Edition du :
Issue Dated : **18/11/2019**

EC 120 B
SITUATION DES REVISIONS DU MANUEL DE VOL
FLIGHT MANUAL REVISIONS STATUS
CERTIFICATION EASA
EASA CERTIFICATION

Ce manuel doit contenir la révision normale (RN) et les révisions rapides (RR) référencées dans l'édition (EDIT) considérée.

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

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SECT.	EDIT	DATE
0, 5.2, 6, 7, 8, 9	RN0	16-26

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Marignane, November 18, 2019

Subject: EC120 B, New edition of the Flight Manual
(EDITION 2_RN0_Date Code 16-26)

Dear Customer,

Within the scope of harmonizing the AIRBUS HELICOPTERS' Aircrew technical publications, please find appended a complete new EC120 B Flight Manual (Edition 2 RN0) which cancels and replaces your current Flight Manual.

This new edition contains all the information in the previous Flight Manual.

Consequently, the old Flight Manual will no longer be updated.

Main changes:

- **Customized pages (green pages) if necessary:**
  Customized green pages will not be revised.
  The former green pages must be reinserted in the new Flight Manual:
  - ✓ "CUSTOMIZATION: List of additional pages" page: Pages N, L or K according to flight manuals must be inserted in front of page 0.0.
  - ✓ Customized pages: Each green page must to be inserted over the corresponding white page.

- This new Flight Manual has been completely restructured, and you will find below a cross-reference table which provides the links between the new and the old Flight Manuals.

If you have any comments or questions, please send them to:

- **technicalsupport.helicopters@airbus.com**

Yours sincerely,

The Light Helicopters
Flight Manual team.

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AIRBUS HELICOPTERS

FLIGHT MANUAL

EC 120 B

EASA TYPE CERTIFICATE No. EASA.R.508

REGISTRATION No. SERIAL No.

APPROVED BY:
European Aviation Safety Agency

BY:

DATE:
June 15, 2010

THE EFFECTIVITY OF THIS MANUAL AT THE LATEST REVISION IS SPECIFIED ON THE LIST OF EFFECTIVE PAGES.

IT IS THE OPERATOR'S RESPONSIBILITY TO MAINTAIN THIS MANUAL IN A CURRENT STATUS IN ACCORDANCE WITH THE LIST OF EFFECTIVE PAGES.

THIS HANDOOK INCLUDES THE MATERIAL TO BE FURNISHED TO THE PILOT AS REQUIRED BY JAR-27 AND ADDITIONAL INFORMATION PROVIDED BY THE MANUFACTURER.
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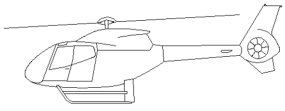

Airbus Helicopters D i r e c t i o n T e c h n i q u e S u p p o r t
Aéroport international Marseille-Provence 13725 Marignane Cedex - France

APPROVING AUTHORITIES

DIRECCION NACIONAL DE AERONAVEGABILIDAD (DNA)

The DNA approves this RFM and Supplements for EC120B helicopters for aircraft registered in the Republic of Argentina in accordance with the provisions under SECTION 21.29 of DNAR Part 21.

"Later EASA-approved revisions and Supplements to this manual shall be taken as approved by the DNA".

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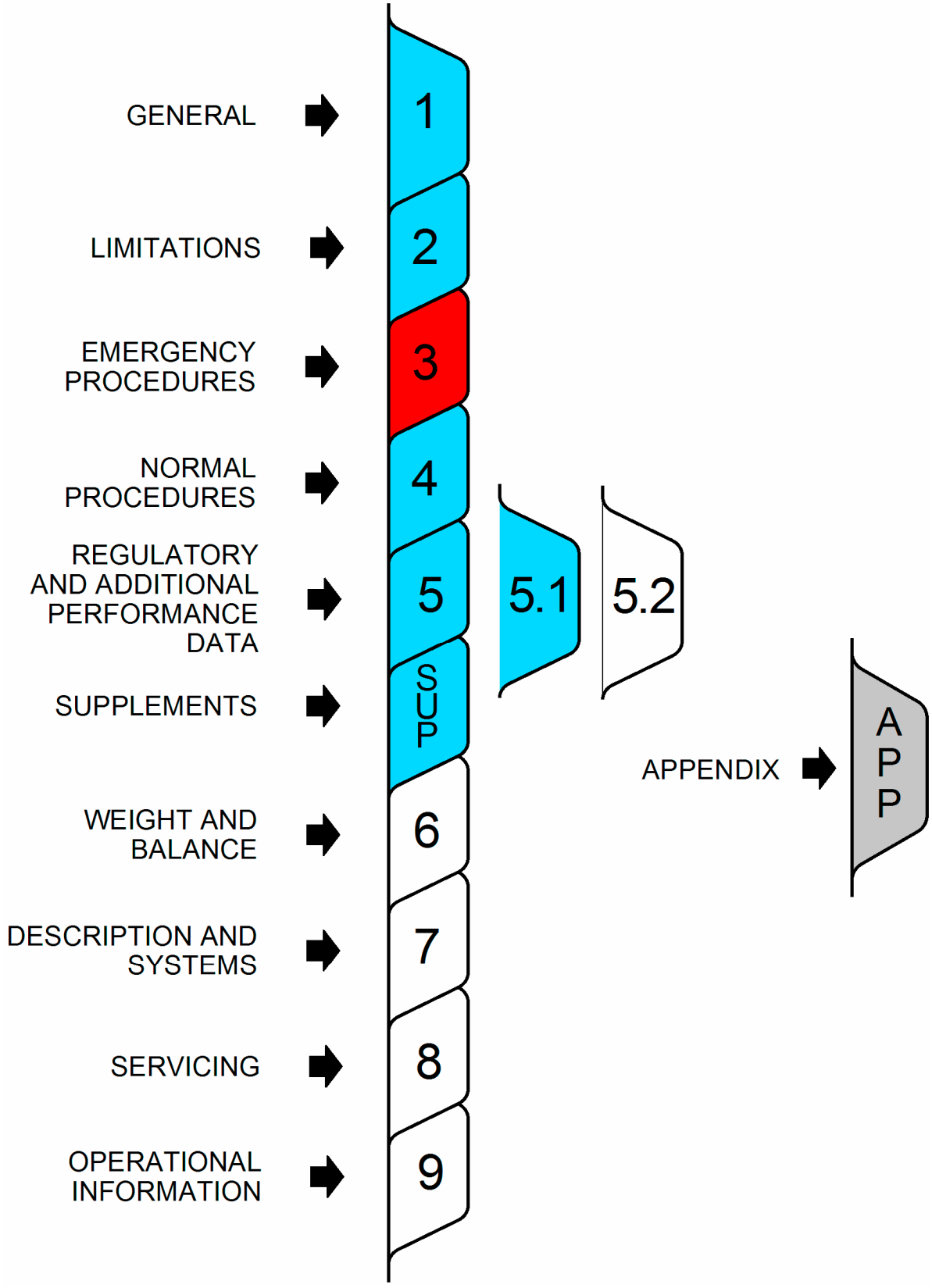

COMPOSITION

OF APPROVED CONDITIONAL REVISIONS (RC)

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

CAUTION

The reader will have to insert the pink pages incorporating the paragraph(s) affected by the Conditional Revision so as the paragr aph(s) cover(s) the paragraph(s) of the standard version or of the variant of standard definition.

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RC No.	SECTION or SUP.	PARAGRAPH	DATE CODE	Number of pages	(1)	Applicable before condition is met:
a	2.1	1 *RC*	16-26	1		SB 34.001
	2.6	1 *RC*	16-26	1		
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f	3.1	2 *RC*	16-26	1		SB 31.003
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i	3.6	4 *RC*	16-26	1		Post SB 31.004 and before SB 63.019
j	3.6	4 *RC*	16-26	1		Post SB 63.019 and before SB 31.004
k	3.6	6 *RC*	16-26	1		SB 21.008

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LIST OF APPROVED EFFECTIVE PAGES - EASA CERTIFICATION

(1) AIRWORTHINESS EFFECTIVITY:

- Without indication..... Applicable to all aircraft
- [A] ..... Specific to EASA.

(2) VARIANT OF STANDARD DEFINITION EFFECTIVITY:

- Without indication..... Applicable to all aircraft
- XXX..... Specific to aircraft equipped with XXX

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LOG OF APPROVED NORMAL REVISIONS

BASIC RFM REVISIONS - EFFECTIVITY (1) (2) - EASA

ISSUE 1: NR 0 to NR 19:

NORMAL REVISION 19 - SEPTEMBER 2014	Approved under the authority of EASA DOA No. 21J056 on June 11, 2015

ISSUE 2:

NORMAL REVISION 0 date code 16-26	EASA Approval No. 10070977 on September 16, 2019
Title	New issue
Revised information	All
Deleted information	None

LIST OF EFFECTIVE PAGES

(1) AIRWORTHINESS EFFECTIVITY:

- Without indication..... Applicable to all aircraft
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- Without indication..... Applicable to all aircraft
- XXX..... Specific to aircraft equipped with XXX

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ISSUE 2:

NORMAL REVISION 0 - date code 16-26	
Title	New issue
Revised information	All
Deleted information	None

LIST OF MODIFICATIONS OR SERVICE BULLETINS MENTIONED IN THE FLIGHT MANUAL

This list includes all modifications or service bulletins that are or have been referenced in the Flight Manual.

MODIFICATION / SB	DESCRIPTION	Embodiment of MOD / SB	
		Yes	No
SB 34.001	Cabin adaptation for night VFR		
SB 63.019	New NR/Nf indicator		
SB 28.007	Use of JP 4 and JET B		
SB 28.009	Upgraded fuel pump strainer		
SB 31.003	Upgraded VEMD		
SB 31.004	Upgraded LACU		
SB 21.008	P2 TEMP warning light		
SB 76.002	Engine controls		
SB 04.003	Cold weather installation kit		
SB 24.015	Segregation of "Direct Battery" routing regarding to the EMB		

SECTION 1

GENERAL

CONTENTS

SECTION 1.1

PRELIMINARY NOTES

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, particularly with the information specific to customized configurations, and to check all revisions and related requirements.

2 DESCRIPTION OF THE MANUAL

This manual contains legally approved information, together with additional manufacturer's information not subject to approval.

- The approved information is contained in PART 1 "FLIGHT MANUAL", in SECTIONS 1, 2, 3, 4, 5.1, in the Supplements and the Appendix.
- The information not subject to approval is contained in PART 2 "COMPLEMENTARY FLIGHT MANUAL", as a complement to PART 1. This information is covered by SECTIONS 5.2, 6, 7, 8, and 9.

  Each PART, each Supplement and each Appendix of the manual makes up a whole and, for this reason, incorporates its own list of effective pages and is revised separately.

The list of effective pages (P5) identifies all the pages which compose the manual.

The total number of P5 pages is shown on the list of effective pages, identified 1/xy where xy is a number between 01 and 99 corresponding to the number of P5 pages.

2.1 BASIC AIRCRAFT

The basic helicopter specifications are covered by SECTIONS 1 through 9.

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.

2.3 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 the relevant certification, appears in the lower left-hand corner of each page of the approved PART 1.

SECTION 1.2

UPDATING

1 GENERAL

This manual is updated periodically through Rush Revisions (RR) or Normal Revisions (RN).

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).

The user is responsible for ensuring proper updating of the manual complying with the list of pages given at the beginning of PART 1, PART 2 and of each Supplement, since each of the these PARTS or Supplements is revised separately.

The composition must be checked by page number and by the date code. The date code is composed of the last two digits of the year, followed by the number of the week in that year.

2.1 NORMAL REVISIONS (RN) 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.

The manual effectivity is specified on the new list of approved effective pages (0.0.P5, SUP.0.P5 and/or APP.X.X.P5).

Normal Revisions are identified in numerical order.

2.2 RUSH REVISIONS (RR) PRINTED ON YELLOW PAPER

Rush Revisions partially update a few major points in the manual.

The new information is given on a page which must face the former text to be modified or completed.

The Rush Revision is printed on yellow paper.

No white page is deleted.

The revised pages are specified on a separate list (0.0.P4 or SUP.0.P4).

Rush Revisions are identified by the number of the next Normal Revision and a letter suffix in normal alphabetical order. Several Rush Revisions may be issued between two Normal Revisions. All Rush Revisions are cancelled when the Normal Revision bearing the same number is issued. If certain Rush Revision provisions remain after the subsequent Normal Revision, they are confirmed by a new Rush Revision with another identification code.

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 or SUP.0.P3).

NOTE

These pages are unaffected by Normal and Rush Revisions or by customization.

2.4 THE "ERRATUM" PROCEDURE

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

SECTION 1.3

SYMBOLS AND CONVERSION FACTORS

1 SYMBOLS AND ABBREVIATIONS

DESIGNATION	SYMBOL OR ABBREVIATION
SPEEDS	
Calibrated Airspeed	CAS
Indicated Airspeed	IAS
True Airspeed	TAS
Never Exceed Speed	VNE
Best Rate of Climb Speed	Vy
Rate of Climb/Descent	R/C, R/D
METEOROLOGY	
International Standard Atmosphere	ISA
Outside Air Temperature	OAT
Outside Air Pressure	p
Relative Air Density	σ
Wind Velocity	Vw
ALTITUDE / HEIGHT	
Geometric Altitude	H
Pressure Altitude	Hp
Density Altitude	Hσ
Radio Altimeter Height	HRA
Height	h
POWER / ENGINE PARAMETERS	
Maximum Continuous Power	MCP
Maximum Takeoff Power (5 min.)	MTOP
Power	PWR
Engine Power Check	EPC
Rotor Speed	NR
Engine Generator Speed	Ng
Engine Generator Deviation Indication	ΔNg
Free Turbine Speed	Nf
Torque	Tq
Power Turbine Inlet Temperature	T4
First Limitation Indicator	FLI

DESIGNATION	SYMBOL OR ABBREVIATION
HOVER / TAKEOFF / LANDING	
Hover In Ground Effect	HIGE
Hover Out of Ground Effect	HOGE
WEIGHT AND BALANCE	
Center of Gravity	CG
Empty Weight	EW
Equipped Empty Weight	EEW
Operating Empty Weight	OEW
Useful Load	UL
Payload	P/L
All-Up Weight	AUW
Maximum Take-Off Weight	MTOW
MISCELLANEOUS	
Automatic Direction Finder	ADF
Automatic Flight Control System	AFCS
Ancillary System Unit	ASU
Battery Contactor	BATC
Caution and Warning Panel	CWP
Cockpit Circuit Breaker Panel	CCBP
Direct Current	DC
Emergency Locator Transmitter	ELT
Electrical Master Box	EMB
Engine	ENG
Equivalent	≅
Essential Contactor	ESSC
External Power Line Contactor	EPLC
External Power Unit	EPU
Generator Line Contactor	GLC
Global Positioning System	GPS

DESIGNATION	SYMBOL OR ABBREVIATION
MISCELLANEOUS (cont'd)	
Hall Effect Sensors	HECS
High Load Contactor	HLC
Horizontal Situation Indicator	HSI
Height-Velocity	HV
Intercommunication System	ICS
Light and Ancillary Control Unit	LACU
Main gear box	MGB
Part per million	PPM
Radio Magnetic Indicator	RMI
Shed Bus Contactor	SBC
Starting Contactor	SC
To be defined	TBD
Tail gear box	TGB
Vehicle and Engine Multifunction Display	VEMD

- Symbol used for switches or pushbuttons (example) : [**HORN**]

- Symbol used for CWP caution/warning lights (example) : 

Light ON 

Light OFF

- Symbol used for VEMD indications (example) : 

indication ON 

indication OFF

2 CONVERSION FACTORS

2.1 METRIC UNITS TO OTHER UNITS

Multiply	By	To obtain
Centimeter (cm)	0.3937	Inch (in)
Meter (m)	3.2808	Foot (ft)
Meter per second (m/s)	196.85	Foot per minute (ft/min)
Kilometer (km)	0.5400	Nautical mile (Nm)
Liter (l)	0.2642	US gallon (US gal)
Liter (l)	0.2200	UK gallon (UK gal)
Kilogram (kg)	2.2046	Pound (lb)
Bars (bar)	14.504	Pound per Square Inch (psi)
Kilometer per hour (km/h)	0.5400	Knot (kt)
Hecto pascal (hPa)	0.02953	Inch of Mercury (inHg)

Conversion of degree centigrade (°C) into degree Fahrenheit (°F): °F = (°C x 9/5) + 32

2.2 OTHER UNITS TO METRIC UNITS

Multiply	By	To obtain
Inch (in)	2.5400	Centimeter (cm)
Foot (ft)	0.3048	Meter (m)
Foot per minute (ft/min)	0.00508	Meter per second (m/s)
Nautical mile (Nm)	1.8520	Kilometer (km)
US gallon (US gal)	3.7850	Liter (l)
UK gallon (UK gal)	4.5460	Liter (l)
Pound (lb)	0.4536	Kilogram (kg)
Pound per Square Inch (psi)	0.0689	Bar (bar)
Knot (kt)	1.8520	Kilometer per hour (km/h)
Inch of Mercury (inHg)	33.864	Hecto pascal (hPa)

Conversion of degree Fahrenheit (°F) into degree centigrade (°C): °C = 5/9 x (°F – 32)

SECTION 1.4

TERMINOLOGY

1 GENERAL

Unless otherwise specified in the text, altitudes are pressure-altitudes (Hp), speeds are indicated airspeeds (IAS).

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

WARNING

AN OPERATING PROCEDURE, PRACTICE, ETC., WHICH, IF NOT CORRECTLY FOLLOWED, COULD RESULT IN PERSONAL INJURY OR LOSS OF LIFE.

CAUTION

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

NOTE

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

2 USE OF PROCEDURAL WORDS

The concept of procedural word usage and intended meaning which has been adhered to in preparing this manual is as follows:

- "Shall" or "must" has been used only when application of a procedure is mandatory.
- "Should" has been used only when application of procedure is recommended.
- "May" and "Need not" have been used only when application of a procedure is optional.
- "Will" has been used only to indicate future event or action, never to indicate a mandatory procedure.

SECTION 2

LIMITATIONS

CONTENTS

PAGE

2.5 MISCELLANEOUS LIMITATIONS

2.6 PLACARDS

RC a

The paragraph **1 - TYPE OF OPERATIONS**, is superseded by:

1 TYPE OF OPERATIONS

The helicopter is approved to operate:

- By day in VFR.

NOTE

Additional equipment may be required by operational regulations.

The following are forbidden:

- Night flight.
- Aerobatic maneuvers.
- Flight in freezing rain.
- Flight in icing conditions.
  (Visible moisture and temperatures conducive to producing ice).
- In-flight intentional VEMD complete cut-off (lane 1 + 2).

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 34.001.

SECTION 2.1

GENERAL LIMITATIONS

The helicopter is approved in compliance with JAR part 27 issue 1. The helicopter shall be operated in compliance with the limitations of this section.

1 TYPE OF OPERATIONS

The helicopter is approved to operate:

- By day and night in VFR.

NOTE

Additional equipment may be required by operational regulations.

The following are forbidden:

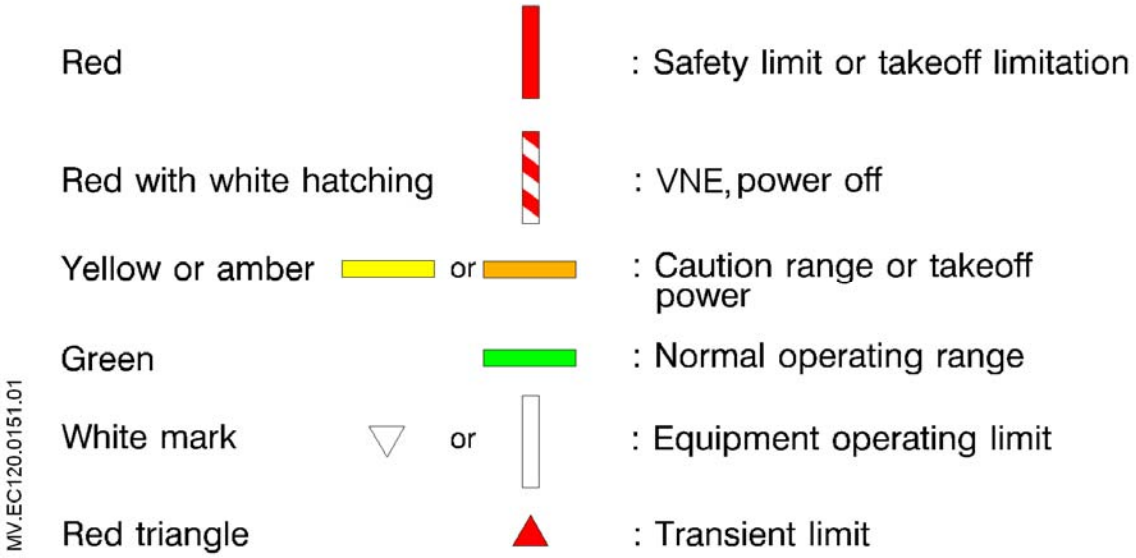
- Aerobatic maneuvers.
- Flight in freezing rain.
- Flight in icing conditions.
  (Visible moisture and temperatures conducive to producing ice).
- In-flight intentional VEMD complete cut-off (lane 1 + 2).

2 OCCUPANTS

- Minimum flight crew ..... One pilot in right seat or one pilot in left seat when the removable dual controls are installed on the left
- Maximum number of seats (including flight crew) 5

3 INSTRUMENT MARKINGS

Limitations are marked on instruments with the following color code:



On the VEMD, related numerical values of parameters are underlined:

- In yellow, when the parameter is in caution or takeoff range,
- In red, when at or above a safety limit or maximum takeoff power. Moreover, to attract attention, red underlining flashes.

SECTION 2.2

WEIGHT AND BALANCE LIMITS

1 WEIGHT LIMITS

- Maximum weight ..... : 1715 kg (3780 lb).
- Minimum weight ..... : 1035 kg (2284 lb).

