing compound B.437.
- Anti-icing compound E.57.
- Anti-rain material S.P.R. G7.
- Anti-icing material to be applied on blades: Kilfrost ABC or Kilfrost DF.

- CAUTION : - REFER TO GENERAL INSTRUCTIONS FOR THE USE OF ANTI-ICING MATERIALS.
- ANTI-ICING MATERIALS CAN DAMAGE THE HELICOPTER COMPONENTS.
 - USE RECOMMENDED AND APPROVED ANTI-ICING MATERIALS ONLY.

N



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

TAKEOFF AND LANDING PROCEDURES AND PERFORMANCE DATA
 ON CLEAR AIRFIELD AND HELIPAD
 WITH ONE ENGINE INOPERATIVE
 NORMAL MODE AND TRAINING MODE

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or applicable flight manual supplements. The effectivity of the supplement at the latest revision is specified on the List of Effective Pages.

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Revisions to this supplement are made by EUROCOPTER FRANCE using the same procedures as AEROSPATIALE.



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SUP. 2	P1	1	91-50				
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SUP. 2		19	91-50				
SUP. 2		20	91-50				

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1 GENERAL

1.1 Certification Criteria

Though the helicopter is not certificated to FAR 29 for category A operation this supplement deals with the procedures and performance allowing the aircraft to be operated in a similar way.

1.2 Applicability

The information contained in the basic Flight Manual remains applicable with the exception of the specific limitations, procedures and performance data mentioned in this Supplement. Refer to relevant Supplement when an optional equipment is installed.

The symbols and definitions given below are used in this Supplement.

V1	Critical decision speed
h1	Critical decision height
VTOSS	Takeoff or landing safety speed. This is the speed at which the helicopter rate of climb is at least 100 ft/ mn with heating and demisting systems off. - 1 engine inoperative. - 1 engine at maximum contingency rating.
Vy	Climbing speed defined in section 4.1 of the basic Flight Manual.
T.O.D.P.	Takeoff Decision Point. THE T.O.D.P. IS THE ONLY POINT WHERE THE COMBINATION OF HEIGHT AND AIRSPEED PERMITS EITHER ABANDONING TAKEOFF OR ACCELERATING UP TO VTOSS AND CONTINUING CLIMBING ON ONE ENGINE IF THE OTHER HAS FAILED.
L.D.P.	Landing Decision Point. The L.D.P. is the last point before landing, where go-around is possible in the event of an engine failure.
Takeoff distance with one engine inoperative	Horizontal distance from the takeoff initial point to the point where the helicopter clears the 35-ft (10 m) height at VTOSS .
A.S.D.	Accelerate-stop distance. The A.S.D. is the sum of the following : . Horizontal distance required to accelerate from the takeoff initial point to the T.O.D.P. where an engine failure may occur. . Horizontal distance required to immobilize the helicopter from the T.O.D.P.

1.3 TRAINING mode

In TRAINING mode (Intermediate Contingency and Maximum Contingency gas generator speeds offset on the engine outputting the power), the procedures specified for NORMAL mode remain applicable. However, to render the takeoff paths more representative, it is recommended not to increase each torque load in hover by more than 10 % for takeoff. The performance data laid down for the NORMAL mode remain applicable, with the exception of the following specific data :

- maximum weight for operation on a clear area (chart. 2)
- maximum weight for operation on a helipad (chart 4)

DATA :

1) The single-engine limitations are given in the LIMITATIONS Section.

2) For the AS 355 VTOSS is : 40 Kt - (74 Km/h - 46 MPH)
 V_y is : 55 Kt - (102 Km/h - 63 MPH)

3) Critical decision points :

. T.O.D.P. on clear area	V1 : 30 Kt - (56 Km/h - 35 MPH)
	h1 : 10 ft - (3 m)
. T.O.D.P. on helipad	V1 : 0 Kt
	h1 : 90 ft - (27 m)
. L.D.P. on clear area	V1 : 40 Kt - (74 Km/h - 46 MPH)
	h1 : 50 ft - (15 m)
. L.D.P. on helipad	V1 : 30 Kt - (56 Km/h - 35 MPH)
	h1 : 90 ft - (27 m)

2 LIMITATIONS

The limitations laid down in Section 2 and those relating to the optional equipment remain applicable with the addition of the following specific points (refer to the SUPPLEMENTS Section) .

2.1 Takeoff and landing envelope

The density-altitude must be equal to or less than 7400 ft (2255 m)

2.2 Maximum weight

The maximum takeoff and landing weight according to the ambient conditions is specified :

- by the type of procedure (chart 5 and 8).
- for the procedure on a clear area ; the smallest weight is given by chart 1 in NORMAL mode, 2 in TRAINING mode and 6.
- for the procedure on a helipad by chart 3 in NORMAL mode, or 4 in TRAINING MODE.

These weights can be reduced according to distant obstacles, using chart 7 and 8 or chart 9 (simplified procedure).

3 PROCEDURES ON A CLEAR AREA

These procedures apply when the length of the site is sufficient, which can be determined from chart 5 and 8. The value obtained does not allow for any safety factor.

3.1 Takeoff from a clear area

3.1.1 Normal takeoff procedure (figure 1)

- From hover I.G.E., increase takeoff power progressively and accelerate up to V_1 while maintaining a nearly constant height.
- Start climbing at V_1 , increasing speed to V_y .
- Select maximum continuous power.
- Maintain V_y until the desired altitude is reached.

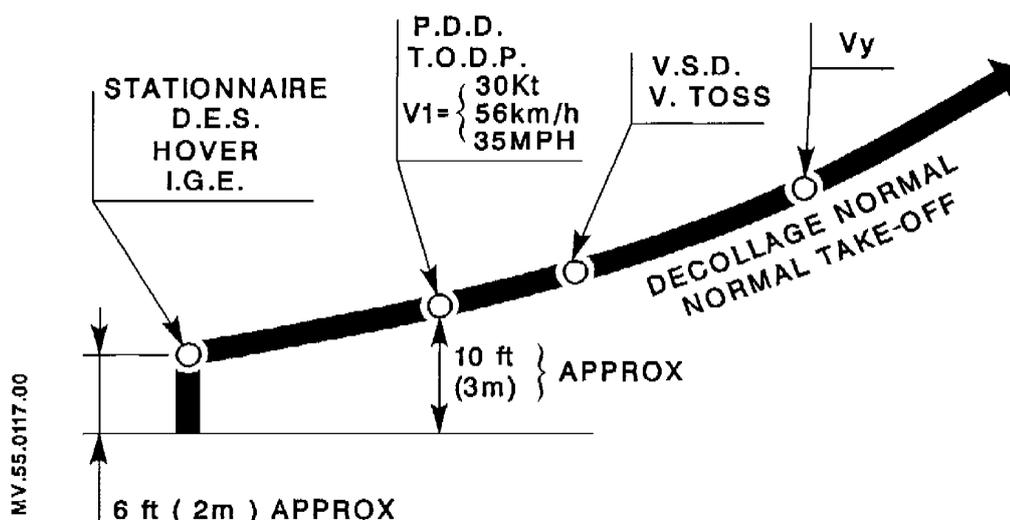


Figure 1

3.1.2 Emergency procedure in the event of an engine failure on takeoff (Figure 2)

3.1.2.1 Before T.O.D.P. is reached :

Abort takeoff. To do so :

- Decrease speed by setting a 15° nose-up attitude and reducing pitch so as to maintain a nearly constant height.
- When the aircraft starts to sink, gradually increase collective pitch.
- When speed is practically zero, bring the aircraft back to a level attitude and cushion landing using the collective pitch up to maximum pitch, if required.

NOTE : If ground permits, make the manoeuvre easier by performing a running landing.

3.1.2.2 After T.O.D.P. has been reached

Continue takeoff.

- Select takeoff safety speed (V_{TOSS}).
- If required, when the horn sounds, slightly reduce collective pitch to obtain 370 r.p.m.
- Climb up to 200 ft.
- At this height, increase level speed up to V_y.
- Continue climbing at V_y.

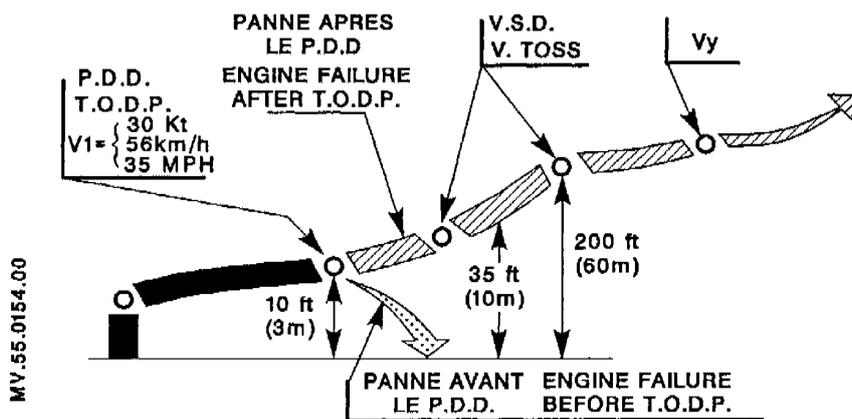


Figure 2

3.2 Landing on a clear area

3.2.1 Normal landing procedure (figure 3)

- Initiate the approach to reach L.D.P. at V₁ = 40 Knots (74 Km/h – 46 MPH) and h₁ = 50 ft (15 m) with an R/D of 500 ft/mn approximately.
- From L.D.P., slow down by decreasing the R/C by means of the collective pitch lever.
- Near the ground, bring the aircraft back to a level attitude and increase collective pitch (up to max. pitch, if necessary) to cushion landing.

NOTE :

. Heater, demister - - - - - off.

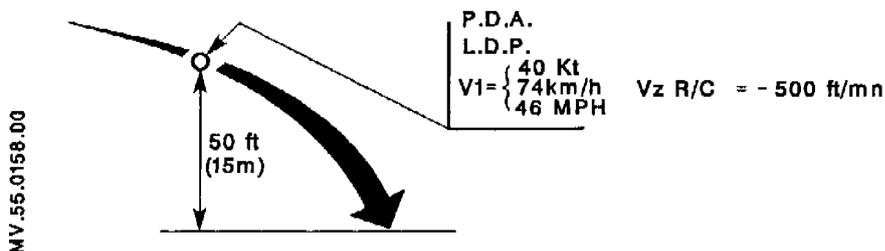


Figure 3

3.2.2 Emergency procedures in the event of an engine failure on landing (figure 4)

3.2.2.1 Before L.D.P. is reached

At maximum permissible weight, it is possible either to land as specified in the following paragraph (Engine failure after L.D.P.) or to go around. To do so :

- Maintain VTOSS.
- Increase collective pitch to obtain 370 r.p.m. NR approx.
- Climb up to 200 ft, then increase level speed up to V_y .

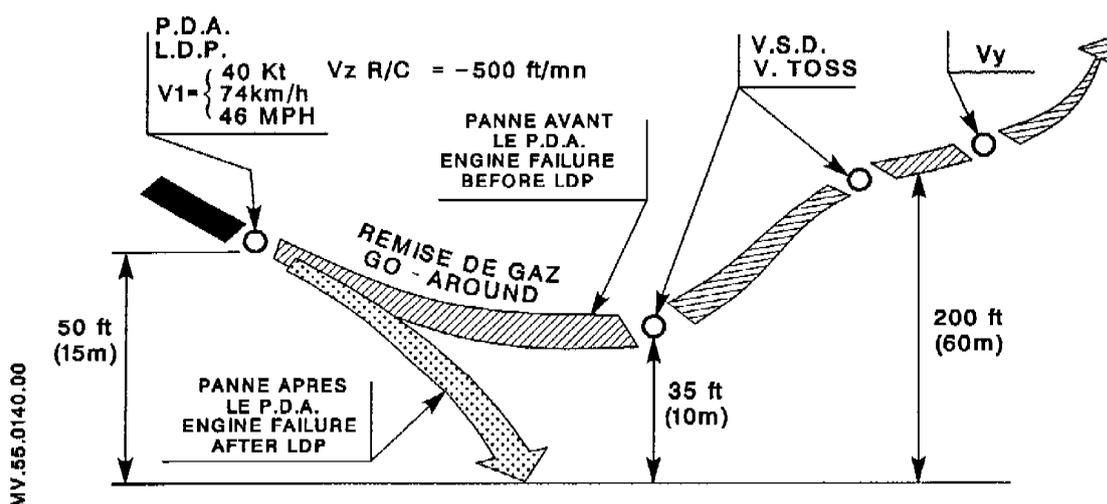


Figure 4

3.2.2.2 After L.D.P. has been reached

Continue landing procedure. To do so :

- Progressively reduce speed to fly near the ground.
- Near the ground, bring the aircraft back to a level attitude and increase collective pitch (up to max. pitch, if necessary) to cushion landing.

4 PROCEDURES ON A HELIPAD

These procedures apply to a prepared site whose dimensions are at least 1 1/2 times the overall length of the helicopter.

4.1 Takeoff from a helipad

4.1.1 Normal takeoff procedure (figure 5)

- Set altimeter and radio altimeter (if fitted) before takeoff.
- Hover the helicopter over the most downwind part of the takeoff area.
- Climb vertically, slightly increasing collective pitch without exceeding the limitations (R/D below 200 ft/mn).
- From 15 ft height, initiate backward flight slowly so as to keep the landing area in sight.
- At T.O.D.P., select maximum takeoff power and a 10° nose-down attitude simultaneously.
- When speed reaches 30 kt, reduce nose-down attitude and aim to reach V_y .
- Maintain V_y up to the desired flight altitude and select maximum continuous power.

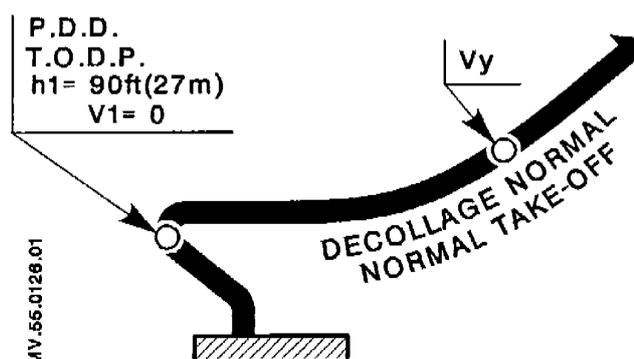
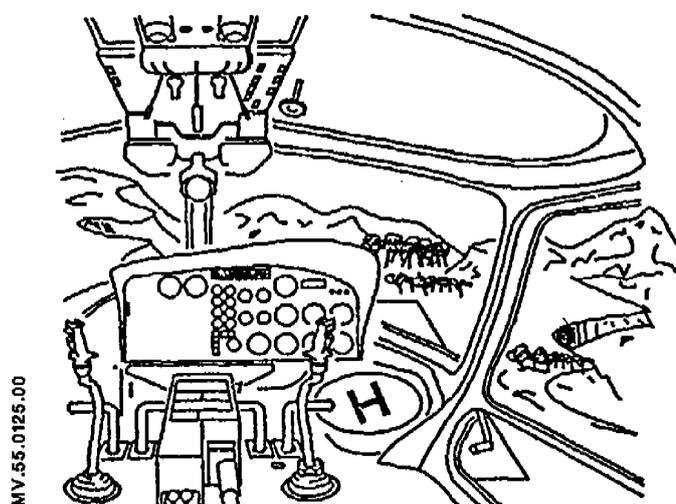


Figure 5

4.1.2 Emergency procedures in the event of an engine failure on takeoff (Figure 6)

4.1.2.1 Before T.O.D.P. is reached :

Abort takeoff. To do so :

- Assume a flight path that will bring the aircraft down to the platform.
- If required, when the horn sounds, slightly reduce collective pitch.
- Near the ground, increase collective pitch (up to max. pitch, if necessary) to cushion landing.

NOTE : During this manoeuvre, the flight attitude will remain nearly constant.

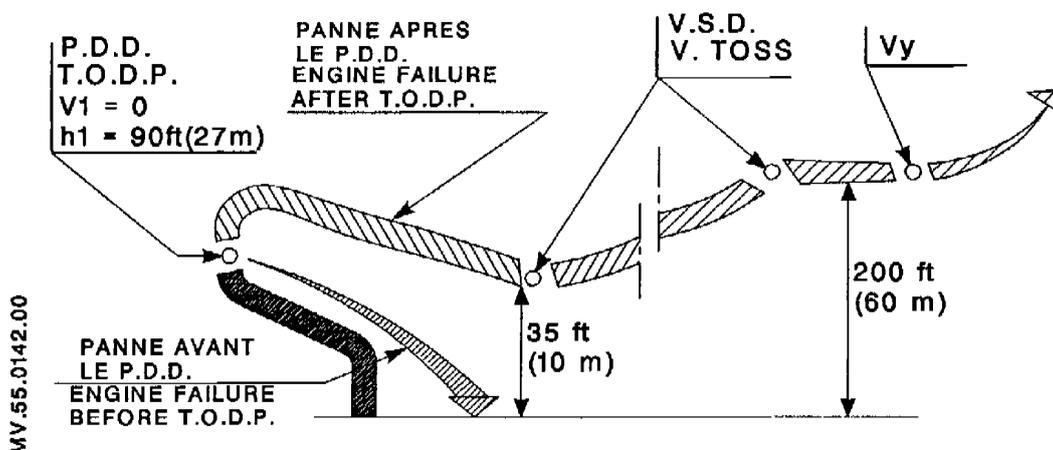


Figure 6

4.1.2.2 After T.O.D.P. has been reached

Continue takeoff. To do so :

- Set a 10° nose-down attitude approximately.
- If required, when the horn sounds, slightly reduce collective pitch to obtain 370 r.p.m. NR.
- As soon as speed reaches 30 Kt (56 Km/h – 35 MPH) reduce nose-down attitude and allow VTOSS to be attained.
- Maintain VTOSS by selecting the single-engine maximum contingency power up to 200 ft.
- At 200 ft, increase speed up to Vy and continue climbing.

4.2 Landing on a helipad

4.2.1 Normal landing procedure (figure 7)

- Initiate the approach to reach L.D.P. at $V1 = 30 \text{ Kt}$, $h1 = 90 \text{ ft}$ with an R/D of 300 ft/mn approx.
- From L.D.P. reduce speed so as to hover the aircraft at 15 ft height above landing area.
- Initiate a slow vertical descent.

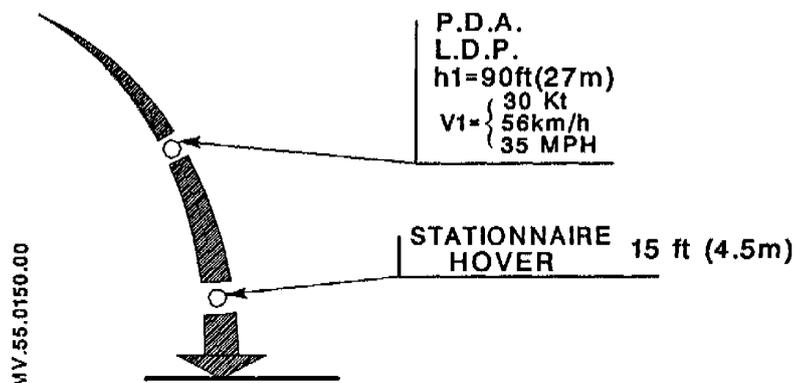


Figure 7

4.2.2 Emergency procedures in the event of an engine failure on landing (Figure 8)

4.2.2.1 Before L.D.P. is reached

At maximum permissible weight, it is possible : either to continue landing as specified in the following paragraph or to go around. To do so :

- Increase collective pitch to obtain 370 r.p.m. NR approx.
- Increase speed to reach VTOSS.
- Continue climbing at VTOSS and apply the procedure recommended in the event of engine failure on takeoff.

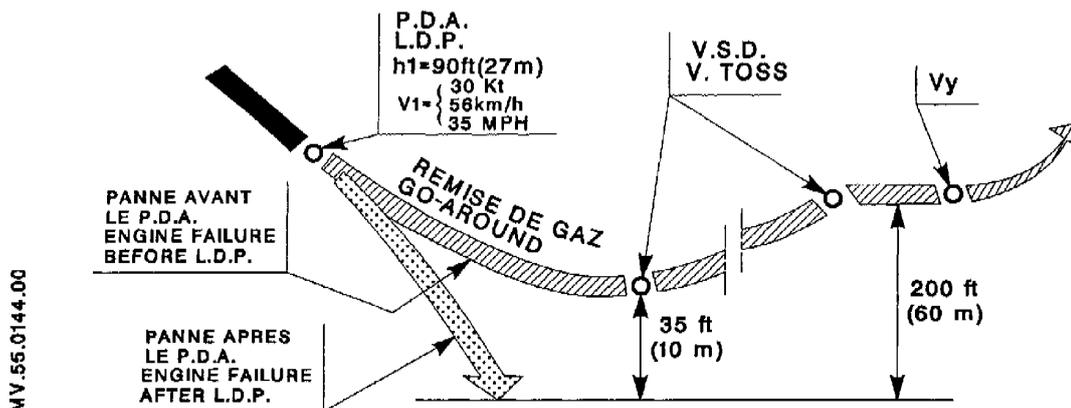


Figure 8

4.2.2.2 After L.D.P. has been reached

Continue landing. To do so :

- Maintain the speed required to reach a position above the landing point at 15 ft height, approximately.
- Decrease the residual speed down to zero and allow the aircraft to descend vertically.
- Just before touch-down, apply maximum pitch as necessary .

5 PERFORMANCE5.1 Maximum takeoff and landing weights

- The maximum weight must not exceed that given by Chart 1, or by Chart 2 in TRAINING mode, which corresponds to a vertical speed of 150 ft/mn at V_y .
- For takeoff from a clear area the weight may be reduced depending on the length available (Chart 6 : distance to clear a 35-ft obstacle).
- Considering the procedures used, the weight is not taken into account when determining the accelerate-stop distance or the distance to clear a 50-ft obstacle on landing.
- For takeoff and landing on a helipad, the maximum weight is given by Chart 3, or by Chart 4 in TRAINING mode.

Paragraph 5.5 gives a few examples on how to determine the maximum weight.

5.2 Distances related to takeoff and landing

These distances are specified in Charts 5 to 8.

5.3 Simplified procedure for determining the maximum takeoff weight according to the obstacles lying in the path.

Chart 9 allows this weight to be determined according to the outside conditions (H_p -OAT). The maximum permissible takeoff weight will be limited to the smaller of the following two weights :

- . Weight as defined in 5.1.
- . Weight as defined in Chart 9.

This simplified procedure is achieved at $IAS = V_{TOSS} = 40$ knots (74 Km/h - 46 MPH).

Remark : This procedure also allows to quickly know the distance to clear a 1000-ft obstacle on takeoff.

5.4 Examples on how to determine the maximum weight on takeoff or landing in NORMAL mode.

1) Takeoff from a clear area (airport type)

Hp = 1000 ft OAT = 40°C Zero wind

- Chart 1 gives 2460 kg
- Chart 5 (Accelerate-stop distance) gives 275 m
- Chart 6 (Distance to clear a 35-ft obstacle) gives 260 m.
- Chart 8 (Distance to clear a 50-ft obstacle on landing) gives 260 m.

The maximum permissible weight is 2460 kg.

2) Takeoff from a small-size site

Length = 250 m Hp = 5000 feet OAT = 20°C Zero wind

- Chart 1 gives 2370 kg
- Chart 5 (Accelerate-stop distance with zero wind) gives 335 m.
The procedure for a clear area cannot be used.

The maximum permissible weight for operation on a helipad is 2200 kg (Chart 3).

3) Takeoff from a small-size site

Length = 150 m Hp = 500 feet OAT = 40°C Wind : 10 Kts

- Chart 1 gives 2500 kg
- Chart 5 (Accelerate-stop distance with wind) gives 135 m.
- Chart 6 (Distance to clear a 35-ft obstacle with wind) gives 180 m.

At aircraft weight of 2500 kg, the length (150 m) of the site is not sufficient to clear a 35 ft obstacle (distance required = 180 m)
The maximum weight given by chart 6 is 2420 kg.

4) Takeoff with a distant obstacle on the takeoff path (Use of Chart 9)

After determining the maximum weight relative to the site used, check that it is compatible with the rest of the path.

Height of obstacle = 600 feet, located 2000 m from takeoff area.

Hp = 2000 feet OAT = 10°C

The maximum weight given by Chart 9 is 2500 kg.
Chart 1 (Clear area, no obstacle) gives 2540 kg.

The maximum permissible weight through the procedure is therefore 2500 kg.

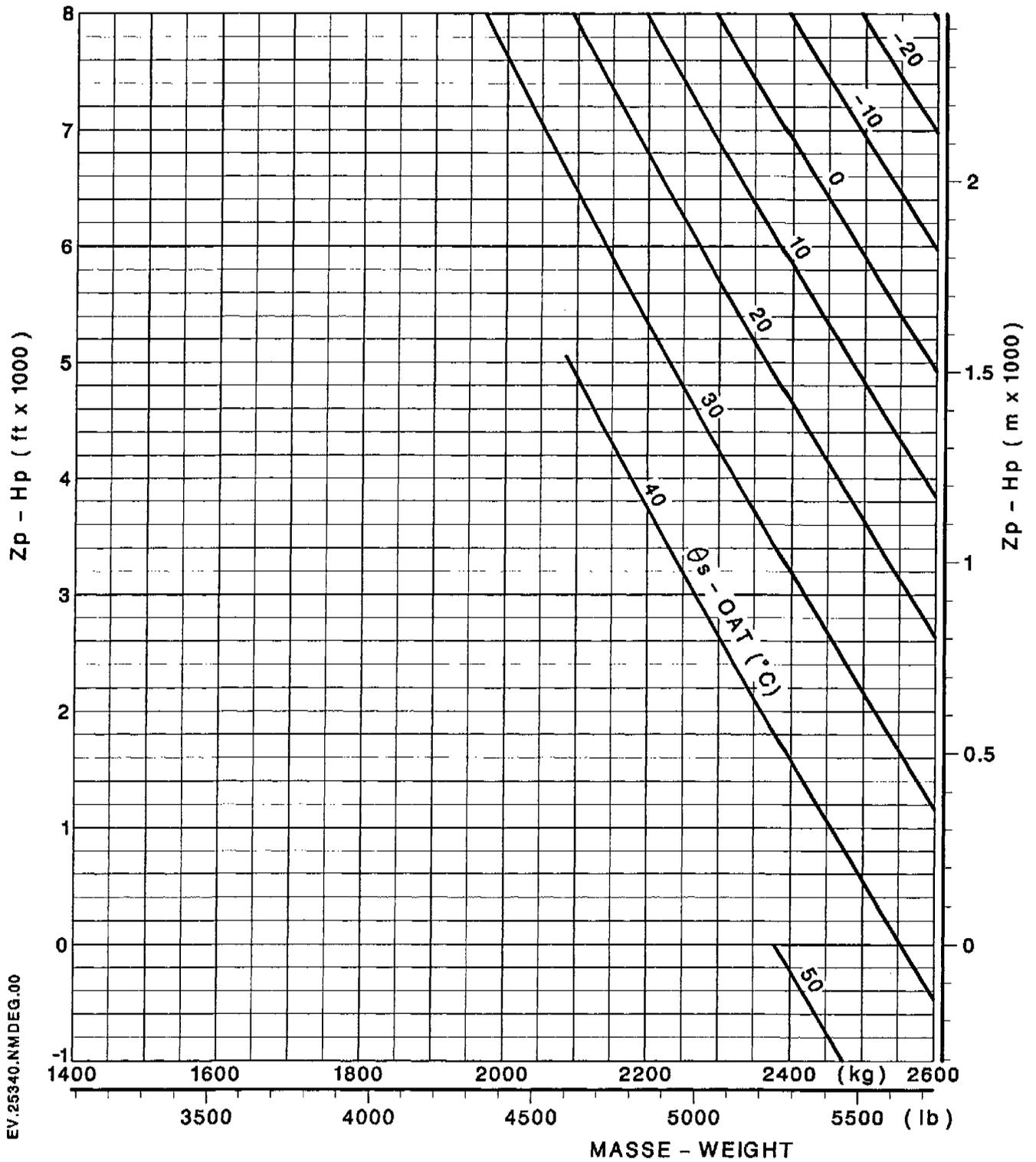


Chart 1

CONDITIONS :

- NORMAL mode
- Heating and demisting systems off.

MAXIMUM TAKEOFF AND LANDING WEIGHTS FOR OPERATION ON A CLEAR AREA.

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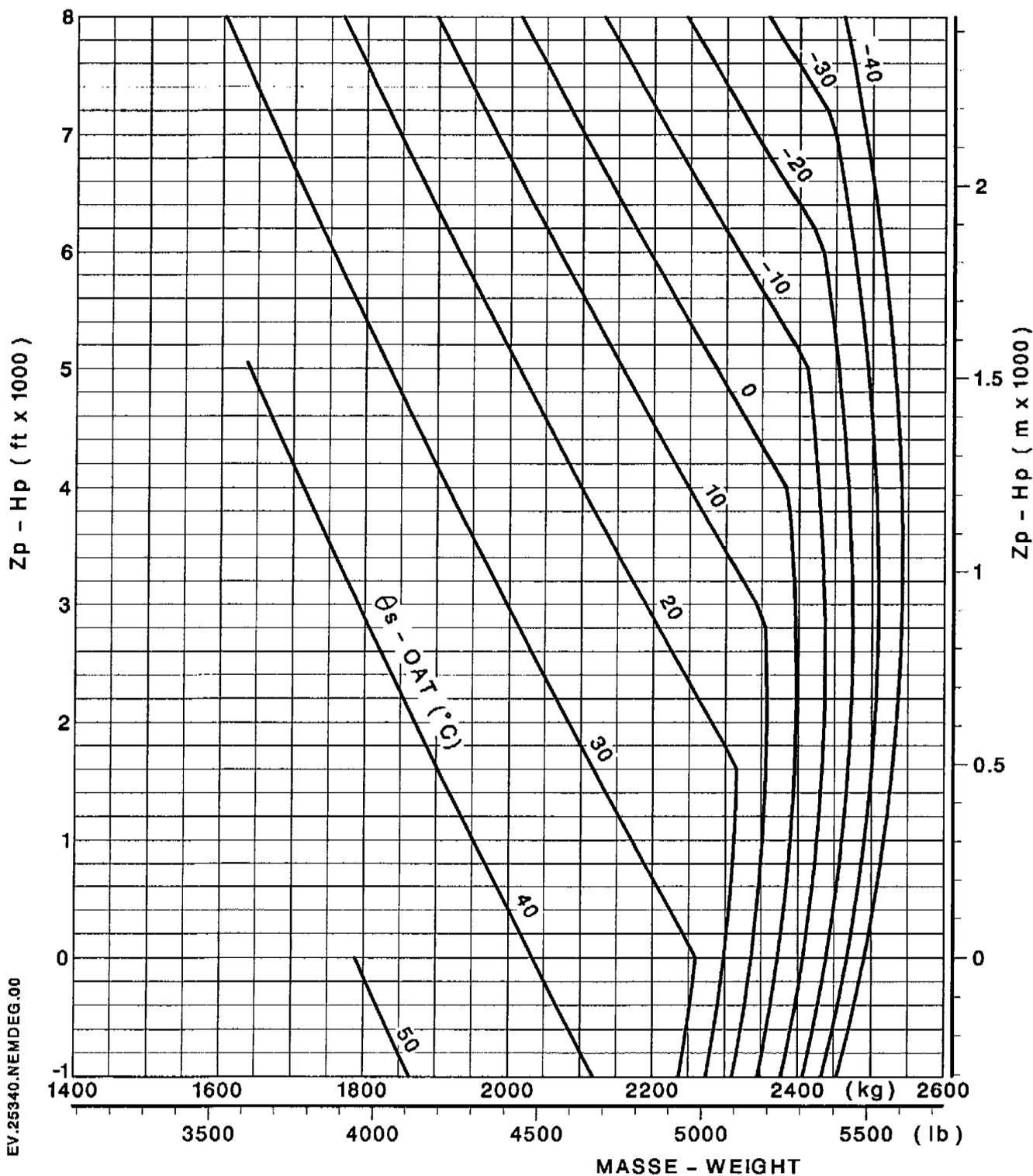


Chart 2

CONDITIONS :

- TRAINING mode
- Heating and demisting systems off.

