eurocopter

FLIGHT MANUAL

AS 350 B3

DOT TYPE APPROVAL No H.83

SECTIONS 1, 2, 3 AND 4 OF THIS MANUAL, AS WELL AS THE APPLICABLE SUPPLEMENTS, CONSTITUE THE APPROVED FLIGHT MANUAL. FOR CANADIAN REGISTERED AIRCRAFT COMPLIANCE WITH SECTION 2 IS MANDATORY.

REGISTRATION No

SERIAL No

APPROVED BY :

The DIRECTION GENERALE DE L'AVIATION CIVILE (DGAC)

Date of approval : 25 MARS 1998

André REVAULT

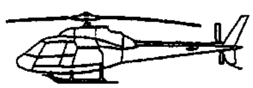
This Rotorcraft Flight Manual is the translation of an approved French flight manual. The note "DGAC approved" on certain pages means that these pages are an integral translation of the French issue approved by DGAC".

This RFM is approved for CANADIAN registered aircraft and consists of all pages marked "DGAC approved" and coded $\boxed{C}$.

IMPORTANT NOTE

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

THIS DOCUMENT SHALL BE CARRIED IN AIRCRAFT AT ALL TIMES.



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AIRCRAFT : 350 B3 - No. 3139

LIST OF ADDITIONAL APPROVED PAGES

SECTION	PAGE	DATE CODE	SECTION	PAGE	DATE CODE
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LIST OF THE LATEST NORMAL APPROVED REVISIONS

No.	Date	No.	Date
0	98-38		

NORMAL REVISION : 0
DGAC APPROVED
DATE : 23 SEP. 1998

DIRECTION GENERALE DE L'AVIATION CIVILE
SERVICE DE LA FORMATION AERONAUTIQUE ET DU CONTRÔLE TECHNIQUE
Ingénieur en Chef des Etudes et Techniques d'Armement
Chef du Bureau Hélicoptères
Division AERONEFS

André REVAULT

CUSTOMIZATION :

A/C : - S/N :

LIST OF ADDITIONAL APPROVED PAGES

SECTION	PAGE	DATE CODE	SECTION	PAGE	DATE CODE

THIS AIRCRAFT DOES NOT OFFER ANY PARTICULAR FEATURES REQUIRING THE CUSTOMIZATION OF THE FLIGHT MANUAL ON GREEN PAGES.

PART 1

GENERAL ➤ 1

LIMITATIONS ➤ 2

EMERGENCY PROCEDURES ➤ 3

NORMAL PROCEDURES ➤ 4

PERFORMANCE ➤ 5

SUPPLEMENTS ➤ SUP

COMPOSITION
OF CONDITIONAL REVISIONS (RC)

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

CAUTION

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

No.	SECTION	PAGE	DATE	Applicable before condition is met :
RC A	2.1	1	97-40	MODIFICATION 350A08-3929 Night VFR flight
RC B	4.1	4	98-28	MODIFICATION TU 27C Starting procedures
RC C	2.1 2.1 2.1 2.1 2.2 3.2 4.1 5.1	1 2 5 6 3 4 7 9	98-36 98-36 98-36 98-36 98-36 98-36 98-36 98-36	MODIFICATIONS 072803 and 072808 Increased speed

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

COMPOSITION
OF CONDITIONAL REVISIONS (RC)

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CAUTION

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

Section	Page	Date	Applicable before condition is met :

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

COMPOSITION
OF RUSH REVISIONS (RR)

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

N° RR	SECTION	PAGE	DATE CODE
2A	2.1	1 *RR*	99-02
	2.2	3 *RR*	99-02
	3.2	5 *RR*	99-02
	3.3	4 *RR*	99-02
2B	2.1 Supersedes RR 2A 2.1 page 1	1 *RR*	99-40
2C	4.1 4.1	3 *RR* 4 *RR*	00-40 00-40
2D	RESERVED		
2E	3.1	4 *RR*	00-45
2F	0.0.P4	1 *RR*	02-14
	3.3	4 *RR*	02-14
	Not applicable for CAA Certification		

N° RR	SECTION	PAGE	DATE CODE

COMPOSITION
OF RUSH REVISIONS (RR)

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

No	SECTION - PAGE	CODE DATE	No	SECTION - PAGE	CODE DATE

LIST OF APPROVED EFFECTIVE PAGES
DOT CERTIFICATION

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

SECTION		PAGE	DATE	(1)
0. 0	P1	1	97-40	
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0. 0	P1	3	97-40	
0. 0	P2	1	97-40	
0. 0	P3	1	97-40	
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1. 3		2	97-40	
2. 0	P6	1	98-36	R
2. 1		1	98-36	R
2. 1		2	98-36	R
2. 1		3	97-40	
2. 1		4	98-36	R
2. 1		5	98-36	R
2. 1		6	98-36	R
2. 1		7	98-36	R
2. 1		8	98-36	R
2. 1		9	98-36	R
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2. 2		4	98-36	N

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LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	97-40		
1	98-36		

NORMAL REVISION : 1
DGAC APPROVED
DATE : 13 NOV 1998

André REVAULT

SECTION 1

GENERAL

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1.2	UPDATING	1
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SECTION 1

GENERAL

CONTENTS

		Page
1.1	PRELIMINARY NOTES	1
1.2	UPDATING	1
1.3	SYMBOLS AND CONVERSION TABLES	1

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 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 and in the SUPPLEMENTS.
- 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 6, 7, 8, 9 and 10.

  Each PART of 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 R
the manual. R
The total number of P5 pages is shown on the List of Effective Pages, R
identified 1/xy where xy is a number between 01 and 99 corresponding to R
the number of P5 pages. R

2.1 Basic Aircraft

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

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.

2.4 Customization modifications (printed on green paper)

Special features of a particular helicopter may justify prioritary addenda to the information on certain basic manual and supplement pages.

These pages, printed on green paper, are filed in the manual over the corresponding white pages.

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

Page 0.0.P1 or SUP.0.P1 page 3 give the list of green pages.

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 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 (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 introductory (0.0.P1 or SUP.XX.P5).
Normal revisions are identified in numerical order.

2.2 Rush revisions (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 page 1)

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 canceled 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 page 1).

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" procedure is used to make quick corrections between revisions. In this case, the pages affected by the procedure are re-issued completely and the date code is underlined for identification. These pages are summarized on an accompanying sheet which is not identified.

2 CONVERSION TABLE

2.1 Metric to english

Multiply	By	To obtain
centimeter(cm)	0.3937	inches (in)
meters (m)	3.2808	feet (ft)
meters per second (m/s)	196.85	feet per minute (ft/min)
kilometers (km)	0.5400	nautical miles (NM)
liters (l)	0.2642	US gallons (US gal)
liters (l)	0.2200	UK gallons (UK gal)
kilograms (kg)	2.2046	pounds (lb)
bars (bar)	14.5040	pounds per square inch (psi)
kilometers per hour (km/h)	0.5400	knot (kt)

2.2 English to metric

Multiply	By	To obtain
inches (in)	2.5400	centimeters (cm)
feet (ft)	0.3048	meters (m)
feet per minute (ft/min)	0.00508	meters per second (m/s)
nautical miles (NM)	1.8520	kilometers (km)
US gallons (US gal)	3.7850	liters (l)
UK gallons (UK gal)	4.5460	liters (l)
pounds (lb)	0.4536	kilograms (kg)
pounds per square inch (psi)	0.0689	bars (bar)
knot (kt)	1.8520	kilometers per hour (km/h)

SECTION 1.3

SYMBOLS AND CONVERSION TABLES

1 SYMBOLS AND ABBREVIATIONS

	FRENCH	ENGLISH
ATMOSPHERE		
- Relative air density	σ	σ
- Outside air temperature	θs	OAT
- Outside air pressure	p	p
ALTITUDE/HEIGHT		
- Pressure altitude	Zp	Hp
- Density altitude	Zσ	Hσ or DA
- Height	h	h
WEIGHTS		
- Empty weight	MV	EW
- Equipped empty weight	MVE	EEW
- Operating empty weight	MOE	OEW
- All-up weight	MT	AUW
- Maximum take-off weight	M	MTOW
SPEEDS		
- Indicated air speed	Vi	IAS
- Calibrated air speed	Vc	CAS
- True air speed	Vp	TAS
- Never exceed speed	VNE	VNE
- Optimum climbing speed	Vy	VY
- Rate of climb - Rate of descent	Vz	R/C
- Wind velocity	Vw	Vw
- Take-off safety speed	VSD	VTOSS
- Rotor speed	NR	NR
NOTE : Unless otherwise specified, the air speed values used refer to indicated air speeds		
HOVER/TAKE-OFF/LANDING		
- In ground effect	DES	IGE
- Out of ground effect	HES	OGE
ENGINE (or POWER) PARAMETERS		
- Power	W	W or PWR
- Torque	C	T or Tq
- Engine generator speed	Ng	Ng or N1
- Ng difference	ΔNg	ΔNg
- Free turbine speed	NTL	Nf
- Generator exhaust gas temperature	t4	t4
- First limitation indicator	IPL	FLI
MISCELLANEOUS		
- Engine	GTM	ENG
- Main gear box	BTP	MGB
- Intermediate gear box	BTI	IGB
- Tail gear box	BTA	TGB
- Vehicle and engine management display	VEMD	VEMD

SECTION 2

LIMITATIONS

CONTENTS

		Pages
2.1	**OPERATING LIMITATIONS**	
1	APPLICABILITY	1
2	TYPES OF OPERATION APPROVED	1
3	BASIS OF CERTIFICATION	1
4	WEIGHT LIMITS	
5	CENTRE-OF-GRAVITY LIMITS	
6	MAXIMUM SPEED	
7	APPROVED FLIGHT ENVELOPE	
8	MAIN ROTOR SPEED	
9	ROTOR BRAKE LIMITATION	
10	FIRST LIMITATION INSTRUMENT	5
11	TORQUE LIMITATIONS	5
12	ENGINE LIMITATIONS	6
13	LUBRICATION SYSTEM LIMITATIONS	8
14	ELECTRICAL AND HYDRAULIC POWER SYSTEM LIMITATIONS	10
15	LANDING AND STOPPING LIMITATIONS ON SLOPES	10
16	PROHIBITIONS	11
17	MINIMUM CREW	11
18	TRANSPORT OF PERSONNEL	11
19	LIFED COMPONENTS	11
20	OPTIONAL EQUIPMENT LIMITATIONS	11
2.2	**PLACARDS AND INSTRUMENT MARKINGS**	
1	PLACARDS	1
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RR 2B

CAUTION : RR 2B (SECTION 2.1 page 1) SUPERSEDES RR 2A (SECTION 2.1 page 1)

The paragraph 2, is to be replaced by :

2 TYPES OF OPERATION APPROVED

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

- Day VFR flight
- Night VFR flight when :
  - modification 350A08-3929 or modification 350A07-2839 or modification 072810 has been applied, and
  - the required equipment are installed and serviceable, and
  - provided such operation is permitted by the flight regulation country concerned.

SECTION 2.1

OPERATING LIMITATIONS

1 APPLICABILITY

THE LIMITATIONS SPECIFIED IN THIS SECTION ARE MANDATORY.

They cover the basic aircraft version.
Any additional restrictions resulting from installation of optional equipment items are specified in the relevant SUPPLEMENTS.

2 TYPES OF OPERATION APPROVED

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

- Day VFR flight
- Night VFR flight, when the required equipment items are installed and serviceable, provided such operation is permitted by the flight regulations of the country concerned.

3 BASIS OF CERTIFICATION

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

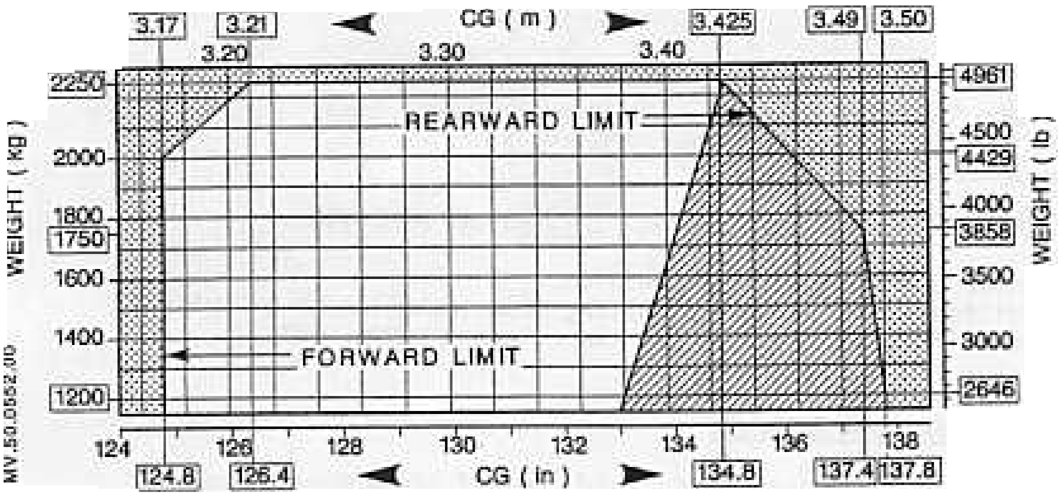
4 WEIGHT LIMITS

- Maximum permissible weight - - - - - - - - - - - - - - 2250 kg (4961 lb)

5 CENTRE OF GRAVITY LIMITS

5.1 Longitudinal c.g.

The c.g. datum is located 3.40 m (133.8 in) forward of the main rotor head centre line.
The longitudinal c.g. limits are given by the graph below :
Within the cross-hatched zone, comply with the particular VNE limitation. R



5.2 Lateral c.g.

- LH limit - - - - - - - - - - - - - - - - - - - 0.18 m (7.08 in)
- RH limit - - - - - - - - - - - - - - - - - - - 0.14 m (5.51 in)

The datum is the aircraft symmetry plane.

6 MAXIMUM SPEED

6.1 VNE with doors closed

6.1.1 VNE Power-on

- Absolute VNE is 155 kt (287 km/h - 178 MPH) at zero pressure-altitude.
- At higher altitudes this speed is to be reduced by 3 kt (5.5 km/h or 3.5 MPH) per 1000 ft or 18 km/h per 1000 m.
- In cold weather the following must be subtracted from VNE : 10 kt (19 km/h - 12 MPH) when OAT is below -30° C.
- In the cross-hatched zone in the C of G graph, VNE is limited R
  to 133 kt or to the value determined above (whichever is the lowest R
  value). R

6.1.2 VNE Power-off

- Absolute VNE is 125 kt (231 km/h - 144 MPH) at zero pressure-altitude.
- At higher altitudes this speed is to be reduced by 3 kt (5.5 km/h -3.5 MPH) per 1000 ft or 18 km/h per 1000 m without dropping below 65 kt (120 km/h - 75 MPH).
- In cold weather, reduce the VNE as follows : 20 kt (37 km/h - 23 MPH) when OAT is below -20°C without dropping below 65 kt (120 km/h - 75 MPH).

6.2 <u>VNE with doors open or removed</u>

6.2.1 Aircraft fitted with four standard doors (LH and RH hand doors)

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

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

6.2.2 Aircraft fitted with one or two sliding doors (optional)

If all four doors have been removed, VNE is limited to 70 knots (130 km/h - 81 MPH).

The other authorized configurations and corresponding VNE are summarized in the tables below.

ANY CONFIGURATIONS NOT MENTIONED ARE PROHIBITED.

SLIDING DOOR ON THE LH SIDE AND STANDARD DOORS ON THE RH SIDE

		LH SLIDING DOOR OPEN OR REMOVED
RH DOORS	CLOSED	135 kt (250 km/h - 155 mph) OR VNE (*)
	REMOVED	70 kt (130 km/h - 81 mph)

OPERATING THE SLIDING DOOR :
- OPENING 110 kt (204 km/h - 127 mph)
- CLOSING 80 kt (148 km/h - 92 mph)

SLIDING DOOR ON THE RH SIDE AND STANDARD DOORS ON THE LH SIDE

		RH SLIDING DOOR OPEN OR REMOVED
LH DOORS	CLOSED	110 kt (204 km/h - 127 mph) OR VNE (*)
	REMOVED	70 kt (130 km/h - 81 mph)

OPERATING THE SLIDING DOOR :
- OPENING 60 kt (111 km/h - 69 mph)
- CLOSING 60 kt (111 km/h - 69 mph)

(*) whichever is the lowest of the 2.

SLIDING DOORS ON THE RH SIDE AND ON THE LH SIDE

		LH DOOR	
		CLOSED	OPEN OR REMOVED
RH DOOR	CLOSED	BASIC VNE	60 kt
	OPEN OR REMOVED	110 kt (204 km/h - 127 mph) OR VNE *	

OPERATING THE SLIDING DOORS :
- OPENING 60 kt (111 km/h - 69 mph)
- CLOSING 60 kt (111 km/h - 69 mph)

(*) Whichever is the lowest of the 2.

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7 APPROVED FLIGHT ENVELOPE

7.1 Altitude

Maximum substantiated pressure-altitude : 23000 ft (7010 m).

7.2 Temperature

- Minimum temperature - - - - - - - - - - - - - -40°C

  The instructions for operation in cold weather are given in SUP.4. R
- Maximum temperature - - - - - - - - - - - - - ISA +35°C limited to +50°C

7.3 Manoeuvring limitations

Do not exceed the load factor corresponding to the servo-control reversibility limit.

7.4 Flight in falling snow

- Flight when visibility is greater than 1500 m (0.81 NM) : flight in falling snow is authorized.
- Flight when visibility is 800 to 1500 m (0.43 to 0.81 NM) : the total flying time in falling snow is limited to 10 min. This time limit includes the time required to leave all snowy conditions, irrespective of the visibility.
- Flight when visibility is less than 800 m (0.43 NM) : flight in falling snow is prohibited.

NOTE : For the preparation before flight, refer to SUP. 4.

RR 1A

Replace the existing text (7.2 Temperature) as follows :

7.2 Temperature

- Minimum temperature - - - - - - - - - - - - - - - -40° C

The instructions for operation in cold weather are given in supplement 4.
- Maximum temperature - - - - - - - - - - - - - - ISA +35° C limited to +50° C

8 MAIN ROTOR SPEED

8.1 Power on

- On the ground at low pitch ----------- 380 ± 5 rpm
- In stabilized flight -------------- 390 + 4 rpm
  - 5

8.2 Power off

- Maximum --------------------- 430 rpm
- Minimum --------------------- 320 rpm

NOTE : The horn sounds when the rotor speed is :
- below 360 rpm (continuous sound)
- above 410 rpm (intermittent sound).

9 ROTOR BRAKE LIMITATION

- Maximum rotor speed for rotor brake application : 170 rpm
- Minimum time between two consecutive brakings : 5 min

10 FIRST LIMITATION INSTRUMENT

- Maximum continuous limitation : 9.6
- Take-off zone (5 min) : 9.6 to 10
- Maximum take-off limitation : 10 (Activation of the power alarm) R
- Maximum transient limitation : 10.4

11 TORQUE LIMITATIONS

When airspeed is lower than 40 kt (74 km/h - 46 MPH) :

- Maximum transient torque (10 s) : 104 %
- Maximum continuous torque : 100 %

When airspeed is equal to or greater than 40 kt (74 km/h - 46 MPH) :

- Maximum continuous torque : 92.7 % R

12 ENGINE LIMITATIONS

The aircraft is equipped with a TURBOMECA "ARRIEL 2B" engine.

Operating limitations are determined by the gas generator rotation speed (Ng), by the exhaust gas temperature (t4) or by the free turbine rotation speed (Nf) depending on the operating conditions.

CAUTION : P2 BLEED IS PROHIBITED AT POWER SETTINGS BEYOND MAX CONTINUOUS POWER.

12.1 Gas Generator Speed

	DELTA Ng	Ng for Zp = 0 m Θs = 15°C
- Maximum transient rating (less than 5 sec.)	+ 1	102.3 %
- Maximum take-off rating (5 min) With P2 air bleed off (Refer to CAUTION)	0	101.1 %
- Maximum continuous	- 4	97.1 % R

12.2 t4 Temperatures

- Maximum for engine starting - - - - - - - - - - - - 750°C
- Maximum transient during starting (10 s max.) - - 865°C
- Maximum on takeoff - - - - - - - - - - - - - - - - - 915°C
- Maximum continuous - - - - - - - - - - - - - - - - - 849°C

12.3 Free Turbine Speeds

- Maximum
  . continuous - 418 rpm
  . transient limits (5 s max.) - - - - - - - - - - - 450 rpm
- Minimum - 349 rpm

NOTE : A rotor speed of 394 rpm corresponds to a free turbine speed of 39970 rpm.

RR 1A

Replace existing text (EMERGENCY FUELS) as follows :

EMERGENCY FUELS

TYPE OF FUEL	NATO SYMBOL	SPECIFICATIONS To be associated with applicable amendments or issues			LIMITATION OF USE
		FRANCE	U.S.A.	U.K.	
AVIATION GASOLINE AVGAS	F 12	AIR 3401 80/87	MIL-G-5572 GRADE 80/87	–	Maximum operating time with petrol : 3 h. between generals overhauls.
	F 18	AIR 3401 100/130	MIL-G-5572 GRADE 100/130	D-Eng-RD 2485	Add 2% mineral oil if possible
	F 22	AIR 3401 115/145	MIL-G-5572 GRADE 115/145	D-Eng-RD 2485	Altitude ⩽ 1500 m T° ⩽ 25°C
CAR / TANK GASOLINE	F 46	DCEA/ 2DMT80	MIL-G-3056	DEF 2401	Bank angles during turns < 60°

NOTE : The use of emergency fuels does not guarantee hot engine starting or re-starting.

MV.50.0523.00

12.4 Fuels

Specifications are to be used at the latest amendment and dash number.

NORMAL FUELS					
TYPE OF FUEL	NATO SYMBOL	SPECIFICATIONS To be associated with applicable amendments or issues			ANTI-ICE ADDITIVE
		FRANCE	U.S.A.	U.K.	
KEROSENE -50 (AVTUR-FSII) JP8	F 34	AIR 3405 (F34)	MIL-T-83 133 JP 8	D-Eng-RD 2453	WITH
KEROSENE -50 (AVTUR) JP1	F 35	AIR 3405 (F35)	ASTM-D-1655 JET A1	D-Eng-RD 2494	WITHOUT
KEROSENE	—	—	ASTM-D-1655 JET A	—	WITHOUT
HIGH FLASH POINT JP5 (AVCAT)	F 43	AIR 3404 (F43)	—	D-Eng-RD 2498	WITHOUT
HIGH FLASH POINT JP5 (AVCAT FSII)	F 44	AIR 3404 (F44)	MIL-T-5624 JP 5	D-Eng-RD 2452	WITH
KEROSENE TS 1 RT	—	—	GOST 10227	—	WITHOUT

EMERGENCY FUELS					
TYPE OF FUEL	NATO SYMBOL	SPECIFICATIONS To be associated with applicable amendments or issues			LIMITATION OF USE
		FRANCE	U.S.A.	U.K.	
AVIATION GASOLINE AVGAS	F 12	AIR 3401 80/87	MIL-G-5572 GRADE 80/87	—	Maximum operating time with petrol : 3 h. between generals overhauls.
	F 18	AIR 3401 100/130	MIL-G-5572 GRADE 100/130	D-Eng-RD 2485	Add 2% mineral oil if possible
	F 22	AIR 3401 115/145	MIL-G-5572 GRADE 115/145	D-Eng-RD 2485	Altitude ⩽ 1500 m
CAR / TANK GASOLINE	F 46	DCEA/ 2DMT80	MIL-G-3056	DEF 2401	T° ⩽ 25°C Bank angles during turns < 60°

NOTE : The use of emergency fuels does not guarantee hot engine starting or re-starting.

MV.50.0523.00

REPLACEMENT FUELS						
TYPE OF FUEL	NATO SYMBOL	SPECIFICATIONS			ANTI-ICE ADDITIVE	LIMITATION OF USE
		FRANCE	U.S.A.	U.K.		
WIDE CUT (JP4) (AVTAG FSII)	F 40	AIR 3407	MIL-T-5624 (JP4)	D-Eng-RD 2454	WITH	OAT < 25°C Hp ⩽ 2000 m
WIDE CUT (JP4) (AVTAG)				D-Eng-RD 2486	WITHOUT	OAT < 25°C Hp ⩽ 2000 m

MV.50.0530.00

12.5 Additives

12.5.1 Anti-Ice Additive

If the fuel does not contain a fuel system icing inhibitor, the use of an anti-icing additive is compulsory if OAT is below - 20°C.

Authorized additives :

- AIR 3652, MIL-I 27686, D.Eng. RD 2451, S 748, MIL-I 85470A. R

Concentration shall be from 0.10 % to 0.15 % by volume.

R

R

12.5.2 Antistatic Additive

- SHELL ASA 3, maximum concentration : 0.0001 % by volume.

12.5.3 Fungicide R

- BIOBOR JF. R

13 LUBRICATION SYSTEMS LIMITATIONS

13.1 Authorized Main and Tail Gearbox Lubricants

NORMAL USE					
OIL TYPE	NATO SYMBOL	SPECIFICATIONS (Are to be used at the latest amendment and dash number)			TEMP. USE
		FRANCE	U.S.A.	U.K.	
Mineral base oil *	O.155	AIR 3525	MIL.L.6086	DTD.581	-20°C +50°C
* SHELL PROHIBITED					

MV.50.0535.00

RR 1A

Replace the existing text as follows :

REPLACEMENT FUELS						
TYPE OF FUEL	NATO SYMBOL	SPECIFICATIONS			ANTI-ICE ADDITIVE	LIMITATION OF USE
		FRANCE	U.S.A.	U.K.		
WIDE CUT (JP4) (AVTAG FSII)	F 40	AIR 3407	MIL-T-5624 (JP4)	D-Eng-RD 2454	WITH	OAT < 25°C Hp ⩽ 2000 m
WIDE CUT (JP4) (AVTAG)				D-Eng-RD 2486	WITHOUT	OAT < 25°C Hp ⩽ 2000 m

MV.50.0530.00

12.5 Additives

12.5.1 Anti-Ice Additive
If the fuel does not contain a fuel system icing inhibitor, the use of an anti-icing additive is compulsory if O.A.T. is below - 20° C.

Autorized additives :
- AIR 3652, MIL-I 27686, D. Eng. RD 2451, S 748, MIL.1-85470A.

Concentration shall be from 0.10 % to 0;15 % by volume.

12.5.2 Antistatic Additive
- SHELL ASA 3, maximum concentration : 0;0001 % by volume.

12.5.3 Fungicide
- BIOBOR JF

13 LUBRICATION SYSTEMS LIMITATIONS

13.1 Autorized Main and Tail Gearbox Lubricants

NORMAL USE					
OIL TYPE	NATO SYMBOL	SPECIFICATIONS (Are to be used at the latest amendment and dash number)			TEMP. USE
		FRANCE	U.S.A.	U.K.	
Mineral base oil *	O.155	AIR 3525	MIL.L.6086	DTD.581	-20°C +50°C
* SHELL PROHIBITED					

MV.50.0535.00

RR 1A

Replace the existing text as follows :

USE IN COLD WEATHER					
OIL TYPE	NATO SYMBOL	SPECIFICATIONS (Are to be used at the latest amendment and dash number)			TEMP. USE
		FRANCE	U.S.A.	U.K.	
Fluid synthetic oil	O.150	AIR 3514			-40°C + 0°C
Fluid synthetic oil	O.148		MIL.L.7808		-40°C + 0°C

MV.50.0634.00

13.2 Authorized Tail Gearbox Lubricants

NORMAL USE					
OIL TYPE	NATO SYMBOL	SPECIFICATIONS (Are to be used at the latest amendment and dash number)			TEMP. USE
		FRANCE	U.S.A.	U.K.	
Fluid synthetic oil 5 cSt	O.156		MIL.L.23699	DERD.2499	-20°C +50°C

MV.50.0633.00

13.3 Approved Engine Lubricants

NORMAL USE USE PROHIBITED UNDER -30°C				
OIL TYPE	NATO SYMBOL	SPECIFICATIONS		
		FRANCE	U.S.A.	U.K.
Middle viscosity oil 5 cSt at 98.9°C	O.156		MIL.L.23699	

OTHER OILS USE PROHIBITED ABOVE 30°C				
OIL TYPE	NATO SYMBOL	SPECIFICATIONS		
		FRANCE	U.S.A.	U.K.
Fluid synthetic oil 3 to 3.5 cSt at 98.9°C	O.148		MIL.L.7808	
	O.150	AIR 3514		
Fluid synthetic oil 3.9 cSt at 98.9°C	AEROSHELL TURBINE OIL 390			

MV.50.0524.00

NOTE : - The temperature limitations mentioned above apply to engine starting.

MV.50.0534.00

USE IN COLD WEATHER					
OIL TYPE	NATO SYMBOL	SPECIFICATIONS (Are to be used at the latest amendment and dash number)			TEMP. USE
		FRANCE	U.S.A.	U.K.	
Fluid synthetic oil	O.150	AIR 3514			-40°C + 0°C
Fluid synthetic oil	O.148		MIL.L.7808		-40°C + 0°C

13.2 Authorized tail gearbox lubricants

MV.50.0533.00

NORMAL USE					
OIL TYPE	NATO SYMBOL	SPECIFICATIONS (Are to be used at the latest amendment and dash number)			TEMP. USE
		FRANCE	U.S.A.	U.K.	
Fluid synthetic oil 5 cSt	O.156		MIL.L.23699	DERD.2499	-20°C +50°C

13.3 Approved Engine Lubricants

MV.50.0524.00

NORMAL USE USE PROHIBITED UNDER -30°C				
OIL TYPE	NATO SYMBOL	SPECIFICATIONS		
		FRANCE	U.S.A.	U.K.
Middle viscosity oil 5 cSt at 98.9°C	O.156		MIL.L.23699	

OTHER OILS USE PROHIBITED ABOVE 30°C				
OIL TYPE	NATO SYMBOL	SPECIFICATIONS		
		FRANCE	U.S.A.	U.K.
Fluid synthetic oil 3 to 3.5 cSt at 98.9°C	O.148		MIL.L.7808	
	O.150	AIR 3514		
Fluid synthetic oil 3.9 cSt at 98.9°C	AEROSHELL TURBINE OIL 390			

NOTE : The temperature limitations mentioned above apply to engine starting.

13.3 Engine Oil Pressure and Temperature

13.3.1 Oil Pressure

- Normal pressure ------------------ 2 to 6 bar (29 to 87 psi)
- Minimum pressure ------------------ 1.1 bar (15.9 psi)
- Maximum pressure starting sequence -------- 9.8 bar (142.1 psi)

13.3.2 Oil Temperature

- Maximum oil temperature ---------------- 115°C
- Minimum oil temperature before power application --- 0°C

14 ELECTRICAL AND HYDRAULIC POWER SYSTEM LIMITATIONS

14.1 Hydraulic System

Fluid Used

- Synthetic ----------------- MIL-H-83282 (recommended)
- Mineral-base ---------------- MIL-H-5606 (AIR 3520) - DTD 585 - (NATO H 515)

If the fluid specification is changed, refer to the procedure specified in the Maintenance Manual.

14.2 Electrical System (direct current)

- Maximum voltage ------------------- 31.5 V
  Rated voltage range 26-29 V
- Maximum current ------------------- 150 A
  200 A with option OP2783

15 LANDING AND STOPPING LIMITATIONS ON SLOPES

15.1 Parking on slopes

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

15.2 Sliding landing

- Excluding failures, the maximum speed for performing sliding landings ------------- 40 kt

16 PROHIBITIONS

The following are prohibited :
- Aerobatics
- In flight use of the starter selector in the IDLE position.
- Engine power reduction in flight using twist grip control, except for autorotational training, emergency procedures which refer to it, or for a technical flight.
- Flight in icing conditions.

17 MINIMUM CREW

One pilot, in RH seat.

18 TRANSPORT OF PERSONNEL

Number of persons carried : 6 maximum (pilot included)

19 MANDATORY INSPECTIONS/AIRWORTHINESS LIMITATIONS

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

20 OPTIONAL EQUIPMENT LIMITATIONS

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

SECTION 2.2

PLACARDS AND INSTRUMENT MARKINGS

1 PLACARDS

1.1 Plates Displayed in the Cockpit

- Operating limitations.

VNE EN PUISSANCE	
Zp (ft)	Vi (kts)
0	155
2000	149
4000	143
6000	137
8000	131

MV.50.0553.00

VNE POWER ON	
Hp (ft)	IAS (kts)
0	155
----	---
----	---
POWER OFF: -30 kts	
Absolute VNE POWER ON 133 kts if C.G. in hatched zone	

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

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

MV.50.0054.00

R

1.2 Loading Instruction Plates

- Loading instruction plates

. On side face of control pedestal

MV.50.0051.00

CHARGES REPARTIES MAXI
DISTRIBUTED LOADS MAXI

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

. In rear cargo compartment

MV.50.0050.00

CHARGE REPARTIE MAXI —— 80 kg
DISTRIBUTED LOAD MAXI —— 176lb

. In port cargo compartment

MV.50.0052.00

CHARGE MAXI. 120 kg
MAX. LOAD 264 lb

. In starboard cargo compartment

MV.50.0053.00

CHARGE MAXI. 100 kg
MAX. LOAD 220 lb

The text of paragraph 2, Page 2, is to be replaced by the following text :

2 INSTRUMENT MARKINGS

Colour code

- Red - Safety limit
- Red with white hatching - - - - - - - - - - VNE, power-off
- Yellow - - - - - - - - - - - - - - - - - - Caution range
- Green - - - - - - - - - - - - - - - - - - - Normal operating range
- White - - - - - - - - - - - - - - - - - - - Equipment operating limit
- Red triangle - - - - - - - - - - - - - - - Transient limit

The numerical values of the parameters on the VEMD are underlined :

- in yellow in the cautionary zone.
- flashing red when the safety limit is reached or exceeded.

INSTRUMENTS	MARKINGS	RANGE
AIRSPEED INDICATOR	Red with white hatching Red line Green arc	125 kt (231 km/h - 144 mph) 155 kt (287 km/h - 178 mph) from 40 to 155 kt (74 to 287km/h - 46 to 178 mph)
ROTOR INDICATOR	White triangle Red line Yellow arc Green arc Yellow arc Red line	170 rpm 320 rpm 320 - 375 rpm 375 - 394 rpm 394 - 430 rpm 430 rpm
TORQUE INDICATOR (*)	Red triangle Red line Yellow arc	104 % 100 % 84 - 100 %

(*) on the upper VEMD display

2 INSTRUMENT MARKINGS

The paragraph (ROTOR INDICATOR AND FREE TURBINE) is to be replaced by :

ROTOR INDICATOR	White triangle Red line Yellow arc Green arc Yellow arc Red line	170 rpm 320 rpm 320 - 375 rpm 375 - 394 rpm 394 - 430 rpm 430 rpm

2 INSTRUMENT MARKINGS

Colour code

- Red - Safety limit
- Red with white hatching - - - - - - - - - - - - VNE, power-off
- Yellow - Caution range
- Green - Normal operating range
- White - Equipment operating limit
- Red triangle - - - - - - - - - - - - - - - - - - Transient limit

The numerical values of the parameters on the VEMD are underlined :

- in yellow in the cautionary zone.,
- flashing red when the safety limit is reached or exceeded.

INSTRUMENTS		MARKINGS	RANGE
AIRSPEED INDICATOR		Red with white hatching Red line Green Arc	125 kt (231 km/h - 144 MPH) 155 kt (287 km/h - 178 MPH) from 40 to 155 Kt (74 to 287 km/h - 46 to 178 MPH)
ROTOR AND FREE TURBINE TACHOMETER	ROTOR	White triangle Red line Yellow arc Green arc Yellow arc Red line	170 rpm 320 rpm 320 - 375 rpm 375 - 394 rpm 394 - 430 rpm 430 rpm
	FREE TURBINE	Red line Green arc Red line Red triangle	349 rpm 349 - 418 rpm 418 rpm 450 rpm
TORQUE INDICATOR (*)		Red triangle Red line Yellow arc	104 % 100 % 92.7 % - 100 % R

(*) on the upper VEMD display

INSTRUMENTS	MARKINGS	RANGE		
		STARTING	FLIGHT	
FIRST LIMITATION INDICATOR (*)	Red triangle Red line Yellow arc	10.4 10 9.6 to 10		
Δ Ng INDICATOR (*)	Yellow arc Red line Red triangle	− 4 to 0 0 + 1		R
EXHAUST GAS TEMPERATURE (T4) INDICATOR (*)	Yellow arc Red line Red triangle	 750°C 865°C	849 to 915°C 915°C	
ENGINE OIL PRESSURE INDICATOR (**)	Red line Yellow arc Yellow arc Red line	1.1 bar (15.9 psi) 1.1 − 2 bar (15.9 − 29 psi) 6 − 9.8 bar (87 − 142.1 psi) 9.8 bar (142.1 psi)		R
ENGINE OIL TEMPERATURE INDICATOR (**)	Red line Yellow arc	115°C − 10°C to 0°C		
VOLTMETER (**)	Underlined yellow Flashing red underlined Underlined yellow	29 − 31.5 Volts from 31.5 volts from 0 − 26 volts		
AMMETER (**)	Flashing red underlined	From 150 or 200 A depending on the generator		

(*) on the upper VEMD display

(**) on the lower VEMD display

SECTION 3

EMERGENCY PROCEDURES

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SECTION 3.1

EMERGENCY PROCEDURES

1 INTRODUCTION

The procedures outlined in this section deal with the common types of emergencies ; however, the actions taken in each actual emergency must relate to the complete situation.
Throughout this section, "Land immediately", "Land as soon as possible" and "Land as soon as practicable" are used to reflect the degree of urgency and are to be interpreted as follows :
- Land (or ditch) immediately
- Land as soon as possible : land at the nearest site at which a safe landing can be made
- Land as soon as practicable : extended flight is not recommended. The landing site and duration of the flight are at the discretion of the pilot.

2 AUTOROTATION LANDING

2.1 Autorotation Landing Procedure following Engine Failure

- Set low collective pitch.
- Maintain NR in the upper part of the green band.
- Establish approximately 65 knots (120 km/h) airspeed.

- Select the OFF/IDLE/FLIGHT selector to OFF.
- According to the cause of loss of the engine:
  .Re-light the engine (see paragraph 3.2 of this Section).
  .Otherwise : close the fuel shut-off valve
  switch off : generator
  alternator (if installed)
  electrical power master "ALL-OFF" switch (if smell of burning).

- Manoeuvre to head the helicopter into the wind in final approach.
- At a height of approximately 65 ft (20 m) above the ground, flare to a nose-up attitude.
- At height 20-25 ft (6-8 m) and at constant attitude, gradually apply collective pitch to reduce the sink-rate.
- Resume level attitude before touch-down, and cancel any side-slip tendency.
- Gently reduce collective pitch after touch-down.

NOTE : 1) It is possible that the tail skid may touch the ground first.
2) The rate of descent at 65 kt is 1800 ft/min.

2.2 Landing after Engine Failure in Hover I.G.E.

- Do not reduce collective pitch.
- Control yaw.
- Cushion touch-down by increasing collective pitch.
- Reduce collective pitch as soon as the aircraft is on the ground.

2.3 Landing after Engine Failure in Hover O.G.E.

- Reduce collective pitch.
- Apply forward cyclic pitch to gain air speed according to available height.
- Terminate in accordance with paragraph 2.1 procedure.

2.4 Autorotation Landing Training Procedure

- Lower the collective to enter autorotation.
- Maintain NR within the upper part of the green band.
- Move the twist grip out of the flight notch and position it on idle without disabling the flight stop.
  The amber TWT GRP an GOV warning lights illuminate. The engine regulates at idle Ng = 68 %.

  NOTE : If the procedure needs to be interrupted, the control can be quickly repositioned against the flight stop.

- Apply the procedure described in paragraph 2.1 except for the engine.
- After landing, with the collective down, re-position the twist grip in the flight notch (the TWT GRP and GOV amber warnings should extinguish). The rotor speed should accelerate to its normal governed value.

3 ENGINE FAILURE

3.1 Flame-out in Flight

The symptoms of an engine failure are as follows :

. Jerk in the yaw axis (only in high-power flight).
. Drop in rotor speed (aural warning sounds below 360 rpm).
. Torque at zero.
. Ng falling off to zero :
. Generator warning light illuminates.
. Engine oil pressure drop warning light illuminates.
In the event of an engine failure in flight, carry out autorotation transition procedure (see paragraph 2).

3.2 Relighting the Engine in Flight

The normal relighting ceiling is 20000 feet, but, relighting may be attempted throughout the altitude envelope.

Proceed as outlined below :

- Booster pumps - ON

- Wait until Ng falls below 5 % then carry out starting procedure.

- GOV (red and amber) warning lights - - - - - - - - - - OUT

- Starting selector - - - - - - - - - - - - - - - - - - - ON
  . Check that NG increases.
  . Check that t4 remains below its limit.
  . Check that the engine oil pressure increases.
  . Check that the following Warning Caution Advisory Panel light go out :
    - P.MOT (ENG.P) should be out at 70 % Ng.

- Lower the switch guard on the starter switch.

- Check : Warning Caution Advisory Panel GEN light off.

- Booster pump selected - - - - - - - - - - - - - - - - - OFF
  . PUMP and FUEL P captions - - - - - - - - - - - - - - Extinguished

NOTE : If the starting cycle has to be aborted, return the start switch to the closed position and switch off the fuel pump.

4 ENGINE FIRE

4.1 Fire during Engine Start

- Close the fuel shut-off cock and apply the rotor brake if necessary.
- Switch off the booster pump.
- Crank the engine for 10 seconds then switch off the battery.
- Use the nearby extinguishers to fight the fire.

4.2 Fire in Flight ("FIRE" light on)

- Enter autorotation (see paragraph 2.1).
- Close the fuel shut-off cock to shut down the engine.
- Switch off the generator and alternator (if installed).
- Switch off the electrical master "ALL OFF" switch if there is a smell of burning.

5 SMOKE IN THE CABIN

5.1 If Source of Smoke is identified

- Shut off the corresponding system.
- If necessary, use the fire extinguisher *.
- Air the cabin by opening :
  . The front ventilator
  . The ventilation ports
  . The bad weather windows.

5.2 If source of Smoke is not identified

- Shut off the heating * demisting system.
  If the smoke does not clear :
  . Switch off the electrical master switch ("ALL OFF").
  . When the smell of smoke has cleared, set all switches to "OFF", including the generator and alternator (if installed), close the cabin ventilators.
  . Reset the "ALL OFF" electrical master switch to normal position.
  . Switch on the generator, check voltage and current.
  . If everything is normal, switch on the circuits one by one until the malfunction is identified.

NOTE : If the electrical power supply system is faulty, carry out the appropriate procedure, as detailed in SECTION 3.3.

6 TAIL ROTOR FAILURE

6.1 Tail Rotor Drive Failure

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

6.1.1 Failure of the Tail Rotor in Hover or at Low Speed

- I.G.E. : set the twist grip to the idling detent and cushion touch-down by pulling the collective pitch lever.
- O.G.E. : reduce collective pitch moderately, to reduce yaw torque, and simultaneously start to pick up speed.

6.1.2 Failure in Forward Flight

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

* Optional

SECTION 3.2

SYSTEM FAILURES

1 FUEL SYSTEM FAILURES

Refer to SECTION 3.3.

2 ENGINE SYSTEM FAILURES

2.1 Low Engine Oil pressure "Gauge pointer in red arc"

- Test Warning-Caution-Advisory Panel and check ENG. P. light illuminates.

  . Light does not illuminate when tested :

  Shut down engine and perform an autorotation landing.

  . Light illuminates when tested :

  Land as soon as possible.

2.2 Engine Oil Temperature higher than Maximum specified values

2.2.1 At Low Speed or in Hover

- Land if possible.
  . Stop the engine.
  . Check that the cooler fan operates.

- If landing impossible :
  . Increase speed and reduce power
  . Fly at approximately 80 knots (148 km/h)
  The temperature should fall rapidly.
  If this result is not obtained, land as soon as possible.

2.2.2 In Cruising Flight

Reduce power then proceed as described above.

3 VEMD FAILURE

3.1 VEMD screen failure

- Failure of one screen

  . Select the failed screen to OFF.

  . Read the information on the other screen.
  All information is available using the SCROLL push-button either on the VEMD or on the collective pitch lever.
  If the top screen has failed, with the lower screen in 3-parameter mode (ΔNg, t4, torque), only t4 and Ng will be available (refer to the procedure provided in paragraph 3.3 for compliance with limitations). R

- Double display failure

  Real failure is highly improbable ; in practice this case occurs only when the battery and generator have both been selected OFF (for example, following application of the "Fire" or "Smoke in cabin" procedure).

  . Select the power setting required for level flight in accordance with the following relationship :

  IAS = 100 kt at zero pressure altitude – (2 kt per 1000 ft)

  . Land without hovering.

3.2 Messages on VEMD

Failure of a parameter is shown on the indicator by :

- disappearance of the needle,
- the scale being displayed in yellow,
- display of a message.

Most caution messages are sufficiently self-explanatory and the pilot must comply with the action requested. If no light is lit on the caution advisory panel, no other action is required by the pilot.

. LANE 1 (or LANE 2) FAILED - - - - - - - - Self-explanatory
---> PRESS OFF 1 (or 2)
. VEH PARAM OVER LIMIT - - - - - - - - - - - Vehicle parameter over limit

ENG PARAM OVER LIMIT - - - - - - - - - - - Engine parameter over limit

These messages appear when the page for the parameter which is over the limit is not displayed at the time of failure.
In this case :
- Press the SCROLL push-button to show the out of limit parameter.
- Check the parameters.

. CROSS TALK FAILED
--->PRESS OFF 2 - - - - - - - - - - - - - Self-explanatory
. BRT CNTRL FAILED - - - - - - - - - - - - - Brightness control has failed
. FLI FAILED - - - - - - - - - - - - - One parameter (Ng, t4, torque) is abnormal.
---> CHECK PARAM

- Check the faulty parameter and refer to the procedures in paragraph 3.3. R

. GENE PARAM OVER LIMIT - - - - - - - - - - Generator parameter over limit
. BAT PARAM OVER LIMIT - - - - - - - - - - Battery parameter over limit
- These messages appear when the relevant parameter is not displayed on the vehicle page and when a limitation is reached.

. BAT.T - - - - - - - - - - - - - - - - - - This message appears when the battery temperature is unserviceable.

3.3 Failure of ΔNg - Torque - t4 indicators

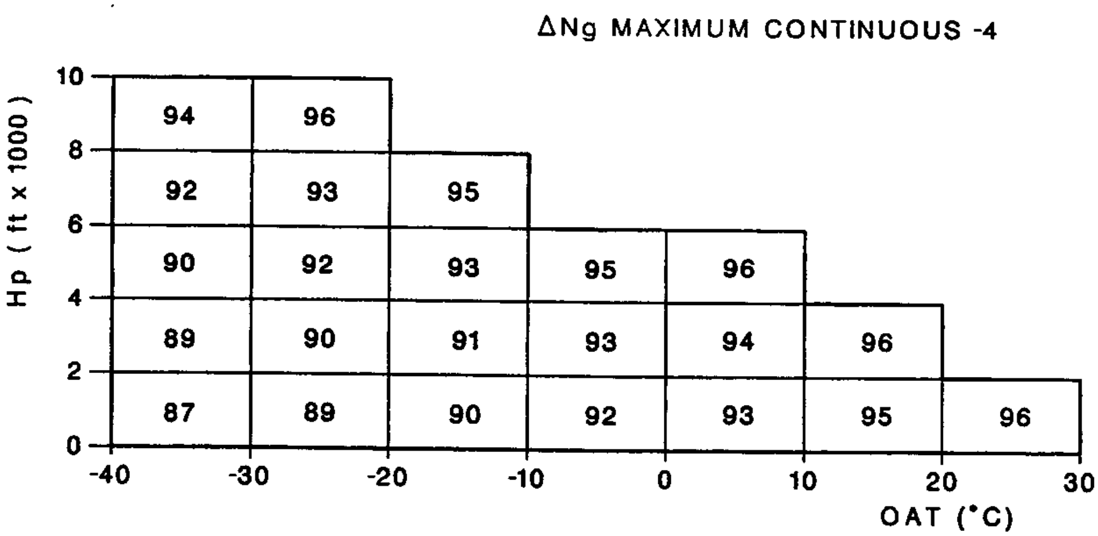
In the event of failure of a first limitation calculation parameter, the FLI is no longer displayed. The Ng/ΔNg, torque, t4 indicators are displayed instead.
A failure message is displayed (Refer to § 3.2). R

ΔNg indicator failure

In the event of an indicator failure, do not exceed the maximum authorized torque value, and maintain the t4 temperature value below 810°C.

Torquemeter failure

In the event of a torquemeter failure, do not allow the engine speed to exceed the Ng (%) limits in the following table :



MV.50.0532.01

ΔNg and torquemeter indications failure

Governing failure (red GOV warning) can also cause loss of ΔNg and torque indications.
The VEMD switches to 3-parameter mode with only t4 valid and Ng numeric.
Comply with the limitations in the above table, substituting the - 4 (ΔNg) limit with a t4 limit of 810°C.

t4 indicator failure

- Comply with the Ng limitations (refer to "LIMITATIONS" SECTION).
- Switch off the heating system.
- Do not attempt to start the engine.

NOTE : If in doubt concerning the values of parameters to be complied with following failure of one or more parameters, the "2 screen failure" procedure can always be applied.

RR2A

2.1 Red lights (Cont'd)

The paragraph (GOV indicator light), is to be completed by :

LIGHT	FAILURE	PILOT ACTION
GOV		NOTE 2: In all cases, the NR must be controlled so that the max NR alarm is never activated.

RR 2F

2.1 Red lights (Cont' d)

The text of paragraph (VOYANT GOV),is to be replaced by the following text:

LIGHT	FAILURE	PILOT ACTION
GOV	MANU mode engaged or Governing failure : the fuel flow is frozen at the value prior to failure.	- Check Flight parameters. - Maintain NR in green arc. - Unlock the "FLIGHT" detent,the fuel flow can be increased or decreased by turning the twist grip. - Only apply small amplitude adjustments, synchronized with the collective pitch control in order to maintain NR in the green range. - Fly the approach at 40 kt and adjust the fuel flow rate to maintain NR within the upper section of the green range. Slowly reduce the speed if necessary adjust the fuel flow rate slightly on the twist grip to maintain NR within the green range. On final approach, when the collective pitch is increased on reaching the hover, let the NR drop for touchdown. After touchdown, reduce the fuel flow rate before lowering the collective pitch. NOTE : This failure can also result in loss of ΔNg and torque parameters on the VEMD. Refer to paragraph 3.3 for compliance with limitations.
	Return from MANU mode to AUTO mode.	- The AUTO/MANU selector can be set back to the AUTO position irrespective of the NR value. Then return the control to the FLIGHT detent (red and amber GOV and TWT GRP warning lights should be extinguished).

RR 2E

Add the following text to paragraph "6 TAIL ROTOR FAILURE" :

CAUTION : LANDING IS MADE EASIER BY A WIND COMING FROM THE RIGHT. IF THE AIRSPEED IS LOWER THAN 20 kt (36 km/h), GO-AROUND IS IMPOSSIBLE DUE TO THE LOSS OF EFFICIENCY OF THE FIN.

The text of paragraph 4, is to be replaced by the following text :

4 ABNORMAL NR READINGS

In the event of complete loss of NR indication

- Maintain engine torque above 10 %
- Land as soon as possible.

NOTE : The NF value can be read on the VEMD screen. Press "SCROLL", then "+" as many times as required to display the parameter in the rectangular window at the bottom of the FLI or 3-parameter screen.

6.2 Tail Rotor Control Failure

- Set IAS 70 knots (130 km/h), in level flight.
- Press the hyd. Test push-button (this cuts off hydraulic power to the yaw servocontrol and depressurizes the load-compensating servo accumulator). After 5 seconds, reset the test button to the normal position.