2 LONGITUDINAL CG

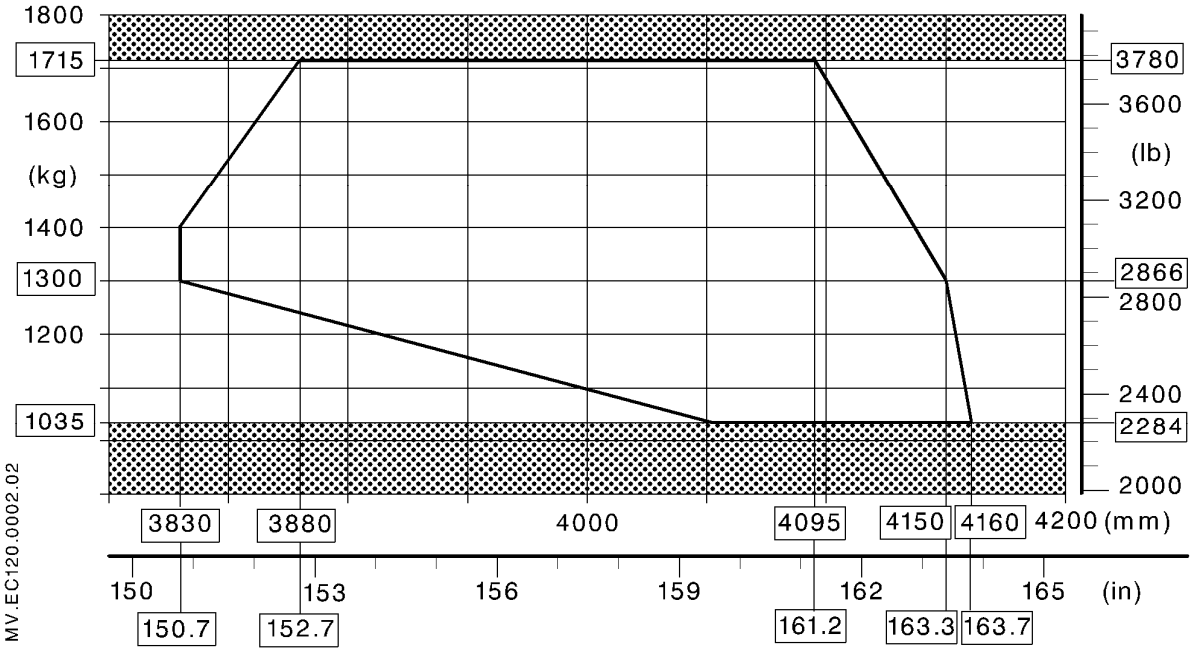


Figure 1: Longitudinal CG Chart

NOTE

The datum is located 4 m forward of the main rotor head center line.

3 LATERAL CG

- Maximum left CG ..... : 0.09 m (3.54 in).
- Maximum right CG ..... : 0.08 m (3.15 in).

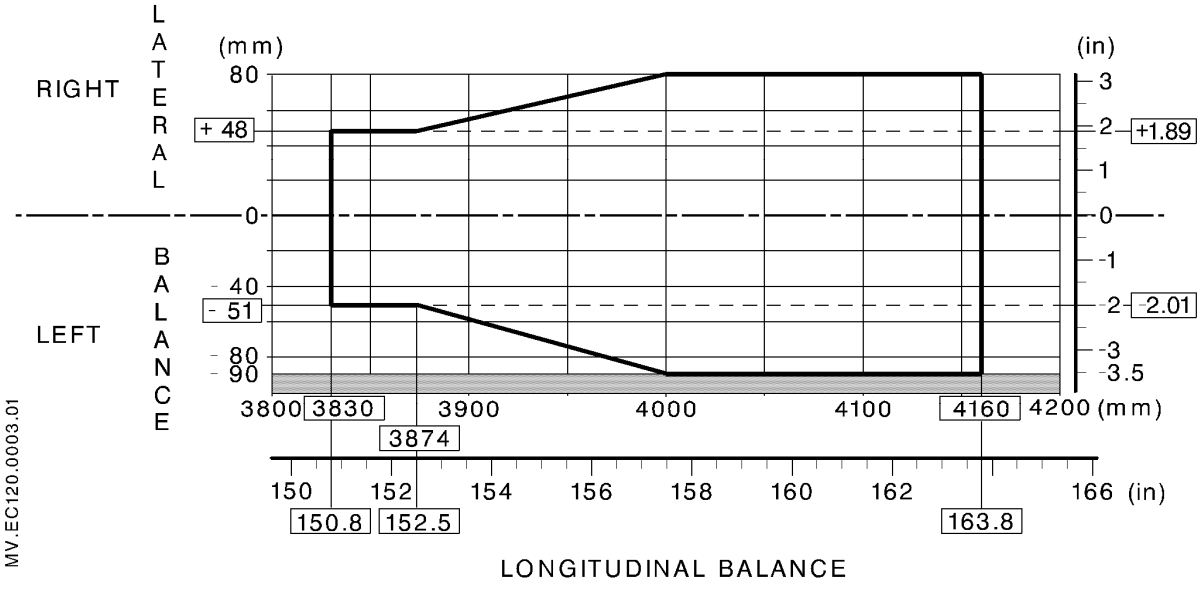


Figure 2: Lateral CG Chart

NOTE

The datum is located in the plane of symmetry of the helicopter.

SECTION 2.3

FLIGHT ENVELOPE LIMITS

1 AIRSPEED LIMITS

All airspeed limitations are Indicated Airspeeds.

1.1 WITH DOORS CLOSED

The opening of the baggage compartment access panel in the cabin has no effect on closed doors airspeed limitations.

1.2 WITH DOORS OPENED OR REMOVED

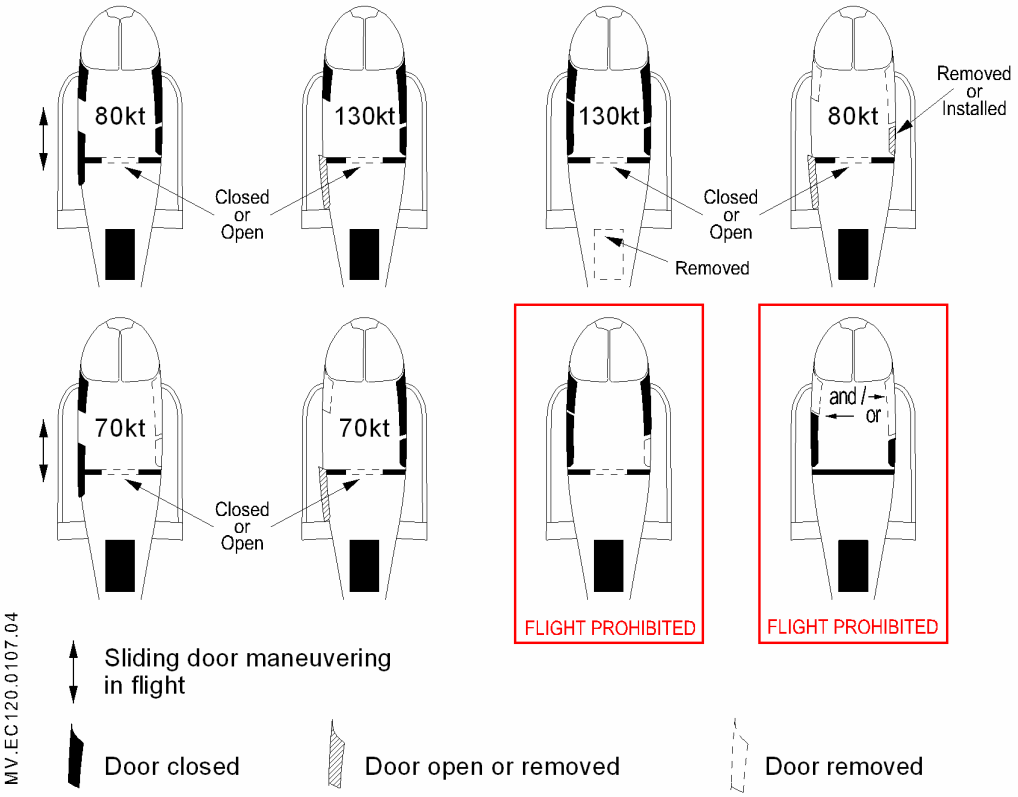
NOTE

Flight with any configuration not shown is prohibited.

In configurations with at least one door opened or removed, loose objects shall not be in the cabin.

- For aircraft up to S/N 1677 except S/N 1674 and for aircraft S/N 8001 to 8034:

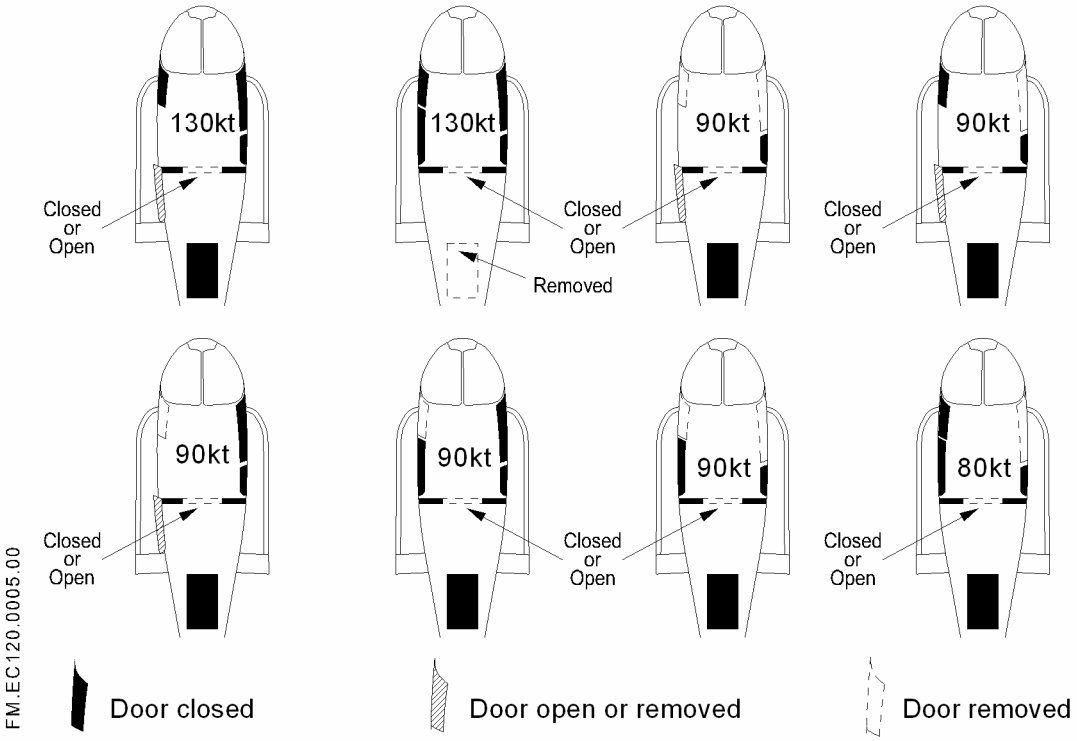
  The VNE is the value as shown below (adapted to the doors configuration) or the VNE « doors closed », whichever is less.



- <u>For aircraft S/N 1674 and from S/N 1678 except for aircraft S/N 8001 to 8034</u>:

  The VNE is the value as shown below (adapted to the doors configuration) or the VNE « doors closed », whichever is less.

  Sliding door opening-closing
  in any authorized configuration .....VNE = 70 kt



2 ALTITUDE LIMITS

Maximum operating altitude in flight ..... Hp = 20000 ft (6096 m)

3 TEMPERATURE LIMITS

- Minimum temperature .....- 30°C
- Maximum temperature ..... ISA+35°C

  limited to +50°C

For cold weather operations (- 40°C ≤ OAT < 30°C), refer to SUP.4.

4 LANDING AND ROTOR STOPPING LIMITATIONS ON SLOPE

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

5 MANEUVERING LIMITATIONS

- Continued operation in servo transparency (where load feedback is felt in the controls) is prohibited.

  Maximum load factor is a combination of TAS, Hσ and gross weight. Avoid such combinations at high values associated with high collective.

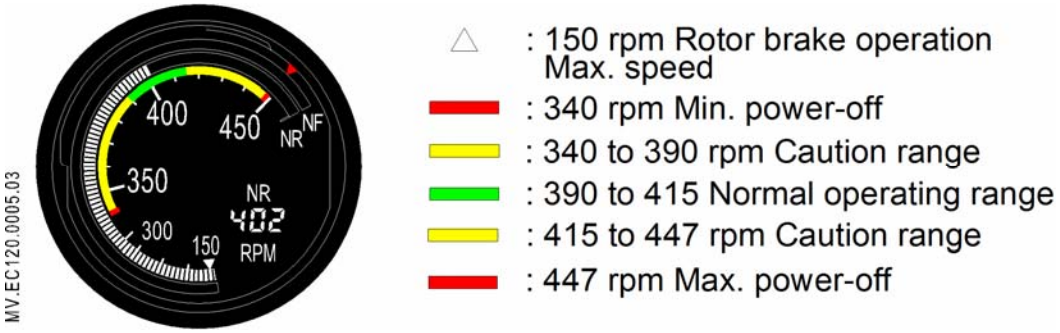
  Transparency may be reached during maneuvers, steep turns, hard pull-up or when maneuvering near VNE. Self-correcting, the phenomenon will induce an un-commanded right cyclic load and an associated collective down reaction. However, even if the transparency feedback loads are fully controllable, immediate action is required to relieve the feed back loads: reduce the severity of the maneuver, follow the aircraft's natural reaction, let the collective decrease naturally (avoid low pitch) and smoothly counteract the right cyclic motion.

  Transparency will disappear as soon as excessive loads are relieved.
- In maximum power configuration, decrease collective slightly before initiating a turn, as for this maneuver the power requirement is increased.
- In hover, avoid rotation faster than 6 sec. per full rotation.

RC c

The paragraph **1 - MAIN ROTOR LIMITATIONS**, is modified as follows:

Supersede the figure by the following:



The rest of the paragraph is unchanged

CAUTION

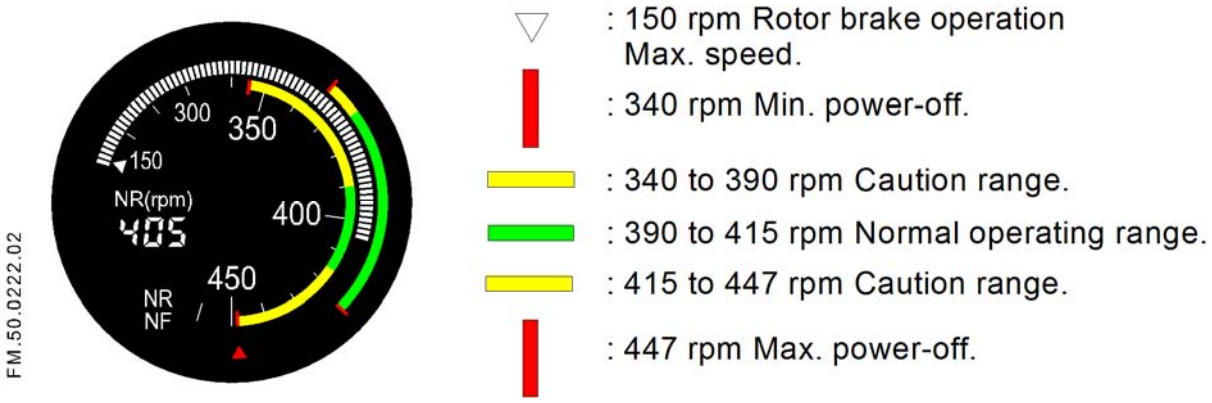
THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 63.019.

SECTION 2.4

VEHICLE LIMITATIONS

1 MAIN ROTOR LIMITATIONS

It is prohibited to use the rotor brake prior to engine shutdown.
Minimum time between two consecutive brake applications: 5 min.



NOTE

Low NR aural warning ≤ 370 rpm
High NR aural warning ≥ 420 rpm

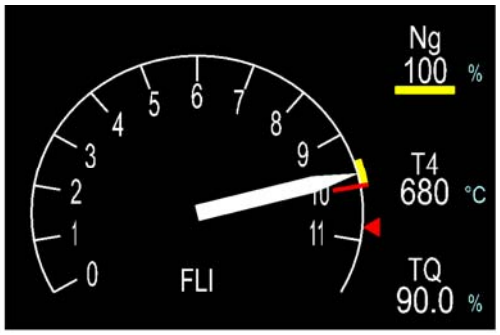
2 TAKEOFF POWER

Use of takeoff power is limited to:

- Maximum airspeed Vy (65 kt at Hp = 0 ft - 1 kt per 1000 ft) if Tq is in takeoff rating range.
- 5 min. continuous use if Ng and/or T4 are in takeoff rating range.

Use of the heating system is forbidden if Ng and/or T4 are above the engine maximum continuous rating.

3 FIRST LIMITATION INDICATION



MV.EC120.0006.03

9.6 Max. continuous rating

: 9.6 to 10 Takeoff rating range

: 10 Max. takeoff rating

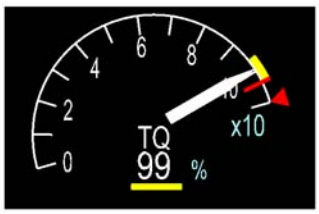
: 10.8 Max. transient rating

NOTE

The values (Ng = 100 %, T4 = 680 °C, Tq = 90%) are given as examples.

4 MAIN TRANSMISSION LIMITATIONS

TORQUE LIMITATIONS



MV.EC120.0007.04

97 % Max. continuous rating

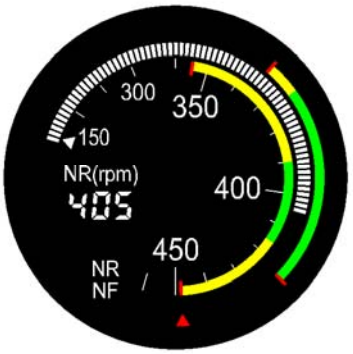
: 97 % to 103 % Takeoff power

: 103 % Max. takeoff rating

: 110 % Max. transient rating (5 sec.)

5 ENGINE LIMITATIONS

- Nf LIMITATIONS



FM.50.0223.02

: 365 rpm Min.

: 365 to 373 rpm transient range (5 sec.).

: 373 to 422 rpm Normal operating range.

: 422 rpm Max. continuous.

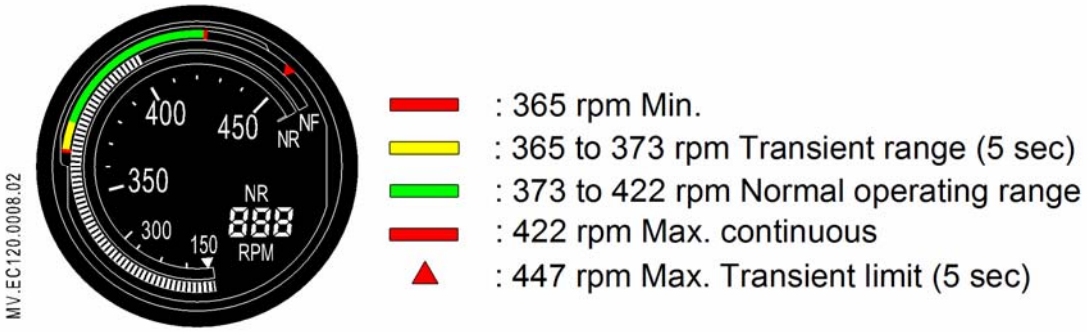
: 447 rpm Max. transient limit (5 sec.).

RC c

The paragraph **5 - ENGINE LIMITATIONS**, is modified as follows:

Nf LIMITATIONS

Supersede the figure by the following:



The rest of the paragraph is unchanged

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 63.019.

- Ng LIMITATIONS

Ng>63 % : Min. stabilized speed
Δ Ng = -1.5 % Max. continuous rating

: Δ Ng = -1.5 % to 0 % Takeoff power

: Δ Ng = 0 % Max. takeoff rating

: Δ Ng = +2.6 % Max. transient rating (5 sec.)

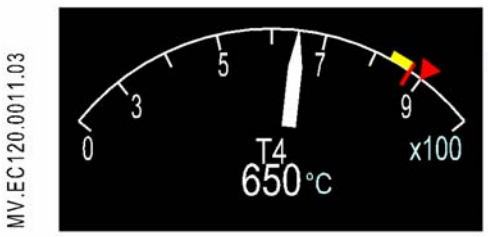
- T4 LIMITATIONS

Starting limitations:

: 800 °C Max. continuous

: 870 °C Transient (10 sec)

Flight limitations:



830 °C Max. continuous rating

: 830 °C to 870 °C Takeoff power

: 870 °C Max. takeoff rating

: 900 °C Max. transient rating (5 sec)

- OIL TEMPERATURE LIMITATIONS

Minimum oil temperature before power application:
- 0°C (Oil 3 cSt),
- 10°C (Oil 5 cSt and 3.9 cSt).

During the oil warm up period, the engine must be run with the collective in its full low pitch position.

- OIL PRESSURE LIMITATIONS

6 ELECTRICAL CIRCUIT LIMITATIONS

- Maximum voltage .....31.5 V (Rated voltage 26 - 29 V)
- Maximum current .....150 A Max. continuous 240 A transient (2 min.)

7 BATTERY TEMPERATURE LIMITATION

- Caution temperature ..... 60°C
- Maximum temperature ..... 75°C

RC e

The paragraph **1 - APPROVED FUEL**, is modified as following:

- NORMAL FUELS

Add the following NOTE:

NOTE 3

The use of an anti-icing additive is compulsory for OAT ≤ + 0°C for all approved fuels which do not contain it.

The rest of the paragraph is unchanged.

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 28 009.

SECTION 2.5

MISCELLANEOUS LIMITATIONS

1 APPROVED FUELS

NOTE 1

Commercial designations of authorized fuels and additives are specified in the TURBOMECA documentation.

- NORMAL FUELS

  (Fuels approved to operate throughout the flight envelope with no restrictions).

Type of fuel	NATO code	Specifications			Anti-ice additive included
		FRANCE	USA	UK	
Kerosene - 50 (AVTUR-FSII) JP8)	F 34	AIR 3405 F 34	MIL-T-83133 (JP8)	D.ENG. RD 2453	Yes
Kerosene - 50 (AVTUR) (JP1)	F 35	AIR 3405 F 35	ASTM-D-1655 JET A1	D.ENG.RD 2494	No
Kerosene	-	-	ASTM-D-1655 JET A	-	No
High flash point (JP5) (AVCAT)	F 43	AIR 3404 F 43	-	D.ENG. RD 2498	No
High flash point (JP5) (AVCAT SII)	F 44	AIR 3404 F 44	MIL-T-5624 (JP5)	D.ENG.RD 2452	Yes
Chinese fuel PRC National Standard N°3 Jet fuel	-	-	-	-	No

NOTE 2

All specifications are effective at latest issue or amendment.