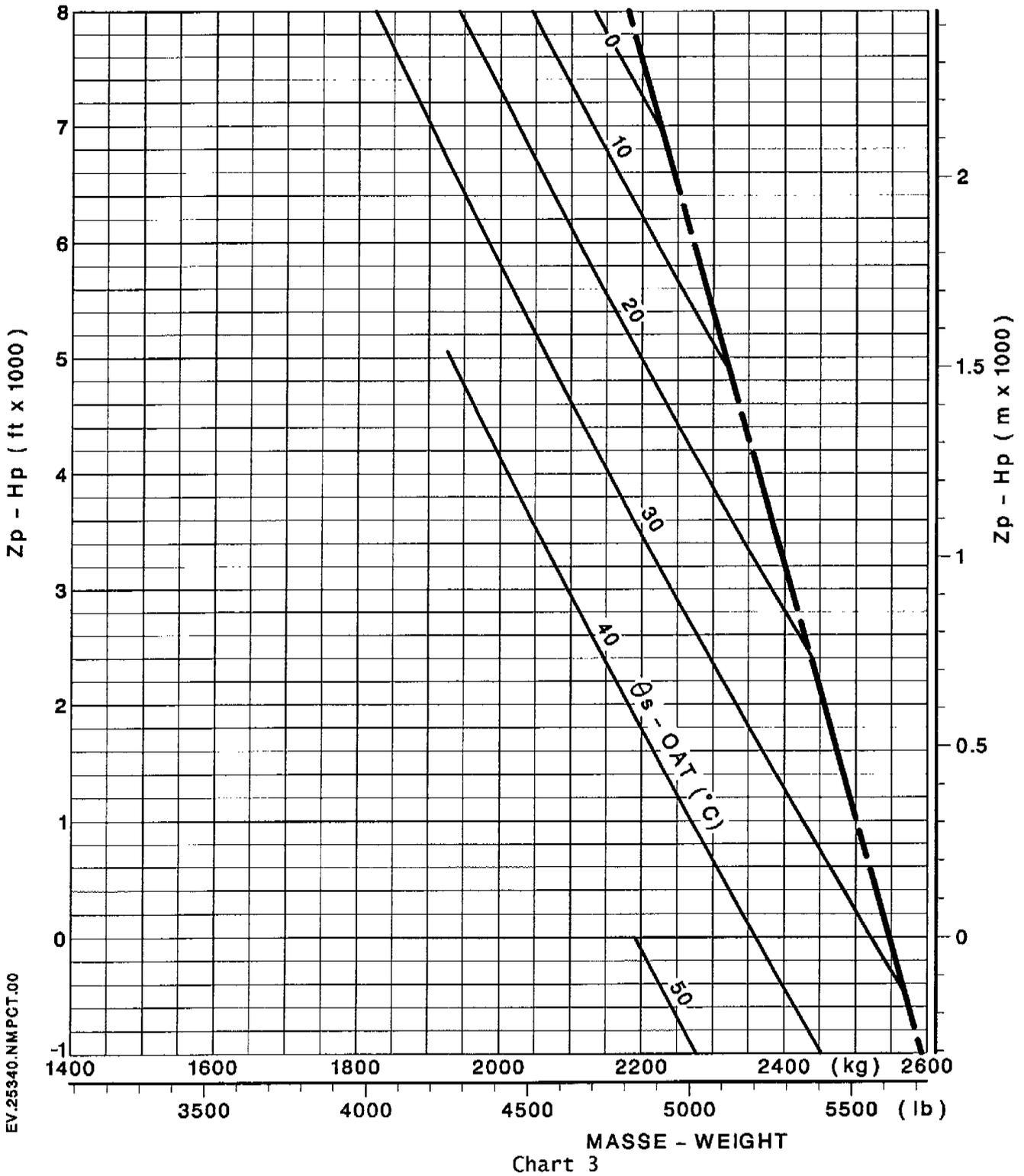
MAXIMUM TAKEOFF AND LANDING WEIGHTS FOR OPERATION ON A CLEAR AREA.

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NOTE : The thick line represents the substantiated height/airspeed envelope.

CONDITIONS :

- NORMAL mode
- Heating and demisting systems off.

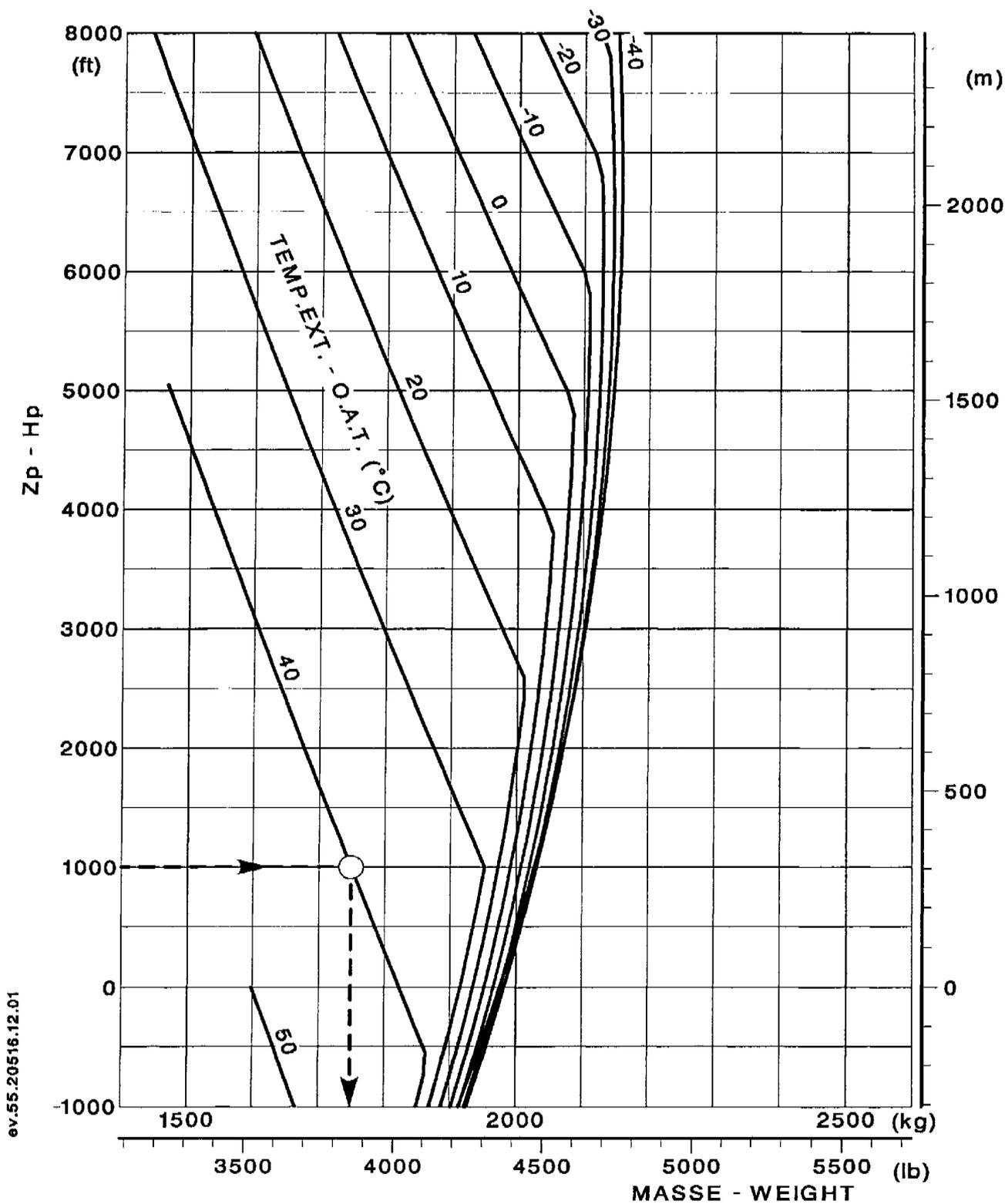
MAXIMUM TAKEOFF AND LANDING WEIGHTS FOR OPERATION ON A HELIPAD.

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Chart 4

CONDITIONS :

- TRAINING mode
- Heating and demisting systems off

MAXIMUM TAKEOFF AND LANDING WEIGHTS FOR OPERATION ON A HELIPAD.

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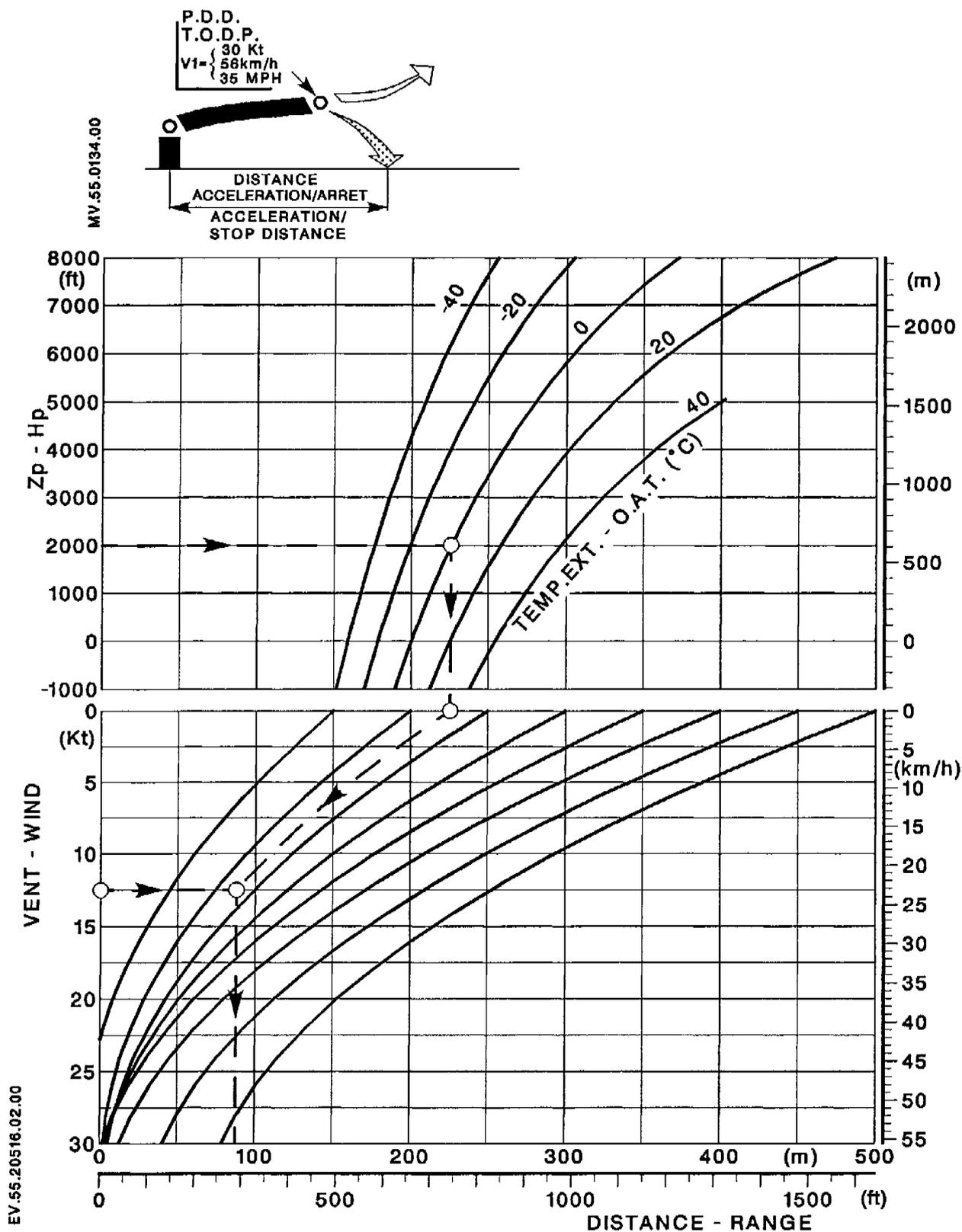


Chart 5

CONDITIONS :

- One engine failed before T.O.D.P.
- Applies to all weight conditions
- True wind

ACCELERATION/STOP
DISTANCE

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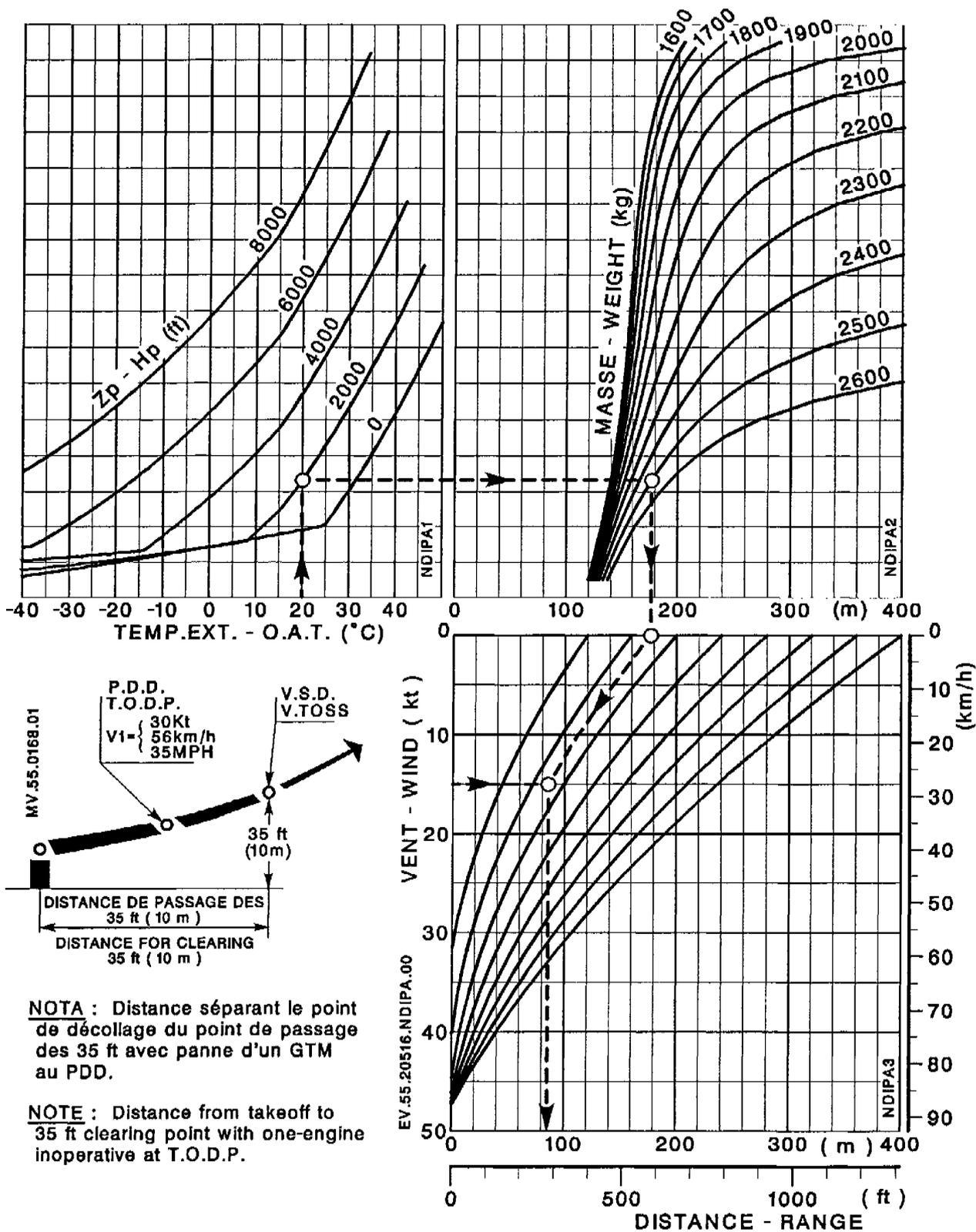


Chart 6

CONDITIONS :

- One engine failed after T.O.D.P.

DISTANCE REQUIRED TO CLEAR A 35-ft (10 m) OBSTACLE ON TAKEOFF

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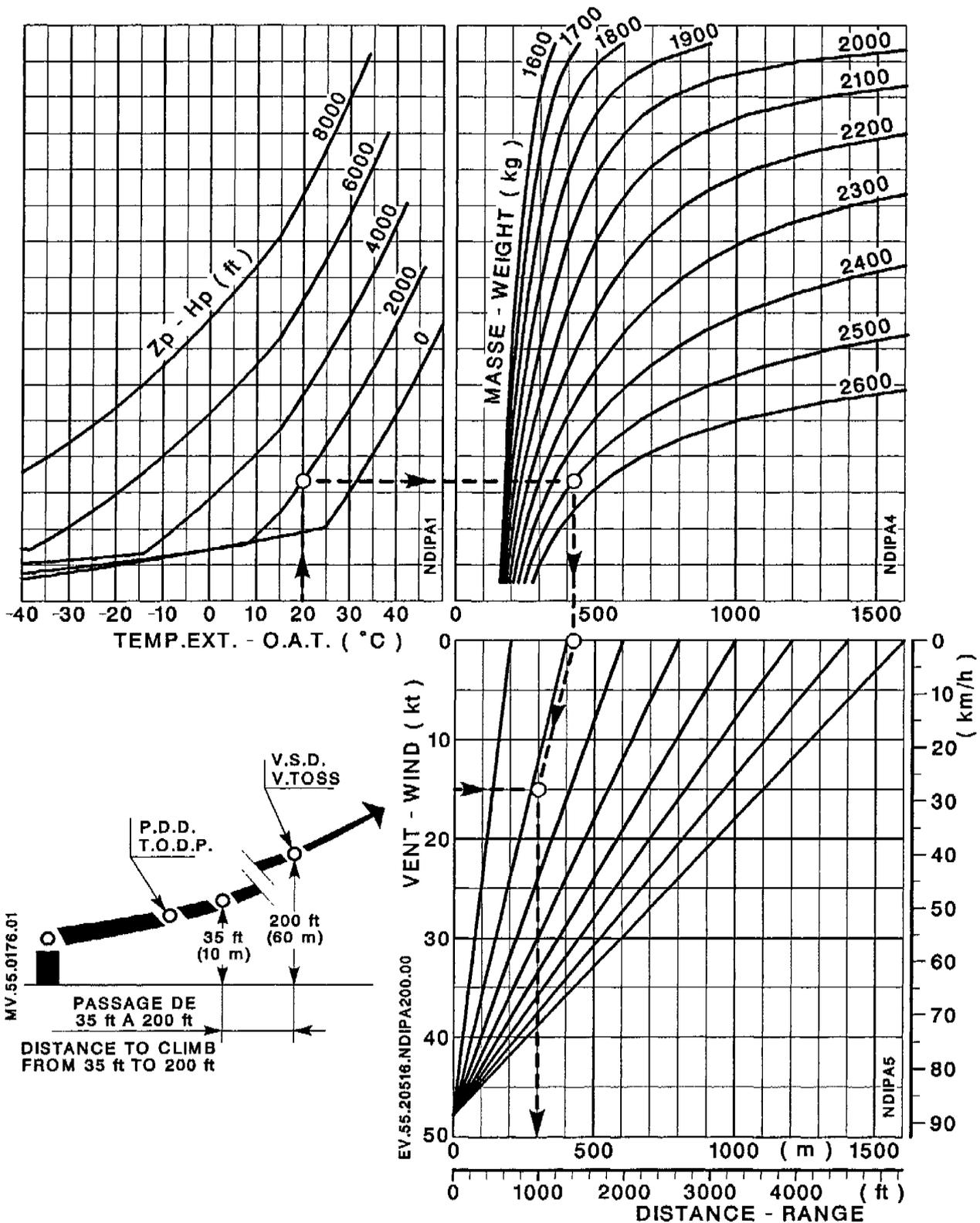


Chart 7

CONDITIONS :

- One engine failed after T.O.D.P.

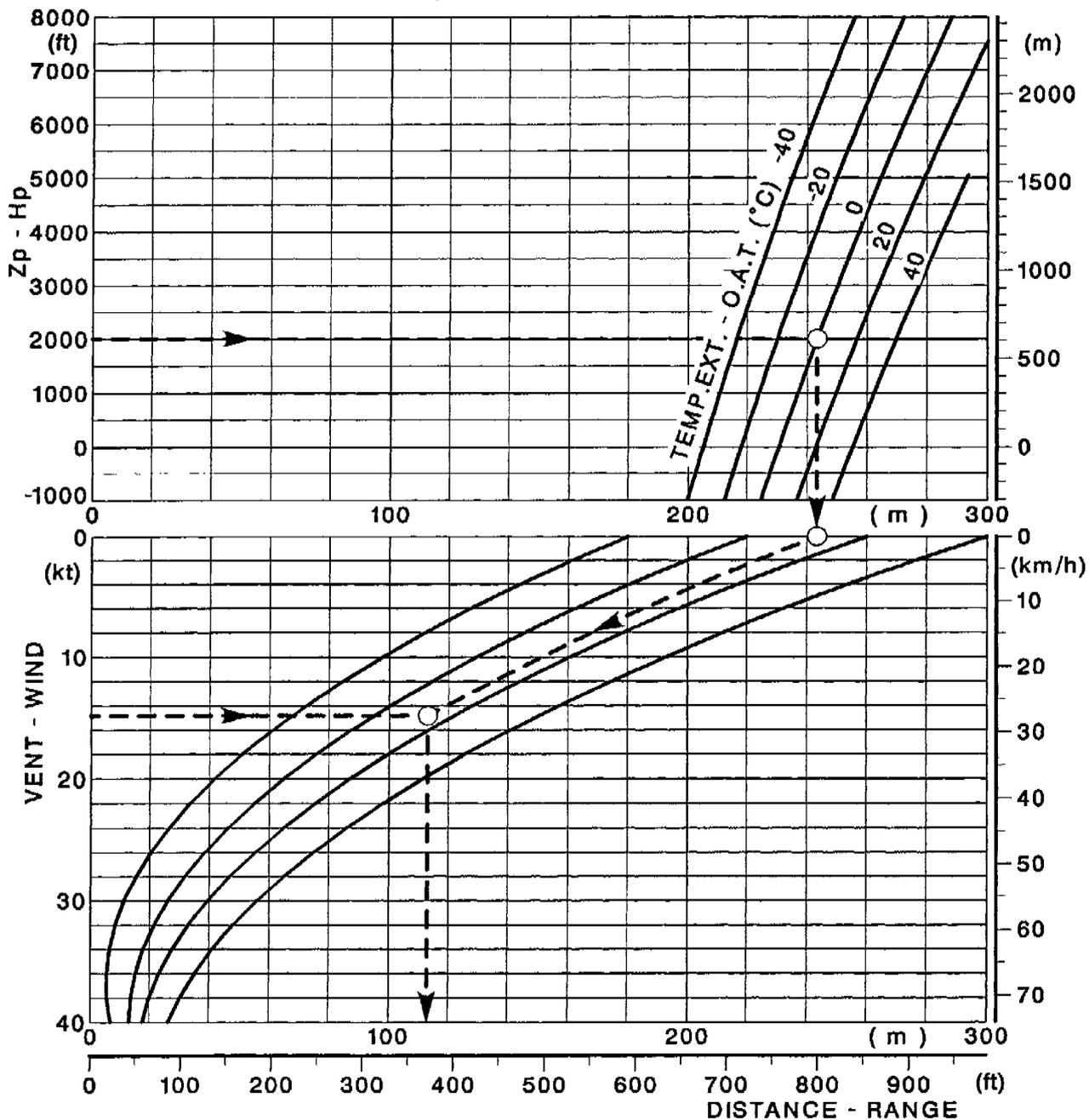
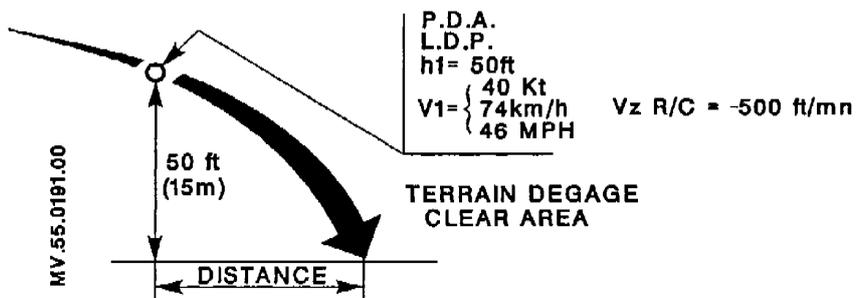
DISTANCE BETWEEN THE 35-ft (10 m) OBSTACLE AND THE 200-ft (60 m) OBSTACLE ON TAKEOFF

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Chart 8

CONDITIONS :

- One engine failed after LDP
- Applies to all weight conditions
- True wind

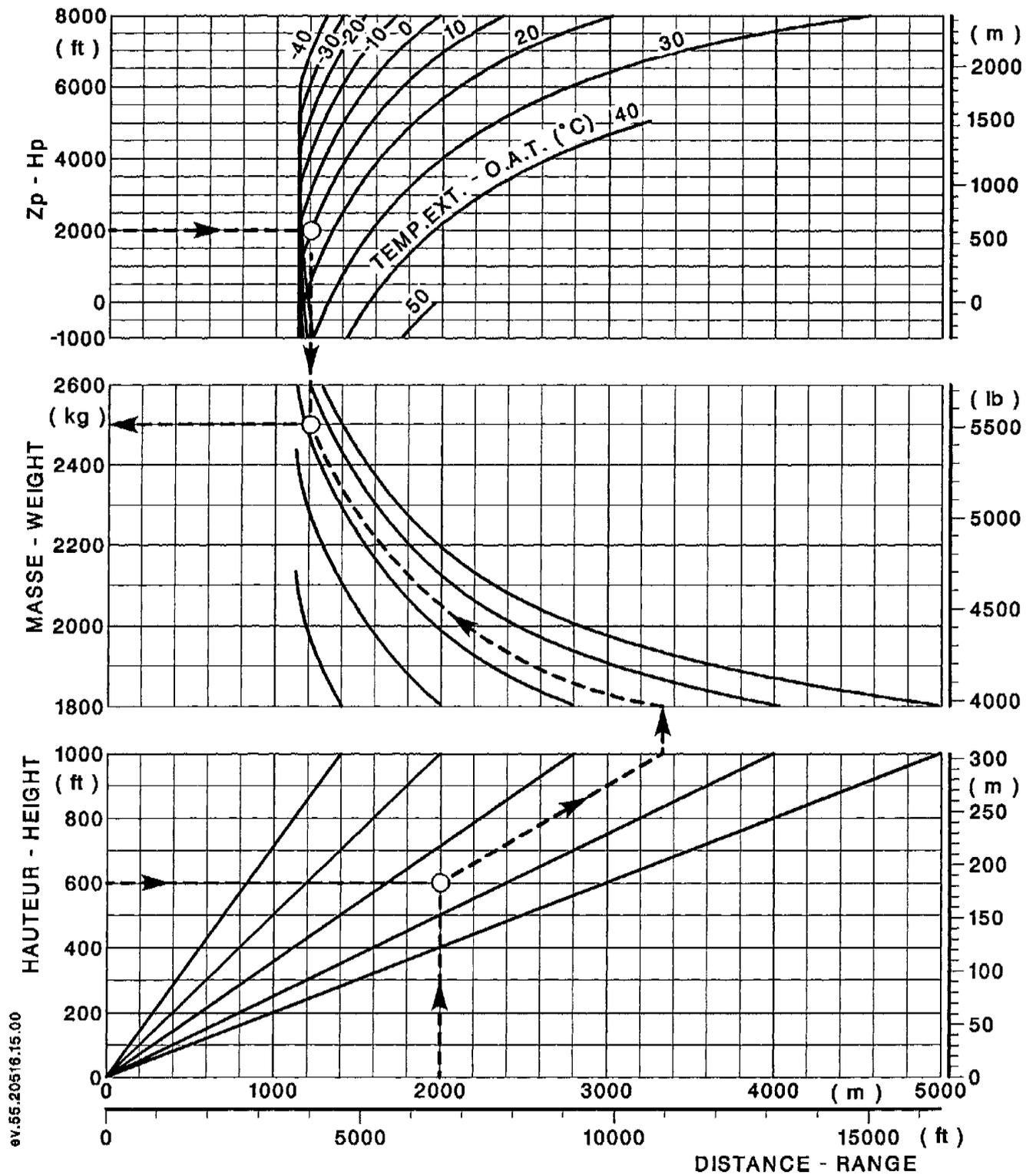
LANDING DISTANCE FROM 50-ft (15 m) HEIGHT TO STOP ON A CLEAR AREA

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Chart 9

CONDITIONS :

- One engine failed after T.O.D.P.

TAKEOFF WEIGHT VERSUS PATH IN ZERO WIND

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FLIGHT MANUAL

AS 355 N

SUPPLEMENT

IFR FLIGHT

Per drawings : 82 9707.03 single-pilot configuration
82 9707.04 two-pilot configuration

IMPORTANT NOTE

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Page 1

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SUP. 4		3	89-24				
SUP. 4		4	89-24				
SUP. 4		5	89-24				
SUP. 4		6	96-20	R			
SUP. 4		7	92-45				
SUP. 4		8	96-20	R			
SUP. 4		9	92-45				

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355 N

SUP.4.P5

1 GENERAL

The equipment items and installations required for IFR flight are defined in the LIMITATIONS section.

It has been verified that the following optional equipment items can be installed :

- a 2nd gyro compass, a transponder, a DME, an elevation- and azimuth-adjustable landing light, a 2nd VOR with IVG indicator, a radio altimeter (required for the GLIDE part of the coupler ILS function), a radar, an HF SSB unit and a radio-beacon receiver.

2 LIMITATIONS

The limitations given in the basic Flight Manual and relevant Supplements remain applicable and are completed or modified by the following limitations.

2.1 Minimum equipment required for IFR flight

2.1.1 Single-pilot configuration

The aircraft must be fitted with special equipment items and installations which are the following :

- a dual a.c. and d.c.power supply system
- an instrument panel capable of accommodating the required equipment.
- an automatic pilot with a coupler and a failure monitoring unit (as per the relevant Supplement).
- two radio communication transceivers.
- two radio navigation units.
- an intercom system with two selector switches.
- two headsets within the pilot's reach.
- two gyro-horizons : one is supplied from an emergency battery and is fitted with a built-in side slip indicator, the other ensures the Flight Director mode.
- a gyro compass associated with an HSI.
- an air data system including :
 - . a dual static pressure circuit
 - . a dual dynamic pressure circuit with anti-ice provision
 - . an air data (BARAN) module mounted in the secondary pitot/static system, which sends pressure data to the AP.
- an elevation-adjustable landing light installation
- a pilot's windshield wiper installation.

2.1.2 Two-pilot configuration

In addition to equipment items listed above, the following must be mounted on the LH section of the instrument panel :

- Altimeter, airspeed indicator, gyro horizon, vertical speed indicator, gyro compass, auto-pilot monitoring panel, rotor speed indicator.

In addition to these, the fully-equipped dual controls and the co-pilot's windshield wiper must be installed.

NOTES : (1) - Equipment items called for by the operational regulations of the country concerned must be approved, installed and serviceable.

- Radio-communication and radio-navigation systems must be adapted to ground installations and to operational regulations in force.

(2) In two-pilot configuration, take-off to return to base for repair is authorized with only the basic autopilot in operation (i.e. without failure monitoring unit or coupler) and one of the two pilots keeping his hands on the controls.

2.2 Types of operation approved

IFR flights except in icing conditions.

2.3 Approved IFR operating envelope

- Maximum pressure altitude : 12000 ft (3658 m)
- Airspeed : . minimum IFR speed = 55 kts (102 Km/h - 63 MPH)
- . recommended climbing speed = 65 kts (120 Km/h - 75 MPH)
- . vertical (climbing or descent) speeds : equal to or lower than \pm 1200 ft/min.

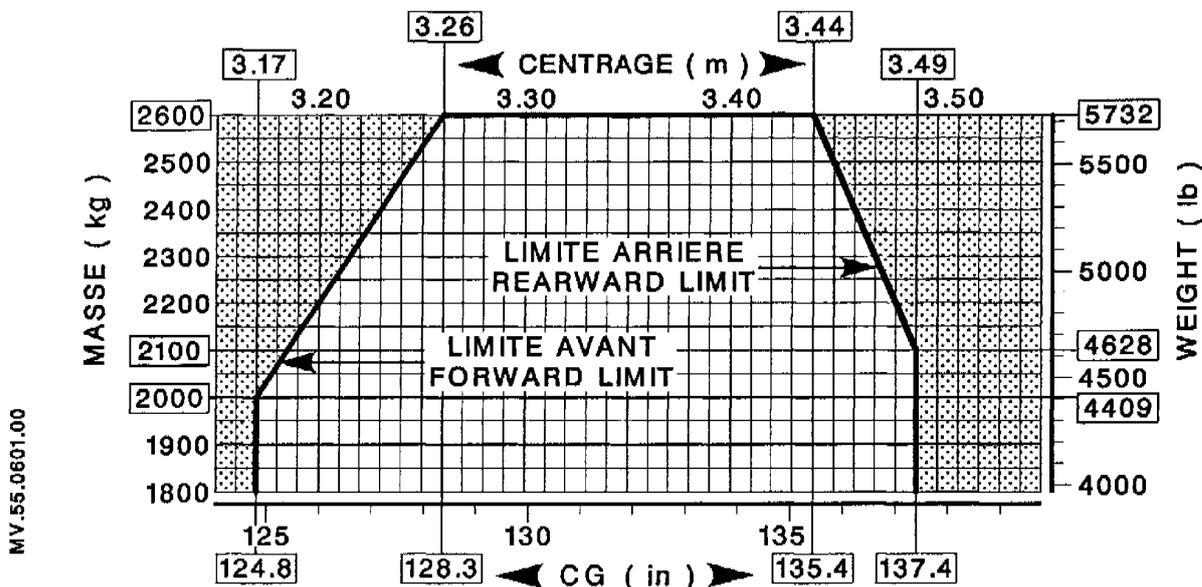
2.4 C.G limits

- Forward C.G : 3.17 m (124.8 in.) if weight does not exceed 2000 kg (4409 lbs).