- Make a shallow approach to a clear landing area with a slight side slip to the left. Perform a run-on landing ; the side slip will be reduced progressively as power is applied.

The text of paragraph 4, is to be replaced by the following text :

4 ABNORMAL NR READINGS

In the event of complete loss of NR indication

- Maintain engine torque above 10 %
- Land as soon as possible.

NOTE : The NF value can be read on the VEMD screen. Press "SCROLL", then "+" as many times as required to display the parameter in the rectangular window at the bottom of the FLI or 3-parameter screen.

4 ABNORMAL NR/NF READINGS

4.1 Rotor RPM Indicator Failure

In the event of complete loss of NR indication :
- Maintain engine torque above 10 % : NR reading is then given by the Nf pointer.
- Land as soon as possible.

4.2 Free Turbine RPM Indicator Failure

Check that NR reading remains within governed range when collective pitch is slowly modified with engine torque above 0 %.
Continue flight.

NOTE : The NF value can be read on the VEMD screen. Press "SCROLL", then "+" as many times as required to display the parameter in the rectangular window at the bottom of the FLI or 3-parameter screen.

5 HYDRAULIC SYSTEM FAILURES

5.1 Yaw Servo-control Slide-valve Seizure

- In hover : If no movement about the yaw axis, land normally ; if rotation about the yaw axis, cut off hydraulic pressure by actuating the switch situated on the collective pitch control lever.
- In cruising flight : Reduce speed, entering into a side-slip if necessary, then cut off hydraulic pressure by actuating the switch situated on the collective pitch control lever.

5.2 Main Servo-control Slide-valve Seizure

- Actuate the switch, situated on the collective pitch control lever, to cut off hydraulic pressure.
  Load feedback will be felt immediately ; load feedback may be heavy if the helicopter is flying at high speed :
  . collective pitch : 20 kgf pitch increase load
  . cyclic : 7 to 12 kgf left-hand cyclic load
  . cyclic : 2 to 4 kgf forward cyclic load
  . yaw pedals : practically no load in cruising flight.
- Reduce speed to 60 kt (111 km/h) and proceed as in the case of illumination of the "HYD" light.

6 BLEED VALVE FLAG (on VEMD)

The flag disappears when the bleed valve closes.
The bleed valve is normally open when the engine is shut down, during starting and at low power settings.

If the flag does not disappear at high power settings, the maximum available engine power is reduced, especially in cold weather.

If the flag does not reappear at lower power settings, the engine may surge. Avoid sudden changes in power settings.

This failure results in ignition of the amber GOV warning light.

SECTION 3.3

WARNING-CAUTION-ADVISORY PANEL AND AURAL WARNING

1 AURAL WARNING

Aural warnings are operative only if the "HORN" push-button is pushed in. When this push-button is out, the HORN light of the warning caution advisory panel is ON.

1.1 Gong

The gong sounds each time a red warning light illuminates.

1.2 Continuous tone

Two continuous tone can be heard :

- when NR is below 360 rpm (310 Hz tone),
- when maximum take-off limitations are exceeded for more than 1.5 seconds (285 Hz tone).

1.2.1 Reduce collective pitch to maintain NR in green arc or power within limitations.

1.2.2 Check engine parameters.
When the fuel flow control lever is in the "Flight" gate low NR can logically only occur following an engine failure. Apply collective pitch very gradually.

1.3 Intermittent tone

An intermittent tone (310 Hz) is heard when NR is above 410 rpm.

Slightly increase collective pitch in order to avoid exceeding 430 rpm.

2 WARNING-CAUTION-ADVISORY PANEL

The Warning-Caution-Advisory Panel located on the instrument panel includes lights of different colors :

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

2.1 Red Lights

LIGHT	FAILURE	PILOT ACTION
HYDR	Servo-control system failure. The pressure stored in the accumulators allows sufficient time to reach the fall-back speed with hydraulic servo-assistance. NOTE : The yaw servo-control is equipped with a load compensator and a hydraulic accumulator which remains pressurized indefinitely after a hydraulic pump failure or after hydraulic power cut-off via the collective lever hydraulic power release control. The accumulator may be depressurized by pressing the HYD. TEST push-button. Do not press the HYD. TEST push button : this would cause immediate depressurization of the accumulator and the resulting control loads could be heavy.	In flight : - Calmly reduce collective pitch and adjust the air-speed to between 40 and 60 kt (74 to 111 km/h) in level flight. - Cut off the hydraulic pressure, using collective lever switch. Control loads are felt : . on collective pitch increase . on forward and LH cyclic. - If necessary, increase IAS, but the control load feedback will also increase, especially on the collective pitch ; as this load increases, be careful not to inadvertently move the twist grip out of the "Flight" detent (TWT GRIP and GOV amber warnings extinguished) - Make a flat approach over a clear landing area and land with slight forward speed. - Shut down the engine, holding the collective pitch lever on the low pitch stop. In hover - Land normally. - Shut down the engine. holding the collective pitch lever on the low pitch stop.

RR 1A

Replace the existing text as follows :

2.1 Red lights (Cont'd)

LIGHT	FAILURE	PILOT ACTION
P BTP MGB.P	Main gearbox oil minimum pressure	- Reduce power, and land as soon as possible. NOTE : The MGB has successfully passed a bench test consisting in running the gearbox for 45 min. with zero oil pressure at the power corresponding to minimum power in level flight (at 55 kt)
T.BATT BATT TEMP	Battery maximum temperature	- Isolate the battery (push-button "OFF") and land as soon as possible.
P.MOT ENG P	Engine oil pressure alarm	- Reduce power. - Check engine oil pressure indicator : . If pressure is low or zero shut down engine and perform an AUTOROTATION LANDING. If pressure is correct, land as soon as possible.
FEU MOT ENG FIRE	Refer to SECTION 3.1 paragraph 5.	

2.1 Red lights (Cont'd)

LIGHT	FAILURE	PILOT ACTION
P BTP MGB.P	Main gearbox oil minimum pressure	- Reduce power, and land as soon as possible. NOTE : The MGB has successfully passed a bench test consisting in running the gearbox for 45 min. with zero oil pressure at the power corresponding to minimum power in level flight (at 55 kt)
			R
T.BATT BATT TEMP	Battery maximum temperature	- Isolate the battery (push-button "OFF") and land as soon as possible.
P.MOT ENG P	Engine oil pressure alarm	- Reduce power. - Check engine oil pressure indicator : . If pressure is low or zero shut down engine and perform an AUTOROTATION LANDING. . If pressure is correct, land as soon as possible.
FEU MOT ENG FIRE	Refer to SECTION 3.1 paragraph 4.		R

2.1 Red lights (Cont'd)

LIGHT	FAILURE	PILOT ACTION
GOV	MANU mode engaged or Governing failure : the fuel flow is frozen at the value prior to failure.	- Store the flight data. - Unlock the "FLIGHT" notch, the fuel flow can be increased or decreased by turning the twist grip. - Only apply small amplitude adjustments, synchronized with the collective pitch control in order to maintain NR in the green range. - Fly the approach at 40 kt and adjust the fuel flow rate to maintain NR within the upper section of the green range. Slowly reduce the speed if necessary adjust the fuel flow rate slightly on the twist grip to maintain NR within the green range. On final approach, when the collective pitch is increased on reaching the hover, let the NR drop for touchdown. After touchdown, reduce the fuel flow rate before lowering the collective pitch. NOTE : This failure can also result in loss of ΔNg and torque parameters on the VEMD. Refer to paragraph 3.3 for compliance with limitations.
	Return from MANU mode to AUTO mode.	- The AUTO/MANU selector can be replaced in the AUTO position irrespective of the NR value. Then return the control to the FLIGHT notch (red and amber GOV and TWT GRP warning lights should be extinguished).

The text of paragraph 2.1, Page 4, is to be replaced by the following text :

2.1 Red lights (Cont'd)

LIGHT	FAILURE	PILOT ACTION
GOV	MANU mode engaged or Governing failure : the fuel flow is frozen at the value prior to failure.	- Store the flight data. - Unlock the "FLIGHT" notch, the fuel flow can be increased or decreased by turning the twist grip. - Only apply small amplitude adjustments, synchronized with the collective pitch control in order to maintain NR in the green range. - Fly the approach at 40 kt and adjust the fuel flow rate to maintain NR within the upper section of the green range. Slowly reduce the speed if necessary adjust the fuel flow rate slightly on the twist grip to maintain NR within the green range. On final approach, when the collective pitch is increased on reaching the hover, let the NR drop for touchdown. After touchdown, reduce the fuel flow rate before lowering the collective pitch. NOTE 1: This failure can also result in loss of ΔNg and torque parameters on the VEMD. Refer to paragraph 3.3 for compliance with limitations. NOTE 2: In all cases, the NR must be controlled so that the max NR alarm is never activated.
	Return from MANU mode to AUTO mode.	- The AUTO/MANU selector can be replaced in the AUTO position irrespective of the NR value. Then return the control to the FLIGHT notch (red and amber GOV and TWT GRP warning lights should be extinguished).

2.2 Amber lights

LIGHT	FAILURE	PILOT ACTION
GENE GENE	- D.C. power supply failure (See NOTE 1) - Overvoltage detected	- Test the D.C. voltage. - Check the position of the push-button. - Attempt to reset - If unsuccessful : Shed the least essential consumer circuits ; continue flight, according to circumstances, keeping a close check on voltage (22 volts minimum). - Maximum flight time on battery : Day : 50 min. Night : 20 min. (see NOTE 2) - Land as soon as practicable.
BATT BATT	Battery isolated from the d.c. network ; no longer charging (see NOTE 2)	- Check the push-button (ON). - Keep a watch on voltage. - Continue flight, according to circumstances.
KLAX HORN	Horn not set	- Set the horn by actuating the push-button situated on the control pedestal panel (see paragraph 1 of this SECTION).
PORT DOORS	One or both baggage hold side doors unlocked <u>NOTE</u> : If optional sliding doors are fitted, this can indicate that the sliding doors are not locked.	- Reduce airspeed (120 kt - 222 km/h - 138 mph maximum). - Check visually that doors are closed. - If one or both doors are open, or if checking is impossible : Land if possible, or continue flight at reduced speed (120 kt - 222 km/h - 138 mph maximum). - Descend at a low sink rate and end with a shallow approach.

2.2 Amber lights (Cont'd)

LIGHT	FAILURE	PILOT ACTION
PITOT	Pitot heating system not energized	- Check the push-button (ON). - Monitor airspeed indicator.
COMB FUEL	Fuel quantity less than 60 litres (15.8 US gal)	- Avoid large attitude changes. NOTE : Approximately 18 minutes level flight remain at maximum continuous power.
TWT GRIP	Throttle out of "FLIGHT" notch	- If necessary, replace the throttle in the "FLIGHT" notch.
GOV	- Permanently lit : governing Function degraded. - Flashing at idle or during shut-down : governing is operating but redundancy is lost.	- Avoid abrupt power variations.
FILT COMB FUEL FILT	Fuel filter clogging	Reduce engine power - If light goes out, continue flight at reduced power. - If light remains on, land as soon as possible.
P. COMB FUEL P	Fuel pressure drop on the engine supply line. Risk of engine flame-out.	- Reduce engine power. - Select booster pump ON. - Land as soon as possible.

RR 1A

Complete the Amber lights with :

2.2 Amber lights (Cont'd)

T.BTP MGB.TEMP	Main gearbox oil max. temperature	- Test the warning caution advisory panel to check the MGB.P light. . If the light does not illuminate, proceed as for MGB oil pressure at zero. . If the light illuminates, land and check the MGB oil level. If the oil level is normal, fly to the nearest base.

2.2 Amber lights (Cont'd)

LIGHT	FAILURE	PILOT ACTION
T.BTP MGB.TEMP	Main gearbox oil max. temperature	- Test the warning caution advisory panel to check the MGB.P light. . If the light does not illuminate, proceed as for MGB oil pressure at zero. . If the light illuminates, land and check the MGB oil level. If the oil level is normal, fly to the nearest base.
LIM BTA TGB CHIP	Metal particles detected in TGB	- Continue flight avoiding prolonged hovering.
LIM BTP MGB CHIP	Metal particles detected in MGB	- Reduce engine power. - Monitor MGB.P. and MGB.T. lights. Should either or both lights illuminate refer to illumination of relevant light (s), in "LIGHT" column.
LIM MOT ENG CHIP	Metal particles in engine oil system	- LAND AS SOON AS POSSIBLE Take-off is PROHIBITED until the checks specified in TURBOMECA Maintenance Manual have been performed.

NOTE 1 : Whenever an electrical circuit failure occurs, check the corresponding fuse and change it if necessary.

Replacement fuses are provided on RH side of cabin.

NOTE 2 : List of functions which must remain ON when flying on the battery only :

- Day : Battery, VHF, Radio-Nav.
- Night : Same as day plus : Instrument lighting (1 and 2), artificial horizon, position lights, anticollision light.

SECTION 4.1

OPERATING PROCEDURES

1 EXTERNAL CHECKS

NOTE : Ensure that the inspection associated with the day's flights has been performed : R R
- either by the pilot, in accordance with the Flight Manual (SECTION 8),
- or by the aircraft mechanic in accordance with the Master Servicing Recommendations.

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

- Check that the ground round the aircraft is clean and unobstructed.
- Remove the blade socks, if applicable. R
- Carry out the following check :

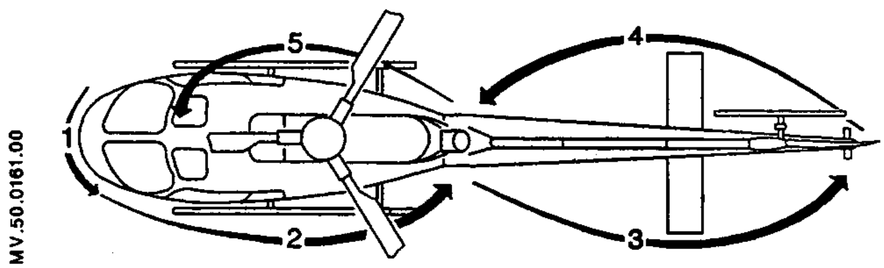


Figure 1

Station 1

- Transparent panels - - - - - - - - - Cleanliness - Condition R
- Total pressure head (PITOT) - - - Cover removed - Check clean
- Landing gear (cross-members, skids, wear-resistant plates) - - Security - Visual check
- Sideslip indicator - - - - - - - - - Condition R

Station 2

- Engine Air Intake - - - - - - - - - Clear (water, snow, foreign matter)
- MGB cowling - - - - - - - - - - - - - Check MGB oil level (steps). Close cowling, check closed.
- Main Rotor Head - - - - - - - - - - Inspect star, sleeves (peeling), spherical thrust bearing, adapters (separation).
- Main Rotor Blades - - - - - - - - - Security (attachment), inspect from ground, for signs of impact.
- Tail pipe cover (if fitted) - - - Removed R
- Engine cowling - - - - - - - - - - - Open R
  . Transmission deck and engine - - Condition, cleanliness, cowling closed R
- All lower fairing panels - - - - - Closed, check

Station 2 (Cont'd)

- Port hold - - - - - - - - - - - - - - Door opening action, no loose objects. Closing, latching.
- Rear hold - - - - - - - - - - - - - - If applicable : open door, net hooked in place, close door.

- Fuel tank and system - - - - - - - - Filler plug closed, leaks. R

Station 3

- Heat shield on tail drive shaft fairing - - - - - - - - - - - Condition, attachments.
- Oil leaks - - - - - - - - - - - - - - No oil under scuppers.
- Tail boom and TGB fairings - - - Security (Dzus fasteners locked).
- Tail Rotor Gear Box - - - - - - - - Oil level
- Tail unit - - - - - - - - - - - - - - Security.
- TRH - - - - - - - - - - - - - - - - - - Condition. R

Station 4

- Heat shield on tail drive shaft fairing - - - - - - - - - - - Condition, attachments.
- Tail rotor blades - - - - - - - - - Condition of skin, no impact (dents, etc), laminated stops (separation).
- TGB and Tail boom fairings - - - Security (Dzus fasteners locked).
- Tail rotor guard (if fitted) - - Security, condition. R

Station 5

- Starboard hold - - - - - - - - - - If necessary : open door, check no loose objects, connection battery, close door, check. R
- Landing gear (crossmembers, skids, wear resistant plates) - - Security - visual check.
- All lower fairing panels - - - - Closed, check.
- External power receptacle door - Closed, check.
- MGB cowling - - - - - - - - - - - - Check engine oil level (steps). Foreign objects on transmission deck. Close cowling, check.
- Hydraulic Unit/System - - - - - - Check hyd. reservoir fluid level

RR 2C

The paragraph : 2 INTERNAL CHECKS

The check
-Fuel shut-off control -- Forward position, snap wire fitted

is replaced by :
-Fuel shut-off control --Forward position, plastic guard or snap wire fitted

The paragraph : 3 CHECKS BEFORE STARTING THE ENGINE

The check
-Fuel shut-off lever lockwired -- Forward

is replaced by :
-Fuel shut-off lever --- Forward, safety device in place

2 INTERNAL CHECKS

- Cabin - - - - - - - - - - - - - - - Clean
- Fire extinguisher - - - - - - - - - Fitted
- Fuses - - - - - - - - - - - - - - - Fitted
- Objects carried - - - - - - - - - - Stowed
- Door jettison - - - - - - - - - - - Checked
- Controls : R
  . Collective pitch control and R
  yaw pedals - - - - - - - - - - - Free travel R
  . Rotor brake control - - - - - - - Free movement R
- Fuel shut-off control - - - - - - - Forward position, snap wire fitted R

NOTE : The fuel flow control on the collective grip must not be operated when the aircraft electrical system is switched off.

3 CHECKS BEFORE STARTING THE ENGINE

Determine aircraft performance limits for the expected flying conditions (Refer to "PERFORMANCE" SECTION).
Ensure that weight and C.G. limits are observed.
In the cross-hatched zone of the C of G graph in SECTION 2, comply with R
particular VNE limitation. R
For a standard aircraft, this zone corresponds to a single pilot alone R
or one pilot with a passenger in the rear (For special loading R
configurations, refer to the aircraft weight sheet and SECTION 6). R

Carry out the following checks :

- Seats and control pedals - - - - - - - - - - - Adjusted
- Seat belts - - - - - - - - - - - - - - - - - - Fastened

NOTE : Check particularly that the copilot seat belt is fastened when this seat is not occupied.

- Battery and Generator in circuit - - - - - - - Switches "ON"
  . Lights on with a/c battery power :
  HYDR, GENE, MGB P, PITOT, ENG.P, FUEL.P, HORN,
  . Lights on with external power :
  same light as above plus BATT
- Battery voltage - - - - - - - - - - - - - - - Checked

- Press the HYD TEST push-button for approx. 2 seconds to depressurize the yaw hydraulic accumulator in order to center the yaw pedals
- Collective pitch lever, yaw pedals - - - - - - Freedom of travel
- Cyclic pitch control stick - - - - - - - - - - Neutral
- Collective pitch control lever - - - - - - - - Locked in low pitch
- Cyclic stick friction lock - - - - - - - - - - Adjusted
- Collective lever friction lock - - - - - - - - Adjusted
- Rotor brake released - - - - - - - - - - - - - Forward safety guard removed
- Fuel shut-off lever lockwired - - - - - - - - Forward
- Emergency rotary throttle control - - - - - - In flight notch, with flight stop in position.
- AUTO/MAN selector - - - - - - - - - - - - - - AUTO
- Starting selector - - - - - - - - - - - - - - OFF (switch guard down)

R

- TEST LIGHT push-button (on interseat console)- engaged
  . Warning lights on Caution Advisory Panel
    and instrument panel - - - - - - - - - - - - lit
  . Target and software identification number displayed on both screens
- TEST FIRE push-button (on interseat console) - engaged
  . Ignition of ENG FIRE warning light
- On VEMD
  . Engine oil temperature and pressure - - - - displayed
  . Fuel gauge - - - - - - - - - - - - - - - - - quantity

- Hydraulic pressure - - - - - - - - - - - - - - ON
- Heating system*, demister, air
  conditioner* - - - - - - - - - - - - - - - - - OFF
- Gyroscopic instruments - - - - - - - - - - - - ON

4 STARTING

- GOV (red and amber) warning lights - - - - - - - - - OUT

- Switch on the booster pump - - - - - - - - - - - - - On console
  . Check that the blue indicator light is on (on the instrument panel).

- Starting selector - - - - - - - - - - - - - - - - - ON
  (for outside air temperatures below -20°C, refer to SUP.04).

  . Check that Ng increases.
  . Check that t4 remains below its limit.
  . Check that the rotor is turning.
  . Check that the engine oil pressure increases.
  . Check that the following Warning Caution Advisory Panel
    lights go out :

    - P MOT (ENG.P) (should be out at 70 % Ng)
    - P BTP (MGB.P)
    - HYDR.

  NOTE : On the ground, to obtain zero thrust at the tail rotor, it is R
  necessary to push the LH pedal over 2 cm approx. (0.8 in). R

- Engage the horn, the HORN light should extinguish.
  . Check aural warning operates at approximately 360 rpm
  . Check that NR is in the green zone of the indicator, near
    the lower limit.

- Lower the switch guard on the starter switch.

- Position the rotor brake safety device.

- Disconnect external power, if used
  . Check : Warning-Caution-Advisory Panel GEN and BAT
    lights off.

- Switch on PITOT heating on pedestal panel.
  . Check that the PITOT light go out

* optional

R

RC B

4 STARTING

On completion of the operation :

. Check that the engine oil pressure increases.

IF Ng stops increasing (or increases very slowly) (Ng $\simeq$ 20 to 35 % and t4 $\simeq$ 600°C), apply the following procedure :

- Disengage the flight notch on the rotary handle and lightly increase the fuel flow.

  CAUTION : EXCEEDING THE STIFF POINT CAUSED BY THE FLIGHT NOTCH (BALL) CAN RESULT IN AN EXCESSIVE INCREASE IN THE FUEL FLOW (RISK OF EXCEEDING t4 LIMITATION). GREAT CARE MUST THEREFORE BE EXERTED IN PERFORMING THIS ACTION TO COMPLY WITH THE TRANSIENT t4 LIMITATION (SECTION 2.1 § 12.2) : NEVER TIGHTEN THE GRIP FRICTION CONTROL.

- When Ng reaches 50 %, pull the handle back to the flight notch.

  CAUTION : NOTE THE DIRECTION OF ROTATION OF THE HANDLE.

- Check :

  . Flight notch engaged - - - - - - - - - - - - Locked
  . GOV and TWT GRIP captions - - - - - - - - - - Extinguished

- Resume the automatic starting procedure.

CAUTION : THIS PAGE MUST ONLY BE REMOVED FROM THE MANUAL AFTER INCORPORATION OF MOD. TU 27C.

RR 1A

Paragraph : 4 STARTING

Comple the starting procedure as follows :

NOTE 2 : On the ground, to obtain zero thrust at the tail rotor, it is necessary to push the LH pedal over 2 cm approx.

RR 2C

The paragraph : 2 INTERNAL CHECKS

The check
-Fuel shut-off control -- Forward position, snap wire fitted

is replaced by :
-Fuel shut-off control --Forward position, plastic guard or snap wire fitted

The paragraph : 3 CHECKS BEFORE STARTING THE ENGINE

The check
-Fuel shut-off lever lockwired -- Forward

is replaced by :
-Fuel shut-off lever -- Forward, safety device in place

- Booster pump selected - - - - - - - - - - - - - - - - OFF
  . PUMP and FUEL P captions - - - - - - - - - - - - - Extinguished

- Check :
  . All warning and caution lights off.
  . Electrical system voltage and current.
  . Engine oil pressure.

- Switch on/engage all necessary systems (VHF, lights, windshield wiper*, etc)

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

- Carry out a hydraulic accumulator test :
  . Check : collective pitch - locked.
  . Cut off hydraulic pressure by actuating the test push-button - On console
  . Check that the HYDR light illuminates and sounds GONG
  . Move the cyclic stick 2 or 3 times along both axes separately on ±10 % of total travel, check for hydraulic assistance by absence of control load.
  . Press the test push-button to restore hydraulic pressure - On console
    Check that HYDR light goes out.

- Carry out a hydraulic pressure isolation check :
  . Isolate hydraulic pressure by actuating the switch on the collective pitch lever : the HYDR light illuminates and control load is felt immediately, except on yaw pedals, where control load should remain low because of load-compensating servo.
  . Restore hydraulic pressure using the switch : the HYD light goes out after 2 to 3 s.

NOTE 1 : In strong wind, apply a little forward cyclic.

NOTE 2 : If the starting cycle has to be aborted, return the start switch to the closed position, and switch off the fuel pump and the generator.

* Optional

5 CHECKS BEFORE TAKE-OFF

- Doors - Closed

- Navigation *- - - - - - - - - - - - - - - - - - -]
- Radio navigation * - - - - - - - - - - - - - - - -] Tests, correct operation
- Radio communication * - - - - - - - - - - - - - -]

- Collective and cyclic friction clamps - - - - - Adjust as required

  NOTE : Sufficient friction must be applied to the collective and cyclic so that the controls do not move without specific pilot action.

- Pressure and temperatures - - - - - - - - - - - - Correct
- All warning and caution lights - - - - - - - - - Out

CAUTION : P2 BLEED IS PROHIBITED BEYOND MAXIMUM CONTINUOUS POWER RATING (Ng/t4).

6 TAKEOFF

Take off by gradually increasing the collective pitch and maintain hover, head into wind, at a height of about 5 ft (1.5m).
Check that the engine and transmission monitoring instruments are within their normal operating ranges.
For transition from hover, increase speed without increasing the power demand (power required for hover IGE) and without climbing until IAS is 40 kt (74 km/h).

NOTE : The bleed valve flag disappears when the valve closes.
The bleed valve is normally open when the engine is shut down, during starting and at low power.

7 CLIMB

- Keep the same power and climb, while avoiding entering the height/airspeed diagram.

- Above 100 ft (30 m) select max. continuous power and optimum climbing speed of (Vy) : IAS = 65 kt (120 km/h - 1 kt/1000 ft). R

* Optional

R

8 CRUISING FLIGHT, MANOEUVRES

8.1 Cruising Flight

- For fast cruise apply max continuous power.

  In the cross-hatched zone of the C of G graph in SECTION 2, comply with particular VNE limitation. R R

8.2 Manoeuvres

- In turns, the maximum load factor is indicated by "transparency" of the servo-controls, and is therefore not dangerous.
- In maximum power configuration, it is advisable to decrease collective pitch slightly before initiating a turn, as in this manoeuvre power requirement is increased.
- In hover, avoid rotation faster than 6 seconds for one full rotation.

8.3 Flight with doors open

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

9 APPROACH AND LANDING

9.1 Approach

- Final approach should be made into the wind at a low sink rate and recommended airspeed of 65 kt (120 km/h).

9.2 Landing

CAUTION : P2 BLEED IS PROHIBITED BEYOND MAXIMUM CONTINUOUS POWER RATING (Ng/t4).

From hover, reduce collective pitch very gradually until initial touch-down is made, then cancel collective pitch completely.

CAUTION : WHEN LANDING ON A SLOPE, RETURN THE CYCLIC CONTROL STICK TO NEUTRAL BEFORE FINAL CANCELLATION OF COLLECTIVE PITCH.

10 AFTER LANDING

Engine and Rotor shutdown

- Switch off all unnecessary power-consuming systems.
- Switch off the generator and all switches.
- Wait 30 seconds then position the start selector on OFF.
- Fully apply the rotor brake when NR is equal to or less than :
  . 140 rpm normal NR,
  . 170 rpm maximum NR (in high wind conditions).
- When the rotors are completely stopped : press the HYD test push-button for 1 to 2 s, then release, in order to :
  . discharge the hydraulic accumulator,
  . re-centralise the yaw pedals if necessary.
- VEMD flight report :
  On engine shutdown, the lower VEMD screen displays the "flight report":
  . Engine start number,
  . Operating time (counted from Ng > 60% until Ng < 50%),
  . Number of gas generator cycles performed during the flight and total number of cycles,
  . Number of free turbine cycles performed during the flight and total number of cycles,
  . Check that the partial cycles figure is not zero and that it is displayed in white.

11 TURNAROUND CHECK (TA) R

The turnaround check consists in : R

- Checking MGB, TGB and engine fluid levels. R
- Check that there is no flow from the general drain for the engine R
  platform. R
- A rapid check of the main and tail rotor blade skins. R
- Checking that all loads are securely tied down, baggage compartment R
  doors and cowlings are correctly locked. R
- Every 15 flight hours maximum : R
  . Check the engine forward and aft reduction gear magnetic plugs R
  (without electrical indication). R

Should the turnaround time be prolonged, short-term picketing of the R
aircraft is recommended : blanking plugs, covers fitted, even blade socks R
and poles in winds greater than 40 kt. R

CAUTION : IN THIS CASE, ALL PICKETING AND HANDLING TOOLING MUST BE REMOVED R
BEFORE THE NEXT FLIGHT. R

12 USE OF HEATING/DEMISTING SYSTEM

The heating/demisting system may be used without restriction up to Maximum Continuous Power rating - beyond that its use is prohibited.

SECTION 4.2

ENGINE POWER CHECK

1 IN-FLIGHT CHECK PROCEDURE

- Stabilize level flight preferably at an altitude where turbulence is zero or very low.

CAUTION : THESE CHECKS ARE ONLY VALID WITH P2 BLEED SELECTED OFF (ELECTRICAL CONSUMPTION LESS THAN 50A).

- Select a power setting close to max continuous power on the FLI. These bleed valve flag should not be visible under these conditions, otherwise increase altitude.

1.1 VEMD procedure

The torque margin and t4 checks are performed automatically by the VEMD. Select the "Engine Power Check" page using the SCROLL button (VEMD on collective pitch).
The result and the calculation parameters required are displayed on the VEMD lower display, record the results.

The values provided by the VEMD can be checked against the graphs (Figures 1 and 2) (Refer to paragraph 1.2).

R

1.2 Use of the chart

- Record The following parameters : torque, Ng, t4, NR, altitude and outside air temperature.
- Use the graphs (Figures 1 and 2) as indicated by the direction of the arrows.

  . Torque margin check :
  Determine the position of point P on Figure 1.
  The engine power is correct if point P is in the "correct" area in the graph.

  . t4 margin check :
  Determine the position of point T in Figure 2.
  The thermodynamic loading is correct if point T is in the "correct" area in the graph.

NOTE : If in doubt as to condition of the engine, repeat the check to eliminate any error of reading.

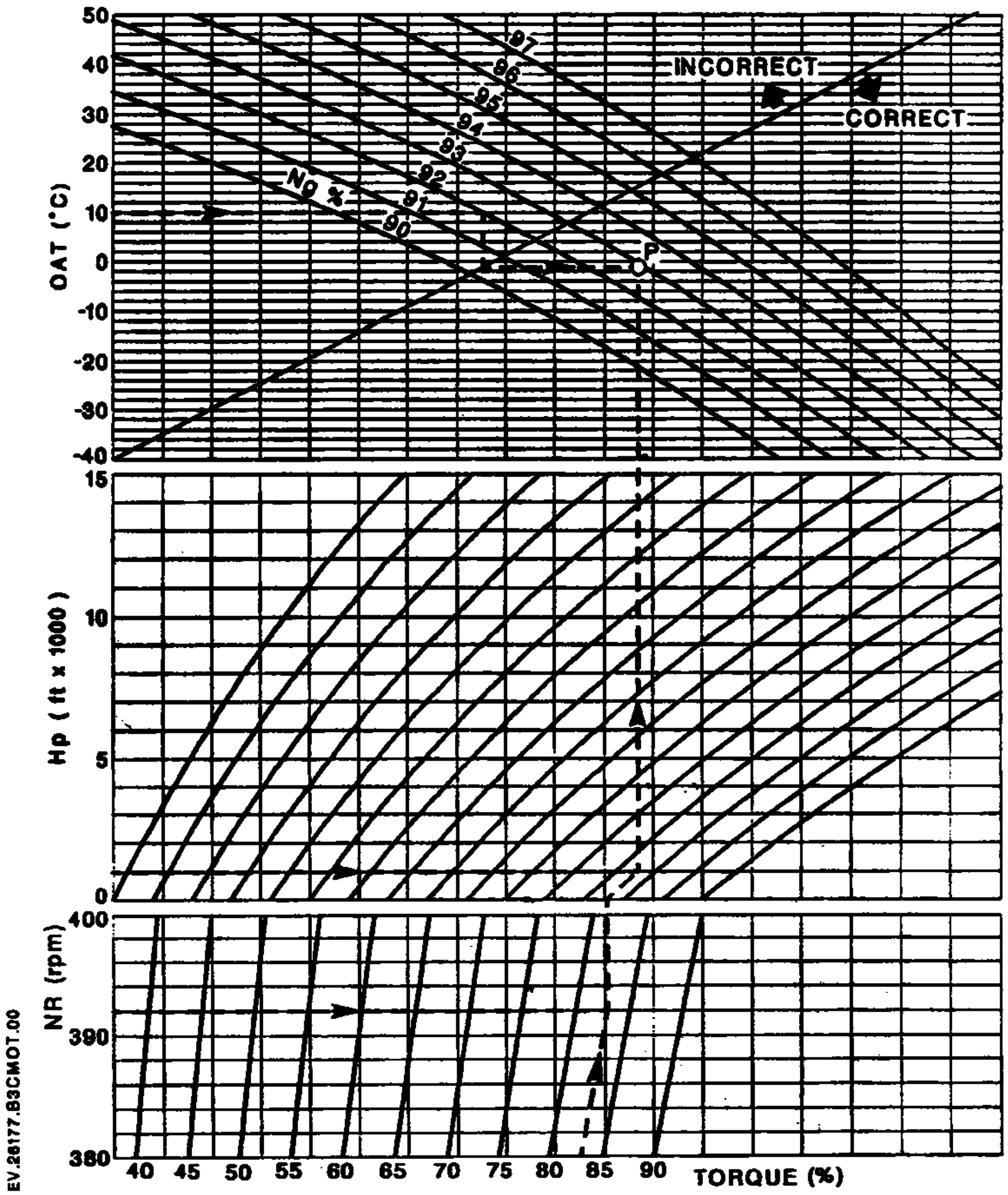
2 GROUND CHECK PROCEDURE

The engine power check cannot be carried out at high power level on the ground with a high-power single-engine helicopter of this type.
Before forward flight in a 5 ft hover, increase the collective pitch enough to ensure a momentary Ng increase of at least 1 %.
After having reached a safe altitude, a normal in flight power assurance check may be performed.

CONDITIONS

-
-
-
-
-
-
-

TORQUE MARGIN CHECK



EXAMPLE : OAT = 10°C Hp = 1000 ft NR = 392 rpm
Ng = 92% TORQUE = 83% => P is in the "correct" zone

Figure 1

SECTION 4

NORMAL PROCEDURES

CONTENTS

		Pages
4.1	OPERATING PROCEDURES	
1	EXTERNAL CHECKS	1
2	INTERNAL CHECKS	3
3	CHECKS BEFORE STARTING THE ENGINE	3
4	STARTING	4
5	CHECKS BEFORE TAKEOFF	6
6	TAKEOFF	6
7	CLIMBING	6
8	CRUISING FLIGHT AND MANOEUVRES	7
9	APPROACH AND LANDING	7
10	AFTER LANDING	8
11	TURNAROUND CHECK (TA)	8
12	USE OF THE HEATING / DEMISTING SYSTEM	8
4.2	ENGINE POWER CHECK	
1	IN-FLIGHT CHECK PROCEDURES	1
2	GROUND CHECK PROCEDURES	2

CONDITIONS

-
-
-
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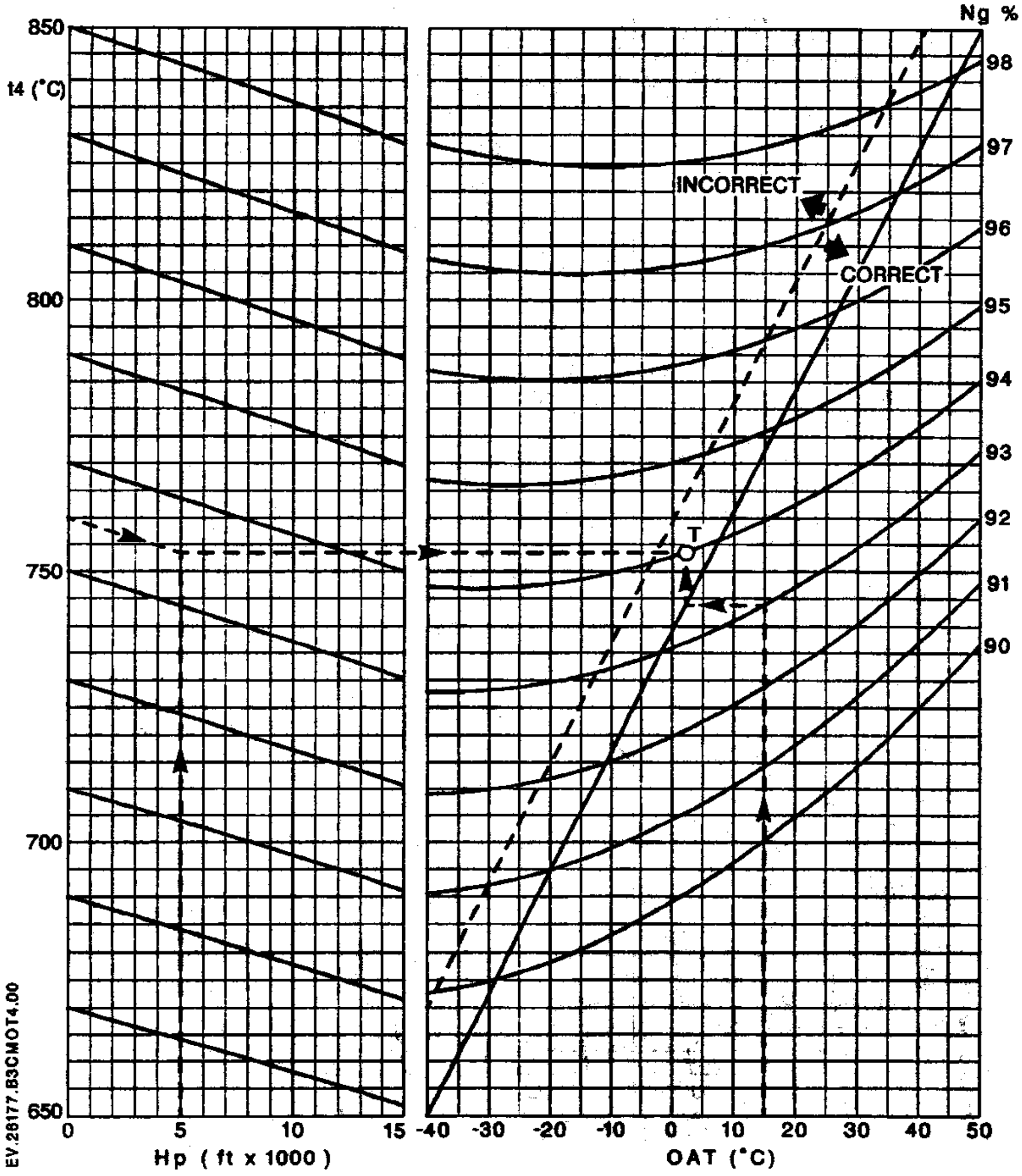
-
-

T4 MARGIN CHECK



EXAMPLE : Hp = 5000 ft OAT = 15°C ⇒ **T** is in the "correct" zone
T4 = 760°C Ng = 93%

Figure 2

SECTION 5

REGULATORY PERFORMANCE DATA

CONTENTS

		Pages
1	INTRODUCTION	1
2	SUBSTANTIATED WIND ENVELOPE	1
3	AIRSPEED CALIBRATION	1
4	AIRSPEED - HEIGHT ENVELOPE	2
5	IGE HOVERING FLIGHT PERFORMANCE	4
6	OGE HOVERING FLIGHT PERFORMANCE	6
7	RATES OF CLIMB	9
8	NOISE LEVELS	10

SECTION 5

REGULATORY PERFORMANCE DATA

1 INTRODUCTION

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

2 SUBSTANTIATED WIND ENVELOPE

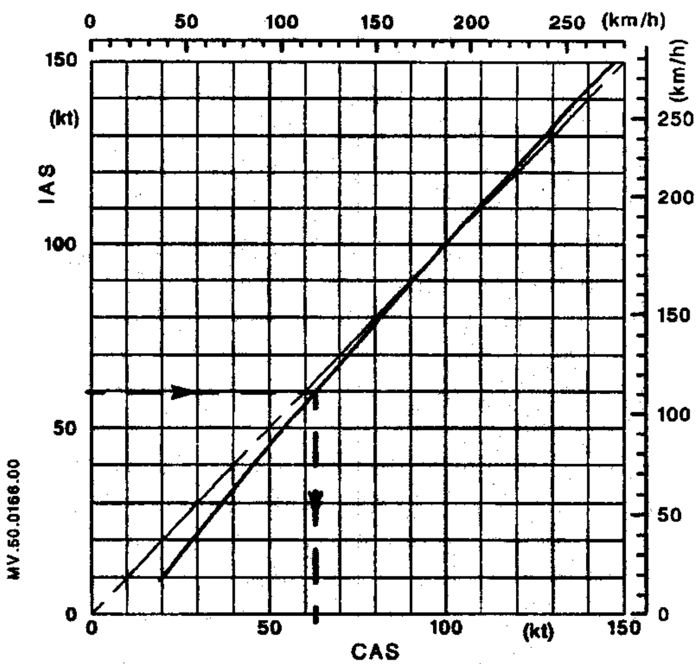
2.1 Wind envelope for spinning and stopping the rotors

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

2.2 Wind envelope in hover

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

3 AIRSPEED CALIBRATION



4 AIRSPEED-HEIGHT ENVELOPE

The avoidance zone (Z) is defined by four points : A, B, C, D.

Determining fixed Points A and B

- Point A
  Point A is located at a height of 8 ft (2.5 m) at zero airspeed.

- Point B
  Point B is located at a height of 25 ft (9 m) for an airspeed of 40 knots (74 km/h).

Determining variable Points C and D

- Point C
  Point C is defined by :
  . a constant height of 100 ft (30 m)
  . a variable airspeed depending on the altitude and on the aircraft weight as determined by line (C).

- Point D
  Point D is defined by :
  . a constant zero airspeed
  . a variable height depending on the altitude and on the aircraft weight as determined by line (D).

CONDITIONS

HEIGHT / VELOCITY ENVELOPE

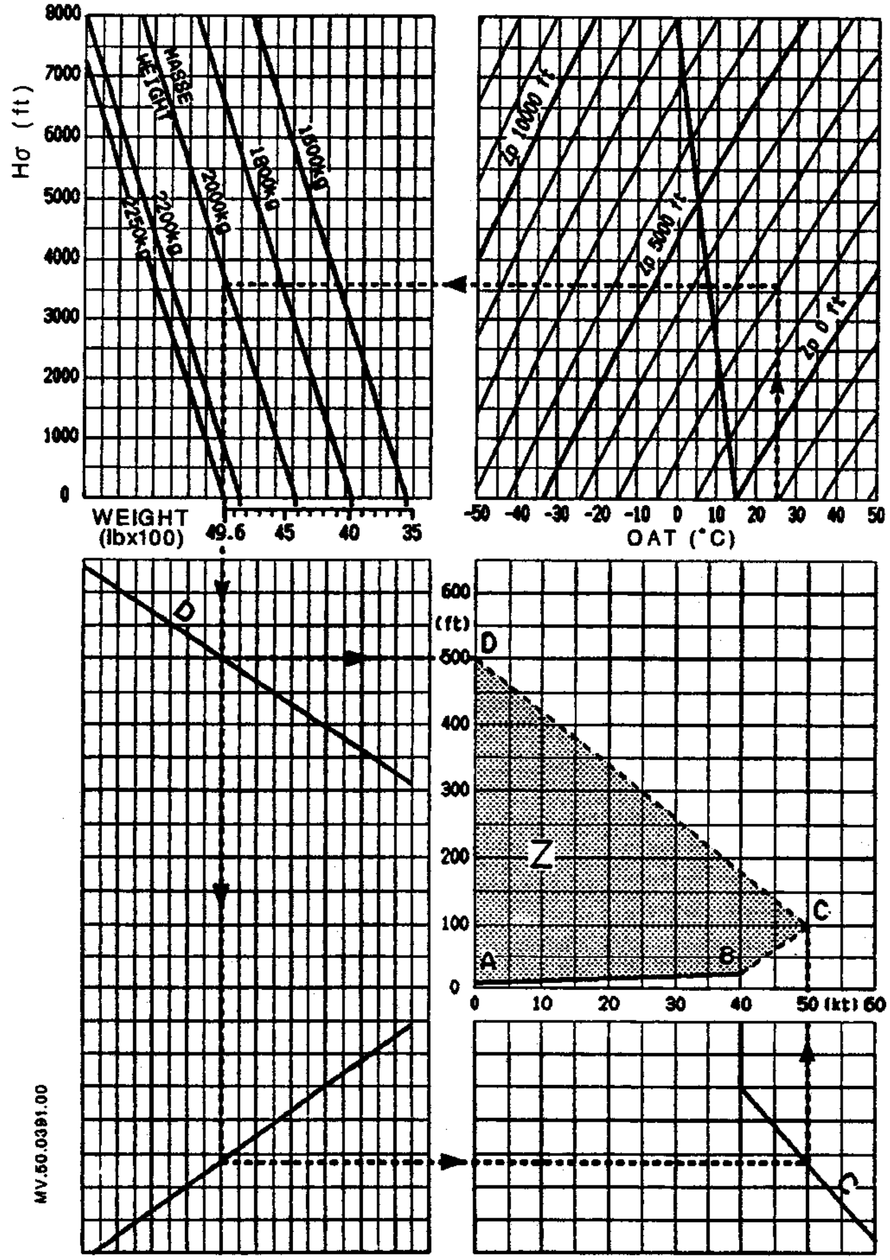


Figure 1

5 IGE HOVERING FLIGHT PERFORMANCE

Conditions :

- Zero wind.
- No P2 bleed.
- Electrical consumption less than or equal to 50 A. If the electrical consumption is greater than 50 A, the performance must be reduced by 50 kg.
- $0 \leq Zp \leq 23\ 000$ ft.

NOTE 1 : This performance is provided on the VEMD performance page. Values corresponding to Zp/Θ torques beyond the certified flight envelope must not be taken into account (refer to SECTION 2.1 § 7).

NOTE 2 : The IGE weight is calculated using the current altitude and temperatures.

CONDITIONS

IGE HOVERING FLIGHT PERFORMANCE

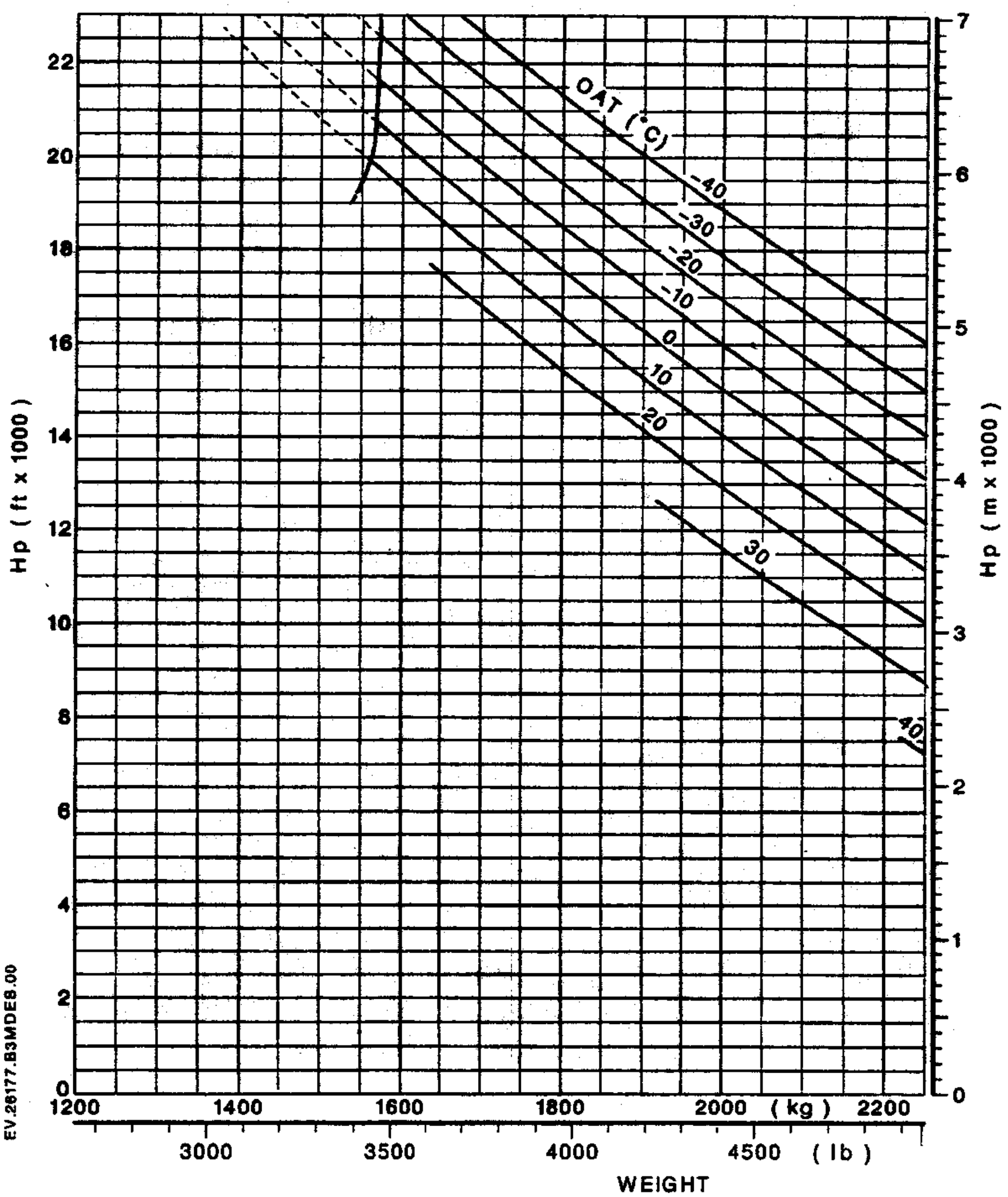


Figure 2

6 OGE HOVERING FLIGHT PERFORMANCE

Conditions

- Zero wind.
- No P2 bleed.
- Electrical consumption less than or equal to 50 A.
  If the electrical consumption is greater than 50 A, the performance must be reduced by 50 kg.
- 0 ≤ Zp ≤ 23 000 ft.

NOTE 1 : This performance is provided on the VEMD performance page. Values corresponding to Zp/Θ torques beyond the certified flight envelope must not be taken into account (refer to SECTION 2.1 § 7).

NOTE 2 : The OGE weight is calculated using the current altitude and temperatures.

NOTE 3 : Weights beyond 2250 kg must only be used with jettisonable loads.