- REPLACEMENT FUELS

USE FOR: -30°C ≤ OAT ≤ +30° AND FOR Hp ≤ 9842 ft (3000 m)						
Type of fuel	**NATO Code**	**Specifications**				**Anti-ice additive included**
		FRANCE	**USA**	**UK**	**RUSSIA**	
Wide cut (AVTAG-FSII) (JP4)	F 40	AIR 3407	MIL-T-5624 (JP4)	D.ENG.RD 2454	-	Yes
Wide cut (JET B) (AVTAG)	-	-	ASTM-D-1655 (JET B)	-	-	No
Russian fuel Kerosene TS 1 (TC1)	-	-	-	-	GOST 10227	No
Russian fuel Kerosene RT (PT)	-	-	-	-	GOST 10227	No

RC d

The paragraph **1 - APPROVED FUEL**, is modified as following:

- REPLACEMENT FUELS

Supersede the table **"USE FOR: -30°C ≤ OAT ≤ + 30° AND FOR Hp ≤ 9842 ft (3000 m)"** by the following:

USE FOR: -30°C ≤ OAT ≤ + 30° AND FOR Hp ≤ 9842 ft (3000 m)						
Type of fuel	**NATO Code**	**Specifications**				**Anti-ice additive included**
		FRANCE	**USA**	**UK**	**RUSSIA**	
Russian fuel Kerosene TS 1 (TC1)	-	-	-	-	GOST 10227	No
Russian fuel Kerosene RT (PT)	-	-	-	-	GOST 10227	No

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 28 007.

RC e

The paragraph **1 - APPROVED FUEL (cont'd)**, is modified as following:

- REPLACEMENT FUELS

Add the following NOTE

NOTE

The use of an anti-icing additive is compulsory for OAT ≤ + 0°C for all approved fuels which do not contain it.

The rest of the paragraph is unchanged.

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 28 009.

RC e

The paragraph **1 - APPROVED FUEL (cont'd)**, is modified as following:

- ANTI-ICE ADDITIVES

Supersede the table "**COMPULSORY USE OF ANTI-ICE ADDITIVE"** by the following text:

Anti-ice additive	: If the fuel does not contain a freezing inhibitor and if the OAT is below or equal to 0°C, the use of an anti-icing additive is compulsory.

The rest of the paragraph is unchanged.

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 28 009.

- ANTI-ICE ADDITIVES

COMPULSORY USE OF ANTI-ICE ADDITIVE			
Water concentration in fuel	**Aircraft without fuel flowmeter system**		**Aircraft with fuel flowmeter system (SB 28-006)**
	Operation at		Operation at
	OAT ≤ -15°C	-15°C < OAT < 0°C	OAT ≤ 0°C
> 30PPM	YES		YES
< 30PPM	YES	NO	

Specifications	Concentration
AIR 3652	Between 0.10% and 0.15%
MIL-I 27686	
D-ENG-RD 2451	
MB-NATO- S 748	
MIL-I 85470A	
Fluid I :GOST 8313-88	Between 0.10% and 0.30%
Fluid I :TU 6-1061458-79	

2 APPROVED LUBRICANTS

- ENGINE LUBRICANTS

NORMAL USE					
Oil type	**NATO Code**	**Specification**			**Approved oil grades**
		FRANCE	**USA**	**UK**	
Synthetic 5 cSt at 98.9° C	0.156	-	MIL-L-23699	-	AEROSHELL OIL/500/560 CASTROL/5000/AEROJET 5 ELF TURBOJET II ESSO TURBO OIL/II/2380/2197 MOBIL JET OIL/II/254/291 TOTAL AEROTURBINE 535 TURBONYCOIL 600

OTHER OILS (-30°C ≤ OAT ≤ +30°C)					
Oil type	**NATO code**	**Specification**			**Approved oil grades**
		FRANCE	**USA**	**UK**	
Synthetic 3 to 3.5 cSt at 98.9° C	0.148	AIR 3513	MIL-L-7808	-	ESSO TURBO OIL 2389 MOBIL OIL AVREX 256 TURBONYCOIL 160
	0.150	AIR 3514	-	-	ELF JET SYNTHETIC OIL 15 TOTAL AERO TURBINE 312 TURBONYCOIL 13B
Synthetic 3.9 cSt at 98.9° C	-	-	-	DEF STAN 91-94	AEROSHELL TURBINE OIL 390

NOTE 1

When the oil specification or grade/trademark differs from the approved one, TURBOMECA approval shall be obtained before using this oil.

NOTE 2

In case of oil change with trademark/NATO code/category/grade or specification change, apply instructions as prescribed in the TURBOMECA Maintenance Manual.

NOTE 3

All specifications are effective at latest issue or amendment.

- MAIN AND TAIL GEARBOX LUBRICANTS

NORMAL USE (-25°C ≤ OAT ≤ +50°C)					
Oil type	**NATO Code**	**Specifications**			**Approved lubricants**
		FRANCE	**USA**	**UK**	
Mineral	0.155	AIR 3525	MIL-L-6086	-	ESSO GEAR OIL MEDIUM NYCOLUBE 3525 TOTAL AEROGEAR 823
NOTE : The « SHELL » trademark is prohibited					

COLD WEATHER USE (-30°C ≤ OAT ≤ +0°C)					
Oil type	**NATO Code**	**Specifications**			**Approved lubricants**
		FRANCE	**USA**	**UK**	
Synthetic	0.148	AIR 3513	MIL-L-7808	-	ESSO TURBO OIL 2389 MOBIL OIL AVREX 256 TURBONYCOIL 160
	0.150	AIR 3514	-	-	ELF JET SYNTHETIC OIL 15 TOTAL AERO TURBINE 312 TURBONYCOIL 13B

- SERVO CONTROL LUBRICANT

  Hydraulic fluid: NATO H 537 or MIL-H-83282.

3 STARTER LIMITATIONS

Starter shall not be energized more than 3 consecutive times.
After the 3rd attempt, wait 30 minutes until next attempt.

4 CRASH RESISTANT REAR SEATS

The safety belts of unoccupied rear seats must not be fastened and the button on the shoulder belt must not be visible.

5 BAGGAGE COMPARTMENT LOAD LIMITATIONS

Maximum distributed load .....300 kg/m² (62.5 lb/ft²)

6 CABIN COMPARTMENT LOAD LIMITATIONS

Maximum distributed load ..... 300 kg/m² (62.5 lb/ft²)

7 MANDATORY MINIMUM EQUIPMENT

A minimum of two adequate radio/audio headsets shall be on-board the helicopter, one worn by the pilot at the controls to monitor the audio warnings delivered through the ICS system, and a spare one.

8 OPTIONAL EQUIPMENT

When optional equipment items are installed, refer to supplements for additional limitations, procedures and performance data.

RC a

The paragraph **1 - VNE PLACARDS**, is superseded by:

1 VNE PLACARDS

VNE ↓ HP	POWER ON
0	150
1000	147
2000	144
3000	141
4000	138
5000	135
6000	132
7000	129
8000	126
9000	123
10000	120
11000	117
12000	114
13000	111
14000	108
15000	105
16000	102
17000	99
18000	96
19000	93
20000	90
***VNE POWER OFF: LESS 30 KTS**	

Location: Inside cabin, instrument panel RH side.

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 34.001.

SECTION 2.6

PLACARDS

All placards shown hereafter are usually presented in bilingual form French/English. However, the State of Registry may approve markings and placards in local language intended for:

- Emergency passenger information and instruction,
- Instruction for operation of passenger doors.

The following illustrations of placards and decals are typical presentations. Slight formal differences from the real placards and decals do not affect information presented therein.

1 VNE PLACARDS

MV.EC120.0094.00

V.N.E. POWER ON	
HP (ft)	Vi (kts)
0	150
2 000	144
4 000	138
6 000	132
8 000	126
10 000	120
12 000	114
14 000	108
16 000	102
18 000	96
20 000	90
* V.N.E. POWER OFF : LESS 30 kts	

MV.EC120.0170.00

V.N.E. POWER ON	
HP (m)	VI (kmh)
0	278
500	269
1 000	260
1 500	250
2 000	241
2 500	232
3 000	223
3 500	214
4 000	205
4 500	196
5 000	187
5 500	178
6 100	167
POWER OFF : – 56 kmh	

Location: Inside cabin, on center post, above standby compass.

2 OPERATING LIMITATION PLACARD

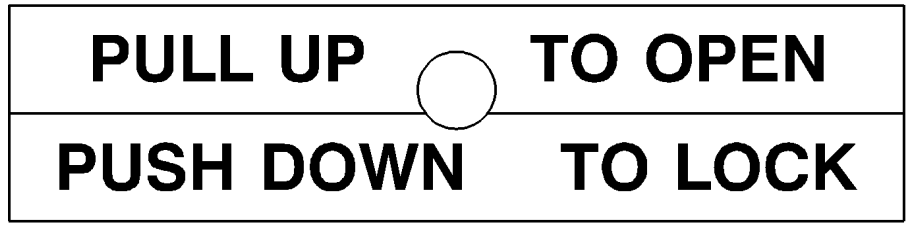
MV.EC120.0067.01

THE HELICOPTER IS APPROVED TO OPERATE BY DAY AND NIGHT IN VFR.
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.

Location: Inside cabin, near the overhead control quadrant.

3 OTHER PLACARDS DISPLAYED IN THE COCKPIT

MV.EC120.0068.00



or

Location: Inside RH and LH front doors and inside sliding door.

RC a

The paragraph **2 - OPERATING LIMITATION PLACARD**, is superseded by:

2 OPERATING LIMITATION PLACARD

MV.EC120.0067.00

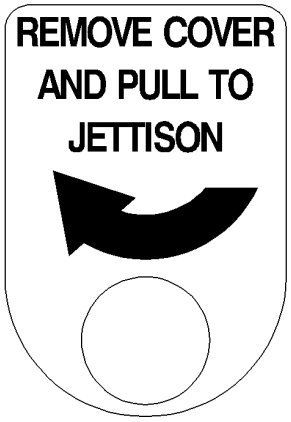
THE HELICOPTER IS APPROVED TO OPERATE BY DAY IN VFR.
THE MARKINGS AND PLACARDS INSTALLED ON THIS HELICOPTER CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS ROTORCRAFT. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS ROTORCRAFT ARE CONTAINED IN THE ROTORCRAFT FLIGHT MANUAL. THE "AIRWORTHINESS LIMITATIONS" SECTION OF THE ROTORCRAFT MAINTENANCE MANUAL MUST BE COMPLIED WITH.

Location: Inside cabin, near the overhead control quadrant.

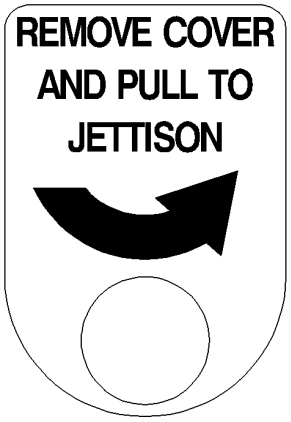
CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 34.001.

MV.EC120.0072.00



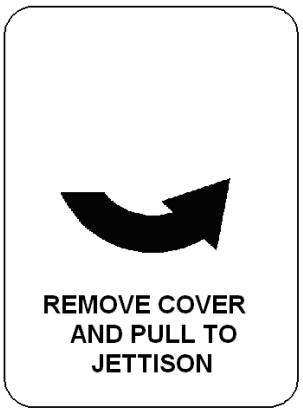
- LH side



- RH side.

or

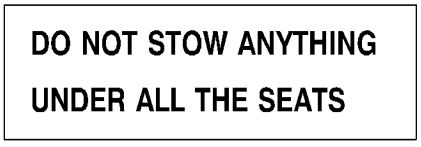
- LH side



- RH side.

Location: Inside cabin near door jettisoning handle.

MV.EC120.0060.00



Location: - RH forward seat, at bottom RH side,
- LH forward seat, at bottom LH side,
- Bench seat LH side.

MV.EC120.0061.00

A/C SERIAL N°:
WEIGHT :
C. OF G. :
DATE :

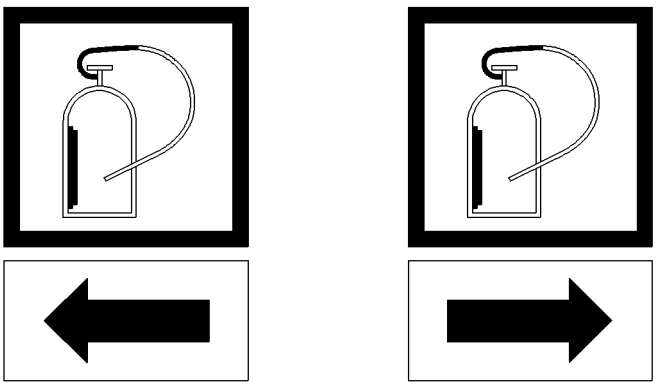
Location : Console RH side.

MV.EC120.0063.00

COMPASS AIRCRAFT DATE	
HEADING MAGNETIC	CORRECTED
000	
045	
090	
135	
180	
225	
270	
315	

Location : Inside cabin, on center post, near standby compass.

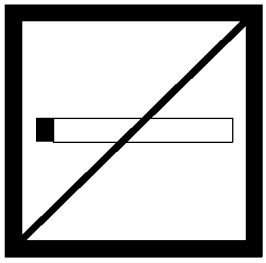
MV.EC120.0074.00



RH side LH side.

Location : Inside cabin, on console lateral side.

MV.EC120.0075.00



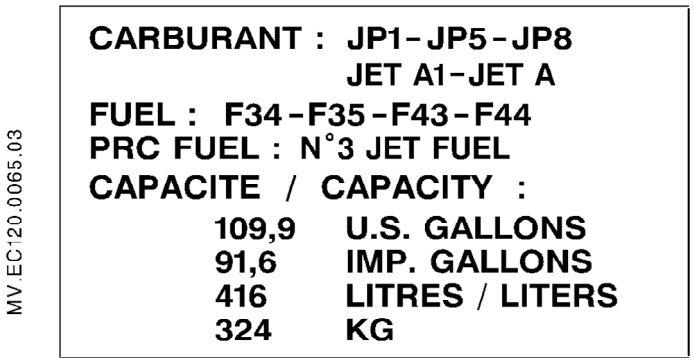
Location : Inside cabin, near reading light.

RC d

The paragraph **5 - FUEL AND LUBRICANT PLACARDS**, is modified as following:

5 FUEL AND LUBRICANT PLACARDS

The fuel placard is replaced by the following:



Location: RH side of filler neck, LH side.

NOTE

The total fuel capacities to be taken into account are those shown in Section 7.1 § 2.4.

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 28.007.

4 FLOOR LOADING PLACARD

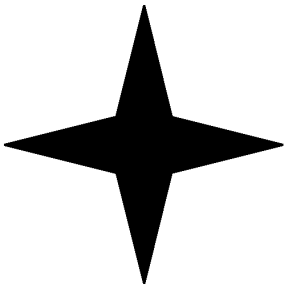
MV.EC120.0062.01

DISTRIBUTED LOADS MAXI ON FLOOR 62.5 POUNDS/SQ FEET - 300 kg/m²
MAX WEIGHT 970 lb - 441 kg

Location : Console LH side, cargo hold, RH side.

5 FUEL AND LUBRICANT PLACARDS

MV.EC120.0064.00



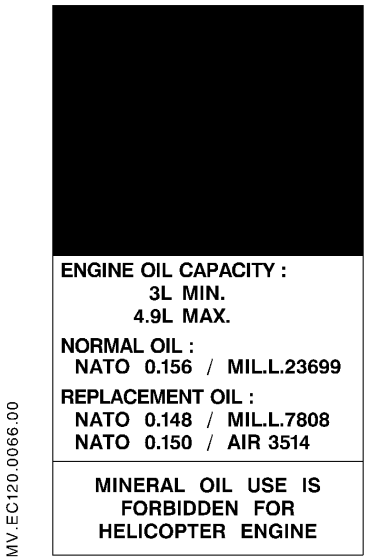
Location : LH filler neck, LH side.

MV.EC120.0065.02

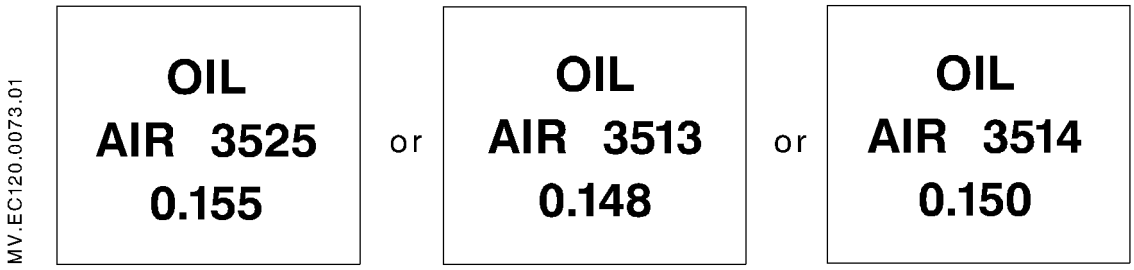
CARBURANT : JP1-JP4-JP5-JP8
JET A1-JET A-JET B
FUEL : F34-F35-F40-F43-F44
PRC FUEL : N°3 JET FUEL
CAPACITE / CAPACITY :

108,5	U.S. GALLONS
90,4	IMP. GALLONS
410,5	LITRES / LITERS
326,3	KG

Location : RH of filler neck, LH side.

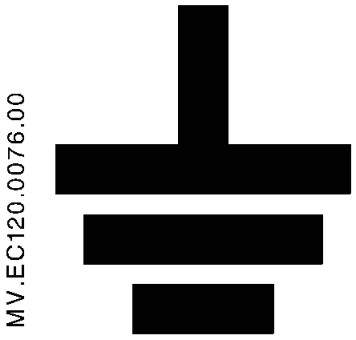


Location : RH of engine oil filler cap.



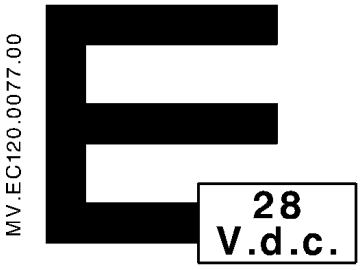
Location : Near TGB and MGB filler neck RH side.

6 ELECTRICAL PLACARDS



Location : LH side of aircraft, above grounding point.

If installed:



Location : RH side, on ground power receptacle cover.

SECTION 3

EMERGENCY PROCEDURES

CONTENTS

PAGE

3.6 CAUTION AND WARNING PANEL

3.7 VARIOUS WARNINGS, FAILURES AND INCIDENTS NOT INDICATED ON THE CWP

3.8 GOVERNOR FAILURES

SECTION 3.1

EMERGENCY PROCEDURES

1 GENERAL

Emergency procedures describe the actions that the pilot must take relative to the various possible failures that can occur.

Meanwhile, depending on the many variable external environments, such as the type of terrain overflown, the pilot may have to adapt to the situation according to his experience.

To help the pilot in his decision process, four recommendations are used:

LAND IMMEDIATELY

Self explanatory.

LAND AS SOON AS POSSIBLE

Emergency conditions are urgent and require landing at the nearest landing site at which a safe landing can be made.

LAND AS SOON AS PRACTICABLE

Emergency conditions are less urgent and in the pilot's judgment, he may proceed to the nearest airfield where he can expect appropriate assistance.

CONTINUE FLIGHT

Continue flight as planned. Repair at the destination according to the maintenance manual.

NOTE

Immediate actions that the pilot shall take are written in bold characters.

2 AUDIO WARNINGS

On the LACU, a [**HORN**] pushbutton is used to activate the audio warning.

When [**HORN**] pushbutton is pressed in: **HORN**.

NOTE

The pilot at the controls shall wear an adequate radio/ICS audio headset to monitor the audio warnings through the ICS system.

- **GONG**

  A gong is generated each time a red warning appears on the CWP.

- **CONTINUOUS TONE**

Two continuous tones can be heard:

- A 310 Hz tone when NR is below 370 rpm
- A 285 Hz tone when maximum takeoff rating is exceeded:

  * After 1.5 sec. delay if power remains within transient range

  * Immediately when max. transient rating is or will be exceeded during fast power increase.

1. Collective ..... REDUCE to maintain NR in normal operating range or power within limitations

2. Engine parameters ..... CHECK

- **INTERMITTENT TONE**

An intermittent tone (310 Hz) is heard when the NR is above 420 rpm.

Collective ..... INCREASE to maintain NR in normal operating range

Apply procedure according to the situation.

RC f

The paragraph **2 - AUDIO WARNINGS**, is modified as follows:

The item "CONTINUOUS TONE" is superseded by:

- CONTINUOUS TONE

Two continuous tones can be heard:

- A 310 Hz tone when NR is below 370 rpm.
- A 285 Hz tone when maximum takeoff rating is exceeded:
  - After 1.5 sec. delay if power remains within transient range.
  - Immediately when max. transient rating is exceeded.

The rest of the paragraph is unchanged.

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 31.003.

SECTION 3.2

ENGINE FLAME-OUT

1 CRUISE FLIGHT

AUTOROTATION PROCEDURE OVER LAND

1.	**Collective**	**REDUCE** to maintain NR in normal operating range
2.	**IAS**	**SET TO Vy**
3.	Twist grip	SHUT OFF detent
4.	Maneuver the aircraft into the wind on final approach	

- <u>At height ≅ 70 ft (21 m)</u>

5.	Cyclic	FLARE

- <u>At 20/25 ft (6/8 m) and at constant attitude</u>

6.	Collective	GRADUALLY INCREASE to reduce the rate of descent and forward speed
7.	Cyclic	FORWARD to adopt a slightly nose-up landing attitude
8.	Pedals	ADJUST to cancel any sideslip tendency
9.	Collective	INCREASE to cushion touch-down

- <u>After touch-down</u>

10.	Cyclic, collective, pedals	ADJUST to control ground run

- <u>Once the aircraft has stopped</u>

11.	Collective	FULL LOW PITCH
12.	Rotor brake	APPLY below 150 rotor rpm

AUTOROTATION PROCEDURE OVER WATER

Before touch-down, apply same procedure as over land, but maneuver to head the aircraft equally between the wind and wave direction on final approach. Ditch with minimum forward speed (IAS < 30 kt (56 km/h)) and vertical speed.
Then:

- After touch-down

10. Collective ..... MAINTAIN
11. Forward doors emergency handles ..... PULL-UP
12. Doors ..... JETTISON or OPEN
13. Rotor brake ..... APPLY

Abandon aircraft once the rotor has stopped.