Refer to graph below if weight exceeds 2000 kg

- Aft C.G : 3.49 m (137.4 in.) if weight does not exceed 2100 kg (4625 lbs)

Refer to graph below if weight exceeds 2100 kg.



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3 EMERGENCY PROCEDURES

The procedures laid down in section 3 remain applicable and are completed or modified by the following :

3.1 Engine failure on approach

Maintain an airspeed above the minimum IFR speed 55 kts (102 Km/h – 63 MPH) until transition to VMC conditions. Then return to the critical landing point : 40 Kts (74 Km/h – 46 MPH) and 50 ft.

3.2 Electrical power failure

3.2.1 Loss of a generator or of a static inverter

The flight may be continued without any restriction as redundancy is ensured by the other equipment (2nd generator or 2nd static inverter).

3.2.2 Loss of both generators

In the event of a failure of the 2nd generator comply with the following procedure :

- If necessary switch on the overhead emergency lighting system.
- Engage both LH BUS SHED and RH BUS SHED (DELEST BUS G and D) push-buttons.
- Attempt to reset both generators.
- Check that the landing lights are off.
- Limit radio communications to a minimum.
- Switch off the following :
 - . LH static inverter,
 - . all radio-communication and navigation equipment not required to continue the flight.
 - . exterior lights (position and anti-collision lights),
 - . 2nd gyro compass, if fitted,
 - . copilot's gyro horizon, if fitted,
 - . coupler,
 - . fuel transfer electro-valve, unless necessary,
 - . all unnecessary power-consuming or optional equipment.

NOTES : 1) If possible look for VMC flight conditions and plan a diversion route.

2) If the loss of the 2nd generator results from an engine failure do not attempt to restart the failed engine.

The flight times given as a guide are based on a battery capable of restoring 75 % of its rating, and on the strict observance of the shedding procedure.

In complete IFR flight conditions :

- . approximately 45 minutes with one 16-A/H battery
- . approximately 90 minutes with two 16-A/H batteries.

3.3 AFCS failure

- Should the failure monitoring unit fail to operate continue flight with hands on controls.
- In the event of reversion to manual piloting, the pilot should use the standby horizon as a reference.

4 NORMAL PROCEDURES

The normal procedures (particularly those concerning the autopilot and associated tests) given in the basic Flight Manual and Supplements remain applicable and are completed by the following procedures :

4.1 External checks

Position 2

Checks in LH hold are to be completed as follows :

Emergency battery : Security, condition, connection, rating test
(relevant light should illuminate when a battery contactor and the standby horizon are set to ON).

4.2 Checks before starting the engines

- Switch on the normal battery, then the emergency battery and check that the standby horizon operates correctly (horizon ball stabilizes, then flag disappears).
- Switch off the normal battery, and check that the standby horizon operates correctly (flag not visible)
- Switch the normal battery on again.
- When testing the failure warning panel check that the two bulbs of each caption illuminate (dual power supply from essential sub-busbars).

4.3 Checks after starting

- d.c. supply
Check output voltage and current from each generator are correct.
- a.c. supply
Using the selector switch check 26 V and 115 V voltages from each one of the following three cases of distribution :
 - . RH static inverter set to ON
LH static inverter set to OFF
 - . LH static inverter set to ON
RH static inverter set to OFF
 - . RH and LH static inverters set to ON.

4.4 Cruising flight

- Avoid flight in thick vertically-building clouds and in lightning hazard areas.
- Avoid abrupt maneuvers at speeds below 65 knots (120 Km/h – 75 MPH) as well as turns with a bank angle greater than 30°.

4.5 Approach

Airspeed without coupler is between min. IFR speed (55kts) and max. permissible speed.

Recommended airspeed with coupler in operation is between 80 and 120 kts (148 and 222 Km/h – 92 and 138 MPH).

NOTE : Avoid ILS approach with coupler engaged at speeds below 80 knots.

Max. approach slope angle = 4.5°.

5 PERFORMANCE

Performance data is identical to that approved for the basic aircraft. Only IFR climbing performance data at 65 Kts (120 Km/h – 75 MPH) on one or both engines is affected. To obtain the data refer to the following charts. Reduce the performance data by 8 % when the sliding door(s) is (are) in the open position.

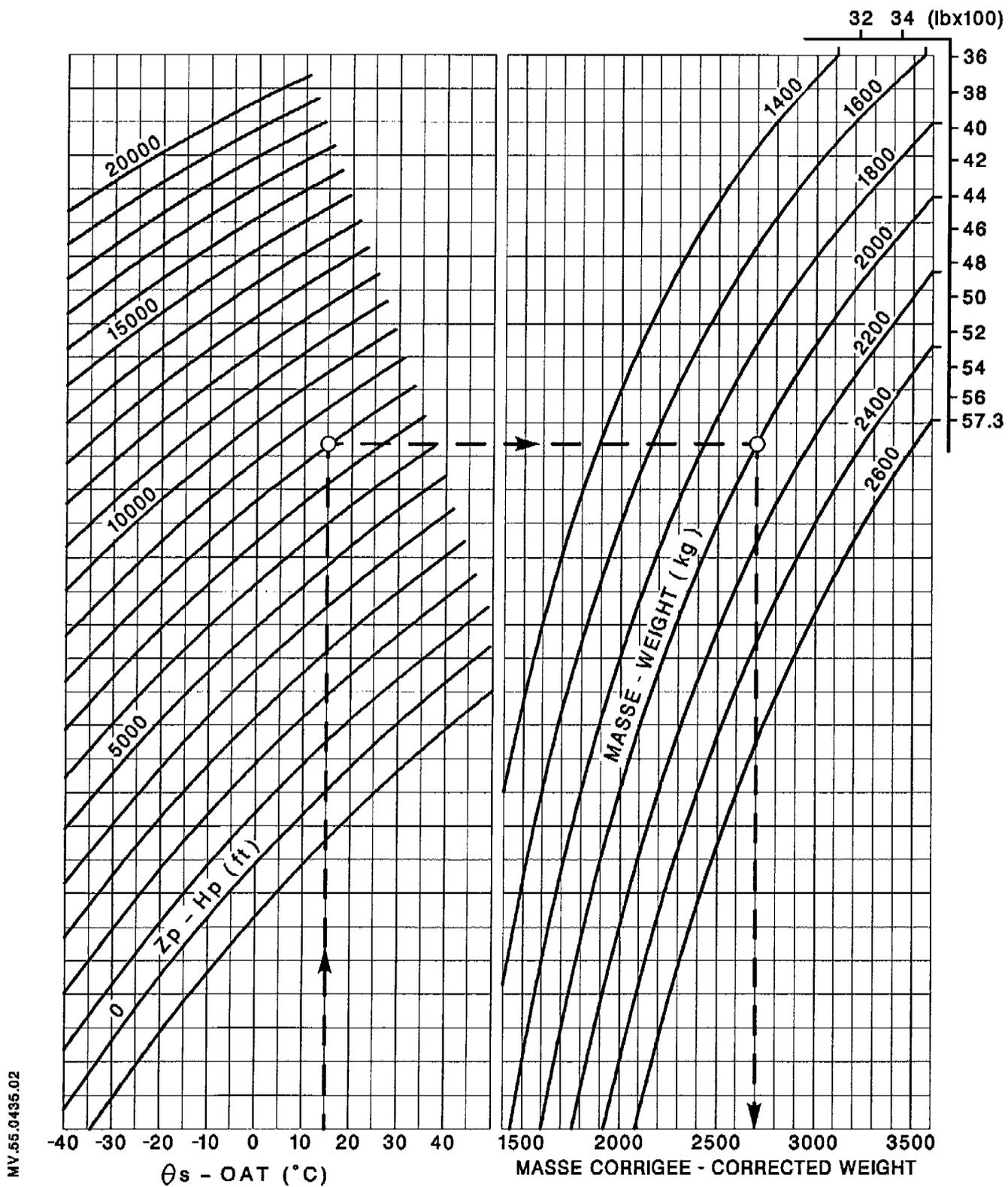


Figure 1

CORRECTED WEIGHT FOR
DETERMINING THE R/C
(FROM THE FIGURE
OPPOSITE)

R
R
R
R

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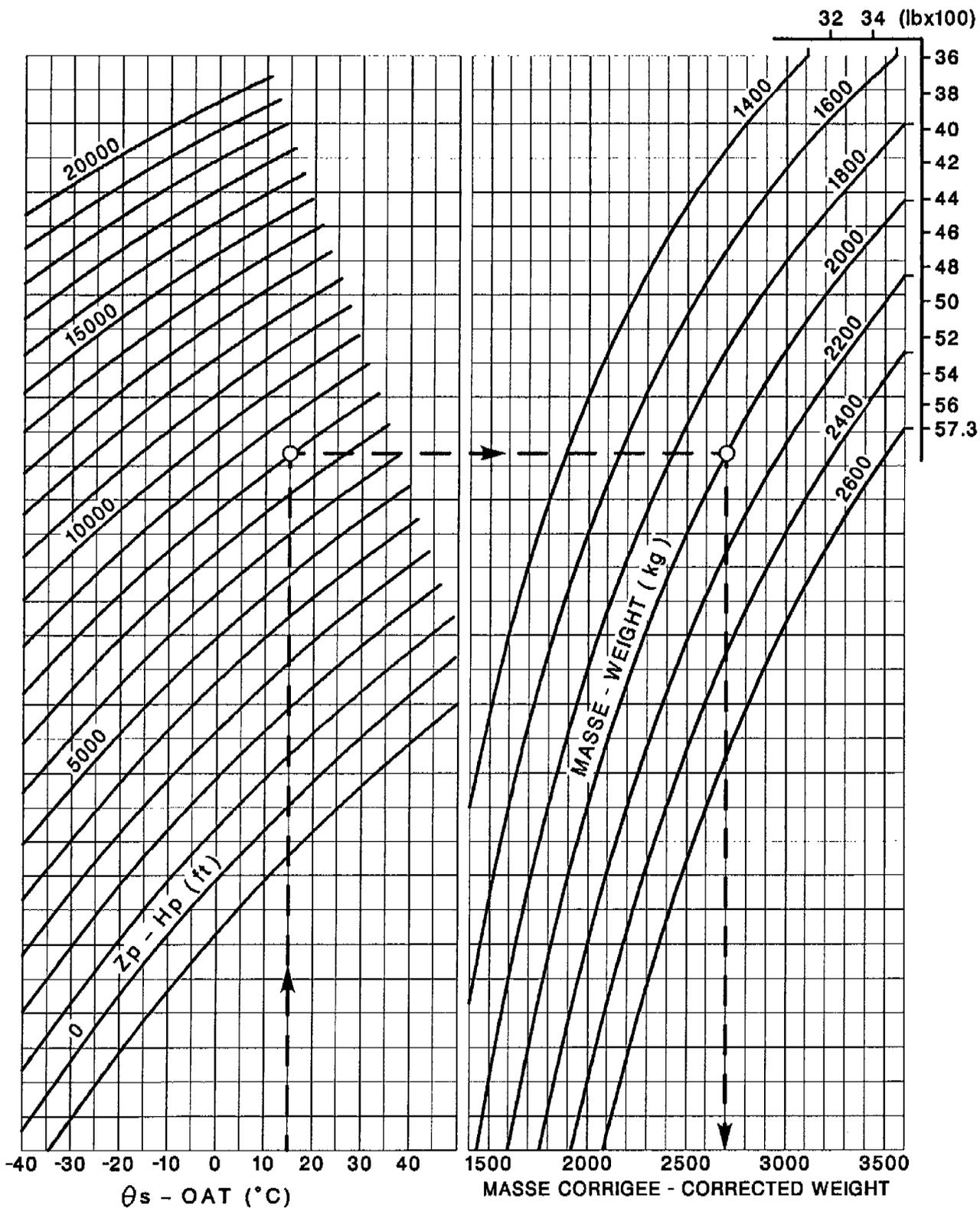


Figure 1

CORRECTED WEIGHT FOR
DETERMINING THE R/C
(FROM THE FIGURE
OPPOSITE)

R
R



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

ENGINE FAILURE TRAINING PROCEDURES
(TRAINING MODE)

IMPORTANT NOTE

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Page 1

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SUP. 5	2	91-50	R				
SUP. 5	3	91-50	N				

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Page 1

1 GENERAL

This procedure allows engine failure training by restricting the power of the remaining engine to non-damaging values.

The gas generator speeds (Ng) at Training Maximum Contingency Power and at Training Intermediate Contingency Power are automatically obtained by reducing the limit values by 3.7 %. Likewise the Max. Contingency Power fuel flow limit of (172 l/h) is replaced by a Training Max. Contingency Power limit of (136 l/h) and a Training Intermediate Contingency Power limit of (127 l/h).

The Ng difference indicator, in training mode, is artificially offset by 3.7 % to yield the same Maximum and Intermediate Contingency Power values.

2 LIMITATIONS

R

All the limitations specified in the basic Flight Manual and relevant supplements remain applicable.

R
R3 EMERGENCY PROCEDURES

R

All the emergency procedures remain applicable.

R

4 NORMAL PROCEDURES

- Power reduction on one engine

- . Make sure the folding guard inhibits switching to "OFF" (ARRET).
- . Set the OFF/TRNG/FLT (ARRET-ECOLE-VOL) selector to TRNG (ECOLE).

Reducing power on one engine will cause the amber "TRAINING" caption to illuminate and the free turbine to rotate at a speed corresponding to 355 rotor rpm. Should the NR pointers happen to resynchronize (power is lost on the second engine), the first engine would be capable of outputting its normal Maximum Contingency Power at a rotor speed of roughly 330 rpm without any pilot action other than increasing the collective pitch. This increase must be considerable to allow for the drop in rotor speed, and obtain the engine Max. Contingency Power.

- Limitations on second engine

The laws governing the second engine's gas generator speeds (Ng) at Max. and Intermediate Contingency Powers and its fuel flow limit are offset as defined in paragraph 1 above.

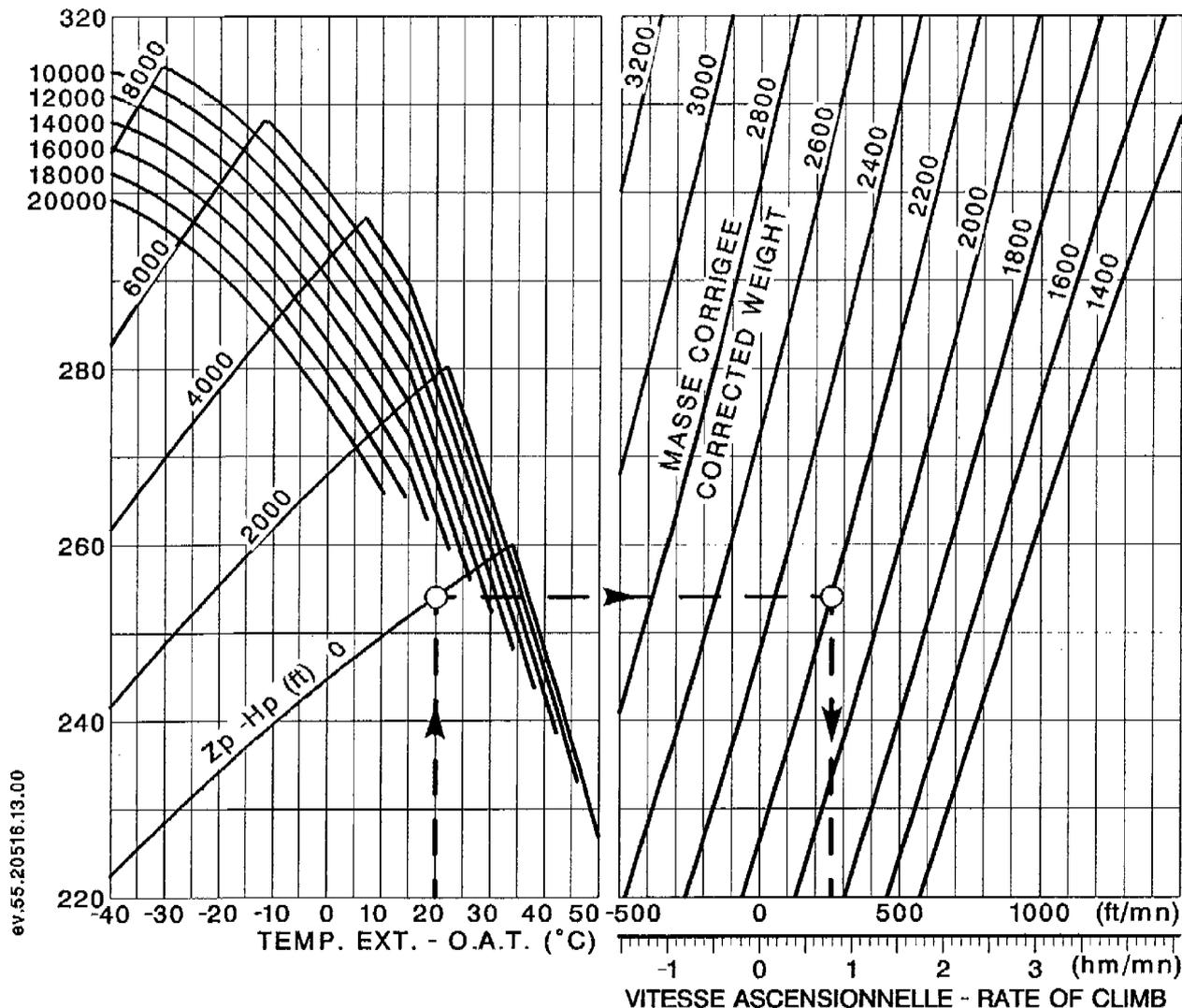
- Follow the normal procedure applicable in case of engine failure and observe the required limitations, in particular :
 - . minimum rotor speed signalled by the horn.
 - . Intermediate Contingency Power selected no later than 2 min. 30 sec. after failure.

Reminder : Should a real failure occur on the engine providing the power for obtaining the Maximum Contingency Power from the engine whose power was deliberately reduced, there is no need to reselect "FLT" (VOL) on the "OFF/FLT/TRNG" (ARRET-VOL-ECOLE) selector of the latter engine.

5 PERFORMANCE

In TRAINING mode, the rate-of-climb at the forward speed of 55 kt are shown on the following chart.

R
R



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CONDITIONS

- TRAINING mode
- IAS 55 kt
- Heating and demisting systems off

RATES-OF-CLIMB ON
1 ENGINE

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A B D E F G H



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

TRAINING PROCEDURES FOR ENGINE GOVERNOR

FAILURES

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Page 1

1 GENERAL

This procedure allows training for governor failure on one engine while keeping automatic fuel control on the second engine.

In case of total failure of the governor (red REG warning light illuminates), the fuel metering unit locks at its current value.

The pilot must then manually meter the fuel using the emergency fuel flow control lever (See Section 3.1, paragraph 6).

- Failure simulation

Moving the "AUTO-MAN" selector to "MAN" produces the same effect as a real failure.

In flight, it is prohibited to perform engine governor failure training procedures on both engines simultaneously. R
R

- . The fuel metering unit is locked.
- . The red REG light on the failure warning panel is illuminated.
- . The red light on the corresponding control lever is illuminated.

2 TRAINING PROCEDURES

In stable flight set the "AUTO-MAN" selector of one engine to "MAN".

Apply the appropriate emergency procedure (red REG warning light illuminates).

IMPORTANT

It is possible to switch back to the automatic fuel control mode at any time by resetting the selector to "AUTO" (red REG light extinguishes) and by moving the emergency fuel flow control lever into the "normal" gate (control lever light and amber REG light extinguish).



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

INSTALLATION FORWARD TWO-PLACE SEAT

Per drawings : 350A 82.2129.00
350A 82.2128.01

IMPORTANT NOTE

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Page 1

1 GENERAL

This supplement applies to the aircraft equipped with the two-place seat which is mounted in lieu of the copilot's seat and allows seven persons to be transported.

2 LIMITATIONS

Apart from the maximum number of occupants raised to seven, the limitations specified in the basic Flight Manual and relevant Supplements remain applicable.

- It is mandatory to remove the optional dual controls before installing the forward two-place seat.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and relevant Supplements remain applicable.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and relevant Supplements remain applicable.

Great care must be exercised in determining C.G. limits.

CAUTION : EMPTY WEIGHT C.G. LIMITS ARE TO BE DETERMINED IN ACCORDANCE WITH THE INFORMATION CONTAINED IN THE MAINTENANCE MANUAL WORK CARD No 25.22.20.401.

NOTE : Flying with one pilot, then with 7 persons on board present very significant differences in C.G. limits. It is imperative that this be checked in every configuration.

Determination of C.G. limits

Forward two-place seat	350 A 82.2128.01 350 A 82.2129.00
Weight	11.4 kg – 25.22 lb
Moment	19.4 mkg – 1688 inlb

Front passengers distance : 1.70 m – 66.93 in.

kg	50	60	70	80	90	100	110	120	130	140	150
m.kg	85	102	119	136	153	170	187	204	221	238	255

lb	100	125	150	175	200	225	250	275	300	325
in.lb	6693	8366	10039	11712	13386	15059	16732	18405	20079	21752

5 APPROVED PERFORMANCE

The approved performance data given in the basic Flight Manual and relevant Supplements remain applicable.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

SKI INSTALLATION

350A 82-8030 SEFA
350A 82-8031 SURFAIR

IMPORTANT NOTE

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Page 1

1 GENERAL

The ski installation permits landing on or take-off from normal or snow-covered ground.

The skis are secured to the skids by means of clamps. With the SURFAIR skis, it is possible to carry four pairs of alpine skis.

2 LIMITATIONS

The limitations specified in the basic Flight Manual and relevant Supplements remain applicable with the exception of the following specific limitation :

- Maximum permissible weight : 2540 kg (5600 lb).

R
R
R

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and relevant Supplements remain applicable.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and relevant Supplements remain applicable.

Great care should be exercised to the tail rotor ground clearance when landing in deep snow.

With the SEFA skis (P/N 350A82-8030), it is advisable not to exceed a weight of 2300 kg.

5 APPROVED PERFORMANCE

The approved performance data given in the basic Flight Manual and relevant Supplements remain applicable.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

AIR EQUIPMENT OR BREEZE

ELECTRIC RESCUE HOIST

As per drawing : 350 A82 – 8002
350 A82 – 8003

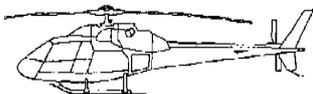
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Page 1

1 GENERAL (Figure 1)

The hoist installation is designed to lower or haul on board people or loads, while the aircraft is hovering.

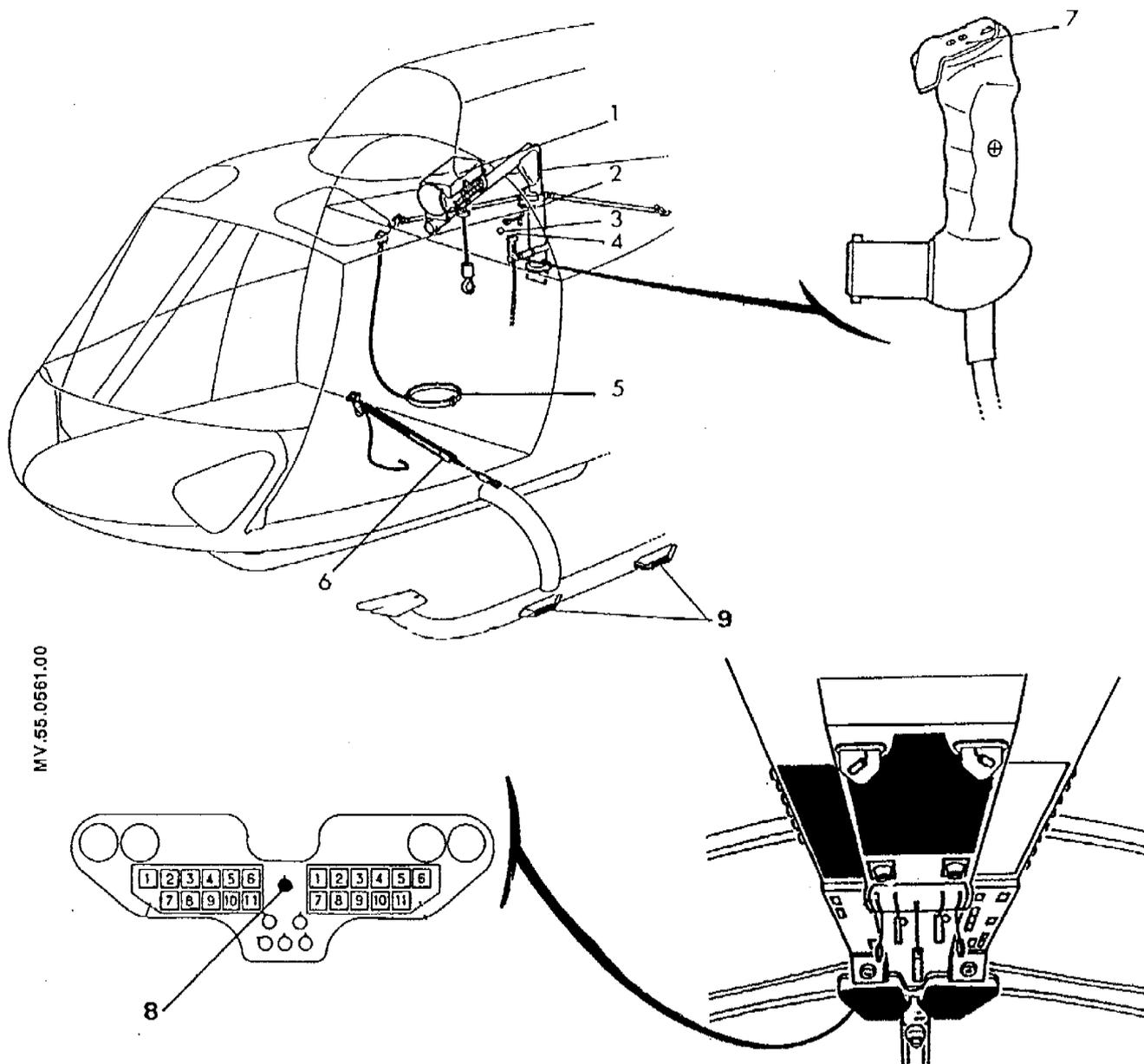
The aircraft can be fitted with either of the two electric hoists :
BREEZE BL 16 600 or AIR EQUIPEMENT 76 370.

The hoist installation comprises essentially :

- a pivoting jib (2) provided with a locking bolt (3), mounted on the port side of the helicopter.
- an electrically operated winch (1) fitted with :
 - . a 33.5 metre (110 ft) cable - BREEZE hoist
 - . a 40 metre (130 ft) cable - AIR EQUIPEMENT hoist
- a snap hook mounted on a pulley-block tackle (6)
- an electrical control system available to the crew
 - . controls available to the pilot :
 - a mission selector switch (8) that makes power available to the system, when selected to TREUIL (HOIST),
 - a cable release guarded push-button mounted on the collective pitch lever, which is used to sever the cable in an emergency.
 - . controls available to the hoist operator :
 - a rocker switch (7) mounted on the hoist operator's control grip, which is used to raise, lower and stop the cable.
- two cable guards (9) secured to the L.H. landing gear skid.
- A pair of shears stowed on the rear wall allows the hoist operator to sever the cable, if necessary.

The system is protected by :

- . a 100-amp. fuse provided in the electrical master box ;
- . a 60-amp. fuse (4) provided on the rear wall near the hoist operator's grip support. Both these fuses power the hoist ;
- . two 2.5-amp. fuses protecting the "emergency release" circuit ;
- . a 2.5-amp. fuse protecting the "up-down" circuit.



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Figure 1

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2 LIMITATIONS

HOIST OPERATIONS MUST BE IN ACCORDANCE WITH OPERATING REGULATIONS GOVERNING THESE OPERATIONS.

The limitations laid down in Section 2 remain applicable with the addition of the following specific points :

- Minimum crew : one pilot and one hoist operator
- Maximum load on the hoist cable : 136 Kg (300 lb)
- Landing with a suspended load of 136 kg (300 lb) is not permissible.

3 EMERGENCY PROCEDURES

The hoist system incorporates a pyrotechnic cable cutter controlled by a guarded push-button mounted on the pilot's collective pitch lever grip. When selector switch (8) is set to TREUIL (HOIST), this permits the cable to be released in an emergency.

In the event of a complete electrical failure, have the cable severed by means of the mechanical shears available to the hoist operator.

4 NORMAL PROCEDURES

Make sure that both cable guard pads are present and firmly secured to the landing gear skid.

The jib locking bolt and the hoist operator's control grip complete with support must be installed before take-off.

The hoist must be controlled by the hoist operator attached with safety belt (5) and standing on the left side of the cabin. A control grip stowed on the rear wall and provided with an UP-DOWN rocker switch (7) marked M/U - D is available to the operator.

To carry out a hoisting operation :

- Stabilize the aircraft in hover above the hoisting site
- Ensure sufficient power reserve is available that will permit to move off in forward flight once the load is hoisted on board.
- Set the jib in hoisting position
- Set mission selector switch (8) to TREUIL (HOIST).

The hoist operator can now control the winch. To bring the load into the cabin, unlock the jib and pivot it inwards.

The snap-hook can be used to hold the load while the hoist cable is being unhooked.

Do not move off in forward flight until the load is hoisted on board.

With the "AIR EQUIPEMENT" hoist, when rigid compact loads (over 80 kg – 176 lb) are being hoisted, inconsequential oscillations may appear. They do not interfere with the operation of the hoist.

NOTE 1 : AIR EQUIPEMENT hoist

Overheating of the winch motor must be avoided. Consequently, never exceed 6 consecutive hoisting operations plus one descent with maximum load and maximum cable reel-out or equivalent.

NOTE 2 : BREEZE hoist

After each operation of the winch (lowering or raising) wait 30 seconds. After three complete cycles (first lowering with maximum load ; the following two lowerings with no load ; plus three raisings at full load) it is recommended to stop the winch for forty minutes.

5 PERFORMANCE

With hoist jib folded, the performance data laid down in Section 5.1 remain applicable except the climbing performance data which are decreased by :

- 100 ft/mn – 30 m/mn with two engines in operation
- 20 ft/mn – 6 m/mn with one engine in operation.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

EMERGENCY FLOATATION GEAR

as per drawings : 350 A 82 8042
350 A 82 8043

(After Mod. AMS 07.1333)

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Page 1

1 GENERAL

The emergency floatation gear allows the helicopter to alight on water in emergency.

Percussion goes with an explosion sound and causes the floats to inflate in less than 3 seconds.

With the float bags inflated, the flying qualities are only slightly affected.

Furthermore, this system allows the helicopter to land on airstrip or prepared hard ground with the floats inflated.

The emergency floatation gear consists of :

- two floatation bags, each stowed on a skid (Figure 1), which, in the upper position, allow the handling wheels to be installed.
- an inflation system and cylinder for each floatation bag
- a dual electrical control system
- a mechanically-operated percussion control, fitted as an option.

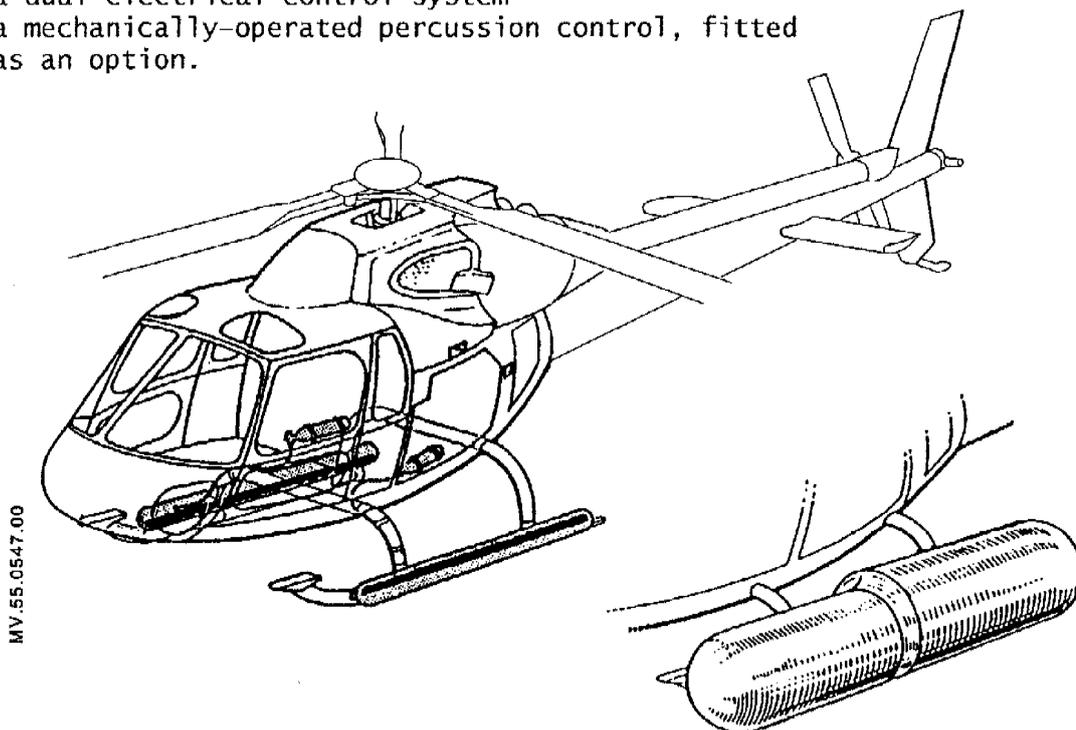


Figure 1

2 LIMITATIONS

All limitations specified in the Section 2 of the Flight Manual and in the relevant supplements remain applicable, independently of the following :

2.1 AIRSPEED LIMIT

- Floats stowed with System not armed
 - . no special limitations

- Floats stowed with System armed or floats inflated
 - . maximum IAS in power-on flight : 135 kt (250 km/h - 155 MPH)
 - . maximum IAS at less than 2 x 20 % torque : 100 kt (185 km/h - 115 MPH)
 - . limiting inflation altitude : 6600 ft (2000 m)
- take-off is prohibited after emergency landing on water.