CONDITIONS

OGE HOVERING FLIGHT PERFORMANCE

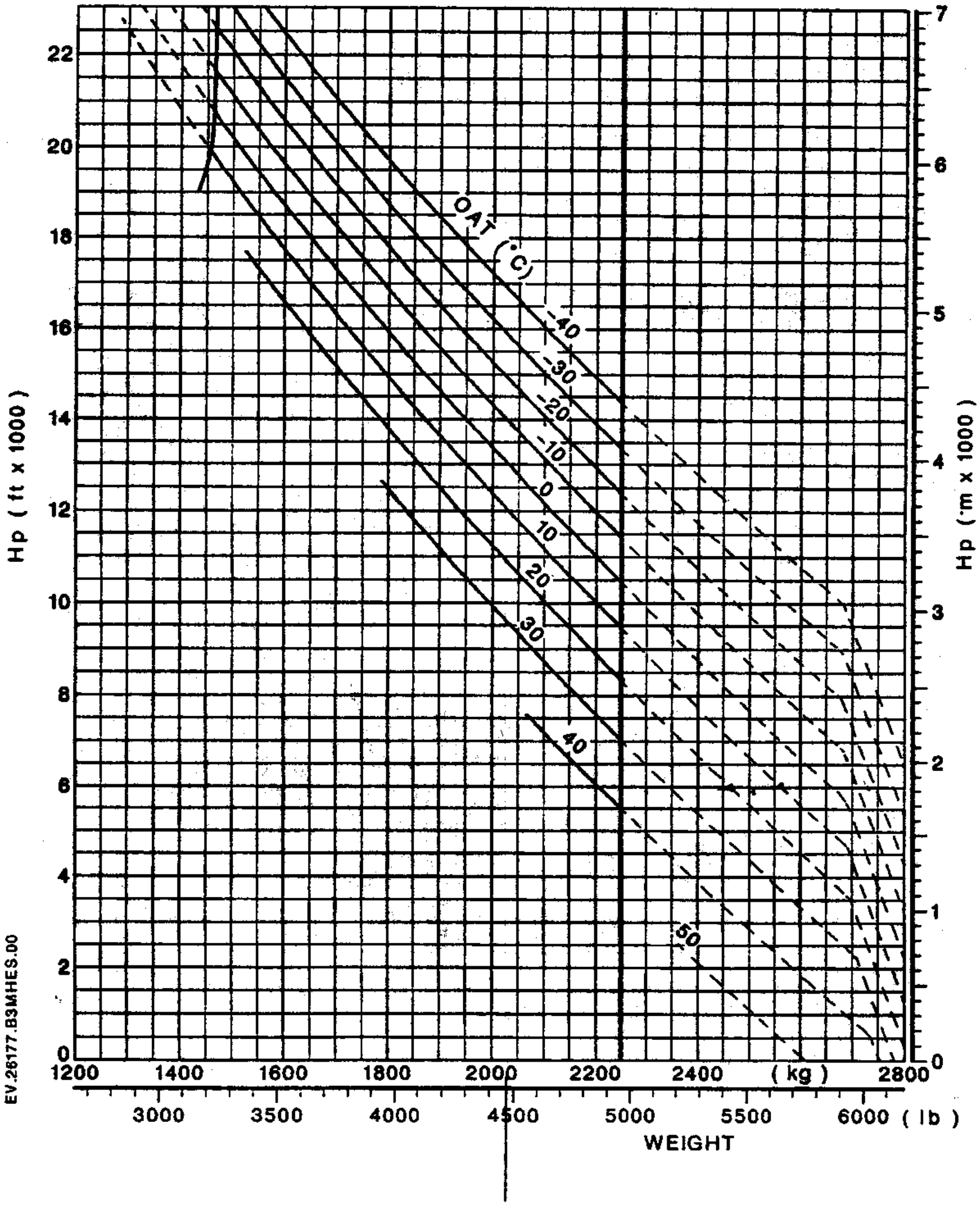
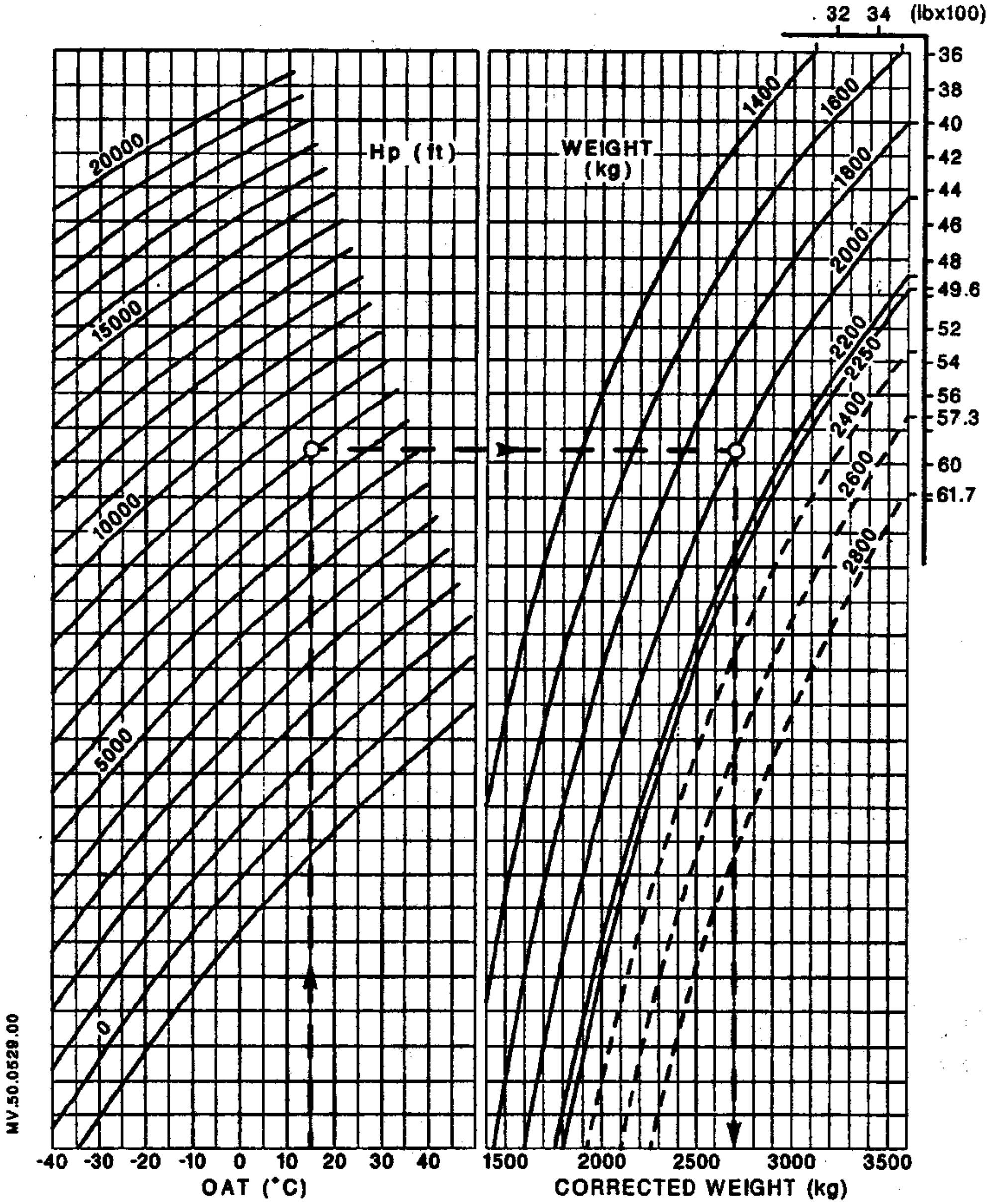


Figure 3

CONDITIONS

- ALL UP WEIGHT LIMITATION WITH INTERNAL LOADS : 2250 kg (4961 lb)
-
-
-
-
-

CORRECTED WEIGHT FOR DETERMINING THE Vz VALUES (using the graph opposite)



EXAMPLE : OAT = 15°C ACTUAL WEIGHT = 2000 kg

Hp = 8000 ft ⇒ CORRECTED WEIGHT = 2700 kg

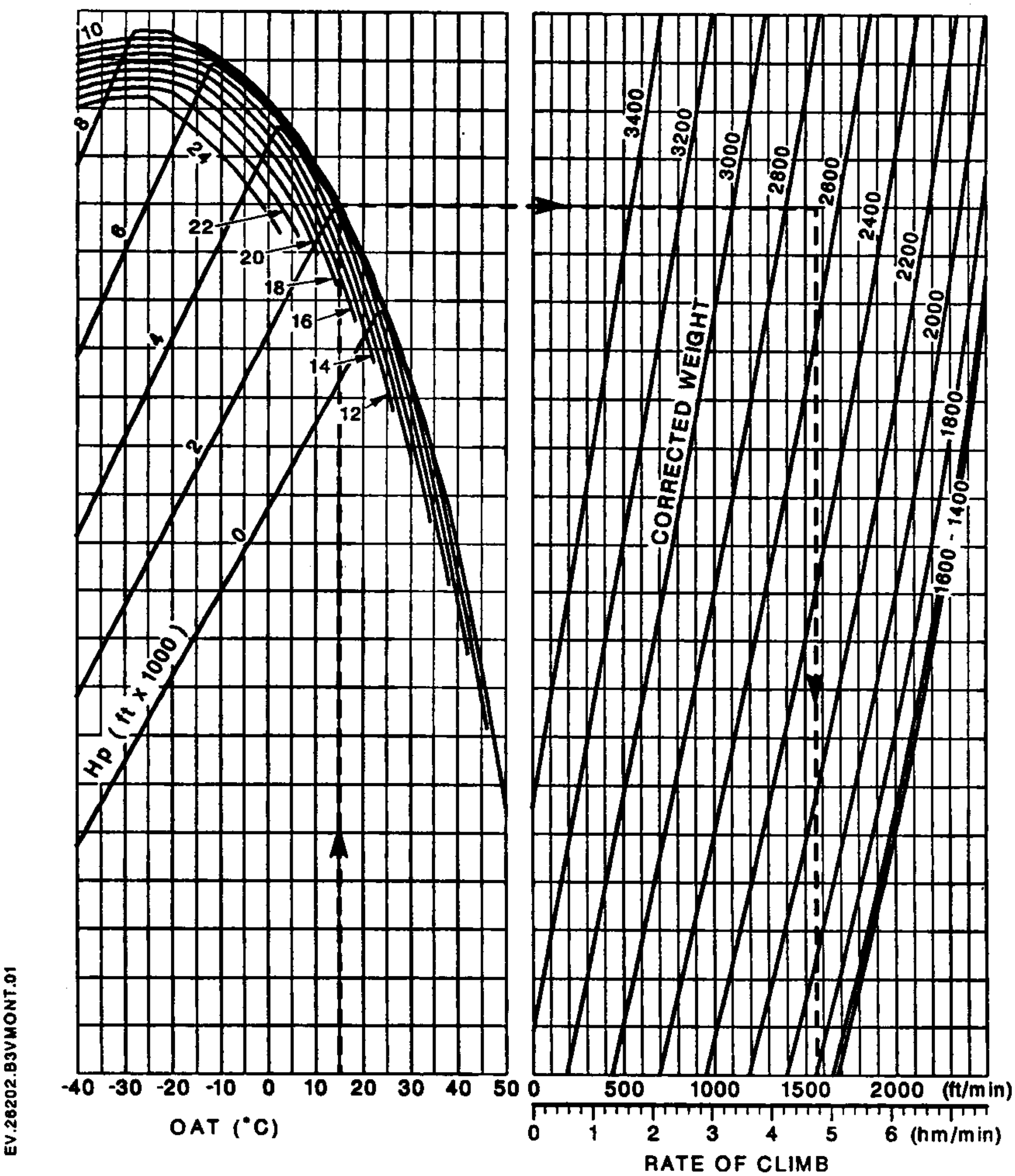
Figure 4

7 RATE OF CLIMB

CONDITIONS

- NO P2 AIR BLEED
- WITH ELECTRICAL CONSUMPTION ≤ 50 A
- FOR ELECTRICAL CONSUMPTION > 50 A PERFORMANCES ARE DECREASED 70 ft/min.
- NOTE : WITH P2 BLEED AT T4 LIMIT, REDUCE PERFORMANCE DATA BY 250 ft/min.

RATE OF CLIMB



EXAMPLE : OAT = 15°C Hp = 8000 ft

CORRECTED WEIGHT = 2700 kg => RATE OF CLIMB = 1560 ft/min

Figure 5

8 NOISE LEVELS

The noise levels determined under the conditions specified in Chapter 11 of Appendix 16 of the ICAO are as follows : R R

Measurement as per ICAO Appendix 16 dB(A)	ICAO Limit dB(A)
84.6	86.5

R R R R

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FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

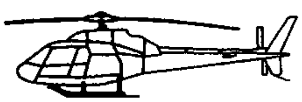
LIST OF SUPPLEMENTS

INCOMPATIBILITY OF UTILIZATION

EFFECT ON PERFORMANCE DATA

IMPORTANT NOTE

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



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NOTE

Pages SUP.0.P1 page 3, SUP.0.P3 page 1 and SUP.0.P4 page 1 concern the whole of the Supplements assigned to the helicopter mentioned on the title pages.

office

REVISION TO AIRCRAFT PUBLICATION : 350 B3

PUBLICATION CONCERNED : FLIGHT MANUAL SUPPLEMENTS

CERTIFICATION CODE : C

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

SUP. N°	TITLE	REVISION N°	DATE-CODE
0	LIST OF SUPPLEMENTS	2	99-37
56	ABSEILING INSTALLATION	0	99-37

CUSTOMIZATION :

A/C : AS 350 B3 - S/N :

LIST OF ADDITIONAL APPROVED PAGES

SECTION	PAGE	DATE CODE	SECTION	PAGE	DATE CODE

THIS AIRCRAFT DOES NOT OFFER ANY PARTICULAR FEATURES REQUIRING THE CUSTOMIZATION OF THE FLIGHT MANUAL ON GREEN PAGES.

1 LIST OF SUPPLEMENTS

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

No.	DESCRIPTION	
0	OPERATIONAL AND OPTIONAL SUPPLEMENTS	
1	RESERVED	
2	RESERVED	
3	RESERVED	
4	INSTRUCTIONS FOR OPERATION IN COLD WEATHER	
5 to 10	RESERVED	
11	EXTERNAL LOAD TRANSPORT "CARGO SWING" 1160 kg (2557 lb)	
12	EXTERNAL LOAD TRANSPORT "CARGO SLING"	
13	EXTERNAL LOAD TRANSPORT "CARGO SWING" 1400 kg (3086 lb) HOOK	R
14	SAND FILTER	R
15	RESERVED	
16	SFIM 85 T 31 3-AXIS AUTOMATIC PILOT SYSTEM	
17	EMERGENCY FLOATATION GEAR	

LIST OF SUPPLEMENTS (Cont'd)

No.	DESCRIPTION
18	AIR EQUIPMENT OR BREEZE ELECTRIC HOIST 136 kg (300 lb)
19	PENDING
20	HYDRAULIC PUMP DRIVE ON MGB
21	FORWARD TWO-PLACE SEAT
22	LONG AND SHORT FOOTSTEPS
23	RESERVED
24	LOUD SPEAKER INSTALLATION
25	PENDING

R

SPECIAL SUPPLEMENTS

50	FERRY FLIGHT FUEL TANK
56	ABSEILING INSTALLATION

COMPOSITION OF CONDITIONAL REVISIONS (RC)

The Supplements contain the following pink pages except those cancelled when the conditions are complied with.

CAUTION

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

Sup.	Page	Date	Applicable before condition is met :

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

RUSH REVISIONS (RR)

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

SUPPLEMENT	No RR	PAGE	DATE CODE
SUP 11 Not applicable for CAA and ENAC Certification	1A	4*RR*	98-48
SUP 14	2A	1*RR* 2*RR*	00-07 00-07
SUP.17	1A	2*RR*	02-08
SUP.0.P4		1*RR*	02-08

SUPPLEMENT	No RR	PAGE	DATE CODE

COMPOSITION
OF RUSH REVISIONS (RR)

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

SUPPLEMENT	No RR	PAGE	DATE CODE	SUPPLEMENT	No RR	PAGE	DATE CODE
SUP.11	1A	4	98-48				
SUP.0.P4		1 *RR*	00-07				
SUP.14	2A	1 *RR* 2 *RR*	00-07 00-07				

COMPOSITION
OF RUSH REVISIONS (RR)

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

No.	SUP. - PAGE	CODE DATE	No.	SUP. - PAGE	CODE DATE

LIST OF APPROVED EFFECTIVE PAGES
DOT CERTIFICATION

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

SUPPLEMENT		PAGE	DATE	(1)	SUPPLEMENT PAGE	DATE	(1)
SUP. 0	P1	1	97-40				
SUP. 0	P1	3	97-40				
SUP. 0	P2	1	98-05				
SUP. 0	P2	2	99-45	R			
SUP. 0	P3	1	97-40				
SUP. 0	P4	1	97-40				
SUP. 0	P5	1/01	99-45	R			
SUP. 0		1	99-37				
SUP. 0		2	97-40				

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	97-40		
1	98-05		
2	99-37		
3	99-45		

NORMAL REVISION : 3
DGAC APPROVED
DATE : 16 DEC. 1999

André REVAULT

2 INCOMPATIBILITY OF UTILIZATION BETWEEN OPTIONAL EQUIPMENT ITEMS

The following list is non-exhaustive and covers only those DGAC - approved equipment items which are incompatible with one or more items.

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

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

ITEM			
15	Emergency floatation gear (SUP 17)	32* -66	R
21	Ferry flight fuel tank (SUP 50)	22 - 23 - 32 - 68	
22	External load carrying installation "CARGO SLING" (SUP12)	21 - 25 - 32 - 44 - 46 66	R
23	External load carrying installation "CARGO SWING" (SUP 11)	21 - 25 - 32 - 44 - 46 66	R
25	Air ambulance installation	22 - 23 - 32	
32	Electric hoist (SUP 18)	15*- 21 - 22 - 23 - 25 - 44 - 46 - 66	R
44	Forward two-place seat (SUP 21)	22 - 23 - 32	
46	Blind flying screens	22 - 23 - 32	
66	Abseiling Installation (SUP 56)	15 - 22 - 23 - 32	R
68	TAP kit	21	

* Hoisting remain possible when the floats are folded.

3 INFLUENCE OF OPTIONAL EQUIPMENT ITEMS ON PERFORMANCE DATA

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

3.1 Regulatory performance data

- Take-off weights

  When the installation of an optional equipment item modifies the take-off weights specified in the basic Flight Manual, the new take-off weights are provided by new charts or a penalty relative to the basic flight performance.

- Rates of climb

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

3.2 Additional performance data

- The reduced performance data are given in SECTION 10.

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FLIGHT MANUAL

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SUPPLEMENT

INSTRUCTIONS FOR OPERATION IN COLD WEATHER

IMPORTANT NOTE

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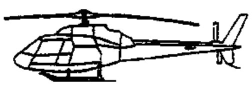

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LIST OF APPROVED EFFECTIVE PAGES
DOT CERTIFICATION

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

SUPPLEMENT		PAGE	DATE	(1)	SUPPLEMENT PAGE	DATE	(1)
SUP. 4	P1	1	97-40	N			
SUP. 4	P5	1/01	97-40	N			
SUP. 4		1	97-40	N			
SUP. 4		2	97-40	N			
SUP. 4		3	97-40	N			
SUP. 4		4	97-40	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	97-40		

NORMAL REVISION : 0
DGAC APPROVED
DATE : **24 DEC. 1997**

1 GENERAL

This supplement details all the procedures to be followed when the aircraft is used in particular climatic conditions, such as cold weather or snow.

2 GENERAL RECOMMENDATIONS

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

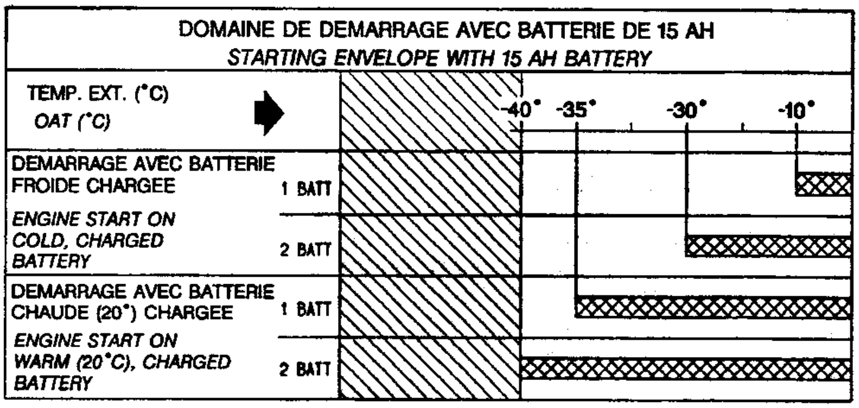
- Remove ice or snow deposits from the whole of the aircraft, particularly at hinges and movement transmitting items (main rotor, rotor mast, tail drive and tail rotor, flight controls, engine controls).
- When the aircraft has been subjected to very low temperatures, it is recommended that:
  . either regular ground runs be carried out every two hours for temperatures of about -20°C or every hour for lower temperatures.
  . or preheating of the engine, transmission assemblies and cabin be effected before take-off (although the helicopter is capable of carrying out engine start up and rotor spinning at temperatures down to -40°C) (See Daily operating checks in cold weather).

3 USE OF BATTERIES FOR STARTING

During long periods of inoperation it is recommended that the battery be stored in a warm area.

If a ground power unit is not available, start-up may be carried out using the aircraft battery or two aircraft batteries connected in parallel.

The starting envelope is related to the temperature and is indicated in the following chart.



MV.50.0404.01

4 CHECKS BEFORE FLIGHT

Independently of the inspections prescribed in the basic Flight Manual, perform the following operations and inspections :

- Main rotor blades :

  Absence of snow and ice.

- Main rotor hub and mast :

  Absence of ice on the swashplates, the scissors, the servo controls and the rotor head spring antivibrator.

- Power plant :

  . Remove the air intake cover and the exhaust nozzle blank after removing snow from the aircraft surface.

  . Remove snow and ice accretion in the vicinity of the air intake and on either side of the screen.

. It is imperative that the air intake be cleaned
Remove the air intake screen, manually and visually check for snow and ice inside the air intake duct up to the first stage of the compressor

. Inspect drains, unblanked scuppers; check for snow and ice on vent and static ports

- Tail rotor :

. Absence of ice on the TRH assembly (blades, pitch change rods...).
. Manually rotate the tail rotor so that the main rotor performs 1 turn at least, then check:
  - the swashplate rotation (rotor brake not blocked),
  - the TRH rotation,
  - the freewheel operation.

- Structure :

. Remove the cabin cover once the inspection is over, to prevent ice from forming.
. Make sure that the windshield wiper is not stuck on the canopy.

- Flight controls - Engine controls :

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

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

5 STARTING

When the outside air temperature is below -20°C, the starting procedure is amended as follows :

- Position the starting selector on IDLE (instead of ON) and keep it there until the engine oil temperature reaches 0°C. Then move the selector to ON.

6 AFTER STARTING

When nominal speed is reached, check that all warning, caution and advisory lights are off, that pressure readings are O.K. Test the hydraulic accumulators with the collective lever locked at full low pitch.

When control loads are felt, move the cyclic stick grip 3-4 cm (at the handle) to evaluate the load, then center the stick (no load) and restore pressure.

If operating loads are considered higher than at normal temperatures, move the cyclic stick 3-4 cm forward (nose-down) for 2 minutes to warm up the spherical thrust bearings.

Move the yaw pedals about 50% of their travel range on either side of the mid-position.

7 IN CASE OF ENGINE FAILURE

Following an engine failure at light weight, the stabilized rotor speed may be below the audio warning threshold : the pilot can switch off the horn using the relevant push-button.

8 AFTER LAST FLIGHT OF THE DAY

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

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FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

EXTERNAL LOAD TRANSPORT (1160 kg - 2557 lb)

"CARGO SWING"

IMPORTANT NOTE

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

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

LIST OF APPROVED EFFECTIVE PAGES
DOT CERTIFICATION

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

SUPPLEMENT		PAGE	DATE	(1)	SUPPLEMENT PAGE	DATE	(1)
SUP.11	P1	1	97-40	N			
SUP.11	P5	1/01	97-40	N			
SUP.11		1	97-40	N			
SUP.11		2	97-40	N			
SUP.11		3	97-40	N			
SUP.11		4	97-40	N			
SUP.11		5	97-40	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	97-40		

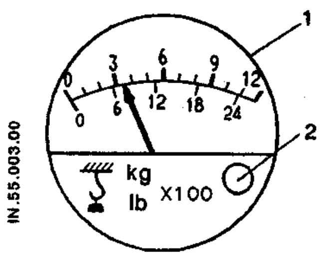
NORMAL REVISION : 0
DGAC APPROVED
DATE : **24 DEC. 1997**

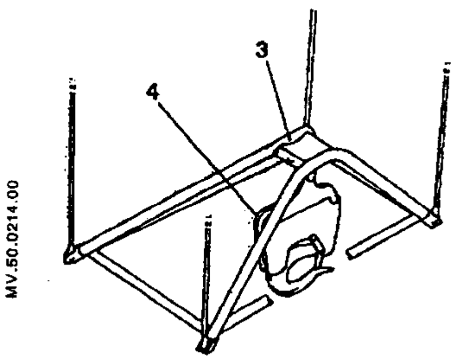
1 GENERAL

The "CARGO SWING" external load carrying installation is composed of :

- A suspended pyramid frame (3) designed to reduce swinging of the load, equipped with a release unit (4). The release unit hook can be opened electrically in normal operation and mechanically in emergency conditions.
- A control and indicating system, for the pilot, comprising :
  - . load indicator (1), on the instrument panel, with a zero setting control (2) ;
  - . an electrical system supplying power to the normal release circuit via a pushbutton, on the control console and a switch on the pilot's cyclic stick grip ;
  - . an "EMERGENCY RELEASE" (jettison) control handle mounted on the underside of the collective lever.

The load indicator electrical circuit is protected by a fuse and the normal release hook control circuit by two fuses.





2 LIMITATIONS

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

- Maximum load
  The maximum permissible slung load is 1160 kg (2557 lb).

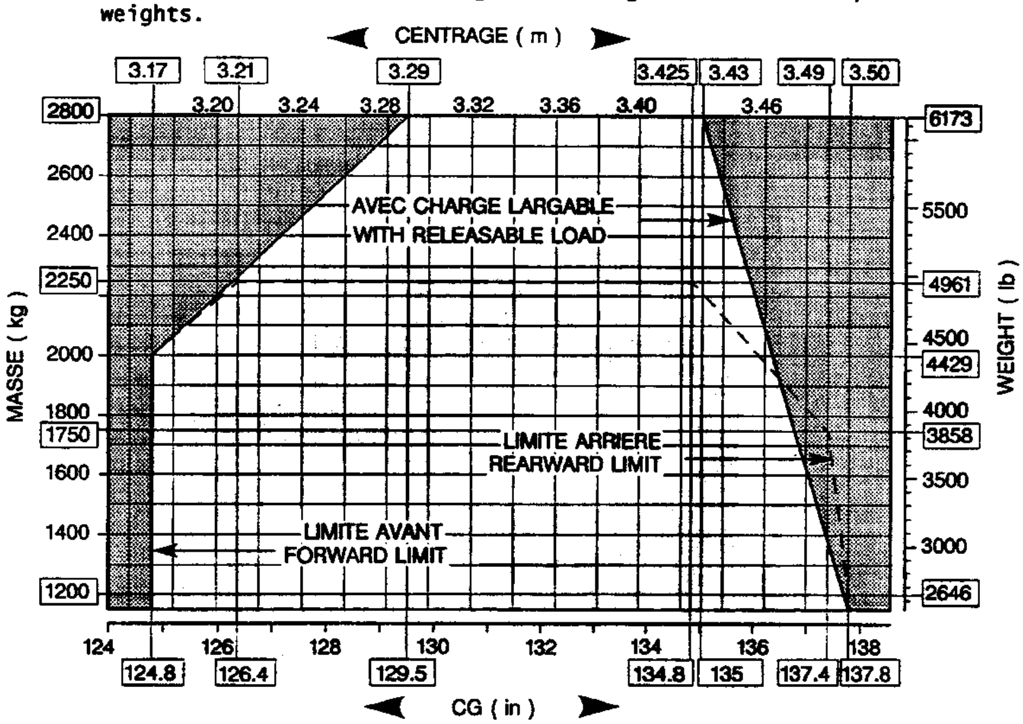
- Maximum gross weight with external load
  Maximum permissible gross weight with an external load is that at which hover O.G.E. can be held. (See Section of the basic Flight Manual).

  Maximum weight including external load : 2800 kg (6173 lb).

  CAUTION : THE MAXIMUM PERMISSIBLE WEIGHT WITHOUT EXTERNAL LOAD IS LIMITED AS SPECIFIED IN THE LIMITATIONS SECTION OF THE BASIC FLIGHT MANUAL.

- Longitudinal c.g. limits

Use chart below to define longitudinal c.g. limits with respect to weights.



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- PROHIBITION

Carrying of external passengers.

- V.N.E.

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

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

- Instruction plates

. An instruction plate in the cockpit indicates :

CARRYING OF EXTERNAL LOADS
CLASS OF APPROVED AIRCRAFT/LOAD COMBINATION B. WHEN EXTERNAL LOADS ARE CARRIED, NO PERSON MAY BE CARRIED UNLESS : - HE IS A FLIGHT CREW MEMBER ; - HE IS A FLIGHT CREW MEMBER TRAINEE ; OR - HE PERFORMS AN ESSENTIAL FUNCTION IN CONNECTION WITH THE EXTERNAL-LOAD OPERATION.

OR

EMPORT DE CHARGES EXTERNES
CLASSE DE COMBINAISONS GIRAVION-CHARGES APPROUVEE B AUCUNE PERSONNE NE PEUT ETRE TRANSPORTEE A MOINS DE : - ETRE UN DES MEMBRES DE L'EQUIPAGE. - SUIVRE UN COURS DE FORMATION EN TANT QUE MEMBRE D'EQUIPAGE. - REMPLIR UNE FONCTION ESSENTIELLE AYANT TRAIT A L'UTILISATION DU GIRAVION AVEC CHARGE EXTERIEURE.

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

3 EMERGENCY PROCEDURES

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

Engine failure with external load

- If an engine failure should occur in flight with an external load, establish autorotational flight and immediately release the load.

- If engine failure occurs whilst ground personnel are hooking up the load, the pilot should move away to the right, applying collective pitch to hold the aircraft up. Ground personnel are to be forewarned that in the event of engine failure they are to move away to the left.

4 NORMAL PROCEDURES

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

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

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

- Check of the installation

  On the ground, before carrying out a load transport operation :

  . Check that the hook opens correctly both in normal and jettison control modes.
  . Zero the load indicator.
  . In flight, press the "SLING" pushbutton in order to set the system in readiness for normal release of the load which will be accomplished by actuating the rocker-switch on the cyclic stick control grip.

- Takeoff

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

- Manoeuvres

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

RR 1A

Paragraph 4 NORMAL PROCEDURE

In the subparagraph Check of the installation after :

"Check that the hook ... control modes"

text added as follows :

. Check the free rotation of the retaining latch and correct operation of its return spring.

- <u>Landing</u>

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

- <u>Release</u>

  To release the load, actuate the switch on the cyclic stick.

  <u>Check that the load is effectively released</u>.

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

5 <u>PERFORMANCE</u>

The Performance Data given in the basic Flight Manual apply.

The performance curves for weights in excess of 2250 kg (4961 lb) are plotted in dotted line on the performance charts contained in the PERFORMANCE Section of the basic Flight Manual.

eurocopter

FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

EXTERNAL LOAD TRANSPORT "CARGO SLING"

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or applicable flight manual supplements.

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

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

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SUP.12		4	97-40	N				

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	97-40		

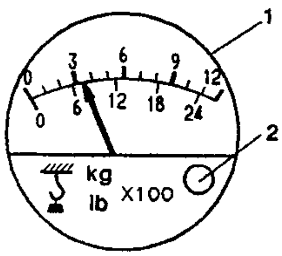
NORMAL REVISION : 0
DGAC APPROVED
DATE : 24 DEC. 1997

1 GENERAL

The external load-carrying installation includes :

- A release unit featuring electrical control of hook release in normal operation and mechanical opening in emergency.
- A control and indicating system, for the pilot, comprising :
  . load indicator (1), with a zero setting control (2).
  . an electrical system supplying power to the normal release circuit via a press-key on the control console and a switch on the pilot's cyclic stick grip.
  . an "EMERGENCY RELEASE" (jettison) control handle mounted on the underside of the pilot's collective lever.

The load indicator electrical circuit is protected by a fuse and the normal release hook control circuit by two fuses.



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2 LIMITATIONS

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

- Maximum load

  The maximum permissible sling load is 750 kg (1660 lb).

- Maximum gross weight with external load

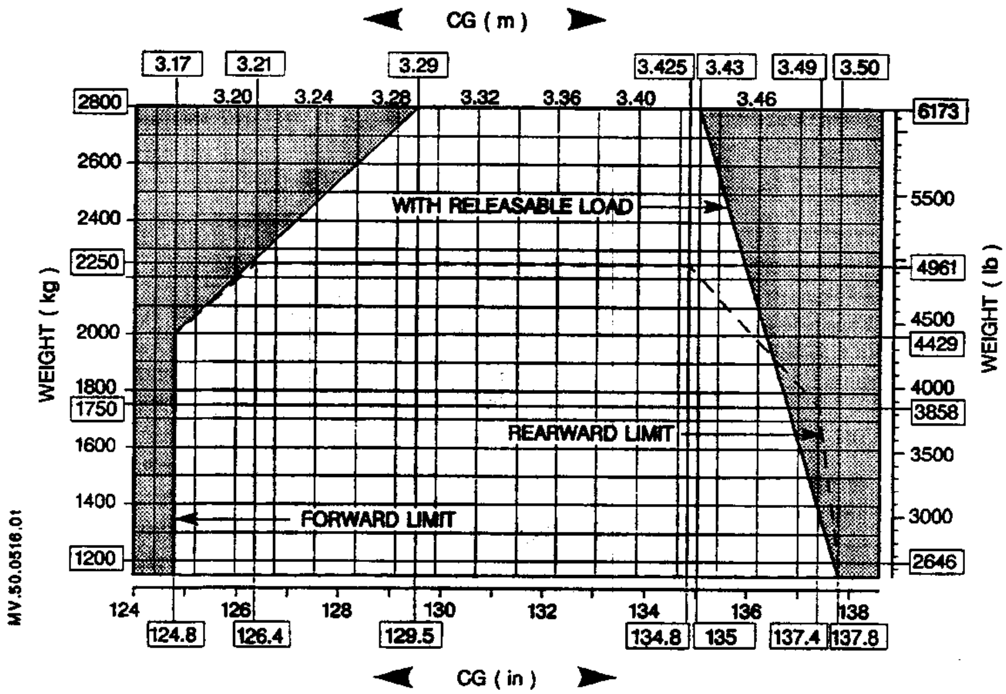
  Maximum permissible gross weight with an external load is that at which hover O.G.E. can be held. (See PERFORMANCE Section of the basic Flight Manual).

  Maximum weight including external load : 2800 kg (6173 lb).

  CAUTION : MAXIMUM WEIGHT WITHOUT EXTERNAL LOAD IS LIMITED AS SPECIFIED IN THE LIMITATIONS SECTION OF THE BASIC FLIGHT MANUAL.

- Longitudinal c.g. limits

  Use graph below to define longitudinal c.g. limits with respect to weights.



- Prohibition

  Carrying of external passengers.

- V.N.E.

  Absolute maximum permissible speed with a load on the hook is 80 knots (92 MPH) (148 km/h).
  Particular care must be exercised when bulky loads are being carried on the sling.

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

- Instruction plates

  . An instruction plate in the cockpit indicates :

CARRYING OF EXTERNAL LOADS
CLASS OF APPROVED AIRCRAFT/LOAD COMBINATION B. WHEN EXTERNAL LOADS ARE CARRIED, NO PERSON MAY BE CARRIED UNLESS : - HE IS A FLIGHT CREW MEMBER ; - HE IS A FLIGHT CREW MEMBER TRAINEE ; OR - HE PERFORMS AN ESSENTIAL FUNCTION IN CONNECTION WITH THE EXTERNAL-LOAD OPERATION.

OR

EMPORT DE CHARGES EXTERNES
CLASSE DE COMBINAISONS GIRAVION-CHARGES APPROUVEE B AUCUNE PERSONNE NE PEUT ETRE TRANSPORTEE A MOINS DE : - ETRE UN DES MEMBRES DE L'EQUIPAGE. - SUIVRE UN COURS DE FORMATION EN TANT QUE MEMBRE D'EQUIPAGE. - REMPLIR UNE FONCTION ESSENTIELLE AYANT TRAIT A L'UTILISATION DU GIRAVION AVEC CHARGE EXTERIEURE.

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

3 EMERGENCY PROCEDURES

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

Engine failure with external load

- If an engine failure should occur in flight with an external load, establish autorotational flight and immediately release the load.
- If engine failure occurs whilst ground personnel are hooking up the load, the pilot should move away to the right, applying collective pitch to hold the aircraft up. Ground personnel are to be forewarned that in the event of engine failure they are to move away to the left.

4 NORMAL PROCEDURES

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

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

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

- Check of the installation

On the ground, before carrying out a load transport operation :
Check that the hook opens correctly both in normal and jettison control modes.
Zero the load indicator.
In flight, press the "SLING" pushbutton in order to set the system in readiness for normal release of the load which will be accomplished by actuating the switch situated on the cyclic stick grip.

- Takeoff

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

- Manoeuvres

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

- Landing

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

- Release

To release the load, actuate the switch on the cyclic stick grip.
Check that the load is effectively released.

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

5 PERFORMANCE

The Performance Data given in the basic Flight Manual remain applicable.

The performance curves for weights in excess of 4961 lb (2250 kg) are plotted in dotted line on the performance charts contained in the PERFORMANCE Section of the basic Flight Manual.

eurocopter

FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

EXTERNAL LOAD TRANSPORT
"CARGO SWING"
1400 kg (3086 lb) HOOK

IMPORTANT NOTE

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Direction Technique Support - 13725 Marignane Cedex - France

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SUP.13		5	98-05	N			

LISTE DES DERNIERES REVISIONS NORMALES APPROUVEES				REVISION NORMALE : 0 APPROUVEE DGAC Le : 16 FEV 1998
N°	Date	N°	Date	
0	98-05			

1 GENERAL

The "CARGO SWING" external load carrying installation is composed of :

- A suspended frame designed to reduce swinging of the load, equipped with a release unit. The release unit hook can be opened electrically in normal operation and mechanically in emergency conditions.
- A load indicator (Figure 1) is located on the RH door pillar and includes two indicator lights :
  . a green "LD OFF" light which indicates that there is no load on the hook,
  . an amber "LD ON" light which indicates that a load greater than 7 kg (15 lb) is present on the hook.
- A control system is provided for the pilot :
  . an "SLING" (ELING) push-button located on the control console for switching on the installation,
  . a normal release control on the cyclic stick,
  . an emergency release handle located under the collective stick.
- Electric circuits protection :
  . the load indicator is protected by a 2.5 A fuse,
  . the release circuit is protected by a 16 A fuse.

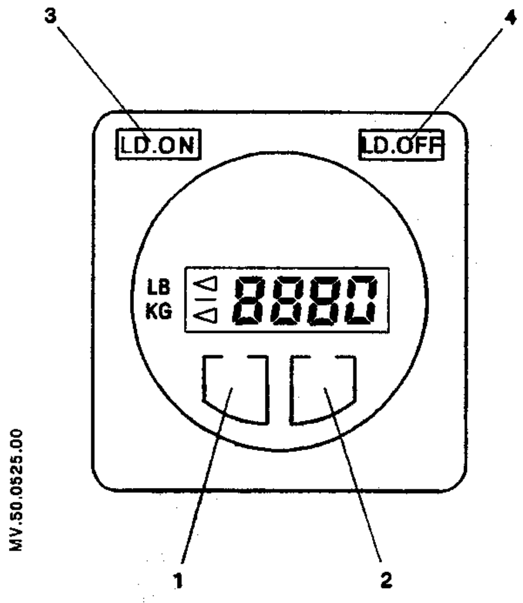


Figure 1

2 LIMITATIONS

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

2.1 Maximum load

The maximum permissible slung load is 1400 kg (3086 lb).

2.2 Maximum weights

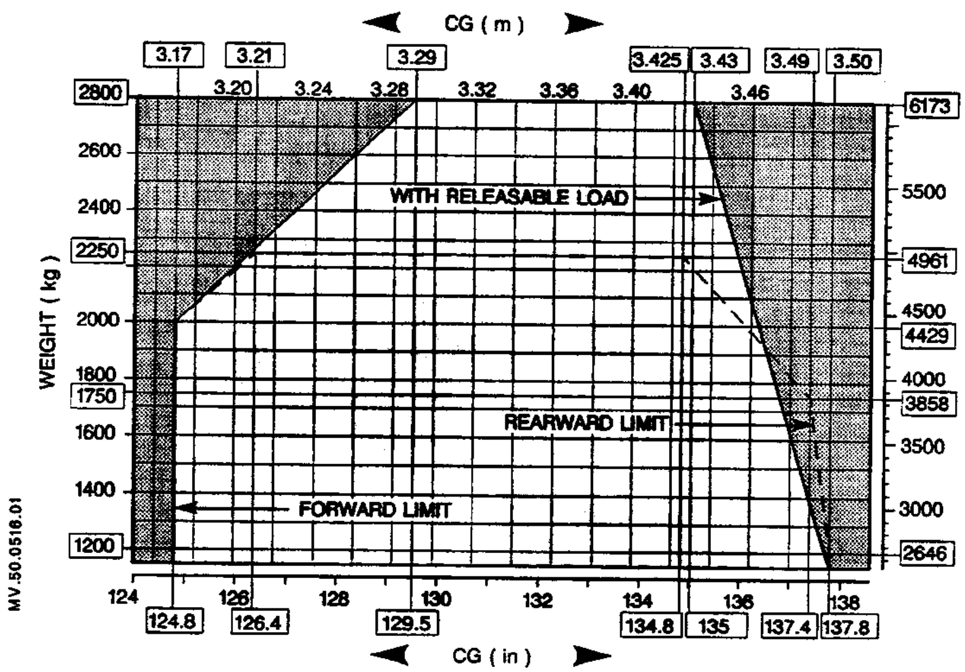
The maximum weight with an external load is limited to 2800 kg (6173 lb).

The maximum authorized weight is that which allows hovering Flight out of ground effect.

CAUTION : THE MAXIMUM WEIGHT WITHOUT EXTERNAL LOAD REMAINS LIMITED TO THAT SPECIFIED IN THE LIMITATIONS SECTION OF THE BASIC FLIGHT MANUAL.

2.3 Centre of gravity limits

With an external load, the longitudinal limits are defined according to the weight as per the graph below.



2.4 V.N.E.

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

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

2.5 Instruction plates

An instruction plate in the cockpit indicates :

> CARRYING OF EXTERNAL LOADS
>
> CLASS OF APPROVED AIRCRAFT/LOAD COMBINATION : B.
> WHEN EXTERNAL LOADS ARE CARRIED, NO PERSON MAY BE CARRIED UNLESS :
> - HE IS A FLIGHT CREW MEMBER ;
> - HE IS A FLIGHT CREW MEMBER TRAINEE ; OR
> - HE PERFORMS AN ESSENTIAL FUNCTION IN CONNECTION WITH THE EXTERNAL-LOAD OPERATION.

OR

> EMPORT DE CHARGES EXTERNES
>
> CLASSE DE COMBINAISONS GIRAVION-CHARGE APPROUVEE : B
> AUCUNE PERSONNE NE PEUT ETRE TRANSPORTEE A MOINS DE :
> - ETRE UN DES MEMBRES DE L'EQUIPAGE
> - SUIVRE UN COURS DE FORMATION EN TANT QUE MEMBRE D'EQUIPAGE OU
> - REMPLIR UNE FONCTION ESSENTIELLE AYANT TRAIT A L'UTILISATION DU GIRAVION AVEC CHARGE EXTERIEURE.

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

3 EMERGENCY PROCEDURES

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

Engine failure with external load

- If an engine failure should occur in flight with an external load, establish autorotational flight and immediately release the load.

- If engine failure occurs in the hover or whilst ground personnel are hooking up the load, the pilot should move away to the right, applying collective pitch to hold the aircraft up. Ground personnel are to be forewarned that in the event of engine failure they are to move away to the left.

Load indicator failure :

Simultaneous ignition or extinction of both lights :

- In hovering flight :

  During hooking or unhooking phase, release the load through the electrical control. If the lights state does not change, abort the mission.

- In forward flight :

  Avoid flying over built-up areas, perform a cautionary approach on the nearest heliport, then apply the previous procedure.

4 NORMAL PROCEDURES

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

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

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

4.1 Ground check of the installation

- On the load indicator (Figure 1) :

  . Test the "LD OFF" (4) and "LD ON" (3) lights.
  . Reset the indicator zero datum using the control (2).
  . Press the indicator test button (1) and check that digits 8880 are displayed.
  The test button runs an automatic test of the indicator.

- Engage the "SLING" (ELING) push-button on the control console.
- Check that the hook actually opens using both release devices (normal and emergency).

4.2 Takeoff

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

4.3 Manoeuvres

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

4.4 Landing

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

4.5 Release

To release the load, actuate the switch on the cyclic stick.

Check that the load is actually released.

If the load is not off, actuate the emergency release handle to release it.

5 PERFORMANCE

The Performance Data given in the Basic Flight Manual apply.

The performance curves for weights in excess of 2250 kg (4961 lb) are plotted in dotted line on the performance charts contained in the PERFORMANCE Section of the Basic Flight Manual.

eurocopter

FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

SAND FILTER

Optional : OP 2702

IMPORTANT NOTE

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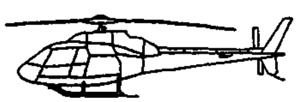

EUROCOPTER Etablissement de Marignane
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SUP.14	5	98-05					
SUP.14	6	98-05					
SUP.14	7	98-05					
SUP.14	8	98-05					
SUP.14	9	98-36	R				

LIST OF THE LATEST NORMAL APPROVED REVISIONS

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0	98-05		
1	98-36		

NORMAL REVISION : 1
DGAC APPROVED
DATE : 13 NOV 1998

André REVAULT

RR 2A

The text of page 2 is replaced with the following text :

3 EMERGENCY PROCEDURES

All the emergency procedures specified in the basic Flight Manual remain applicable.
If the "P2" air valve fails to open (the "P2" message does not appear on the VEMD and the light, if fitted, remains off), avoid flying the helicopter in sand-laden atmosphere to prevent premature damage to the engine. R R
Should the valve fail to close (the "P2" message does not disappear and the light, if fitted, remains on) flight can be continued without adverse consequence. R R

4 NORMAL PROCEDURES

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

EXTERNAL CHECKS

- Engine air intake :
  . Remove ice or snow from the air intake grid.
  . Open the engine cowling.
  . Check for snow, ice or water in the air intake, and particularly under the filter.

CHECKS BEFORE STARTING THE ENGINE

- Check the "P2" indication on the VEMD and the illumination of the indicator light (if fitted) by momentanily switching on the "SAND FILT" push-button. R R

ENGINE POWER CHECK

When checking the engine, make sure that the sand filter push-button is set to "off".
When the sand filter is fitted, use the power assurance check chart on the next page (Figure 1).
The procedures for checks on ground and in flight, given in SECTION 4, remain applicable.

FLYING IN SAND-LADEN ATMOSPHERE :

- Switch off the heating and de-misting systems.
- Depress the SAND FILT push-button.
- Make sure that the "P2" message appears on the VEMD and that the indicator light (if fitted) comes on. R R

NOTE : Operating the sand filter causes t4 temperature to rise by approximately 10 °C.

RR 2A

Paragraph 1 GENERAL is replaced with the following paragraph :

1 GENERAL

The sand filter installation is designed to protect the engine against ingestion of sand.
This installation even when it does not use any "P2" bleed air, is also designed to protect the air intake against any potential induction of snow in flight, in falling snow.

The system mainly consists of the following :
- a filter fitted on the engine air intake, below the ice protection screen,
- a P2 air pressure supply system,
- an electric control and monitoring system.

During engine operation, the ambient air flows through separator tubes which constitute the filter. The filtered air is forced towards the engine air intake. The sand is evacuated by scavenge tubes ventilated by "P2" air.

The electrical circuit supplies an electric valve via the "SAND FILT" push-button. Opening and closing of the P2 air pressure circuit is controlled by the electric valve. A "P2" message on the FLI display of the VEMD, optionally repeated by a R
blue SAND F. light on the instrument panel, indicates that the electric valve is R
fully open. The electrical circuit is protected by the SAND FILT, fuse on the side panel.

1 GENERAL

The sand filter installation is designed to protect the engine against ingestion of sand.
This installation even when it does not use any P2 bleed air, is also designed to protect the air intake against any potential induction of snow in flight, in falling snow.

The system mainly consists of the following :
- a filter fitted on the engine air intake, below the ice protection screen,
- a P2 air pressure supply system,
- an electric control and monitoring system.

During engine operation, the ambient air flows through separator tubes which constitute the filter. The filtered air is forced towards the engine air intake. The sand is evacuated by scavenge tubes ventilated by P2 air.

The electrical circuit supplies an electric valve via the "SAND FILT" push-button. Opening and closing of the P2 air pressure circuit is controlled by the electric valve. A blue SAND F. light comes on to indicate that the electric valve is fully open. The electrical circuit is protected by the SAND FILT. fuse on the side panel.

2 LIMITATIONS

The limitations laid down in the basic Flight Manual remain applicable with the exception of the following specific limitations :

- The flight envelope restrictions in case of falling snow are cancelled.

- Sand filter operating.
  . the heating and demisting systems must be switched off,

3 EMERGENCY PROCEDURES

All the emergency procedures specified in the basic Flight Manual remain applicable.
If the P2 air valve fails to open (light remains off), avoid flying the helicopter in sand-laden atmosphere to prevent premature damage to the engine.
Should the valve fail to close (light remains on), flight can be continued without adverse consequence.

4 NORMAL PROCEDURES

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

EXTERNAL CHECKS

- Engine air intake :

  . Remove ice or snow from the air intake grid.
  . Open the engine cowling.
  . Check for snow, ice or water in the air intake, and particularly under the filter.

CHECKS BEFORE STARTING THE ENGINE :

- Test the indicator light located on the instrument panel.

ENGINE POWER CHECK :

When checking the engine, make sure that the sand filter push-button is set to "off".
When the sand filter is fitted, use the power assurance check chart on the next page (Figure 1).
The procedures for checks on ground and in flight, given in SECTION 4, remain applicable.

FLYING IN SAND-LADEN ATMOSPHERE :

- Switch off the heating and de-misting systems.
- Depress the SAND FILT push-button.
- Make sure the SAND FILTER light illuminates.

NOTE : Operating the sand filter causes t4 temperature to rise by approximately 10°C.

RR 2A

The text of page 2 is replaced with the following text :

3 EMERGENCY PROCEDURES

All the emergency procedures specified in the basic Flight Manual remain applicable.
If the "P2" air valve fails to open (the "P2" message does not appear on the VEMD and the light, if fitted, remains off), avoid flying the helicopter in sand-laden atmosphere to prevent premature damage to the engine. R R
Should the valve fail to close (the "P2" message does not disappear and the light, if fitted, remains on) flight can be continued without adverse consequence. R R

4 NORMAL PROCEDURES

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

EXTERNAL CHECKS

- Engine air intake :
  . Remove ice or snow from the air intake grid.
  . Open the engine cowling.
  . Check for snow, ice or water in the air intake, and particularly under the filter.

CHECKS BEFORE STARTING THE ENGINE

- Check the "P2" indication on the VEMD and the illumination of the indicator light (if fitted) by momentanily switching on the "SAND FILT" push-button. R R

ENGINE POWER CHECK

When checking the engine, make sure that the sand filter push-button is set to "off".
When the sand filter is fitted, use the power assurance check chart on the next page (Figure 1).
The procedures for checks on ground and in flight, given in SECTION 4, remain applicable.