2 HOVER IGE

1. **Collective ..... MAINTAIN**
2. **Pedals ..... CONTROL YAW**
3. **Collective ..... INCREASE** as needed to cushion touch-down

3 HOVER OGE

WARNING

SAFE AUTOROTATIVE LANDING CANNOT BE ENSURED IN CASE OF A FAILURE IN HOGE BELOW THE TOP POINT OF THE HV DIAGRAM (REFER TO SECTION 5.1) OR IN CONFINED AREA.

1. **Collective ..... FULL LOW PITCH**

- When NR stops decreasing

2. **Cyclic ..... FORWARD**
   to gain airspeed according to available height
3. Autorotation procedure..... APPLY

4 IN FLIGHT RELIGHTING

When Ng is less than 10%, according to available height and cause of flame-out, try to relight using starting procedure.

At least 1000 ft (300 m) are necessary to complete relighting procedure after flame-out.

SECTION 3.3

TAIL ROTOR FAILURES

1 COMPLETE LOSS OF TAIL ROTOR THRUST

Symptom: The helicopter will yaw to the left with a rotational speed depending on the amount of power and the forward speed set at the time of the failure.

WARNING

SAFE AUTOROTATIVE LANDING CANNOT BE ENSURED IN CASE OF A FAILURE IN HOGE BELOW THE TOP POINT OF THE HV DIAGRAM (REFER TO SECTION 5.1) OR IN CONFINED AREA.

1.1 HOVER IGE (OR OGE WITHIN HV DIAGRAM)

LAND IMMEDIATELY

1. **Twist Grip** ..... **IDLE position**
2. **Collective** ..... **INCREASE** to cushion touch-down

1.2 HOVER OGE (CLEAR AREA, OUTSIDE HV DIAGRAM)

Simultaneously,

1. **Collective** ..... **REDUCE** depending on available height
2. **Cyclic** ..... **FORWARD** to gain speed
3. Airspeed ..... MAINTAIN Vy or higher
4. Collective ..... ADJUST to obtain minimum sideslip angle

LAND AS SOON AS POSSIBLE

If a go-around was performed, carry out an autorotative landing on an area suitable for the autorotation procedure.

1.3 IN CRUISE FLIGHT

1. Airspeed..... MAINTAIN Vy or higher
2. Collective ..... ADJUST to obtain minimum sideslip angle.

LAND AS SOON AS POSSIBLE

APPROACH AND LANDING

On a suitable area for autorotative landing:

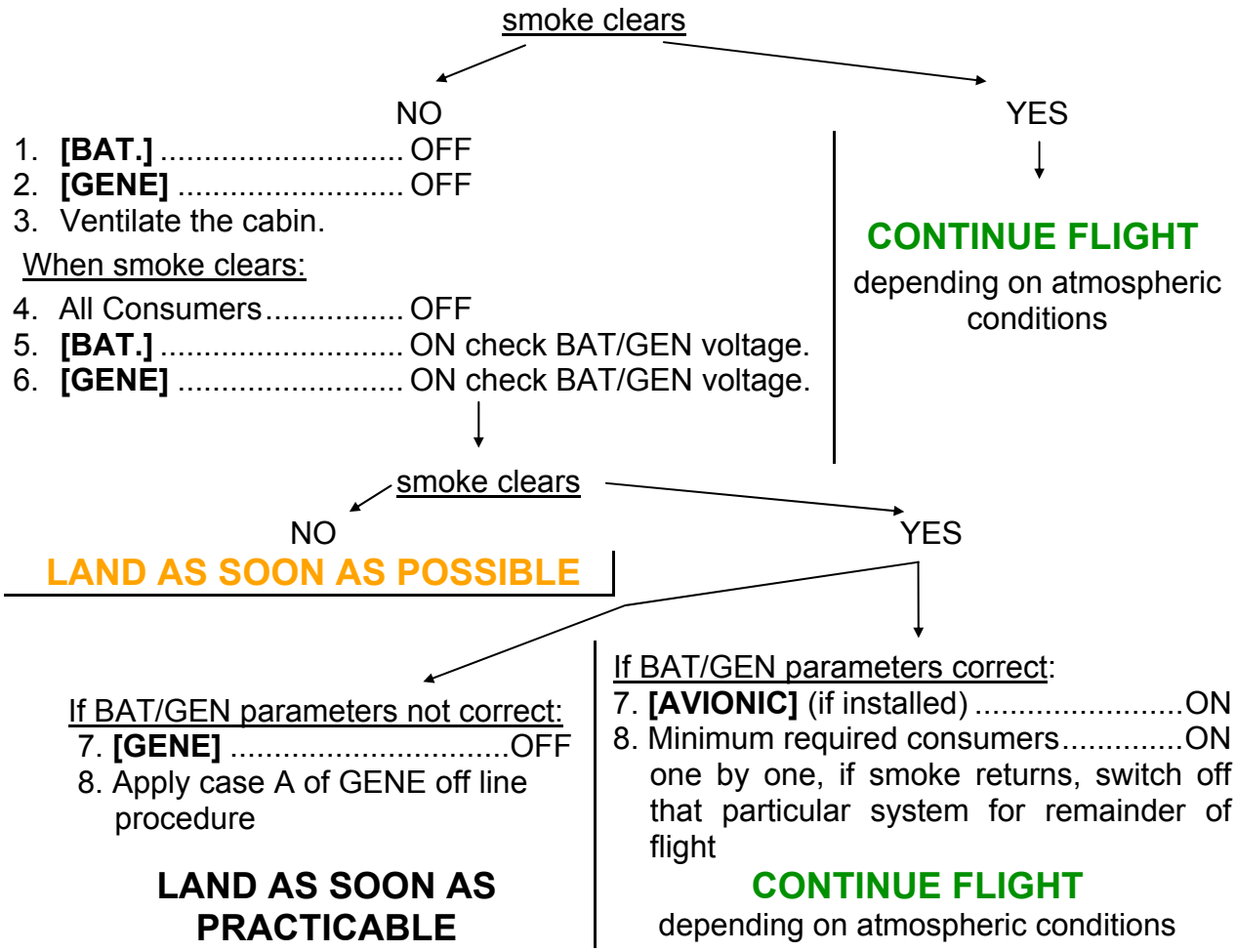
1. Twist grip ..... IDLE position
2. Carry out an autorotative landing according to the autorotation procedure (Refer to SECTION 3.2 § 1).

RC g

The paragraph **1 - SOURCE NOT IDENTIFIED**, is modified as follows:

1 SOURCE NOT IDENTIFIED

Heating, Demisting ..... OFF



CAUTION

When [EMER SW] (if installed) is actuated or battery and generator are off line, the VEMD goes off. Apply the procedure for failure of both screens (SECTION 3.5 § 1 VEMD screen failure).

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 31.004.

SECTION 3.4

SMOKE IN THE CABIN

1 SOURCE NOT IDENTIFIED

Heating, Demisting ..... OFF

smoke clears

NO

1. **[EMER SW]** (if installed) ..... **OFF**
2. **[BAT/EPU]** ..... OFF
3. **[GENE]** ..... OFF
4. **[AVIONIC]** (if installed) ..... OFF
5. Ventilate the cabin.

When smoke clears:

6. All consumers ..... OFF
7. **[EMER SW]** (if installed) ..... ON
8. **[BAT/EPU]** ..... ON check BAT/GEN Parameters
9. **[GENE]** ..... ON, check BAT/GEN Parameters

smoke clears

NO

LAND AS SOON AS POSSIBLE

If BAT/GEN parameters not correct:

10. **[GENE]** ..... OFF
11. Apply case A of GENE off line procedure

LAND AS SOON AS PRACTICABLE

YES

If BAT/GEN parameters correct:

10. **[AVIONIC]** (if installed) ..... ON
11. Minimum required consumers ..... ON one by one, if smoke returns, switch off that particular system for remainder of flight

CONTINUE FLIGHT

depending on atmospheric conditions

YES

CONTINUE FLIGHT

depending on atmospheric conditions

CAUTION

When [EMER SW] (if installed) is actuated or battery and generator are off line, the VEMD goes off. Apply the procedure for failure of both screens (SECTION 3.5 § 1 VEMD screen failure).

2 SOURCE IDENTIFIED

1. Corresponding system ..... OFF

2. Ventilate the cabin

CONTINUE FLIGHT

depending on system failed.

SECTION 3.5

VEMD FAILURES AND CAUTION MESSAGES

1 VEMD SCREEN FAILURES

- **Failure of one screen**

  [OFF1] or **[OFF2]**..... OFF

  Read all available information on the other screen.

  Information is available using the [**SCROLL**] pushbutton either on the VEMD or on the collective grip.

- **Failure of both screens**

  To avoid any power overlimit, the maximum authorized power will be the power needed to establish level flight with the following law:

  IAS kt = 100 kt at 0 Hp - (2 kt / 1000 ft).

  IAS km/h = 185 km/h at 0 Hp - (4 km/h per 300 m).

LAND AS SOON AS PRACTICABLE

Landing procedure: Carry out a no hover landing.

2 CAUTION MESSAGES ON VEMD

When a parameter is off line, the parameter value is not displayed on the corresponding VEMD screen and the parameter scale symbology is displayed in yellow.
Caution messages are self explanatory and the pilot shall comply with the action requested. If no light is lit on the Caution and Warning Panel, no other action is required from the pilot.

LANE 1 (or 2) FAILED
------> PRESS OFF 1 (or 2) : Self explanatory

VEH PARAM OUT RANGE : Abnormal vehicle parameter

ENG PARAM OUT RANGE : Abnormal engine parameter

These messages appear when a parameter usually displayed on this page reaches a limitation, as the relevant (vehicle or engine) pages are not displayed.

- **[SCROLL]** ..... : PRESS to reach the relevant page and check the parameter

CROSSTALK FAILED
------> PRESS OFF 1 (or 2) : Self explanatory

BRT CNTRL FAILED : Brightness control failed

FLI FAILED
------> CHECK PARAM : One power parameter (Ng, T4, Tq) not consistent

- Parameter consistency ..... : CHECK
- Relevant procedures in § ABNORMAL ENGINE PARAMETER INDICATION; SECTION 3..... : APPLY

GEN PARAM OUT RANGE : Abnormal generator parameter

BAT PARAM OUT RANGE : Abnormal battery parameter

These messages appear when the relevant parameter is not displayed on the vehicle page and when an electrical limitation is reached.

- **[V/A SELECT]**..... : ACTUATE, check electrical parameters

BAT.T : Battery temperature probe off line

GPS NOT AVAILABLE : GPS system not available. (no absolute time reference)

- GPS navigation system ..... : CHECK ON

OVERLIMIT DETECTED : Engine / vehicle overlimit recorded

This message appears as soon as a parameter over limit is recorded in the VEMD. It will be displayed on the FLI or engine page until 40 % Ng during the next engine start.
After the flight, check the recorded over limit data and perform the associated maintenance actions.
For all of these messages, unless otherwise required by accompanying caution/warning lights or procedures:

CONTINUE FLIGHT

RC f

The paragraph **2 - CAUTION MESSAGE ON VEMD**, is modified as follows:

The paragraph is superseded by the following:

LANE 1 (or 2) FAILED
------> PRESS OFF 1 (or 2) : Self explanatory

VEH PARAM OVER LIMIT : Abnormal parameter over limit

ENG PARAM OVER LIMIT : Engine parameter over limit

These messages appear when a parameter usually displayed on this page reaches a limitation, as the relevant (vehicle or engine) pages are not displayed.

- **[SCROLL]** .....: PRESS to reach the relevant page and check the parameter

CROSSTALK FAILED
------> PRESS OFF 1 (or 2) : Self explanatory

BRT CNTRL FAILED : Brightness control failed

FLI FAILED
------> PRESS OFF 1 (or 2) : One power parameter (Ng, T4, Tq) not consistent

- Parameter consistency ..... : CHECK
- Relevant procedures in § ABNORMAL ENGINE PARAMETER INDICATION; SECTION 3..... : APPLY

GEN PARAM OVER LIMIT : Abnormal generator parameter

BAT PARAM OVER LIMIT : Abnormal battery parameter

These messages appear when the relevant parameter is not displayed on the vehicle page and when an electrical limitation is reached.

- **[V/A SEL]**..... : ACTUATE, check electrical parameters

BAT.T : Battery temperature probe off line

CAUTION

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3 ABNORMAL NR/Nf INDICATIONS

- **NR indication failure**

  Collective .....: MAINTAIN Tq > 10 %

  NR reading is given by Nf pointer

LAND AS SOON AS PRACTICABLE

- **Nf indication failure**

  NR indication .....: CHECK in normal operating range with Tq > 0

CONTINUE FLIGHT

NOTE

After failure of the Nf indication, the FLI is replaced by the 3 data symbology (Ng/ΔNg, T4 and Tq) and a failure message is displayed.

4 ABNORMAL ENGINE PARAMETER INDICATIONS

- **Engine Oil Temperature > 110° C**

IAS ..... SET to Vy

Temperature decreases

YES → **LAND AS SOON AS PRACTICABLE**

NO → **LAND AS SOON AS POSSIBLE**

- **Loss of OAT, Ng, Tq or T4 parameters**

  When a parameter is off line, the parameter value is not displayed on the VEMD upper screen and the parameter scale symbology (if applicable) is displayed in yellow.

  The First Limitation Indicator (FLI) is replaced by the 3-data symbology (Ng/ΔNg, T4 and Tq) and a failure message is displayed.

CONTINUE FLIGHT

- **OAT indicator failure**

  OAT appears in the lower right corner of the upper screen when OAT indication fails. The ΔNg scale is then displayed in yellow and ΔNg indication is lost.

  Comply with the maximum Ng values given below:

  - Maximum takeoff power (MTOP) ..... Ng = 100 %
  - Maximum continuous power (MCP) ..... Ng = 98.5 %

- **Ng indicator failure**

  Comply with the maximum T4 values given below:

  - OAT > -10°C ..... T4 limited to 760°C
  - OAT ≤ -10°C ..... T4 limited to 750°C

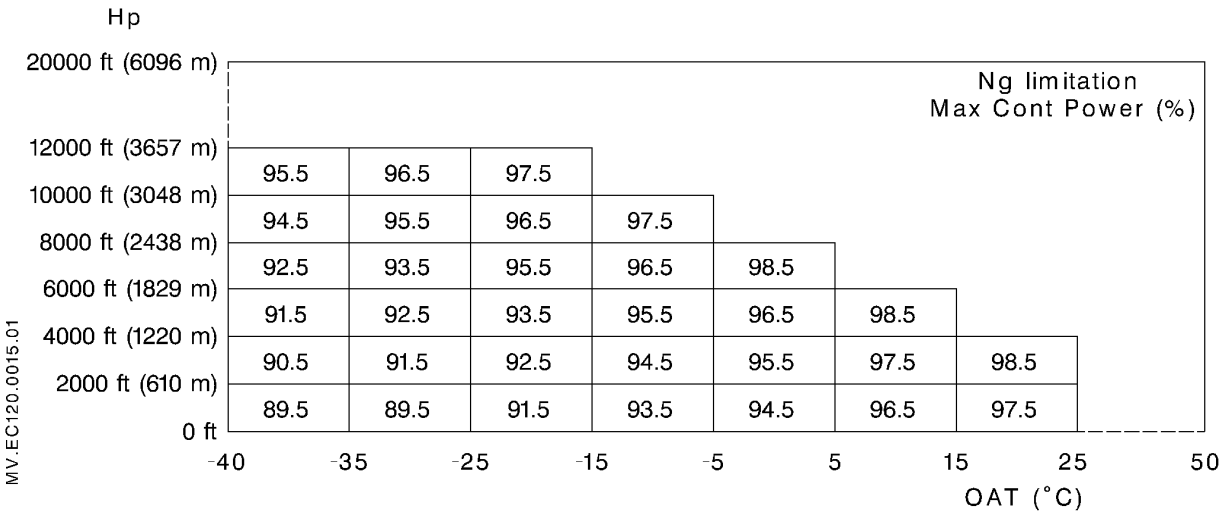
NOTE

In this case, the T4 limitations displayed are the starting limitations.

An engine overlimit may be recorded and the message OVERLIMIT DETECTED displayed on VEMD if the T4 exceeds 750°C. This overlimit can be ignored.

- **Torquemeter failure**

  Comply with the maximum Ng given in the following table:



- **T4 indication failure**

  Comply with Ng and Tq limitations.

  Do not start the engine.

5 ABNORMAL ELECTRICAL PARAMETER INDICATIONS

VEMD	CORRECTIVE ACTIONS
GEN 32.0 V	Over voltage on the generator (> 31.5 V): 1. **[GEN]** or **[GENE]** .....OFF 2. CWP .....MONITOR for BATT TEMP 3. GENE procedure case A .....Apply **LAND AS SOON AS PRACTICABLE**
GEN 30.0 V	Over voltage on the generator (29.0 V < GEN ≤ 31.5 V): 1. GEN voltage .....MONITOR **CONTINUE FLIGHT**
GEN 24.0 V	Under voltage on DC bus (≤ 24.0 V): 1. GENE procedure .....Apply 2. GEN voltage ..... CHECK > 24.0 V YES → **CONTINUE FLIGHT** NO → 3. GENE procedure case A..... Apply **LAND AS SOON AS PRACTICABLE** **NOTE** **Probable cause of such a failure is a generator defect that does not make GENE come on.**

VEMD	CORRECTIVE ACTIONS
 Red underline is flashing	Generator current over limit: 1. Unnecessary equipment..... OFF **CONTINUE FLIGHT** **NOTE** **After engine starting on battery, a temporary high generator current is normal because the battery is being recharged. During this phase, avoid using high electrical load consumers.**

RC g

The paragraph 1 **- ENGINE ALARMS** , is modified as follows:

1 ENGINE ALARMS

Supersede the table **ENG FIRE** by the following:

WARNING PANEL	CORRECTIVE ACTIONS
ENG FIRE Fire in engine bay	**- At Start-up:** **1. Twist grip ..... OFF** **2. Emergency fuel shut-off handle ..... AFT** **3. [PUMP] ..... OFF** 4. **[CRANK]**..... PRESS (10 sec.) 5. **[BAT.]** ..... OFF 6. Rotor brake ..... APPLY (≤ 150 rpm) 7. Evacuate aircraft and fight fire from outside. **- Hover, Takeoff, Final:** **LAND IMMEDIATELY** Carry out a no hover powered landing. Once on ground, apply same procedure as above. **- In Flight:** **LAND IMMEDIATELY** **1. Collective ..... REDUCE** **2. IAS ..... SET to Vy** **3. Autorotation procedure ..... APPLY** **4. Twist grip ..... OFF** **5. Emergency fuel shut-off handle .. AFT** **6. [PUMP] ..... CHECK OFF** **- After landing:** 7. **[BAT.]** ..... OFF 8. Rotor brake ..... APPLY (≤ 150 rpm) 9. Evacuate aircraft and fight fire from outside

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SECTION 3.6

CAUTION AND WARNING PANEL

1 ENGINE ALARMS

WARNING PANEL	CORRECTIVE ACTIONS
ENG FIRE Fire in engine bay	**- At start-up:** **1. Twist grip ..... OFF** **2. Emergency fuel shut-off handle .. AFT** **3. [FUEL P] ..... OFF** 4. **[CRANK]** ..... PRESS (10 sec.) 5. **[BAT/EPU]** ..... OFF 6. Rotor brake..... APPLY (≤ 150 rpm) 7. Evacuate aircraft and fight fire from outside **- Hover, Takeoff, Final:** **LAND IMMEDIATELY** Carry out a no hover powered landing. Once on ground, apply same procedure as above. **- In flight:** **LAND IMMEDIATELY** **1. Collective ..... REDUCE** **2. IAS ..... SET to Vy** **3. Autorotation procedure ..... APPLY** **4. Twist grip ..... OFF** **5. Emergency fuel shut-off handle .. AFT** **6. [FUEL P] ..... CHECK OFF** **- After landing:** 7. **[BAT/EPU]** ..... OFF 8. Rotor brake..... APPLY (≤ 150 rpm) 9. Evacuate aircraft and fight fire from outside

WARNING PANEL	CORRECTIVE ACTIONS
ENG P Engine oil pressure below limit	**Oil pressure .....CHECK gauge** LOW OR NIL → **LAND IMMEDIATELY** NORMAL → **LAND AS SOON AS PRACTICABLE** Autorotation procedure.... APPLY Shut down engine, time permitting
TWT GRIP Twist grip out of FLIGHT position	**Twist grip .....INCREASE to FLIGHT position**
ENG CHIP Metal particles in engine oil circuit	**Collective.....Reduce power** **LAND AS SOON AS POSSIBLE** Low-power approach and landing. Be prepared in case of a loss of engine power. **NOTE** **Takeoff is prohibited until checks specified in TURBOMECA Maintenance Manual have been completed.**

2 TRANSMISSION ALARMS

<table>
<tr><th>WARNING PANEL</th><th>CORRECTIVE ACTIONS</th></tr>
<tr><td>MGB P

Main gear box low oil pressure</td><td>
Collective ..... REDUCE power
Tq ..... Set < 45%

LAND AS SOON AS POSSIBLE

If a safe landing is not possible, continue flight to the nearest appropriate landing site, reduce power to fly at minimum power speed (Vy).

NOTE

At low power (Tq < 45%) a maximum of 30 min. of simulated flight time has been demonstrated during bench tests.
</td></tr>
<tr><td>MGB TEMP

Main gear box oil overheating</td><td>
1. IAS ..... SET TO Vy
2. CWP ..... MONITOR

MGB TEMP → LAND AS SOON AS PRACTICABLE
MGB TEMP → LAND AS SOON AS POSSIBLE
</td></tr>
<tr><td>GB CHIP

Metal particles in MGB or TGB oil circuit</td><td>
IAS ..... Set to Vy

MGB P and MGB TEMP ..... Monitor

Be prepared to apply MGB P or MGB TEMP procedure.

Avoid prolonged hovering.