2.2 Minimum weight

When the O.A.T. is lower than 0°C, the minimum weight should remain greater than 1550 kg (3417 lb) in order to comply with the min. rotor rpm upon engine failure.

3 EMERGENCY PROCEDURES

Should emergency landing on water be necessary, proceed as follows :

- Press instrument panel push-button to arm the emergency floatation gear.
- Press push-button on collective pitch lever to fire the system.
Recommended firing speed not to exceed 80 kt - (148 km/h - 92 MPH).
- Alight broadside-on to the sea swell and avoid ramming the nose of the floats on touch-down.

NOTE : When optional mechanically-operated percussion system is fitted, sharply pulling (6 to 8 kg load approx.) the handle causes immediate inflation of the emergency floatation gear even if the EMERG FLOAT ARMING (ARM FLOT S) push-button has not previously been pressed in.

WARNING : WHEN THE HELICOPTER IS AFLOAT, THE DOORS MUST BE JETTISONED TO FREE THE EXITS.

4 NORMAL PROCEDURES

Normal procedures specified in the Flight Manual remain applicable, independently of the following :

- External checks :
 - . Float covers properly closed
 - . Correct cylinder pressure
 The following limit values are applicable :

OAT (°C)		-40	-30	-20	-10	0	10	20	30	40	50
PRESSURE (BARS)	MAX.	256	266	277	287	298	309	321	332	344	356
	MIN.	238	248	258	268	279	290	301	312	324	335

NOTE : A placard located near the cylinders indicates the limit pressure values.

- . Float elements locked down
 - Pre-start checks :
 - . engage the EMERG FLOAT ARMING (ARM FLOT S) push-button
 - . with the aircraft battery on, ensure that both LH and RH push-button lamps illuminate
- NOTE : Two generally engaged circuit-breakers mounted near the external power receptacle protect the system.
- Prior to take-off and landing :
It is recommended to arm the emergency floatation gear prior to take-off and landing when flying over the sea is contemplated.

5 PERFORMANCE

With the emergency floatation gear in stowage position, the performance data given in Section 5.1 apply, except the climbing performance figures which are reduced as follows :

- Two engines in operation : 50 fr/mn - 15 m/mn
- one engine in operation : 30 fr/mn - 9 m/mn.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

TRANSPORT OF EXTERNAL LOADS

"CARGO SWING"

PER DRAWINGS : 355A 82-2160
355A 82-2161

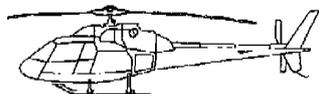
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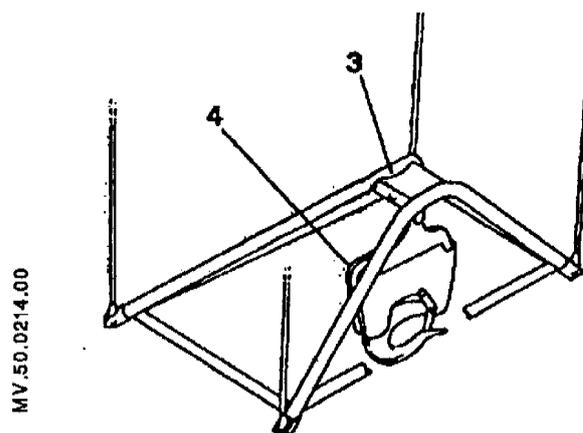
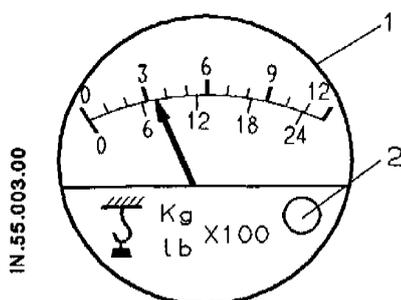
1 GENERAL

The external CARGO SWING load carrying installation includes :

- A hanging chassis (3) intended to reduce swinging of load and is provided with a release unit (4) that allows hook electrical opening in normal operation and mechanical opening in emergency. R
R
- Controls and monitoring system available to the pilot, comprising :
 - . A load indicator (1) on the instrument panel, with a zero setting control (2). R
R
 - . An electrical system supplying power to the normal release circuit via a mission selector switch on the overhead panel and a control provided on the pilot's cyclic stick. R
R
 - . An emergency release control handle mounted below the collective pitch lever. R
 - . A lever for resetting the mechanical control, provided underneath the cabin, when the system is not fitted with the automatic reset function. R
R

The circuits are protected by :

- A 16-Amp fuse for SLING (ELING) normal release circuit.
- A 2.5-Amp fuse for SLING LOAD (CHARGE ELINGUE) indicating circuit.



R
R

2 LIMITATIONS

EXTERNAL LOAD OPERATIONS MUST BE IN ACCORDANCE WITH OPERATING REGULATIONS GOVERNING THESE OPERATIONS

The limitations laid down in the basic Flight Manual remain applicable but are completed by the following limitations.

2.1 Maximum load

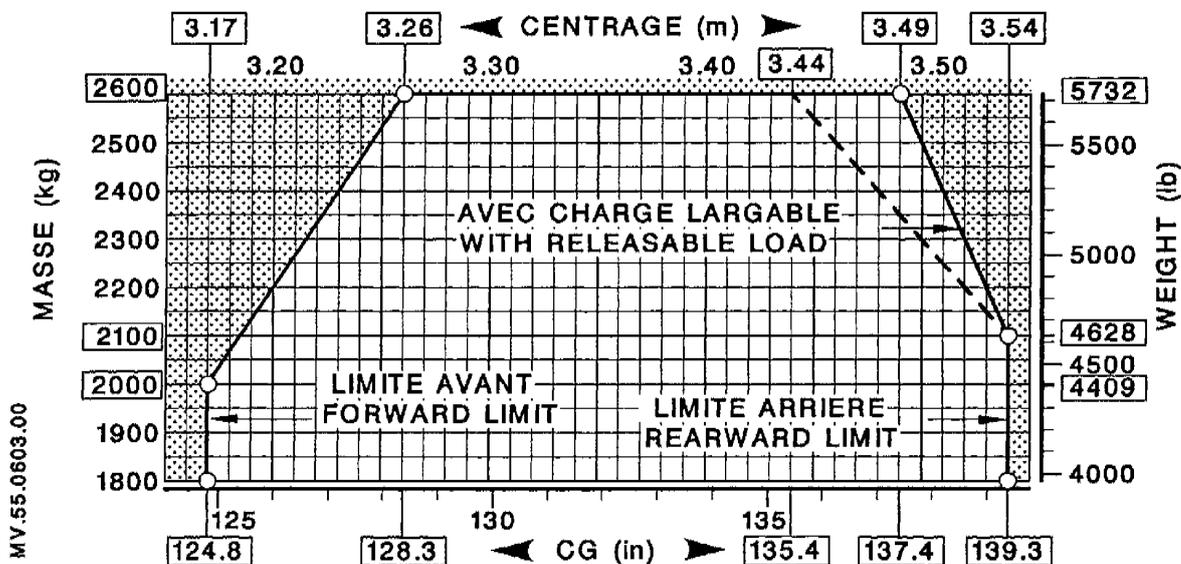
- The maximum permissible sling load is 1134 kg (2500 lb).

2.2 Maximum permissible weights

The maximum permissible weight is that at which hover OGE can be held.

2.3 Limit c.g. location

With an external load, the longitudinal c.g. limits are specified by the following chart according to the weight.



MV.55.0603.00

2.4 VNE

Absolute VNE, with a load on the hook is 80 kt (148 km/h – 92 MPH). Particular care must be exercised when bulky loads are being carried on the sling.

NOTE : The pilot is responsible for determining the limit speed according to the load and sling length.

2.5 Instruction plate

An instruction plate in the cockpit indicates :

CARRYING OF EXTERNAL LOADS

CLASSES OF APPROVED AIRCRAFT/LOAD COMBINATION : B
 WHEN EXTERNAL LOADS ARE CARRIED, NO PERSON MAY BE CARRIED UNLESS :

- HE IS A FLIGHT CREW MEMBER ;
- HE IS A FLIGHT CREW MEMBER TRAINEE ; OR
- HE PERFORMS AN ESSENTIAL FUNCTION IN CONNECTION WITH THE EXTERNAL LOAD OPERATION.

A plate, visible to the ground operator and located near to the hook, indicates, the maximum sling load.

R
R

3 EMERGENCY PROCEDURES

The emergency procedures laid down in the basic Flight Manual remain applicable but are completed by the following procedures :

R
R

ENGINE FAILURE WITH EXTERNAL LOAD

Should an engine fail, it could be necessary to release the load according to the circumstances.

The pilot shall take decision according to the conditions of weight and terrain configuration.

4 NORMAL PROCEDURES

The normal procedures laid down in the basic Flight Manual remain applicable but are completed by the following procedures :

R
R

Carrying heavy loads is a delicate operation, due to the possible effects of a swinging load on the flight behaviour of the helicopter. Consequently, pilots are advised to train with gradually increased sling loads before undertaking heavy load carrying operations.

WARNING : IN WET WEATHER, THICK RUBBER GLOVES SHOULD BE WORN BY THE OPERATOR HANDLING THE HOOK AND LOAD.
 RELEASE THE CHARGE OF STATIC ELECTRICITY BY PLACING AN ELECTRICAL CONDUCTOR CABLE OR TUBE BETWEEN THE GROUND AND THE CARGO RELEASE UNIT (Hook).

4.1 Check of the installation

On the ground, before carrying out an external load transport operation :

- Set function selector switch to CARGO SLING (ELING).
- Check that the hook opens correctly both in normal and jettison control modes.
- If necessary set the load indicator pointer to zero.

NOTE : On system which are not fitted with the automatic reset function, when the hook has been opened using the jettison control, the mechanical control must be reset using the lever under the cabin.

R
R
R

4.2 Take-off

- When the load is secured, apply collective pitch very smoothly, while maintaining the aircraft directly above the load. When the cables are taut, dwell briefly before raising the load.
- Lift the load off the ground vertically, keeping a watch on the load indicator, then move off in a forward climb.

4.3 Manoeuvres

All control movements should be made very gently, with very gradual acceleration and deceleration, and only slightly banked turns.

R
R

4.4 Landing

Establish zero translational ground speed sufficiently high to ensure that the load is not dragged along the ground, then descend vertically until the load is deposited. The load indicator reading is zero.

4.5 Load release

To release the load, operate the control provided on the pilot's cyclic stick while the sling is held slightly tight.

Check that the load is effectively released.

R
R
R
R

If the load is not off, actuate the jettison handle to clear it.

On systems which are not fitted with the automatic reset function, the mechanical control must then be reset by means of lever underneath cabin.

R

5 PERFORMANCE

The regulatory performance data are not affected.

The performance curves for hover flight OGE over the maximum weight without an external load are plotted in broken lines on the performance sheets given in Section 5 of the basic manual.

R
R
R



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

FUEL JETTISONING SYSTEM

PER DRAWING : 355A 82-5051

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or applicable flight manual supplements. The effectivity of the supplement at the latest revision is specified on the List of Effective Pages.

* ————— *

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



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Direction Technique Support - 13725 Marignane Cedex - France

DGAC Approved:

355 N

SUP.15.P1

A	B	D	E	F	G	H
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89-24

Page 1

LIST OF APPROVED EFFECTIVE PAGES
DGAC CERTIFICATION

- (1) Evolution page code
 - R : Revised, to be replaced
 - N : New, to be inserted

SUPPLEMENT	PAGE	DATE	(1)	SUPPLEMENT	PAGE	DATE	(1)
SUP.15	P1	1	N				
SUP.15	P5	1/01	N				
SUP.15		1	N				
SUP.15		2	N				
SUP.15		3	N				

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DGAC Approved:

355 N

SUP.15.P5

1 GENERAL

The fuel jettison system allows the aircraft to be rapidly lightened if necessary through quick drain of fuel.

Fuel jettisoning is achieved by operation of an electric valve at the bottom of each tank. An extension line prevents the fuel from splashing against the fuselage. Each valve is controlled via an electrical system from two push-buttons with frangible disk, provided on panels 5 ALPHA 1 and 5 ALPHA 2. Each system is protected by a fuse.

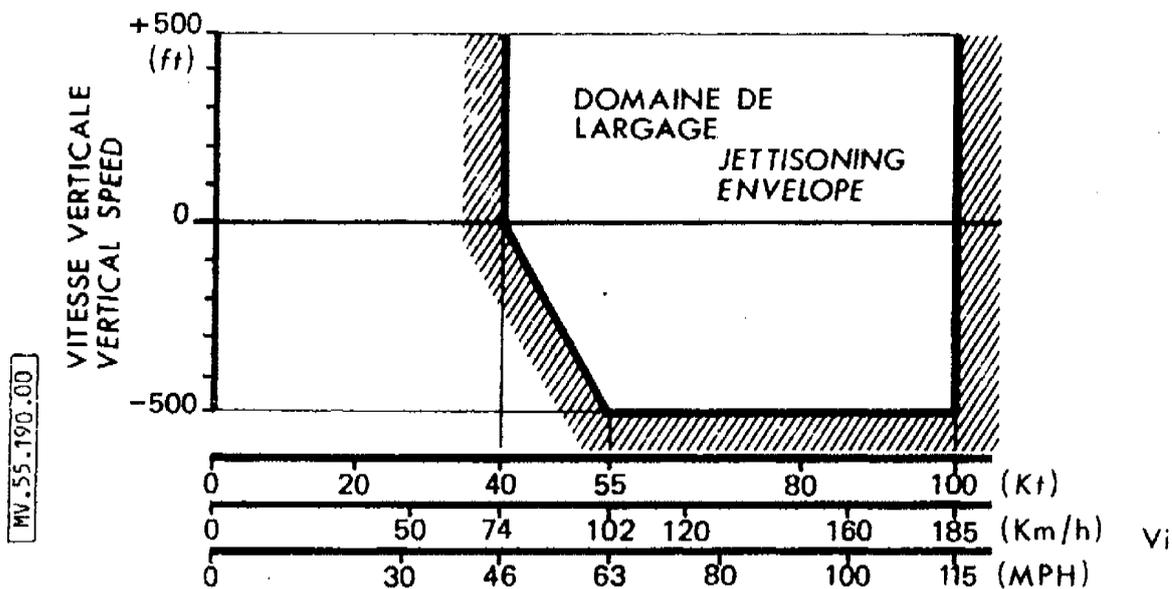
The non-jettisonable amount of fuel is :

- Fwd tank : 70 l 18.5 US gal. 15.4 UK gal.
- Rear tank : 69 l 18.2 US gal. 15.2 UK gal.

2 LIMITATIONS

All the limitations specified in Section 2 apply ; it should however be noted that :

- fuel jettison in hover is prohibited
- fuel must be jettisoned within the envelope below :



When both the fuel jettison system and emergency floatation gear are installed, fuel must be dumped before inflation of the emergency floatation gear (as necessary).

3 EMERGENCY PROCEDURES

All the procedures given in Section 3 apply.

Special recommendation

If necessary, jettison the fuel before landing while complying with the above limitations.

NOTE : Duration of jettison operation : 3 minutes approx. (full tanks and both valves opened). Jettisoning can be stopped by releasing the push-button.

Procedure :

- Select I.A.S. 55 kt – 102 km/hr – 63 MPH.
- Operate the system while complying with the longitudinal c.g. limits.
For this purpose :
 - . Medium c.g. location (if take-off is performed with a centre-of-gravity between 3.30 m and 3.51 m) :
Engage both control buttons simultaneously.
 - . Aft c.g. location (e.g. one pilot on board) :
 - 1) Press the control push-button corresponding to the rear tank (feeding the RH engine)
 - 2) Check for illumination of "FUEL JETTISON REAR" (VIDE VITE AR) control button.
 - 3) Check for proper jettisoning by monitoring the associated fuel contents indicator.
 - 4) Then press the forward tank jettison control button, if required. Should the rear tank jettison valve not operate, open fuel tank intercommunication cock and drain fuel through the forward tank taking care not to exceed 20 % difference between the fuel contents of both tanks.
 - . Forward c.g. location
 - 1) Press the control push-button corresponding to the forward tank (feeding the LH engine)
 - 2) Check for illumination of "FUEL JETTISON FWD" (VIDE VITE AV) control button.
 - 3) Check for proper jettisoning by monitoring the associated fuel contents indicator.
 - 4) Then press the rear tank jettison control button, if required. Should the forward tank jettison valve not operate, open fuel tank intercommunication cock and drain fuel through the rear tank taking care not to exceed 20 % difference between the fuel contents of both tanks.
- Release the control buttons and wait for 30 seconds before landing.

NOTE :

Since both jettison valves are fully independent (mechanically and electrically), each one can be operated separately.

4 NORMAL PROCEDURES

Independently of the procedure specified hereafter, the normal procedures of the Flight Manual remain applicable.

4.1 Pre-flight checks

Check extension pipes for condition and attachment.
Ensure that the push-buttons are fitted with the frangible disks.

4.2 Post-flight steps

If fuel has been jettisoned, replace the frangible disk.

5 PERFORMANCE

The performance data are not affected by this system.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

SAND FILTERS

Per drawing : 355A 82.5043

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or applicable flight manual supplements. The effectivity of the supplement at the latest revision is specified on the List of Effective Pages.

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95-23

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SUPPLEMENT	PAGE	DATE	(1)	SUPPLEMENT	PAGE	DATE	(1)
SUP.16	P1	1	95-23				
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SUP.16		9	96-20				R
SUP.16	10		96-20				R
SUP.16	11		95-23				
SUP.16	12		96-20				R
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355 N

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Page 1

1 GENERAL

The sand filters are designed to protect the engines against ingestion of sand.

The system mainly consists of the following :

- A filter fitted on each engine air-intake in the place of the protective grid.
- A P2 air-pressure supply system, common to both engines.
- An electrical control and monitoring circuit.

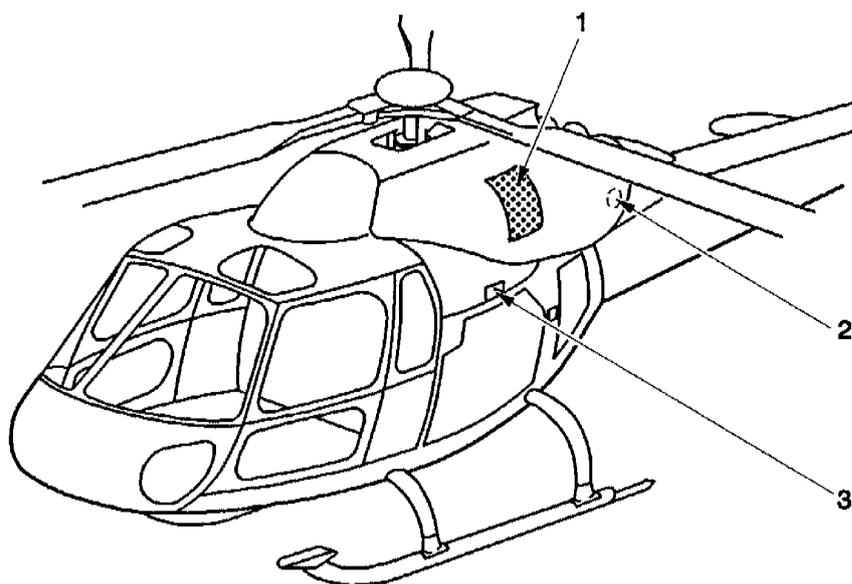
During engine operation, the ambient air flows through separator tubes (item 1) which constitute the filter. The filtered air is ducted towards the engine air-intakes. The sand is evacuated by scavenge tubes supplied with P2 air-pressure (item 2).

Electrical system :

A PARTICLE SEPARATOR lighted pushbutton, located on panel 5 ALPHA 2, controls the electric valve (item 3) which opens and closes the P2 air-pressure circuit. A time-delayed relay (5 seconds' delay) automatically closes the P2 air-pressure circuit when the pointer of the Ng difference indicator reaches 0%.

The push-button is illuminated when the P2 air-pressure circuit is open. The electrical system is protected by a fuse.

MV.55.0583.00



2 LIMITATIONS

The limitations specified in Section 2 of the Basic Manual remain applicable and are completed by the following limitations :

- With sand filters in operation, heating and de-misting systems must be cut off.
- Flight under the snow is prohibited.

3 EMERGENCY PROCEDURES

All the emergency procedures specified in Section 3 of the Basic Manual remain applicable.

If the P2 air valve fails to open (light remains off), avoid flying the helicopter in sand-laden atmosphere to prevent premature damage to the engines. Should the valve fail to close (light remains on), flight can be continued without adverse consequences.

Should one engine fail, switch off the sand filter P2 air supply before relighting is attempted.

4 NORMAL PROCEDURES

Normal procedures specified in the Flight Manual remain applicable independently of the following :

FLYING IN SAND-LADEN ATMOSPHERE

- Switch off heating and de-misting systems.
- Depress "PARTICLE SEPARATOR" push-button.
- Make sure that the lighted push-button illuminates.
- Make sure that the electric P2 air-supply valve has opened or closed : this is confirmed respectively by a t4 increase or decrease of about 5°C. Perform this check when the t4 is higher than 600°C.

POWER ASSURANCE CHECK

When checking the engines, make sure that the sand filter push-button is set to "off". When the sand-filters are installed, the procedures specified in the basic Flight Manual remain applicable; only the power assurance check is performed with the following charts (1, 2, 3).

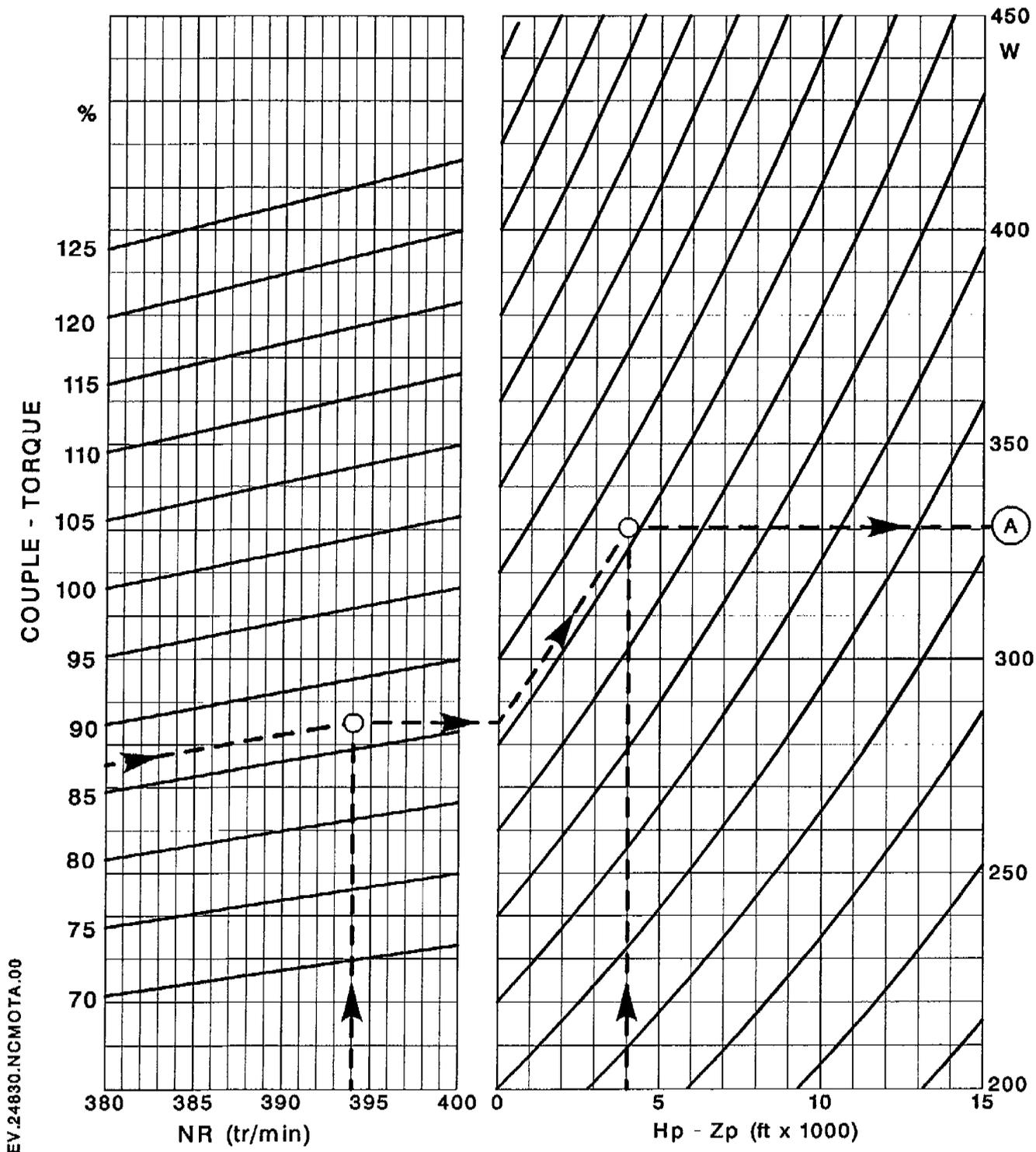


Figure 1

CONDITIONS :

- Sand filters not in operation

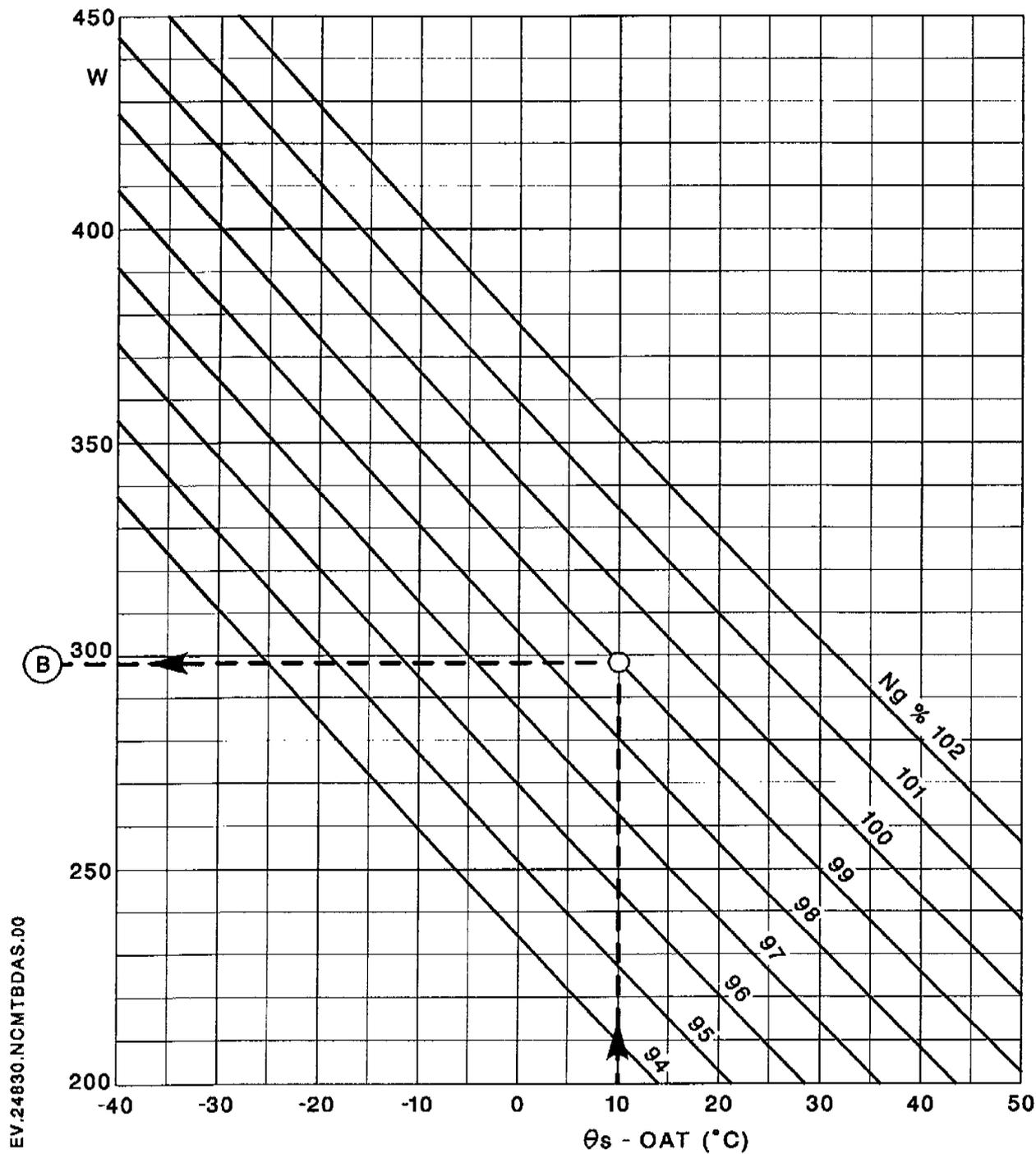
POWER ASSURANCE CHECK

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355 N

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Figure 2

CONDITIONS :

- Sand filters not in operation

POWER ASSURANCE CHECK
FOR THE RH ENGINE

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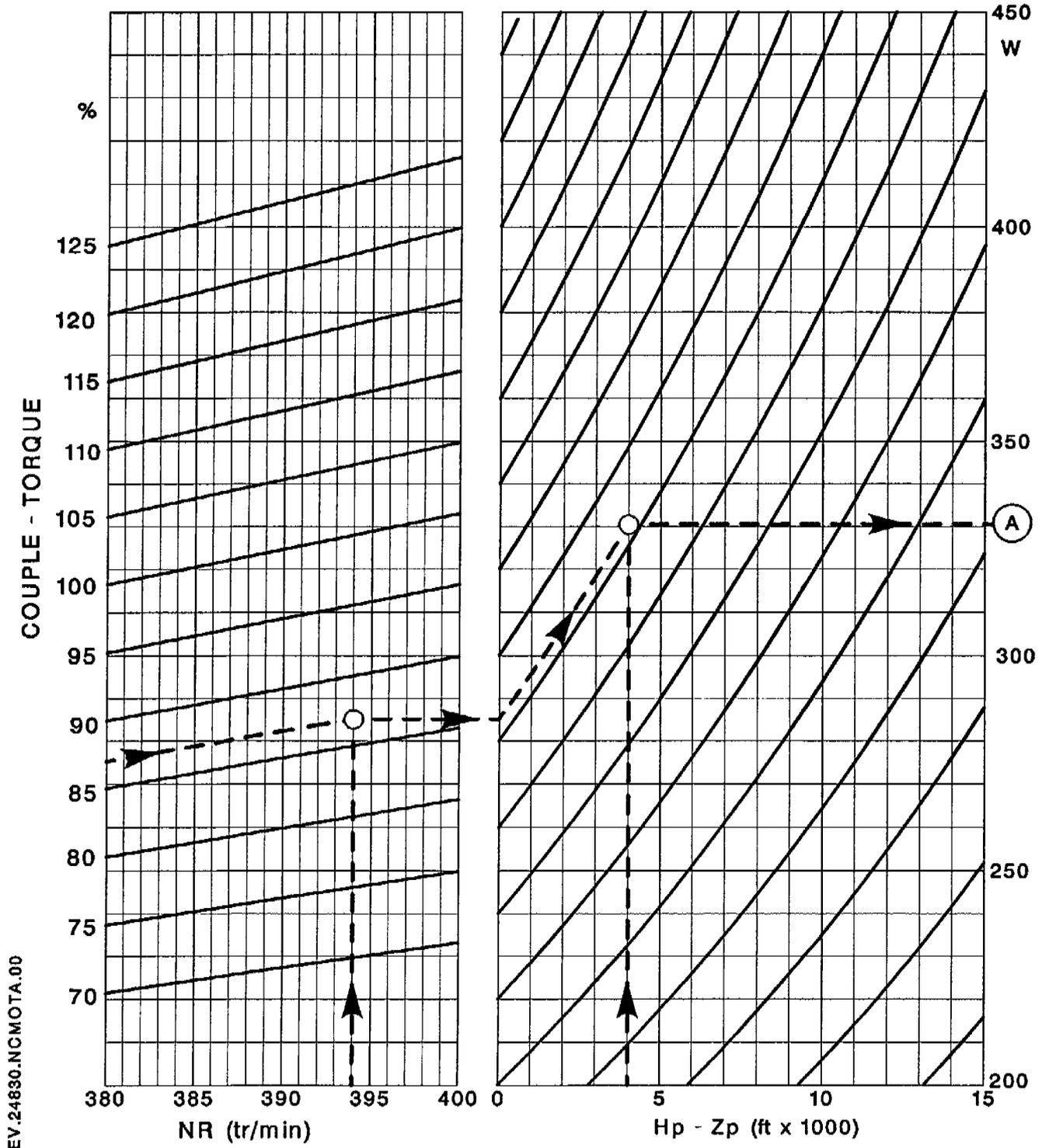


Figure 1

CONDITIONS :

- Sand filters not in operation

POWER ASSURANCE CHECK

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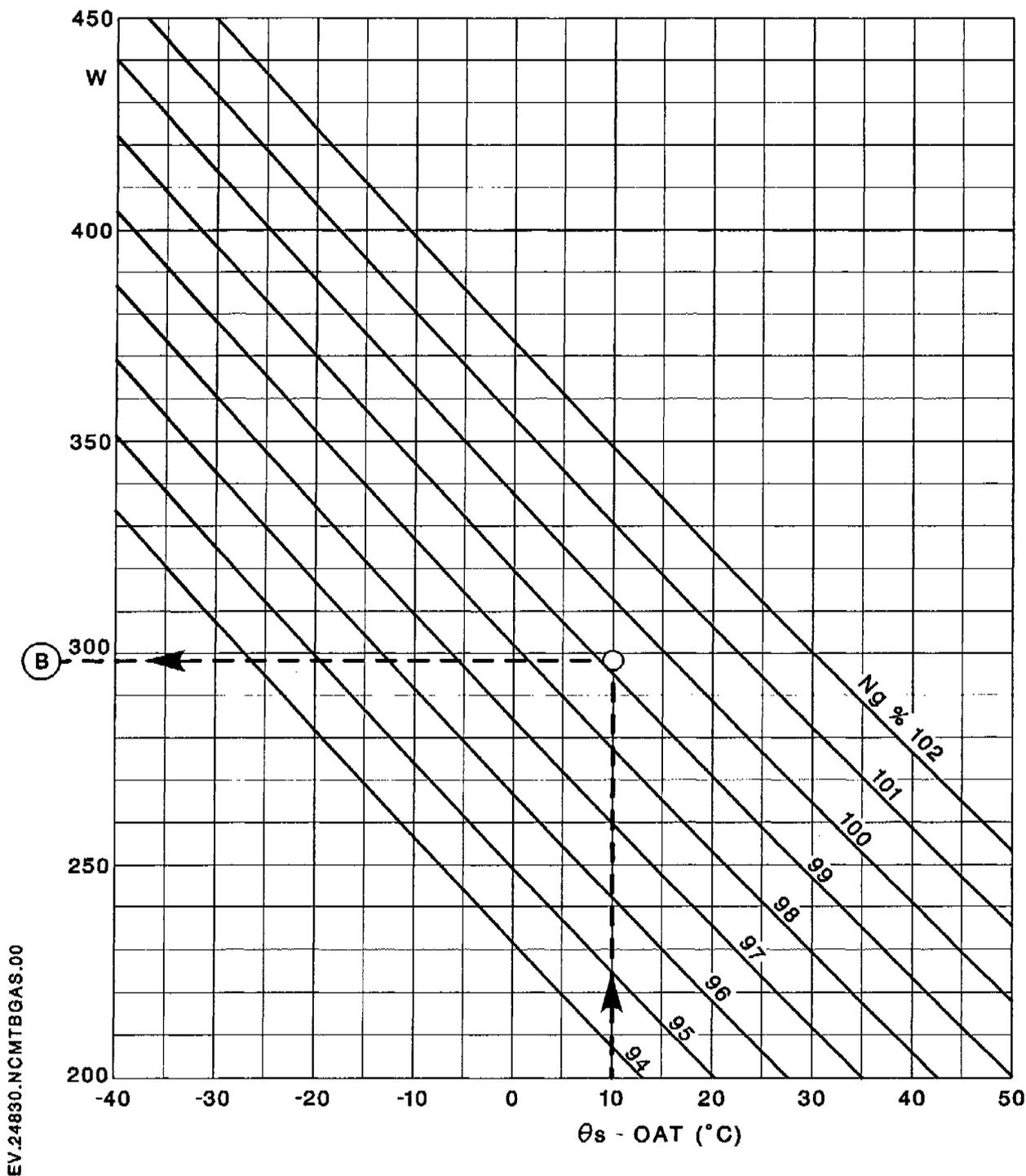


Figure 3

CONDITIONS :

- Sand filters not in operation

POWER ASSURANCE CHECK
FOR THE LH ENGINE

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5 PERFORMANCE DATA

5.1 Regulatory performance data

The performance data contained in Section 5.1 still apply with the exception of the following :

5.1.1 Height/velocity envelope

For weights not exceeding 2150 kg (4740 lb), there is no unsafe area. For weights above 2150 kg, the height/velocity diagram is specified in Figure 4.