FLYING IN SAND-LADEN ATMOSPHERE :

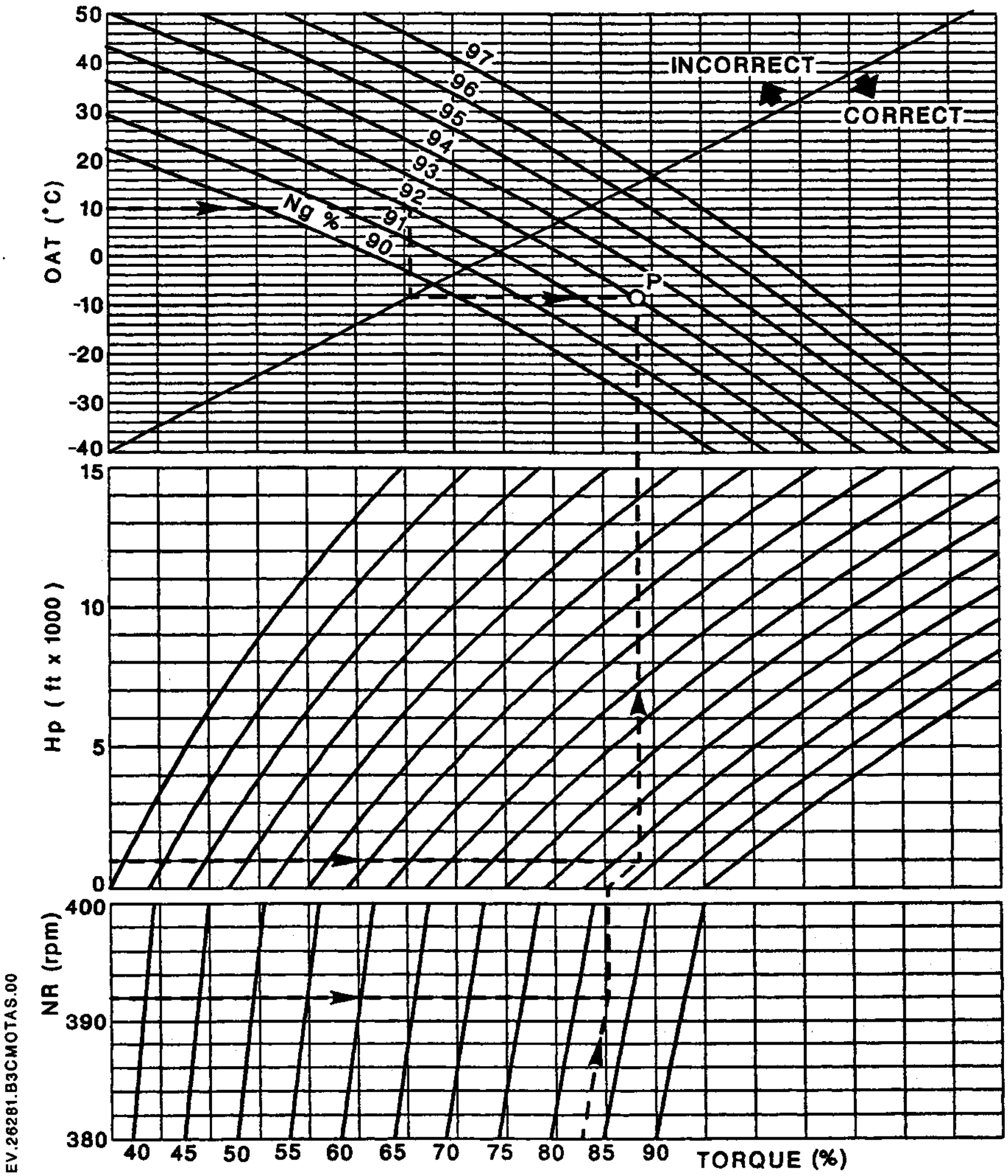
- Switch off the heating and de-misting systems.
- Depress the SAND FILT push-button.
- Make sure that the "P2" message appears on the VEMD and that the indicator light (if fitted) comes on. R R

NOTE : Operating the sand filter causes t4 temperature to rise by approximately 10 °C.

CONDITIONS

-
-
-
-
-
-
-

TORQUE MARGIN CHECK WITH SAND FILTER NOT OPERATING



EXAMPLE : OAT = 10°C Hp = 1000 ft NR = 392 rpm
Ng = 92% TORQUE = 83% => **P** is in the "correct" zone

Figure 1

5 PERFORMANCE

5.1 Regulatory Performance Data

The performance data laid down in the basic Flight Manual SECTION 5.1 remain applicable with the exception of the following data :

5.1.1 Performance in hoering flight IGE with sand filter not operating

Conditions :

- Zero wind
- No P2 bleed
- Electrical consumption less than or equal to 50 A.
  If the electrical consumption is greater than 50 A, the performance must be reduced by 50 kg.
- $0 \leq Zp \leq 23000$ ft

NOTE 1 : This performance is provided on the VEMD performance page. The values corresponding to Zp/Θ torques beyond the certified flight envelope must not be taken into account (Refer to SECTION 2.1, § 7)

NOTE 2 : The IGE weight is determined by default using the current altitude and temperature.

NOTE 3 : With the sand filter operating, the performance is reduced by 40 kg.

CONDITIONS

IGE HOVERING FLIGHT PERFORMANCE WITH SAND FILTER NOT OPERATING

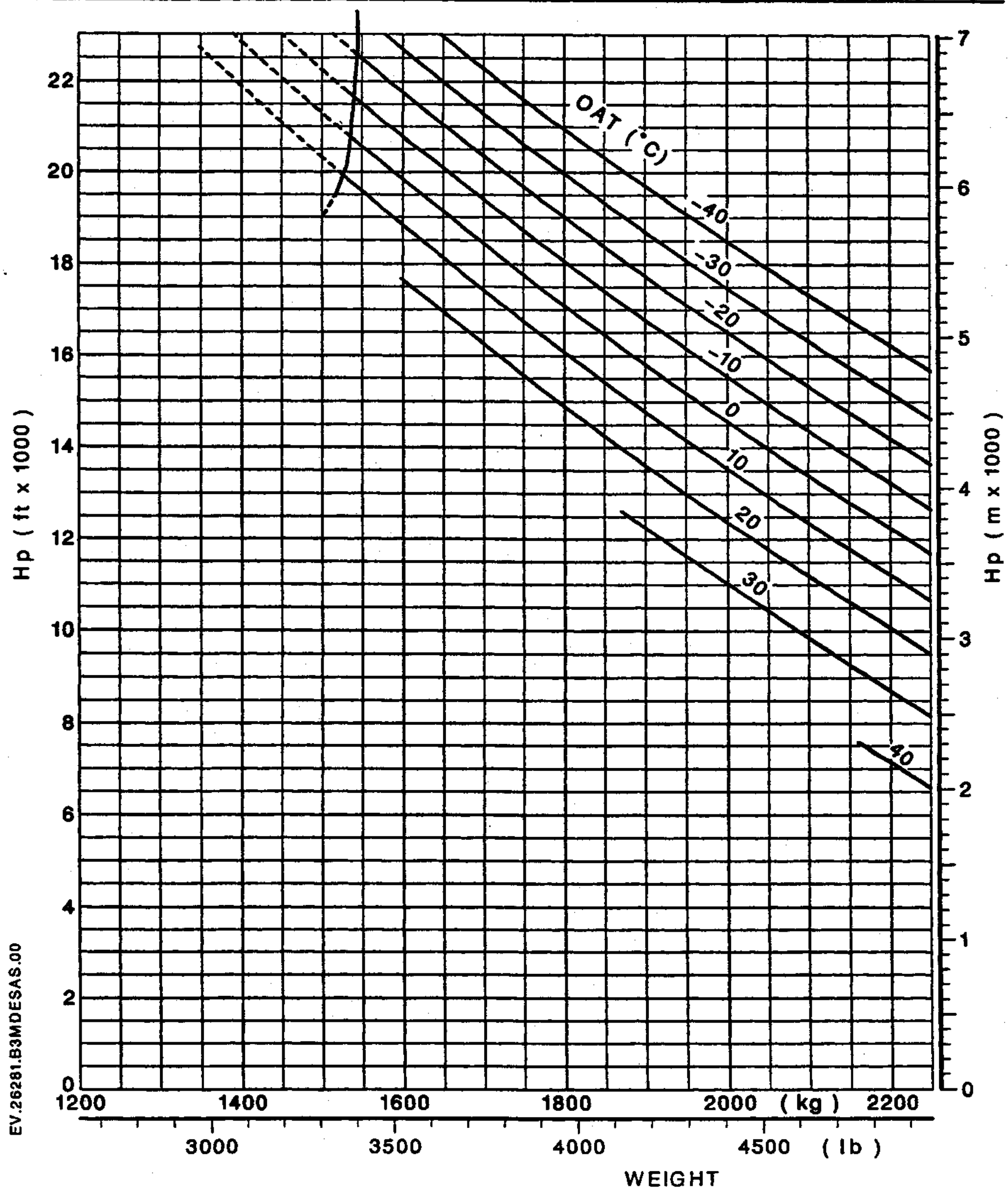


Figure 2

5.1.2 Performance in hovering flight OGE with sand filter not operating.

Conditions :

- Zero wind
- No P2 bleed
- Electrical consumption less than or equal to 50 A.
  If the electrical consumption is greater than 50 A, the performance must be reduced by 50 kg.
- $0 \leq Zp \leq 23000$ ft

NOTE 1 : This performance is provided on the VEMD performance page. Values corresponding to Zp/Θ torques beyond the certified flight envelope must not be taken into account (refer to SECTION 2.1, § 7)

NOTE 2 : The OGE weight is determined by default using the current altitude and temperature.

NOTE 3 : Weights in excess of 2250 kg may only be used with jettisonable loads.

NOTE 4 : With the sand filter operating, the performance is reduced by 40 kg.

CONDITIONS

OGE HOVERING FLIGHT PERFORMANCE WITH SAND FILTER NOT OPERATING

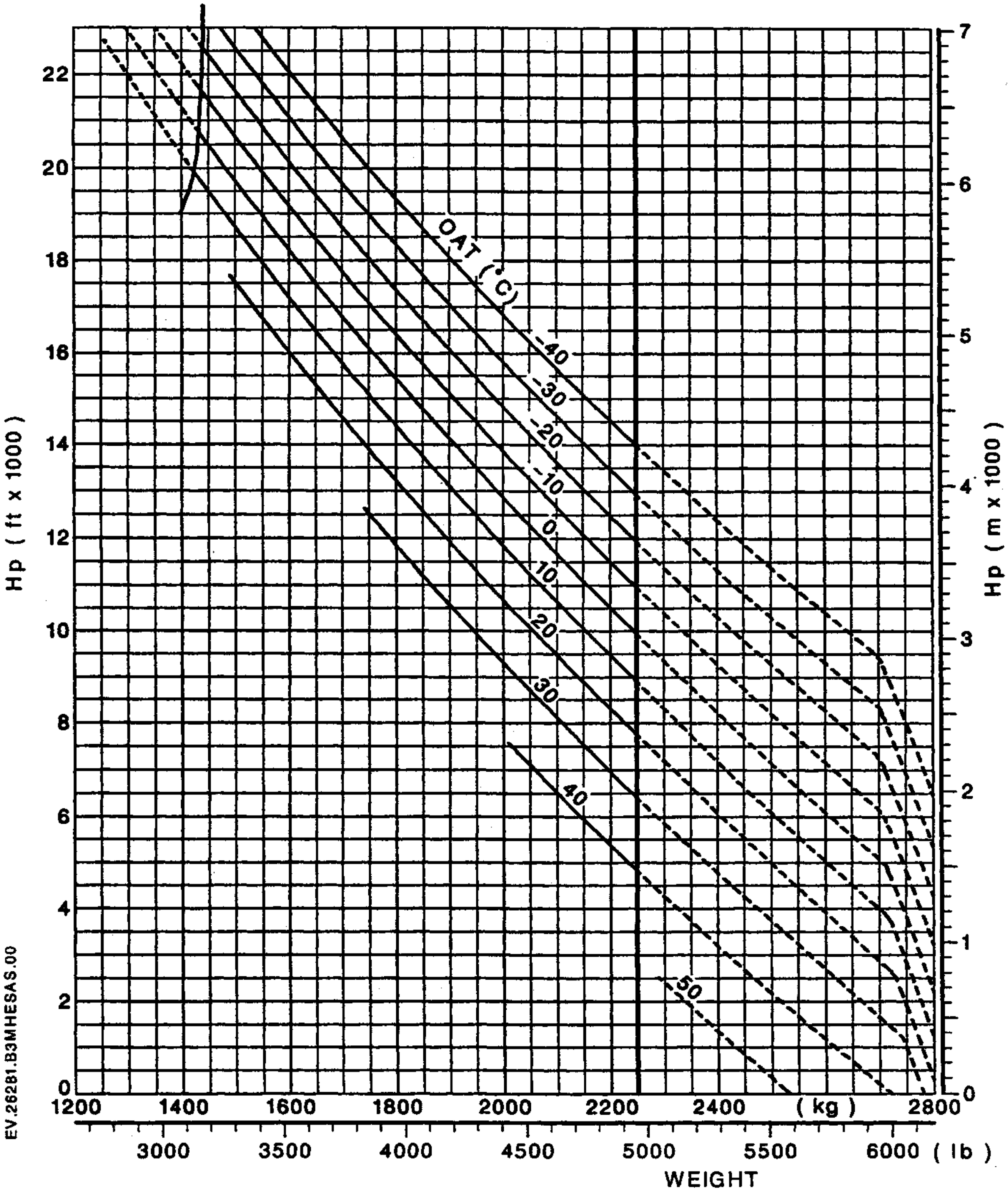
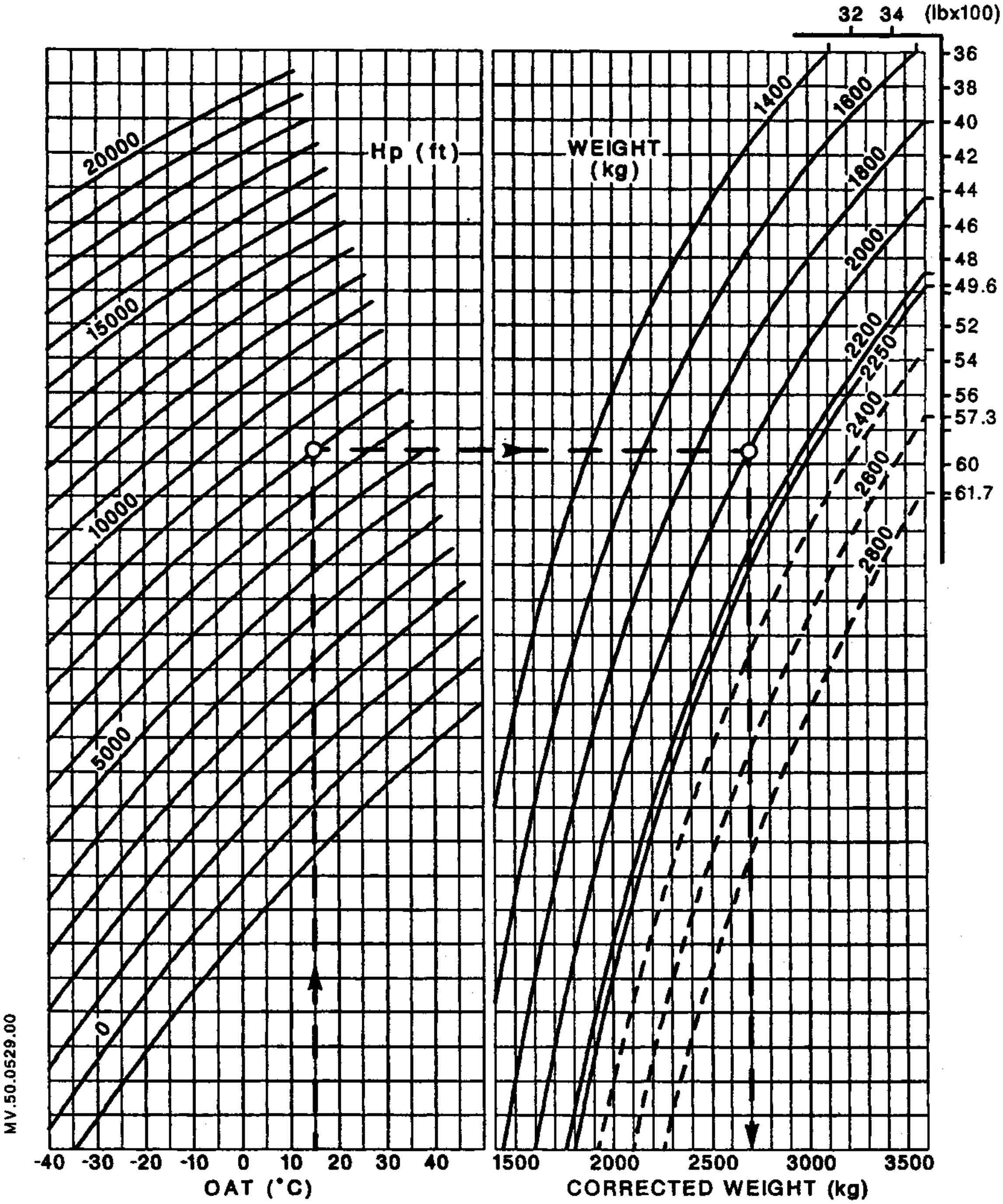


Figure 3

CONDITIONS - ALL UP WEIGHT LIMITATION WITH INTERNAL LOADS : 2250 kg (4961 lb)	**CORRECTED WEIGHT FOR DETERMINING THE Vz VALUES (using the graph opposite)**



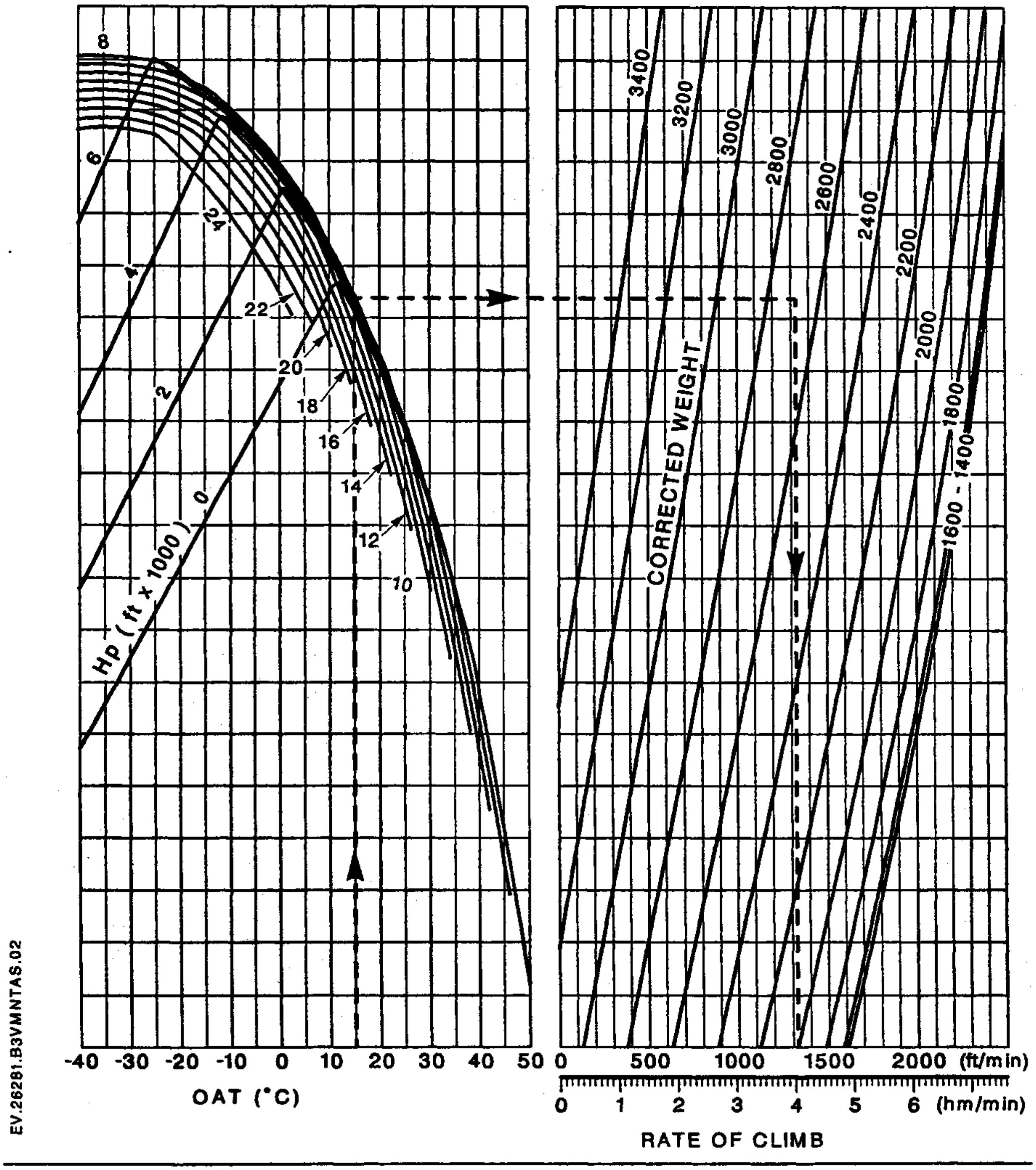
EXAMPLE : OAT = 15°C ACTUAL WEIGHT = 2000 kg

Hp = 8000 ft ⇒ CORRECTED WEIGHT = 2700 kg

Figure 4

CONDITIONS
- NO P2 AIR BLEED
- WITH ELECTRICAL CONSUMPTION ≤ 50 A
- FOR ELECTRICAL CONSUMPTION > 50 A PERFORMANCES ARE DECREASED 70 ft/min
- NOTE WITH THE SAND FILTER OPERATING, THE PERFORMANCE IS REDUCED BY 80 ft/min.

RATE OF CLIMB WITH SAND FILTER NOT OPERATING



EXAMPLE : OAT = 15°C Hp = 8000 ft

CORRECTED WEIGHT = 2700 kg => RATE OF CLIMB = 1330 ft/min

Figure 5

eurocopter

FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

SFIM 85 T 31 AUTOMATIC PILOT

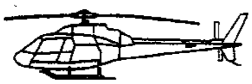
THREE-AXIS

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or applicable flight manual supplements.

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

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



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

LIST OF APPROVED EFFECTIVE PAGES
DOT CERTIFICATION

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

SUPPLEMENT		PAGE	DATE	(1)	SUPPLEMENT PAGE	DATE	(1)
SUP.16	P1	1	97-40	N			
SUP.16	P5	1/01	97-40	N			
SUP.16		1	97-40	N			
SUP.16		2	97-40	N			
SUP.16		3	97-40	N			
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SUP.16		5	97-40	N			
SUP.16		6	97-40	N			
SUP.16		7	97-40	N			
SUP.16		8	97-40	N			
SUP.16		9	97-40	N			
SUP.16		10	97-40	N			
SUP.16		11	97-40	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	97-40		

NORMAL REVISION : 0
DGAC APPROVED
DATE : 24 DEC. 1997

1 GENERAL

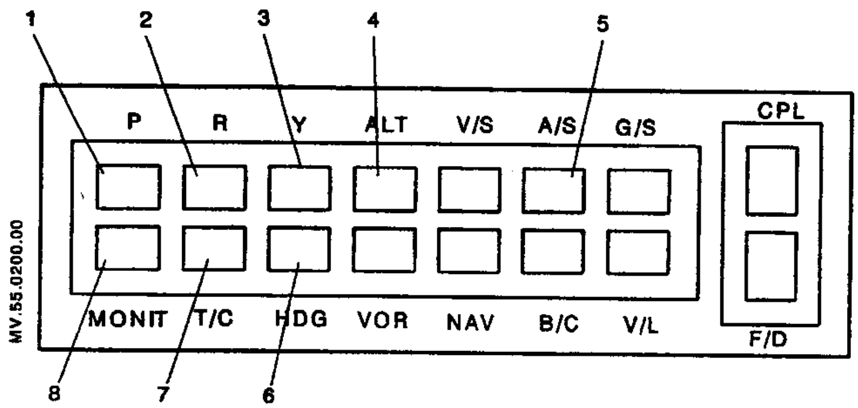
The three-axis (pitch, roll, yaw) autopilot (AP) is intended to hold the attitudes and heading selected by the pilot.
Additional modes can provide :

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

The AP unit mainly consists of :

- A control panel on the console.
- A computer underneath the cabin floor on copilot's side that receives data from the following detectors :
  - . vertical gyro,
  - . horizontal situation indicator (HSI),
  - . gyro-compass,
  - . air data sensor,
  - . control pedal displacement detector,
  - . lateral accelerometer.
- An artificial load release system.
- A control for adjustment of the rudder pedals friction.
- Three control actuators (one per axis).
- Two trim actuators (on pitch and roll axes).
- Three galvanometers (pitch, roll, yaw).
- Three "disengaged channel" indicating lights (P, R and Y).
- An AP coupler monitoring panel.
- A failure monitoring unit.
  This module monitors the operation of the pitch and roll channels at different levels by comparing the data delivered from the instrument panel vertical gyro and gyro horizon :
  - . Attitude sensors.
  - . Command inputs generating system.
  - . Control actuators.
    In case of abnormal operation, this unit warns the pilot and cuts out the defective channel. It starts operating automatically as the AP pitch and roll channels are engaged.

1.1 Autopilot Control Panel (Figure 1)



ITEM No.	Description - Function
1	Pitch channel engage pushbutton
2	Roll channel engage pushbutton
3	Yaw channel engage pushbutton
4	Altitude hold pushbutton
5	Airspeed hold pushbutton
6	Selected heading hold pushbutton
7	Coordinated turn mode pushbutton
8	Failure monitoring unit and AP disengage pushbutton

Only the functions of the pushbuttons identified on the figure can be used. When pressed in, these pushbuttons illuminate to indicate that their functions are effective. This causes the green ON marking to appear.

1.2 Instrument Panel Galvanometers (Figure 2)

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

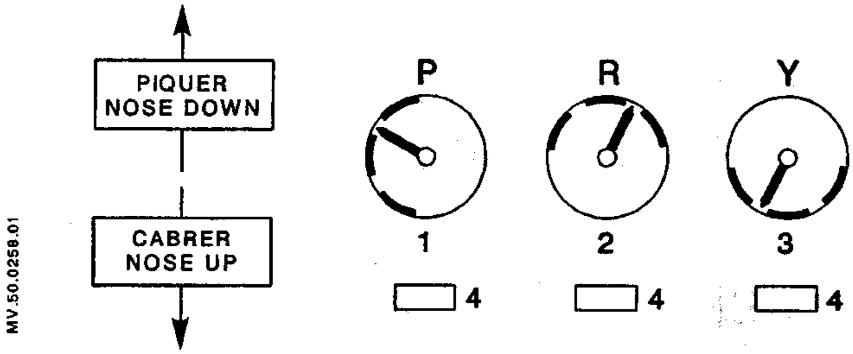


Figure 2

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

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

1.3 Cyclic Stick Grip Controls

The autopilot controls are located on pilot's and copilot's cyclic stick grips (if dual controls installed) :

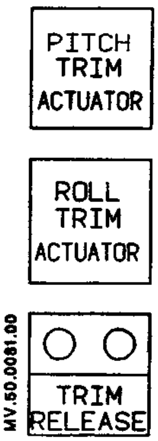
- A four-way beep-trim button. Allows the pilot to operate the stick and change the aircraft attitudes.
- A trim release pushbutton. Momentarily releases pitch and roll channel artificial feel loads.
- A pushbutton. Disengages AP system.

1.4 Vertical Gyro Valid Data Light (If installed)

An amber GYRO light on the failure monitoring panel illuminates to indicate that the vertical gyro valid data signal is lost.

1.5 <u>Autopilot Control Pushbuttons</u> (Figure 3)

- On the instrument panel or on the console.

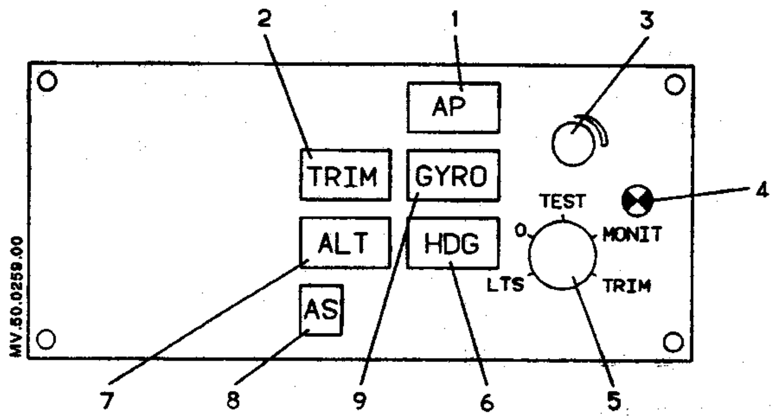


ITEM No.	Description – Function
1	Pitch trim actuator release
2	Roll trim actuator release
3	Permanent release of artificial loads in Pitch and Roll.

- On the console

An ON/OFF pushbutton located on the console controls the static inverter (115-V and 26-V, 400 Hz, a.c. power generating system).

1.6 <u>Autopilot Monitoring Panel</u> (Figure 4)



ITEM No.	Description – Function
1	A.P. warning light (blinking, red)
2	TRIM caution light (blinking, amber)
3	Light dimmer
4	TEST function indicator light
5	TEST selector switch
6	Selected heading hold mode engagement advisory light (green)
7	Altitude hold mode engagement advisory light (green)
8	Airspeed hold mode engagement advisory light (green)
9	GYRO warning light (amber)

2 LIMITATIONS

Apart from the specific limitations given below, all the limitations laid down in Section 2 remain applicable :

- When the aircraft is on the ground, the AP must be disengaged except when checks are to be performed.
- Do not engage the AP before take-off if trim test is not satisfactory.
- If height is less than 400 ft (120 m), the pilot must keep his hand on the cyclic stick.
- Minimum gross weight with AP in operation : 1300 kg.

3 EMERGENCY PROCEDURES

All emergency procedures specified in Section 3 of the basic Flight Manual remain applicable, together with the following additional procedures.

3.1 General

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

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

3.2 Failure of hydraulic system

- Comply with procedure specified in Section 3.
- Disengage AP

3.3 Failure of the vertical gyro or gyro horizon

INDICATION	SYMPTOM	PILOT'S ACTION
- AP light blinks for 10 sec. (Fig. 4). - GYRO light illuminates or gyro horizon flag comes into view. - P, R, MONIT pushbutton lights on AP control panel go out (Fig. 1). - P and R lights (below galvanometers) illuminate (Fig. 2, Detail 4).	- Automatic disengagement of pitch and roll channels or of failure monitoring unit.	- Manual control by the pilot. The yaw channel remains operative - The HDG, ALT and A/S modes are inoperative. - Continue flight.

3.4 Failure of the gyro-compass

INDICATION	SYMPTOM	PILOT'S ACTION
- AP light blinks for 10 seconds (Fig. 4)	- The yaw channel disengages automatically. Y and T/C pushbutton (3,7 Fig. 1) light goes out and Y indicator light (3 Fig. 2) illuminates.	- Yaw control by the pilot (Yaw channel and heading hold are inoperative).
- Failure flag appears on HSI (HDG).	- The "selected heading" function disengages automatically. HDG pushbutton light (Fig. 1) and HDG indicator light (Fig. 4) go out.	- Continue flight.

3.5 Sudden failure of the auto-pilot

INDICATION	SYMPTOM	PILOT'S ACTION
- AP light blinks for 10 seconds (Fig. 4).	- Hardover to the defective axis.	- Manual control by the pilot (power reduction may be required to comply with the limitations)
- Automatic disengagement of faulty channel		- Continue flight.

3.6 TRIM malfunction

INDICATION	SYMPTOM	PILOT'S ACTION
- TRIM light illuminates for 10 sec. (Fig. 4) and defective trim disengages automatically.	- Before operation of the safety system (automatic disengagement), the stick tends to move in the direction of the failure.	- Manual control by the pilot. - Momentarily disengage the artificial loads to trim stick. - Disengage the faulty trim function. - Continue flight. The autopilot continues to operate without the faulty axis being trimmed
	- The pilot can no longer operate trim.	- Bring galvanometer pointer back to the centre using the stick trim release button.

3.7 Blockage of artificial load system

INDICATION	SYMPTOM	PILOT'S ACTION
	- Blockage of cyclic stick	- Release the stick trim loads : . The blockage disappears : disengage the stick trim release pushbutton and continue flight. . The blockage persists : break mechanical shear pin of load compensator shaft by applying a 10 daN load approx. on cyclic stick.

3.8 A.C. power supply failure

INDICATION	SYMPTOM	PILOT'S ACTION
- AP light blinks for 10 sec. (Fig. 4).	- AP disengages automatically	- Check that ALTER pushbutton is pressed in. - Continue flight without autopilot.

3.9 Total power supply failure

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

4 NORMAL PROCEDURES

Apart from the specific procedures given below, the normal procedures laid down in the basic Flight Manual remain applicable :

NOTE : In case the copilot's cyclic stick has been removed check for presence of threaded shunt plug on relevant connector (28-VDC power supply to autopilot).

4.1 Checks before take-off

- Pushbuttons : . TRIM RELEASE (ARTIFICIAL LOADS) . PITCH TRIM ACTUATOR . ROLL TRIM ACTUATOR	- Released
- Cyclic stick	- Friction untightened
- Rudder pedals	- Friction tightened
- Static inverter	- Pushbutton pressed in
- Horizontal Situation Indicator	- HDG flag not visible
- Pilot's and copilot's gyro horizons	- Flag not visible

4.1.1 Autopilot test

- Test selector switch set to **LTS** (Detail 5 on Figure 4).	- Lights on control panel (Fig. 1) illuminate. - Lights on AP monitoring panel (Fig. 4) illuminate (2 1/2 second time delay). - Test function light (4) (Figure 4) illuminates.
- Test selector switch set to 0.	- Test function light (4) (Figure 4) extinguishes.
. Pitch, roll and yaw channels engaged.	- P, R, Y, MONIT pushbutton lights illuminate (Fig. 1). - Lights below galvanometers extinguish (Detail 4, Fig. 2).
. Four-way beep trim button : successively actuate in each direction.	- Check cyclic stick and relevant galvanometer pointer move in the right direction.
. Switch off autopilot through AP release pushbutton on pilot's cyclic stick. Then repeat this step through same pushbutton on copilot's cyclic stick (if fitted) after re-engaging the three autopilot channels.	- Lights below galvanometers illuminate. - AP light (Fig. 4) blinks for 10 seconds. - Lights on control panel (Fig. 1) extinguish.

4.1.2 Failure monitoring unit test

- Pitch channel engaged	- Pitch pushbutton light illuminates (Fig. 1). - MONIT pushbutton light illuminates (Fig. 1).
- Actuate four-way button to offset cyclic stick in pitch direction. - Test selector switch set to MONIT, (Fig. 4).	- Cyclic stick moves in the chosen direction. - Cyclic stick stops moving. - Galvanometer re-centers (light on). - AP warning light flashes (Fig. 4). - GYRO warning light illuminates (Fig. 4). - MONIT pushbutton light flashes (Fig. 1). - Pitch pushbutton light extinguishes (Fig. 1).
- Test selector switch set to 0 - Roll channel engaged.	- Roll pushbutton light illuminates (Fig. 1). - MONIT pushbutton light illuminates (Fig. 1).

Same procedure as the pitch channel.

4.1.3 Pitch trim test

- Pitch channel engaged.	- Relevant pushbutton light (Fig. 1) illuminates; ON appears.
- Test selector switch set to TRIM (Detail on Fig. 4).	- TRIM caution light (Fig. 4) illuminates with 2-second time delay, then alternate nose-up displacement of cyclic stick with TRIM light (Fig. 4) blinking.
- Test selector switch set to 0. - Disengage pitch channel.	- P pushbutton light (Fig. 1) extinguishes.

4.1.4 Roll trim test

- Roll channel engaged. - Test selector switch set to TRIM.	- Same as pitch trim test above with alternate displacement of cyclic stick to the left.
- Test selector switch set to 0. - Disengage roll channel.	

<u>CAUTION</u> : DO NOT OPERATE THE AUTOPILOT IF THE TRIM LIGHT DOES NOT ILLUMINATE OR REMAINS ON STEADY DURING THE TEST.

4.2 Autopilot engagement before take-off

- Engage the three autopilot channels	- Check that the channels are engaged. P, R, Y, MONIT pushbutton lights illuminate : ON is visible (Fig. 1).
- Test selector switch set to 0 (Fig. 4).	- Test light extinguishes (item 4, Fig. 4).
WARNING : DO NOT ALLOW THE AIRCRAFT TO REMAIN ON THE GROUND WITH THE AP ENGAGED AS THE TRIM ACTUATORS MAY UNWIND, THUS CAUSING THE STICK TO MOVE AGAINST THE STOP.	

4.3 Operating the autopilot in flight

4.3.1 Basic modes (P, R, Y, T/C)

4.3.1.1 Pitch and roll

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

4.3.1.2 Yaw

- Feet off the pedals NOTE 1 : Collective pitch/yaw coupling is efficient when some friction is applied to the pedals. It is therefore recommended to apply friction. NOTE 2 : When the RH rudder pedal is near the stop (e.g. high LH cross wind) moving the collective pitch lever fully upward requires a greater effort than the usual value due to spring rod.	- Channel holds "present heading" within the limits of its authority. Operating the pedals causes the heading reference to be altered. The pilot must bring the aircraft to the desired heading (angular speed less than 1.5°/sec.) then remove his feet from pedals so that the yaw channel can hold the new heading.

4.3.1.3 Coordinated turns (T/C)

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

4.3.2 Additional modes (HDG, ALT, A/S)

4.3.2.1 Selected heading (HDG)

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

When this mode is engaged, the autopilot captures and holds the heading selected on the HSI via the roll channel (the roll attitude reference is then nil). The yaw channel provides coordination.

4.3.2.2 Altitude (ALT)

This mode may be operated when the airspeed is above 60 kt (111 km/h - 69 MPH).

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

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

4.3.2.3 Airspeed (A/S)

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

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

4.4 After landing

Disengage the autopilot via the cyclic stick pushbutton.

5 PERFORMANCE

Not affected.

eurocopter

FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

EMERGENCY FLOATATION GEAR

IMPORTANT NOTE

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

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

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

LIST OF APPROVED EFFECTIVE PAGES
DOT CERTIFICATION

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

SUPPLEMENT	PAGE		DATE	(1)	SUPPLEMENT PAGE	DATE	(1)
SUP.17	P1	1	97-40	N			
SUP.17	P5	1/01	97-40	N			
SUP.17		1	97-40	N			
SUP.17		2	97-40	N			
SUP.17		3	97-40	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	97-40		

NORMAL REVISION : 0
DGAC APPROVED
DATE : 24 DEC. 1997

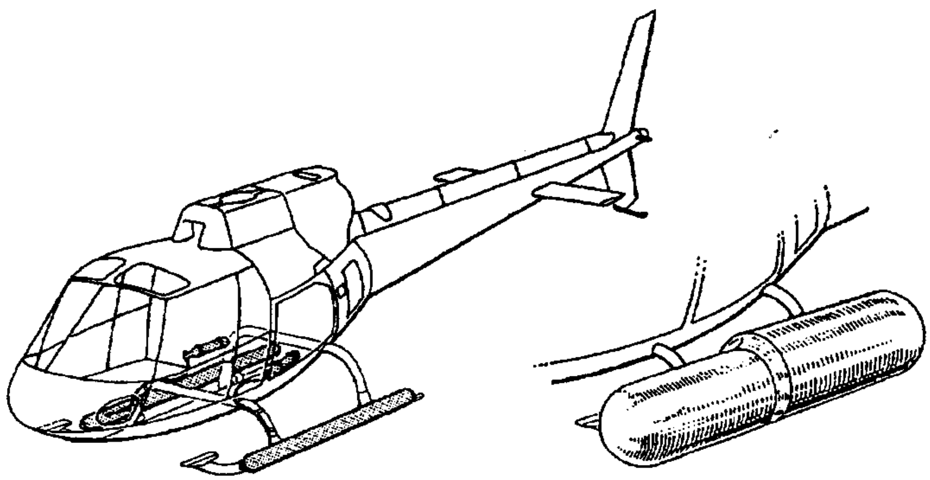
1 GENERAL

The emergency floatation gear allows the helicopter to alight on water, if necessary.

The installation is designed to allow the aircraft to land on an airstrip or prepared hard ground with floats inflated.

The emergency floatation gear comprises :

- two skid assemblies
- two parallel float assemblies, one on either side of the helicopter
- a float inflation system including two cylinders
- an electrical control system.



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2 LIMITATIONS

All limitations specified in the basic Manual remain applicable, independently of the following :

- Floats stowed, system not armed
  . no special limitations
- Floats stowed, system armed or floatation gear inflated
  . maximum IAS in powered flight :
  135 kt (250 km/h)
  . maximum IAS at less than 40 % torque :
  100 kt (185 km/h)
- Maximum altitude for float inflation : 6600 ft (2000 m)
- When flying over water at an altitude below 400 ft (122 m) the floatation gear system must be armed.
- Minimum weight : when the OAT is lower than 0°C, the minimum weight must remain greater than 1480 kg (3263 lb), in order to comply with the min. rotor rpm upon engine fialure.

3 EMERGENCY PROCEDURES

In the event of engine failure or other need for ditching, check rotor rpm and apply the following procedure :

- Arm the emergency floatation gear firing system
- Fire the float inflation cartridges (Recommended maximum firing speed 80 kt - 148 km/h)
- Complete the autorotation procedure as described in the basic Manual. Alight broadside-on to the sea; avoid ramming of the nose of the floats on touch-down.

<u>NOTE</u> : Inflation of emergency floatation gear reduces the rotor speed by 20 rpm in autorotation descent.

<u>IMPORTANT NOTE</u> : WHEN THE HELICOPTER IS AFLOAT, THE FORWARD DOORS MUST BE OPENED BY ACTUATING THE JETTISON CONTROL.

4 NORMAL PROCEDURES

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

- External checks :
  . Float covers properly laced
  . Correct cylinder pressure

Limit pressure values are given by the following table :

TEMPERATURE C° FAHRENHEIT DEGREE	- 40 - 40	- 30 - 22	- 20 - 4	- 10 14	0 32	10 50	20 68	30 86	40 104	50 122
PRESSION MAXI BARS MAX PRESSURE PSI	256 3713	266 3958	277 4018	287 4163	298 4322	309 4482	321 4656	332 4815	344 4989	356 5163
PRESSION MINI BARS MIN PRESSURE PSI	238 3452	248 3597	258 3742	268 3887	279 4047	290 4206	301 4366	312 4525	324 4699	335 4859

<u>NOTE</u> : A placard located near the cylinders indicates the limit pressure values.

  . Float elements locked down

- Arming the emergency floatation gear
  . Depress the FLOAT ARMING (ARM.FLOT.SEC) push-switch
  . Check that both lights illuminate in the FLOAT FIRING (PERCUT FLOT SEC) push-switch.

RR 1A

4 NORMAL PROCEDURES

- External checks :
  . Correct cylinder pressure

Placard added as follows :

- The following limit values are applicable (post Mod 07 3026) :

  . Placard (ref. 217664-0)

TEMPERATURE °C	-45	-40	-30	-20	-10	0	10	20	30	40	50	60	70
FAHRENHEIT DEGREE	-49	-40	-22	-4	14	32	50	68	86	104	122	140	158
PRESSION MAX BARS	242	247	257	268	278	288	298	308	318	328	339	349	362
MAX PRESSURE PSI	3501	3582	3728	3887	4032	4177	4322	4467	4612	4757	4917	5062	5250
PRESSION MINI BARS	224	229	239	249	259	269	279	289	299	309	319	329	339
MINI PRESSURE PSI	3249	3321	3466	3611	3757	3902	4047	4192	4337	4482	4627	4772	4917

MV.50.0657.00

5 PERFORMANCE

With the emergency floatation gear in stowage position the performance data specified in SECTION 5.1 remain applicable except for climbing performance which is reduced by 50 ft/min (15 m/min) at 55 kt IAS.

eurocopter

FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

136 kg (300 lb) ELECTRIC HOIST

AIR EQUIPEMENT OR BREEZE

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or applicable flight manual supplements.

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

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

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

LIST OF APPROVED EFFECTIVE PAGES
DOT CERTIFICATION

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

SUPPLEMENT		PAGE	DATE	(1)	SUPPLEMENT PAGE	DATE	(1)
SUP.18	P1	1	97-40	N			
SUP.18	P5	1/01	97-40	N			
SUP.18		1	97-40	N			
SUP.18		2	97-40	N			
SUP.18		3	97-40	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	97-40		

NORMAL REVISION : 0
DGAC APPROVED
DATE : 24 DEC. 1997

DIRECTION GENERALE DE L'AVIATION CIVILE
SERVICE DE LA FORMATION AERONAUTIQUE ET DU CONTROLE TECHNIQUE

1 GENERAL

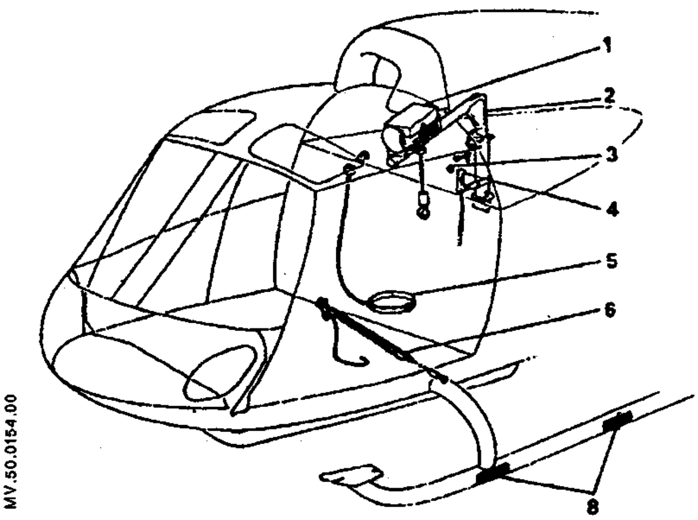
The hoist installation is designed to lower or haul on board people or loads, while the aircraft is hovering.

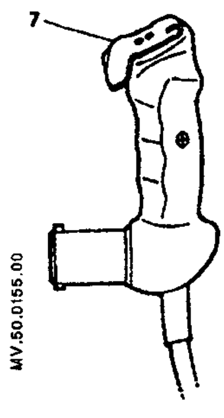
The aircraft can be fitted with either of the two electric hoists : BREEZE BL 16600 or AIR EQUIPEMENT 76370.

The hoist installation comprises essentially :
- A pivoting jib (2) provided with a locking bolt (3), mounted on the port side of the helicopter.
- An electrically operated winch (1) fitted with :
  . a 33.5-metre (110-ft) cable in the case of the BREEZE hoist
  . a 40-metre (130-ft) cable in the case of the AIR EQUIPEMENT hoist.
- A snap hook mounted on a pulley-block tackle (6).
- An electrical control system including :
  . A cable jettison guarded switch on the pilot's collective lever, which is used to sever the cable in an emergency.
  . A rocker switch (7) on the hoist operator's control grip, which is used to raise, lower and stop the cable.
  The system is energized by means of a pushbutton on the control console.
- Two cable guards (8) secured to the LH landing skid.

The hoist installation is protected by :
  . a 100-Amp fuse provided in the electrical master box
  . a 60-Amp fuse (4) provided on the aft wall near the hoist operator's grip support. Both these fuses power the hoist.
  . two 2.5-Amp. fuses protecting the "emergency release" circuit
  . a 2.5-Amp. fuse protecting the "up-down" circuit.

A mechanical cutter provided on the rear wall allows the hoist operator to sever the cable, if necessary.





2 LIMITATIONS

The limitations laid down in the basic Flight Manual remain applicable in full with the addition of the following specific points :

- Minimum crew : one pilot and one hoist operator.
- Maximum load on the hoist cable : 136 kg (300 lb).
  For the aircraft equipped with the A.E Hoist, before embodiment of modification AMS 1587, limit rigid compact loads to 80 kg (176 lb).
- Landing with a suspended load of 136 kg (300 lb) is not permissible.
- Speed limitation in forward flight with hoist cable reeled in and no load on :
  . Refer to SECTION 2 of the Basic Flight Manual.

3 EMERGENCY PROCEDURES

The emergency procedures laid down in the basic Flight Manual remain applicable but are completed by the following procedures :
The hoist installation incorporates a pyrotechnic cable cutter controlled by a guarded pushbutton, located on the pilot's collective lever or cyclic stick handgrip, which permits the load to be released in an emergency.
In the event of a complete electrical failure, have the cable severed by means of the mechanical cutter available to the hoist operator.

4 NORMAL PROCEDURES

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

The L.H. door and sub-door must be removed if the aircraft is not fitted with the sliding door.
Make sure that both cable guards are present and firmly secured.
The jib locking bolt and the hoist operator's control grip complete with support must be installed before take-off.

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

The hoist may also be operated by the pilot, using the rocker switch on the cyclic stick grip (if the switch is fitted).

For carrying out a hoisting operation :
- Stabilize the aircraft in hover above the hoisting site
- Ensure that sufficient power reserve is available to permit moving off in forward flight once the load is hoisted on board
- Set the jib in hoisting position
- Ensure that SLING (ELING) and FLARE (FUS.ECL) functions are not engaged.
- Engage the HOIST (TREUIL) pushbutton on the control console.

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

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

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

With "Air Equipement" hoist, when rigid compact loads (over 80 kg - 176 lb post mod AMS 1587) are being hoisted, inconsequential oscillations may appear. Operate the hoist.

NOTE 1 : AIR EQUIPEMENT hoist

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

NOTE 2 : BREEZE hoist

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

5 PERFORMANCE

With hoist jib folded, the performance data laid down in Section 5.1 are unaffected.

eurocopter

FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

HYDRAULIC PUMP DRIVE ON MGB

Optional : op 1487

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or applicable flight manual supplements.

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

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

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

LIST OF APPROVED EFFECTIVE PAGES
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(1) Page Revision Code
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- N : New, to be inserted

SUPPLEMENT PAGE	DATE	(1)	SUPPLEMENT PAGE	DATE	(1)
SUP.20 P1 1	97–40	N			
SUP.20 P5 1/01	97–40	N			
SUP.20 1	97–40	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS			
No	Date	No	Date
0	97-40		

NORMAL REVISION : 0
DGAC APPROVED
DATE : **24 DEC. 1997**

1 GENERAL

The power takeoff on the MGB permits a hydraulic pump to be driven at 6000 rpm for a rotor speed of 386 rpm.

The drive is taken from the MGB spiral bevel gear wheel.

When the hydraulic pump runs dry the power taken must be less than 3 kW so that the aircraft's performance data is not affected.

2 LIMITATIONS

The limitations laid down in the basic Flight Manual remain applicable except for special limitations below :

- The maximum permissible power is 32 kW.
- When the hydraulic pump runs dry the power taken must be less than 3 kW so that the aircraft's performance data is not affected.
- Operation of the hydraulic pump (under load) is prohibited :
  . in hover
  . in climb
  . in level flight at airspeeds below 30 knots (56 km/h) and above 80 knots (148 km/h).

3 EMERGENCY PROCEDURES

The emergency procedures laid down in the basic Flight Manual remain applicable.

In the event of an engine failure, immediately shut down the power-driven system.

4 NORMAL PROCEDURES

The normal procedures given in the basic Flight Manual remain applicable.

5 PERFORMANCE

Performance data given in the basic Flight Manual remain applicable.

eurocopter

FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

FORWARD TWO-PLACE SEAT

IMPORTANT NOTE

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

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

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SUP.21	P1	1	97-40	N			
SUP.21	P5	1/01	97-40	N			
SUP.21		1	97-40	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	97-40		

NORMAL REVISION : 0
DGAC APPROVED
DATE : 24 DEC. 1997

1 GENERAL

When two-place seat is mounted in lieu of the copilot's seat the aircraft can carry seven persons.

2 LIMITATIONS

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

- The maximum number of persons carried is increased to seven (including pilot).
- The total weight of the two passengers on the forward two-place seat shall not exceed 154 Kg (339 lb).
- The optional dual controls shall be removed in order to install the forward two-place seat.