LAND AS SOON AS PRACTICABLE
</td></tr>
</table>

3 HYDRAULIC ALARM

WARNING PANEL	CORRECTIVE ACTIONS
HYDR Loss of hydraulic pressure or Hydraulic pressure < 20 bar	**Keep aircraft at a more or less level attitude.** **Avoid abrupt maneuvers.** **CAUTION** **Do not attempt to carry out hover flight or any low speed maneuver.** **The intensity and direction of the control feedback force will change rapidly. This will result in poor aircraft control and possible loss of control.** **NOTE 1** **The accumulators contain sufficient pressure to secure flight and to reach the hydraulic failure safety speed.** **NOTE 2** **Pushing down and locking simultaneously the collective with one hand is a difficult operation. The pilot can decide to first shut down the engine then lock the collective.** - **HIGE, Takeoff, Final:** (if immediate landing is possible) 1. Land normally 2. Collective.....LOCK 3. Engine shut down procedure .....Apply - **In flight:** Smoothly 1. IAS .....SET to around Vy (hydraulic failure safety speed) 2. Hydraulic cut-off switch (collective grip).....OFF Pilot has to exert forces: - On collective increase or decrease around no force feedback point - On forward and left cyclic **LAND AS SOON AS POSSIBLE** **NOTE** **Speed may be increased as necessary but control loads will increase with speed.** 3. Approach and landing: Over a clear and flat area - Perform a flat approach into wind - Make a no-hover slow running landing at around 10 kt (18.5 km/h) **- Do not hover or taxi without hydraulic pressure** 4. After landing: - Collective.....LOCK - Shutdown procedure .....Apply

RC g

The paragraph **4 - ELECTRICAL ALARMS**, is modified as follows:

4 ELECTRICAL ALARMS

Supersede the tables **BATT TEMP** and **BATT** by the following:

<table>
<tr><th>WARNING PANEL</th><th>CORRECTIVE ACTIONS</th></tr>
<tr><td>BATT TEMP

Maximum battery temperature:
- Above 60° C, AMBER alarm is displayed on VEMD.
- Above 71°C, RED alarm is displayed on VEMD and CWP.</td><td>On VEMD:
Battery temperature and BAT voltage ..... CHECK
<u>If overheating suspected:</u>
1. [BAT.] ..... OFF
2. GEN Voltage ..... CHECK
NORMAL → Battery temp ..CHECK → DECREASES → CONTINUE FLIGHT
When Bat temp < 65 °C :
[BAT.] ..... ON (If required)
STEADY → LAND AS SOON AS PRACTICABLE
ABOVE U max (32V) → 1. [BAT.] ..... ON
2. [GENE] ..... OFF
3. Unnecessary equipment ..... OFF → LAND AS SOON AS PRACTICABLE</td></tr>
<tr><td>BATT

Battery off line</td><td>[BAT.] ..... CHECK ON
NO → [BAT.] ..... ON → BATT → CONTINUE FLIGHT
YES → [ELECT RESET] ....ACTUATE → BATT → LAND AS SOON AS PRACTICABLE
Battery(ies) connections .... CHECK</td></tr>
</table>

CAUTION

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4 ELECTRICAL ALARMS

<table>
<tr><th>WARNING PANEL</th><th>CORRECTIVE ACTIONS</th></tr>
<tr><td>BATT TEMP

Maximum battery temperature:
- Above 60° C, AMBER alarm is displayed on VEMD.
- Above 71°C, RED alarm is displayed on VEMD and CWP.</td><td>On VEMD:
Battery temperature and BAT voltage ..... CHECK
<u>If overheating suspected:</u>

1. [BAT/EPU]..... OFF
2. GEN Voltage ..... CHECK

NORMAL → Battery temp .....CHECK
DECREASES → CONTINUE FLIGHT
STEADY → LAND AS SOON AS PRACTICABLE

ABOVE U max (32V)
1. [BAT/EPU] ..... ON
2. [GENE]..... OFF
3. Unnecessary equipment..... OFF
→ LAND AS SOON AS PRACTICABLE

<u>When Bat temp < 65 °C :</u>
[BAT/EPU]..... ON (If required)</td></tr>
<tr><td>BATT
Battery off line</td><td>[BAT/EPU].....CHECK ON

NO → [BAT/EPU].....ON → BATT → CONTINUE FLIGHT

YES → [ELEC RST].....ACTUATE → BATT → LAND AS SOON AS PRACTICABLE
Battery(ies) connections ..... CHECK</td></tr>
</table>

<table>
<tr><th>WARNING PANEL</th><th>CORRECTIVE ACTIONS</th></tr>
<tr><td>BATT FUSE

Battery fuse has blown.
Battery is off line</td><td>LAND AS SOON AS PRACTICABLE</td></tr>
<tr><td>GENE

DC Generator off line.</td><td>
1. GEN voltage on VEMD ..... CHECK
2. [GENE]..... CHECK ON
YES → [ELEC RST]..... ACTUATE
NO → [GENE] .....ON
Case A: GENE → Unnecessary equipment .....OFF → BAT voltage on VEMD .....MONITOR → LAND AS SOON AS PRACTICABLE
Case B: GENE → CONTINUE FLIGHT

WARNING
IF THE BATTERY FAILS, THE VEMD WILL GO OUT AND NR/NF INDICATION IS LOST.
APPLY THE PROCEDURE FOR FAILURE OF BOTH SCREENS (SECTION 3.5 §1 VEMD SCREEN FAILURE).
AVOID AUTOROTATION, PERFORM A SHALLOW APPROACH WITH CAUTIOUS LANDING.
BEFORE BATTERY FAILURE, NR AUDIO ALARM WILL COME ON (U < 18 V).
</td></tr>
</table>

RC h

The paragraph **4 - ELECTRICAL ALARMS**, is modified as follows:

Supersede the tables BATT FUSE and GENE by the following:

WARNING PANEL	CORRECTIVE ACTIONS
BATT FUSE Battery fuse has blown. Battery is off line	**LAND AS SOON AS PRACTICABLE**
GENE DC Generator off line	**1. GEN voltage on VEMD ..... CHECK** **2. [GENE]..... CHECK ON** YES → NO NO → **[GENE]** .....ON **[ELECT RESET]**..... ACTUATE Case A : GENE → Unnecessary equipment ..... OFF → BAT voltage on VEMD ..... MONITOR → **LAND AS SOON AS PRACTICABLE** Case B : GENE → **CONTINUE FLIGHT** **CAUTION** **If the battery fails, the VEMD will go out and only the analogue NR indication will remain.** **Apply the procedure for failure of both screens (SECTION 3.5 §1 VEMD screen failure).** **Before battery failure, NR audio alarm will come on (U < 18 V).**

CAUTION

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RC i

The paragraph **4 - ELECTRICAL ALARMS**, is modified as follows:

Supersede the tables BATT FUSE and GENE by the following:

WARNING PANEL	CORRECTIVE ACTIONS
BATT FUSE Battery fuse has blown. Battery is off line.	**LAND AS SOON AS PRACTICABLE**
GENE DC Generator off line.	**1. GEN voltage on VEMD ..... CHECK** **2. [GENE]..... CHECK ON** YES → **[ELEC RST]**..... ACTUATE Case A : GENE Unnecessary equipment ..... OFF BAT voltage on VEMD ..... MONITOR **LAND AS SOON AS PRACTICABLE** NO → **[GENE]** .....ON Case B : GENE **CONTINUE FLIGHT** **CAUTION** **If the battery fails, the VEMD will go out and only the analogue NR indication will remain. Apply the procedure for failure of both screens (SECTION 3.5 §1 VEMD screen failure). Before battery failure, NR audio alarm will come on (U < 18 V).**

CAUTION

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RC j

The paragraph **4 - ELECTRICAL ALARMS**, is modified as follows:

Supersede the tables BATT FUSE and GENE by the following:

WARNING PANEL	CORRECTIVE ACTIONS
BATT FUSE Battery fuse has blown. Battery is off line	**LAND AS SOON AS PRACTICABLE**
GENE DC Generator off line	**1. GEN voltage on VEMD ..... CHECK** **2. [GENE]..... CHECK ON** YES → **[ELECT RESET]**..... ACTUATE Case A : GENE → Unnecessary equipment ..... OFF → BAT voltage on VEMD ..... MONITOR → **LAND AS SOON AS PRACTICABLE** Case B : GENE → **CONTINUE FLIGHT** NO → **[GENE]** .....ON **WARNING** **IF THE BATTERY FAILS, THE VEMD WILL GO OUT AND NR/NF INDICATION IS LOST.** **APPLY THE PROCEDURE FOR FAILURE OF BOTH SCREENS (SECTION 3.5 §1 VEMD SCREEN FAILURE).** **AVOID AUTOROTATION, PERFORM A SHALLOW APPROACH WITH CAUTIOUS LANDING.** **BEFORE BATTERY FAILURE, NR AUDIO ALARM WILL COME ON (U < 18 V).**

CAUTION

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5 FUEL ALARMS

WARNING PANEL	CORRECTIVE ACTIONS
FUEL Fuel quantity < 30 kg (66 lb)	**LAND AS SOON AS POSSIBLE** **NOTE** **15 min of flight time remains at MCP.** **WARNING** **AVOID MAINTAINING SIDESLIP OVER 15° AS T HIS COULD LEAD TO AN ENGINE FLAME-OUT.**
FUEL P Low fuel Pressure	**- At engine start up:** **[FUEL P]** or **[PUMP]**..... ON ↓ **FUEL P** **- In flight:** 1. Collective..... REDUCE POWER **2. [FUEL P]** or **[PUMP]**..... ON **LAND AS SOON AS POSSIBLE** Low power approach and landing. **WARNING** **BE PREPARED IN CASE OF AN ENGINE FLAME-OUT.**

WARNING PANEL	CORRECTIVE ACTIONS
FUEL FILT Fuel filter clogged	**WARNING** **FUEL FILTER BY-PASS OPENING LEADS TO CONTAMINATION OF THE FUEL LINES AND THE GOVERNOR, WHICH MAY INDU CE NG OSCILLATIONS, LIMITED POWER OR POSSIBLY FLAME-OUT.** Collective ..... REDUCE POWER FUEL FILT Continue flight at reduced power **LAND AS SOON AS PRACTICABLE** FUEL FILT **LAND AS SOON AS POSSIBLE** MONITOR Ng If Ng oscillations occur: NR .....CHECK in normal operating range YES **LAND AS SOON AS POSSIBLE** NO Refer to SECTION 3.8: GOVERNOR FAILURES

RC k

The paragraph **6 - MISCELLANEOUS ALARMS** , is modified as follows:

6 MISCELLANEOUS ALARMS

The **P2 TEMP** light is deleted.

The rest of the paragraph is unchanged.

CAUTION

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6 MISCELLANEOUS ALARMS

WARNING PANEL	CORRECTIVE ACTIONS
PITOT Pitot heating not operative	**[PITOT]**.....**CHECK ON** YES → Monitor airspeed indicator NO → **[PITOT]**..... ON **CONTINUE FLIGHT**
HORN Aural warning not operative	**[HORN]**.....**CHECK ON** YES → Aural warning failure NO → **[HORN]**..... ON **CONTINUE FLIGHT**
P2 TEMP Maximum temperature in heating / demisting duct exceeded	Cabin hot air outlet nozzles..... Check that air flows and air outlets not obstructed YES NO → Heating control.....Close Heating control..... Reduce until: **P2 TEMP**

SECTION 3.7

VARIOUS WARNINGS, FAILURES AND INCIDENTS NOT INDICATED ON THE CWP

1 ROTOR BRAKE INOPERATIVE

WARNING

WAIT UNTIL ROTOR COMES TO A STANDSTILL BEFORE LEAVING THE AIRCRAFT.

Rotor stopping with wind blowing:

1. Aircraft ..... Head into the wind
2. Cyclic ..... Slightly into the wind

2 FLIGHT CONTROL HARDOVER OR SERVOJAM

A hardover results in uncommanded movements of one or two flight controls (excluding yaw).

A servojam results in a higher than normal force to move the flight controls.

- **HIGE, Takeoff, Final:** (if immediate landing is possible)

LAND IMMEDIATELY

After landing:

1. Hydraulic cut-off switch (collective grip) ..... OFF
2. Engine and rotor shutdown procedure ..... APPLY

- **In flight:**

1. IAS ..... SET to around Vy
2. Hydraulic cut-off switch (collective grip) ..... OFF, apply **HYDR** procedure

LAND AS SOON AS POSSIBLE

SECTION 3.8

GOVERNOR FAILURES

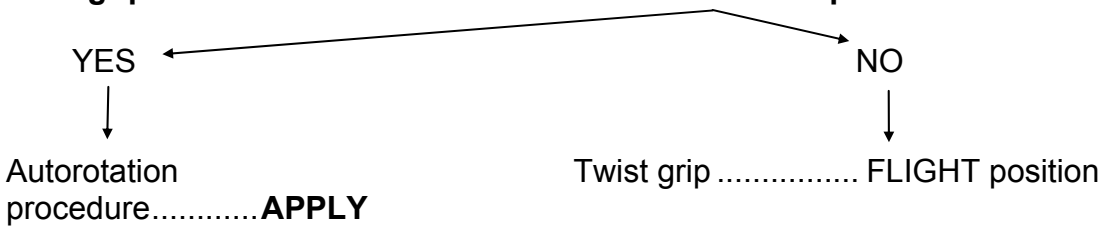
Engine governor failure leads either to NR drop, NR increase or NR oscillations.

1 NR DROP OR NR OSCILLATIONS LEADING TO NR/Nf < 365 rpm

1.1 IN CRUISE FLIGHT

Simultaneously to maintain NR in normal operating range:

1. **Collective ..... REDUCE**
2. **Twist grip ..... CHECK in FLIGHT position**



1.2 HOVER IGE

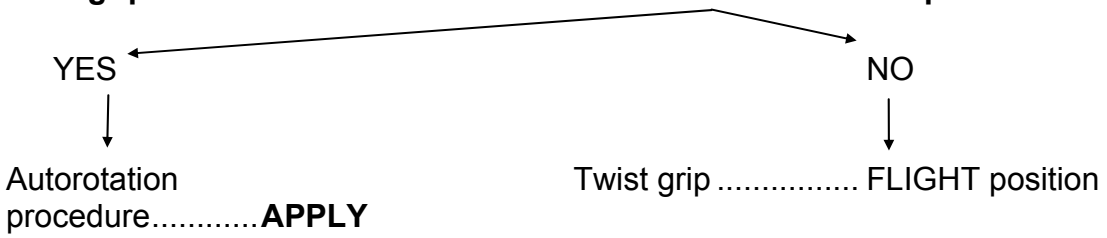
LAND IMMEDIATELY

1. Collective ..... MAINTAIN
2. Yaw ..... CONTROL
3. Collective ..... INCREASE to cushion touch down

1.3 HOVER OGE

Simultaneously:

1. **Collective ..... FULL LOW PITCH**
2. **Twist grip ..... CHECK in FLIGHT position**

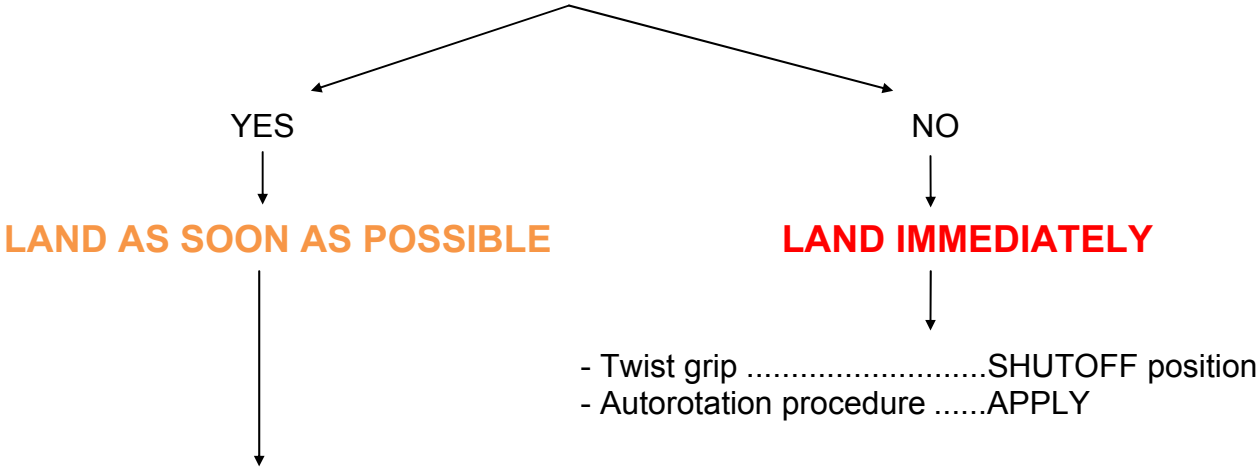


2 NR INCREASE OR NR OSCILLATIONS LEADING TO NR/Nf < 422 rpm

To maintain NR in normal operating range:

1. Collective ..... INCREASE

NR CAN BE KEPT IN NORMAL OPERATING RANGE



APPROACH AND LANDING:

- Suitable area for autorotation landing .....Join
- Twist grip.....SHUTOFF position
- Autorotation procedure.....APPLY

SECTION 4

NORMAL PROCEDURES

CONTENTS

PAGE

4.6 ENGINE AND ROTOR SHUTDOWN

4.7 MISCELLANEOUS PROCEDURES AND DATA

4.8 EXTREME WEATHER OPERATIONS

SECTION 4.1

GENERAL

This section contains instructions and procedures for operating the helicopter from the planning stage, through actual flight conditions, to securing the helicopter after landing.

Normal and standard conditions are assumed in these procedures. Pertinent data in other sections is referenced when applicable.

The instructions and procedures contained herein are written for the purpose of standardization and are not applicable to all situations.

1 OPERATING LIMITATIONS

For minimum and maximum limits, refer to SECTION 2.

Each time an operating limitation is exceeded, an appropriate entry shall be made in the logbook (helicopter, engine, etc.). The entry shall state which limit was exceeded, the duration, the extreme value attained, and any additional information essential in determining the maintenance action required.

2 FLIGHT PLANNING

Each flight should be planned adequately to ensure safe operations and to provide the pilot with the data to be used during flight. Flight planning must comply with helicopter limitations and performance (Refer to SECTIONS 2, 5, 6 and Supplements).

3 TAKEOFF AND LANDING DATA

Refer to SECTION 2 - LIMITATIONS
and
SECTION 5 - REGULATORY & ADDITIONAL PERFORMANCE DATA.

4 WEIGHT AND BALANCE DATA

Ascertain proper weight and balance of the helicopter as follows:

- Consult SECTION 6 - WEIGHT AND BALANCE.
- Ascertain weight of fuel, oil, payload, etc.
- Compute takeoff and anticipated landing gross weights.
- Check helicopter center of gravity (CG) locations.
- Check that the weight and CG limitations in SECTION 2 are not exceeded.

SECTION 4.2

PREFLIGHT CHECK

- Make sure that all flightworthiness-required corrective maintenance operations have been performed.
- These preflight checks can be done without opening any cowlings unless the helicopter had been parked for more than 2 days or in case of any visible leak or doubt.
- Check that the aircraft area is clean and unobstructed.
- Remove all picketing items if applicable.
- Carry out the following checks:

1 EXTERIOR CHECK

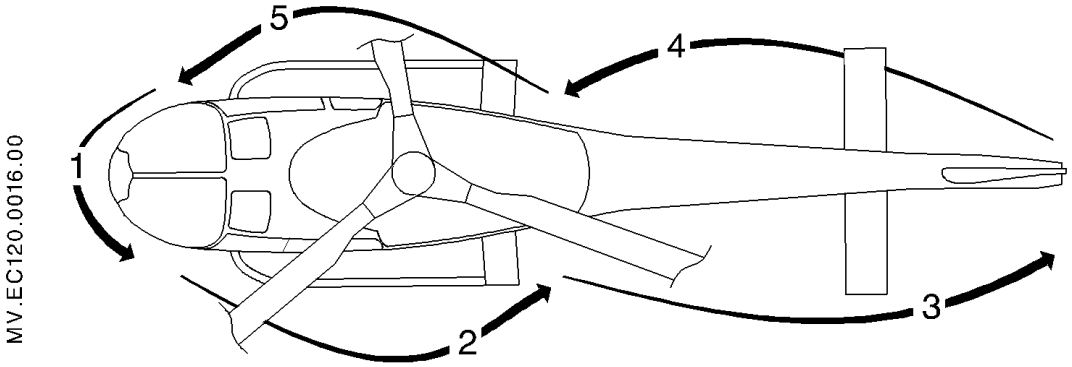


Figure 1: Sequence of checks

Station 1

- Pitot tube ..... Cover removed - Condition
- Landing light ..... Condition
- Sideslip indicator ..... Condition
- Transparent panels ..... Condition - Cleanliness
- Windshield wiper (if installed) ..... Condition
- External mirror (if installed) ..... Condition, set to avoid dazzling (night flight)
- Front Air intake ..... Blanking cover removed - Check no obstruction or foreign objects

Station 2

- Front door.....Condition, jettison system check
- Sliding door .....Condition, closed or open-locked
- MGB-Engine LH cowling .....Open
- MGB.....Oil level
- Hydraulic compact unit.....Oil level
- Engine.....Oil level
- Transmission deck and engine.....Condition, cleanliness, no leaks
- Fuel filler plug.....Closed, locked
- MGB-Engine LH cowling .....Closed, correctly locked
- Landing gear and foot steps.....Attachment - visual check
- Lower central cowling.....Closed, correctly locked
- Fuel tank .....Bled (before the first flight, if OAT ≥ 0°C), no leak at bleed valve
- Main rotor head .....Visual inspection, rotor head, sleeves, spherical thrust bearing, adapters, bonding braids
- Main rotor blades .....Condition, visual inspection from ground, no impact
- Static port.....Cover removed, clear
- Exhaust pipe .....Condition – Cover removed
- Maintenance steps.....Closed
- Rear cargo door .....Open, check battery attachment, connections
  Check for no snow in the tail boom.
  Closed, locked
- Tail boom .....Condition, condition of antennas

Station 3

- Stabilizer .....General condition
- Tail rotor blades .....Condition, no impact
- Tail rotor hub fairing .....No rotation (paint marks)
- Keel and tail skid.....Attachment - visual check

Station 4

- Yaw control rod ..... Condition
- TGB ..... Oil level
- Stabilizer ..... General condition
- Tail boom ..... Condition, condition of antennas

Station 5

- Static port ..... Cover removed, clear
- Engine air intake and transmission deck ..... Cleanliness, no foreign objects
- RH cargo door ..... Open
- Electrical master box circuit breakers ..... All set
- RH cargo compartment ..... Carried objects stowed
- RH cargo door ..... Closed and locked
- MGB-Engine RH cowling ..... Open
- Oil cooler ..... Condition, cleanliness, no leaks
- MGB-Engine RH cowling ..... Closed and locked
- EPU door ..... As required
- Landing gear and foot steps ..... Attachment - visual check
- Lower central cowling ..... Closed
- Door ..... Condition, jettison system check

2 INTERIOR CHECK

- Cabin ..... Clean
- Seats ..... Condition
- Seat belts ..... Condition
- Blanking plate of pedal unit ..... Installed (if single pilot configuration).
- Fire extinguisher ..... Secured - checked
- First aid kit (if installed) ..... Attachment
- Breakers ..... All set
- Loads and objects carried ..... Stowed and secured
- Front door jettison systems ..... Checked plastic guard condition, (snap wire checked for aircraft S/N 1674 and from S/N 1678 except S/N 8001 to 8034)
- Stretcher installation (if installed) ..... Condition, attachment
- ELT (if installed) ..... Check control switch on instrument panel is set to "AUTO" or "ARMED"

3 TURN AROUND CHECK

- Overall aspect .....Condition, cleanliness
- Engine / MGB .....Oil level
- Main and tail rotor blades (from ground) .....Condition
- Loads .....Stowed and secured
- All cowlings .....Locked
- Doors .....Closed or sliding door open-locked

NOTE 1

If the aircraft is to be parked some time between flights, temporary picketing is recommended by fitting blanks, covers, and blade socks.
In this case, perform a complete exterior check.