5.1.2 Performance in hover IGE, with sand filters in operation and not in operation

The take-off weights are given in Figure 5.

5.1.3 Performance in hover OGE, with sand filters in operation and not in operation

The take-off weights are given in Figure 6.

5.1.4 Rate of climb, with sand filters in operation and not in operation

- Twin-engine rate of climb.
The rate of climb data are given, as a function of the corrected weight, in figure 8.
- Single-engine rate of climb.
The rate of climb data are given, as a function of the corrected weight, in Figure 9.

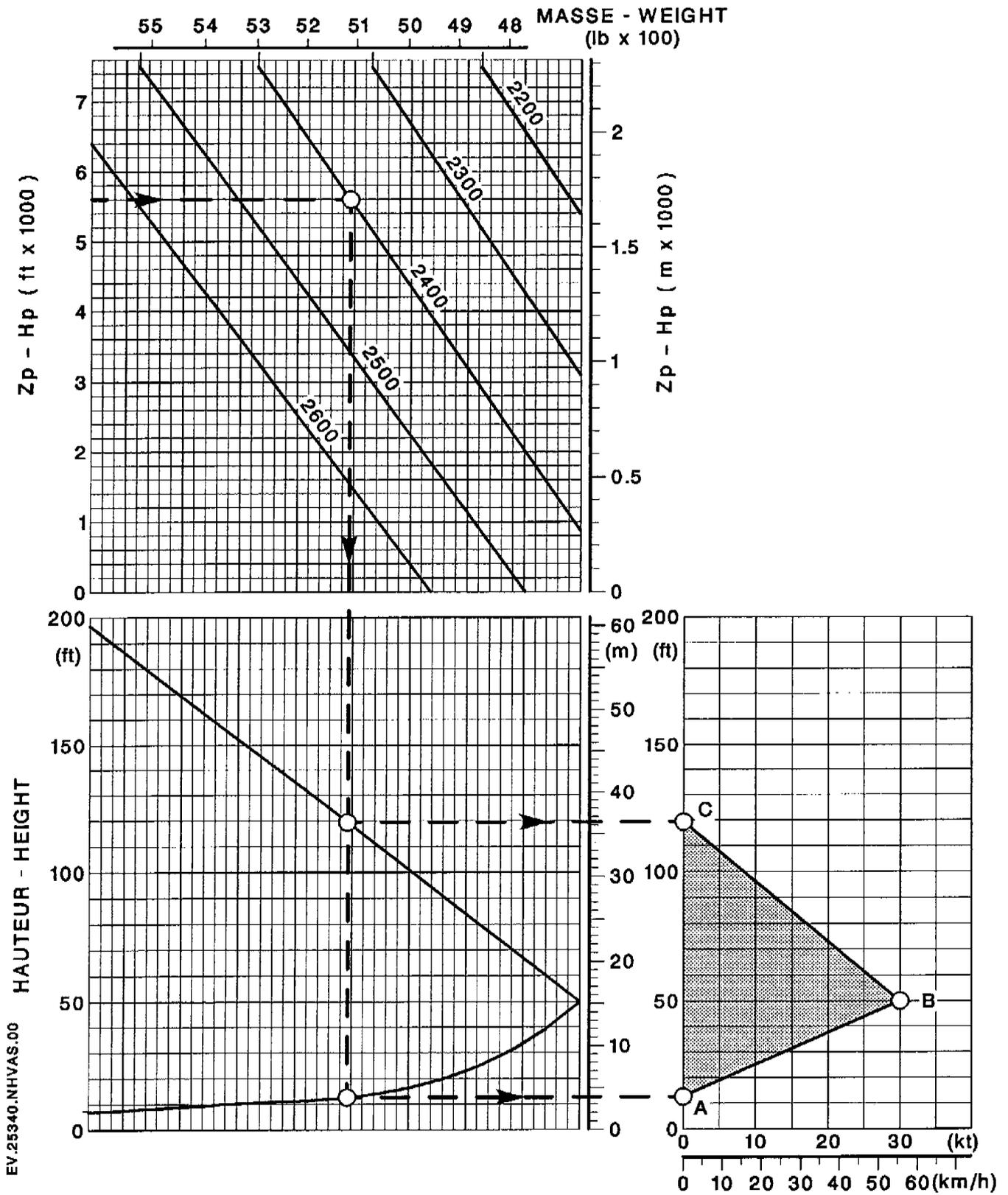


Figure 4

DETERMINING THE
HEIGHT/VELOCITY
ENVELOPE

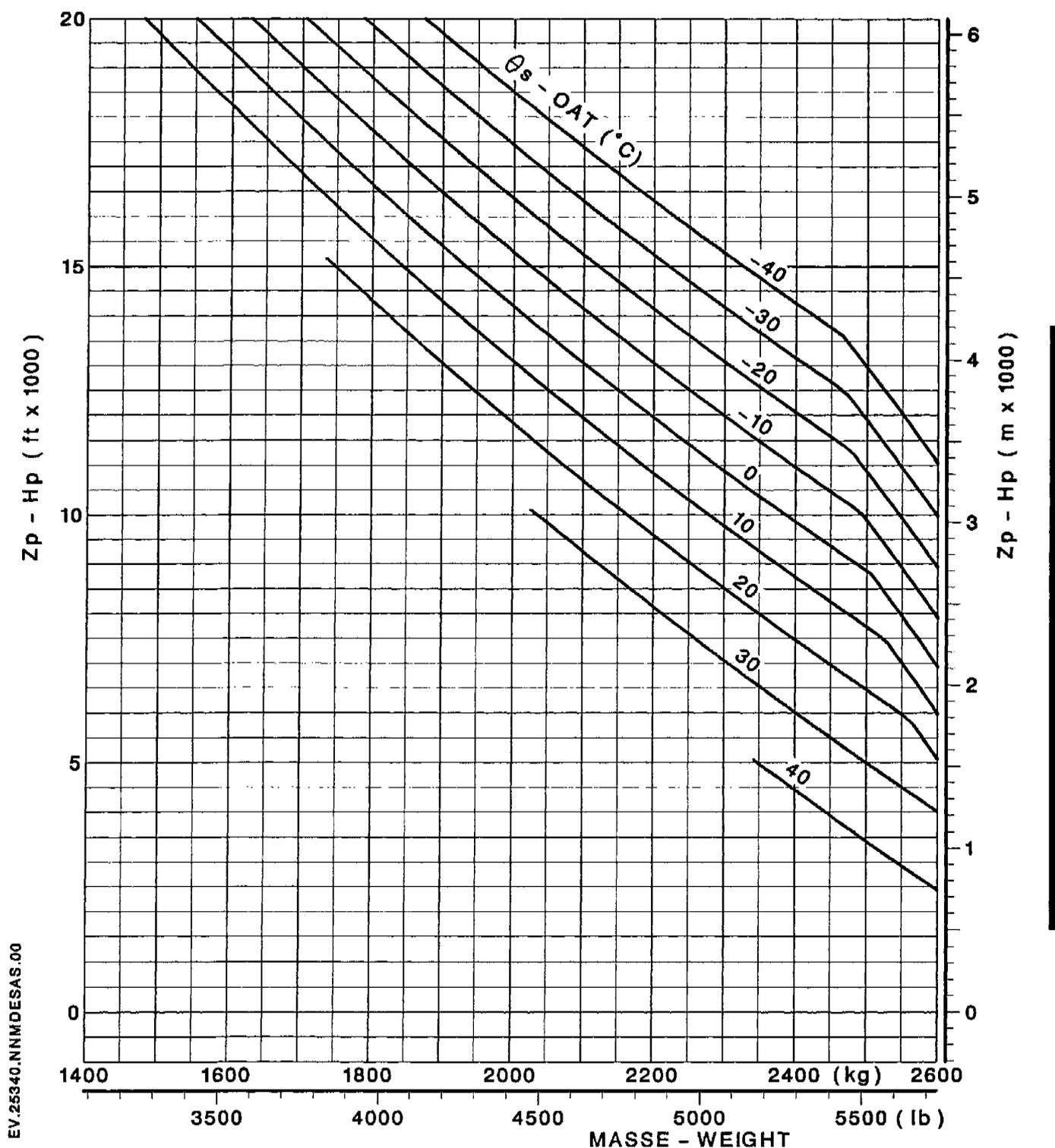


Figure 5

CONDITIONS :

- Height : 6 ft (2 m).
- No P2 air bleed.
- Clearance at the yaw pedals allowing hover to be held with a 17-knot wind from any direction.
- Max. Takeoff Power limit (torque or Ng Diff.).
- Sand filters in operation or not in operation.

HOVER PERFORMANCE
IGE ON TWO ENGINES

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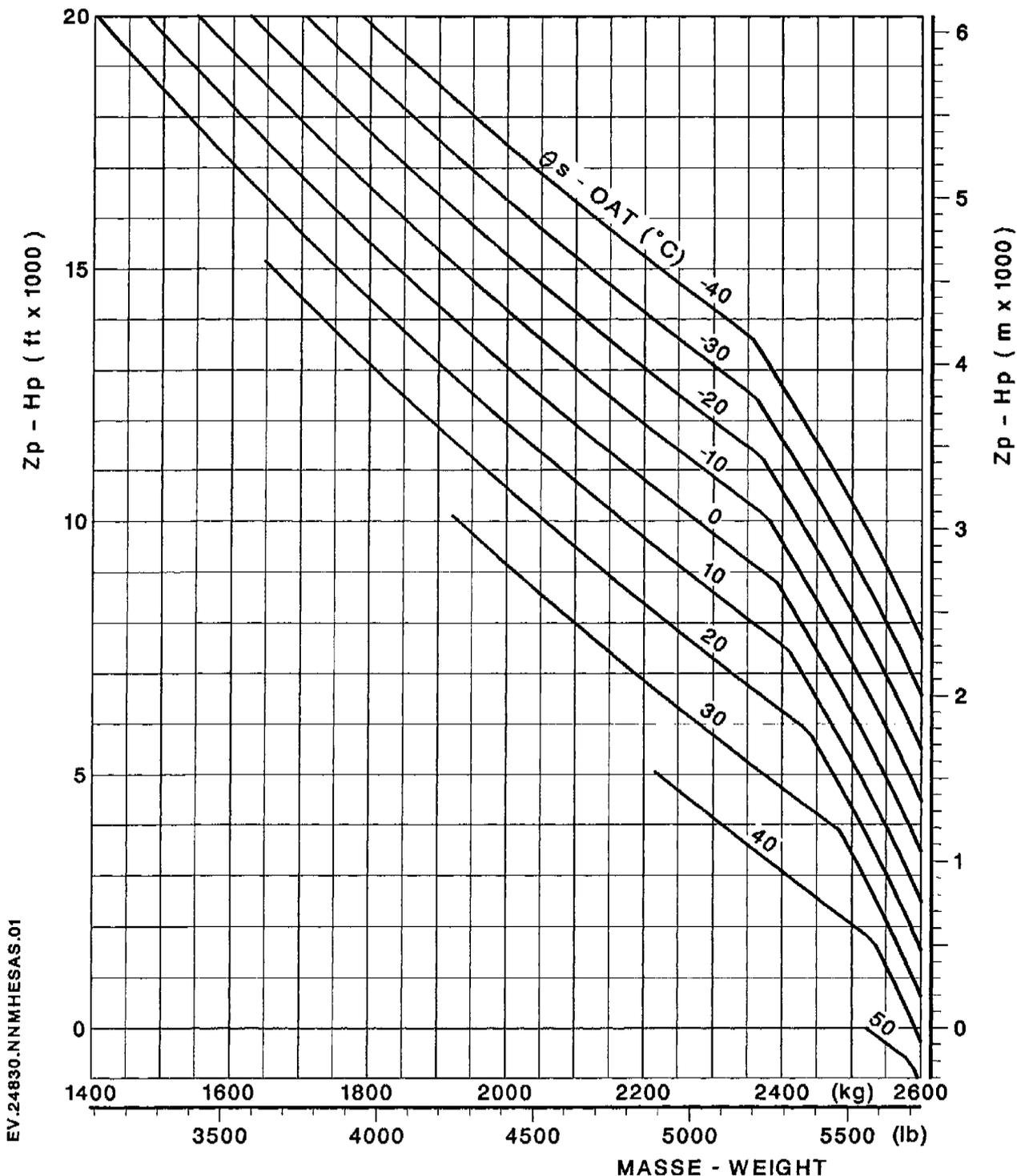


Figure 6

CONDITIONS :

- Zero wind.
- No P2 air bleed.
- Max. Takeoff Power limit (torque or Ng diff.).
- Sand filters in operation or not in operation.

HOVER PERFORMANCE
OGE ON TWO ENGINES

R

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355 N

SUP.16

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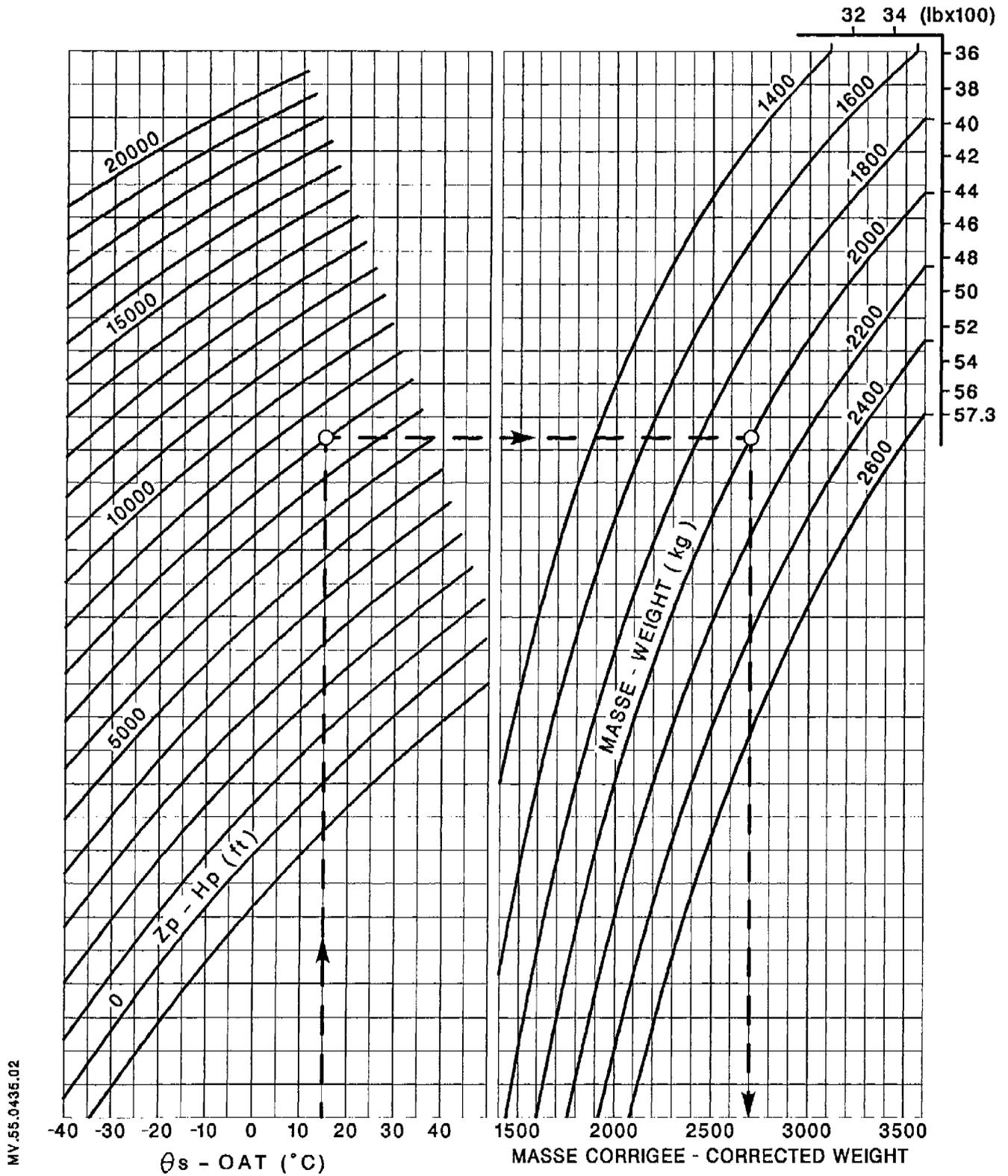


Figure 7

CORRECTED WEIGHT FOR DETERMINING THE R/C (FROM THE FIGURE OPPOSITE)

R
R

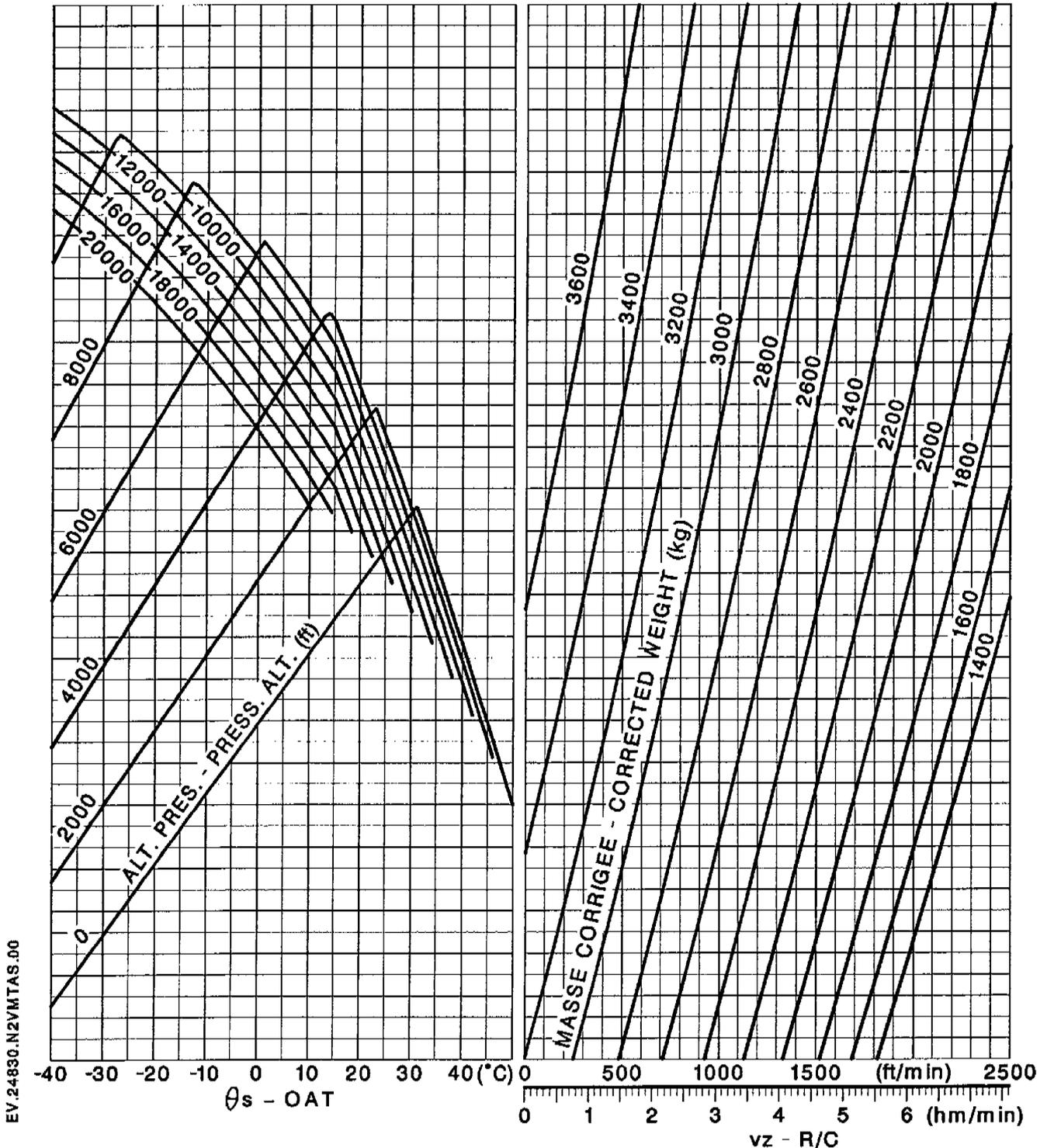


Figure 8

CONDITIONS :

- Max. Continuous Power
- IAS 55 kt (102 km/h - 63 MPH)
- Sand filters in operation or not in operation

TWIN-ENGINE RATE OF CLIMB

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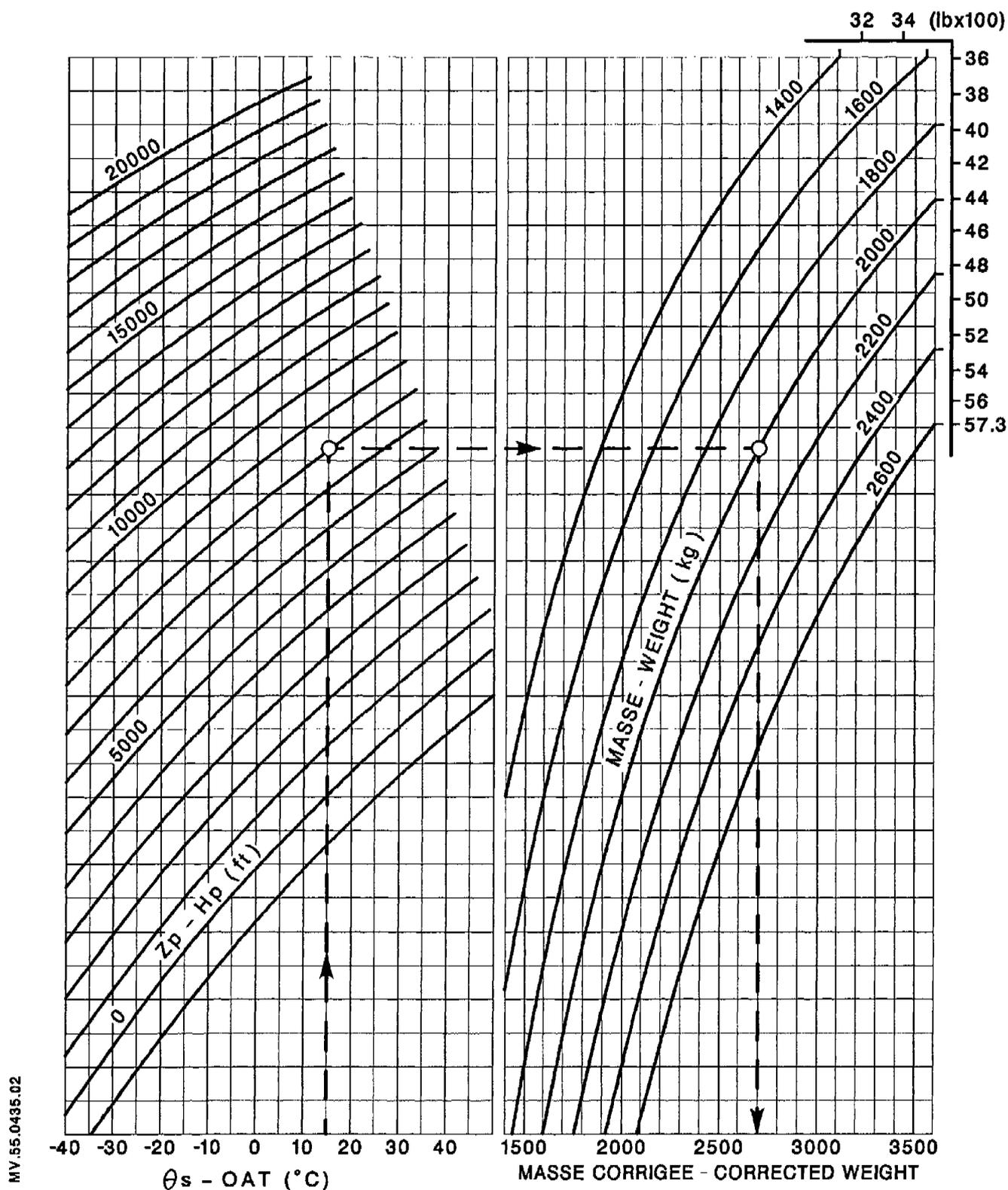


Figure 7

CORRECTED WEIGHT FOR DETERMINING THE R/C (FROM THE FIGURE OPPOSITE)

R
R

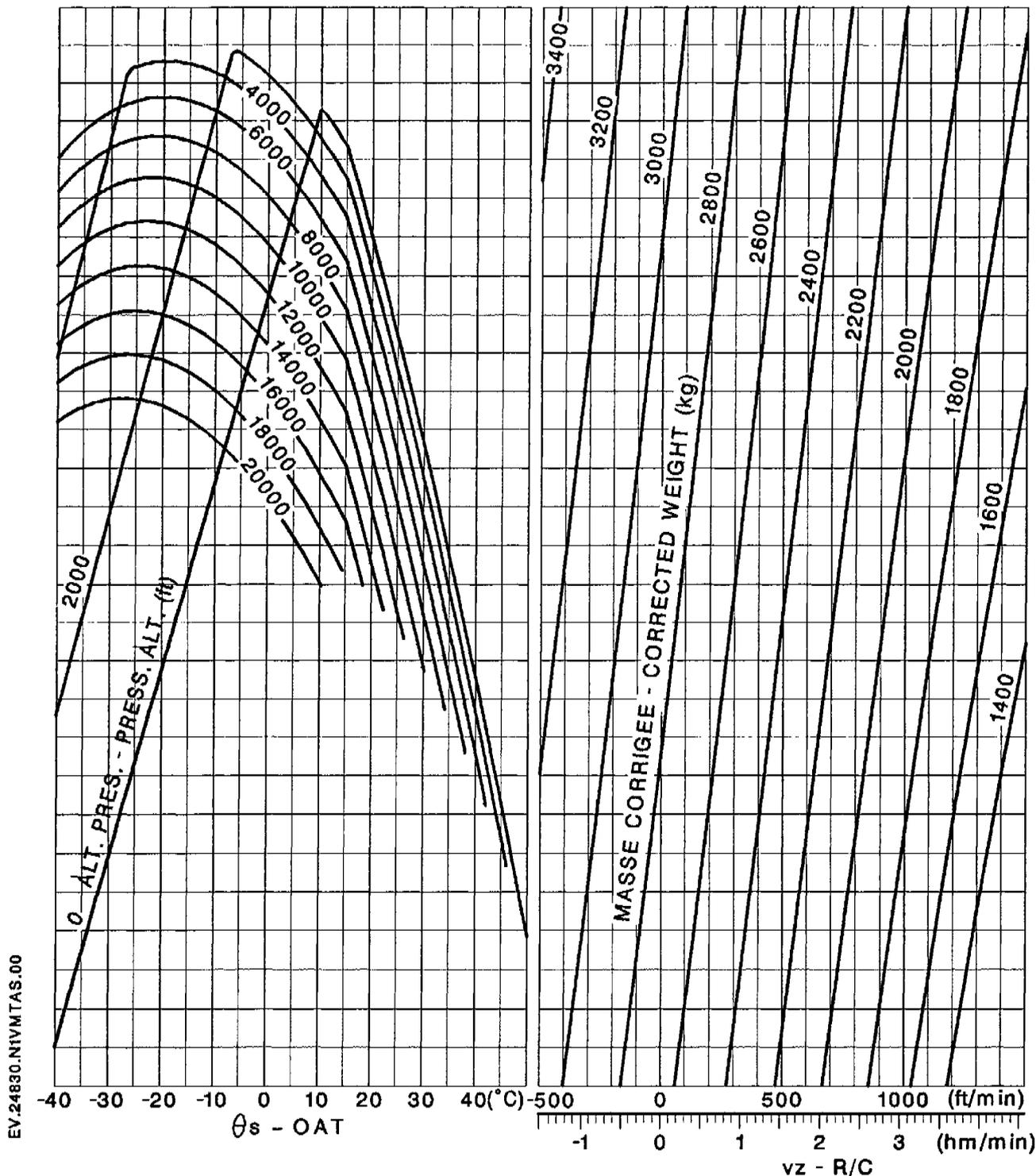


Figure 9

CONDITIONS :

- Intermediate Contingency Power or 115% torque.
- IAS 55 kt (102 km/h - 63 MPH).
- Sand filters in operation or not in operation.