3 EMERGENCY PROCEDURES

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

4 NORMAL PROCEDURES

The normal procedures given in the Basic Flight Manual and relevant Supplements remain applicable.
Special attention shall be paid to c.g. determination.

CAUTION : C.G. LIMITS AT EMPTY WEIGHT ARE TO BE RE-DETERMINED IN ACCORDANCE WITH THE INFORMATION CONTAINED IN THE MAINTENANCE MANUAL, WORK CARD 25.22.20.401.

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

5 PERFORMANCE

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

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FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

LONG AND SHORT FOOTSTEPS

LONG D.350-591-111-a
SHORT D.350-591-113

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or supplements listed in supplement 0.
The effectivity of the supplement at the latest revision is specified on the List of Effective Pages.

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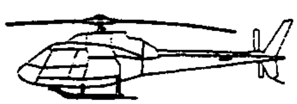

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Aéroport international Marseille-Provence 13725 Marignane Cedex - France

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SUP.22	P1	1	99-21	N			
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SUP.22		1	99-21	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	99-10		
1	99-21		

NORMAL REVISION : 1
DGAC APPROVED
DATE : 28 MAI 1999

André REVAULT

DGAC Approved:

1 GENERAL

The long footstep (P/N D.350-591-111-a) on the high landing gear facilates cabin access and inspection of the transmission platform.

The short footstep (P/N D.350-591-113) on the high landing gear facilates cabin access.

2 LIMITATIONS

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

3 EMERGENCY PROCEDURES

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

4 NORMAL PROCEDURES

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

5 PERFORMANCE

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

- Rate of climb : reduce by 2,5 %.

eurocopter

FLIGHT MANUAL

AS 350 B3

SUPPLEMENT

LOUD SPEAKER INSTALLATION

Optional : OP 1810
and : OP 1811

IMPORTANT NOTE

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Direction Technique Support - 13725 Marignane Cedex - France

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SUP.24	P5	1/01	97-40	N			
SUP.24		1	97-40	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS			
No	Date	No	Date
0	97-40		

NORMAL REVISION : 0
DGAC APPROVED
DATE : **24 DEC. 1997**

1 GENERAL

The loudspeaker installation is designed to transmit high-audio messages.

The installation comprises :

- an amplifier unit incorporating an audio adjust potentiometer, located on the radio console,
- a microphone, and
- two loudspeakers secured to the landing gear aft cross member.

The installation is protected by two fuses and can be controlled by the LS pushbutton.

2 LIMITATIONS

When the aircraft is fitted with the loudspeaker installation, all the limitations specified in the basic Flight Manual remain applicable, independently of the following specific limitations :

Maximum speed

- VNE Power-on :
  . 135 kt, or basic aircraft VNE if it less than that value.
- VNE Power-off :
  . same as basic aircraft

3 EMERGENCY PROCEDURES

Not affected.

4 NORMAL PROCEDURES

The normal procedures in the basic Flight Manual remain applicable and are completed by the following information :

Before flight, check loudspeaker installation for attachment.

5 PERFORMANCE

- Hover performance IGE and OGE : not affected.
- Rate of climb : reduce by 10 %.

eurocopter

FLIGHT MANUAL

AS 350 B3

SPECIAL SUPPLEMENT

FERRY FLIGHT FUEL TANK

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or applicable flight manual supplements.
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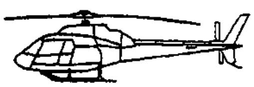

EUROCOPTER Etablissement de Marignane
Direction Technique Support - 13725 Marignane Cedex - France

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SUP.50	P5	1/01	97-40	N			
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SUP.50		2	97-40	N			
SUP.50		3	97-40	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No	Date	No	Date
0	97-40		

NORMAL REVISION : 0
DGAC APPROVED
DATE : 24 DEC. 1997

1 GENERAL

The range of the helicopter can be increased by installing a special ferry flight tank transversally in the rear cabin area.
The installation consists essentially of :
- A 475-litre (125-US gal.) capacity removable tank. The unusable fuel quantity is negligible.
- A vent line
- A fuel transfer line, with an isolating valve, between the ferry fuel tank and main fuel tank.

2 LIMITATIONS

THIS INSTALLATION IS TO BE USED ONLY FOR FERRY FLIGHT WITH THE SPECIAL PERMISSION OF THE COMPETENT AUTHORITIES.

The limitations laid down in the basic Flight Manual remain applicable.
In addition :
- Only personnel indispensable to the accomplishment of the mission are authorized to fly in the aircraft.
- Smoking is prohibited, due to the presence of fuel in the tank in the cabin.
- Maximum airing of the cabin is to be ensured.

The weight of fuel that can be carried in the ferry tank will depend on the loading of the helicopter and can be determined by referring to the C.G. chart, bearing in mind that the forward c.g. limit on take-off with a full main tank must not be exceeded.

3 EMERGENCY PROCEDURES

If a fuel leak should occur in the cabin :
- Land as soon as possible.

4 NORMAL PROCEDURES

Checks before filling the tank

- Make sure that the ferry flight tank is securely attached.
- Check that the ferry tank vent line is correctly installed.
- Close the transfer valve.

Filling procedure

- Fill the main fuel tank
- Fill the ferry tank to the amount previously determined.
- Check C.G. location :
  . Weight and moment of empty ferry tank are given in Section 6
  . Fuel is located at 91.3 in. (2.32 m) from datum line.

In-flight procedure

- Take off and fly with the transfer valve closed.
- When the fuel gauge reads 80 %, open the transfer valve. The fuel level in the two tanks is then equal if the quantity in the ferry tank is approx 79.2 US gal. (300 l.).
- If there is a difference in fuel level, transfer will occur and balance will be attained within ten minutes.
- When the fuel levels are balanced the quantity corresponding to the gauge reading is :

	Gauge Reading	90	80	70	60	50	40	30	20
VOLUME	Litres	805	705	605	505	405	305	205	105
	US Gal	212	186	159	133	107	80	54	27
	IMP Gal	176	154	132	110	88	66	45	23

When the gauge reads 20 % the ferry tank is empty and the quantity of fuel remaining in the main tank is 27 US gal./23 Imp. gal./105 litres.

When the transfer valve is open it is important to ensure that transfer is effective by making sure that the fuel gauge indicator pointer is moving

CAUTION : IF FUEL TRANSFER IS NOT OPERATIVE, LAND BEFORE THE FUEL GAUGE READING FALLS TO 60 %. FAILURE TO LAND ABOVE 60 % MAY RESULT IN CENTRE OF GRAVITY MOVING OUTSIDE ALLOWABLE LIMITS.

5 PERFORMANCE

The approved performance data contained in Section 4 of the Flight Manual are not affected by the ferry flight tank installation.

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FLIGHT MANUAL

AS 350 B3

SPECIAL SUPPLEMENT

ABSEILING INSTALLATION

Per drawing : 355P84.0080

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic flight manual and/or applicable flight manual supplements.
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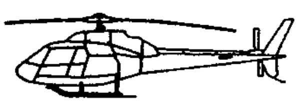

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SUP.56	P5	1/01	99-37	N			
SUP.56		1	99-37	N			

LIST OF THE LATEST NORMAL APPROVED REVISIONS			
No	Date	No	Date
0	99-37		

NORMAL REVISION : 0
DGAC APPROVED
DATE : 13 SEP. 1999

L'Ingénieur en Chef des Etudes et Techniques d'Armement
Division AERONEFS

André REVAULT

DIRECTION GÉNÉRALE DE L'AVIATION CIVILE
SERVICE DE LA FORMATION AÉRONAUTIQUE ET DU CONTRÔLE TECHNIQUE

1 GENERAL

This installation allows trained personnel to perform abseiling. It consists of two rings fixed to the cabin floor in front of the passenger's seats and of a protection for the lower rail of each sliding door.

2 LIMITATIONS

THE USE OF THIS TYPE OF INSTALLATION IS SUBJECTED TO THE APPROVAL OF THE COMPETENT OPERATIONAL AUTHORITIES.

The limitations specified in the basic Flight Manual and relevant Supplements remain applicable ; however, they are completed or modified by the following limitations :

- Abseiling is limited to hover flight.
  After completion of the abseiling operation, transition to forward flight or landing is prohibited with the ropes unwound.

- The load on the abseiling installation is limited to 120 kg per ring.
  A plate affixed close to each ring indicates the maximum load.

3 EMERGENCY PROCEDURES

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

4 NORMAL PROCEDURES

The normal Procedures specified in the basic Flight Manual and relevant Supplements remain applicable ; however, they are completed by the following :

- Before takeoff, determine the weight and CG conditions which will prevail during the mission, knowing that the load on the asbeil ropes is located at :
  . 2.24 m from the longitudinal datum,
  . 1.09 m from the aircraft centerline.

5 REGULATORY PERFORMANCE DATA

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

DART AERO ACCESSORIES INC
PO Box 23003
Victoria International Airport
Sidney, BC, V8L 5N7, Canada

Tel: **604 656 2262**
Fax: **604 656 2993**

FLIGHT MANUAL SUPPLEMENT

Heli-Utility-Basket™

EUROCOPTER AS 350 MODELS

STA No. SH94-14

This supplement must be attached to the approved flight manual when the listed equipment is installed. The information contained herein supplements the information in the basic Helicopter Flight Manual. For limitations, procedures and performance data not contained in this document, consult the Helicopter Flight Manual.

COMPLIANCE WITH SECTION 1, OPERATING LIMITATIONS IS MANDATORY.

DOT APPROVED: L.B. Samoil
Regional Airworthiness Engineer
Pacific Region

Amendment: **A**
Date: May 20th, 1994

LOG OF AMENDMENTS

Rev. No.	Pages Revised	Revised By and Date	Approved By and Date	Inserted By	Date Inserted
A	None	J.Bradley May 16, 1994	L.B. Samoil May 20th, 1994		

SECTION 1 - LIMITATIONS

Vne

MAXIMUM Vne - 124 KIAS

Autorotation Vne

MAXIMUM AUTORATION Vne - 100 KIAS

COMPATABILITY

Heli-Utility- Basket™ is compatible with:

Approved Bearpaws
DART *Heli-Access Steps*™
Approved Mirror Assembly
DART Vertical Reference Widow

PLACARD: (located on lid)

MAXIMUM DISTRIBUTED LOAD

200 lb / 91 kg

NOTE: THE BASKETS ARE LOCATED CENTRALLY AT:

LONGITUDINAL STATION:	135 in / +3422 mm
LH LATERAL BL:	-48 in / -1222 mm
RH LATERAL BL:	+48 in / +1222 mm
BASKET EMPTY WEIGHT:	65 lb / 29.5 kg

SECTION 2 - NORMAL PROCEDURES

PREFLIGHT

Ensure lid is closed and securely latched.

DAILY INSPECTION

Check physical integrity and security of the *Heli-Utility-Basket*™

SECTION 3 - EMERGENCY PROCEDURES

NO CHANGE

SECTION 4 - PERFORMANCE DATA

CRUISE

Vh reduced by up to 15 KIAS

CLIMB

Rate of climb may be reduced by up to 200 FPM

AUTORATION

Rate of descent may be increased by up to 100 FPM

HOVER

No Change

United States of America

Department of Transportation — Federal Aviation Administration

Supplemental Type Certificate

Number SR00213NY

This certificate, issued to Dart Aero Accessories Inc.
P.O. Box 23003 CDO
Victoria International Airport
Sidney, British Columbia
Canada V8L 5N7

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 27 *of the* Federal Aviation *Regulations.*

Original Product — Type Certificate Number: H9EU (AS-350 Series), H11EU (AS355 Series)

Make: Eurocopter France

Model: AS-350B, AS-350B1, AS350B2, AS350BA, AS-350C, AS-350D, AS-350D1, AS355E, AS355F, AS355F1, AS355F2

Description of Type Design Change:

[illegible]llation of Utility Basket in accordance with Dart Aero Accessories, Inc., Drawing No. D350-607, Rev. B, dated February 2[illegible] 1994.

Limitations and Conditions:

1. Dart Aero Accessories, Inc. Maintenance Manual Supplement MMS-D350-607, Revision A, dated February 22, 1994 is required with this STC.

[illegible]Dart Aero Accessories, Inc. Flight Manual Supplement FMS D350-607, Amendment A, dated May 20, 1994 (AS-350 Series [illegible]y) is required with this STC.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: May 18, 1994

Date of issuance: August 8, 1994

Date reissued:

Date amended:

By direction of the Administrator

I. Brumer

Irwin N. Brumer *(Signature)*
Mgr. New York Aircraft
Certification Office

FEDERAL AVIATION ADMINISTRATION

United States of America
Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate
(Continuation Sheet)

Number

SR00213NY
Date of Issuance: August 8, 1994

Limitations and Conditions (continued):

3. Dart Aero Accessories, Inc. Flight Manual Supplement FMS D355-607, Amendment A, dated May 20, 1994 (AS-355 Series Only) is required with this STC.

4 approval should not be incorporated in any aircraft of these specific models on which other approved modifications are inc orated, unless it is determined that the interrelationship between this change and any of those previously incorporated approved modifications will not introduce any adverse effect upon the airworthiness of the aircraft.

--END--

DEPARTMENT OF TRANSPORT

Supplemental Type Approval

Number: SH94-14

This approval is issued to:	Issue No.: 1
Dart Aero Accessories Inc. P.O. Box 23003 CDO Victoria International Airport Sidney, British Columbia Canada V8L 5N7	Approval Date: May 20, 1994 Issue Date: May 20, 1994

Responsible Region	Pacific
Aircraft/Engine Type or Model:	Eurocopter France AS-350B/B1/B2/BA/C/D/D1 AS-355E/F/F1/F2
Canadian Type Approval or Equivalent:	H-83 (AS-350 Series) & H-87 (AS-355 Series)
Description of Type Design Change:	Utility Basket Installation

Installation/Operating Data, Required Equipment and Limitations:

The Utility Basket Installation is to be carried out in accordance with DOT sealed Dart Aero Accessories Inc. Drawing No. D350-607, Revision B, dated February 22, 1994*.

__Required Equipment:__

1) Dart Aero Accessories Inc. Maintenance Manual Supplement MMS-D350-607, Revision A, dated February 22, 1994.
2) **AS-350 Series Only**: DOT Approved copy of Dart Aero Accessories Inc. Flight Manual Supplement FMS D350-607, Revision A, dated May 20, 1994*.
3) **AS-355 Series Only**: DOT Approved copy of Dart Aero Accessories Inc. Flight Manual Supplement FMS D355-607, Revision A, dated May 20, 1994*.

(* or later approved revisions)

Conditions: This approval is only applicable to the type / model of aeronautical product specified therein. Prior to incorporating this modification, it shall be established that the interrelationship between this change and any other modification(s) incorporated will not adversely affect the airworthiness of the modified product.

L.B. Samoil
Regional ~~Airworthiness~~ Engineer

For Minister of Transport

26-0357 (10-88)

Canada

DART AEROSPACE LTD
2071 Malaview Avenue
Sidney, BC, V8L 5N7
Canada

Tel: 604 656 2262
Fax: 604 656 2993

FLIGHT MANUAL SUPPLEMENT

Spacepod™

SIDE CARGO COMPARTMENT EXTENDERS

EUROCOPTER AS350/355 MODELS

This supplement must be attached to the approved flight manual when the listed equipment is installed. The information contained herein supplements the information in the basic Helicopter Flight Manual. For limitations, procedures and performance data not contained in this document, consult the Helicopter Flight Manual.

DART

LOG OF AMENDMENTS

Rev. No.	Pages Revised	Revised By and Date	Approved By and Date	Inserted By	Date Inserted
A	NEW ISSUE	B. Williams 95.09.25	95/09/25		

SECTION 1 - GENERAL

NO CHANGE

SECTION 2 - LIMITATIONS

VFR FLIGHT ONLY

Flight under IFR is prohibited with the pods installed.

INTERNAL GARGO LOADING

Maximum Load in the LH (Port) Hold: 364 lb (165 kg)

DECAL: (located inside door)

MAXIMUM DISTRIBUTED LOAD
IN THIS COMPARTMENT
364 lb / 165 kg

Maximum Load in the RH (Stbd) Hold: 320 lb (145 kg)

DECAL: (located inside door)

MAXIMUM DISTRIBUTED LOAD
IN THIS COMPARTMENT
320 lb / 145 kg

DART

SECTION 3 - EMERGENCY PROCEDURES

NO CHANGE

SECTION 4 - NORMAL PROCEDURES

DAILY INSPECTION (Preflight)

Check physical integrity and security of the *Spacepod*™ body and door.

SECTION 5 - REGULATORY PERFORMANCE DATA

CLIMB

Climb performance will be reduced by up to 100 fpm when pods installed.

FLIGHT MANUAL SUPPLEMENT

FOR MODEL
AS 350 / AS 355 HELICOPTERS

WITH LH AND / OR RH CARGO PODS ("SQUIRREL CHEEKS") INSTALLED

This supplement shall be attached to the applicable approved EUROCOPTER AS 350 and AS 355 Flight Manuals, when the "SQUIRREL CHEEKS" are installed on the aircraft in accordance with DOT STC No. . . SH97-15 . SH97-60

Section 2,3,4, and 5 of this document comprise the approved Flight Manual Supplement. Compliance with Section 2, Certification Limitations, is mandatory. Section 1 and 6 (if applicable) of this document do not require D.O.T. approval but contain information which may be of use to the pilot and therefore are included as "Manufacturer's Data".

Department of Transport (Canada) Approved

CANADA
DEPARTMENT OF TRANSPORT
AERONAUTICAL ENGINEERING
DIVISION
MAY 7 1998
APPROVED
BY..........
APPROVAL No....SH97-15

Regional Airworthiness Engineer
Ontario Region

1. **GENERAL** (unapproved)

The optional Cargo Pods ("SQUIRREL CHEEKS)" are an enlargement of the LH and / or RH cargo compartments.

The volume of the normal baggage compartment with no cargo pods installed is 7.1 cubic feet on the right side with the battery in the basic helicopter configuration, and 8.3 cubic feet on the left side.

With installation of the Cargo Pods ("SQUIRREL CHEEKS") on each side, the baggage compartment volume is almost doubled (right side 14.1 cubic feet, left side 15.3 cubic feet). With the Cargo Pods ("SQUIRREL CHEEKS") installed, the RH cargo compartment can carry up to 175 kg (386 lb), and the LH compartment can carry up to 195 kg (430 lb). They are constructed with a reinforced aluminium floor with no lip at the door for easier loading. The Cargo pod floor and top can be stood upon by maintenance personnel.

The Cargo Pods have large doors that are hinged to open in the forward direction, with gas struts to hold the door in the open position.

The doors incorporate high quality door latches which are easy to operate.

Additional RH Cargo Pod volume and weight capacity can be achieved with the additional installation of Optional Equipment ECL-6, Battery Relocation.

2. **LIMITATIONS**

No change

3. **EMERGENCY AND MALFUNCTION PROCEDURES**

No change

4. **NORMAL PROCEDURES**

No change

5. **PERFORMANCE DATA**

The following performance data is equally applicable with LH, RH or both Cargo Pods installed:

AS 350 C, D, D1, B, B1, B2, B3, BA

a. For hover IGE and OGE, use the standard performance charts in Section 5 of the Flight Manual but reduce the resulting helicopter weight by 30 kg.

NOTE: The HOGE chart in Section 5 may be extrapolated to 30 kg above maximum weight for this calculation, but the the maximum weight of the helicopter does not change.

b. For Climb, use the standard performance chart in Section 5 of the Flight Manual, but reduce the resulting rate of climb by the following amount:

- for AS 350 C, D, D1, B, BA: .... 200 ft/min.
- for AS 350 B1, B2, and B3: .... 250 ft/min

AS 355 E, F, F1, F2

a. For hover IGE and OGE, use the standard performance charts in Section 5 of the Flight Manual but reduce the resulting helicopter weight by 60 kg.

NOTE: The HOGE chart in Section 5 may be extrapolated to 60 kg above maximum weight for this calculation, but the the maximum weight of the helicopter does not change.

b. For Climb, use the standard performance chart in Section 5 of the Flight Manual, but reduce the resulting rate of climb by the following amount:

- for AS 355 E, F, F1 and F2:

  AEO .... 150 ft/min
  OEI .... 110 ft/min

NOTE: At altitudes over 10,000 ft, the AEO climb performance penalty given above is estimated only.

DOT Approved:______________________

eurocopter

COMPLEMENTARY

FLIGHT MANUAL

AS 350 B3

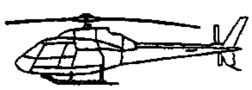
REGISTRATION No

SERIAL No

IMPORTANT NOTE

The practical value of this manual depends entirely upon its being correctly up-dated.

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



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

PART 2

WEIGHT AND BALANCE	6
SYSTEMS AND DESCRIPTION	7
SERVICING	8
OPERATIONAL INFORMATION	9
ADDITIONAL PERFORMANCE	10

CONDITIONAL REVISIONS (RC)

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

CAUTION

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

No	SECTION	PAGE	DATE	Applicable before condition is met :
RC A	7.4	5 "RC"	00-23	Modification 07 2810 New instrument panel
	7.12	1 "RC"	00-23	
	7.12	2 "RC"	00-23	
	7.12	3 "RC"	00-23	
RC B	8.2	4 "RC"	02-18	Modification TU 66C (07 3124) New FADEC software

COMPOSITION
OF CONDITIONAL REVISIONS (RC)

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

CAUTION

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

Section	Page	Date	Applicable before condition is met :

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

COMPOSITION OF RUSH REVISIONS (RR)

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

No. RR	SECTION	PAGE	DATE CODE	No. RR	SECTION	PAGE	DATE CODE
3A	0.0.P4	1 *RR*	01-20				
	8.2	4 *RR*	01-20				

COMPOSITION
OF RUSH REVISIONS (RR)

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

N° RR	SECTION	PAGE	DATE CODE	N° RR	SECTION	PAGE	DATE CODE
4A	8.3	19 *RR*	02-13				
	10.2	1 *RR*	02-13				
4B	8.2	4 *RR*	02-18				
	10.2	1 *RR*	02-18				
4C	9.2	7 *RR*	02-20				
	9.2	8 *RR*	02-20				
4D	8.3	2 *RR*	02-25				
	0.0.P4	1 *RR*	02-25				

COMPOSITION
OF RUSH REVISIONS (RR)

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

No	SECTION - PAGE	CODE DATE	No	SECTION - PAGE	CODE DATE

LIST OF EFFECTIVE PAGES

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

SECTION		PAGE	DATE	(1)	SECTION	PAGE	DATE	(1)
0. 0	P1	1	97-40		7. 4	5	00-23	
0. 0	P2	1	97-40		7. 4	6	00-23	
0. 0	P3	1	97-40		7. 4	7	97-40	
0. 0	P4	1	97-40		7. 4	8	97-40	
0. 0	P5	1/03	02-03	N	7. 4	9	98-46	
6. 0	P6	1	97-40		7. 5	1	97-40	
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LIST OF THE LATEST NORMAL REVISIONS

No	Date	No	Date
0	97-40		
1	98-46		
2	00-23		
3	02-03		

NORMAL REVISION : 3

SECTION 6

WEIGHT AND BALANCE

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		Page
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	1 WEIGHTS - CONVENTIONAL TERMS	1
	2 CENTRE-OF-GRAVITY - CONVENTIONAL TERMS	2
	3 WEIGHING	3
	4 CALCULATING C.G.	3
6.2	LONGITUDINAL LOCATION OF VARIABLE LOADS	
	1 CREW AND PASSENGERS	1
	2 FREIGHT AND BAGGAGE TRANSPORT	2
	3 FUEL	3
	4 C.G. CHARTS	4
6.3	LATERAL LOCATION OF VARIABLE LOADS	
	1 CREW AND PASSENGERS	1
6.4	WEIGHT AND MOMENT OF EQUIPMENT ITEMS	1

SECTION 6.1

GENERAL - IDENTIFICATION

1 WEIGHT - STANDARD DEFINITIONS

1.1 Empty Weight (EW)

This corresponds to the sum of the permanent assemblies and equipment :
- The vehicle and its power plant.
- Equipment common to all missions.
- Lubricants and hydraulic fluids.
- Unusable fuel.

EW then, is constant for a given aircraft.

1.2 Equipped Empty Weight (EEW)

This is the sum of :
- Empty weight (EW)
- Specific operational or mission equipment.

EEW (OEW) varies according to the proposed mission.

1.3 Operating empty weight (OEW)

This is the sum of :
- Equipped empty weight (EEW)
- Crew

1.4 All-up Weight (AUW)

This is the sum of :
- Operating empty weight (OEW)
- Commercial load (Payload or no paying load)
- Usable fuel

The useful load includes the commercial load and the usable fuel.

1.5 Maximum Weight

Weight is limited on takeoff and landing. Refer to Limitations (Section 2).

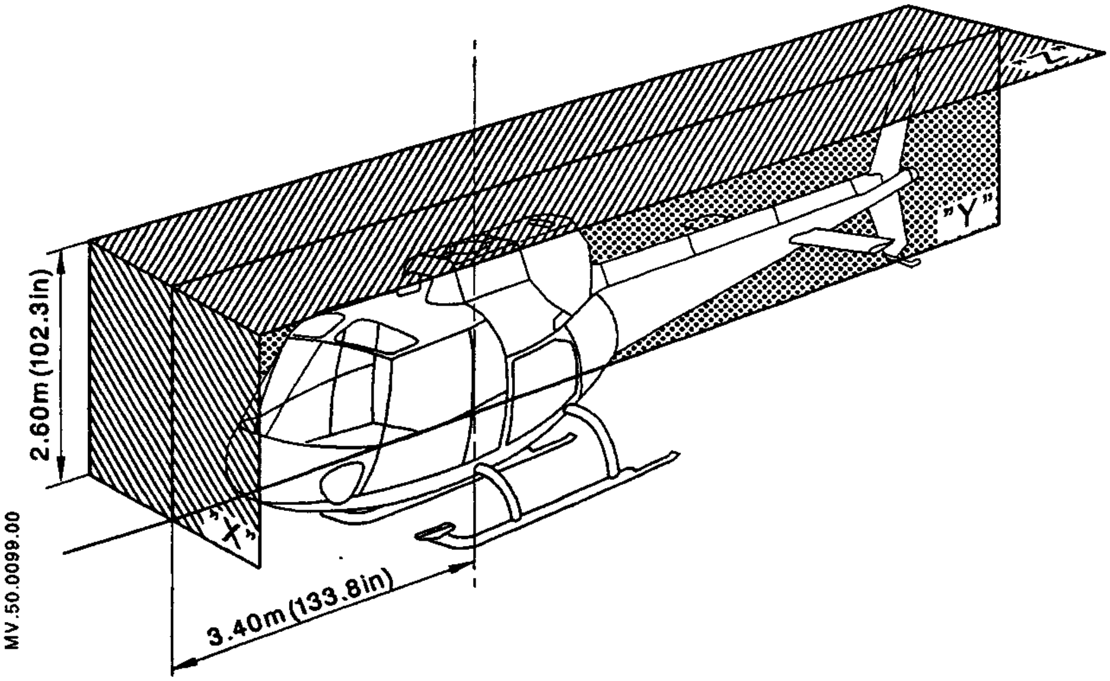
2 CENTRE-OF-GRAVITY - CONVENTIONAL TERMS

2.1 Definition of the datum trihedral

The centre-of-gravity figures are dimensions measured perpendicularly to the faces of the datum trihedral.
The trihedral is formed by the following planes :

a) A horizontal plane parallel to the cabin floor datum, the Z datum plane and situated 2.60 m (102.3 in.) above this datum.
b) A vertical plane perpendicular to the cabin floor datum. This Y datum plane is the aircraft plane of symmetry. Dimensions to the left (port) are negative, dimensions to the right (starboard) are positive.
c) A vertical plane perpendicular to the two mentioned above, situated 3.40 m (133.8 in.) forward of the centre of the main rotor. This is the X datum plane, from which the longitudinal reference stations and CG positions are measured.

The cabin floor datum is materialized by the surface of the cabin floor.



2.2 CG location limits

CG location limits are never to be exceeded (Refer to SECTION 2 and the "LIMITATIONS" paragraph of some SUPPLEMENTS)

CAUTION : A CG LOCATION WHICH IS CORRECT ON TAKEOFF MAY CHANGE IN THE COURSE OF THE MISSION, DUE TO FUEL WEIGHT REDUCTION OR LOADING VARIATION AND SO EXCEED ACCEPTABLE LIMITS.

Longitudinal CG must be the more closely watched.
Lateral CG need be considered only in very dissymetric loading configurations.

3 WEIGHING

Weighing is the only reliable way of obtaining :

- Equipped empty weight (EEW)
- Aircraft centre of gravity (CG) location.

The aircraft must be weighed :

- On leaving the works
- Following any major modification.

4 CALCULATING CG

4.1 Method

The distance from the centre of gravity of the aircraft to the datum plane is calculated as follows :

$$\frac{\text{Sum of moments}}{\text{Sum of weights}} = \text{CG location}$$

- Determine the Equipped Empty Weight.
- Referring to the tables of Section 6.2 (for the longitudinal C of G position) or in Section 6.3 (for the lateral C of G position) list and add up the weights and moments.
- Check that the total weight is lower than the maximum permissible takeoff weight.
- Determine the CG location and check that it falls within permissible limits.

4.2 Example : Analysis for a passenger transport mission

4.2.1 Before takeoff

1) Determine the maximum permissible takeoff weight.
2) Note the equipped empty weight and the moment.
3) Refer to tables given below to determine loading conditions ; totalize weights and moments.
4) Calculate the CG location.
5) Check that CG falls within permissible limits.

Example :

	kg	m.kg
EEW	1200	4272
Crew	160	248
Passengers	140	356
Side cargo hold	50	160
Fuel	400	1390
TOTAL	1950	6426

CG : $\frac{6426}{1950} = 3.295$ m

i.e. longitudinal CG is within the permissible limits.

4.2.2 In flight or on landing

Same procedure as above, taking into account the weight and moment of the fuel remaining.

Example : - Initial CG : 3.295 m
- CG after consumption of 350 kg of fuel.

	kg	m.kg
EEW	1200	4272
Crew	160	248
Passengers	140	356
Side cargo hold	50	160
Fuel	50	173
TOTAL	1600	5209

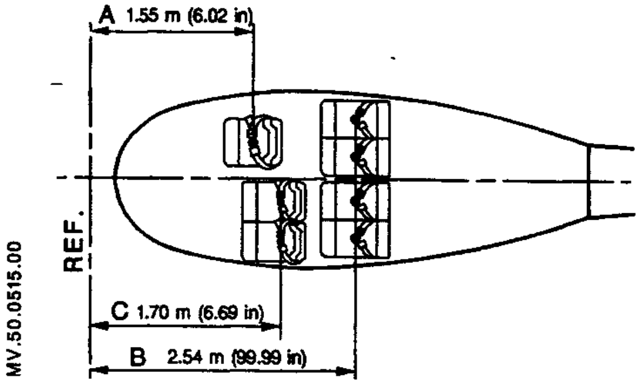
Longitudinal CG becomes : $\frac{5209}{1600} = 3.255$ m

i.e. CG is within permissible limits.

SECTION 6.2

LONGITUDINAL LOCATION OF VARIABLE LOADS

1 CREW AND PASSENGERS



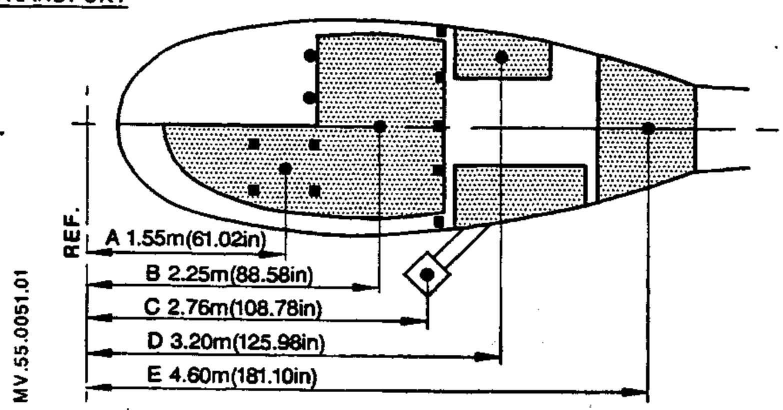
METRIC UNITS

WEIGHT kg	MOMENT : m.kg (A)	(B)	(C)
60	93	152	102
80	124	203	136
100	155	254	170
120	186	305	204
140	219	356	238
160	248	406	272
180	279	457	
200	310	508	
220	341	559	
240		610	
260		660	
280		711	
300		762	
320		812	

IMPERIAL UNITS

WEIGHT lb	MOMENT : in.lb (A)	(B)	(C)
100	6102	9999	6693
150	9153	12999	10039
200	12204	19998	13386
250	15255	24997	16732
300	18306	29997	20079
350	21537	34996	23426
400	24400	39996	
450	27459	44995	
500	30510	49995	
550		54994	
600		59994	
650		64993	
700		69993	

2 FREIGHT AND BAGGAGE TRANSPORT



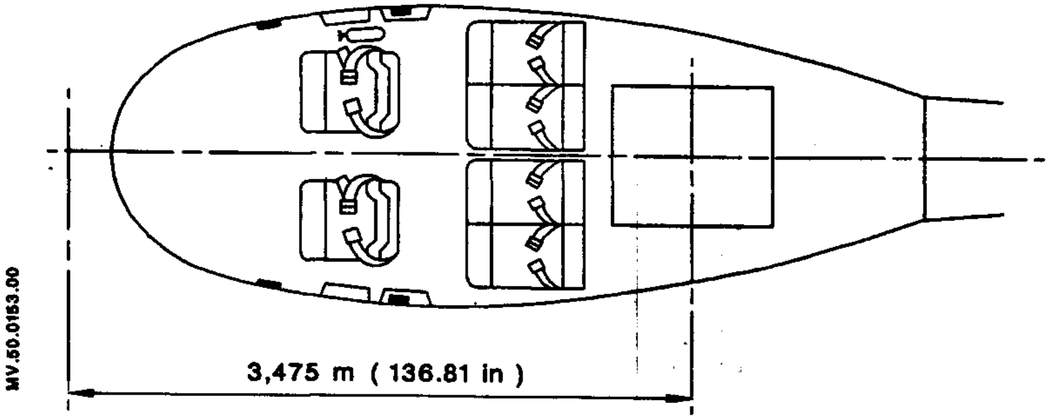
METRIC UNITS

WEIGHT kg	MOMENT : m.kg (A)	(B)	(C)	(D)	(E)
10	15.5	22.5	27.6	32	46
20	31.0	45.0	55.2	64	92
50	77.5	112.5	138.1	160	230
70	108.5	157.5	193.4	224	322
80	124.0	180.0	221.0	256	368
100	155.0	225.0	276.3	320	
120	186.0	270.0	331.5	384	
150	232.5	337.5	414.4		
200		450.0	552.6		
250		562.5			
300		675.0			
310		697.5			

IMPERIAL UNITS

WEIGHT lb	MOMENT : in.lb (A)	(B)	(C)	(D)	(E)
50	3051	4429	5439	6299	9055
100	6102	8858	10878	12598	18110
150	9153	13287	16317	18897	27165
176	10740	15590	19036	22172	31874
200	12204	17716	21756	25196	
220	13424	19488	23931	27716	
250	15255	22145	27195	31495	
264	16109	23385	28718	33259	
300	18306	26574	32634		
330	20137	29231	35897		
400		35432	43512		
500		44290	54390		
600		53148	65268		
682		60412	74188		

3 FUEL



NOTE : Fuel specific gravity : 0.79

METRIC UNITS

litre	Kg	m.KG
10	8	28
20	16	56
40	32	111
60	47	163
80	63	219
100	79	275
150	119	414
200	158	549
250	198	688
300	237	824
350	277	963
400	316	1098
540	427	1484

IMPERIAL UNITS

UK gal.	lb	in. lb
5	40	5472
10	79	10808
20	158	21616
30	238	32561
40	317	43369
50	396	54177
60	475	64985
70	554	75793
80	633	86601
90	712	97409
100	792	108353
110	871	119161
119	940	128601

IMPERIAL UNITS

US gal.	lb	in. lb
5	33	4515
10	66	9029
15	99	13544
20	132	18059
30	198	27088
40	264	36118
50	330	45147
60	396	54177

US gal.	lb	in. lb
70	462	63206
80	527	72099
90	593	81128
100	659	90158
110	725	99187
120	791	108217
130	857	117246
143	940	128601

4 CG CHARTS

The following charts (metric units and Imperial units) are used to easily know the aircraft centre-of-gravity. When the point obtained is close to the limits, it should be confirmed by calculations.

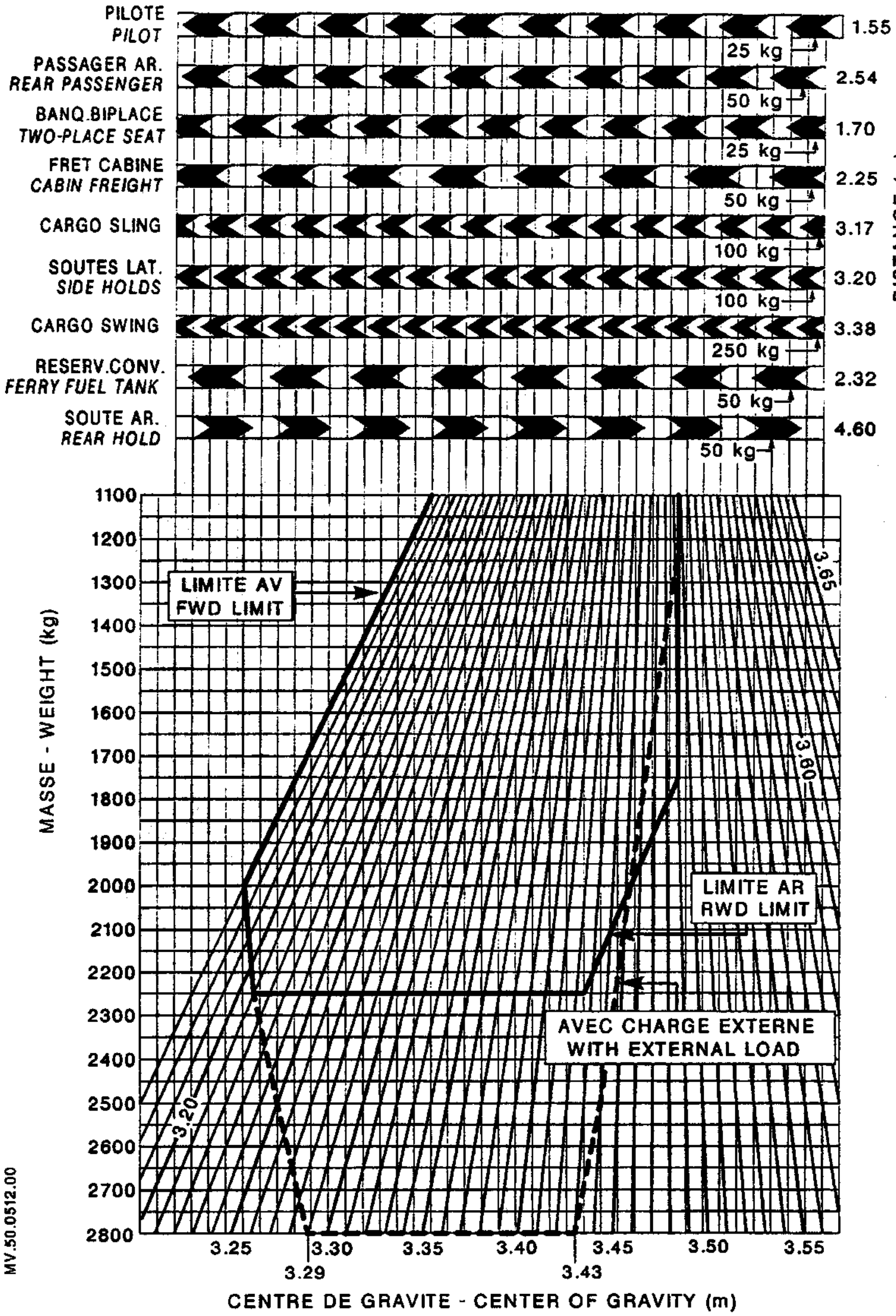
These charts are designed so that the variations in the fuel weight make CG move along a vertical line.

Example 1 : Total weight 1800 kg for a centre of gravity of 3.30 m. During the flight, after consumption of 200 kg of fuel, the centre of gravity will be 3.28 m (Refer to chart).

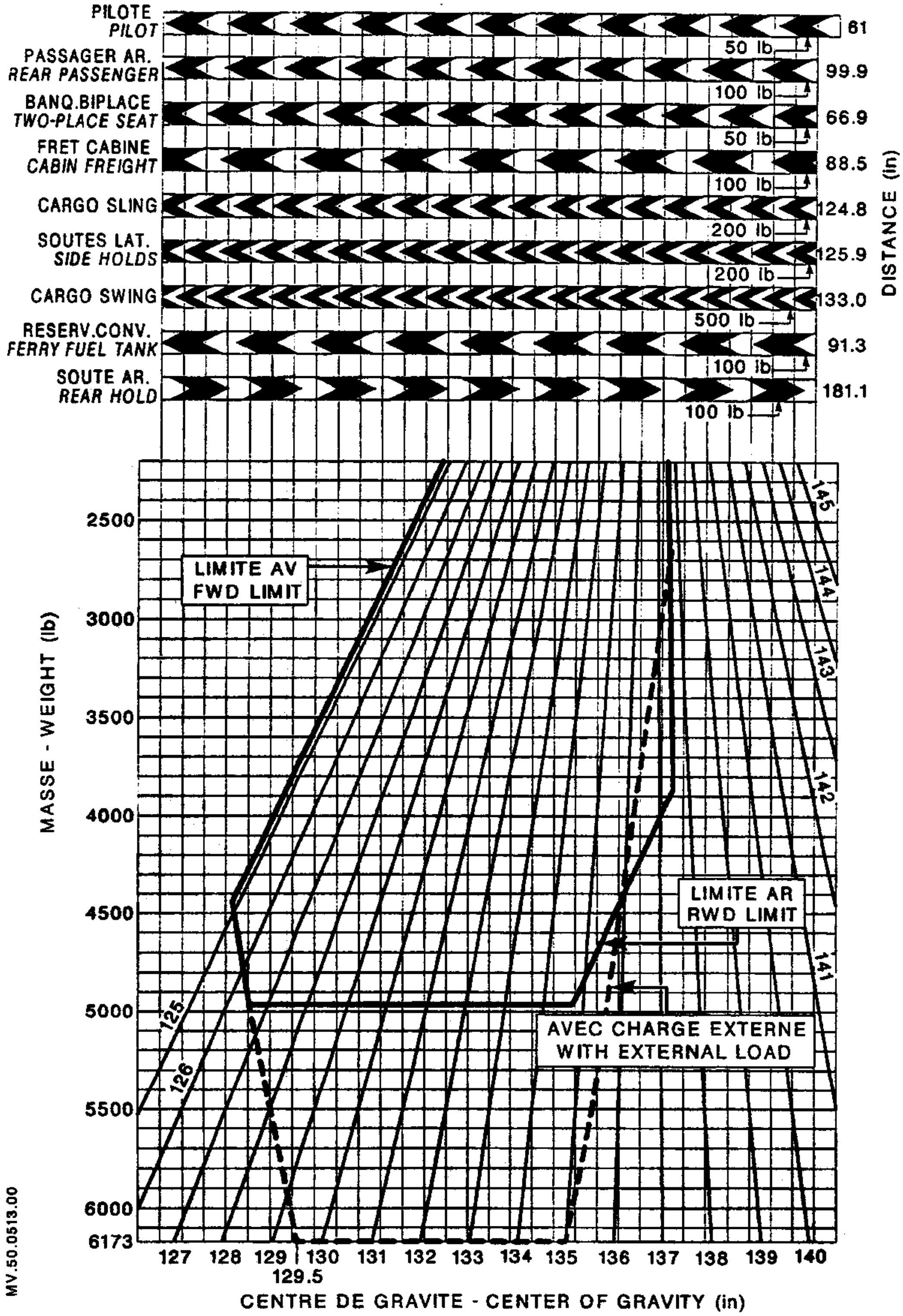
Example 2 : Total weight 4000 lb for a centre of gravity of 131 in. During the flight after consumption of 600 lb of fuel, the centre of gravity will be 130 in. (Refer to chart).

The weight and CG limits are given in the LIMITATIONS SECTION and may be modified by the Supplements corresponding to the optional items fitted.

ABAQUE DE CENTRAGE *LOADING CHART*



ABAQUE DE CENTRAGE *LOADING CHART*

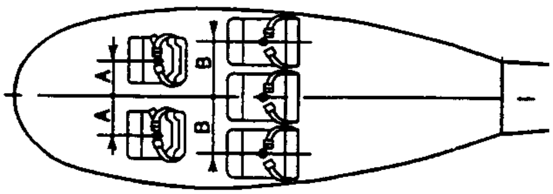


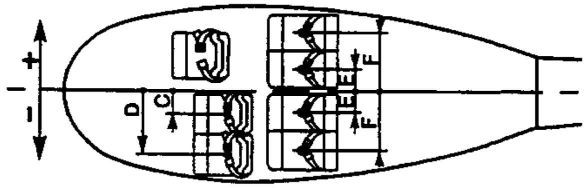
SECTION 6.3

LATERAL LOCATION OF VARIABLE LOADS

The tables below give the lateral CG positions for different weights and their moments with respect to the Y plane (positive dimensions on the right, negative dimensions on the left).

1 CREW AND PASSENGERS





MV.50.0514.00

A = 0.360 m (14.17 in)
B = 0.495 m (19.49 in)

C = 0.200 m (7.88 in)
D = 0.597 m (23.5 in)
E = 0.207 m (8.15 in)
F = 0.620 m (24.45 in)

METRIC UNITS

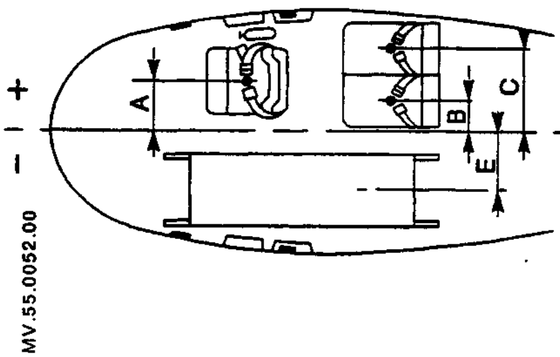
WEIGHT kg	MOMENT : m.kg (A)	(B)	(C)	(D)	(E)	(F)
50	18	25	10	30	10	31
60	22	30	12	36	12	37
70	25	35	14	42	14	43
80	29	40	16	48	17	50
90	32	45	18	54	19	56
100	36	50	20	60	21	62
110	40	55	22	66	23	68
120	43	59	24	72	25	75

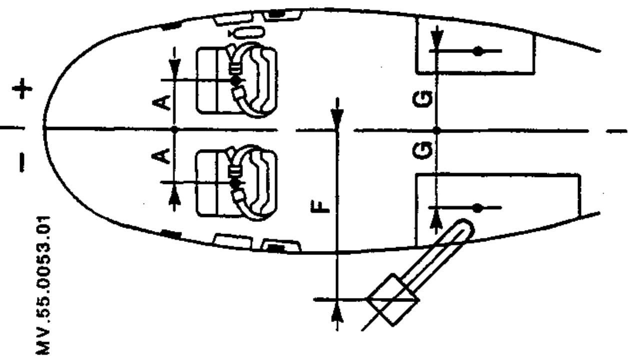
IMPERIAL UNITS

WEIGHT lb	MOMENT : in.lb (A)	(B)	(C)	(D)	(E)	(F)
100	1417	1949	788	2350	815	2445
120	1700	2339	946	2820	978	2934
140	1984	2729	1103	3290	1141	3423
160	2267	3118	1261	3760	1304	3912
180	2551	3508	1418	4230	1467	4401
200	2834	3898	1576	4700	1630	4890
220	3117	4288	1734	5170	1793	5379
240	3401	4678	1891	5640	1956	5868
260	3684	5067	2049	6110	2119	6357

R

2 AIR AMBULANCE, HOIST AND LATERAL BAGGAGE HOLDS





METRIC UNITS

WEIGHT kg	MOMENT : m.kg (A)	(B)	(C)	(E)	(F)	(G)
50	18	10	31	21	77	28
60	22	12	37	25	93	33
70	25	14	43	29	108	39
80	29	17	50	33	124	44
90	32	19	56	37	139	50
100	36	21	62	41	154	56
110	40	23	68	46	170	61
120	43	25	75	50	185	67
130	47	27	81	54	201	
136	49	28	84	56	210	

IMPERIAL UNITS

WEIGHT lb	MOMENT : in.lb (A)	(B)	(C)	(E)	(F)	(G)
100	1417	815	2445	1634	6079	2189
120	1700	978	2934	1961	7294	2627
140	1984	1141	3423	2287	8510	3065
160	2267	1304	3912	2614	9726	3502
180	2551	1467	4401	2941	10942	3940
200	2834	1630	4890	3268	12157	4378
220	3117	1793	5379	3595	13373	4816
240	3401	1956	5868	3921	14589	5254
260	3684	2119	6357	4248	15805	5691
280	3968	2282	6846	4575	17020	
300	4252	2445	7335	4902	18236	

SECTION 6.4

WEIGHT AND MOMENT OF EQUIPMENT ITEMS

The following list covers the optional equipment items. It gives the approximate weight and moment of the removable components.