NOTE 2

Perform a complete exterior check if the aircraft was parked in falling snow.

RC g

The paragraph **1 - ENGINE PRESTART CHECK**, is modified as follows:

1 ENGINE PRESTART CHECK

- Seats and control pedals.....ADJUST and SECURE
- Seat belts .....FASTEN

NOTE 1

Copilot seat belts shall be fastened in all cases.

NOTE 2

The safety belts of unoccupied rear seats must not be fastened and the button on the shoulder belts must not be visible.

NOTE 3

Check that, when flying with doors open there are no loose objects in the cabin, and the belts of unoccupied rear seats are stowed between the backrest foam and the backrest.

1. Heating, demisting, air conditioning (if installed).....OFF
2. Rotor brake .....FORWARD
3. Fuel shut-off lever .....FORWARD LOCKWIRED
4. **[OFF/DAY/NIGHT/NVG]** light selector .....SET to OFF or DAY
5. **[BAT]**, **[GENE]** and **[HORN]**.....ON, check BAT voltage
6. **[LIGHT TEST]**.....PERFORM
7. **[FIRE TEST]** .....PERFORM, check gong
8. Electrical mirror (if fitted) .....SET to avoid dazzling (night flight)
9. GPS navigation system.....ON (if fitted)
10. CWP.....CHECK:
    - With battery power .....:

GENE PITOT ENG P
FUEL P MGB P
TWT GRIP HYDR

    - With EPU power .....: Same lights as above + BATT

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No. 31.004.

SECTION 4.3

START UP

1 ENGINE PRESTART CHECK

- Seats and control pedals.....ADJUST and SECURE
- Seat belts .....FASTEN

NOTE 1

Copilot seat belts shall be fastened in all cases.

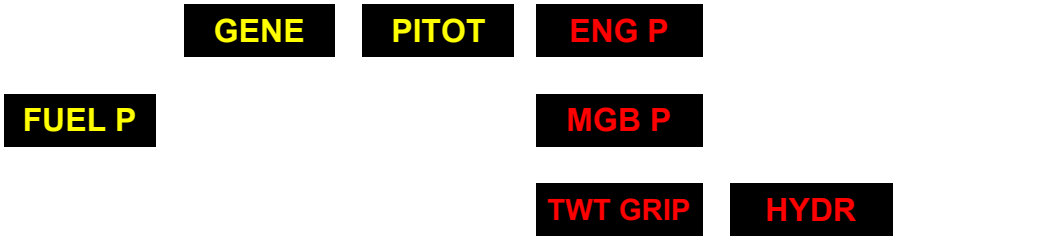
NOTE 2

The safety belts of unoccupied rear seats must not be fastened and the button on the shoulder belts must not be visible.

NOTE 3

Check that, when flying with doors open there are no loose objects in the cabin, and the belts of unoccupied rear seats are stowed between the backrest foam and the backrest.

1. Heating, demisting, air conditioning (if installed).....OFF
2. Rotor brake .....FORWARD
3. Fuel shut-off lever .....FORWARD LOCKWIRED
4. **[EMER SW]** (if fitted).....ON
5. Light selector.....SET to OFF or DAY
6. **[BAT/EPU]**, **[GENE]** and **[HORN]** .....ON, check BAT voltage > 22V
7. **[LIGHT TST]** .....PERFORM
8. **[FIRE TST]**.....PERFORM, check gong
9. Electrical mirror (if fitted) .....SET to avoid dazzling (night flight)
10. ICS and GPS navigation system.....ON (if fitted)
11. CWP.....CHECK:
    - With battery power.....:



    - With EPU power .....: Same lights as above + BATT

12. VEMD.....Engine page DISPLAYED, check no message
13. Control pedals.....Free travel, then NEUTRAL
14. Collective .....LOCK
15. Twist grip.....Free travel, check time-delay mechanism then SHUT OFF position
16. Hydraulic cut-off switch (both collective grips).....ON, guarded
17. Cyclic .....CENTER, friction adjusted

RC b

The paragraph **2 - ENGINE STARTING**, is superseded by the following:

2 ENGINE STARTING

CAUTION

In case of any doubt on the success of the start, abort starting procedure:
- **Keep the starter button pressed,**
- **Set twist grip to OFF position,**
- **Release the starter button, then [FUEL P] OFF, [GENE] OFF.**

In case of residual T4 higher than 200°C or aborted start due to excessivel y high T4, check the BAT voltage:
- **Voltage normal:**
  - **Press [CRANK] during 10 sec.**
  - **Apply normal starting procedure.**
- **Voltage under 15 VDC when starting:**

If BAT voltage < 15 VDC durin g start, a bort the sta rting procedure immediately, set the twist grip to OFF position, release the starter button.

1. **[PUMP]** .....ON, check **FUEL P**
2. **[A.COL LIGHT]**.....ON

- After 30 sec.:

3. Starter .....PRESS
4. Twist grip.....IDLE position

NOTE

If remaining T4 is above 150°C wait until 10% Ng before actuating twist grip

5. Twist grip.....CONTROL to maintain T4 within limits

- When Ng = 50% :

6. Starter .....RELEASE
7. Twist grip.....Progressively to IDLE position, check: **ENG P** **HYDR** **MGB P**
8. **[HORN]** .....OFF, check **HORN**

NOTE

At Ng > 60 % the VEMD upper screen automatically switches to FLI display.

- If EPU is used:

EPU.....DISCONNECT, check **GENE** **BATT**

CAUTION

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2 ENGINE STARTING

CAUTION

In case of any doubt on the success of the start, abort starting procedure:

- **Keep the starter button pressed,**
- **Set twist grip to OFF position,**
- **Release the starter button, then [FUEL P] OFF, [GENE] OFF.**

In case of residual T4 higher than 200°C or aborted start due to excessively high T4, check the BAT voltage:

- **Voltage normal:**
  - **Press [CRANK] during 10 sec.**
  - **Apply normal starting procedure.**
- **Voltage under 15 VDC when starting:**

If BAT voltage < 15 VDC during start, abort the starting procedure immediately, set the twist grip to OFF position, release the starter button.

1. **[FUEL P]**.....ON, check **FUEL P**
2. **[A/COL LT]**.....ON

- After 30 sec.:

3. Twist grip.....TURN slowly to START position (white index)
4. Starter .....PRESS
5. Twist grip.....CONTROL to maintain T4 within limits

- When Ng = 50%:

6. Starter .....RELEASE
7. Twist grip.....Progressively to IDLE position, check: **ENG P** **HYDR** **MGB P**
8. **[HORN]**.....OFF, check **HORN**

NOTE

At Ng > 60 % the VEMD upper screen automatically switches to FLI display.

- If EPU is used:
  EPU.....DISCONNECT, check **GENE** **BATT**

3 RUN-UP CHECK

NOTE 1

For aircraft equipped with spot light only: If a flight under night conditions is envisaged adjust the right map light so that it illuminates the pilot's side of the instrument panel and dim it to minimum necessary level before switching the spot light on.

NOTE 2

Do not use the windshield wiper on a dry windshield or in light rain.

1. **[PITOT]** ..... ON, check **PITOT**
2. **[FUEL P]** or **[PUMP]** ..... OFF
3. **[V/A SELECT]**:
   - Check electrical system voltage and current
4. Check ENG OIL pressure
5. All necessary systems..... ON and TEST
   (Radio, radio navigation, lights, windshield wiper*, instrument panel lighting*, etc.)
6. Hydraulic checks:

CAUTION

If not locked, the collective lever will move up when the accumulators are depleted or when the hydraulic cut-off switch on the collective grip is set to OFF.

- Accumulator checks:
  - **Collective..... CHECK correctly locked**
  - **[ACCU TST]** or **[HYDR]** ..... ON
  - CWP ..... CHECK **HYDR**
  - Move the cyclic 2 or 3 times on each axis ± 10 % of total travel (± 2.5 cm, 1 inch) and check for accumulator hydraulic assistance on pitch and roll (no control loads).
  - **[ACCU TST]** or **[HYDR]** ..... RESET to OFF position
  - CWP ..... CHECK **HYDR**

- Hydraulic cut-off test:
  - Collective ..... **CHECK correctly locked**
  - Hydraulic cut-off switch (collective grip)..... OFF
  - CWP ..... CHECK **HYDR**
  - Check that loads are felt immediately and that cyclic can be moved in pitch and roll with normal feedback loads.
  - Hydraulic cut-off switch (collective grip)..... ON, guarded

(*) If installed

- CWP ..... CHECK **HYDR** after 2 to 3 sec.
  Maintenance action must be performed prior to flight if this time is reduced to 1 sec. or greater than 3 sec. (at least one of the accumulators is faulty)

7. Twist grip ..... Progressively to FLIGHT position
   Maintain Tq < 40 %

- When NR = 350 rpm:
  - **[HORN]** ..... ON, check:
    - Low NR audio warning sounds for NR < 370 rpm
    - **HORN**

- When twist grip is in flight position:

8. Parameter checks ..... No warning light illuminated,
   Electrical system voltage and current,
   Engine oil pressure.

NOTE

In strong wind, perform the hydraulic tests at the nominal power rating, apply a small cyclic input into the wind direction and accelerate the engine to NR ≈ 320 rpm, as fast as compatible with T4 limitations, then follow the normal procedure (refer to SECTION 4.8.1).

4 CRANKING

The cranking procedure shall be performed after a failed or aborted start and can be used for check or maintenance purposes.

Proceed as follows:

- Check:

1. Twist grip ..... OFF
2. **[FUEL P]** or **[PUMP]** ..... ON
3. Engine starting selector ..... OFF
4. Emergency fuel shut-off lever ..... FORWARD
5. Ng ..... CHECK ≤ 10 %
6. **[CRANK]** ..... PRESS for 20 sec. max.
7. **[FUEL P]** or **[PUMP]** ..... OFF

CAUTION

Do not crank the engine with the emergency fuel shutoff valve closed as this could damage the engine high pressure fuel pump.

SECTION 4.4

TAKEOFF

1 BEFORE TAKEOFF CHECK

1. Doors .....CLOSED or sliding door OPEN LOCKED
2. Cyclic and collective frictions .....AS REQUIRED
3. Landing light.....AS REQUIRED
4. Temperatures and pressures .....NORMAL RANGE
5. CWP.....All lights OFF
6. Collective .....UNLOCKED

NOTE

Adjust collective and cyclic frictions so that friction loads are felt by the pilot when moving the flight controls.

2 TAKEOFF CHECK AND PROCEDURE

CAUTION

The heating system is forbidden if Ng and/or T4 are above the engine maximum continuous rating.

- Gradually increase collective to hover at 5 ft (1.5 m).
- Check NR, engine and mechanical parameters, no warning caution light.
- Increase airspeed with the HIGE power until IAS = 40 kt (74 km/h), then begin to climb so as to clear 20 ft (6 m) at IAS = 65 kt (120 km/h).

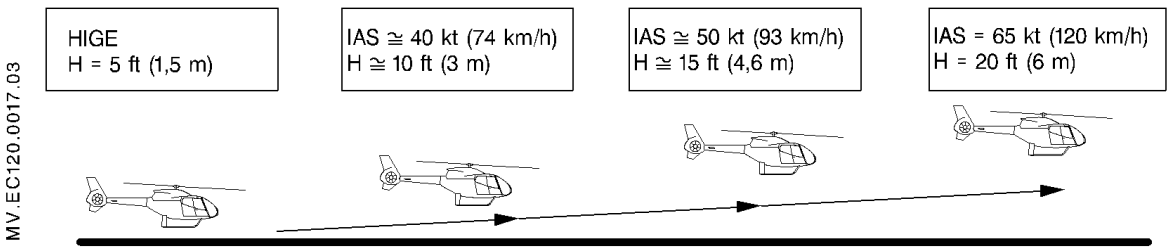

Figure 1: Takeoff procedure

CAUTION

For safe operation, takeoff path should avoid HV diagram (refer to SECTION 5).

SECTION 4.5

CLIMB - CRUISE - APPROACH - LANDING

1 CLIMB

Above 100 ft (30 m), for maximum climb performance, select up to Maximum Continuous Power and optimum climbing speed (Vy):

IAS kt = 65 kt at 0 Hp - (1 kt / 1000 ft).

IAS km/h = 120 km/h at 0 Hp - (2 km/h per 300 m).

2 CRUISE

Fast cruise is obtained by the first limitation reached corresponding to the beginning of the FLI amber area:

Corresponding mechanical or engine limits (Tq, Ng, T4) are indicated by an underlined numerical value.

Economic cruise: Set Tq to 10% less than MCP Tq.

Reduce indicated airspeed in turbulence.

3 APPROACH

CAUTION

The heating system is forbidden if Ng and/or T4 are above the engine maximum continuous rating.

- Begin approach at Vy.
- At approximately 100 ft (30 m), reduce airspeed down to HIGE at 5 ft (1.5 m).

  - Approach check:

    1. Landing light .....AS REQUIRED
    2. All parameters.....CHECK

4 LANDING

- In hover, gradually reduce collective until touch-down, then fully reduce collective.

RC g

The paragraph **1- ENGINE AND ROTOR SHUTDOWN** ,is superseded by:

1 ENGINE AND ROTOR SHUTDOWN

1. Cyclic .....CENTER
2. Collective .....LOCK
3. [**PITOT**], [**HORN**], landing light .....OFF
4. Twist grip.....IDLE position

   66 % ≤ Ng ≤ 70 %, wait 30 sec. for temperature stabilization
5. All unnecessary systems.....OFF
6. **[GENE]** .....OFF

CAUTION

If, after 30 sec. with twist grip in IDLE position, Ng remains higher than 80 %, maintenance action shall be performed before next engine start.

7. Twist grip.....OFF position

   Cancel the IDLE stop by briefly pressing on the starter pushbutton.

   The twist grip must be turned to OFF position with no delay.

- At NR ≤ 150 rpm:

8. Rotor brake .....APPLY

- When rotor is stopped:

9. GPS navigation system (if installed). .....OFF
10. [**A.COL LIGHT**].....OFF

- **BEFORE LEAVING HELICOPTER**

11. VEMD.....CHECK FLIGHT REPORT page data:
    - Operating time (counted from Ng > 60 % until Ng < 50 %)
    - Ng and Nf cycles .....CHECK (indicated in white characters and above 0)
    - Messages: **FAILURE DETECTED** or **OVERLIMIT DETECTED**
12. **[BAT]** .....OFF
13. Map lights.....OFF
14. Pitot, static ports, intake, exhaust covers, blade socks as required
15. Battery (or batteries) .....DISCONNECT (if necessary)

CAUTION

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SECTION 4.6

ENGINE AND ROTOR SHUTDOWN

1 ENGINE AND ROTOR SHUTDOWN

1. Cyclic .....CENTER
2. Collective .....LOCK
3. [**PITOT**], [**HORN**], landing light .....OFF
4. Twist grip.....IDLE position

   66 % ≤ Ng ≤ 70 %, wait 30 sec. for temperature stabilization
5. All unnecessary systems.....OFF
6. **[AVIONIC]** (if installed) .....OFF
7. **[GENE]** .....OFF

CAUTION

If, after 30 sec. with twist grip in IDLE position, Ng remains higher than 80 %, maintenance action shall be performed before next engine start.

8. Twist grip.....OFF position

   Cancel the IDLE stop by briefly pressing on the starter pushbutton.
   The twist grip must be turned to OFF position with no delay.

- At NR ≤ 150 rpm:

9. Rotor brake .....APPLY

- When rotor is stopped:

10. GPS navigation system (if installed). .....OFF
11. [**A/COL LT**] .....OFF

- **BEFORE LEAVING HELICOPTER**

12. VEMD.....CHECK FLIGHT REPORT page data:
    - Operating time (counted from Ng > 60 % until Ng < 50 %)
    - Ng and Nf cycles .....CHECK (indicated in white characters and above 0)
    - Messages: **FAILURE DETECTED** or **OVERLIMIT DETECTED**
13. Light selector.....OFF
14. **[BAT/EPU]**.....OFF
15. Map lights.....OFF
16. Pitot, static ports, intake, exhaust covers, blade socks as required
17. Battery (or batteries) .....DISCONNECT (if necessary)

SECTION 4.7

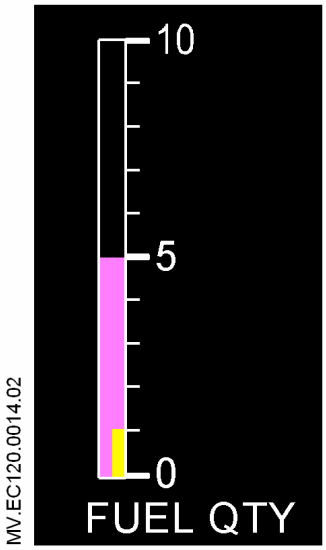
MISCELLANEOUS PROCEDURES AND DATA

1 TANK CAPACITY

- **Maximum capacity**

  410.5 litres (326.3 kg - 108.5 US gal - 719.5 lb).

- **Fuel gauge**



MV.EC120.0014.02

10 = 406 litres (323 kg - 107.3 gal - 712 lb) usable fuel quantity

: 15 min of flight time remains at MCP at the beginning of this range.

NOTE 1

The unusable fuel quantity is reached when zero is indicated on the fuel gauge.

NOTE 2

Fuel quantity indication in kg and fuel flow indication in kg/h is based on a fuel density of 0.79 kg/l.

SECTION 4.8

EXTREME WEATHER OPERATIONS

1 HIGH WIND OPERATION (WIND ABOVE 30 kt (56 km/h))

- **Parking**
  - Park the helicopter head into the wind. Maintain rotor brake applied with one blade at 12 o'clock. Keep blade socks until start up.
  - For wind above 50 kt (93 km/h) the helicopter must be tied down.
- **Start up**
  - Before engaging the starter switch, push and maintain the cyclic in the wind direction.
  - Apply engine start up procedure and accelerate the engine to reach NR = 320 rpm as quickly as possible within T4 limits and Tq ≤ 40%.
  - Then carry out the normal procedure.
- **Run up check**
  - Perform the hydraulic checks with the twist grip in FLIGHT position and NR at nominal speed.
- **Shutdown**
  - After engine shutdown, push and maintain the cyclic slightly in the wind direction.
  - Apply rotor brake at NR = 150 rpm and maintain cyclic position until the rotor stops with one blade in 12 o'clock position.

NOTE

Start up and shutdown have been demonstrated up to 55 kt (102 km/h) of wind from all directions.

2 COLD WEATHER OPERATION

Refer to SUP. 4: "INSTRUCTIONS FOR OPERATIONS IN COLD WEATHER"

SECTION 5.1

REGULATORY PERFORMANCE DATA

CONTENTS

RC f

The paragraph **1.0.0 - INTRODUCTION**, is superseded by the following:

1 INTRODUCTION

The following performance curves apply to the basic version of the aircraft.

Refer to Supplement when optional equipment is fitted.

NOTE

Values obtained on VEMD PERFORMANCE and ENGINE POWER CHECK pages can be checked with the ENGINE POWER CHECK, T4 CHECK, HOVER IN GROUND EFFECT, and HOVER OUT OF GROUND EFFECT curves.

For AUW over 1680 kg, the performance has to be checked manually with Figures 6, 7 and 8.

CAUTION

Pilot shall limit the flight envelope and weight displayed on VEMD performance pages to the relevant limitations of SECTION 2.

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 31.003.

SECTION 5.1

REGULATORY PERFORMANCE DATA

1 INTRODUCTION

The following performance curves apply to the basic version of the aircraft.

Refer to Supplements when optional equipment is fitted.

CAUTION

Pilot shall limit the flight envelope and weight displayed on VEMD performance pages to the relevant limitations of SECTION 2.

2 DEMONSTRATED WIND ENVELOPES

2.1 STARTING AND STOPPING ROTOR WIND ENVELOPE

Starting and stopping the rotor has been demonstrated up to 55 kt (102 km/h) of wind from all directions.

3 ENGINE POWER CHECK

3.1 BEFORE TAKEOFF

In HIGE at 5 ft (1.5 m) and before initiating forward flight, pull the collective slightly to ensure that the Ng can increase by at least 1%, without exceeding the max. transient rating.

3.2 ENGINE POWER CHECK PROCEDURE

The engine power check consists in checking the power margin:

- TRQ margin,
- T4 margin.

Checking can be performed using the VEMD data (refer to paragraph 3.2.1) or manually recorded parameters (refer to paragraph 3.2.2).

3.2.1 VEMD procedure

- The engine power check is performed in level flight at MCP, heating system OFF.
- Prefer an altitude where the engine is operating close to the Ng MCP limit with Hp ≤ 12000 ft (3657 m).
- Stabilize level flight at MCP for at least 2 min. before initiating the engine power check.
- Read the results displayed on VEMD at the end of the procedure.
- The engine power check is satisfactory if:
  - The **"TRQ MARGIN"** value is positive ⟶ **"GOOD"** displayed,

  and
  - The **"T4 MARGIN"** value is negative ⟶ **"GOOD"** displayed.