SINGLE-ENGINE RATE OF CLIMB

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FLIGHT MANUAL

AS 355 N

SUPPLEMENT

3 - AXIS AUTOMATIC PILOT

SFIM 85 T31

350 82-7022

350 82-7024

Complete with optional coupler

350 82-6614

IMPORTANT NOTE

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SUP.17		13	R				
SUP.17		14	R				
SUP.17		15	R				
SUP.17		16	N				

LIST OF THE LATEST NORMAL APPROVED REVISIONS				NORMAL REVISION : 1 DGAC APPROVED DATE : 14 MARS 1995 L'Ingénieur Général de l'Armement Chef de la Division Aérospatiale	
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1	94-24				

DGAC Approved:

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SUP.17.P5

1 GENERAL

1.1 Basic autopilot

The three-axis (pitch, roll, yaw) autopilot (A.P.) is intended to hold the attitudes and heading selected by the pilot. Additional modes can provide :

- airspeed hold,
- altitude hold,
- acquire and hold of heading selected on the HSI.

The A.P. unit mainly consists of :

- A control panel on the console.
- A computer underneath the cabin floor on copilot's side that receives data from the following detectors :

- . vertical gyro,
- . horizontal situation indicator (H.S.I.),
- . gyro-compass,
- . air data sensor,
- . control pedal displacement detector,
- . lateral accelerometer
- An artificial load release system.
- A control for adjustment of the rudder pedals friction.
- Three control actuators (one per axis).
- Two trim actuators (on pitch and roll axes).
- Three galvanometers (pitch, roll, yaw).
- Three "disengaged channel" indicating lights (P, R and Y).
- An AP coupler monitoring panel.
- A failure monitoring unit

By comparison of the vertical gyro with gyro horizon on the instrument panel, this unit monitors the operation of the pitch and roll channels at various levels :

- . Attitude sensors.
- . Command inputs generating system.
- . Control actuators.

In case of abnormal operation, this unit warns the pilot and cuts out the defective channel. It is automatically brought into operation when the AP pitch and roll channels become operative.

1.2 Coupler - Flight Director

As optional equipment, a module designated "Coupler/Flight Director" is provided to operate additional modes and track navigation paths.

This module includes :

- A Coupler/Flight Director computer which receives data from the following detectors :
 - . vertical gyro,
 - . radio altimeter,
 - . gyro-compass,
 - . Horizontal Situation Indicator (HSI),
 - . VOR - LOC - GLIDE receiver,
 - . vertical speed indicator with setting provision.
 - . air data sensor,
 - . radio-electrical navigation system, as required.
- Engagement push-buttons located on autopilot control panel.
- Monitoring lights on autopilot annunciator panel.
- Controls on cyclic stick and collective lever grips.
- An Attitude and Direction Indicator (ADI).

The coupler ensures the following functions :

- Pitch axis
 - . Altitude hold "ALT"
 - or . Airspeed hold "A/S"
 - or . Selected vertical speed acquire and hold "V/S"
 - or . Go-Around "G/A"
 - or . GLIDE beam acquire and track with radio-
altimeter level flight safety "G/S"
- Roll axis
 - . Selected heading acquire and hold "HDG"
 - or . Capture and track of VOR radial at long distance
from beacon "VOR"
 - or . Acquire and track of LOC or VOR approach beam .. "V/L"
 - or . Acquire and track of navigation course "NAV"
 - or . Acquire and track of LOC back course beam "B/C".

1.3 Autopilot control panel (Figure 1)

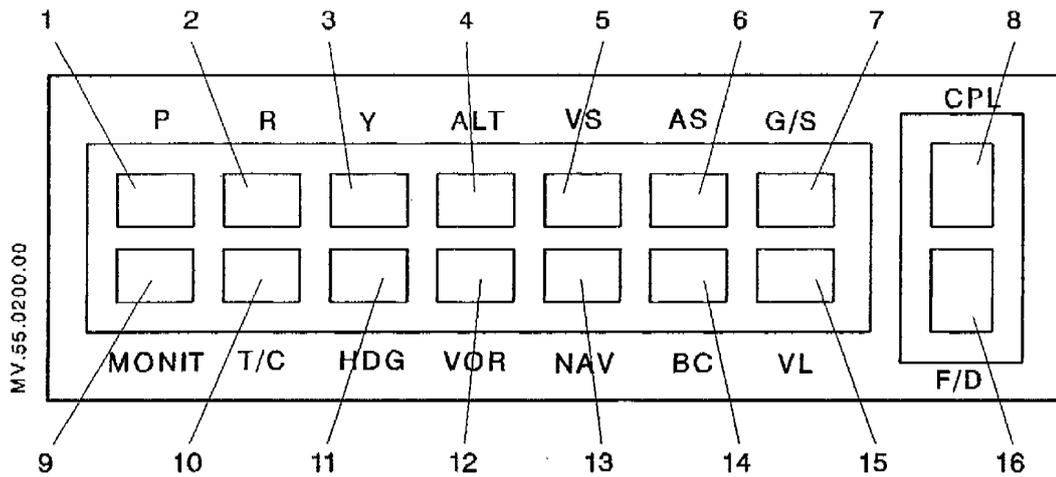


Figure 1

ITEM No	Description - Function	ITEM No	Description - Function
1	Pitch channel engagement push-button	9	Failure monitoring unit + autopilot release push-button
2	Roll channel engagement push-button	10	Coordinated turns mode engagement push-button
3	Yaw channel engagement push-button	11	Selected heading mode engagement push-button
4	Altitude mode engagement push-button	12*	VOR (long distance) mode engagement push-button
5*	Vertical speed mode engagement push-button	13*	NAV course track engagement push-button
6	Airspeed mode engagement push-button	14*	LOC back-course mode engagement push-button
7*	Glide mode engagement push-button	15*	VOR (approach) or LOC mode engagement push-button
8*	Coupler engagement push-button	16*	Flight Director engagement push-button

* Functions achieved by the optional Coupler.

- Push-buttons 1 - 2 - 3 - 4 - 5* - 6 - 8* - 9 - 10 - 11 - 16* illuminate when depressed, their function is armed or effective. "ON" marking appears in green on buttons 1 - 2 - 3 - 4 - 5* - 6 - 9 - 10 - and 11. "CPL" appears on button 8* and "F/D" on button 16*.
- On push-buttons 7* - 12* - 13* - 14* - 15*, amber "ARM" marking appears on L.H. section of button when function is armed and green "CAP" marking appears on RH section after capture.

1.4 Instrument panel galvanometers (Figure 2)

The galvanometers indicate the position of the series-mounted actuators with respect to their middle position; when the actuator is centered, the pointer is in the middle. In pitch and roll, the actuators are recentered automatically. R
R
R
R

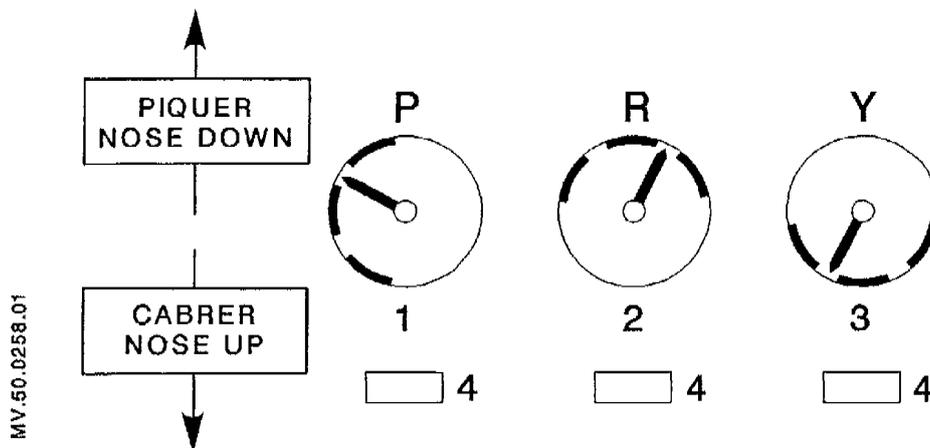


Figure 2

Item No.	Description	Direction of indication	R
1	P (pitch) galvanometer	Indicates a nose-down order given by the autopilot	R
2	R (roll) galvanometer	Indicates a roll-to-right order given by the autopilot	R
3	Y (yaw) galvanometer	Indicates a yaw-to-left order given by the autopilot	R
4	Amber indicator lights	When on the associated channel(s) is (are) not engaged	R R

NOTE : The yaw galvanometer pointer is recentered by moving the rudder pedals in the direction shown by the pointer.

1.5 Cyclic stick grip controls

- Four-way beep-trim button. Allows the pilot to operate the stick and change the aircraft attitudes.
- Trim release push-button. Momentarily releases pitch and roll channel artificial feel loads.
- Push-button switch. Disengages A.P. system.
- Push-button switch. Disengages coupler (if fitted).

1.6 Collective lever grip control (Figure 3)

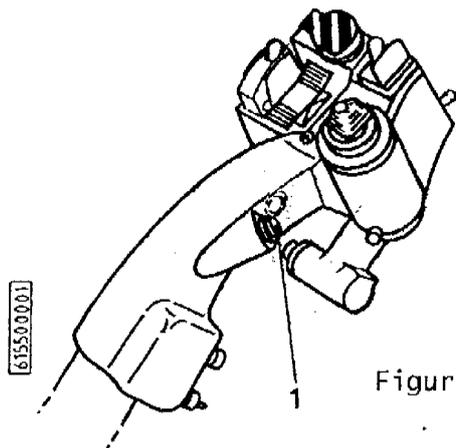


Figure 3

Item	Description - Function
1*	Engagement - disengagement of GO-AROUND mode (if mode installed)

1.7 A.P. control push-buttons (Figure 4)

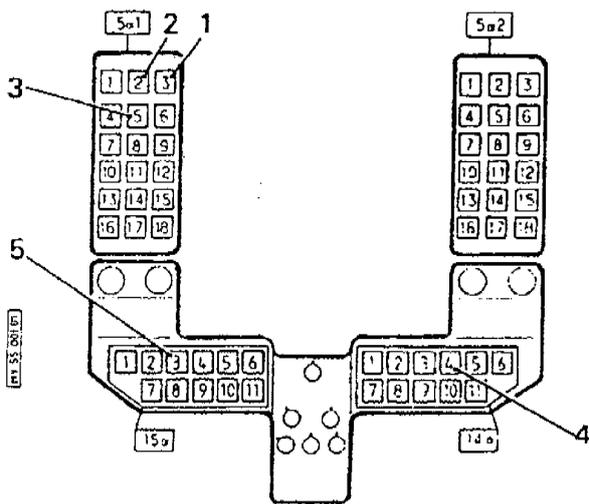


Figure 4

Item	Description - Function
1	Permanent release of artificial loads in Pitch and Roll
2	Pitch trim motor cut-off
3	Roll trim motor cut-off
4	RH inverter power-up push-button
5	LH inverter power-up push-button (if fitted)

1.8 AP/CPL monitoring panel (Figure 5)

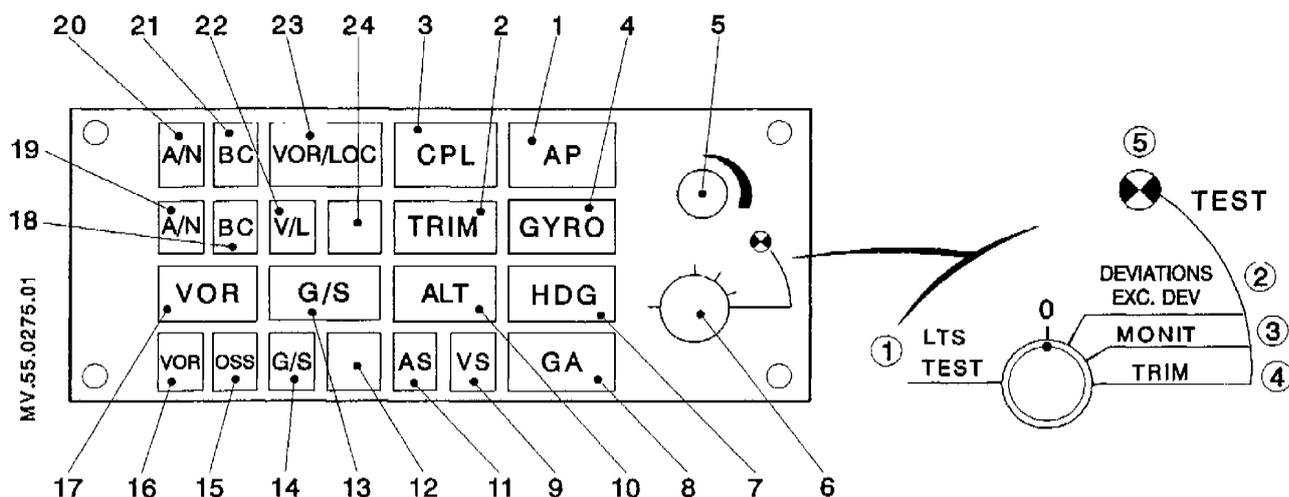


Figure 5

Item No	Description - Function	Item No	Description - Function
1	A.P. warning light (flashes red)	14*	GLIDE mode armed light (amber)
2	TRIM caution light (flashes amber)	15*	VOR signal sensitivity (OSS) light (amber)
3*	Coupler caution light (flashes amber)	16*	VOR mode armed light (amber)
4	GYRO caution light (flashes amber)	17*	VOR beam capture light (green)
5	Light dimmer	18*	LOC back-course beam armed light (amber)
6	Test selector switch	19*	Auxiliary navigation mode armed light (amber)
7	Selected heading hold engagement light (green)	20*	Auxiliary navigation function capture light (green)
8*	Go-around function engagement light (green)	21*	LOC back-course beam capture light (green)
9*	Vertical speed function engagement light (green)	22*	VOR LOC mode armed light (amber)
10	Altitude hold function engagement light (green)	23*	VOR approach or LOC beam (depending on frequency) capture light (green)
11	Airspeed hold function engagement light (green)	24*	Localizer mode deviation light (flashes amber).
12*	GLIDE coupling or altitude or airspeed deviation light (flashes amber)		
13*	GLIDE beam capture light (green)		

* functions provided by the coupler (optional item)

2 LIMITATIONS

All limitations specified in Section 2 remain applicable, independently of the following :

- Fore-and-aft c.g. location : aft limit at 3.52 m (138.6 in.)
- If height to clear obstacles is less than 400 ft (120 m), the pilot must keep his hands on the controls.
- When the aircraft is on the ground, the A.P. must be disengaged except when checks are to be performed.
- Do not engage the A.P. before take-off if trim test (Refer to para. 4.1.1) is not satisfactory.

3 EMERGENCY PROCEDURES

All emergency procedures specified in Section 3 remain applicable, together with the following additional procedures :

3.1 General

If jerks or sudden movements independent of air turbulence are felt during flight with autopilot engaged, this may be caused by the autopilot. Consequently disengage the autopilot.

- If the anomaly disappears after disengagement, re-engage each channel in turn until failure is identified. Retain channels that operate properly.
- If the anomaly persists the AP is not at fault. Re-engage the autopilot if required.

3.2 Failure of hydraulic system

- Comply with normal procedure (Section 3.2).
- If the RH hydraulic system is faulty (loads at rudder pedals) the complete yaw channel is inoperative.

NOTE : In case of hydraulic pressure loss in the R.H. system or intentional cut-off of the hydraulic pressure to the yaw servo-control, it is recommended to switch off the yaw channel.

3.3 Failure of the vertical gyro or gyro horizon

INDICATION	SYMPTOM	PILOT'S ACTION
<p>.AP caption flashes for 10 s (Fig.5)</p> <p>.GYRO caption illuminates(Fig.5) or flag appears on horizon</p> <p>.P, R, MONIT. push-button lights on AP control panel go out (Fig.1)</p> <p>.P and R indicating lights (below galvanometers) illuminate (Fig.2, Detail 4)</p>	<p>- Automatic disengagement of pitch and roll channels and of failure monitoring unit.</p>	<p>- Manual control by the pilot. The yaw channel remains operative. The other modes are inoperative. Flight Director, if installed, remains operative.</p> <p>- Continue flight or land as soon as practicable according to the circumstances.</p>

3.4 Failure of the gyro-compass

INDICATION	SYMPTOM	PILOT'S ACTION
<p>.AP caption flashes for 10 seconds (Fig. 5)</p> <p>.Failure flag appears on H.S.I. (HDG)</p>	<p>-The yaw channel disengages automatically. Y (Yaw) push-button (3, Fig.1) light goes out and Y indicating light (4, Fig.2) illuminates.</p> <p>- The "selected heading" function disengages automatically. HDG push-button light (Fig.1) and HDG caption (Fig.5) go out</p>	<p>- Yaw control by the pilot (Yaw channel and heading hold are inoperative).</p> <p>- Continue flight</p>

NOTE : Certain gyro compass failures cause the loss of GLIDE data to the HSI.

3.5 Sudden failure of the auto-pilot

INDICATION	SYMPTOM	PILOT'S ACTION
<ul style="list-style-type: none"> .AP caption flashes for 10 seconds (Fig.5) . The associated channel disengages automatically 	<ul style="list-style-type: none"> - Hardover on the defective axis. 	<ul style="list-style-type: none"> - Manual control by the pilot (power reduction may be required to comply with the limitations). - Continue flight.

NOTE : Altitude loss following an AP failure is no greater than 300 ft (90m).

3.6 Malfunctioning of trim

INDICATION	SYMPTOM	PILOT'S ACTION
<ul style="list-style-type: none"> .TRIM caption illuminates for 10 sec. (Fig.5) and defective trim disengages automatically 	<ul style="list-style-type: none"> - Before operation of the safety system (automatic disengagement), the stick tends to move in the direction of the failure. <p>The pilot can no longer operate trim.</p>	<ul style="list-style-type: none"> - Manual control by the pilot. - Momentarily disengage the artificial loads to recenter the stick. - Disengage the faulty trim function (push-button on panel 5 ALPHA 1) - Continue flight. <p>The auto-pilot continues to operate without the faulty axis being trimmed.</p> <ul style="list-style-type: none"> - Continue flight while bringing galvanometer pointer back, using the stick trim release button.

R

3.7 Blockage of artificial load system

INDICATION	SYMPTOM	PILOT'S ACTION
	<ul style="list-style-type: none"> - Blockage of cyclic stick 	<ul style="list-style-type: none"> - Release the stick trim loads : <ul style="list-style-type: none"> . The blockage disappears : disengage the stick trim release push-button and continue flight. . The blockage persists : break mechanical shear pin of load compensator shaft by applying a 10-kg load approx. on cyclic stick.

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3.8 A.C. power supply failure

3.8.1 Single a.c. system (VFR only)

INDICATION	SYMPTOM	PILOT'S ACTION
<ul style="list-style-type: none"> .AP caption flashes for 10 seconds (Fig.5) "INV" (CONV) caption on failure warning panel and "TRIM" caption illuminate (Fig. 5) 	<ul style="list-style-type: none"> - AP disengages automatically 	<ul style="list-style-type: none"> - Check that "INV" (CONV) push-button (panel 14 ALPHA) is engaged. - Check a.c. voltages. - Attempt to reset the inverter. - If not possible, continue flight with AP disengaged.

3.8.2 Dual a.c. system

INDICATION	SYMPTOM	PILOT'S ACTION
<ul style="list-style-type: none"> .INVERT RH or INVERT LH (CONV D or G) caption on failure warning panel illuminates 	<ul style="list-style-type: none"> - None (A.P. is automatically supplied from the other inverter.) 	<ul style="list-style-type: none"> - Check that the associated push-button is engaged - Check a.c. voltages. - Attempt to reset the tripped inverter.

3.8.3 Total power supply failure

In the event of a total power supply failure the autopilot disengages automatically and cannot be re-engaged.

4 NORMAL PROCEDURES

The normal procedures specified in the Flight Manual apply with the addition of the following :

NOTE : If the co-pilot's cyclic stick has been removed, check that the shunt plug is present on the corresponding connector (28 V.d.c supply to the auto-pilot).

4.1 Pre-takeoff checks

- | | |
|--|--|
| <ul style="list-style-type: none"> - Push-buttons : <ul style="list-style-type: none"> . TRIM RELEASE ----- . PITCH TRIM ACTUATOR ----- . ROLL TRIM ACTUATOR ----- - Cyclic stick ----- - Rudder pedals ----- - a.c. inverters ----- - Horizontal Situation Indicator - Pilot's gyro horizon | <ul style="list-style-type: none"> --- Released - Friction untightened - Friction tightened or as required - Push-buttons pressed in and captions off (according to version) - HDG flag not visible - Flag not visible |
|--|--|

4.1.1 Autopilot test

- | | |
|---|--|
| <ul style="list-style-type: none"> - Test selector switch set to LTS position 1. (Detail on Figure 5) - Test selector switch set to 0 - Pitch, roll and yaw channels engaged. - Four-way beep trim button : successively actuate in each direction. - Switch off autopilot through A.P. release push-button on pilot's cyclic stick. - Then repeat this test through same push-button on copilot's cyclic stick if fitted, after re-engaging the three auto-pilot channels. | <ul style="list-style-type: none"> - Captions on control panel (Fig.1) illuminate. - Captions on monitoring panel (Fig. 5) illuminate (2.5-second time delay) - Test function caption (5) (Detail on Fig. 5) illuminates. - Test function caption (5) (Detail on Fig. 5) extinguishes. - P, R, Y, MONIT. push-button lights illuminate (Fig. 1). Captions (4) below galvanometers extinguish (Detail on Fig.2). - Check cyclic stick and relevant galvanometer pointer move in the right direction. - Captions below galvanometer illuminate. - AP caption (Fig.5) flashes for 10 seconds. - Captions on control panel (Fig. 1) extinguish. |
|---|--|

4.1.2 Pitch trim test

- | | |
|--|--|
| <ul style="list-style-type: none"> - Pitch channel engaged - Test selector switch set to TRIM, position 4 (Detail on Fig.5). - Test selector switch set to 0 - Disengage pitch channel | <ul style="list-style-type: none"> - Relevant ON push-button light (Fig.1) illuminates - TRIM caption light (Fig.5) flashes - alternate displacements of the cyclic stick. - P push-button light (Fig. 1) extinguishes |
|--|--|

4.1.3 Roll trim test

- | | |
|---|---|
| <ul style="list-style-type: none"> - Roll channel engaged - Test selector switch set to TRIM (position 4). - Test selector switch set to 0 - Disengage roll channel | <ul style="list-style-type: none"> - Same as pitch trim test above with alternate displacements of cyclic stick to the left. |
|---|---|

CAUTION : DO NOT OPERATE THE AUTOPILOT IF THE TRIM CAPTION DOES NOT ILLUMINATE OR REMAINS ON STEADY DURING THE TEST.

4.2 Failure monitoring unit test (MONIT)

- | | |
|---|--|
| <ul style="list-style-type: none"> - Pitch channel engaged - Actuate four-way button to offset cyclic stick in pitch - Test selector switch set to MONIT position 3 (Detail on Fig. 5) - Test selector switch set to 0 - Roll channel engaged. | <ul style="list-style-type: none"> - Pitch push-button light illuminates. (Fig. 1) - MONIT push-button light illuminates (Fig.1). - Cyclic stick moves in the selected direction - Cyclic stick stops moving. - Galvanometer re-centers - AP warning light flashes (Fig. 5) - GYRO warning light illuminates (Fig.5) - MONIT push-button light flashes (Fig. 1) - Pitch push-button light extinguishes (Fig. 1) - Roll push-button light illuminates (Fig. 1) - MONIT push-button light illuminates (Fig. 1). |
|---|--|

Same procedure as for the pitch channel.

R

4.3 Coupler test (CPL)

- Move selected heading (HDG) index to the right
- Select a vertical speed of + 500 ft/min.
- Engage respectively : P, R, F/D, HDG, V/S, CPL (Fig.1)
- Disengage CPL on cyclic stick and F/D on control panel (Fig. 1)
- Test selector switch set to Deviations or Exc. Dev. (Excessive Deviation) position 2 (Detail on Fig. 5).
- Test selector switch set to 0 (Detail on Fig.5)
- Disengage autopilot
- Cyclic stick and pointers of Flight Director (F/D) move nose-up and right
- CPL caption flashes for 10 seconds (Fig. 5)
- Coupling function captions extinguish (Fig. 5)
- Re-center the cyclic stick.
- Captions 12 and 24 on monitoring panel (Fig. 5) flash. R
- Test caption extinguishes (Item 5, Detail on Fig. 5)

4.4 Autopilot engagement before take-off

- Engage the three autopilot channels
- Engage, as required, CPL and F/D push-buttons if fitted (Fig. 1)
- Test selector switch set to 0 (Detail on Fig. 5).
- Check that the three channels are engaged
Push-button lights P, R, Y, MONIT. illuminate : ON is visible (Fig.1).
- CPL and F/D captions on control panel (Fig. 1) illuminate.
- Test caption extinguishes (item 5, Detail on Fig. 5).

WARNING : DO NOT ALLOW THE AIRCRAFT TO REMAIN ON THE GROUND WITH THE AP ENGAGED AS THE TRIM ACTUATORS MAY UNWIND, THUS CAUSING THE STICK TO MOVE AGAINST THE STOP.

4.5 Operating the autopilot in flight

4.5.1 Basic modes

4.5.1.1 Pitch and roll

- Hands off the stick -----
- Artificial loads released ---
- Overriding the artificial loads -----
- Through the 4-way button ----
- Autopilot holds attitudes.
- Autopilot operates as a damper.
- Trim actuators are inhibited. The actuators counteract within the limits of their authority.
- Deviation in the direction of operation of the attitude references.

4.5.1.2 Yaw

- Feet off the pedals -----

NOTE : 1. Collective pitch/yaw coupling is efficient when some friction is applied to the pedals. It is therefore recommended to apply friction.

NOTE : 2. When the R.H. rudder pedal is near the stop (e.g. high cross wind from the left) moving the collective pitch lever fully upward requires a greater effort than the usual value due to spring rod.

- Channel holds "present heading" within the limits of its authority.

Operating the pedals causes the heading reference to be altered. The pilot must bring the aircraft to the desired heading (angular speed less than 1.5°/sec.) then remove his feet from pedals so that the yaw channel can hold the new heading.

4.5.1.3 Coordinated turns (C/T)

When airspeed is above 50 knots (92 km/h - 57 MPH), the pilot can alter heading by flying the aircraft to a bank angle above 7°. The yaw channel then coordinates the turn.

4.5.2 Additional modes (coupler not fitted)

Remark : If coupler is not fitted, the three HDG, ALT, AS modes are incorporated in the basic autopilot (CPL button inoperative).

4.5.2.1 Selected heading (HDG)

This mode may be operated when the airspeed is above 50 knots (92 Km/h - 57 MPH). When this mode is engaged, the autopilot acquires and holds the heading selected on the HSI via the roll channel (the roll attitude reference is nil). The yaw channel provides coordination.

4.5.2.2 Altitude (ALT)

This mode can be operated when the airspeed is above 60 knots (111 km/h - 69 MPH). When this mode is engaged, the autopilot holds the engagement altitude through the pitch channel.

NOTE : It is recommended to engage this mode only when vertical speed is lower than 1000 ft/mn.

4.5.2.3 Airspeed (AS)

This mode may be operated when the airspeed is above 50 knots (92 km/h – 57 MPH).

When this mode is engaged, the autopilot holds the engagement airspeed through the pitch channel.

4.5.3 Additional modes and couplings (coupler fitted)

These modes will effectively be coupled only if CPL button is engaged.

4.5.3.1. Selected heading (HDG)

Refer to para. 4.5.2.1. above.

4.5.3.2 Altitude (ALT)

Refer to para. 4.5.2.2. above.

4.5.3.3 Airspeed (AS)

Refer to para. 4.5.2.3. above.

4.5.3.4 Vertical speed (VS)

When this mode is engaged, the autopilot retains vertical speed selected on the VSI.

4.5.3.5 GLIDE mode

When this mode is engaged, the autopilot acquires and retains the vertical GLIDE beam.

NOTE : Testing the radio–altimeter disengages the mode.

4.5.3.6 VOR mode

When this mode is engaged, the autopilot retains the VOR radial.

NOTE : Under certain conditions, particularly when VOR reception is poor, interferences due to VHF transmissions may affect the operation of this mode.

4.5.3.7 NAV mode

Optional, not used in the basic version.

4.5.3.8 B/C mode

When this mode is used, the autopilot acquires and retains the back–course beam of the LOC transmitter.

R

4.5.3.9 V/L mode

This mode can be used when the aircraft is close to the station, the autopilot acquires and retains the VOR or LOC beam.

Remarks : - On each channel involved (P,R) there can be only one coupling at a time.
- When a mode is coupled with a channel, the four-way trim button is inhibited on the axis involved.

CAUTIONS : 1) WHEN AIRSPEED AND/OR POWER IS ALTERED, THE PILOT MUST OPERATE THE PEDALS TO RESTORE THE AIRCRAFT ROLL ATTITUDE AND RECENTER THE YAW ACTUATOR.
2) SIGNIFICANT POWER CHANGES MAY AFFECT COUPLER OPERATION.
3) DURING APPROACH BELOW 200 ft (60 m) SWITCH OFF THE ADDITIONAL MODES AND COUPLINGS.

4.5.4 Flight Director (F/D) mode

This mode provides two functions :

- In normal operation of the autopilot and coupler the Flight Director makes it possible to monitor the latter (proper position of the command bars).
- In case of failure of the autopilot, the Flight Director helps the pilot to steer the helicopter along a path (VOR radial, ILS, etc...) using the command bars.

The Flight Director mode is active when the F/D button is pressed in. However it is not necessary for the autopilot and coupler to be in operation for the flight director to be active.

4.6 After landing

Disengage the auto-pilot through the push-button on cyclic stick.

5 PERFORMANCE

The performance data are not affected.

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FLIGHT MANUAL

AS 355 N

SUPPLEMENT

FREON AIR CONDITIONER

As per drawing No. 355A 82 5016

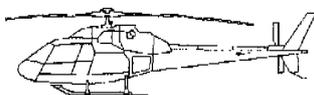
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EUROCOPTER FRANCE Etablissement de Marignane
Direction Technique Support - 13725 Marignane Cedex - France

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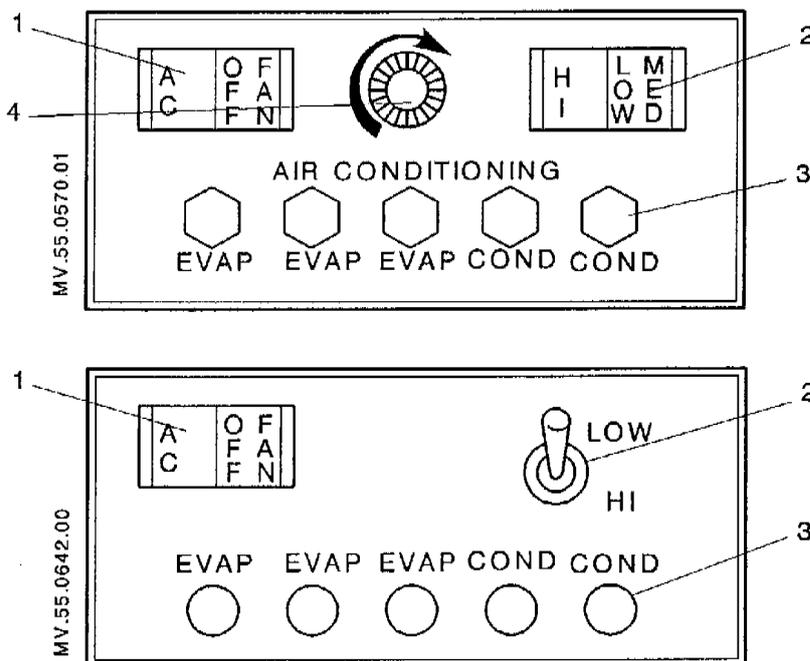
Page 1

1 GENERAL

The air conditioning system is designed to lower the ambient temperature within the cabin. R

System controls and indicators

- Available to the pilot. R
 Depending on the instrument panel installed on the aircraft, the air R
 conditioning system includes one of the control units illustrated below. R



No.	Description	Function
1	Rocker switch : . OFF neutral . FAN engaged . A/C engaged	Stops system operation Switches on ventilation Switches on ventilation and air conditioning
2	Rocker switch : . LOW neutral . HI engaged . MED engaged	Slow ventilation Fast ventilation Medium ventilation
3	Protection fuses for condenser and fan blowers	
4	Temperature control button	

- Available to the passengers
 A rocker switch located on the rear bulkhead or near permits ventilation adjustment.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

BREEZE ELECTRIC HOIST
204 kg (450 lb)

As per drawing : 355 A 82-8008
355 A 82-8009

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1 GENERAL

The hoist installation is designed to lower or haul on board people or loads, while the aircraft is hovering.