DESCRIPTION	WEIGHT kg	WEIGHT lb	MOMENT m.kg	MOMENT in.lb	
Aircraft tool kit					
Cabin fire extinguisher	2.1	4.6	3.2	275	
Axe	1.1	2.4	1.7	149	
Door + subdoor	14.0	30.9	27.2	2360	
High front seat	10.6	23.4	17.1	1484	
Low front seat	7.3	16.1	11.5	998	
Forward Two-place seat (High back)	11.4	25.22	19.4	1688	
2 Two-place seats, rear	21.1	46.5	54.6	4739	
1 Three-place seat, rear (complete with armrests)	26.2	57.8	67.6	5867	
Dual control	2.3	5.1	2.6	225	
Battery	17.3	38.1	69.0	5990	
Skis complete with struts	30.4	67.0	105.6	9165	
Skis without struts	23.6	52.0	82.4	7152	
Emergency floatation gear	67.6	148.8	227.5	19708	
Sling (cargo swing)	13.3	29.3	45.9	3977	R
Wheels for soft ground	44.8	98.9			R
Ferry tank	35.0	77.2	82.3	7143	
Single stretcher installation (not including stretcher)	0.7	1.5	1.1	95	
Double stretcher installation (not including stretcher)	2.3	5.1	3.9	340	
Stretcher	15.1	33.3	26.7	2318	

DESCRIPTION	WEIGHT		MOMENT		
	kg	lb	m.kg	in.lb	
BREEZE electric hoist (136 kg - 300 lb) (arm, winch, grip, pulley-block, belt, shears)	26.0	57.4	68.4	5947	R R R R
AIR EQUIPEMENT electric hoist (136 kg - 300 lb) (arm, winch, grip, pulley-block, belt, shears)	33.4	73.7	87.9	7637	R R R R
BREEZE electric hoist (204 kg - 450 lb) (boom, faired winch, grip, pulley block, belt, shears)	44.0	97.1	115.8	10060	R R R R
Drip pan	11.3	25.0	26.56	2305	
LOCATOR search light	10.1	22.3	9.3	809	
Low landing gear	42.9	94.5	145.6	12618	
High landing gear	55.5	122.2	187.1	16189	
Footstep	2.9	6.4	5.5	478	
Loud speaker WANDEL AND GOLTERMANN	16.6	36.6	63.9	5548	

SECTION 7

SYSTEMS AND DESCRIPTION

CONTENTS

7.1 MAIN DIMENSIONS

7.2 COCKPIT

7.3 WARNING-CAUTION-ADVISORY PANEL

7.4 POWER PLANT

7.5 FUEL SYSTEM

7.6 ROTOR AND TRANSMISSION SYSTEMS

7.7 FLIGHT CONTROLS

7.8 HYDRAULIC SYSTEMS

7.9 ELECTRICAL POWER SYSTEMS

7.10 PITOT-STATIC SYSTEM

7.11 HEATING AND DEMISTING SYSTEMS

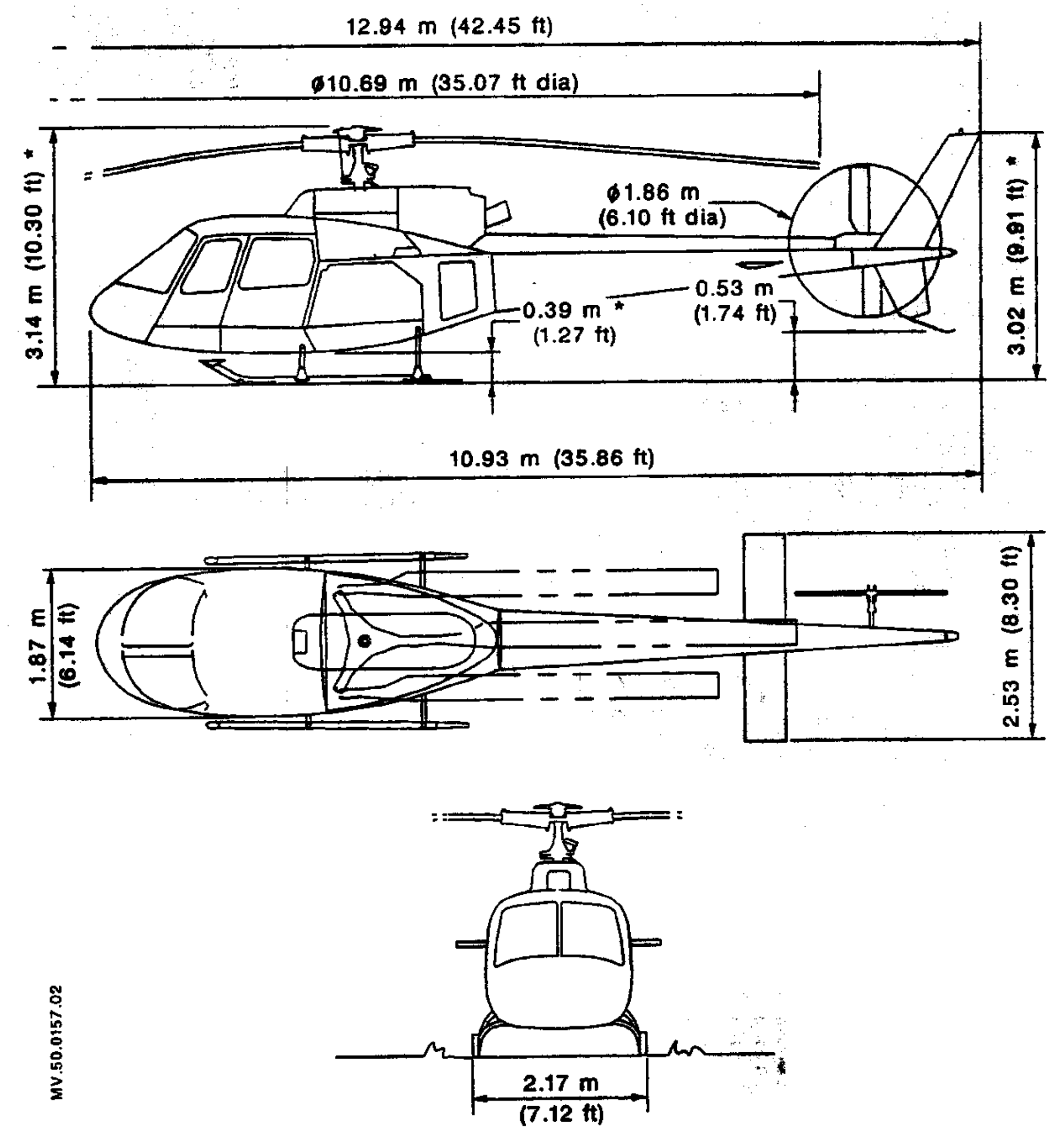
7.12 LIGHTING SYSTEMS

7.13 PARAMETER MANAGEMENT AND DISPLAY SYSTEM (VEMD)

SECTION 7.1

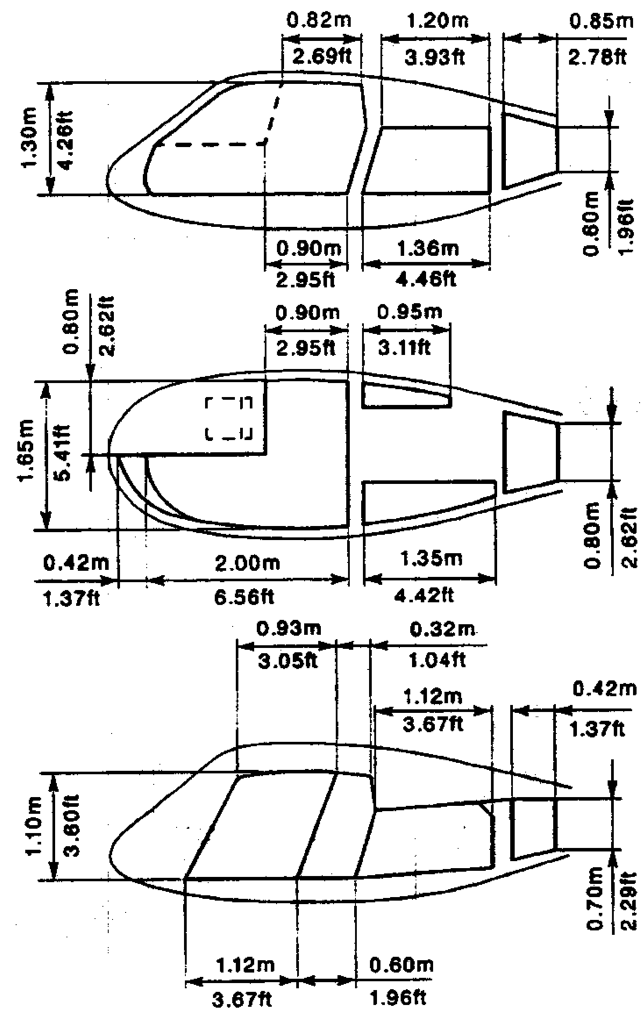
MAIN DIMENSIONS

1 AIRCRAFT DIMENSIONS



* Plus 0.20 m (0.65 ft) when aircraft equipped with high L/G

2 ACCESS DOORS AND COMPARTMENTS DIMENSIONS



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Area :

- Available cabin floor ------------- 2.60 m2 (27.98 sq.ft)
- Cabin forward doors ------------- 1.29 m2 (13.88 sq.ft)
- Cabin rear subdoors ------------- 0.69 m2 (7.42 sq.ft)
- LH hold ------------------- 0.43 m2 (4.62 sq.ft)
- RH hold ------------------- 0.35 m2 (3.76 sq.ft)
- Rear hold ------------------- 0.55 m2 (5.92 sq.ft)

Volumes :

- Available cabin volume ----------- 3.00 m3 (105.94 cu.ft)
- LH hold ------------------- 0.235 m3 (8.29 cu.ft)
- RH hold ------------------- 0.200 m3 (7.06 cu.ft)
- Rear hold ------------------- 0.565 m3 (19.94 cu.ft)

SECTION 7.2

COCKPIT

This section is customized.

SECTION 7.3

WARNING-CAUTION-ADVISORY PANEL

This section is customized.

SECTION 7.4

POWER PLANT

1 DESCRIPTION

1.1 Installation

The engine is mounted at the top of the body structure in a fireproof bay. It is installed aft of the main gearbox, to which it is connected by a shaft mounted between two flexible couplings.

1.2 Brief Description of the Engine

The engine is a free power turbine design.

The engine consists of five separate interchangeable modules :

- Axial Compressor Module (with bleed valve)

  Mounted at the forward end of the engine, comprising a single-stage axial compressor followed by a guide vane.

- Gas Generator Module

  Centrally located, comprises :
  . a centrifugal compressor
  . a combustion chamber
  . generator turbine drying the compressors.

- Free Turbine Module

  At the aft end, consisting of a turbine wheel and shaft.

- Reduction Gear Module

  Reduces the free turbine speed from 39158 r.p.m. to 6000 r.p.m.

- Output Shaft Module

  Transmits engine power to the main gearbox and accessory drive couplings.

2 LUBRICATION SYSTEM

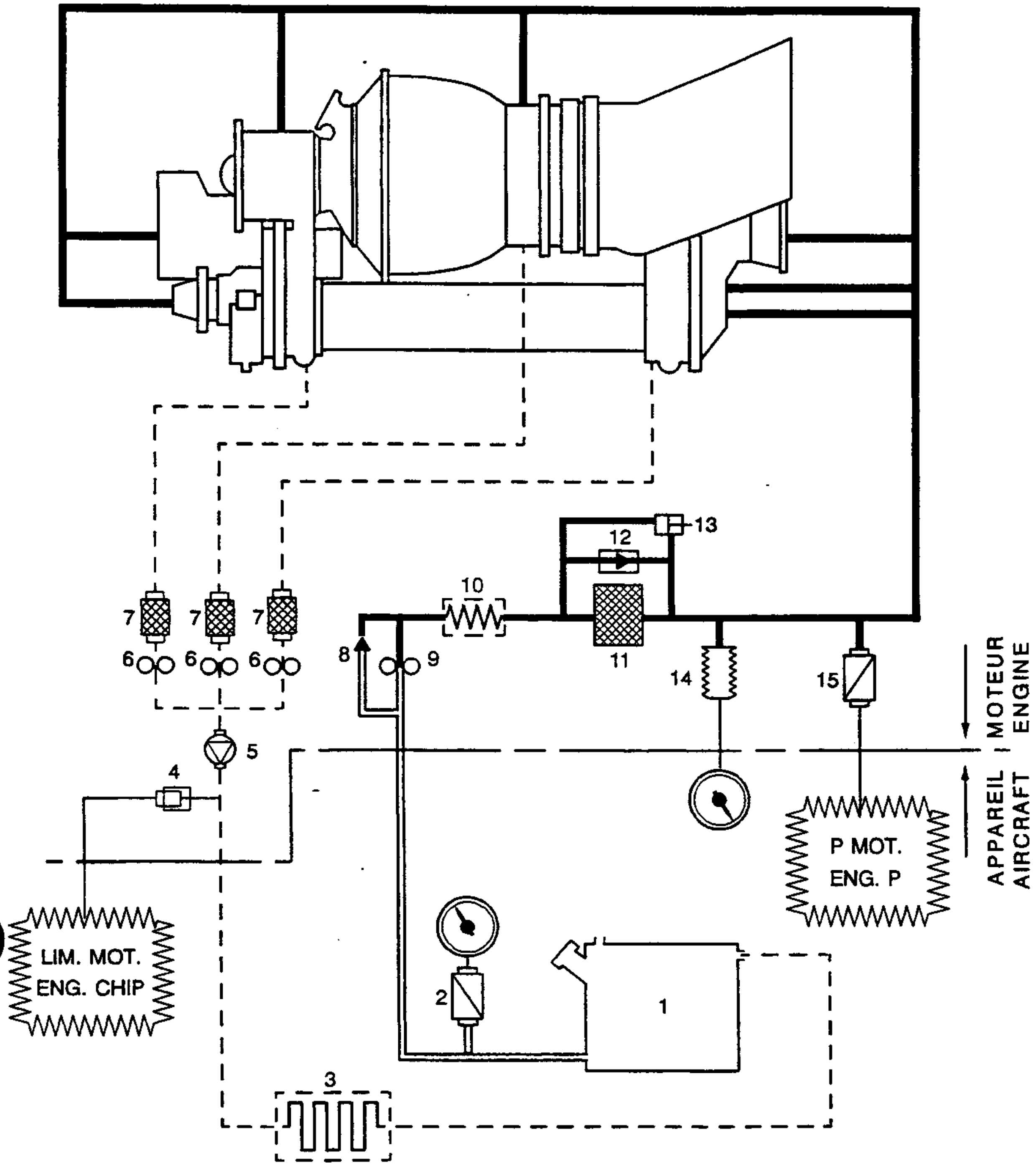
The engine includes a self-contained lubrication system with an external oil cooling system and oil tank.

Oil system monitoring is ensured by oil temperature and pressure indicators located on the VEMD bottom screen.
In addition, the Warning-Caution-Advisory Panel includes lights that illuminate to indicate :

- minimum oil pressure
- metal particles on the magnetic chip detectors.

KEY TO FIGURE OIL SYSTEM

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Oil tank	8	Pressure relief valve
2	Oil temperature indicator	9	Pressurizing pump
3	Oil cooler	10	Heat exchanger
4	Chip detection light	11	Oil filter
5	Non-return valve	12	Bypass valve
6	Scavenge pumps	13	Clogging indicator
7	Suction filter	14	Oil pressure indicator
		15	Minimum oil pressure light



ASPIRATION - OIL SUCTION LINE

PRESSION - OIL PRESSURE LINE

RETOUR - OIL RETURN LINE

MV.50.0519.00

3 ENGINE MONITORING

The control and monitoring parameters are displayed on the VEMD.

- Gas generator speed:

  . ΔNg indicator: reads the deviation between actual engine Ng and local PMD Ng (as a function of Zp and Θs).
  . Ng digital display: remains only available in case of computer failure.

- First Limitation Indicator (FLI): the three Ng, exhaust gas temperature and torque parameters are converted on a common scale. This indicator provides a synthetic engine power information.

- Torquemeter.

- Exhaust gas temperature (t4) indicator.

- Bleed valve flag, at the LH top part of VEMD.

4 ENGINE CONTROLS

4.1 Electrical controls

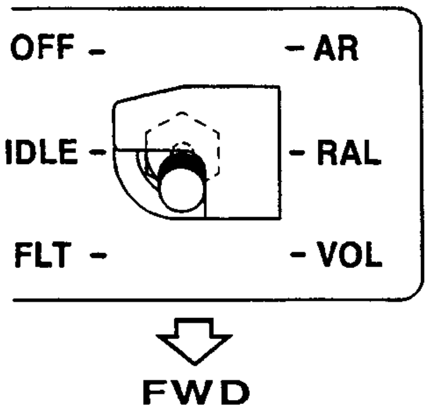
- EXT PWR BATT push-button

  The complete self-test is performed upon computer switch-on only if engine controls are in the following configuration :

  . Starting selector - - - - - - - - - - - - - - OFF (AR) R
  . Fuel control selector - - - - - - - - - - - - AUTO
  . Emergency flow twist grip - - - - - - - - - - Flight detent

- Starting selector :

  In the OFF and IDLE positions, the foldable switchguard is raised. R



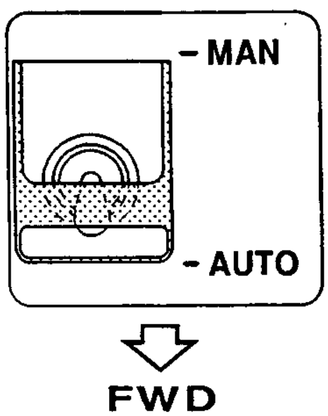
MV.50.0545.00

OFF (AR) : Engine shutdown R
R

IDLE (RAL) : Steady idling speed R
Permits engine oil temperature build-up when starting the engine in very cold weather.

FLT (VOL) : Automatic engine starting in normal conditions. R
Flight position

- Fuel control mode selector :



MV.50.0546.00

AUTO : Automatic engine fuel control mode.
Guarded position.

MAN : Locks the fuel flow setting at the current value.
Provides for training in engine governor failure (using the rotary throttle control).
Results in illumination of the red "GOV" light.

- Cranking pushbutton :

  Located on the HONEYWELL unit, this pushbutton performs the no-fuel cranking function in the following configuration :

  . Starting selector - - - - - - - - - - - - - - - OFF (AR) R
  . Fuel control mode selector - - - - - - - - - - AUTO

4.2 Mechanical controls

- Flow control twist grip:

  . When the twist grip is in the flight detent, flow control is automatically ensured by the FADEC computer.
  The "TWT GRP" and amber "GOV" lights come on each time the twist grip leaves the flight detent.

  . At mid travel, a microswitch controls the Ng regulated idle function, thus preventing engine blowout in particular when practicing autorotation.
  Returning the twist grip to the flight detent whenever necessary will switch the computer back to automatic mode.

  . In case of failure of the fuel control system, the pilot can leave the flight detent to either increase or reduce the fuel flow as required. The twist grip includes a surpassable stop in the "fuel flow increase" direction beyond the flight detent.

- Fuel shutoff control :

  This control is used to close the fuel shutoff valve. R

- Rotor brake control:

  When the brake is not released, a microswitch prevents the engine from being started. R

RR 2B

Paragraph 4.2 Mechanical controls

Replace the subparagraph " Fuel shutoff control " by :

- Fuel shutoff control :
  This control is used to close the fuel shutoff valve.

Replace the subparagraph " Rotor brake control " by :

- Rotor brake control :
  When the brake is not released, a microswitch prevents the engine from being started.

4.3 Engine electrical power supply

- 30 ALPHA panel

DESCRIPTION	FUNCTION
GOV	FADEC power supply

- 31 ALPHA panel

DESCRIPTION	FUNCTION
GOV	FADEC power supply
ENG. ACC	Power supply to starting relay and fuel cut-off control electric valve
CRANK	Power supply to no-fuel cranking control relay

- 32 ALPHA panel

DESCRIPTION	FUNCTION
START	Power supply to starting accessories (starting and fuel supply electric valves, high-energy box)

- Fuel control

  The fuel control function is performed by the FADEC computer according to the full-authority microprocessor-type digital electronic technique.

  The free turbine speed is governed at a value which is related to the governor speed (Ng) and the collective pitch (anticipator).

  The main functions of the fuel control system are as follows:

  . Automatic engine starting and acceleration from idling speed up to the speed necessary for flight.

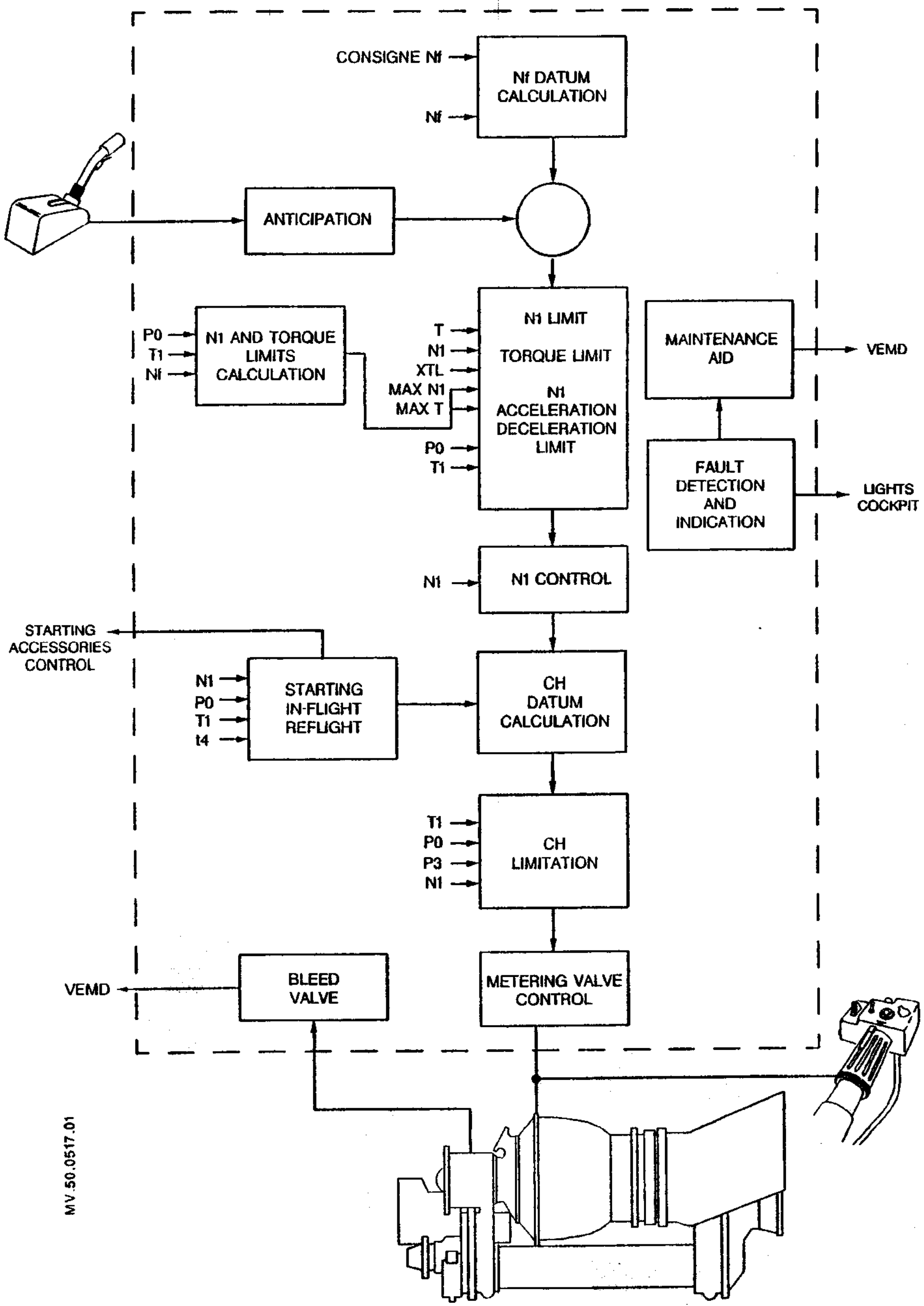
  . Automatic control of free turbine and gas generator rotational speeds to maintain a rotor rotational speed corresponding to the selected value, whatever the changes in the aerodynamic loads applied to the rotor (rapid or slow loading or unloading).

  . Engine speed control to keep engine speed within permissible operating ranges and in particular as regards speed limitations.

  . Rapid engine acceleration without hunting and rapid deceleration without blowout.

  . In-flight restarting.

  . Engine shutdown.
  The FADEC computer performs the engine shutdown function and also performs a the maintenance aid function which is available on the VEMD.


CONSIGNE Nf
Nf
Nf DATUM CALCULATION
ANTICIPATION
P0
T1
Nf
N1 AND TORQUE LIMITS CALCULATION
T
N1
XTL
MAX N1
MAX T
P0
T1
N1 LIMIT
TORQUE LIMIT
N1 ACCELERATION DECELERATION LIMIT
MAINTENANCE AID
VEMD
FAULT DETECTION AND INDICATION
LIGHTS COCKPIT
N1
N1 CONTROL
STARTING ACCESSORIES CONTROL
N1
P0
T1
t4
STARTING IN-FLIGHT REFLIGHT
CH DATUM CALCULATION
T1
P0
P3
N1
CH LIMITATION
VEMD
BLEED VALVE
METERING VALVE CONTROL
MV.50.0517.01

SECTION 7.5

FUEL SYSTEM

1 FUEL TANK

1.1 Description

The spin-molded polyamide fuel cell is located in the body structure beneath the transmission deck. It is equipped with a gravity refueling spout on the LH side of the aircraft, as well as a vent line and a water bleed valve.

1.2 Capacity

Fuel Quantity	Liters	US gal.	Imp.Gal.	kg	lb	Remarks
Total	540	143	119	427	940	Specific gravity : 0.79
Usable after illumination of low-level light	60	15.8	13.1	47.4	104	
Unusable	1.25	0.33	0.28	1	2.20	

s.g. = 0,79

CONVERSION TABLE
GAUGE READING - CAPACITY/WEIGHT

Graduation	Liters	US Gal.	Imp. Gal.	kg	lb
10	540	143	119	427	940
9	486	129	107	384	846
8	432	114	95	342	752
7	378	100	83	299	658
6	324	86	71	256	564
5	270	74	59	213	470
4	216	57	48	171	376
3	162	43	36	128	282
2	108	29	24	85	188
1	54	14	12	43	94
0	0-3	0-0.8	0-0.6	0-2.3	0-5

2 ENGINE FUEL SUPPLY SYSTEM

The engine fuel supply system consists of the following :

- on the aircraft : a booster pump fitted to the bottom of the fuel tank.

- on the engine : . a LP fuel pump,
  . a HP fuel pump,
  . a fuel filter with bypass.

3 FUEL SYSTEM CONTROLS AND MONITORING

The following cockpit provisions are available to the pilot :

- An emergency throttle control to meter the fuel in the event of a governor failure.

- A fuel shutoff lever that actuates the shutoff valve in the engine fuel supply system

- On the VEMD :
  . A fuel contents gauge (in %). A yellow line from 0 to 10 % indicates the last 15 min. of flying time.
  . A digital fuel contents gauge calibrated in the chosen units.
  A flow-meter indicating the fuel flow in the chosen units and the remaining flying time.

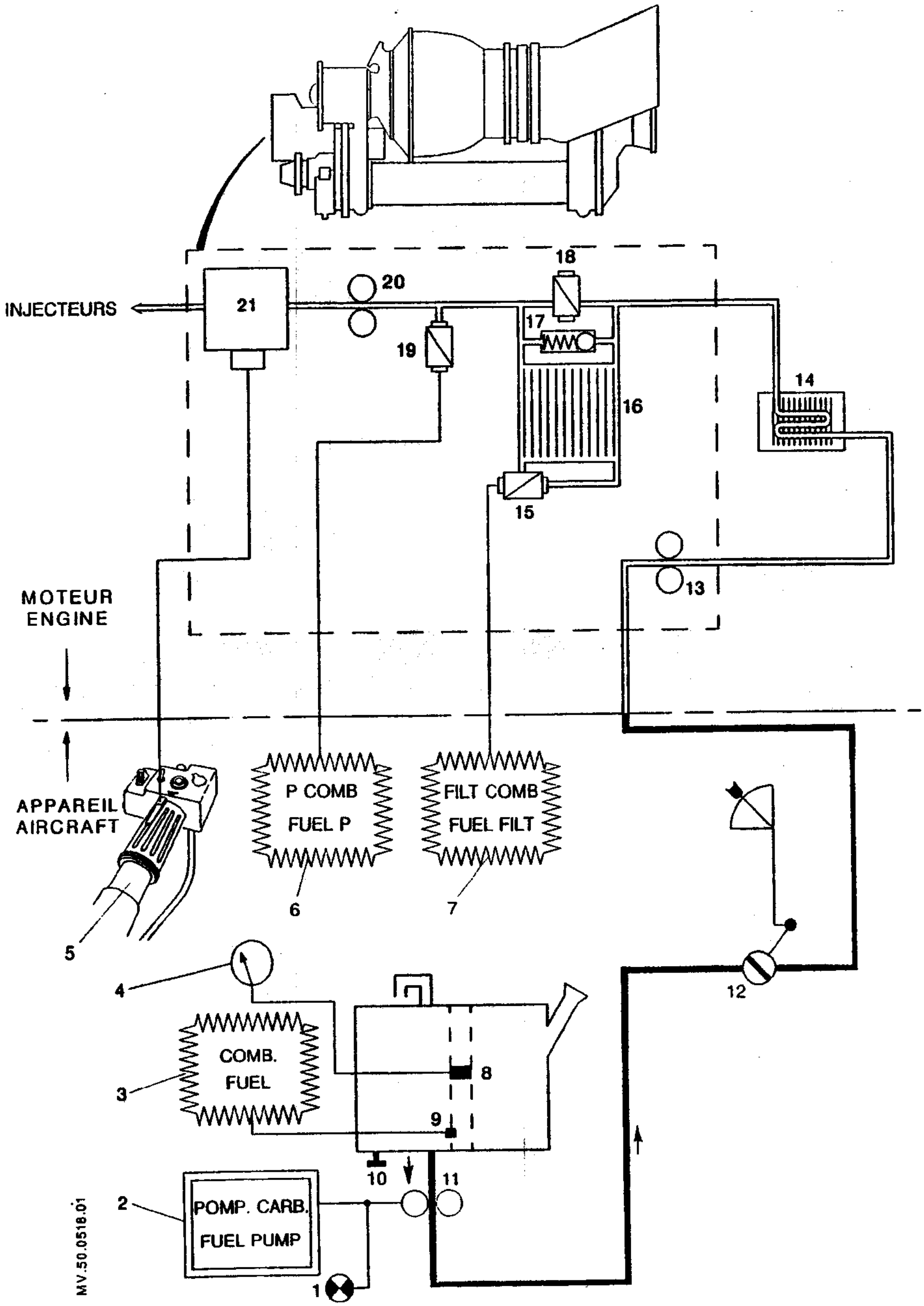
- A "COMB" (FUEL) warning which lights up when the low level is reached in the tank.

- A "P COMB" (FUEL P) warning which lights up when the fuel pressure drops below 500 mb. R

- A "FILT COMB" (FUEL FILT) warning which lights up when the pressure differential between the fuel filter input and output exceeds 700 mb. R

- An indicator light on the instrument panel to show when the booster pump is operating.

ITEM	DESCRIPTION	ITEM	DESCRIPTION	
1	Booster pump operating indicator	11	Booster pump	
2	Booster pump push-button	12	Fuel shut-off valve	R
3	Fuel low level warning light	13	LP fuel pump	R
4	Fuel contents gauge	14	Fuel heating	R
5	Standby engine throttle control	15	Filter pre-clogging pressure switch	R
6	Low pressure warning light	16	Fuel filter	R
7	Fuel filter pre-clogging warning light	17	Filter bypass valve	R
8	Fuel gauge sender unit	18	Differential pressure switch	R
9	Fuel low level switch	19	Fuel pressure transducer	R
10	Fuel tank bleed	20	HP fuel pump	R
		21	Fuel metering unit	R


INJECTEURS
21
20
18
17
19
16
14
15
13
MOTEUR
ENGINE
APPAREIL
AIRCRAFT
P COMB
FUEL P
FILT COMB
FUEL FILT
5
6
7
4
12
COMB.
FUEL
3
8
9
10
11
2
POMP. CARB.
FUEL PUMP
1
MV.50.0516.01

SECTION 7.6

ROTORS AND TRANSMISSION SYSTEM

1 ROTORS

1.1 Main rotor

Of semi-rigid design, the "STARFLEX" rotor hub has no bearings nor lubrication system.

The three main rotor blades are of flexible glass-resin laminated construction. Pitch variation is achieved through distortion of elastomer items.

Seen from above, the rotor spins in the clockwise direction.

1.2 Tail rotor

The two-blade tail rotor is see-saw mounted on the TGB. The tail rotor blades rotate counterclockwise as viewed from the right side of the aircraft.

2 TRANSMISSION SYSTEM

The transmission system consists of :

- engine-to-main gearbox coupling system
- main gearbox (MGB)
- tail rotor drive shaft
- tail gearbox (TGB).

For main rotor speeds of 394 rpm, the rotational speeds are as follows :

- 39970 rpm for the free power turbine
- 6125 rpm for the engine-to-MGB coupling shaft and the tail rotor drive shaft
- 2086 rpm for the tail rotor.

2.1 Engine-to-MGB Coupling

It transmits engine power to the MGB through a shaft and flexible coupling turning inside a flared coupling tube. The shaft drives the MGB input coupling by means of a pulley used to drive a hydraulic pump.

2.2 Main Gearbox (MGB)

The MGB consists of three interchangeable modules :

- an epicyclical reduction gear module with five planet gears providing a 4.33 reduction ratio.

- a bevel reduction gear module with a ring gear and pinion providing a further 3.59 reduction ratio.
  This module is housed in two casings :

  . main casing supporting a power takeoff coupling
  . lower casing with MGB mounting provisions ;

- a lubrication module attached to the lower casing.

Lubrication of the MGB is monitored through :

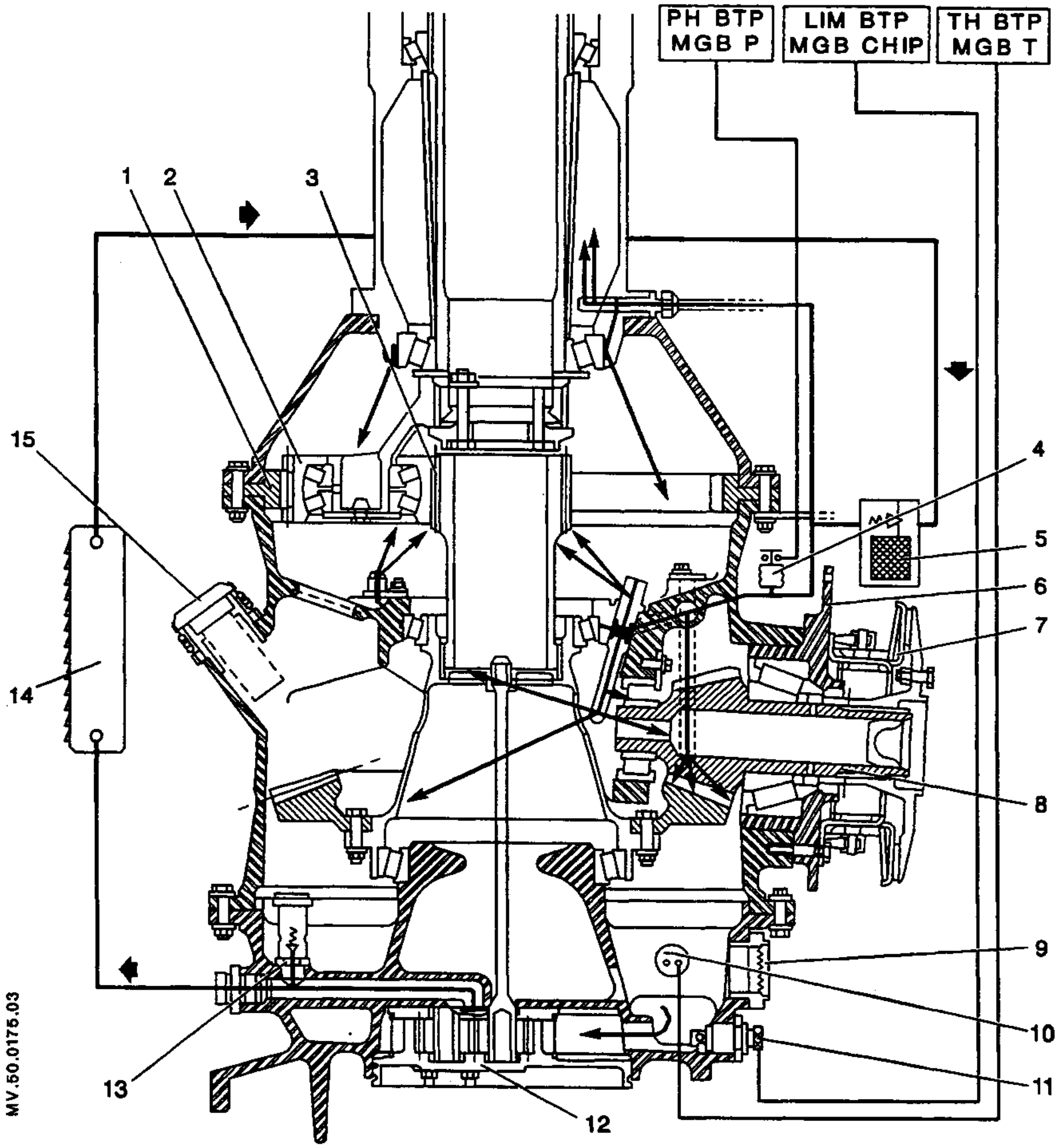
- a pressure switch causing the "MGB. P" light to illuminate on the warning-caution-advisory panel when the pressure drops below 1 bar (14.50 psi).

- a thermal switch causing the "MGB. T" light to illuminate on the warning-caution-advisory panel when the temperature reaches 115°C.

- a magnetic plug that causes the "MGB CHIP" light to illuminate when metal particles are present.

- as an optional equipment an MGB oil pressure and temperature indicator can be fitted in addition to the lubrication monitoring system.

The power transmitted through the MGB is measured by a torsion-type torquemeter fitted to the engine-MGB coupling shaft.
100 % torque is equivalent to 853 Nm.



Item	DESCRIPTION	Item	DESCRIPTION
1	Epicyclical reduction gear	9	Oil level sight
2	Planet gear	10	Oil temperature switch
3	Sun gear	11	Magnetic plug
4	Low pressure switch	12	Oil pump
5	Oil filter and bypass	13	Pressure relief valve
6	Power input module	14	Oil cooler
7	Rotor brake assembly	15	Oil filler cap
8	Bevel pinion		

2.3 Tail Rotor Drive System

It consists of two items :

- a forward short shaft at the engine output
- a long shaft supported by five ball bearing assemblies.

These items are connected to each other by means of flexible couplings.

2.4 Tail Gearbox (TGB)

The TGB is a right-angle drive.

It is splash-lubricated and is provided with an oil level sight glass.

2.5 Rotor Brake

The rotor brake is mechanically controlled by means on the lever on the control quadrant. R R

When the lever is FORWARD, the rotor brake is released.
When the lever is AFT, the rotor brake is applied.

On brake application, the lever causes a diaphragm spring to compress, thus keeping the friction linings under constant load. A return spring brings the device back to the "brake released" position when the lever is moved forward.

SECTION 7.7

FLIGHT CONTROLS

The basic aircraft is fitted with controls at the RH seat.

As an optional item, the aircraft can be fitted with dual controls in order to fly with a copilot. These controls can be removed quickly for transportation of loads inside the cabin.

The hydraulic servo-controls fitted to each control channel are described in SECTION 7.8.

When the aircraft is fitted with the optional autopilot each channel is completed by the following :

- for the pitch and roll channels :
  . an electric actuator
  . a trim actuator

- for the yaw channel :
  . an electric actuator
  . a collective pitch - yaw coupling system
  . an elastic rod
  . an adjustable friction lock on the pedals
  . a pedal movement detector.

SECTION 7.8

HYDRAULIC SYSTEM

1 GENERAL

The hydraulic system reduces the pilot's workload by providing hydraulically assisted servo-controls to actuate the flight controls.

The hydraulic fluid used must comply with specifications AIR 3520 or MIL-H-83282.

The total system fluid volume is 3 liters (0.79 US gal. or 0.66 UK gal.) up to the maximum level mark on the reservoir.

2 SYSTEM DESCRIPTION (Figure 1)

The hydraulic system basically includes the following :

- A gear pump (20) driven by the main gearbox.
- A regulator unit mounted on the R.H. side of the M.G.B., containing :
  . a pressure regulating valve (18)
  . a pressure switch (16)
  . a filter (17)
  . a solenoid valve (15).
- A hydraulic reservoir (21) supplying the pump.
- Three single-cylinder main servo-controls (1) (2) (3) driving the fixed swashplate.

  Each servo-control is equipped with a safety system comprising :
  . a hydraulic accumulator (4)
  . a non-return valve (5)
  . a solenoid valve (6).

  In the event of a hydraulic pressure failure, this system provides hydraulic assistance for sufficient time to enter a flight configuration with acceptable control operating loads.

- A single-cylinder yaw servo-control (10) driving the tail rotor control rod. In the event of a hydraulic pressure failure, a load compensating system is provided to actuate the control rod with acceptable yaw pedal operating loads ; this system comprises :
  . a hydraulic accumulator (4)
  . a non-return valve (5)
  . a pressure-drop solenoid valve (8) on the accumulator
  . a servo compensator (9)
  . pressure relief valve (7).

The rated system operating pressure is 40 bars.

3 SYSTEM CONTROLS AND MONITORING (Figure 1)

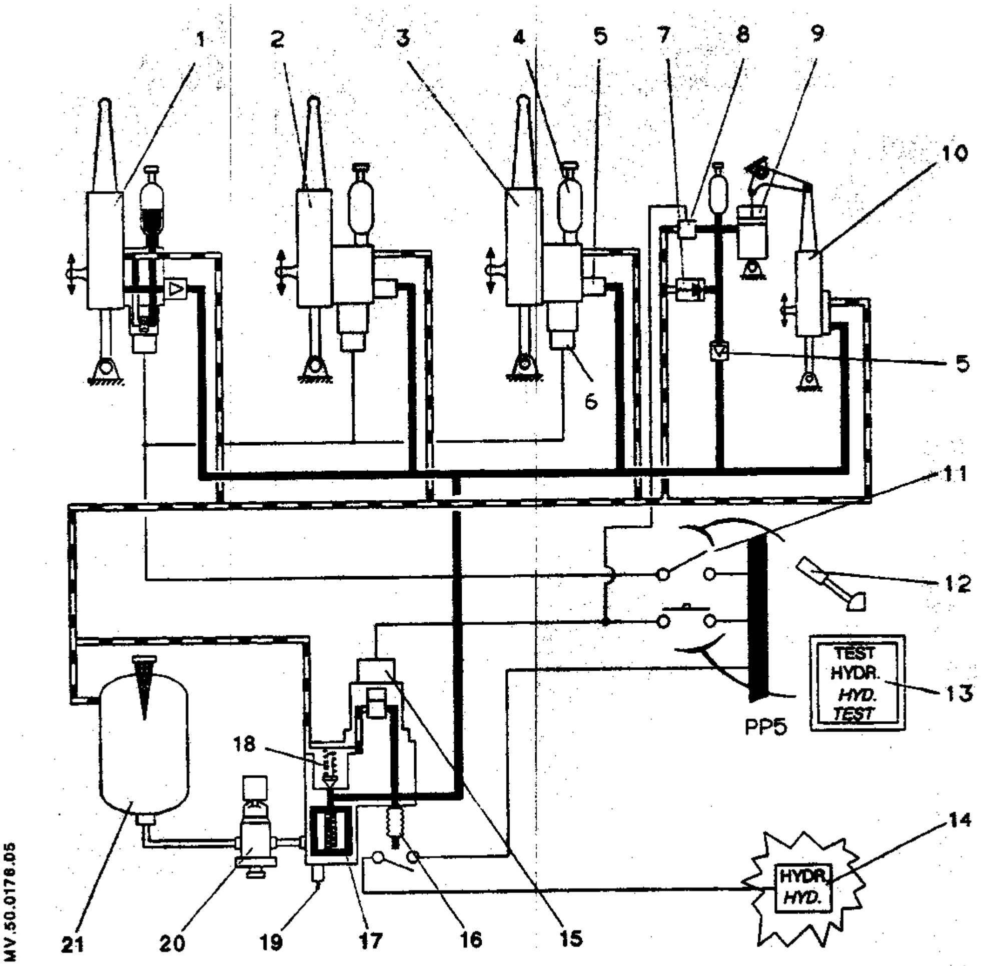
The pilot is informed of hydraulic system fault conditions by a red "HYD" low-pressure warning light (14) on the Warning-Caution-Advisory Panel which ignites when the pressure is less than 30 bar (435 psi).

A switch (11) on the collective pitch lever (12) can be used to cut off all hydraulic power by opening the three solenoid valves on the main rotor servo-controls to depressurize the system.

A push-button (13) on the control console is used :

- to test the hydraulic accumulators by opening the regulator unit solenoid valve (15)
- to depressurize the load compensating servo (9).

The hydraulic system filter, located on the regulator unit, is fitted with a clogging indicator (19).



Item	DESCRIPTION	Item	DESCRIPTION
1	Roll servo-control	12	Collective pitch lever
2	Pitch servo-control	13	Accumulator test push-button
3	Roll servo-control	14	Low pressure warning light
4	Hydraulic accumulator	15	Solenoid valve
5	Non-return valve	16	Low pressure switch
6	Solenoid valve	17	Filter
7	Pressure relief valve	18	Pressure regulator
8	Pressure- drop solenoid valve	19	Clogging indicator
9	Load compensating servo	20	Hydraulic pump
10	Yaw servo-control	21	Hydraulic fluid reservoir
11	Hydraulic pressure cutoff switch		

Figure 1

SECTION 7.9

1 - DC POWER SYSTEM

1 GENERAL

DC power is provided by a starter-generator and by a 15 amp-hr buffer-mounted storage battery.

A second identical storage battery may be installed as optional equipment.

An external power receptacle on the R.H. side of the aircraft may be used to supply the aircraft electrical system from a 28 VDC ground power unit.

The generator and the battery are coupled to the distribution bus by means of line contactors, which can only close if the ground power unit is disconnected.

2 EXTERNAL POWER CIRCUIT

The ground power unit is coupled at the primary distribution bus by means of its contactor when the following conditions are met :

- electric power is available at the external power receptacle
- the "MASTER SW" pushbutton is released
- the "EXT PWR BATT" pushbutton is engaged.

The "GEN" and BATT" lights are illuminated.

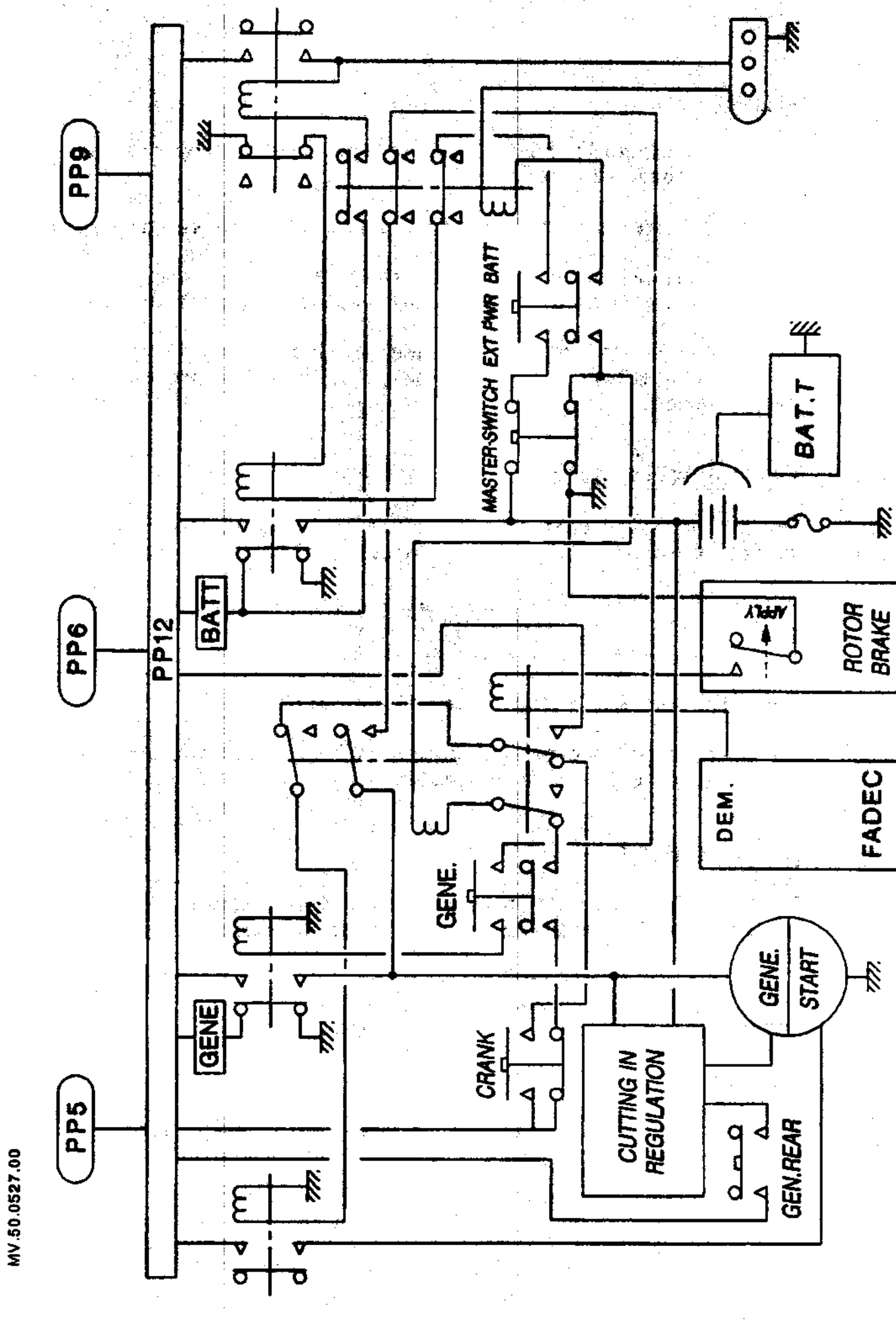
The battery and the generator are isolated from the system until the ground power unit is disconnected.

3 BATTERY CIRCUIT

The battery is coupled to the primary distribution bus by means of its contactor when the following conditions are met :

- electric power is not available at the external power receptacle
- the "MASTER SW" pushbutton is released
- the "EXT PWR BATT" pushbutton is engaged.

The battery may be isolated from the aircraft power system either :
. manually using the "MASTER SW" and "EXT PWR BATT" switches,
. or automatically by connecting the ground power unit.


PP9
PP6
PP5
PP12
BATT
GENE
MASTER-SWITCH
EXT PWR
BATT
BAT.T
APPLY
ROTOR BRAKE
DEM.
FADEC
GENE.
CRANK
CUTTING IN REGULATION
GENE.
START
GEN.REAR
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RR 2B

Paragraph : 5 ELECTRICAL SYSTEM CONTROL AND MONITORING

Replace the existing title " 5.1.2 Selectors located on the instrument panel " by :

5.1.2 Selectors located on the instrument panel or overhead panel

4 GENERATOR CIRCUIT

The generator is coupled to the primary distribution bus by means of its contactor when the following conditions are met :

- electric power is not available at the external power receptacle
- the "MASTER SW" and "CRANK" push-buttons are released
- the "GEN" pushbutton is engaged
- the generator voltage exceeds the battery voltage by at least 0.5 V.

The generator may be isolated from the aircraft power system :

- manually :
  . by disengaging the "GEN" push-button,
  . by pressing the "MASTER SW" and "CRANK" push-buttons.

- automatically if :
  . a reverse current is detected from the battery to the generator,
  . a ground power unit is connected,
  . the generator voltage exceeds 31.5 V.

  A push-button is provided to attempt resetting of the generator.

When the generator is isolated, the "GEN" light illuminates on the Caution-Advisory Panel.

5 ELECTRICAL SYSTEM CONTROL AND MONITORING

5.1 Controls

5.1.1 Console Push-buttons

- "EXT PWT BATT"
- "MASTER SW"
- "CRANK"
- "GEN"
- "GENE RESET"

5.1.2 Selectors located on the instrument panel or on the overhead panel R

- ON/OFF switch,
- Power regulation mode selector.

5.2 Indicator Lights

The following lights are included in the Caution-Advisory Panel :

- Red warning light : "BATT TEMP"
- Amber caution lights : "BATT"
  "GENE"

5.3 Monitoring parameters

The vehicle page on the VEMD displays the following parameters :

- voltage,
- generator current,
- starting current.

SECTION 7.9

2 - AC POWER SYSTEM

1 GENERAL

The AC power generation system is an optional installation required when the aircraft is equipped with an automatic pilot or with certain gyroscopic instruments.
Two different types of installation are available, depending on the power capacity required.

AC power is supplied by a static inverter from the DC power system. The inverter is located beneath the cabin floor. Performance characteristics are as follows :

250-VA A.C power system

- Input voltage	28 VDC
- Output voltages	115 and 26 VAC
- Frequency	400 Hz
- Power output : 115 VAC	150 VA) limited to 250 VA
26 VAC	150 VA)

10-VA A.C. power system

- Input voltage	28 VDC
- Output voltage	26 VAC
- Frequency	400 Hz
- Power output	10 VA

2 DESCRIPTION OPERATION

The static inverter is supplied from bus bar PP9, through a fuse located on the RH side fuse panel (16-amp. fuse for the 250-VA power system, 2.5-amp. fuse for the 10-VA power system).

The system is switched on by means of the "INVERT" push-button located on the control panel.

AC power distribution circuits are protected by fuses located on the LH side fuse panel.

An amber caution light on the instrument panel indicates a failure of the A.C. power generation system.