RC f

The paragraph **3.2.1 - VEMD Procedure**, is superseded by the following:

3.2.1 VEMD procedure

- The engine power check is performed in level flight at MCP, heating system OFF.
- Prefer an altitude where the engine is operating close to the Ng MCP limit with Hp ≤ 12000 ft (3657 m).
- Stabilize level flight at MCP for at least 2 min. before initiating the engine power check.
- Read the results displayed on VEMD at the end of the procedure.
- The engine power check is satisfactory if:
  - The **"TRQ MARGIN"** value is positive ⟶ **"GOOD"** displayed,

  and
  - The **"T4 MARGIN"** value is negative ⟶ **"GOOD"** displayed.

NOTE

To obtain the actual Tq and T4 margins values and/or if the TRQ MARGIN is negative (BAD) and/or T4 MARGIN is positive (BAD), calculate the corrected TRQ and/or T4 margin as per paragraph 3.2.3.

If the corrected TRQ margin is positive and corrected T4 margin is negative, the result is acceptable.

CAUTION

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RC f

The paragraph **3.2.2 - Manual Procedure**, is superseded by the following:

3.2.2 Manual procedure

- The engine power check is performed in level flight at MCP, heating system OFF.
- Prefer an altitude where the engine is operating close to the Ng MCP limit with Hp ≤ 12000 ft (3657 m).
- Stabilize level flight at MCP for at least 2 min. before recording the following parameters: Tq, Ng, NR, Hp, OAT and T4.

NOTE

The altimeter must be set to 1013.2 hPa to display Hp.

Refer to the ENGINE POWER CHECK chart (Fig 1 and 2) and the T4 CHECK chart (Fig 3). Use the chart in the direction shown by the arrows in the example.

The engine power check is satisfactory if:

- The point "P" is located in the "CORRECT" area of the ENGINE POWER CHECK chart ⟶ positive Tq margin,

and

- The point "T" is located in the "CORRECT" area of the T4 CHECK chart ⟶ negative T4 margin.

NOTE

No correction is to be applied to the values obtained by a manual engine power check.

Tq Margin Calculation:

- Mark the point "P" on the chart according to the recorded parameters.
- Mark the point "P' " on the separation line between the "CORRECT" and "INCORRECT" zones according to the recorded Ng and OAT values. Then carry over to the Tq scale according to the recorded NR and Hp values.
- The Tq margin is given by the torque value difference "P" – "P' " measured on the torque scale.

T4 Margin Calculation:

- Mark the point "T" on the chart according to the recorded parameters.
- Mark the point "T' " on the separation line between the "CORRECT" and "INCORRECT" zones according to the recorded Ng and OAT values. Carry over to the T4 scale according to the recorded Hp value.
- The T4 margin is given by the T4 value difference "T' " - "T" measured on the T4 temperature scale on the LH side.

CAUTION

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3.2.2 Manual procedure

- The engine power check is performed in level flight at MCP, heating system OFF.
- choose an altitude where the engine is operating close to the Ng MCP limit with Hp ≤ 12000 ft (3657 m).
- Stabilize level flight at MCP for at least 2 min. before recording the following parameters: Tq, Ng, NR, Hp, OAT and T4.

NOTE

The altimeter must be set to 1013.2 hPa to display Hp.

Refer to the ENGINE POWER CHECK charts (Fig. 1 and Fig. 2). Use the charts in the direction shown by the arrows in the examples.

The engine power check is satisfactory if:

- The point "P" is located in the "CORRECT" area of the ENGINE POWER CHECK chart ⟶ positive Tq margin,

and

- The point "T" is located in the "CORRECT" area of the T4 CHECK chart ⟶ negative T4 margin.

Tq Margin Calculation:

- Mark the point "P" on the chart according to the recorded parameters.
- Mark the point "P' " on the separation line between the "CORRECT" and "INCORRECT" zones according to the recorded Ng and OAT values. Then carry over to the Tq scale according to the recorded NR and Hp values.
- The Tq margin is given by the torque value difference "P" – "P' " measured on the torque scale.

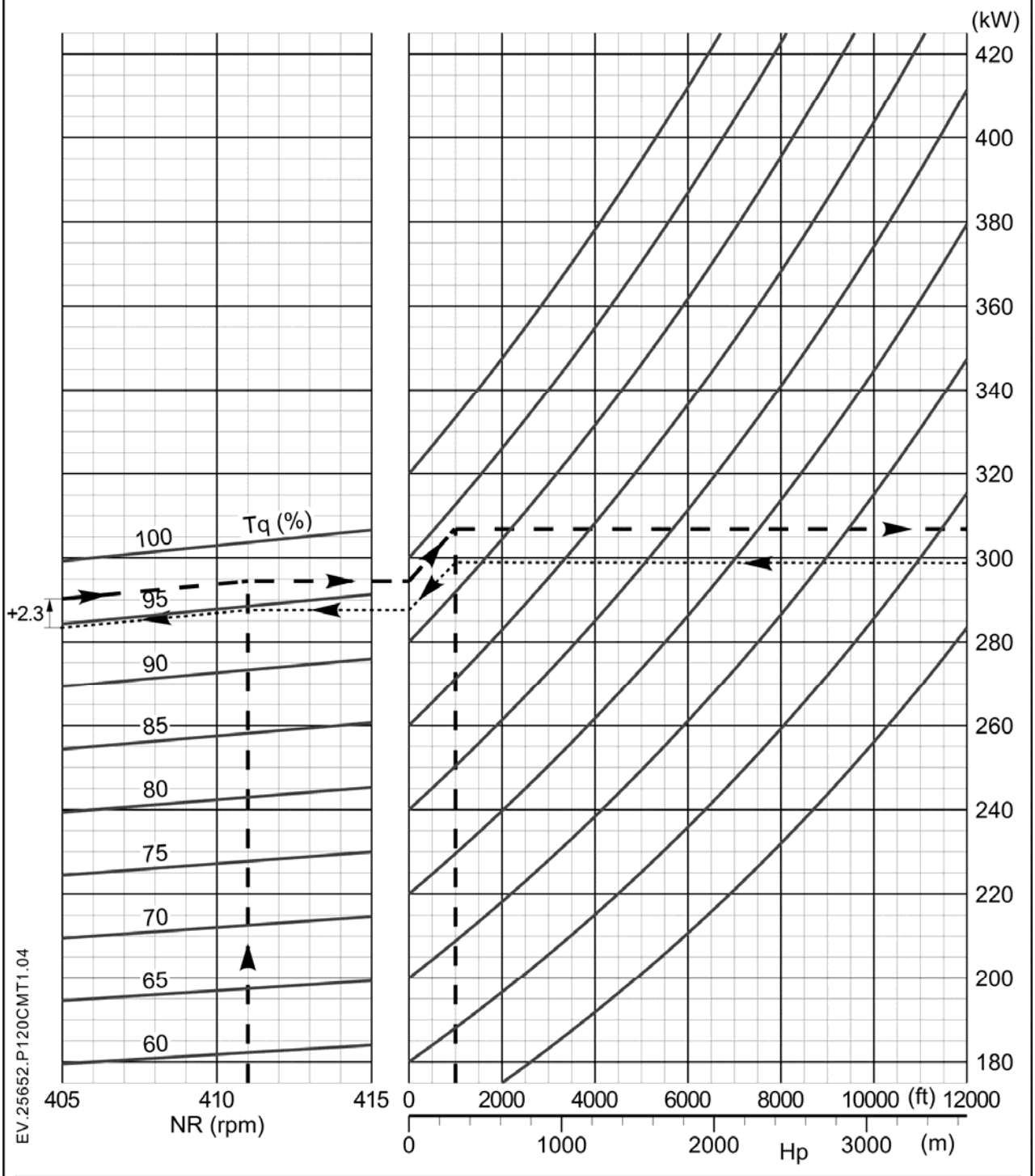
T4 Margin Calculation:

- Mark the point "T" on the chart according to the recorded parameters.
- Mark the point "T' " on the separation line between the "CORRECT" and "INCORRECT" zones according to the recorded Ng and OAT values. Carry over to the T4 scale according to the recorded Hp value.
- The T4 margin is given by the T4 value difference "T' " - "T" measured on the T4 temperature scale on the LH side.

CONDITIONS

- HEATING SYSTEM OFF
- GENERATOR LOAD < 50 A
- Hp ≤ 12000 ft (3657m)

ENGINE POWER CHECK



EXAMPLE: OAT = 20°C Hp = 1000 ft (300 m) NR = 411 rpm

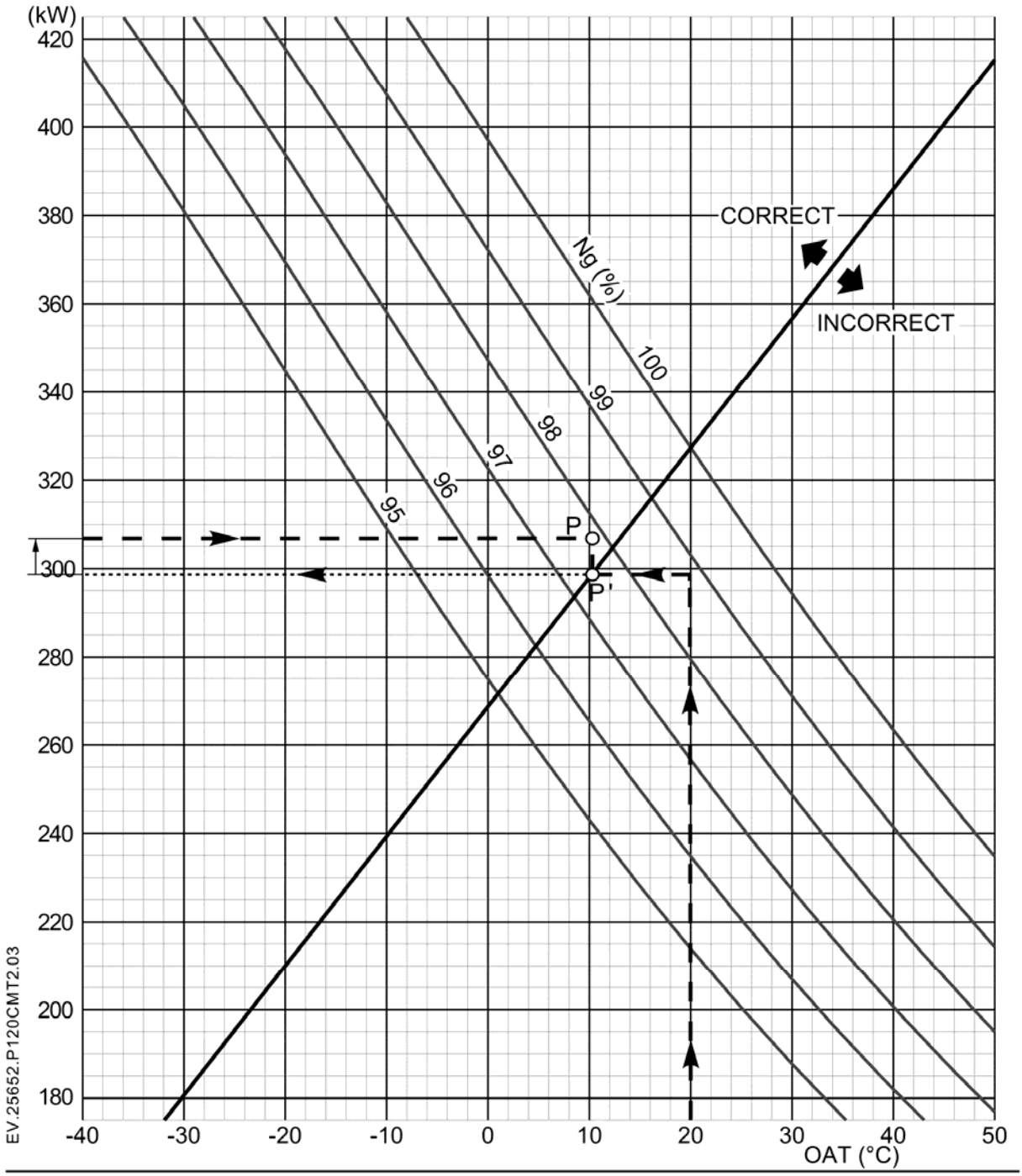
Ng = 98.7% Tq = 97% ⇒ P is in the "CORRECT" zone

⇒ Tq margin = +2.3%

Figure 1

CONDITIONS
- HEATING SYSTEM OFF
- GENERATOR LOAD < 50 A
- Hp ⩽ 12000 ft (3657m)

ENGINE POWER CHECK



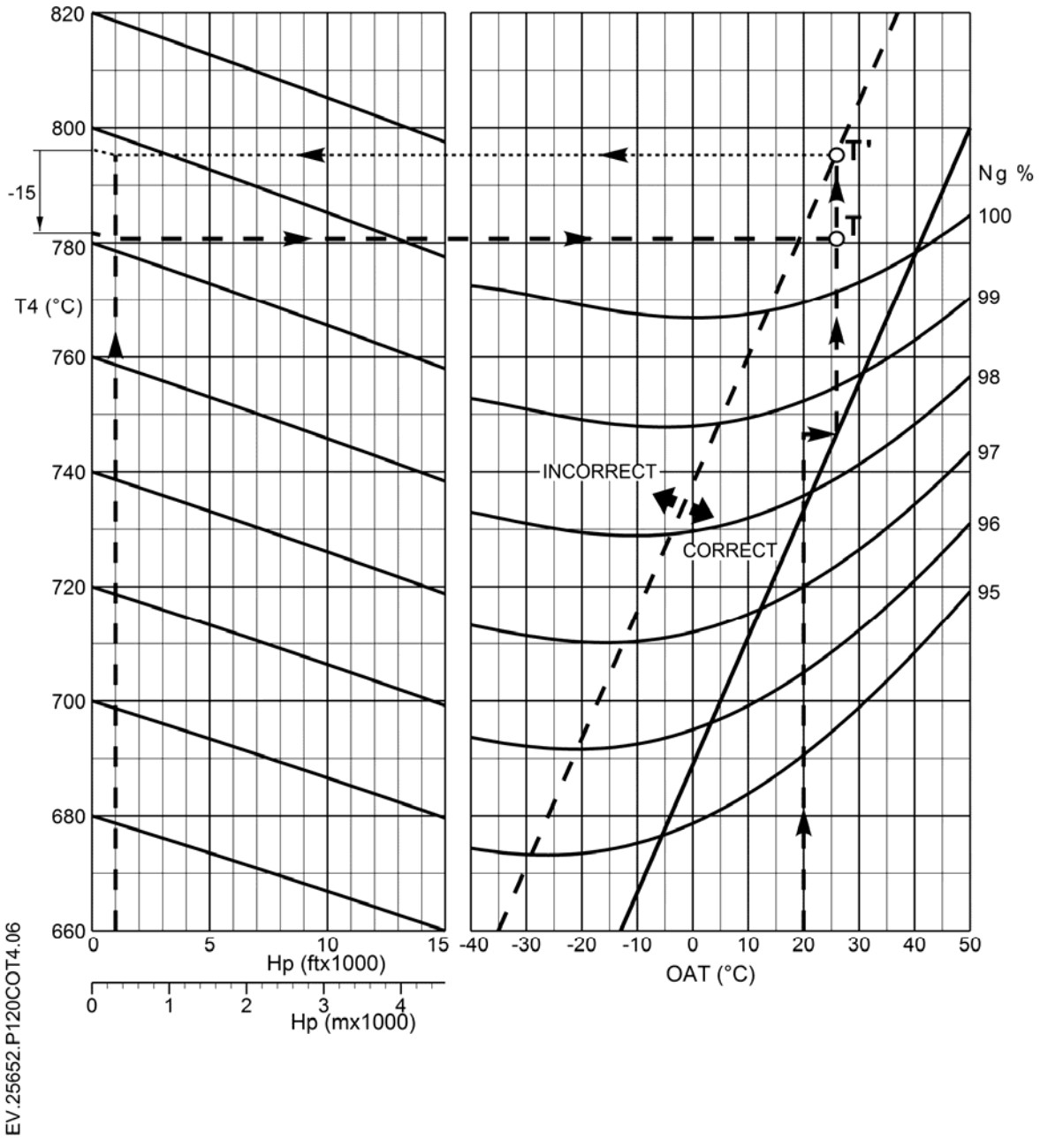
EXAMPLE: OAT = 20°C Hp = 1000 ft (300 m) NR = 411 rpm
Ng = 98.7% Tq = 97% ⇒ P is in the "CORRECT" zone
⇒ Tq margin = +2.3%

Figure 2

CONDITIONS

- HEATING SYSTEM OFF
- GENERATOR LOAD < 50A
- Hp ⩽ 12000 ft (3657m)

T4 CHECK



EXAMPLE : Hp = 1000 ft (300 m) OAT = 20°C ⇒ T is in the "correct" zone
T4 = 782°C Ng = 98.7% T4 margin = -15°C

Figure 3

RC f

The paragraph **3.2.3 - Corrected Tq and T4 margin calculation**, is added as follows:

3.2.3 Corrected Tq and T4 margin calculation

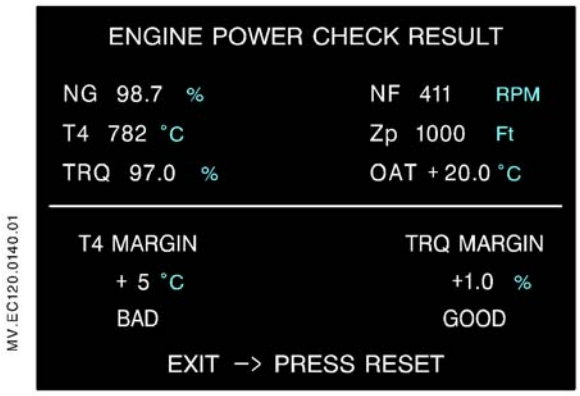
- Apply to the Tq (TRQ MARGIN) given by the VEMD, a correction factor (Hp, Tq) as given in the table below:

Hp (ft)	0	1000	2000 3000 4000		≥ 5000
Tq (%)	+ 1.7	+ 1.3	+ 1	+ 0.7	+ 0.4	0

  - Corrected Tq margin = Tq margin + correction factor.

- Apply to the T4 (T4 MARGIN) given by the VEMD, a correction of – 20°C:
  - Corrected T4 margin = T4 margin – 20°C.

Example of VEMD results:



- Corrected Tq margin calculation:
  - Enter (Hp, Tq) table, find:

    Hp = 1000 ft gives a correction factor of + 1.3 %
  - Corrected Tq margin = Tq margin + correction factor.
    = + 1 + 1.3
    = + 2.3%
- Corrected T4 margin calculation:
  - Corrected T4 margin = T4 margin – 20°C.
    = + 5 - 20
    = - 15°C

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 31.003.

4 AIR DATA SYSTEM CALIBRATION

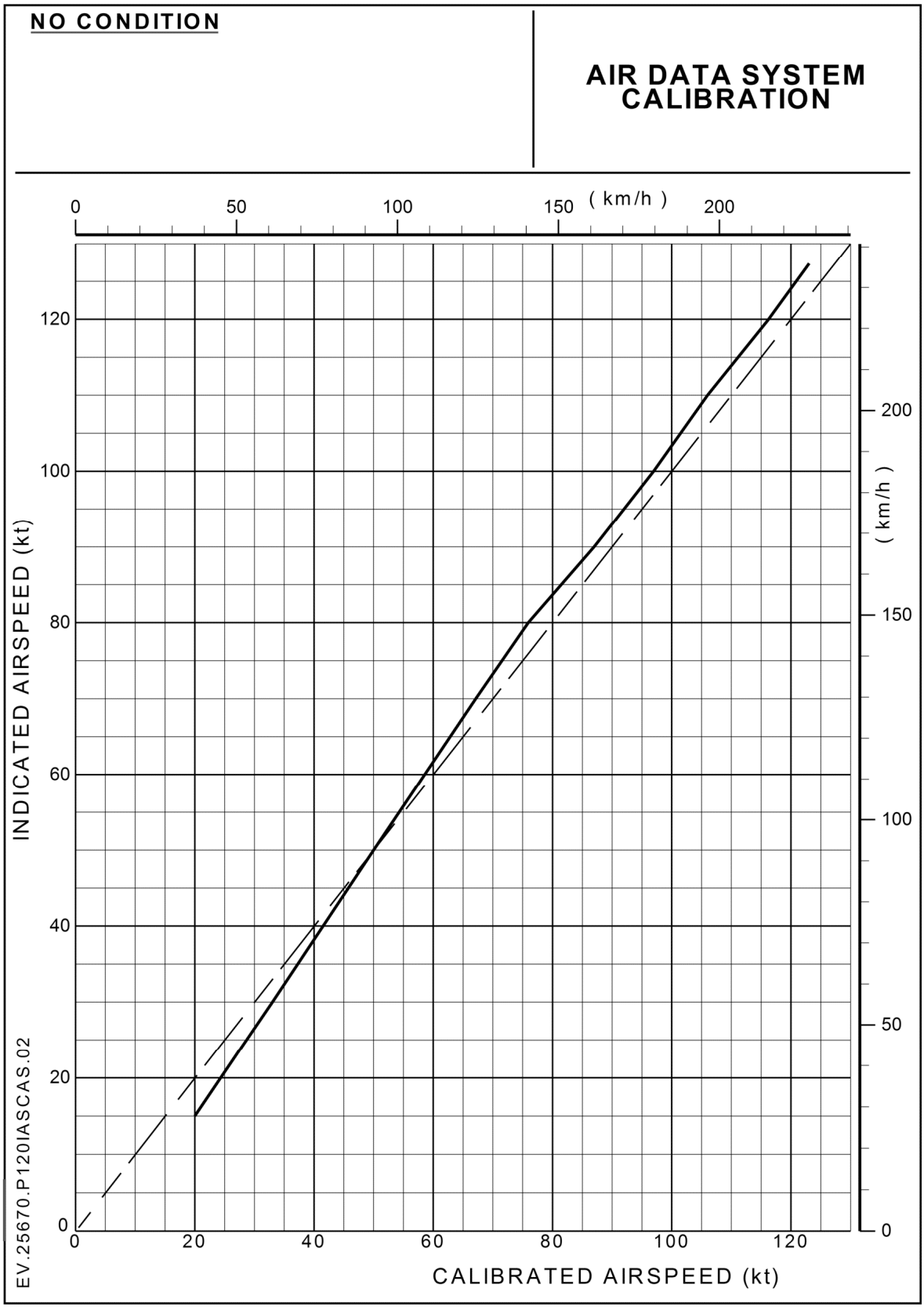


Figure 4

5 HEIGHT - VELOCITY DIAGRAM

The avoidance zone is defined by four points: A, B, C, D (refer to Figure 5)

- Point A: low hover point

  Point A is at 6 ft (1.80 m) skid height at zero airspeed.