1.1 Description of the installation (Figure 1)

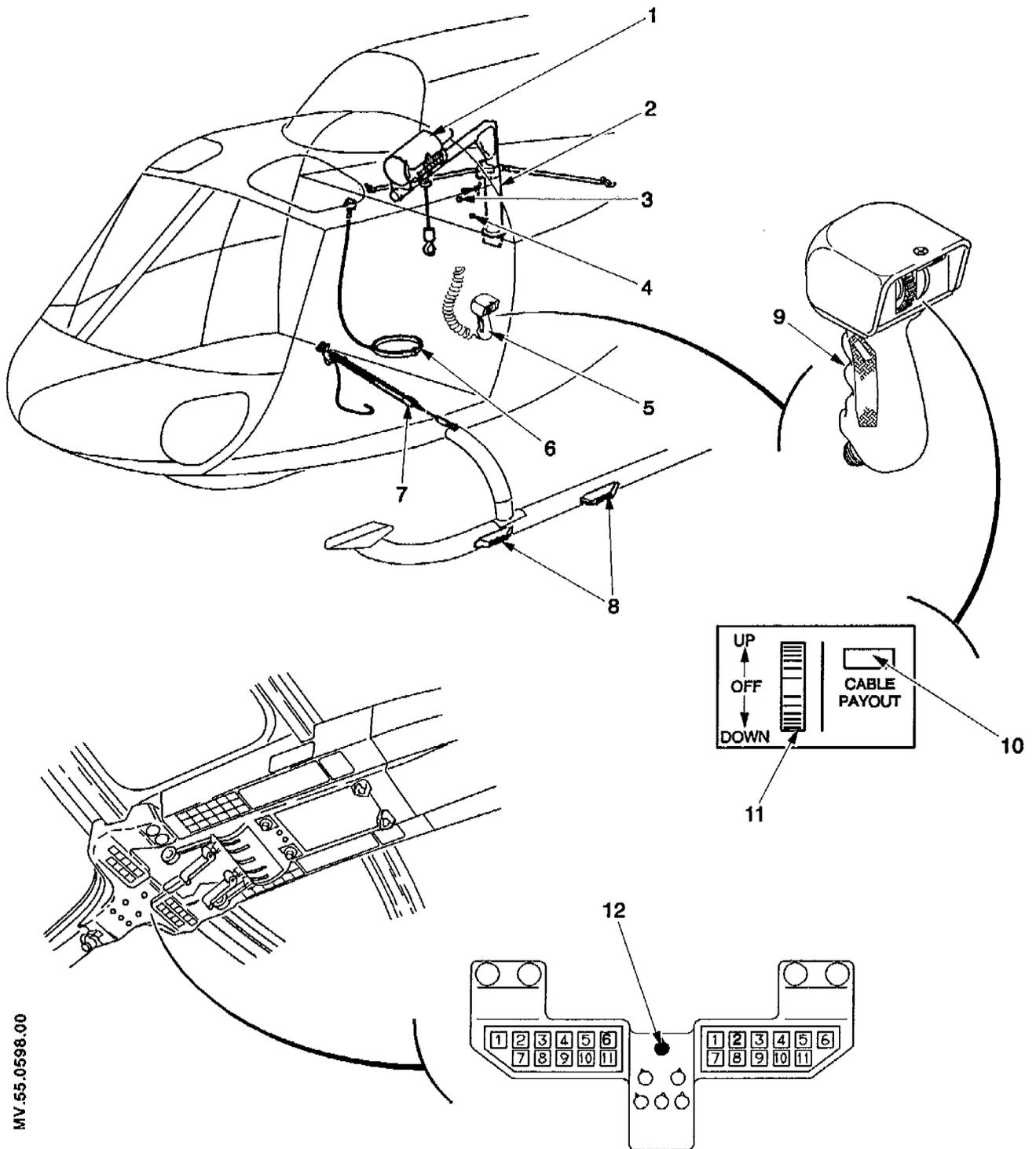
The hoist installation comprises essentially :

- a pivoting jib (2) provided with a locking bolt (3), mounted on the port side of the helicopter.
- a hoist (1) driven by a variable speed electric motor and fitted with a 50 meter cable.
- a snap hook mounted on a pulley-block tackle (7),
- two cable guards (8) secured to the LH landing gear skid,
- a pair of shears stowed on the rear wall allows the hoist operator to sever the cable, if necessary.
- An electronic control unit secured to the LH side cargo hold, providing :
 - . control of the hoist up/down speed
 - . automatic deceleration before reaching the high and low travel limits
 - . automatic stop at travel limit

The system is protected by :

- one 130-amp, fuse provided in the electrical master box.
- two 2.5-amp, and two 10 amp fuses protecting the "emergency release" circuit.
- one 2.5-amp, and one 6.3-amp, fuses for the "control" circuit.
- a resettable cut-off device on the hoist supply system.

This device, located on the rear wall is accessible to the hoist operator.



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Figure 1

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1.2 Controls and indicators available to the crew

- Controls available to the pilot :
 - . a mission selector switch (12) that makes power available to the system when selected to TREUIL (HOIST)
 - . a cable release guarded push-button mounted on the collective pitch lever which is used to sever the cable in an emergency
- Controls available to the hoist operator

The following controls are mounted on the hoist operator's control grip :

 - . a rocker switch (11) used to raise, lower and stop the cable. The cable up/down speed is dependent upon the rocker switch (11) displacement.
 - . a display (10) indicates the length of unreeled cable in meter.
 - . a press-to-talk switch for the intercommunication system

2 LIMITATIONS

HOIST OPERATIONS MUST BE IN ACCORDANCE WITH OPERATING REGULATIONS GOVERNING THESE OPERATIONS.

The limitations laid down in SECTION 2 remain applicable with the addition of the following specific points :

- Minimum crew : one pilot and one hoist operator
- Maximum load on the hoist cable : 204 Kg (450 lb)
- Landing with a load suspended from the hoist is forbidden
- Left lateral CG location extended to 0,18 m (7,08 in) with load on hoist

3 EMERGENCY PROCEDURES

The hoist system incorporates a pyrotechnic cable cutter controlled by a guarded push-button mounted on the pilot's collective pitch lever grip. When selector switch (12) is set to TREUIL (HOIST), this permits the cable to be released in an emergency.

In the event of a complete electrical failure, have the cable severed by means of the mechanical shears available to the hoist operator.

4 NORMAL PROCEDURES

Make sure that both cable guard pads are present and firmly secured to the landing gear skid.

The jib locking bolt and the hoist operator's control grip complete with support must be installed before take-off.

The hoist must be controlled by the hoist operator attached with safety belt (6) and standing on the left side of the cabin. A control grip provided with an UP-DOWN rocker switch (11) marked UP-OFF-DOWN is available to the operator.

To carry out a hoisting operation :

- Stabilize the aircraft in hover above the hoisting site
- Ensure sufficient power reserve is available that will permit to move off in forward flight once the load is hoisted on board.
- Set the jib in hoisting position
- Set mission selector switch (12) to TREUIL (HOIST).

The hoist operator can now control the winch. To bring the load into the cabin, unlock the jib and pivot it inwards.

The snap-hook can be used to hold the load while the hoist cable is being unhooked.

5 PERFORMANCE

With hoist jib folded, the performance data laid down in SECTION 5.1 remain applicable except the climbing performance data which are decreased by :

- 100 ft/min - 30 m/min with two engines in operation
- 20 ft/min - 6 m/min with one engine in operation.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

SPECTROLAB SEARCHLIGHT

PER DRAWING :355A 64 7051

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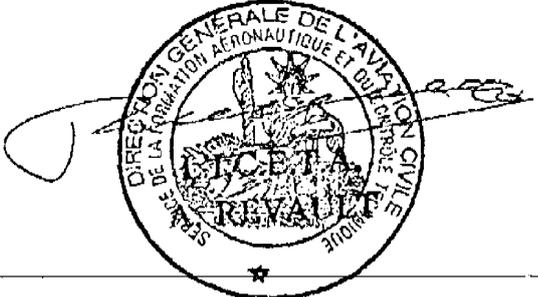
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SUP.20.P5

1 GENERAL

1.1 Description

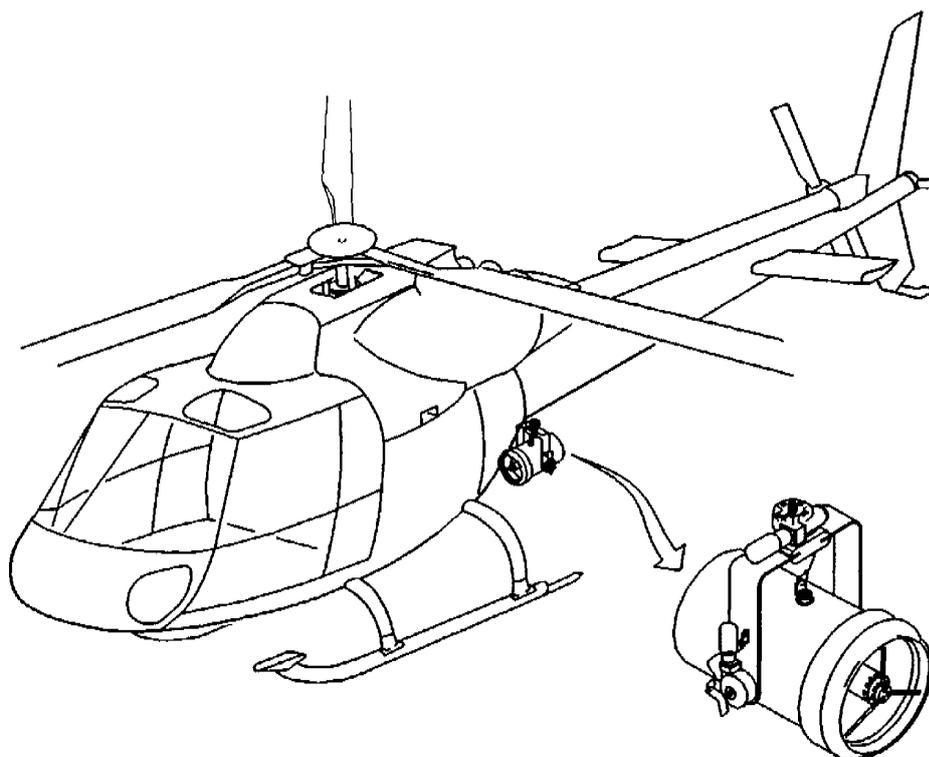
The 1.6 kW SPECTROLAB searchlight is designed to facilitate certain missions (search, rescue, surveillance). It is located at the tail boom root.

The light ON-OFF and orientation controls are located on a movable unit which can be used by the crewmembers either in the cockpit or in the cabin.

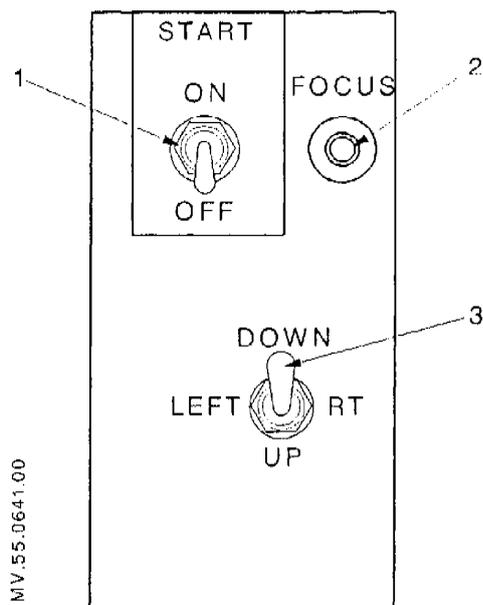
The searchlight system is made up of the following components :

- a ventiled optical assembly (lamp and reflector), complete with FOCUS control,
 - a gimbal complete with azimuth and elevation motors,
 - a junction box containing interconnections,
 - a control unit.
- a green "LIGHT"(PHARE) indicator light on the warning-caution-advisory panel. This light comes on to indicate that the light is switched on.

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1.2 Control Unit



ITEM	DESCRIPTION	FUNCTION
1	Switch	<ul style="list-style-type: none"> - Stable "ON-OFF" positions - used to switch the system on and off. - Unstable "START" position to switch on the lamp.(NOTE)
2	"FOCUS" pushbutton	<ul style="list-style-type: none"> - Used to adjust the switch of the light beam.
3	"UP/DOWN/LEFT/RT" button	<ul style="list-style-type: none"> - Used to direct the light beam in the direction required. Simultaneous displacement on both axes is possible.

NOTE : To prevent premature damage to the searchlight and to the lamp, release the switch as soon as the searchlight is illuminated and avoid long series of flashes.

1.3 Techniques to maximize lamp life

We recommend that you use the light for at least 20 minutes, once it has been switched on.

This 20-minute period enables the lamp electrodes to be "recharged". This recharging prevents the erosion and premature damage to the lamp.

2 LIMITATIONS

The limitations laid down in the basic Flight Manual and relevant Supplements remain applicable.

3 EMERGENCY PROCEDURES

The Emergency Procedures laid down in the basic Flight Manual and relevant Supplements remain applicable, but are completed by the following Emergency Procedures.

S/Section 3.2

ELECTRICAL POWER SYSTEM FAILURES

5.1.1 Failure of a generator

Complete the § by the following :

- Switch off light

4 NORMAL PROCEDURES

The Normal Procedures laid down in the basic Flight Manual and relevant Supplements remain applicable, but are completed by the following Normal Procedures.

4.1 External Checks

Visually check : support brackets, attachment fittings, safety devices and wiring.

4.2 Operation

Since the searchlight control unit is amovable unit, it is not normally used by the pilot.

CAUTION : THE SEARCHLIGHT GIVES OFF HEAT. DO NOT, THEREFORE :

- DIRECT THE BEAM TOWARDS FLAMMABLE MATERIALS WHEN THE AIRCRAFT IS FLYING LESS THAN 10 ft ABOVE THEM.
- DIRECT THE BEAM TOWARDS THE LANDING GEAR SKIDS OR THE EMERGENCY FLOTATION GEAR FLOATS.

4.3 Landing

Before landing, it is recommended to rotate the light in elevation until it is against its upper stop.

5 REGULATORY PERFORMANCE DATA

The Regulatory Performance Data laid down in the basic Flight Manual and relevant Supplements remain applicable.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

FAURE HERMAN FUEL FLOWMETER

OP 2625

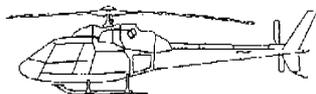
IMPORTANT NOTE

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* ————— *

This supplement supports the helicopters delivered by both AEROSPATIALE and EUROCOPTER FRANCE.
Revisions to this supplement are made by EUROCOPTER FRANCE using the same procedures as AEROSPATIALE.

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



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SUP.21	P5	1/01	97-18	N			
SUP.21		1	97-18	N			
SUP.21		2	97-18	N			
SUP.21		3	97-18	N			

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Page 1

1 GENERAL

This equipment provides the crew with a continuous indication of :

- The instantaneous fuel consumption of each engine,
- The amount of fuel remaining in the fuel tanks,
- The remaining flight time.

The equipment description and details of its operation are given in Section 9.

2 LIMITATIONS

Irrespective of the specific limitation indicated below, the limitations of the basic manual and the supplements used remain applicable.

An anti-icing additive must be used in the fuel at outside air temperatures equal to or below 0°C.

3 EMERGENCY PROCEDURES

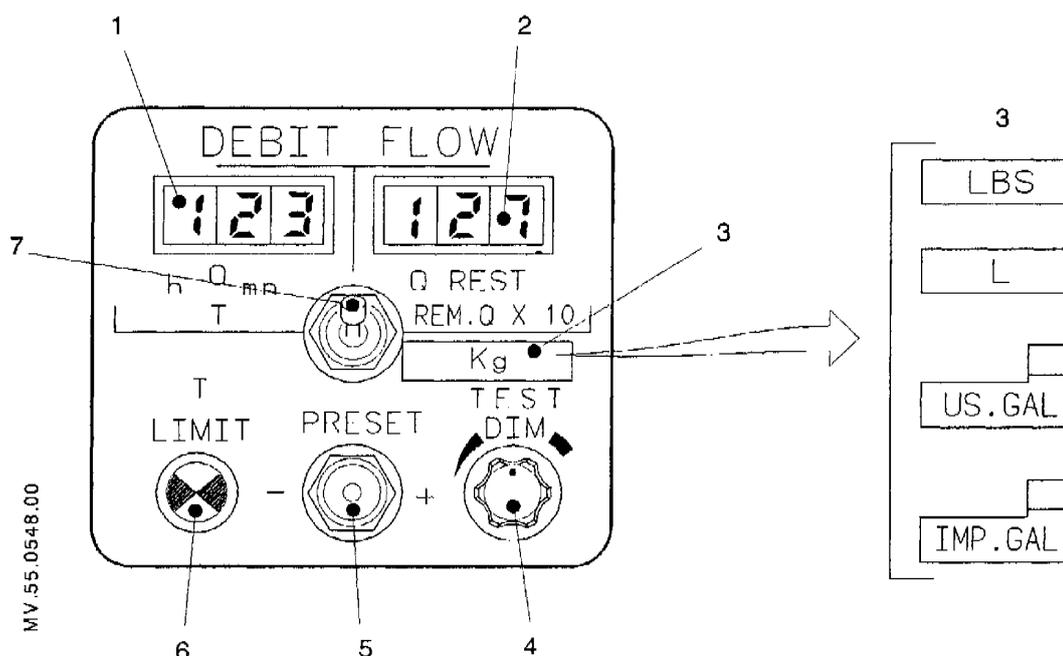
The emergency procedures of the basic manual and the supplements used remain applicable.

4 NORMAL PROCEDURES

The normal procedures of the basic manual and the supplements used remain applicable.

4.1 Flowmeter operation

NOTE : The standard aircraft fuel quantity gauge readings must take precedence over the fuel flowmeter computer.



In flight

- Flow (débit) read on the display units (1) and (2).
- Remaining time (T) read on the LH display and remaining quantity (REM. Q) read on the RH display.

On the groundProgramming the indicator

This operation is carried out when fuel is added in the tanks.

- Trip selector switch (7) to PRESET (position protected by a locking system).

The amount of fuel remaining is indicated on the RH display (2).

Actuating selector switch (5) :

- Toward position (-) slowly reduces the value displayed,
- Toward position (+) rapidly increases the value displayed.

After displaying the actual amount of fuel on board, return selector switch (7) to its initial position.

4.2 Indicator test procedure

Pressing push-button (4) should make "eights" appear on displays (1) and (2) and cause illumination of the limit light (6).

If the light flashes, the indicator battery has to be changed (the "remaining quantity" information stored in memory is not valid).

5 PERFORMANCE

The performance, values given in the basic manual and in the supplements used are not affected.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

LONG AND SHORT FOOTSTEPS

Long D.350.591.111-a
Short D.350.591.113

IMPORTANT NOTE

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SUP.22	P5	1/01	99-23	N			
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Page 1

1 GENERAL

The long footstep (P/N D.350.591.111-a) on the high landing gear facilitates cabin access and inspection of the transmission platform.

The short footstep (P/N D.350.591.113) on the high landing gear facilitates cabin access.

2 LIMITATIONS

The limitations specified in the Basic Flight Manual and relevant Supplements remain applicable.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the Basic Flight Manual and relevant Supplements remain applicable.

4 NORMAL PROCEDURES

The normal procedures given in the Basic Flight Manual and relevant Supplements remain applicable.

5 PERFORMANCE

Performance data given in the Basic Flight Manual and relevant Supplements remain applicable but are completed by the following procedures :

- Climbing performance on 1 ENG. and 2 ENG.

. Only rates of climb superior to 400 ft/min must be decreased by 2.5 %.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

BREEZE ELECTRIC HOIST
204 kg (450 lb)

IMPORTANT NOTE

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Page 1

1 GENERAL

The BREEZE electric hoist 204 kg (450 lb) installation is designed to lower or haul on board people or loads, while the aircraft is hovering.

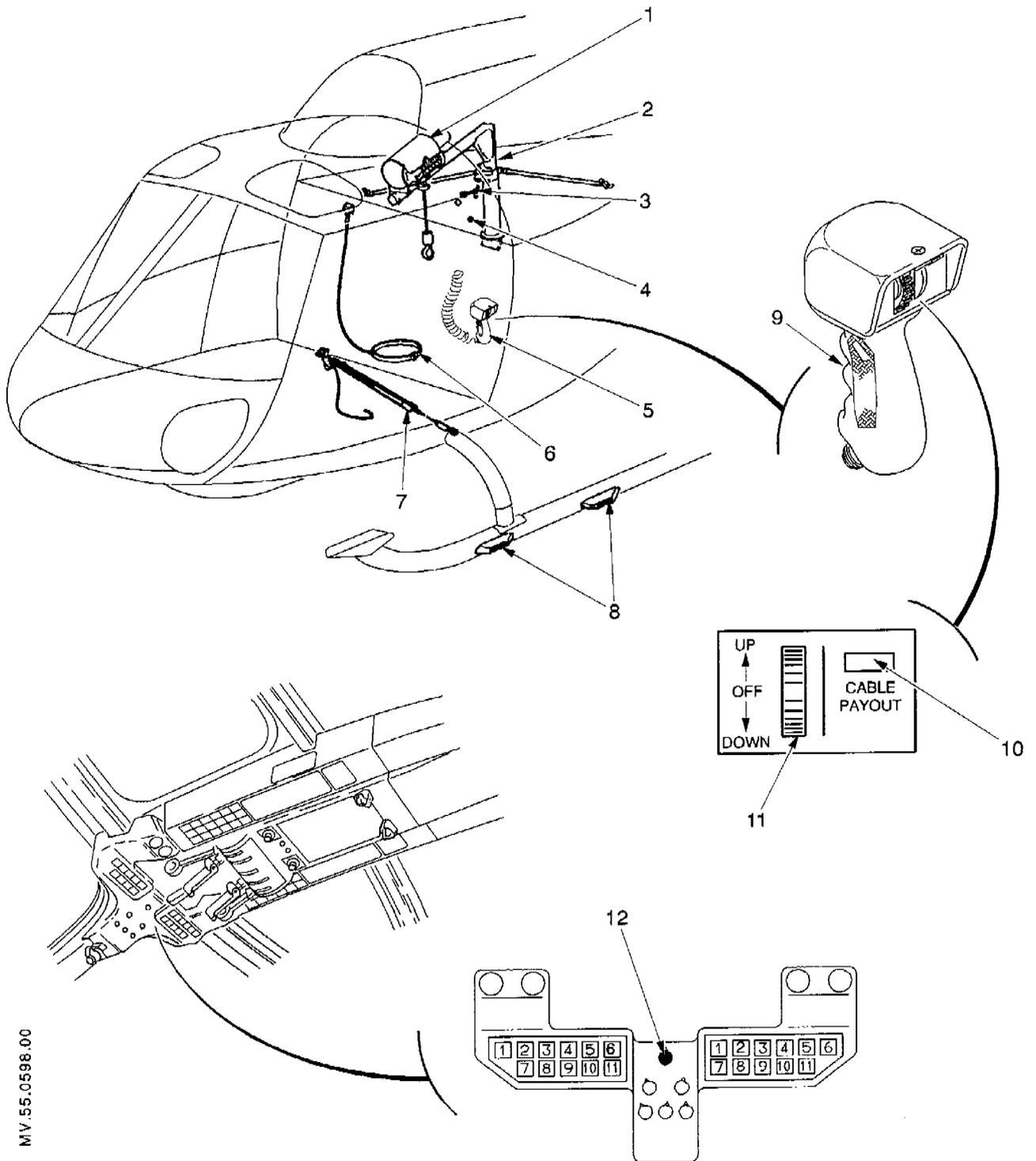
1.1 Description of the installation (Figure 1)

The hoist installation comprises essentially :

- A pivoting jib (2) provided with a locking bolt (3) (ferrying and hoisting position, mounted on the port side of the helicopter.
- A hoist (P/N BL 29700-23) (1) driven by a variable speed electric motor and fitted with a 50 meter cable.
- A snap hook mounted on a pulley-block tackle (7),
- An electrical power supply and control circuit provided for the crew.
- Two cable guards (8) secured to the LH landing gear skid,
- A pair of shears stowed on the rear wall allows the hoist operator to sever the cable, if necessary.
- An electronic control unit secured to the LH side cargo hold, providing :
 - . control of the hoist up/down speed
 - . automatic deceleration before reaching the high and low travel limits
 - . automatic stop at travel limit and in the event of incorrect unwinding of the cable.

The system is protected by :

- one 130-amp, fuse provided in the electrical master box.
- Two 7.5 A circuit-breakers for the " emergency release " system, located on the aft bulkhead (4).
- One 100 A circuit-breaker for the hoist power supply system for cut-off and rearming located on the aft bulkhead (4).
- Two 2.5 A fuses on center overhead panel 10 Alpha for the emergency release system.
- One 2.5 A fuse on overhead panel 7 alpha 1 for the UP-DOWN system.



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Figure 1

1.2 Controls and indicators available to the crew

- Controls available to the pilot :
 - . a mission selector switch (12) that makes power available to the system when selected to TREUIL (HOIST).
 - . a cable release guarded push-button mounted on the collective pitch lever which is used to sever the cable in an emergency.
- Controls and monitoring system available to the hoist operator. The following controls are mounted on the hoist operator's control grip (5) :
 - . a rocker switch (11) used to raise, lower and stop the cable. The cable up/down speed is dependent upon the rocker switch (11) displacement.
 - . a display (10) indicates the length of unreeled cable in meter.
 - . a press-to-talk switch for the intercommunication system (9).

2 LIMITATIONS

The limitations specified in the Basic Flight Manual and relevant Supplements remain applicable with the exception of the following specific limitations :

- Minimum crew : one pilot and one hoist operator.
- Maximum load on the hoist cable : 204 Kg (450 lb).
- Landing with a load suspended from the hoist is forbidden.
- Left lateral CG location extended to 0,18 m (7,08 in) with load on hoist.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the Basic Flight Manual and relevant Supplements remain applicable, but are completed by :

The hoist system incorporates a pyrotechnic cable cutter controlled by a guarded push-button mounted on the pilot's collective pitch lever grip. When selector switch (12) is set to TREUIL (HOIST), this permits the cable to be released in an emergency.

In the event of a complete electrical failure, have the cable severed by means of the mechanical shears available to the hoist operator.

4 NORMAL PROCEDURES

The normal procedures given in the Basic Flight Manual and relevant Supplements remain applicable but are completed by :

Make sure that both cable guard pads are present and firmly secured to the landing gear skid (8).

The jib locking bolt and the hoist operator's control grip complete with support must be installed before take-off.

The hoist must be controlled by the hoist operator attached with safety belt (6) and standing on the left side of the cabin. A control grip provided with an UP-DOWN rocker switch (11) marked UP-OFF-DOWN is available to the operator.

To carry out a hoisting operation :

- Stabilize the aircraft in hover above the hoisting site.
- Ensure sufficient power reserve is available that will permit to move off in forward flight once the load is hoisted on board.
- Set the jib in hoisting position.
- Set mission selector switch (12) to TREUIL (HOIST).

The hoist operator can now control the winch. To bring the load into the cabin, unlock the jib and pivot it inwards.

The snap-hook can be used to hold the load while the hoist cable is being unhooked.

The jib must be locked in the folded position after hoisting operations or when the hoist is not in use.

5 PERFORMANCE

With hoist jib folded, the performance given in the Basic Flight Manual remain applicable except the climbing performance data which are decreased by :

- 100 ft/min - 30 m/min with two engines in operation
- 20 ft/min - 6 m/min with one engine in operation.



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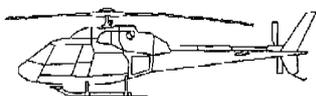
SUPPLEMENT

BREEZE ELECTRIC HOIST
204 kg (450 lb)
HANDLE WITH SUPPORT BRACKET

IMPORTANT NOTE

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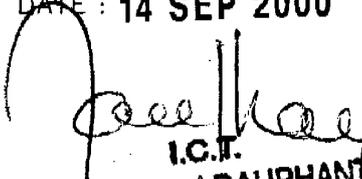


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Page 1

1 GENERAL

The BREEZE electric hoist 204 kg (450 lb) installation is designed to lower or haul on board people or loads, while the aircraft is hovering.

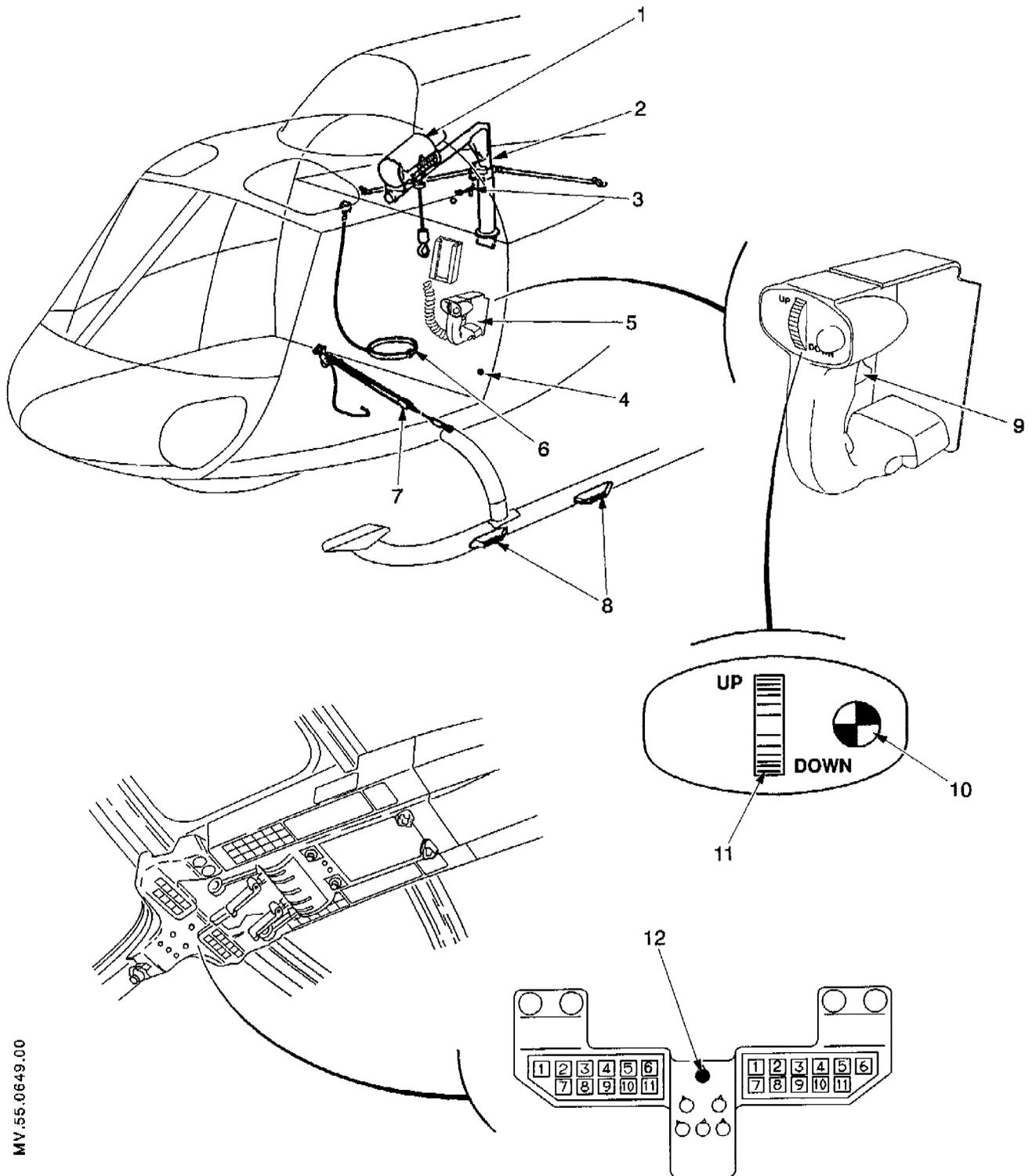
1.1 Description of the installation (Figure 1)

The hoist installation comprises essentially :

- A pivoting jib (2) provided with a locking bolt (3) (ferrying and hoisting position), mounted on the port side of the helicopter.
- A hoist (P/N BL 29700-23) (1) driven by a variable speed electric motor and fitted with a 50 meter cable.
- A snap hook mounted on a pulley-block tackle (7),
- An electrical power supply and control circuit provided for the crew.
- Two cable guards (8) secured to the LH landing gear skid,
- A pair of shears stowed on the rear wall allows the hoist operator to sever the cable, if necessary.
- An electronic control unit secured to the LH side cargo hold, providing :
 - . control of the hoist up/down speed
 - . automatic deceleration before reaching the high and low travel limits
 - . automatic stop at travel limit and in the event of incorrect unwinding of the cable.

The system is protected by :

- one 130-amp, fuse provided in the electrical master box.
- One 100 A circuit-breaker for the hoist power supply system for cut-off and rearming located on the aft bulkhead (4).
- Two 7.5 A circuit-breakers for the "emergency release" system, located on the aft bulkhead (4).
- One 6.3 A fuse on overhead panel 7 ALPHA 1 for the UP-DOWN system.
- Two 2.5 A fuses on center overhead panel 10 ALPHA for the emergency release system.
- One 2.5 A fuse on overhead panel 7 ALPHA 1 for the "mission selector" system.



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Figure 1

1.2 Controls and indicators available to the crew

- Controls available to the pilot :
 - . a mission selector switch (12) that makes power available to the system when selected to TREUIL (HOIST).
 - . a cable release guarded push-button mounted on the collective pitch lever which is used to sever the cable in an emergency.
- Controls and monitoring system available to the hoist operator. The following controls are mounted on the hoist operator's control grip (5) :
 - . a press-to-talk switch for the intercommunication system (9).
 - . a rocker switch (11) used to raise, lower and stop the cable. The cable up/down speed is dependent upon the rocker switch (11) displacement.
 - . a white indicator light (10) shows that the hoist installation is energized.