SECTION 7.10

PITOT-STATIC SYSTEM

It consists of :

- A total pressure circuit
- A static pressure circuit
- Three flight instruments
  . an airspeed indicator
  . a vertical speed indicator
  . an altimeter.

The static system includes 2 pressure pick-offs under the cabin on either side of the aircraft centerline. The pick-offs are connected together in order to supply the 3 instruments.

The total pressure pick-off is mounted on the nose slightly to the left of the aircraft centerline.

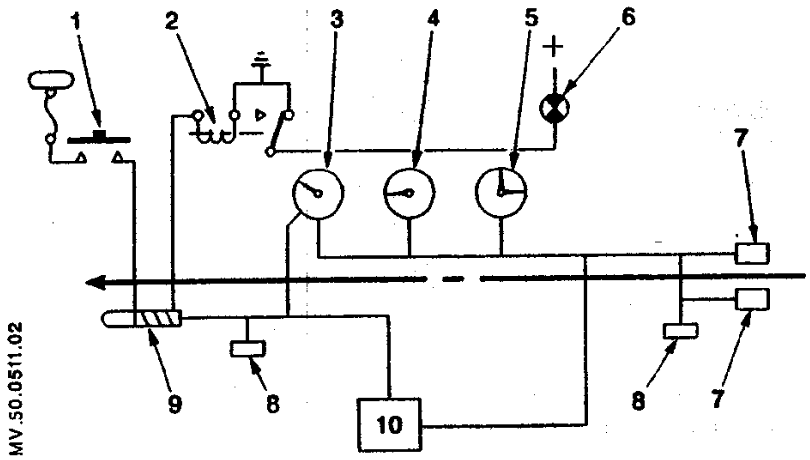
The total pressure circuit supplies the airspeed indicator.

It may include an optional heating resistor operated by the "PITOT" push-button on the control console.

A light illuminates on the Warning-Caution-Advisory panel :
- when the push-button is released
- in the event of failure of the heating resistor
- in the event of power supply failure.

A bleed valve provided on each pressure circuit allows condensation water to be drained off.

The aircraft may be fitted with an optional 2nd total pressure pick-off and dual instruments.



Item	DESCRIPTION	Item	DESCRIPTION
1	"PITOT" push-button	7	Static pressure pick-off
2	Relay	8	Water bleed valves
3	Airspeed indicator	9	Total pressure pick-off (with optional heating)
4	Rate-of-climb indicator		
5	Altimeter	10	VEMD
6	"PITOT" light on Warning-Caution- Advisory panel		

R
R
R

AUTO-PILOT AIR DATA CIRCUIT

When the aircraft is fitted with the auto-pilot, an air data unit supplied with static and total pressure complements the copilot's system.

SECTION 7.11

AIR CONDITIONING

1 CABIN VENTILATION

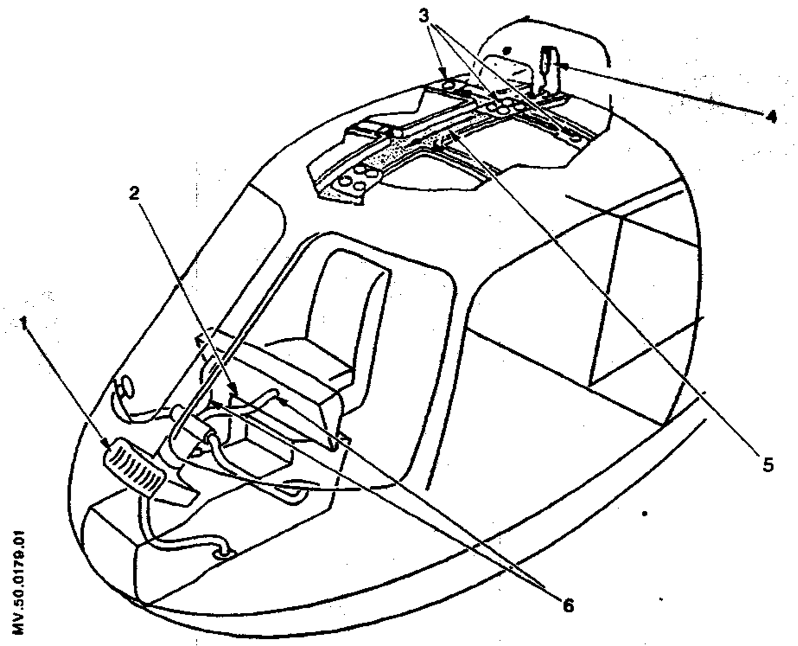
Two separate circuits provide ventilation to the cabin.

- Front ventilation :

  The air taken from the front cabin area flows through two ducts and is distributed to the crew. A pull-knob on the instrument panel controls opening and adjustment of the ventilation circuit.

- Overhead ventilation :

  The air taken from the upper cabin area through a ram air scoop is then circulated to the air outlets via the structure posts.
  Air is diffused by opening and orientation of each air outlet.

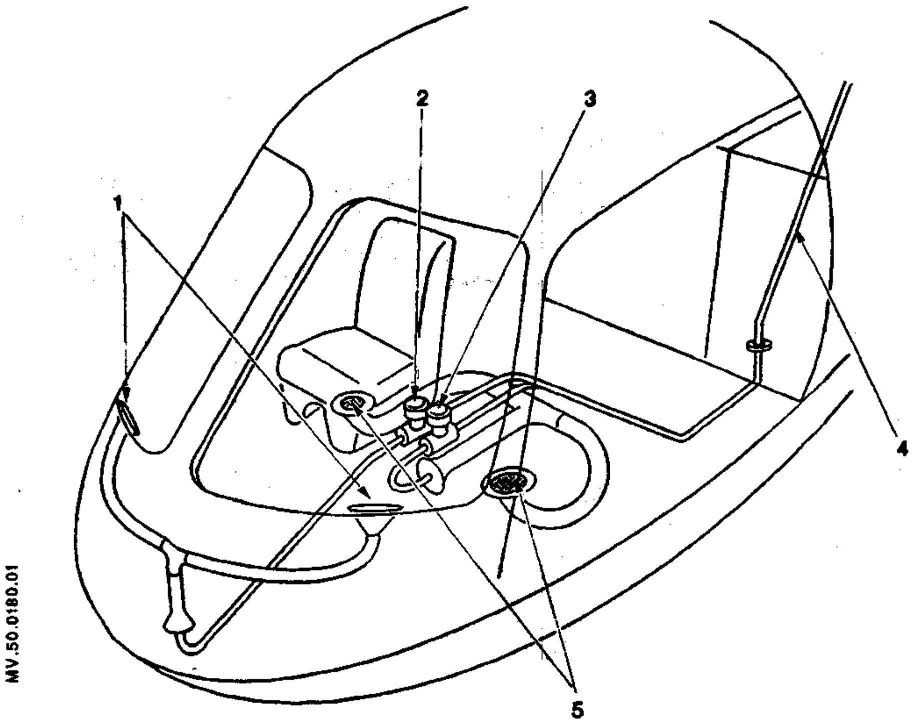


Item	DESCRIPTION	Item	DESCRIPTION
1	FRONT aerator	4	Ram air scoop
2	Control pull-knob	5	Ventilation duct
3	Overhead air outlets	6	FRONT air outlets

2 HEATING * AND DEMISTING SYSTEM

These systems provide cabin heating and windscreen demisting.

Heating and demisting are achieved by mixing (hot) P2 air from the engine with air drawn from under the floor.
The air mixture is circulated through two separate circuits to the heating outlets provided under the front seats and to the demisting manifolds at the front. Two manually operated valves mounted on the P2 lines are used to open and control air distribution.



Item	DESCRIPTION	Item	DESCRIPTION
1	Demisting air diffusers	4	P2 air ducts
2	Demisting control valve	5	Heating diffusers
3	Heating control valve		

* Optional

SECTION 7.12

LIGHTING

1 CABIN LIGHTING

The system consists of a movable spot light, at the front for the crew and two swivel dome lights, at the rear, for the passengers.

The lamps of the dome lights are switched on and off by means of two push-buttons.

The movable spot light is used as an emergency light in case of total lighting failure.

Lighting is controlled by means of a potentiometer.

The movable spot light is directly supplied from the battery and the circuit is protected by a fuse.
The rear dome lights are protected by a fuse on the RH side fuse panel.

For aircraft equipped with the Public Air Transport kit, the rear dome light is supplied from the battery direct busbar and controlled by means of a switch available to the pilot.

2 INSTRUMENT PANEL AND CONSOLE LIGHTING

The instruments are lit by two separate circuits :

- Lighting circuit 1

  Supplies :
  . the control unit (HONEYWELL) on the console,
  . the radio sets on the instrument panel,
  . the radio sets on the console.

- Lighting circuit 2

  Supplies :
  . the indicators having integrated lighting,
  . the lighting control plate,
  . the engine control plate,
  . the NR indicator lighting fixture,
  . the stand-by compass lighting, controlled by means of the Day/Night selector,
  . the VEMD front face.

SECTION 7.12

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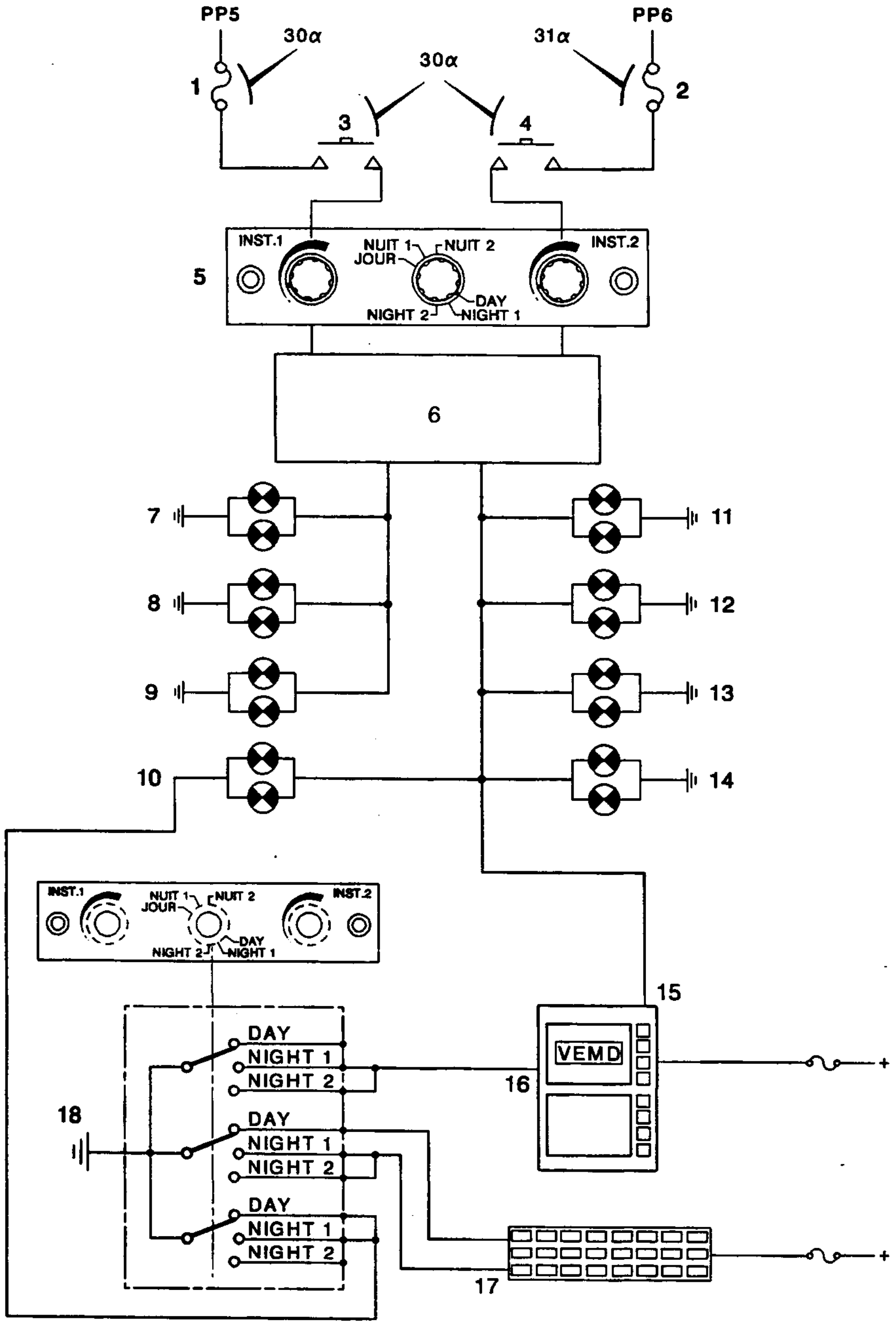
  Supplies :
  . the indicators having integrated lighting,
  . the lighting control plate,
  . the engine control plate,
  . the NR indicator lighting fixture,
  . the stand-by compass lighting, controlled by means of the Day/Night selector,
  . the VEMD front face.

The INST. LTS 1 and INST. LTS 2 push-buttons control the energization of the lighting system. R
The "CONSOLE" and "PIL. INST. PANEL" potentiometers control the brightness of the panels. R

NOTE : Should one of the two power supply circuits fail, the other circuit automatically takes over the supply of the failed circuit. R R
The potentiometer of the serviceable circuit ensures the brightness adjustment for the whole assembly. R R

2.1 Intregrated circuits of instrument panel and console

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	INST. LTS 1 fuse	10	Lighting of stand-by compass
2	INST. LTS 2 fuse	11	Lighting of indicators having integrated lighting
3	INST. LTS 1 pushbutton	12	Lighting control plate
4	INST. LTS 2 pushbutton	13	Engine control plate
5	Lighting control unit	14	NR indicator lighting fixture
6	Graduator	15	Lighting of VEMD front face
7	Lighting of control unit pushbuttons	16	Lighting of VEMD screens
8	Lighting of radio sets on instrument panel	17	Lighting of caution-advisory panel
9	Lighting of radio sets on console	18	Day/Night selector


PP5
30α
30α
31α
PP6
1
2
3
4
5
INST.1
NUIT 1
JOUR
NUIT 2
DAY
NIGHT 2
NIGHT 1
INST.2
6
7
8
9
10
11
12
13
14
INST.1
NUIT 1
JOUR
NUIT 2
DAY
NIGHT 2
NIGHT 1
INST.2
15
VEMD
16
DAY
NIGHT 1
NIGHT 2
18
DAY
NIGHT 1
NIGHT 2
DAY
NIGHT 1
NIGHT 2
17
+
+

3 POSITION LIGHTS

The aircraft is fitted with three position lights :

- one red light on the port tip of the horizontal stabilizer
- one green light on the starboard tip of the horizontal stabilizer
- one white light at rear tip of the fuselage.

The circuit is protected by two "POS. LT." fuses
The installation is controlled by the "POS. LT." pushbutton located on the control console.

4 ANTI-COLLISION LIGHT

The anti-collision light is fitted at the top of the vertical fin and indicates the aircraft's presence at long range by bright red flashes of light.

The circuit is protected by the "A/COLL LT" fuse.
The anti-collision light is controlled by the "A/COL.LT" push-button on the control console.

5 LANDING LIGHT

The landing light is usually mounted at the front RH side of the aircraft, below the cabin.
It can also be fitted in the nose cone.

The landing light is switched ON/OFF using the "LAND LT" pushbutton located on the control console.
The installation is protected by 2 "LAND LT CONT" and "LAND LIGHT" fuses located on the RH side fuse panel.

6 TAXIING LIGHT

The taxiing light is usually mounted at the front LH side of the aircraft, below the cabin.
It can also be fitted in the nose cone above the landing light.

The taxiing light is switched ON/OFF using the "TAXI LIGHT" pushbutton located on the control console. The installation is protected by a "TAXI LIGHT" fuse.

SECTION 7.13

VEHICLE AND ENGINE MANAGEMENT DISPLAY

1 GENERAL

The system, which comprises the VEMD multi-function screen, provides a display of engine and vehicle parameters. The VEMD is located in the center of the instrument panel and comprises :

- two calculating modules : LINE 1 and LINE 2,
- one "screen" module which comprises two screens and control push-buttons.

2 CHARACTERISTICS

The VEMD is supplied with a dual 28 VDC power supply and is protected by circuit-breakers.

3 OPERATING MODES

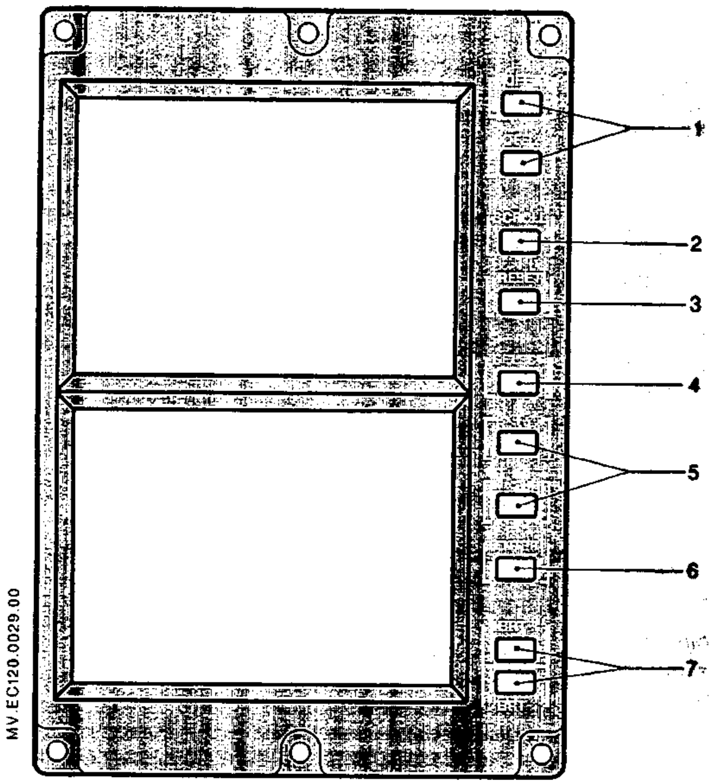
Three operating modes are accessible :

- "FLIGHT" mode : by default, this constitutes the main operating mode of the equipment. It contains the ENGINE, VEHICLE, FLI, FLIGHT REPORT, ENGINE POWER CHECK and PERFORMANCE pages.

- "CONFIG" mode : this mode contains the pages which are used to configure the equipment. This mode is accessed by successively pressing the "OFF1" and "OFF2" keys, then by simultaneously pressing and maintaining "SELECT" and "ENTER", then pressing the "OFF1" and "OFF2" keys again. Release "SELECT" and "ENTER" keys when the message "RELEASE KEY" appears.

- "MAINT" mode : This mode contains the pages associated with maintenance and with the avionic system. This mode is accessed by applying the "CONFIG" mode access procedure but pressing "SCROLL" and "RESET" keys instead of "SELECT" and "ENTER" keys.

4 VEMD CONTROLS



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	OFF1(2) push-buttons : Cut off the processing module 1 (2) and the upper (lower) screen.	5	+/- push-buttons : Increase/decrease the numerical value of the selected data.
2	SCROLL push-button : Commute the page.	6	ENTER push-button : Validate the selected data.
3	RESET push-button : Return to nominal display configuration	7	BRT+/- push-buttons : Screen brightness control
4	SELECT push-button : Select the data field.		

Figure 1 : VEMD control

5 OPERATION

The VEMD is switched on when the "BAT" switch is set to "ON".

The equipment performs an initialization test which checks correct operation of each of the two lines. During the test, the following message is displayed :

"TEST IN PROGRESS"

If the test is faulty, the following is displayed :

"LANE 1 FAILED" "PRESS OFF1"	or	"LANE 2 FAILED" "PRESS OFF2"

The line concerned can be cut by pressing the associated push-button (OFF1 or OFF2). This validates the initialization tests and switches the remaining line to operating mode.

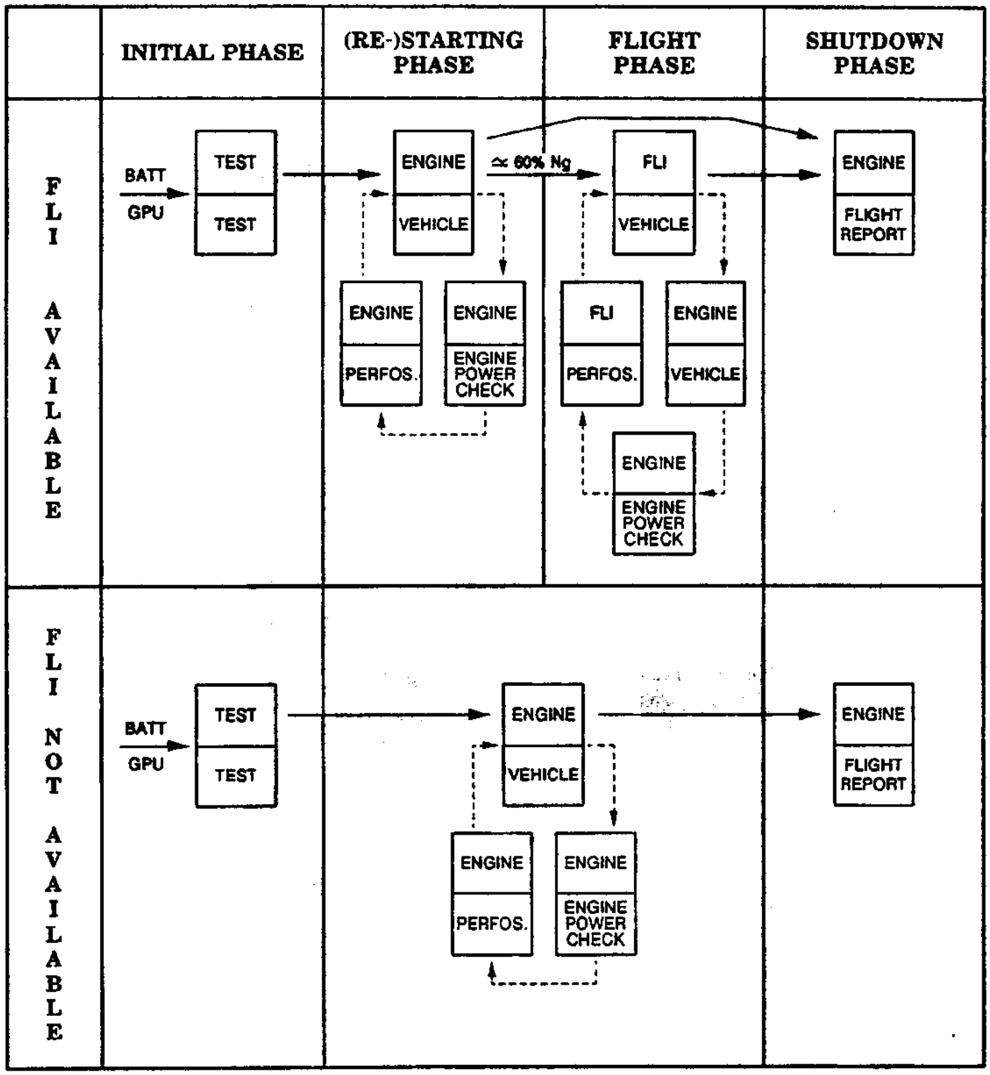
If the test is correct, the VEMD automatically goes to operating mode.

6 FLIGHT MODE

The flight mode is displayed by default, when no other mode is selected.

The "SCROLL" push-button issued to scroll the pages as shown on the following diagrams(Figures 2 and 3).

- Management of pages in normal mode :



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——► Automatic change-over at end of phase

- - - - ► Page selected manually by pressing "SCROLL"

Figure 2 : Management of pages in normal display mode

- Management of pages in degraded mode :

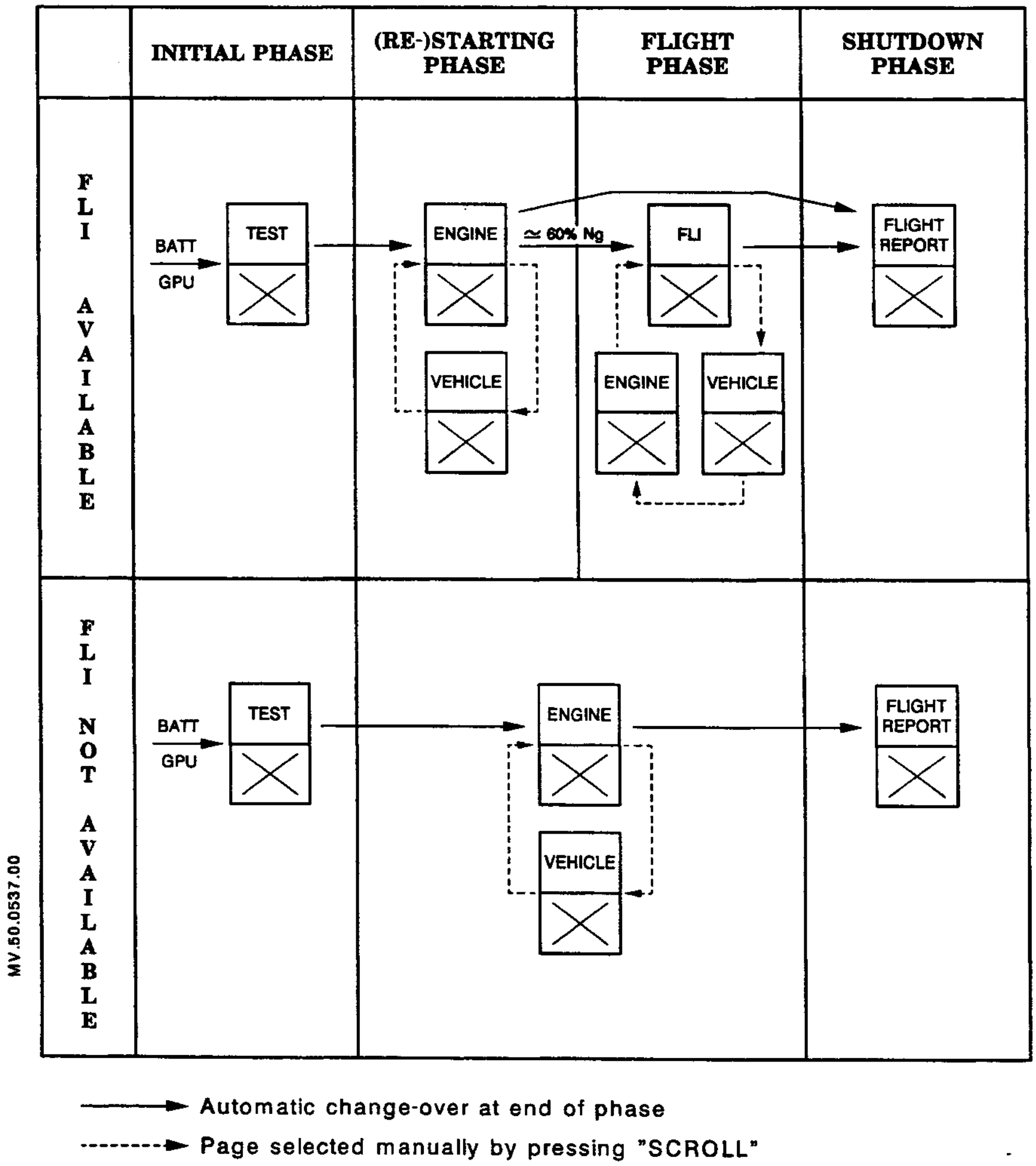

Figure 3 : Management of pages in degraded display mode

- The FIRST LIMITATION INDICATOR (FLI) page :

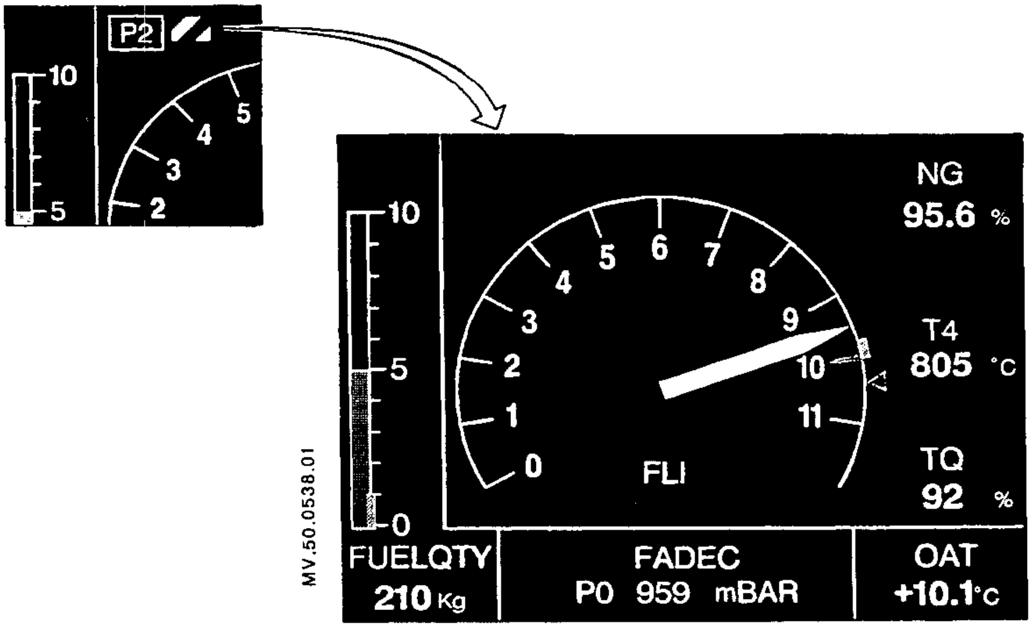

Figure 4 : FLI Page
(Values given as an example)

NOTE : If one of the parameters on the FLI page becomes invalid, the ENGINE page is displayed automatically ; the parameters can then be read on independent indicators.

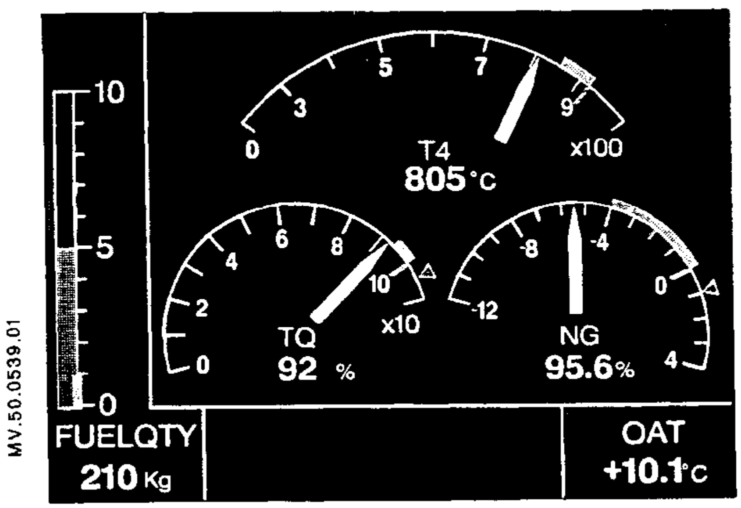

Figure 5 : ENGINE Page

- The VEHICLE page :

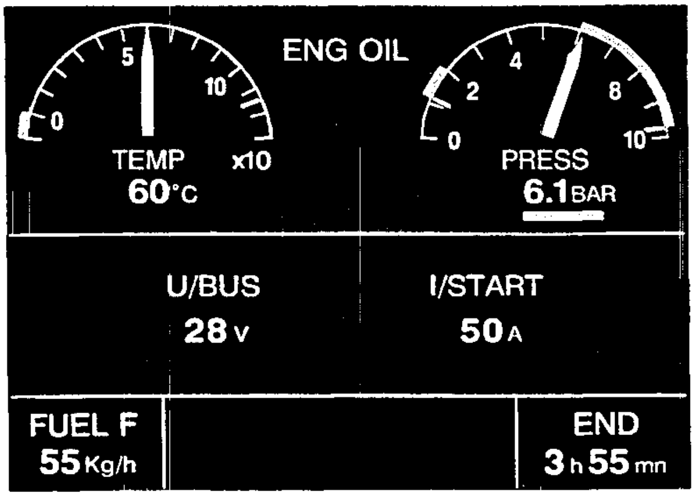

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Figure 6 : VEHICLE Page

- The ENGINE POWER CHECK (EPC) page :

When the EPC page is displayed, the first page provides the conditions to be satisfied, where applicable, in order to achieve a correct engine power check. The check is broken down into three phases:

- a value stabilization phase,
- a more restrictive stabilization phase,
- a margin stabilization phase.

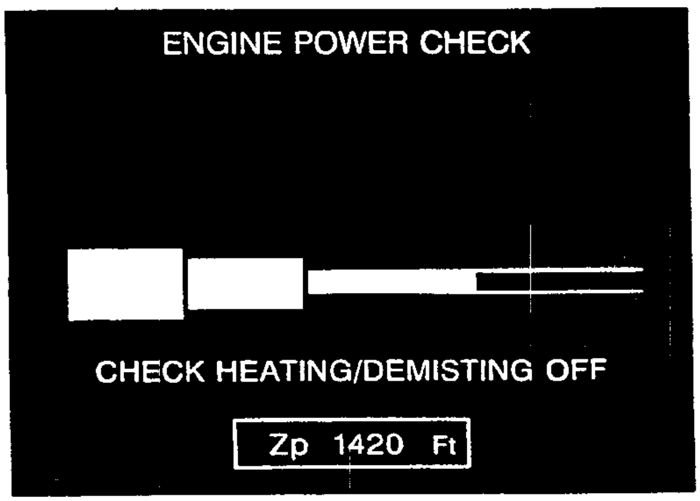

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Figure 7 : First page of the EPC

The second page displays the result of the EPC according to 6 parameters (Ng, Nf, t4, Zp, Tq, OAT) and the positive or negative differences in t4 and torque.

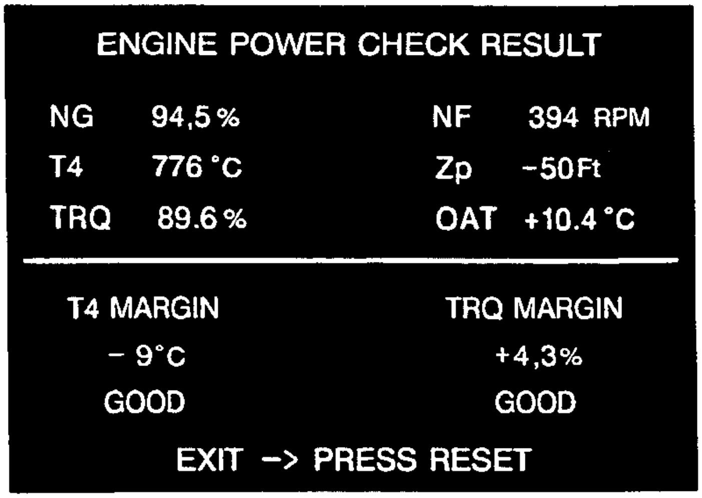

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Figure 8 : Second page of the EPC

- <u>The PERFORMANCE page</u> :

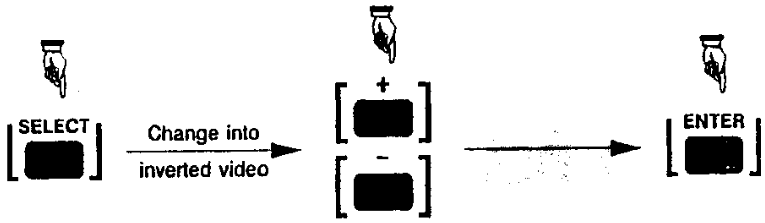
This page is used to calculate aircraft performance in the form of takeoff weights, in and out ground effect.

The following parameters must be set :

- the equipped empty weight of the aircraft,
- the weight of the crew,
- the weight of the payload.

Fuel and external parameters Zp and OAT are taken into account automatically.

For mission planning purposes, Zp and OAT can be modified.
When Zp is modified, the OAT decreases in accordance with the standard atmosphere law.
When the page is changed or another parameter is selected, the VEMD takes into account the actual Zp and OAT values.
To set or modify the parameters, apply the following procedure :



Use of + / − Keys

	Weight	Hp	OAT
Press > 5s	± 100 kg (200 lb)	± 500 ft (150 m)	± 5°C (10°F)
Press < 5s	± 2 kg (4 lb)	± 100 ft (30 m)	± 1°C (2°F)

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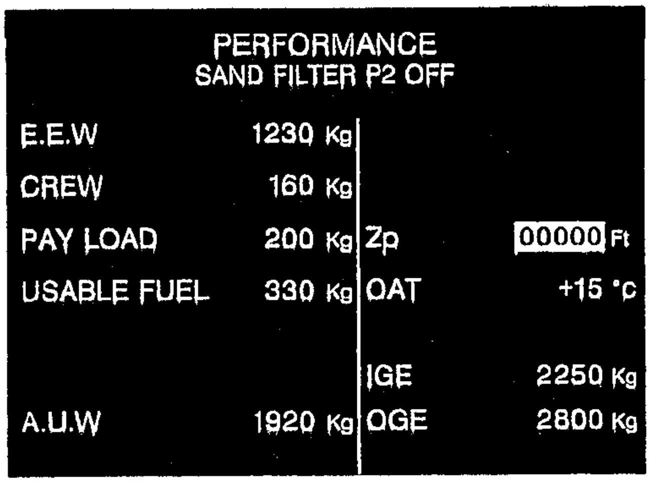

Figure 9 : PERFORMANCE Page

NOTE : When the IGE and OGE values are less than the aircraft all-up weight, they are displayed in yellow.

- **The FLIGHT REPORT page :**

The purpose of this page is to provide the crew with a synthetic report of the last flight performed. The end of flight report automatically replaces the "VEHICLE" page when the VEMD detects the engine "shutdown" state.

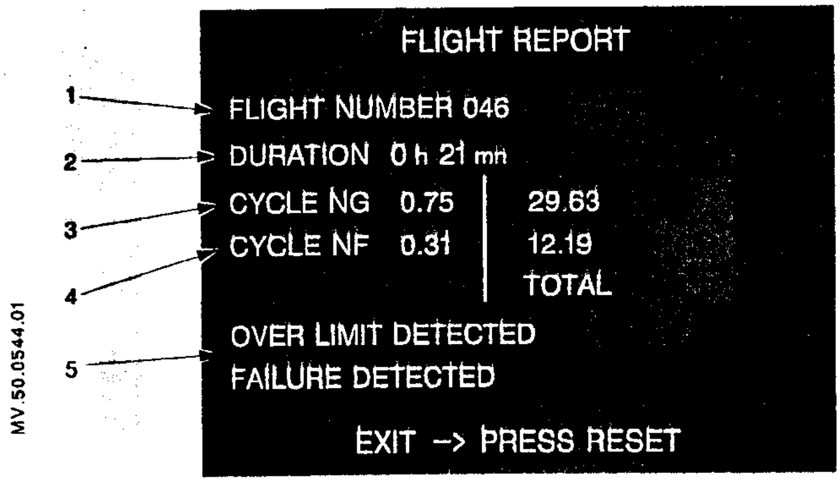

Figure 10 : FLIGHT REPORT Page

ITEM	DESCRIPTION
1	Flight number, which is incremented automatically.
2	Flight time.
3	Compressor cycles/Total cycles.
4	Free turbine cycles/Total cycles.
5	Message area (in yellow) if a discrepancy is detected during the flight.

If a message appears, refer to the "MAINTENANCE" mode in the systems description manual.

To exit this page, press the "RESET" key.

SECTION 8

SERVICING

CONTENTS

		Pages
8.1	GROUND HANDLING	
	1 EQUIPMENT REQUIRED	1
	2 HANDLING	1
8.2	SERVICING INSTRUCTIONS	
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	2 FUEL ADDITIVES	1
	3 LUBRICANTS	2
	4 HYDRAULIC FLUIDS	2
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8.4	DAILY OPERATING CHECKS	
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SECTION 8.1

GROUND HANDLING

1 EQUIPMENT REQUIRED

- For moving the aircraft by hand :
  . single or twin handling wheels
  . jacking lever.
- For towing the aircraft with a tractor :
  the above-mentioned equipment, plus :
  . a towing cable.

2 HANDLING

- Moving the helicopter by hand

On prepared ground

. Position the ground handling wheels on the mounting studs according to aircraft balance.
. Install ground handling wheels (wheels outside skids, see Detail B).
. Check that wheels are correctly locked (see Detail A).
Lift the aircraft onto its wheels using a jacking lever.
Lock in this position with retaining pins.

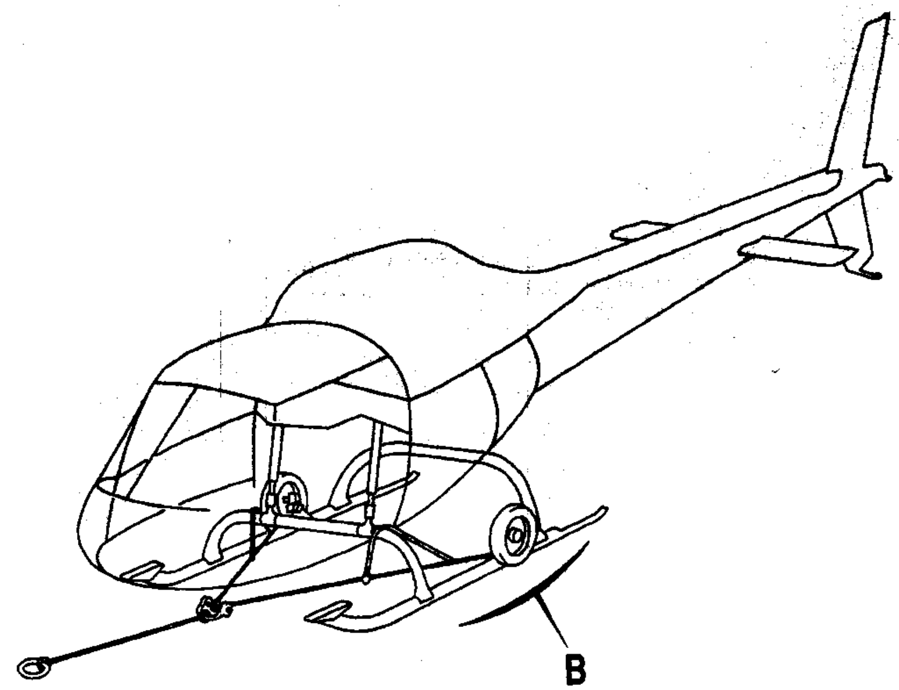
On rough ground

. Use twin ground handling wheels.
Install as described above.

- Towing the helicopter with a tractor

Prepare the aircraft as above and attach the towing cable.
Elastic cords are wrapped round the undercarriage front arch.

NOTE : Handles secured to the tail boom should always be used to guide the aircraft when towed.



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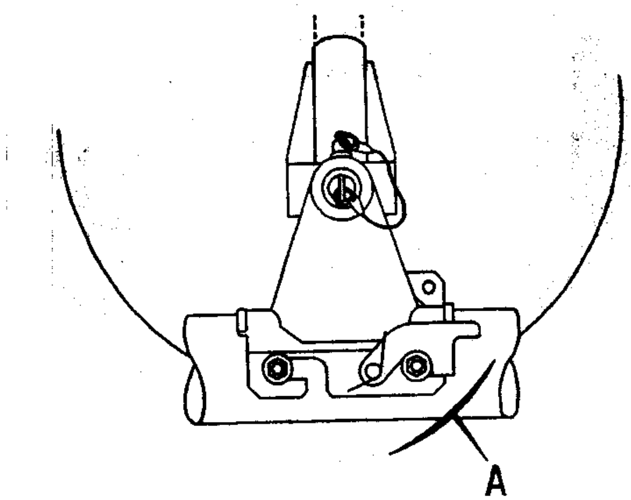

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SECTION 8.2

SERVICING INSTRUCTIONS

1 FUELS

1.1 Commercial Designation of Fuels

The authorized fuels are given in the "LIMITATIONS" SECTION.

The trade names are provided in the TURBOMECA Maintenance Manual.

1.2 Capacity

Refer to SECTION 7 "DESCRIPTIONS AND SYSTEMS".

2 FUEL ADDITIVES

The anti-ice additive when used must meet the requirements of French Specification AIR 3652 or the equivalent non-French specifications :

- MIL-I-27686
- D.ENG.RD 2451
- OTAN S.748
- MIL-I-85470A

The additive is to be mixed with the fuel in the following proportions :

- Minimum concentration, by volume : 0.10 %. R
- Maximum concentration, by volume : 0.15 %. R

If there exists any doubt as to the concentration of additive in the contents of a fuel tank, the fuel is to be drained from the tank and replaced by fuel containing a known proportion of additive within the afore-mentioned limits unless it is possible to measure the concentration using a differential refractometer.

Instructions permitting the correct concentration of additive to be obtained are given by the vendor.

3 LUBRICANTS

3.1 Engine Lubrication System

3.1.1 Engine Oils/Commercial Designations

- Authorized lubricants : Refer to "LIMITATIONS" SECTION.
- Commercial descriptions : Refer to TURBOMECA publications.

3.1.2 Capacity

- Engine oil tank and system capacity : 6.2 litres (1.64 US gal or 1.36 Imp gal)

3.2 Transmission Components

3.2.1 Lubricants/Commercial Designations

The authorized lubricants are given in the "LIMITATIONS" SECTION.

3.2.2 Capacity

- Main gearbox (system included) : 6.5 litres (1.7 US gal or 1.4 Imp gal)
- Tail gearbox (system included) : 0.33 litre (0.08 US gal or 0.07 Imp gal).

4 HYDRAULIC FLUIDS

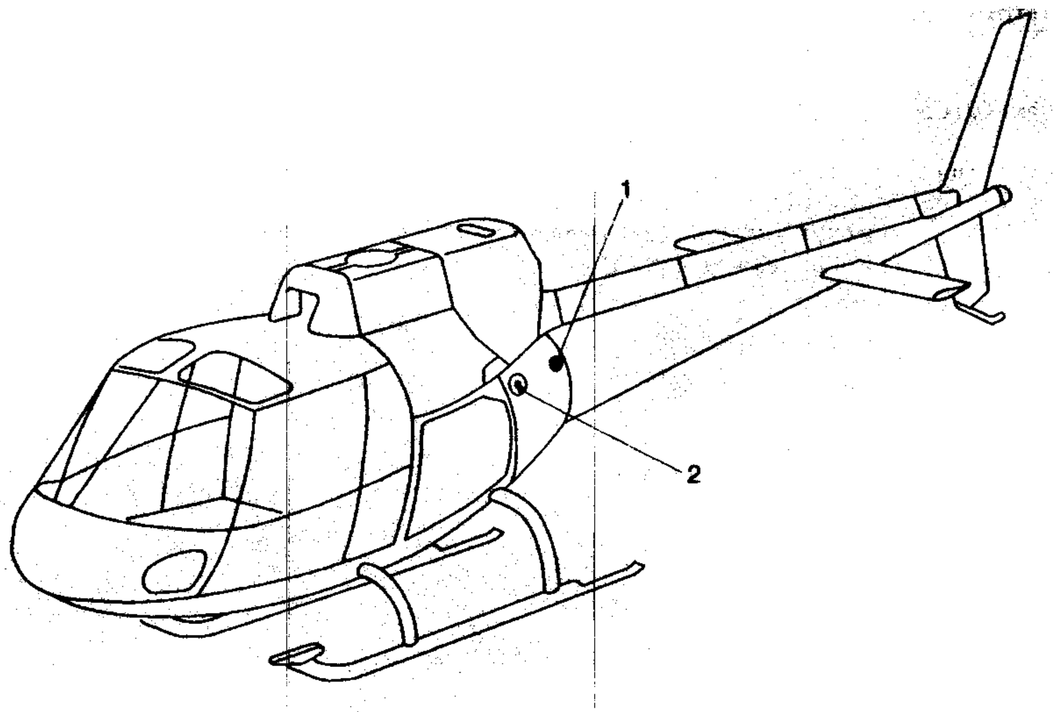
4.1 Hydraulic Fluids/Commercial Designations

The authorized hydraulic fluids are given in the "LIMITATIONS" SECTION.

4.2 System

- Total capacity of system : 3 litres or 0.8 US gal or 0.65 Imp gal.
- Operating pressure : 40 bar (580 psi).

5 REFUELING



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- Place the helicopter on a level surface.
- Connect the bowser earthing cable to the electro-static balance connector (1) on the helicopter.
- Check, on the fuel gauge, the quantity of fuel remaining in the tanks.
- Observe the following safety precautions :
  . Ensure that the aircraft electrical power supply is switched off.
  . Place a fire extinguisher near the work area.
  . Strictly prohibit smoking in the security area.
  . Prohibit the use of any means of lighting not conforming to the rules of safety.
  . Ensure, during refueling (or defueling), that the bowser (or the defueling unit) is connected to the aircraft by the electro-static balance connectors.
  . Strictly prohibit draining of fuel tanks, whether partial or total, inside a hangar or shop.
- Fill the tanks, monitoring the quantity of fuel delivered on the bowser flowmeter.
- Position and lock the filler plug (2), using the key.
- Disconnect the bowser earthing connector from the aircraft electro-static balance connector (1).
- Check that the difference in the aircraft fuel gauge readings corresponds to the quantity of fuel delivered and determine the corresponding weight.

Refueling with rotors turning

CAUTION : REFUELING WITH ROTORS TURNING IS PROHIBITED. R

Strictly comply with the instructions defined below : R

- Shut the engine down. R
- Apply the rotor brake. R
- Switch the battery off before getting off the aircraft. R
- Carry out the refueling operation. R

RC B

5 REFUELING

Replace the text (Refueling with rotors turning) of the page 4 with the following text :

Refueling with rotors turning

CAUTION : REFUELING WITH ROTORS TURNING IS PROHIBITED

Strictly comply with the instructions defined below :

- Shut the engine down.
- Apply the rotor brake.
- Switch the battery off before getting off the aircraft.
- Carry out the refueling operation.

CAUTION : THIS PAGE MUST ONLY BE REMOVED FROM THE MANUAL AFTER INCORPORATION OF MOD TU 66C (07 3124)

RR 3A

Paragraph : <u>Refueling with rotors turning</u>

Replace the text of this paragraph with the following text :

<u>CAUTION</u> : REFUELING WITH ROTORS TURNING IS PROHIBITED.

Strictly comply with the instructions defined below :

- Shut the engine down.
- Apply the rotor brake.
- Switch the battery off before getting off the aircraft.
- Carry out the refueling operation.

5 REFUELING

Replace the text (Refueling with rotors turning) of the page 4 with the following text :

Refueling with rotors turning

WARNING : REFUELING WITH ROTORS TURNING SHALL BE PERFORMED ONLY AFTER PRIOR AGREEMENT IS GIVEN BY THE COMPETENT AUTHORITY IN COMPLIANCE WITH OPERATIONAL REGULATIONS.

- Strictly comply with the instructions defined below.
- Head aircraft into forward wind sector ± 45° if wind above 10 kt.
- Lock the collective pitch lever in full low pitch position.
- Check main rotor is at nominal speed with fuel flow control in flight detent.
- Limit refueling at 95% in order to prevent any fuel spillage.
- The pilot must have someone well in sight to signal the mechanic to stop refueling.
- After refueling give the filler plug key to the pilot.

SECTION 8.3

TEST SHEETS

1 GENERAL

The test sheets are intended to sum up the checks to be carried out in flight or on the ground, with rotors turning either after replacement of major components, or after an extensive operation, or further to periodic inspections.

The test sheets are in the form of reproducible sheets which can directly be filled in by the crew.

CAUTION : SINCE THESE CHECKS DO NOT FORM PART OF NORMAL HELICOPTER OPERATION, THEY SHALL BE CARRIED OUT ONLY BY QUALIFIED PERSONNEL UNDER THE OPERATOR'S RESPONSIBILITY.