- Point B:

  Point B is defined by:

  - A variable height (18 ft ≤ height ≤ 24 ft) depending on the pressure altitude, OAT and on the aircraft weight as determined by line (C).
  - A variable airspeed (50 kt ≤ IAS ≤ 60 kt) depending on the pressure altitude, OAT and on the aircraft weight as determined by line (C).

- Point C:

  Point C is defined by:

  - A constant height of 50 ft (15 m).
  - A variable airspeed (50 kt ≤ IAS ≤ 60 kt) depending on the pressure altitude, OAT and on the aircraft weight as determined by line (C).

- Point D:

  Point D is defined by:

  - A variable height (500 ft ≤ height ≤ 800 ft) depending on the pressure altitude, OAT and on the aircraft weight as determined by line (D).
  - A constant zero airspeed.

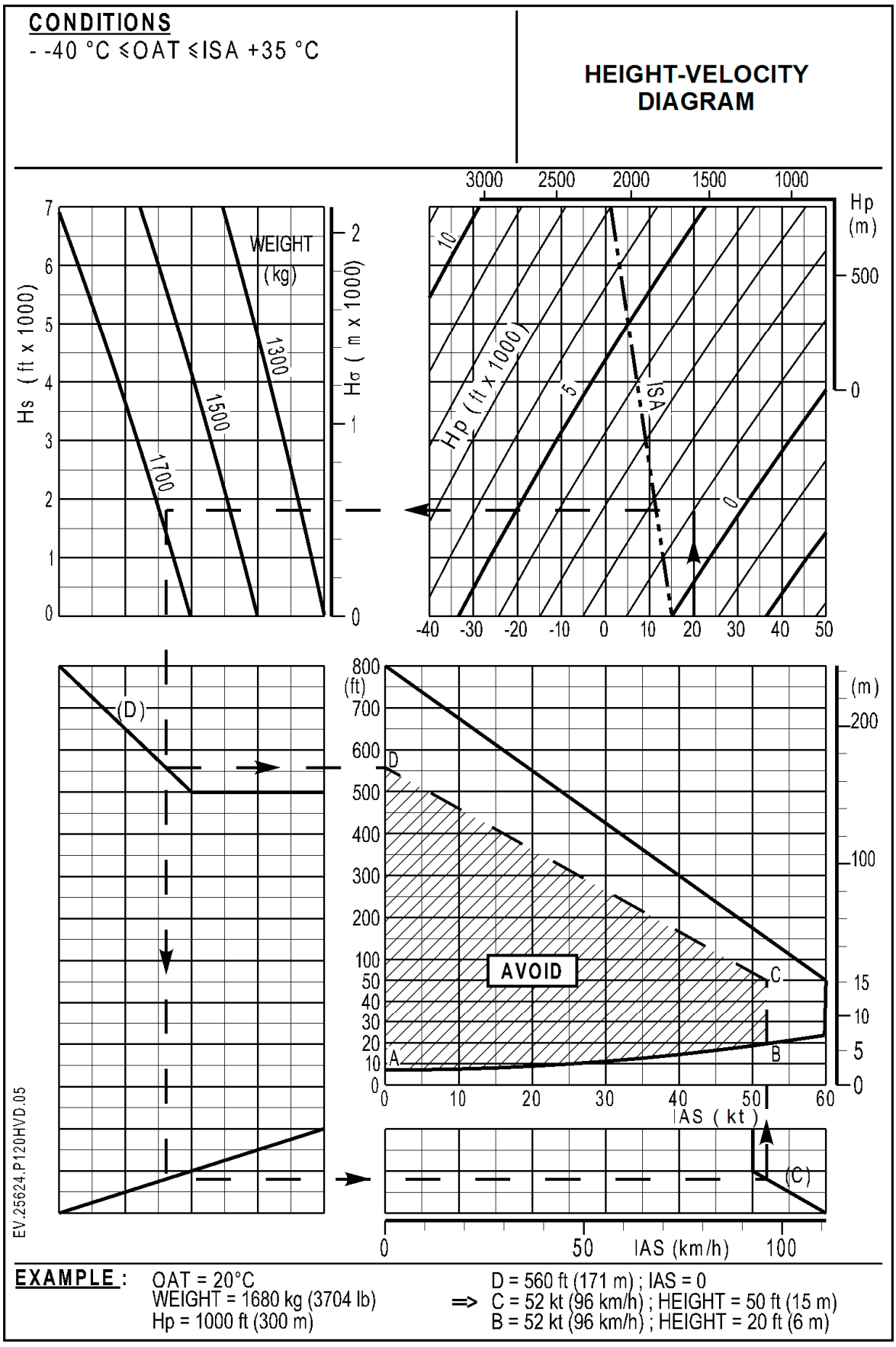
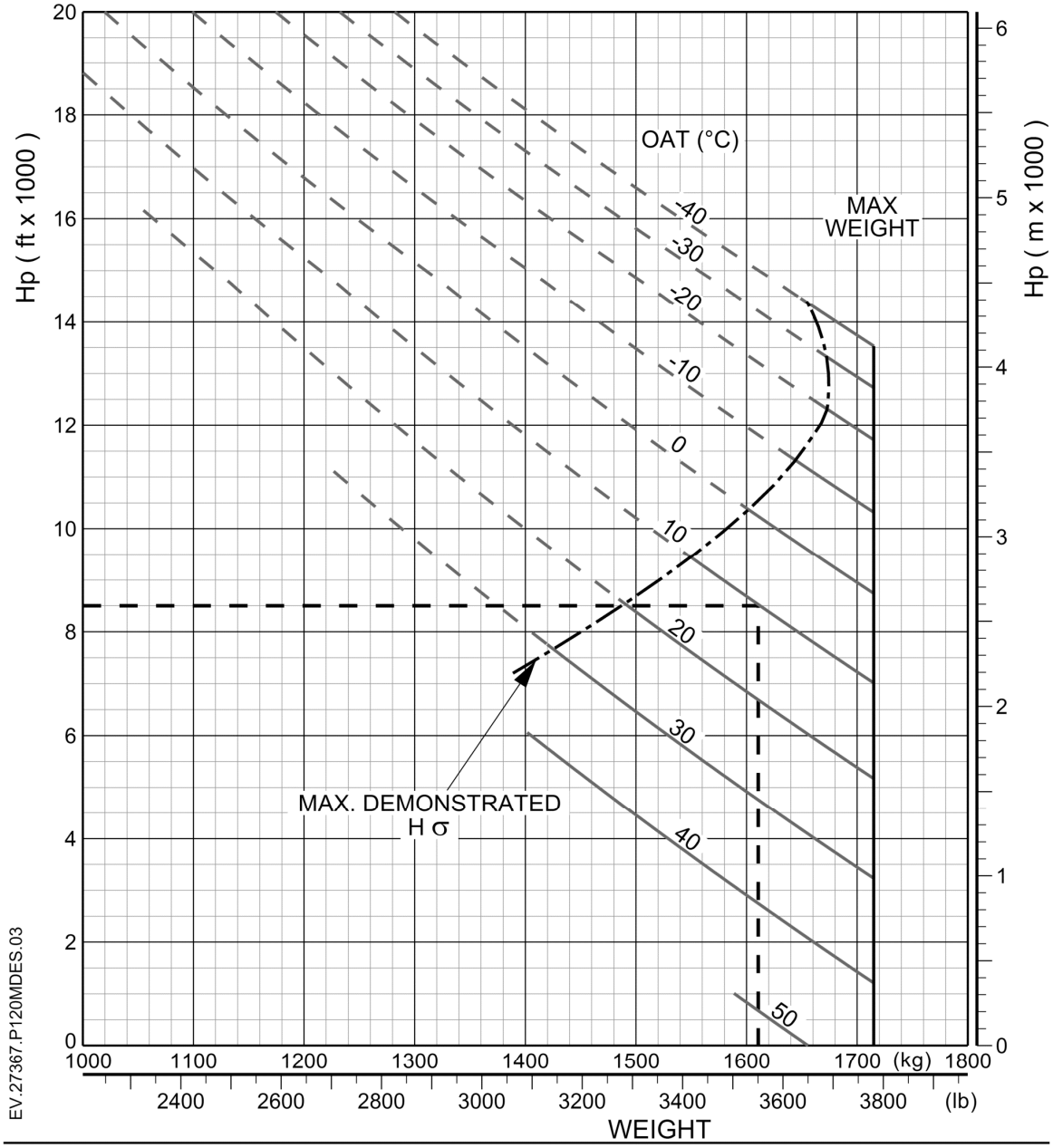

CONDITIONS
- -40 °C ≤OAT ≤ISA +35 °C
HEIGHT-VELOCITY DIAGRAM
Hs (ft x 1000)
WEIGHT (kg)
1700
1500
1300
Hσ (m x 1000)
Hp (ft x 1000)
10
5
ISA
0
Hp (m)
500
0
3000 2500 2000 1500 1000
-40 -30 -20 -10 0 10 20 30 40 50
(D)
(ft)
800 700 600 500 400 300 200 100 50 40 30 20 10 0
(m)
200
100
15
10
5
0
D
AVOID
A
B
C
0 10 20 30 40 50 60
IAS (kt)
(C)
0 50 IAS (km/h) 100
EV.25624.P120HVD.05
EXAMPLE : OAT = 20°C
WEIGHT = 1680 kg (3704 lb)
Hp = 1000 ft (300 m)
⇒ D = 560 ft (171 m) ; IAS = 0
C = 52 kt (96 km/h) ; HEIGHT = 50 ft (15 m)
B = 52 kt (96 km/h) ; HEIGHT = 20 ft (6 m)

Figure 5

6 HOVER IN GROUND EFFECT

CONDITIONS
- NO WIND
- HEIGHT 5 ft (1.5 m)
- HEATING SYSTEM OFF
- MAX. TAKEOFF POWER
- -40°C ⩽ OAT ⩽ ISA +35°C

HOVER IN GROUND EFFECT



SAFE WIND HAS BEEN DEMONSTRATED UP TO 35 kt (65 km/h) AND MAX. WEIGHT FOR ALL DIRECTIONS AT SEA LEVEL AND AT 22 kt (41 km/h) FOR A CORRECTED WEIGHT OF 2200 kg (4850 lb). (Refer to Fig.8)

EXAMPLE : OAT = 10°C
Hp = 8500 ft (2590 m) ⇒ HIGE WEIGHT 1610 kg (3549 lb).

Figure 6

7 HOVER OUT OF GROUND EFFECT

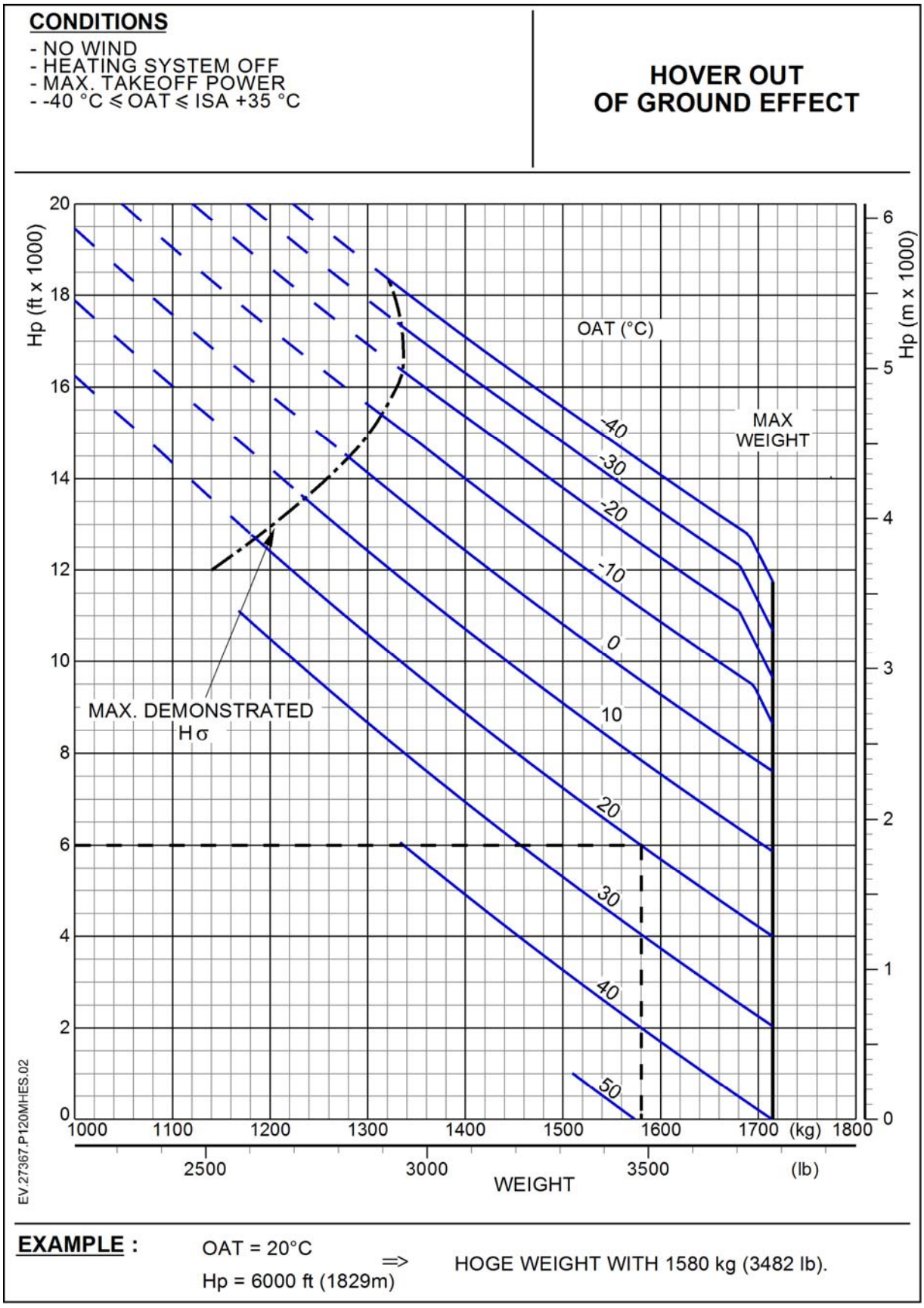


Figure 7

8 CORRECTED WEIGHT

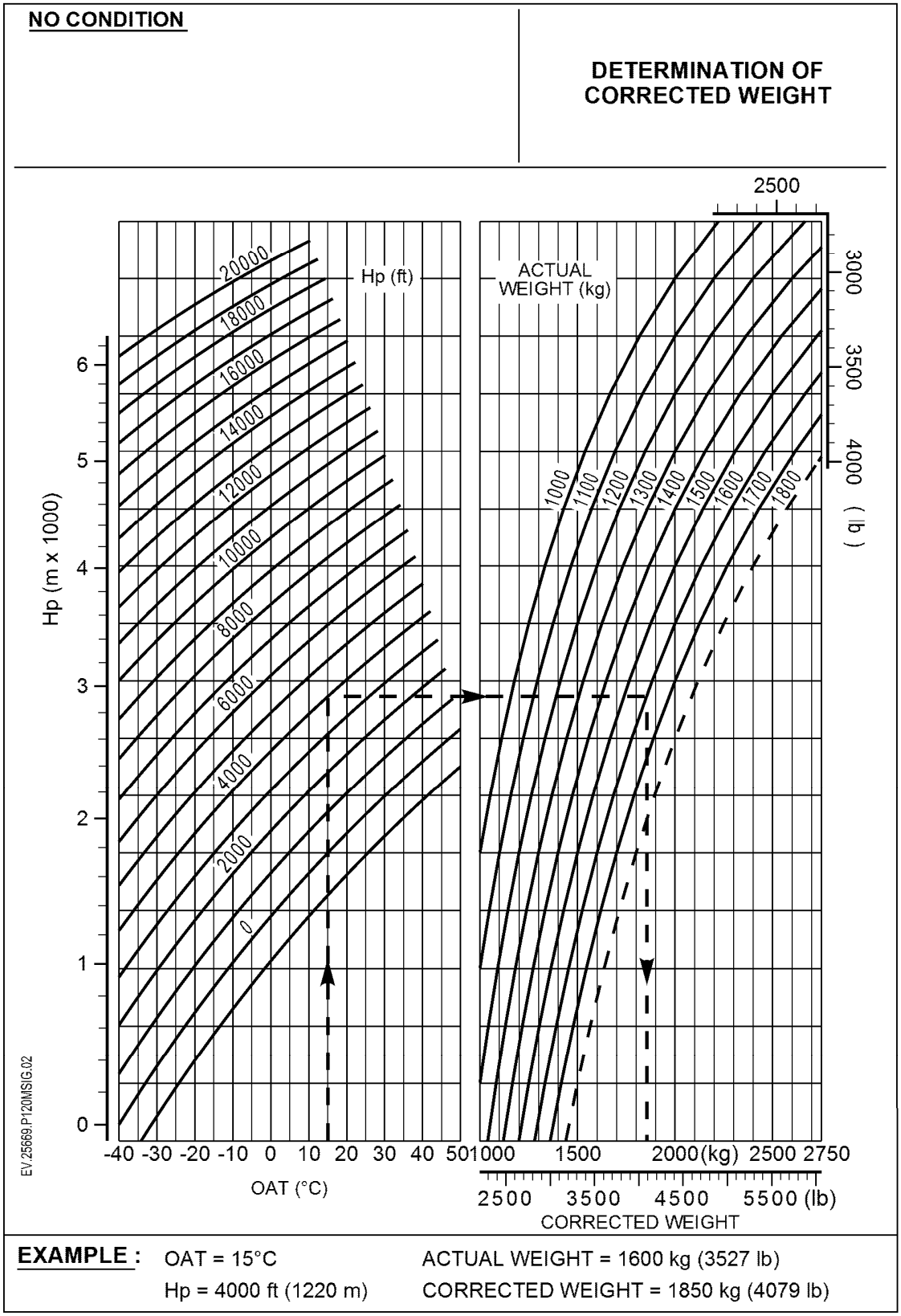


Figure 8

9 RATE OF CLIMB

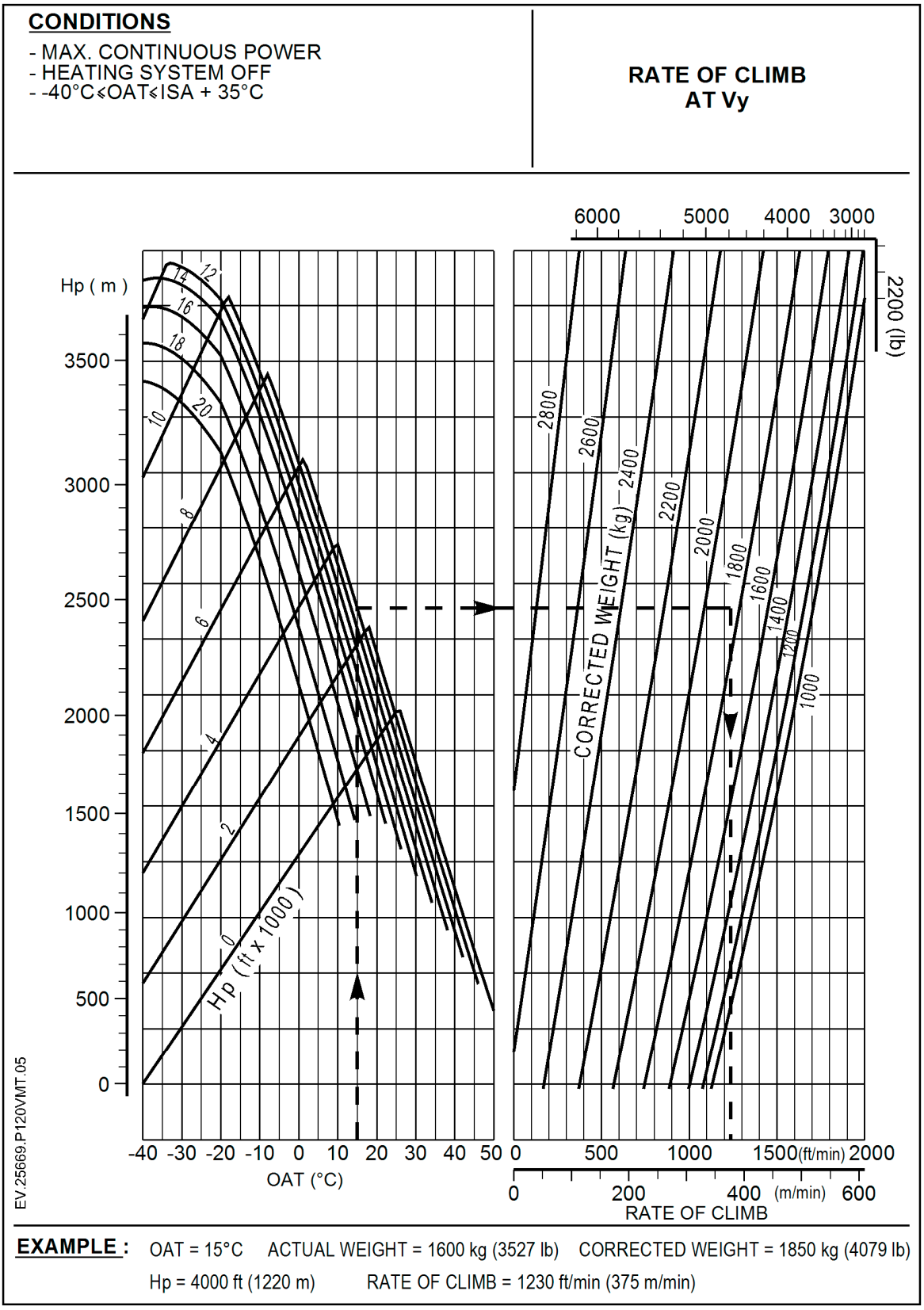


Figure 9

10 GLIDE DISTANCE IN AUTOROTATION

The distance flown in autorotation is:

0.7 Nm (1300 m) per 1000 ft (300 m) at Vy and NR ≅ 410 rpm.

11 NOISE LEVEL

Noise characteristics defined by chapter 11 of the ICAO annex 16 and JAR 36 subpart E are as follows:

Measurement Reference Point	Noise Level SEL (dBA)	ICAO Noise Limits SEL (dBA)
Overflight (at Max. gross weight)	78.7	85.4