2 LIMITATIONS

The limitations specified in the Basic Flight Manual and relevant Supplements remain applicable with the exception of the following specific limitations :

- Minimum crew : one pilot and one hoist operator.
- Maximum load on the hoist cable : 204 kg (450 lb).
- Landing with a load suspended from the hoist is forbidden.
- Left lateral CG location extended to 0,18 m (7,08 in) with load on hoist.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the Basic Flight Manual and relevant Supplements remain applicable, but are completed by :

The hoist system incorporates a pyrotechnic cable cutter controlled by a guarded push-button mounted on the pilot's collective pitch lever grip. When selector switch (12) is set to TREUIL (HOIST), this permits the cable to be released in an emergency.

In the event of a complete electrical failure, have the cable severed by means of the mechanical shears available to the hoist operator.

4 NORMAL PROCEDURES

The normal procedures given in the Basic Flight Manual and relevant Supplements remain applicable but are completed by :

Make sure that both cable guard pads are present and firmly secured to the landing gear skid (8).

The jib locking bolt and the hoist operator's control grip complete with support must be installed before take-off.

The hoist must be controlled by the hoist operator attached with safety belt (6) and standing on the left side of the cabin. A control grip provided with an UP-DOWN rocker switch (11) marked UP-DOWN is available to the operator.

To carry out a hoisting operation :

- Stabilize the aircraft in hover above the hoisting site.
- Ensure sufficient power reserve is available that will permit to move off in forward flight once the load is hoisted on board.
- Set the jib in hoisting position.
- Set mission selector switch (12) to TREUIL (HOIST).

The hoist operator can now control the winch. To bring the load into the cabin, unlock the jib and pivot it inwards.

The snap-hook can be used to hold the load while the hoist cable is being unhooked.

The jib must be locked in the folded position after hoisting operations or when the hoist is not in use.

5 PERFORMANCE

With hoist jib folded, the performance given in the Basic Flight Manual remain applicable except the climbing performance data which are decreased by :

- 100 ft/min - 30 m/min with two engines in operation
- 20 ft/min - 6 m/min with one engine in operation.



FLIGHT MANUAL

AS 355 N

SUPPLEMENT

CAMERA CARRYING

INSTALLATION

IMPORTANT NOTE

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<p>LIST OF THE LATEST NORMAL APPROVED REVISIONS</p> <table border="1"> <thead> <tr> <th>No</th> <th>Date</th> <th>No</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>00-26</td> <td></td> <td></td> </tr> </tbody> </table>	No	Date	No	Date	0	00-26			<p>NORMAL REVISION : 0 DGAC APPROVED DATE : 06 AVR. 2001</p>  <p align="right">Signé : IETA DANTART J.P.</p>
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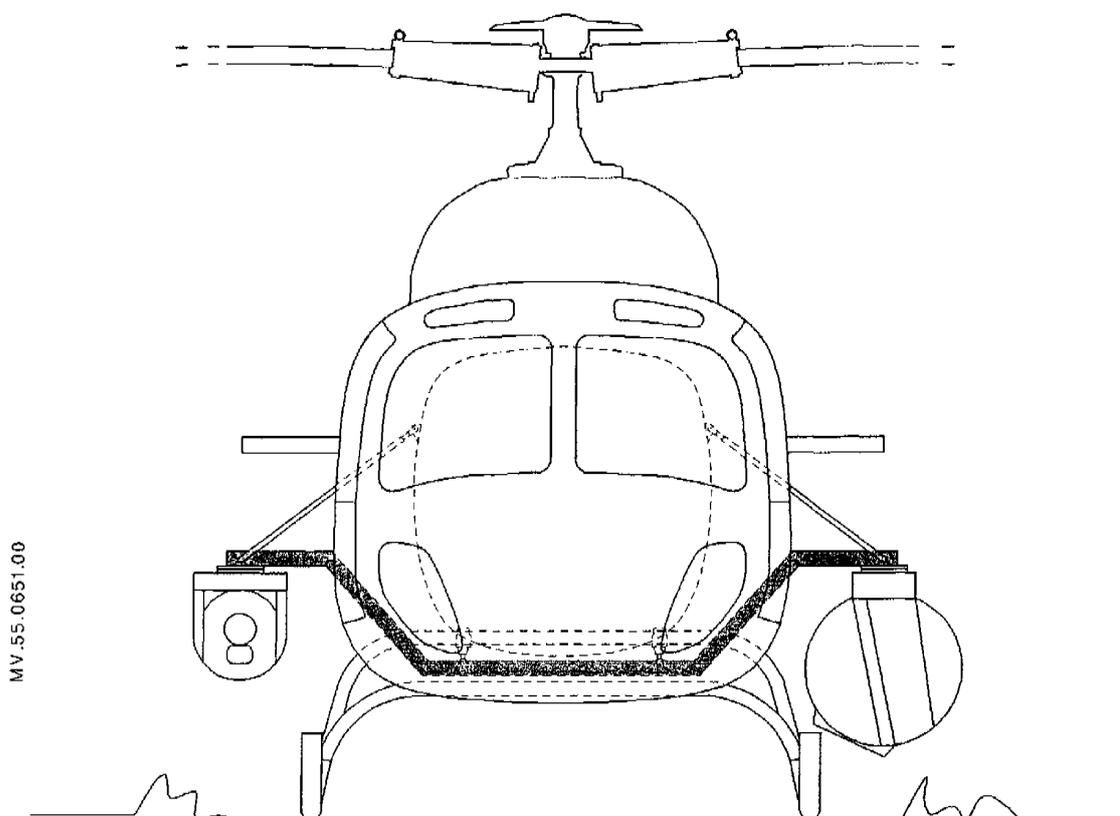
Page 1

1 GENERAL

The installation permits the transportation of external 24" or 16"-type cameras.

It is mainly composed of :

- a jib that supports the camera that is secured beneath the tail undercarriage and connected to the airframe with four rods (two on each side).



2 LIMITATIONS

The limitations specified in the Basic Flight Manual and relevant Supplements remain applicable with the exception of the following specific limitations :

- Equipements required

- . high-type landing gear
- . dual angle section on the lower fin.

- Allowable cameras

- . 24" ± 2" and 68 kg ± 2 kg ball
- . 16" ± 2" and 38 kg ± 2 kg ball.

3 EMERGENCY PROCEDURES

The Emergency Procedures specified in the Basic Flight Manual and relevant Supplements remain applicable.

4 NORMAL PROCEDURES

The Normal Procedures specified in the Basic Flight Manual and relevant Supplements remain applicable.

5 PERFORMANCE DATA

The performance Data specified in the Basic Flight Manual and relevant Supplements remain applicable but are completed by :

- Performance in climb (R/C) :

- . Apply the following corrections according to the configuration.

	No-loaded beam	24" ball alone	24" ball + 16" ball
Single-engine configuration	- 5%	- 10%	- 20%
Twin-engine configuration	- 4%	- 7%	- 12%

- Performance of speeds in level flight according to the configuration (not DGAC approved).

	No-loaded beam	24" ball alone	24" ball + 16" ball
Level flight	- 3%	- 5%	- 8 %

NOTE : The above corrections allow for the corrections related to the high-type landing gear.

6 WEIGHT AND BALANCE (not DGAC-approved)

INSTALLATION	WEIGHT kg	LONGITUDINAL CG		LATERAL CG	
		DISTANCE	MOMENT	DISTANCE	MOMENT
Non-loaded support beam	29	4.256 m	123	0	0

Some examples of weight and balance of cameras after installation on their supports are given in the table below :

INSTALLATION	WEIGHT kg	LONGITUDINAL CG		LATERAL CG	
		DISTANCE	MOMENT	DISTANCE	MOMENT
WESCAM 24"	68	4.318 m	294	1.315 m	89
WESCAM 16"	38	4.318 m	164	1.315 m	50
FLIR (2000 HP SAFIRE)	40	4.318 m	173	1.315 m	53
FLIR (Chlio)	39	4.318 m	168	1.315 m	51



FLIGHT MANUAL

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SPECIAL SUPPLEMENT

FERRY TANK INSTALLATION

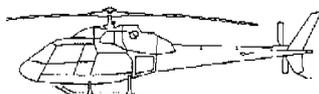
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LIST OF APPROVED EFFECTIVE PAGES
DGAC CERTIFICATION

- (1) Evolution page code
 - R : Revised, to be replaced
 - N : New, to be inserted

SUPPLEMENT	PAGE	DATE	(1)	SUPPLEMENT	PAGE	DATE	(1)
SUP.51	P1	1	94-40	N			
SUP.51	P5	1/01	94-40	N			
SUP.51		1	94-40	N			
SUP.51		2	94-40	N			
SUP.51		3	94-40	N			
SUP.51		4	94-40	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS				NORMAL REVISION : 0 DGAC APPROVED DATE : 28 OCT. 1994	
No	Date	No	Date		
0	94-40				

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94-40

Page 1

1 GENERAL

The range of the helicopter can be increased by installing a special metal ferry flight tank transversally in the rear cabin area.

This installation consists essentially of :

- A removable tank with a useful capacity of 475 litres (125 US gal)
- A vent line.
- A fuel transfer line, with an isolating valve, for connection of ferry tank to forward tank (LH fuel contents gauge).

2 LIMITATIONS

THIS INSTALLATION IS TO BE USED ONLY FOR FERRY FLIGHT
WITH THE SPECIAL PERMISSION OF THE COMPETENT AUTHORITIES

The limitations laid down in the basic Flight Manual remain applicable but are completed by the following :

- Only personnel indispensable to the accomplishment of the mission are authorized to fly in the aircraft.
- Smoking is prohibited, due to the presence of fuel in the tank in the cabin.
- Air the cabin as much as possible.
- Fuel transfer is prohibited as long as the forward tank gauge reading exceeds the value as determined by means of Chart 1.

NOTE : Check that weight and CG values are within authorized limits (see Section 2).

3 EMERGENCY PROCEDURES

The emergency procedures laid down in the basic Flight Manual remain applicable but are completed by the following :

In the event of fuel leaks in the cabin :

- Land as soon as possible.

4 NORMAL PROCEDURES

The normal procedures laid down in the basic Flight Manual remain applicable but are completed by the following :

CHECKS BEFORE FILLING THE TANK

- Make sure that the ferry flight tank is securely attached.
- Check that the ferry tank vent line is correctly installed.
- Close the transfer valve.

FILLING THE TANK

- Fill the main fuel tanks.
- Fill the ferry tank with the quantity of fuel previously determined.
- Check C.G. location :
 - . Weight and moment of empty ferry tank are given in Section 6.
 - . Fuel is located at 2.32 m (91.3 in) from the reference line.

USE OF FERRY TANK IN FLIGHT

The following procedure makes it possible to maintain C.G. location within limits and to know the quantity of fuel available.

- Take off and start flight with transfer valve closed.
- Open the transfer valve when the forward tank gauge reading is at the most equal to the value determined by means of Chart 1.
- Check that the fuel transfer is effective (reading increasing on forward tank gauge).
- Wait until balance is obtained between ferry tank and forward tank to determine the quantity of fuel.

CAUTION : - DURING FUEL TRANSFER, DO NOT TAKE ACCOUNT OF FORWARD TANK GAUGE READINGS.
 - WHEN FUEL TRANSFER IS ACHIEVED, FORWARD TANK GAUGE READS 2 % MORE THAN AT BEGINNING OF TRANSFER.* THIS OPERATION MAY LAST 20 MINUTES.

* This reading may exceed 2 % when the ferry tank contains more than 240 litres (63.4 US gal).

- The total quantity of fuel available is the sum of :
 - . the quantity determined by means of Chart 1 from the reading on forward tank gauge,
 - . and the reading on rear tank gauge.

EXAMPLE OF USE OF CHART 1

DETERMINING THE TRANSFER LIMIT VALUE

- Starting from the quantity of fuel 1 contained in the ferry tank, follow the vertical line up to line 2 (limit of authorized transfer).
- Then move horizontally to point 3, which corresponds to the fuel contents gauge reading at which fuel transfer can be started.

DETERMINING THE QUANTITY OF FUEL AVAILABLE AFTER TRANSFER
(Forward tank and ferry tank)

- When reading is steady (point 4) read on line 5 the quantity of fuel available in both tanks (forward and ferry tanks).

Example : With 150 litres in the ferry tank

- Transfer authorized from 26 % reading on forward tank gauge.
- When reading is steady :
 - . the gauge reads 28 %
 - . the total fuel quantity is 370 litres.

NOTE : From 0 to 130 litres (0 to 34.3 US gal) the fuel is contained in the forward tank only. Above this value, the fuel is divided between the forward tank and the ferry tank, which explains why the scale is different.

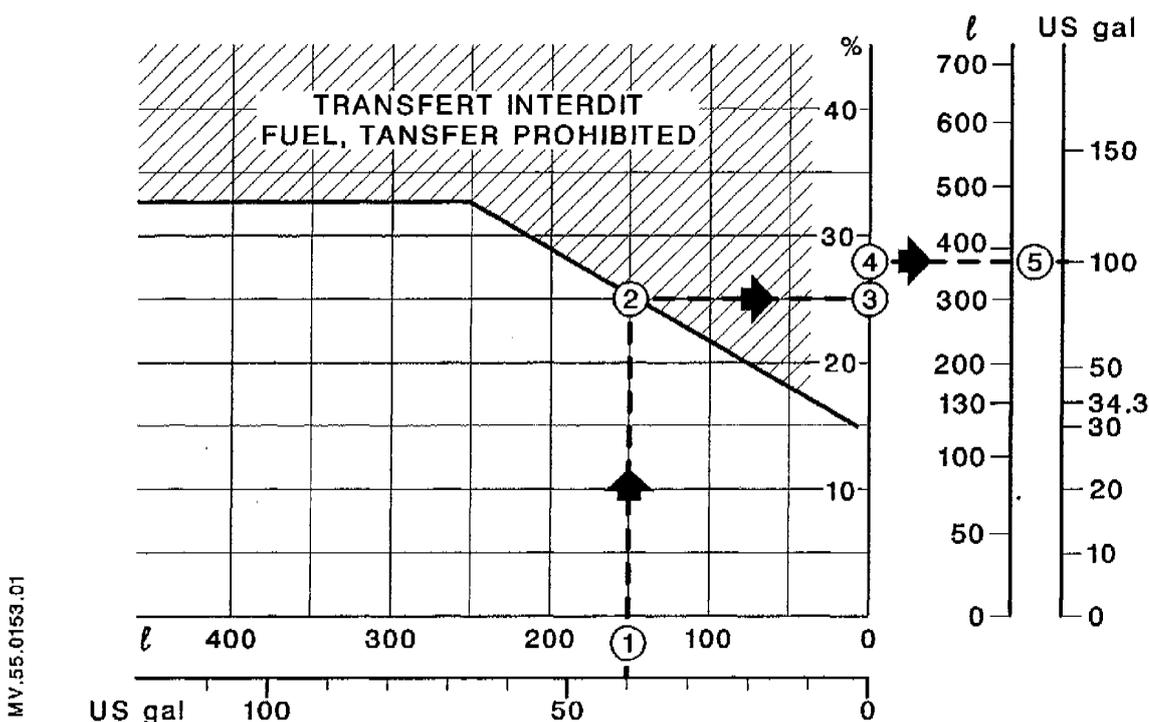


Chart 1

5 PERFORMANCE

The performance data laid down in the basic Flight Manual are unaffected.



FLIGHT MANUAL

AS 355 N

SPECIAL SUPPLEMENT

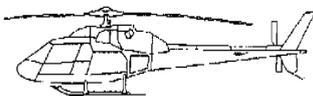
ABSEILING INSTALLATION

Per drawing : 355P84.0080

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 Effective Pages.

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

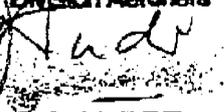


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SUP.53	P1	1	99-29	N			
SUP.53	P5	1/01	99-29	N			
SUP.53		1	99-29	N			

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Page 1

1 GENERAL

This installation allows trained personnel to perform abseiling. It consists of two rings fixed to the cabin floor in front of the passenger's seats and of a protection for the lower rail of each sliding door.

2 LIMITATIONS

THE USE OF THIS TYPE OF INSTALLATION IS SUBJECTED TO THE APPROVAL OF THE COMPETENT OPERATIONAL AUTHORITIES.

The limitations specified in the basic Flight Manual and relevant Supplements remain applicable ; however, they are completed or modified by the following limitations :

- Abseiling is limited to hover flight.
After completion of the abseiling operation, transition to forward flight or landing is prohibited with the ropes unwound.
- The load on the abseiling installation is limited to 120 kg per ring.
A plate affixed close to each ring indicates the maximum load.

3 EMERGENCY PROCEDURES

The Emergency Procedures specified in the basic Flight Manual and relevant Supplements remain applicable.

4 NORMAL PROCEDURES

The normal Procedures specified in the basic Flight Manual and relevant Supplements remain applicable ; however, they are completed by the following :

- Before takeoff, determine the weight and CG conditions which will prevail during the mission, knowing that the load on the asbeil ropes is located at :
 - . 2.24 m from the longitudinal datum,
 - . 1.09 m from the aircraft centerline.

5 REGULATORY PERFORMANCE DATA

The Regulatory Performance Data specified in the basic Flight Manual and relevant Supplements remain applicable.



FLIGHT MANUAL

AS 355 N

SPECIAL SUPPLEMENT

G.P.S.

TNL 2101 APPROACH

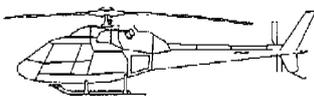
AND TNL 2101

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 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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SUP.55		2	99-28	N			
SUP.55		3	99-28	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS				NORMAL REVISION : 1 DGAC APPROVED DATE : 15 JUL. 1999	
No	Date	No	Date	 <p align="right">Ingénieur en Chef de l'Aviation Chef du Bureau : Avions de Transport Division Aéronautique <i>J. Andre</i> J. ANDRE</p>	
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1	99-28				

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355 N

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1 GENERAL

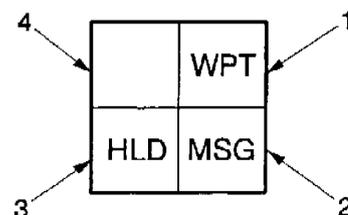
The TNL 2101 APPROACH and TNL 2101 GPS system complies with the requirements of AC 20-138 for use IFR conditions, en route and in the terminal area or VFR as a day or night primary navigation aid.

R

This navigation system :

- Involves using the CRS (Course) command to display the DTK which is provided by the GPS CDU at each change of navigation leg.
- Provides the following data to the horizontal situation indicator (HSI) :
 - . XTK : The track error has an adjustable scale both for the equipment built-in CDI and for the HSI indicator.
On the helicopter, the recommended value to use en route and in the terminal area is ± 1 NM.
It is also recommended to use the same scale for the built-in and external CDI.
When the equipment is switched on, the operator is automatically advised of the XTK values selected.
 - . a validity flag for the GPS.
- Sends the following data to a caption panel located on the instrument panel :

1. WPT - Waypoint approach
2. MSG - Repeat of CDU MSG data
3. HLD - Stores a pilot action which suspends the current flight plan
4. Not wired up.



Abbreviations used :

DTK : Desired Track
 XTK : Cross-Track
 TK : Track
 CDU : Control Display Unit
 CDI : Control Display Indicator
 RAIM : Receiver Autonomous Integrity Monitoring

2 LIMITATIONS

The standard flight manual and flight manual supplements limitations in use remain applicable, and are supplemented or modified by the following limitations :

- Use of the GPS system is prohibited in approach mode.
- A plate indicate :

USING GPS FOR
INSTRUMENT APPROACHES
IN PROHIBITED

L'UTILISATION DU GPS POUR
DES APPROCHES AUX INSTRUMENTS
EST INTERDITE

3 EMERGENCY PROCEDURES

The standard flight manual and flight manual supplements emergency procedures in use remain applicable, and are supplemented or modified by the following emergency procedures :

3.1 GPS failure

1st case

Symptoms : - Appearance of a GPS flags on the HSI.
- Flashing of MSG push-button on the CDU as well as the pilot's and copilot's MSG warning lights.

<u>Analysis</u>	<u>Action</u>
- Loss of GPS data validity	- Use conventional navigation equipment.

NOTE : Pressing on the MSG push-button on the CDU indicates the status of the GPS.

2nd case

Symptoms : - Ignition of RAIM warning light.
- Flashing of MSG push-button on the CDU and MSG warning lights on the instrument panel with a 30 s time delay.

<u>Analysis</u>	<u>Action</u>
- RAIM failure (" RAIM UNAVAILABLE " message)	- Use conventional navigation equipments (refer to NOTE 1 and 2)
- Error position detected by the RAIM (" RAIM ERROR " message)	- Use conventional navigation equipments (refer to NOTE 2)

NOTE 1 : " En route ", the GPS can still be used subject to checking the navigation data by conventional equipment at least every 15 minutes.

NOTE 2 : Pressing on the MSG push-button on the CDU indicates the status of the GPS.

4 NORMAL PROCEDURES

The standard flight manual and flight manual supplements normal procedures in use remain applicable, and are supplemented or modified by the following normal procedures :

- Before the start of navigation, the crew must read the CDU messages to check that all the validities are present.
- The PILOT GUIDE operating manual (Part number 81451) must be up to date and available on-board the aircraft.
- The equipment in use must have software loaded (part number 0237), which is compatible with the above-mentioned PILOT GUIDE.
- The crew must check the validity and accuracy of the data base information (28 day validity) relative to the official documentation.
- At regular intervals, the crew must check the accuracy of his position using other navigation equipment at his disposal.

NOTE - Use of the VHF frequencies listed below may degrade GPS receiver operation after 10 to 15 seconds of transmission, reverting to normal 3 seconds after transmission ends.
f= 121.150/121.175/121.200/131.200/131.250/131.275/131.300 Mhz.

- Correct operation of the GPS is not guaranteed at temperatures of between -20°C and -45°C.

5 REGULATORY PERFORMANCE

The regulatory performance for the basic flight manual and the flight manual supplements remain applicable.



FLIGHT MANUAL

AS 355 N

SPECIAL SUPPLEMENT

GPS

TNL 2101 APPROACH PLUS

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 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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SUP.55. 1	2	00-10	N				
SUP.55. 1	3	00-10	N				

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Page 1

1 GENERAL

THIS SUPPLEMENT IS NOT AN AUTHORIZATION FOR OPERATIONAL USE.

The TNL 2101 APPROACH PLUS GPS system complies with the requirements of AC 20-138 and AMJ 20X2 for use in :

- IFR conditions, en route and in the terminal area
- or VFR as a day or night primary navigation aid.
- or BRNAV.

This navigation system :

- Provides the CDI or HSI indicators with the following information (according to the aircraft customization) :

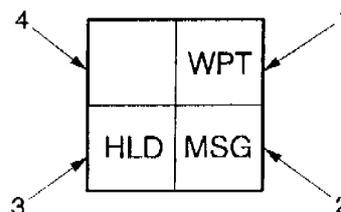
- . DTK : The DTK is set manually using the " CRS " (course) control.

- . XTK : The track error has an adjustable scale both for the equipment built-in CDI and for the HSI indicator.
On the helicopter, the recommended value to use en route and in the terminal area is ± 1 NM.
It is also recommended to use the same scale for the built-in and external CDI's.
When the equipment is switched on, the operator is automatically advised of the XTK values selected.

- . a validity flag for the GPS.

- Sends the following data to a caption panel located on the instrument panel :

1. WPT - Waypoint approach
2. MSG - Repeat of CDU MSG data
3. HLD - Stores a pilot action which suspends the current flight plan
4. Not wired up.



Abbreviations used :

- DTK : Desired Track
- XTK : Cross-Track
- TK : Track
- CDU : Control Display Unit
- CDI : Course Deviation Indicator
- RAIM : Receiver Autonomous Integrity Monitoring
- HSI : Horizontal Situation Indicator

2 LIMITATIONS

The Limitations specified in the Basic Flight Manual and relevant Supplements remain applicable but are completed or modified by the following :

- Use of the GPS is prohibited with SIDs and STARs.
- Use of the GPS system is prohibited in approach mode.
The pilot is reminded of these instructions by a placard :

L'UTILISATION DU GPS POUR DES
APPROCHES AUX INSTRUMENTS
ET SIDs / STARs EST INTERDITE

USING GPS FOR INSTRUMENT
APPROACHES AND SIDs / STARs
IS PROHIBITED

3 EMERGENCY PROCEDURES

The Emergency Procedures specified in the Basic Flight Manual and relevant Supplements remain applicable but are completed or modified by the following :

3.1 GPS failure

1st case

Symptoms : - Appearance of a GPS flag on the HSI.
- Flashing of MSG push-button on the CDU as well as the pilot's and copilot's MSG warning lights.

Analysis

- Loss of GPS data validity

Action

- Use conventional navigation equipment.

NOTE : Pressing the MSG push-button on the CDU indicates the status of the GPS.

2nd case

Symptoms : - Illumination of RAIM warning light.
- Flashing of MSG push-button on the CDU and MSG warning lights on the instrument panel with a 30-s time delay.

Analysis

- RAIM failure
(" RAIM UNAVAILABLE " message)
- Error position detected
by the RAIM
(" RAIM ERROR " message)

Action

- Use conventional navigation equipment (refer to NOTES 1 and 2)
- or
- Use conventional navigation equipment (refer to NOTE 2)

NOTE 1 : "En route", the GPS can still be used subject to checking the navigation data by conventional equipment at least every 15 minutes.

NOTE 2 : Pressing the MSG push-button on the CDU indicates the status of the GPS.

4 NORMAL PROCEDURES

The Normal Procedures specified in the Basic Flight Manual and relevant Supplements remain applicable but are completed or modified by the following :

- The RAIM prediction must be checked for flight in BRNAV space.
- Before the start of navigation, the crew must read the CDU messages to check that all the validities are present.
- The PILOT GUIDE operating manual (Part number 82879) must be up to date and available on board the aircraft.
- The equipment in use must have software compatible with the above-mentioned PILOT GUIDE (Part number 0240 D).
- The crew must check the validity and accuracy of the data base information (28 day validity) relative to the official documentation.
- For IFR or BRNAV flight, the means defined in SUP. 4 of this Manual must be operable.
- The DEAD RECKONING mode cannot be used because the TAS is unavailable.
- At regular intervals, the crew must check the accuracy of his position using the other navigation equipment items at his disposal.

NOTE - Use of the VHF frequencies listed below may degrade GPS receiver operation after 10 to 15 seconds of transmission, reverting to normal 3 seconds after transmission ends.

f= 121.150/121.175/121.200/131.200/131.250/131.275/131.300 Mhz.

- Correct operation of the GPS is not guaranteed at temperatures below -20°C.

5 REGULATORY PERFORMANCE

The regulatory Performance data specified in the Basic Flight Manual and relevant Supplements remain applicable.



FLIGHT MANUAL

AS 355 N

SPECIAL SUPPLEMENT

GPS

KLN 89B

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 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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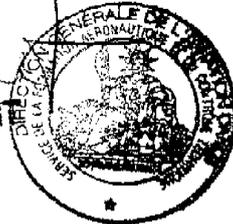
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Page 1

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SUPPLEMENT	PAGE	DATE	(1)	SUPPLEMENT	PAGE	DATE	(1)
SUP.55. 2	P1 1	00-27	N				
SUP.55. 2	P5 1/01	00-27	N				
SUP.55. 2	1	00-27	N				
SUP.55. 2	2	00-27	N				
SUP.55. 2	3	00-27	N				
SUP.55. 2	4	00-27	N				

<p align="center">LIST OF THE LATEST NORMAL APPROVED REVISIONS</p> <table border="1"> <thead> <tr> <th>No</th> <th>Date</th> <th>No</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>00-27</td> <td></td> <td></td> </tr> </tbody> </table>				No	Date	No	Date	0	00-27			<p>NORMAL REVISION : 0 DGAC APPROVED DATE : 30 JAN 2001</p> <p align="center"><i>Jean-Marcel Dauphant</i> I.C.T. Jean-Marcel DAUPHANT</p> 	
No	Date	No	Date										
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DGAC Approved:

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Page 1

1 GENERAL

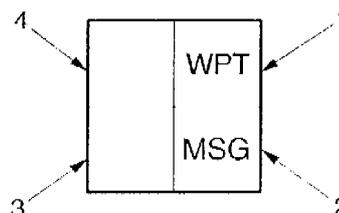
THIS SUPPLEMENT IS NOT AN AUTHORIZATION FOR OPERATIONAL USE.

The KLN 89B GPS system complies with the requirements of AC 20-138 and AMJ 20X2 for use in :

- IFR conditions, en route and in the terminal area
- or VFR as a day or night primary navigation aid.
- or BRNAV.

This navigation system :

- Provides the CDI or HSI indicators with the following information (according to the aircraft customization) :
 - . DTK : The DTK is set manually using the "CRS" (course) control.
 - . XTK : The track error has an adjustable scale both for the equipment built-in CDI and for the HSI indicator.
On the helicopter, the recommended value to use en route and in the terminal area is + 1 NM.
It is also recommended to use the same scale for the built-in and external CDI.
When the equipment is switched on, the operator is automatically advised of the XTK values selected.
 - . a validity flag for the GPS.
- Sends the following data to a caption panel located on the instrument panel :
 1. WPT - Waypoint approach
 2. MSG - Repeat of CDU MSG data
 3. Not wired up.
 4. Not wired up.



Abbreviations used :

DTK : Desired Track
 XTK : Cross-Track
 TK : Track
 CDU : Control Display Unit
 CDI : Course Deviation Indicator
 RAIM : Receiver Autonomous Integrity Monitoring
 HSI : Horizontal Situation Indicator

2 LIMITATIONS

The limitations specified in the Basic Flight Manual and relevant Supplements remain applicable but are completed or modified by the following limitations :

For an approved daytime and nighttime VFR operation of the helicopter :

- Use of the GPS is prohibited in approach mode.

A placard reads :

GPS OPERABLE IN VFR
CONDITIONS ONLY

GPS UTILISABLE EN VFR
UNIQUEMENT

For an approved daytime VFR, nighttime VFR and IFR operation of the helicopter :

- Use of the GPS is prohibited with SIDs and STARs.
- Use of the GPS is prohibited in approach mode.

A placard reads :

USING GPS FOR
INSTRUMENT APPROACHES
AND SIDs / STARs IS PROHIBITED

L'UTILISATION DU GPS POUR
DES APPROCHES AUX INSTRUMENTS
ET SIDs / STARs EST INTERDITE

The standard Flight Manual and Flight Manual SUPPLEMENTS emergency procedures in use remain applicable, and are supplemented or modified by the following emergency procedures :

3.1 GPS failure

1st case

Symptoms : – Appearance of a GPS flags on the HSI.
– Flashing of the "M" annunciator light on the CDU as well as the pilot's and copilot's MSG warning lights.

<u>Analysis</u>	<u>Action</u>
– Loss of GPS data validity	– Use conventional navigation equipment.

NOTE : Pressing on the MSG push-button on the CDU indicates the status of the GPS.

2nd case

Symptoms : – Flashing of the "M" annunciator light on the CDU and MSG warning lights on the instrument panel with a 30 s time delay.

<u>Analysis</u>	<u>Action</u>
– RAIM failure ("RAIM NOT AVAILABLE" message)	– Use conventional navigation equipments (refer to <u>NOTE 1</u> and <u>2</u>) or – Use conventional navigation equipments (refer to <u>NOTE 2</u>)
– Error position detected by the RAIM ("RAIM POSITION ERROR" message)	

NOTE 1 : "En route", the GPS can still be used subject to checking the navigation data by conventional equipment at least every 15 minutes.

NOTE 2 : Pressing on the MSG push-button on the CDU indicates the status of the GPS.

4 NORMAL PROCEDURES

The standard Flight Manual and Flight Manual SUPPLEMENTS normal procedures in use remain applicable, and are supplemented or modified by the following normal procedures :

- The RAIM prediction must be checked for flight in BRNAV space.
- Before the start of navigation, the crew must read the CDU messages to check that all the validities are present.
- The PILOT GUIDE operating manual (Part number 006-08786-0000) must be up to date and available on-board the aircraft.
- The equipment in use must have software loaded (part number ORS 02), which is compatible with the above-mentioned PILOT GUIDE.
- The crew must check the validity and accuracy of the data base information (28 day validity) relative to the official documentation.
- For IFR or BRNAV flight, the means defined in SUP.4 of this Manual must be operable.
- The DEAD RECKONING mode cannot be used because the TAS is unavailable.
- At regular intervals, the crew must check the accuracy of his position using other navigation equipment at his disposal.

NOTE : -- The coordinates reference system used by the database is not necessarily the same as that used by the KLN 898 GPS receiver : this restriction may result in a position error in addition to the GPS system intrinsic error.

- Use of the VHF frequencies listed below may degrade GPS receiver operation after 10 to 15 seconds of transmission, reverting to normal 3 seconds after transmission ends.
f= 121.150/121.175/121.200/131.200/131.250/131.275/131.300 Mhz.

5 REGULATORY PERFORMANCE

The regulatory performance for the Basic Flight Manual and the Flight Manual SUPPLEMENTS remain applicable.