LIST OF TEST SHEETS

No. 0 FLIGHT REPORT
No. 1 VEMD CONFIGURATION
No. 2 TWIST GRIP ADJUSTMENT
No. 3 CHECKS AFTER ENGINE OR MODULE REPLACEMENT
No. 4 CHECKS AFTER MRH-FREQUENCY ADAPTER-MAIN ROTOR BLADE REPLACEMENT
No. 5 CHECKS AFTER MGB REPLACEMENT
No. 6 CHECKS AFTER TRH-TAIL ROTOR BLADE-TAIL ROTOR DRIVE SHAFT REPLACEMENT
No. 7 CHECKS AFTER OPERATION ON FLIGHT CONTROLS
No. 8 CHECKS AFTER GENERATOR OR ELECTRICAL MASTER BOX REPLACEMENT
No. 9 SYSTEM CHECKS

ENGINE OR MODULE SERVICING

- CHECKS TO BE CARRIED OUT ACCORDING TO COMPONENT REPLACED.

CHECKS	ENGINE REMOVAL/ INSTALLATION	ENGINE REPLACEMENT	ADJUSTED METERING UNIT REPLACEMENT	DECU COMPUTER REPLACEMENT	MODULE REPLACEMENT			
					No.1	No.2 or 3	No.4	No.5
START-UP GROUND RUN-UP	●	●	●	●	●	●	●	●
MANUAL EMERGENCY		●	●	●		●		●
HOVER FLIGHT		●				●		
ACCELERATION		●				●		
ENGINE CONDITION - Check - Power		●			●	●	●	
ENGINE AUTOROTATION		●	●		●	●		

RR 4D

The text of paragraph (LIST OF TEST SHEETS), is to be replaced by the following text :

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LIST OF TEST SHEETS

No. 0 FLIGHT REPORT
No. 1 VEMD CONFIGURATION
No. 2 TWIST GRIP ADJUSTMENT
No. 3 CHECKS AFTER ENGINE OR MODULE REPLACEMENT
No. 4 CHECKS AFTER MRH-FREQUENCY ADAPTER-MAIN ROTOR BLADE REPLACEMENT
No. 5 CHECKS AFTER MGB REPLACEMENT
No. 6 CHECKS AFTER TRH-TAIL ROTOR BLADE-TAIL ROTOR DRIVE SHAFT REPLACEMENT
No. 7 CHECKS AFTER OPERATION ON FLIGHT CONTROLS
No. 8 CHECKS AFTER GENERATOR OR ELECTRICAL MASTER BOX REPLACEMENT
No. 9 SYSTEM CHECKS

ENGINE OR MODULE SERVICING

- CHECKS TO BE CARRIED OUT ACCORDING TO COMPONENT REPLACED.

CHECKS	ENGINE REMOVAL/ INSTALLATION	ENGINE REPLACEMENT	ADJUSTED METERING UNIT REPLACEMENT	DECU COMPUTER REPLACEMENT	MODULE REPLACEMENT			
					No.1	No.2 or 3	No.4	No.5
START-UP GROUND RUN-UP	●	●	●	●	●	●	●	●
MANUAL EMERGENCY	●	●	●	●		●		●
HOVER FLIGHT		●				●		
ACCELERATION		●				●		
ENGINE CONDITION - Check - Power		●			●	●	●	
ENGINE AUTOROTATION		●	●		●	●		

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CHEET No. 0	HELICOPTER AS 350 B3	FLIGHT REPORT
HELICOPTER No. :	**VEMD**	**WEATHER CONDITION**
DATE ...: STAT TIME...: DURATION...: CREW...: AREA...:	CYCLES : Ng [ ] Total [ ] Nf [ ] Total [ ] Limit exceeded YES NO Failures YES NO	Pressure [ ] OAT : [ ] **WIND** Direction : [ ] Force : [ ]
WEIGHT	**MAJOR WORK CARRIED OUT BEFOR FLIGHT**	**REMARKS MADE BY CREW AFTER FLIGHT**
EMPTY WEIGHT EQUIPPED...: CREW...: BALLAST...: WEIGHT WITHOUT FUEL...: FUEL...: GROSS WEIGHT...: CENTERING...		
UNITS USED (Cross out as applicable)		
WEIGHT : kg lb		
FUEL : kg lb UK gal l %		
ALTITUDE : m ft	**SPECIAL INSTALLATION**	**WRITER'S VISA**
SPEED : Km/h kt MPH		

CHEET No. **1A**	HELICOPTER **AS 350 B3**	VEMD CONFIGURATION
TEST PHASES AND REQUIREMENTS	**RESULTS TO BE OBTAINED OR LIMITATIONS**	**RESULTS OBTAINED**
VEMD before starting Warning panel lamps test	Test pattern on both screens and software serial number	Serial numbers :
Lighting variation using +/- using day-and-night selector	Identical variation on both Screens on night position	Correct Incorrect
Switch to CONFIG : Cut "OFF1", "OFF2" Then keeping "SELECT" et "ENTER" pressed, press "OFF1" et "OFF2"	check compliace with customer's sheet : Units, Options, etc...	Correct Incorrect
Switch to MAINTENANCE : Cut "OFF1", "OFF2" Then keeping "SCROLL" et "RESET" pressed, press "OFF1" et "OFF2"	FLIGHT REPORT page →ENTER Record No. of last ground run-up or flight duration of last ground run-uo or flight Ng Cycles Nf Cycles	No. : Time : Partial Ng : Total Ng : Partial Nf : Total Nf :
	FAILURE DETECTED OVER LIMIT DETECTED	yes no yes no
	FAILURE : note codes in memory	

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SHEET No. 1B	HELICOPTER AS 350 B3	VEMD CONFIGURATION		
TEST PHASE AND REQUIREMENTS		**RESULT TO BE OBTAINED OR LIMITATIONS**	**RESULTS OBTAINED**	
VEMD CYCLES COUNTING (after removal and installation)		VEMD cycle (1) removed	Ng (1) ☐	Nf (1) ☐
		- VEMD cycle (2) installed	Ng (2) ☐	Nf (2) ☐
		.Corrected value of cycles new VEMD	= ☐	= ☐
		- VEMD total cycles after 1st start	+ ☐	+ ☐
		.Engine cycles after 1st start	= ☐	= ☐
		- VEMD total cycles after 2nd start	+ ☐	+ ☐
		.Engine cycles after 2nd start	= ☐	= ☐
		- VEMD total cycles after 3rd start	+ ☐	+ ☐
		.Engine cycles after 3rd start	= ☐	= ☐
		- VEMD total cycles after 4th start	+ ☐	+ ☐
		.Engine cycles after 4th start	= ☐	= ☐

SHEET No. 2	HELICOPTER AS 350 B3	TWIST GRIP ADJUSTMENT	
TEST PHASE AND REQUIREMENTS		**RESULT TO BE OBTAINED OR LIMITATIONS**	**RESULTS OBTAINED**
Power on , twist grip against flight stop		After DECU test, red and amber "GOV" flicker, variation in fuel flow on VEMD, after stabilization = 43 kg/h (54 l/h)	Flow =
		Warning lights off "amber GOV", "red GOV", "TWT GRIP"	Correct Incorrect
Reduce to the min. stop		Warning lights on "amber GOV" and "TWT GRIP"	Correct Incorrect
Bring back twist grip stop		At end movement, "TWT GRIP" and "amber GOV" go out	Correct Incorrect
Unlock flight stop and increase up to max. stop		As soon as flight notch exceeded, "amber GOV" and "TWT GRIP" warning lights	Correct Incorrect
Unlocking stabilized		Free movement from one stop to another	Correct Incorrect
Return to active flight stop, remove unlocking, return below flight notch increase/accelerate up to the stop		The grip must be stopped by the flght ntch and "amber GOV " and "TWT GRIP" off	Correct Incorrect
NOTE : DO NOT MOVE THE TWIST GRIP WHEN THE ENGINE DECU IS SWITCHED OFF			

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SHEET No. 3A	HELICOPTER AS 350 B3	CHECKS AFTER ENGINE OR MODULE REPLACEMENT Start-up - Ground Run-up

TEST PHASE AND REQUIREMENTS	RESULT TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
ENGINE START-UP Comply with the Normal Procedures of the Flight Manual,SECTION 4	DO NOT START WHEN AMBER REG IS LIT	Uv T4°c Ng% Phb Th°c Before start
Operate the pump for 30s, START selector switch to FLIGHT	Blue PUMP light on Fuel P light off UBUS > 26v approx. Ng increase	Min. U
	If T4 increases, continue starting T4 regulated between 600 and 650°c Switch to FLI mode for Ng = 60% ENG. P. light off for Ng < 68% Gen. cut-in at Ng = 50%	Max. T4 Ng, FLI mode PHM Ng GEN Ng
	Rotor acceleration with a TORQUE # 30% Check NR stabilization at approximately 375 rpm	HYD NR ALARM NR MGB OIL P. NR
Fuel pump off	Adjustment using INST. Panel potentiometer PUMP and FUEL P lights off	Regulated NR Regulated Nf
		Amplitude Phase Unbalance Track
Parameters stabilized Check SCROLL buttons for correct operation on INST. PANEL and COLLECTIVE PITCH	FLI 3 INFO pages on top screen ENGINE, CHECK W, PERFO pages on bottom screen	Fuel contents% Digital Flow Time Uv Ia ENG.T° ENG. P. Ng% T4°c C% Hp T°c

SHEET No. 3B	HELICOPTER AS 350 B3	CHECKS AFTER ENGINE OR MODULE REPLACEMENT Start-up - Ground run-up

TEST PHASE AND REQUIREMENTS	RESULT TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
ENGINE SHUTDOWN		
- Stabilization for 30s at flight or ground idle - Switch the STOP/FLIGHT selector switch to OFF	VEMD : mode 3 info for Ng = 50% Ng generator run-down time = 50% at Ng = 2%	Ng at idle ☐ Run-down ☐
	Warning : min. NR at 360 rpm GONG at each red warning Rotor braking time from 170 rpm	Braking ☐
- HYDR TEST - FLIGHT REPORT page in VEMD	Compensator depressurization Automatic display of this page Record : No. of the last start Duration of last ground run-up or flight	No ☐ Duration ☐
	Ng cycles Nf cycles	Partial Ng ☐ Total ☐ Partial Nf ☐ Total ☐
		YES NO
	FAILURE DETECTED	☐ ☐
	OVER LIMIT DETECTED	☐ ☐
	FAILURE : note the codes in memory	☐
	OVER LIMIT : record level and duration	Ng% ☐ T4°c ☐ C% ☐ NP% ☐ NR rpm ☐ level ☐ duration ☐

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SHEET No. 3C	HELICOPTER AS 350 B3	CHECK AFTER ENGINE OR MODULE REPLACEMENT Manual - Emergency
TEST PHASE AND REQUIREMENTS	**RESULT TO BE OBTAINED OR LIMITATIONS**	**RESULTS OBTAINED**
COMBINED REGULATION MODE From flight idle rating slowly retard the twist grip	Up to mid-travel, NR remains steady "TWT GRIP" and amber "GOV" lighft are lit	
	The engine then switches to ground idle (IDLE) and Ng stabilizes at ≃ 68% for any twist grip position up to min. stop	Ng at idle [ ] NR at idle [ ]
Return the twist grip to the FLIGHT stop in one second	"TWT GRIP" and amber "GOV" go out immediately, the engine accelerates with a a torque very close to 30%, within 8s	Acceler. time [ ]
	NR is not exceeded	MAX. NR [ ] Stab. NR [ ]
EMERGENCY MODE From flight idle rating Set the"AUTO/MAN" selector switch to "MAN"	Red "GOV" light lit + GONG warning if "HORN" knob is set to ON	Correct / Incorrect
	The rotor speed remains steady	Correct / Incorrect
Retard the throttle	"TWT GRIP" light comes on alone, the rotor speed decreases.NR must not exceed 350 rpm	Correct / Incorrect
Remove flight stop and slightly increase flow at twist grip	The rotor speed increases, do not go above max. NR alarm (410 rpm)	Max. NR alarm [ ]
Set the "AUTO/MAN" selector switch to "AUTO" without moving the twist grip	The rotor speed returns to its regulated value The red "GOV" light goes out The amber "GOV" light comes on	
Remove the non-active flight stop lock, return the twist grip to below the flight notch, then raise it ondo the flight notch	"TWT GRIP" and amber "GOV" lights go out when the flight notch is passed All lights off	Correct / Incorrect Regulated NR [ ]

SHEET No. 3D	HELICOPTER AS 350 B3	CHECKS AFTER ENGINE OR MODULE REPLACEMENT Hover Flight-Acceleration / Deceleration-Climb

TEST PHASE AND REQUIREMENTS	RESULT TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
GROUND RESONANCE Full low pitch and C = 35%	Some non-divergent oscillations can be accepter if the phenomenon stops when cyclic pitch returned to neutral or after changing to Full low pitch	Full low pitch C= 35% — Hard ground / Grass
HOVER I.G.E	Unbalance < 0,2 ips Track < 1/2 target	Unbalance Track C% / T4°c / Ng% / FLI / NR Hp / T°c / Kero / ENG. P. / ENG.T° Fuel contents / Weight
CLIMB IAS = 65 Kt per 1,000 ft Hp Keep the wooden thread centered	Respect max. continuous power limitations	Time / Hp ft / T°c / Ng% / T4°c / C% / vft/min 0 1' 2' 3' 4'
At the end of climb, perform a OGE hover flight, apply PMD	FLI = 10 Check PMD warning Check clearance to the right	YES / NO — T4 / C% / NR / Ng YES / NO

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SHEET No. 3E	HELICOPTER AS 350 B3	CHECK AFTER ENGINE OR MODULE REPLACEMENT Engine condition - Power check / Thermal check

TEST PHASE AND REQUIREMENTS	RESULT TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
<u>STABILIZED LEVEL FLIGHT IN ALTITUDE</u> Hp = 7000 ft - Rotor adjustment	Set a power approaching the Max. Continuous Power (lower limit of FLI yellow band)	Amplitude / Phase Unbalance Accel Z 1W Track
- Vibration record	Record acceleration Z at pilot's seat	Accel Z pilot 3W
- Power check	Check that HEATING AND DEMISTING are off VEMD : Switch to POWER CHECK page using one of the SCROLL pushbuttons Record parameters during stabilization At the end of the test, automatic display of parameters and result	Gen. I before change Hp ft / T°c / IAS Kt / NR C% / T4°c / Ng% C% / T4°c / Ng% / Hp / T° / NR Delta T4°c / Delta C%
	Heating and demisting on/off P2 sand filter open/closed (if installed)	Delta T4°c Delta T4°c
- VNE with power applied	Without changing the collective pitch, increase speed up to VNE: 155 kt - 3 kt /1000 ft Hp	Amplitude / Phase Unbalance Track

SHEET No. 3F	HELICOPTER AS 350 B3	CHECK AFTER ENGINE OR MODULE REPLACEMENT Engine condition - Power check / Thermal check

TEST PHASE AND REQUIREMENTS	RESULT TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
OPER. VD PITCH TRANSIENTS		
Determine opening and closing values by slow pitch variation	Values as per chart in TURBOMECA Maintenance Manual Threshold tolerance ± 1.3%	Hp ☐ T°c ☐ Ng closed ☐ Ng open ☐
Pitch decrease from MCP to Full low pitch in 2s IAS = 65 kt	No engine flame-out Observe max. NR	
Pitch increase from synchro to MCP in **3s** then 1s	Min. NR > 370 rpm No surge	Min. NR: 3" ☐ 1" ☐ Max. T4: 3" ☐ 1" ☐

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SHEET No	HELICOPTER	CHECKS AFTER MRH FREQUENCY ADAPTER OR MAIN ROTOR BLADE REPLACEMENT
4A	**AS 350 B3**	

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTNAINED
MAIN WINGS		
Track	< 1/2 target	
Unbalance At the beginning: 6 plates on sleeve J 4 plates on sleeve R 0 plate on sleeve B	< 0.10 IPS Figure No. 5V Tolerance 12 weight as a max. on yellow and red sleeve. 5 weights as a max. on blue sleeve	
WING ADJUSTMENT		
- On ground Full low pitch	Unbalance < 0.1 ips Track < 1/2 target	
- Stationary	Unbalance < 0.2 ips Track < 1/2 target	

Track	Corrections R	Corrections Y	Corrections B
		x x x x x x	
		x x x x x x	
		x x x x x x	

Unbalance	Corrections R	Corrections Y	Corrections B

	Amplitude	Phase
Unbalance		
Track		
Unbalance		
Track		

SHEET No. 4B	HELICOPTER AS 350 B3	CHECK AFTER MRH FREQUENCY ADAPTER OR MAIN ROTOR BLADE REPLACEMENT	
TEST PHASE AND REQUIREMENTS		RESULT TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
- Level flight at Max. Continuous Power		Unbalance < 0,2 ips Accel Z av < 0,2 ips	Unbalance ☐ ☐ Accel Z fwd ☐ ☐ Track
- VNE		Unbalance < 0,3 ips	Unbalance ☐ ☐ Accel Z fwd ☐ ☐ Track
NR IN AUTOROTATION AT FULL LOW PITCH			
IAS = 65 kt (120 km/h - 75 MPH)		Design NR ☐ + / - 5 rpm	Fuel / Weight / Hp / T°c / NR / NP
Engine desynchronized; if it is not, increase Hp		Max. NR warning at 410 rpm	☐
- VNE in autorotation		Set VNE auto to level flight 125 kt - 3kt / 1,000 ft Hp then decrease pitch to obtain C = 0% et NR = 410 rpm Control pedals close to LH stop	IAS kt ☐

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SHEET No. 5	HELICOPTER AS 350 B3	CHECK AFTER MGB REPLACEMENT	
TEST PHASE AND REQUIREMENTS		**RESULT TO BE OBTAINED OR LIMITATIONS**	**RESULTS OBTAINED**
Start engine as prescribed in the Normal Procedures of the Flight Manual, SECTION 4.1.		MGB warning light goes out for NR : <200 rpm (hot) <110 rpm (cold)	Correct ☐ Incorrect ☐
Press the "HORN" pushbutton		Aural warning at NR between NR between 250 and 360 rpm	Correct ☐ Incorrect ☐
Perform 5 to 10 minutes hover flight IGE (6 ft) at a weight approaching the maximum take-off weight. Refer to Flight Manual, SECTION 5.1.		Refer to limitations in Flight Manual, SECTION 2.1.	Hp ☐ OAT ☐ ΔNg ☐ Ng ☐ t4 ☐ [illegible] ☐ MGB.T ☐ MGB.P ☐ NR ☐
Engine shutdown		Lights : MGB.P MGB.T must remain off	Correct ☐ Incorrect ☐
Rotor brake from NR 170 rpm		t ≤ 25 s	t : ☐

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SHEET No. 6	HELICOPTER AS 350 B3	CHECK AFTER TRH-TAIL ROTOR BLADE-TAIL ROTOR DRIVE SHAFT REPLACEMENT
TEST PHASE AND REQUIREMENTS	RESULT TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
TAIL ROTOR BALANCING	< 0,2 IPS at NR 270 t. and nominal	
TAIL ROTOR DRIVE SHAFT BALANCING Accelerometer on 5th level	Unbalance < 0,8 IPS (Rotation speed of the shaft # 6000 rpm)	

Tail rotor balancing – results obtained:

Unbalance	Corrections

Tail rotor drive shaft balancing – results obtained:

Unbalance	1	2	3

M[illegible].0615.01

SHEET No. 7A	HELICOPTER AS 350 B3	CHECK AFTER OPERATIONS ON FLIGHT CONTROLS

TEST PHASE AND REQUIREMENTS	RESULT TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
Start engine as prescribed in the Normal Procedures of the Flight Manual, SECTION 4.1.	HYD warning light goes out for : NR < 200 rpm (hot) NR < 110 rpm (cold)	Correct ☐ Incorrect ☐
HYDRAULIC		
Cut out hydraulic on the collective pitch lever	"HYD" light comes on + GONG warning if "HORN" button ON. Loads on controls apprear instantaneously. Loads on pedals remain low (action of load compensator)	Cyclic loads correct : Correct ☐ Incorrect ☐
Press "HYD TEST" pushbutton	Loads on pedals increase (load compensator accumulator discharged)	Load compensator correct : Correct ☐ Incorrect ☐
Reset "HYD TEST" and hydraulic cut-off to normal	Time between hydraulic replenishing and disappearance of lods$\simeq$ 3s	T. hydraulic replenoshing : ☐
Press "HYD TEST" pushbutton Move cyclic lever pitch to longitudinal then lateral by +/- 10% of total travel	Loads must only appear after 3 or 4 movements	Battery test correct : Correct ☐ Incorrect ☐
FLIGHT HYD CUT OUT		
Hydraulic cut out to the collective lever pitch at 70 kt (130 km/h - 80 MPH)	Low loads at 70 kt	Correct loads YES ☐ NO ☐
Accelerate up to 100kt (185 km/h - 115 MPH)	No excessive load at 100 kt	

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SHEET No. 7B	HELICOPTER AS 350 B3	**CHECK AFTER OPERATIONS ON FLIGHT CONTROLS** **Low pitch stop adjustment**

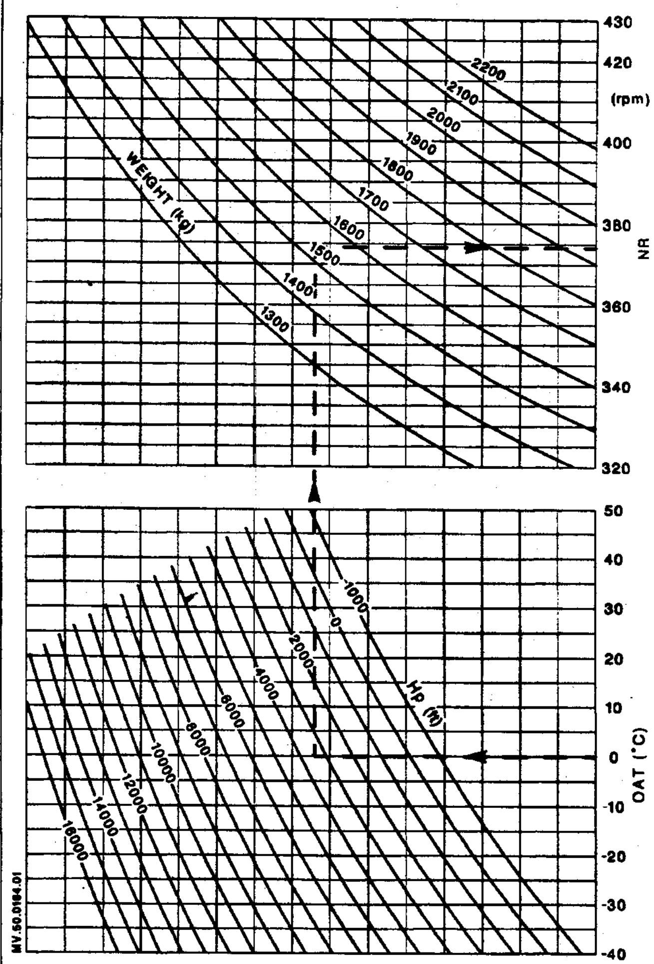
TEST PHASE AND REQUIREMENTS	**RESULT TO BE OBTAINED OR LIMITATIONS**	**RESULTS OBTAINED**
ADJUSTMENT OF THE LOW PITCH STOP	**LIMITATIONS :**	
Altitude < 5,000 ft, Perform autorotation with collective lever against low pitch IAS : 65 kt	NR max : 430 rpm	
NOTE : Select the weight and altitude values which allow an NR of 395 to 415 rpm to be obtained at Full Pow pitch. If the turbine is not always synchronized, increase Hp.		
Record the following parameters :	NR in compliance with the value computed using Figure 1 : + 0 + 10 tr/ rpm	Hp OAT Fuel contents Computed weight NR obtained Design nr

RR 4A

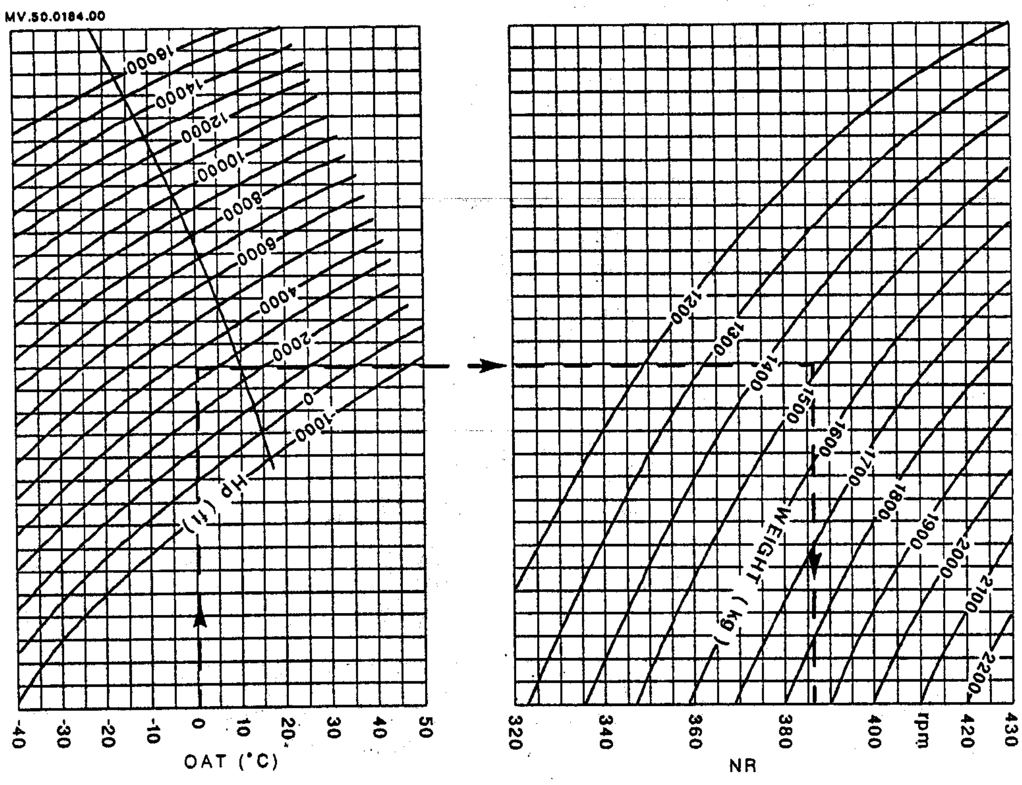
SECTION 8.3 : <u>TEST SHEETS</u>

Replace the Figure of the page 19 with the following Figure :

SHEET No. 7C	HELICOPTERE AS 350 B3	ROTOR SPEED IN AUTOROTATION 65 kt - 75 MPH - 120 km/h Check of the low pitch slop adjustment



SHEET No 7C	HELICOPTERE AS 350 B3	ROTOR SPEED IN AUTOROTATION 65 kt - 75 MPH - 120 km/h Check of the low pitch slop adjustment



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SHEET No. 8	HELICOPTER AS 350 B3	CHECK AFTER GENERATOR OR ELECTRICAL MASTER BOX REPLACEMENT

TEST PHASE AND REQUIREMENTS	RESULT TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
<u>Electrical checks</u>		
Depress emergency cut out	Loss of all supplies except NR and front ceiling	Correct / Incorrect
Switch the emergency cut out to normal	"GOV" amber light comes on	
External lighting	Correct operation of position and anticollision lights	Correct / Incorrect
Internal lighting	INST.LST 1 (on), INST.LST 2 (off) Panel and light lighting	Correct / Incorrect
	INST.LST 1 (off), INST.LTS 2 (on) Panel and light lighting	Correct / Incorrect
	INST.LST 1 (on), INST.LST 2 (on) Panel and light independent lighting	Correct / Incorrect
Check generator voltage	U = 28.4 / 28.6 v	Correct / Incorrect

SHEET No. 9	HELICOPTER AS 350 B3	SYSTEM CHECKS
TEST PHASE AND REQUIREMENTS	**RESULT TO BE OBTAINED OR LIMITATIONS**	**RESULTS OBTAINED**

THE PERFORMANCE DATA OF THE SYSTEMS TO BE CHECKED UPON COMPLETION OF A MAJOR INSPECTION ARE INDICATED IN THE STANDARD PRACTICES MANUAL (MTC)

TEST PHASE AND REQUIREMENTS	Ch	Sect	Subj	Task	RESULTS OBTAINED
- Radio - communication	20	07	07	501	
- Radio - navigation	20	07	07	502	
- Navigation	20	07	07	503	
- Autopilot and associated couplings	20	07	07	504	

SECTION 8.4

DAILY OPERATING CHECKS

THE EXTERNAL AIRCRAFT INSPECTIONS (to be performed before each flight) and the INSPECTION ASSOCIATED WITH THE DAY'S FLIGHTS must be conducted by a person qualified for performing maintenance or by a pilot having undertaken suitable training (*), refer to SECTION 4.

During daily inspections, in the event of doubt or if a defect is identified, the pilot must report to the person in charge of maintenance for the action to be taken. The acceptance criteria for defects on the items checked during daily inspections are described in the Aircraft Maintenance Manual.

If following daily inspections, a detailed inspection or maintenance action is required in order to make the aircraft flightworthy, this must be performed under the responsibility of a qualified aircraft maintenance specialist and must be recorded in the aircraft documentation.

NOTE : Certain certification authorities may demand special qualifications on the part of operators.

1 INSPECTION ASSOCIATED WITH THE DAY'S FLIGHTS

1.1 General

This inspection is to be performed once only either after the last flight of the day or before the first flight of the next day of flying.
The inspection associated with the day's flights enables the aircraft to be maintained in a condition suitable for performing another day of flying. This consists in performing a visual or tactile check of the condition of a component, or of an assembly, in order to detect any defects which may be detrimental to its correct operation without recourse to special techniques or tooling.

Record the total number of Ng and Nf cycles performed during the day, in the pilot's log-book.

Pay particular attention to those operations identified by an asterisk (*).

In the event that the inspection associated with the day's flights is performed immediately before a new day of flying, it replaces the external aircraft inspections to be performed before each flight, providing that it is performed by the same person.

After grounding for more than one week :

- Perform an inspection associated with flights of the day before resuming flying.
- Wipe the servocontrol piston rods with a cloth impregnated with operating fluid before moving the flight controls.

NOTE A : Magnetic plugs which do not have an electric indicating system may be checked for metal chips during the ALF check before the 30-flying hour limit. R R R

NOTE B : This check for defects can be performed daily or during the ALF check nearest to the 30-flying hour limit.

NOTE C : Magnetic plugs which do not have an electric indicating system may be checked for metal chips during the ALF check nearest to the 15-flying hour limit. R

1.2 Inspection associated with flights

STATION 1

- All transparent panels .... Cleanliness (clean if required)
- Door jambs, canopy arch members........ No faults nor cracks
- Cabin access door .... Security and correctly locked
- Pitot heads and static vents .... Fit blanking covers, if necessary

STATION 2

- LH baggage compartment door .... Condition, security, open, all objects tied down, close and lock
- LH landing gear .... Condition
  - . Shock absorber .... Condition, no leaks
  - . Wear resistance plate .... Condition
- MGB cowlings .... Open : condition of locking systems
- MGB oil .... Check level
- Transmission deck .... Cleanliness
- MGB suspension bars .... Security
- DUNLOP servo-controls .... Security, no leaks, no cracks on the body leading to seepage
- SAMM servo-controls .... Security, no leaks
- Hydraulic system....................... Security, no leaks, lines
- Hydraulic filter .... Clogging indicator not visible R
- Cooling fan .... Motor security, condition of blades
- Universal joint assembly .... Security, pins in place and locked
- Firewall .... Condition R

- MAIN ROTOR SHAFT

* Swashplate bearing : check to be performed within five minutes after rotor stops	No abnormal heating felt when touched with hand, no grease runs, no change in color nor scaling of paint.
. Scissors, swashplates, rods, swivel bearings	Condition, security, no friction pointer play
. Swashplate/pitch change rod end-fitting interface	No traces of contact, paint scaling on swashplate attachment yokes
* Pitch change rods	Condition, rod upper and lower end-fitting paint marks must be visible and aligned
* Rotor shaft : All visible section of the shaft, particularly under the hub	Condition of paint, no cracks, crazing, blistering, corrosion nor tool marks.
- MAIN ROTOR HUB	Security, general condition
* Star	No delamination (splinters)
* Star recesses	No cracks
* Spherical thrust bearings and frequency adapters	No elastomer faults, unbonding, scratches, blisters, extrusion, cracks
* 2-layer frequency adapter	Check for clearance between the adapter and the metal shim. Refer to <u>NOTE B</u>.
. Self-lubricating bearings	No debris nor play. Refer to <u>NOTE B.</u>
. Bushes in the ends of the STARFLEX hub arms	No space between the adhesive bead and the bush. Refer to <u>NOTE B</u>.
. Magnetic plug	No metal chips. Refer to <u>NOTE A</u>. R R
- Shock mount	Security
* MAIN ROTOR BLADES	Attachment, general condition of polyurethane protection coating and of the zone of the tabs (visually inspect for debonding, blisters, scratches, cracks dents and distortion). On the stainless steel leading edge strip, inspect for holes (erosion), splaying and dents.
- Engine air intake	Condition, security, blanking cover fitted if necessary
. Manufacturer air intake	Condition of seal

- Engine cowling .... Open : condition of locking systems
- Engine mount .... Condition, security
- Engine and engine compartment
  . Engine and accessories .... General condition, cleanliness
  . Systems .... No leakage
  . Controls .... Interference
  . Transmission deck drain .... Not plugged
  . Fuel filter .... Security : clogging indicator not visible
  . Oil filter .... Security : clogging indicator not visible
- Freewheel .... Operate from the tail rotor : the free turbine should be driven when the top tail rotor blade is is pushed forwards. When the tail rotor turns counter-clockwise, the freewheel should de-synchronize (less important load), Refer to NOTE B
- Tail pipe .... Condition, security, blanking cover fitted if necessary
- Aft baggage compartment door .... Security, closing

STATION 3
- Horizontal stabilizer, fin, tail bumper .... Security, condition
- TGB .... Oil level, no leaks
- Tail rotor guard (if fitted) .... Security, condition

STATION 4
- TGB .... Security by applying a load on the drive shaft
  . Bellcrank hinge pin .... No Play
  . Sealant bead .... Condition
  . Magnetic plug .... No metal chips. Refer to NOTE A. R R
- Horizontal stabilizer, fin, tail bumper .... Security, condition
* TAIL ROTOR BLADES .... Attachment, general condition of polyurethane protection coating in the trailing edge (visually inspect for debonding, blisters, scratches, cracks, dents and distortion). On the stainless steel leading edge strip, inspect for holes (erosion), splaying and dents.
* Tail rotor blade spar .... Check for abnormal spar noise when the rotor is bent inwards and outwards to form an arc, Refer to NOTE B.
  . Laminated half-bearing .... No bonding separation, deep crack or emergence
  . Blade horn .... No play

- TRH .... Condition, security
  . Pitch change control
  . Paint line on pitch change R
    control and spacer/baffle .... No misalignment. R
  . Pitch change rod swivel bearing .... Check, refer to NOTE B : R
    . the absence of play (J) by R
      twisting the blades back and R
      forth, low amplitude movements R
      (A) (Refer to Figure 3) R
    . the condition of the ball R
      joint, by visual inspection, R
      that no teflon material has R
      squeezed out, R
      that the ball shows no signs R
      or burnishing or scoring. R

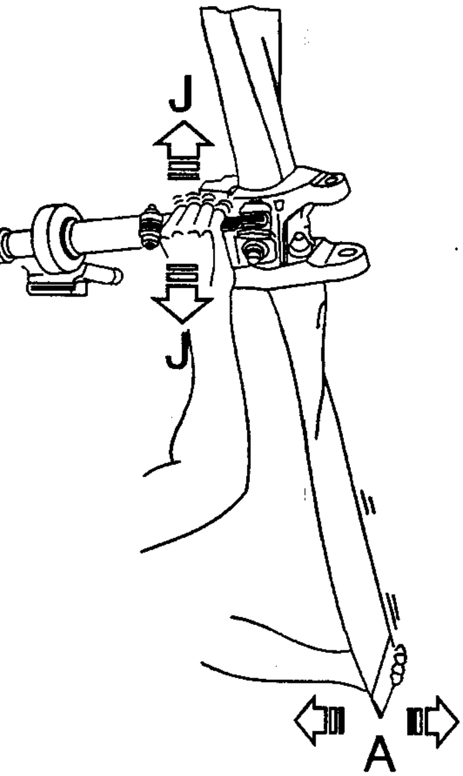

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Figure 3

* BALANCE ARM HINGE : (Flapping hinge bearing) according to type :
  . Type 1 : cups on either side of the pin .... Visual play and no metallic particles
  . Type 2 : flapping bearings .... No play
  . Type 3 : bearing outside cone rubber .... No cracks, extrusion, bronze chips
- Tail boom fairing .... Security
- Forward fairing and head shield ...... Condition, no cracks. R
  Particularly at the six R
  lateral attachment points on R
  the fairing (use a mirror, if R
  necessary). R

STATION 5

– Battery	Security	
– RH baggage compartment door	Security, condition, locking	
– RH landing gear		
. Shock absorber	Condition, no leaks	
. Wear resistance plate	Condition	
– MGB cowling	Open : condition of locking systems	
– Transmission deck	Cleanliness	
– MGB	Leaktightness	
. Flared housing magnetic plug	No metal chips. Refer to NOTE A.	R
– MGB suspension bar	Security	
– DUNLOP servo-controls	Security, no leaks, no cracks on the body leading to seepage	
– SAMM servo-controls	Security, no leaks	
– Hydraulic system	Security, no leaks, lines	
– Hydraulic reservoir	Check fluid level, security, tightness	R
– Engine oil tank, system	Oil level, security, tightness	
– Engine oil cooler	Security, no leaks	
– Universal joint assembly	Security, pin fitted	
– Firewall	Condition	R
– Engine mount	Condition, security	
– Engine and engine compartment		
. Engine and accessories	General condition, cleanliness	
. Systems	No leaks	
. Controls	Interference	
. Transmission deck drain	Not plugged	
* MAGNETIC PLUGS :		
. ARRIEL engine magnetic plugs without electrical indication	No metal chips on forward and aft reduction gear magnetic plugs, Refer to NOTE C	R
– Engine and MGB cowlings	Closing, locking	

STATION 6

– Seat	Security, pin in place
– Cabin	General cleanliness

1.3 Flight report on the VEMD

- Procedure for recording the Ng and NF cycle count :

  . Read the cumulative Ng and NF cycles after the last flight of the day.
  . Record the values in the aircraft log-book.

NOTE : When the cumulative Ng and NF cycles reach 999.99, the counter returns to zero. Take this into account for updating calculations.

If the number of Ng and NF cycles are not read before the electrical system is switched off, delay the procedure till the next flight, but do not exceed the flights of the following day.

2 DAILY OPERATING CHECKS FOR OPTIONAL EQUIPMENT

For each optional equipment item installed on the helicopter, the daily check must include :

- a check before the first flight of the day,
- a check after the last flight of the day.

These checks consist in performing a visual examination of each optional equipment item in order to check its general condition and security on the aircraft, in particular for :

- windshield wipers,
- fire extinguisher,
- ski installation,
- air ambulance installation (stretcher),
- flares,
- cargo swing,
- ferry tank,
- blade protection against sand,
- sand filter.

The optional equipment items which require specific checks are listed below.

2.1 AIR EQUIPEMENT OR BREEZE ELECTRIC HOIST INSTALLATION R

The hoist must be checked by the hoist operator.

- Check that the hoisting blocks and snap hooks function correctly.

- Perform a hoist functional check : unwind the cable over approximately 0.6 m (2 ft) and then rewind it : check that the "Up" end of travel contact functions correctly.

- Check to be performed during the inspection associated with flight nearest the 30-hour operating limit.

AIR EQUIPEMENT HOIST fitted with an end-of-travel microswitch monitoring system :

Complete the check with the following :

- Switch on the electric hoist.
- Unwind the cable by approximately one to two metres.
- Wind the cable :

  . As the cable winds up, check that :
  the GREEN light is LIT,
  the RED light is EXTINGUISHED.

- On completion of the hoisting operation, maintain the "UP" order using the hoist operator's grip.

  . During the "UP" order, check that :
  the GREEN light is EXTINGUISHED,
  the RED light is EXTINGUISHED.

- Maintain the "UP" order on the hoist operator's grip and press the test push-button :

  . During the "UP" order, check that :
  the GREEN light is EXTINGUISHED,
  the RED light ILLUMINATES.

- Check to be performed every 25 hoisting operations :

  . Free rotation of the hook.
  . Condition of the cable.
  . Operation of the cable extraction mechanism.

- Operations to be performed every 50 hoisting operations :

  . Grease the hoist brake assembly.
  . Clean then grease the cable winding screw.

2.2 EMERGENCY FLOATATION GEAR INSTALLATION R

Check before the first flight

- Place the emergency floatation gear in low position, pins locked, safety pin in place.
- Check that the circuit-breakers in the aft baggage compartment are engaged.

Check after the last flight

If the aircraft has flown at low altitude over the sea, wash the inflation cylinders and the cradle assemblies.

2.3 CROP SPRAYING INSTALLATION R

This optional equipment requires the presence of qualified staff to perform the daily operating checks.

2.4 ENGINE FIRE EXTINGUISHING SYSTEM R

- Check that the pressure of the cylinders is correct.

2.5 CARGO SWING R

- After the last flight, lightly grease (G354) the end of the load hook at the lock input.

2.6 SSB WIRE ANTENNA INSTALLATION R

- Check the condition and attachment of the wire antenna. R

3 OPERATION IN COLD WEATHER

3.1 General

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

3.2 General Recommendations

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

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

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

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

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

  PRACTICAL ADVICES :

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

3.3 Lubricants to be used for Transmission Assemblies

Refer to "Limitations" SECTION of the Basic Flight Manual.

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

3.4 Use of Batteries for Starting

During long periods in inoperation it is recommended that the battery be stored in a warm area.
If a ground power unit is not available, start-up may be carried out using the aircraft battery or two aircraft batteries connected in parallel.
The starting envelope is related to the temperature and is indicated in the supplement instruction for operation in cold weather.

3.5 Preparation for Flight

Independently of the inspections prescribed in SECTION 8.4.1, perform the following operations and inspections :

Main rotor blades

Remove the blade socks, then remove snow if need be and, if necessary remove ice from blades using hot air flow at a temperature not exceeding 80 °C.

Main rotor hub and mast

Remove ice from the swashplates, the scissors, the servo controls and the rotor head spring antivibrator.

Power plant

- Remove the air intake cover and the exhaust nozzle blank after removing snow from the aircraft surface.
- Remove snow and ice accretion in the vicinity of the air intake, on either side of the screen and inside the engine air intake duct (remove the air intake screen if necessary).

- It is imperative that the air intake be clean

  Manually and visually check for snow and ice inside the air intake duct up to the first stage of the compressor :
  In case of icing :
  . remove ice using a wooden or plastic scraper,
  . carefully wipe the surface using a cloth soaked with isopropyl alcohol.
  . inspect drains, unblanked scuppers; check for snow and ice on vent and static ports

Tail rotor

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

Structure

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

Flight controls - Engine controls

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

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

Fuel system bleeding

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

3.6 Check after Last Flight of the Day

The operations described in SECTION 8.4.1 are to be completed by the following actions :

- Inspection of the engine magnetic plugs should be performed within 30 min after the rotor has stopped rotating, in order to avoid seal damaging.
- Care must be taken not to leave doors open.
- Install the air intake cover and exhaust nozzle blank.
- When the aircraft is parked in an unsheltered area it is recommended to apply anti-icing materials and to carry out the aircraft parking and mooring.

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

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

SECTION 9

OPERATIONAL DATA

CONTENTS

9.1 WANDEL AND GOLTERMANN HAILERS OP 2480

9.2 EMERGENCY LOCATOR TRANSMITTERS R

9.3 SCHERMULY FLARES

9.4 AIR AMBULANCE INSTALLATION

9.5 SWIVELLING LANDING LIGHT

9.6 RETRACTABLE SWIVELLING LANDING LIGHT

9.7 SEARCHLIGHT

9.8 RESERVED

9.9 SKI INSTALLATION

9.10 FREON AIR CONDITIONER

SECTION 9.1

WANDEL AND GOLTERMANN HAILERS OP 2480

1 GENERAL

The hailers are designed to transmit either messages of a high sound level, or a continuous signal (siren).

The effect of this optional equipment on the additional performance data is negligible.

2 DESCRIPTION

The system mainly consists of :

- two amplifiers located in the LH side baggage hold,
- four hailers mounted in pairs on the landing gear rear cross beam,
- one microphone located on the RH side of the copilot's seat and fitted with two push-buttons : a black one for the mike function and a red one for the siren.

The system is switched on by means of a push-button and is protected by a fuse.

SECTION 9.2

1. JOLLIET JE2 EMERGENCY LOCATOR TRANSMITTER

R

1 GENERAL

The JOLLIET J.E.2 emergency locator transmits radio beacon signals simultaneously on the international distress frequencies (121.5 MHz and 243.0 MHz) to aid helicopter search and rescue operations.

The unit operates automatically in the event of crash impact. It may be operated manually by means of a switch on the transmitter front panel, or by means of a remote control switch.

2 COMPONENT LOCATIONS

- A locator beacon is attached to the structure and is located inside the rear luggage bay.
- A beacon location label is attached to the outside of the aircraft.
- A control switch is fitted underneath the instrument panel on the pilot's side.
- An antenna is located on the tail boom.
- A label fitted close to the switch reads :

EMERGENCY LOCATOR TRANSMITTER
AVIATION EMERGENCY USE ONLY

3 CHECKING PROCEDURE

3.1 Pre-flight Inspection

Beneath the instrument panel :

- Check that remote control switch is set to "AUTO".

On transmitter :

- For old generation locator beacons :
  . check that the switch is set to "AUTO",
  . press in the "RESET" pushbutton.

- For new generation (NG) locator beacons :
  . set the switch to "OFF/RST" for 2 to 3 seconds,
  . set the switch back to "AUTO".

3.2 Pre-flight Checks

- Select the international distress frequency on the aircraft VHF or UHF system.
- Set switch beneath instrument panel to "MANU" for approximately one second. R
- The transmitter output signal should be audible in the headphones.
- Set switch back to "AUTO". R

3.3 Post-flight Check

After landing, ensure that the emergency locator transmitter has not accidentally been switched on.

4 OPERATING PROCEDURE

4.1 Automatic Operation

The transmitter is actuated automatically in the event of an impact if the switch is set to "AUTO". R

Impact detector reset :

- New generation locator beacon (NG) :
  Select the locator switch to OFF/RST, hold it in this position for 2 to 3 seconds then select it back to AUTO.

- Old generation locator beacon :
  The impact detector may be reset by means of the "RESET" push-button on the transmitter front panel ; the reset push-button also stops the transmitter output signals if the unit is operating.

4.2 Manual Operation

The unit may be actuated manually by setting the switch to "MANU". R

4.3 Portable Operation

The transmitter may be used on the ground as follows :

- Remove the transmitter from its mount.
- Select an unobstructed area.
- Extend the built-in antenna.
- Place the unit upright with the antenna on top.
- Switch on the transmitter by setting the switch to "MANU".

SECTION 9.2

2. ELT 96 EMERGENCY LOCATOR TRANSMITTER

1 GENERAL

The ELT 96 radio beacon is an emergency transmitter which is used to locate the helicopter in an emergency. It transmits simultaneously on the international frequencies (121,5 - 243 - 406 MHz).

The transmitter starts operating automatically in case of impact or in case of cable breakage.
It may be switched on manually via the switch located on the top face of the transmitter or via the remote control switch located under the instrument panel.

2 COMPONENT LOCATION

- A transmitter attached to the structure inside the rear cargo hold.
- An external label indicating transmitter location.
- An AUTO - MANU control switch located under the instrument panel on the pilot's side.
- An AUTO TEST/RESET pushbutton located next to the control switch.
- A red XMIT ALERT indicator light located on the instrument panel on the pilot's side.
- An antenna on the LH side of the cabin roof.
- A label fitted close to the switch reads :

EMERGENCY LOCATOR TRANSMITTER FOR AVIATION EMERGENCY USE ONLY.

3 CHECKS

3.1 Pre-flight Inspection

Check the following under the instrument panel :
- The remote control switch is set to "AUTO".

CAUTION : IF THE SWITCH IS SET TO "AUTO" AND THE CONNECTOR IS UNPLUGGED, THE TRANSMITTER WILL OPERATE.

Check the following on the transmitter :
- The connector is plugged in.
- The switch is set to "AUTO".

3.2 Pre-flight Checks

- Tune in to 121.5 or 243 MHz.
- Press and hold pressed the "AUTO TEST/RESET" pushbutton.
  The following should occur :
  . The red "XMIT ALERT" light comes on.
  . The transmitter should be heard on the distress frequency.

NOTE : If the indicator light flashes, it indicates that the batteries are faulty or the transmitter is inoperative.

3.3 Post-flight Check

After landing, check for untimely transmitter operation (the red "XMIT ALERT" light should be extinguished).

Check the following on the transmitter :

- The switch is set to "OFF".

4 OPERATING PROCEDURE

4.1 Automatic Operation

The transmitter will begin operating automatically in case of impact if the remote control switch is set to the "AUTO" position.
The red "XMIT ALERT" light comes on during transmitter operation.

Resetting the impact detector

- Control switch set to "AUTO".
- Press the "AUTO TEST/RESET" pushbutton.
- The transmitter should cease operating.

NOTE : If the transmitter continues transmitting, perform the operation again. If, after several attempts, the transmitter remains in operation, set the switch on its top face to "OFF".

4.2 Manual Operation

The transmitter will begin operating when the remote control switch is set to "MANU".
The red "XMIT ALERT" light comes on during transmitter operation.

4.3 Portable Operation

The transmitter may be used on the ground as follows :

- Set the switch to "OFF".
- Remove the transmitter from its support.
- Work in a clear space.
- Hold the transmitter in the vertical position with the antenna upwards.
- Set the switch to "MAN/RESET" to begin transmission.

SECTION 9.2

3. NARCO ELT 910 EMERGENCY LOCATOR TRANSMITTER

1 GENERAL

The NARCO ELT 910 emergency locator transmits radio beacon signals simultaneously on the international distress frequencies (121,5 Mhz and 243.0 Mhz) to aid helicopter search and rescue operations.

2 COMPONENTS - LOCATION

- A locator beacon, attached to the structure, is positioned inside the rear baggage hold.
- An external identification label of the locator beacon.
- A control unit, located on the instrument panel.
- An antenna, located on the tail boom.
- A label fitted close to the switch reads :

EMERGENCY LOCATOR TRANSMITTER FOR AVIATION EMERGENCY USE ONLY.

3 CHECKS

3.1 Pre-flight Inspection

On the instrument panel :

- check that remote control switch is set to "ARM".

On transmitter, check that :

- ON-OFF-ARM is set to "ARM".

3.2 Pre-flight Checks

- Select the international distress frequency on the aircraft VHF or UHF system.
- Set control unit switch to "ON" for approximately two seconds.
- The indicator light on the remote control unit lights up.
- The transmitter output signal should be audible in the headphones.
- Set control unit switch to "ARM".

3.3 Post-flight Check

After landing, ensure that the emergency locator transmitter has not accidentally been switched on.

4 OPERATING PROCEDURE

4.1 Automatic Operation

The transmitter is actuated automatically in the event of an impact, assuming the switch is set to "ARM".

NOTE : In order to reset the locator beacon following automatic actuation, proceed as follows :

- Select the remote control switch "ON" for two seconds, or the transmitter selector to "OFF".
- Re-select the switch to "ARM".

4.2 Manual Operation

The unit may be actuated manually by setting the switch to "ON".

4.3 Portable Operation

The transmitter may be used on the ground as follows :

- Remove the transmitter from its mount.
- Select an unobstructed area.
- Extend the antenna.
- Place the unit upright with the antenna on top.
- Switch on the transmitter by setting the "ON-OFF-ARM" switch to "ON".

RR 4C

SECTION 9.2

KANNAD 406 AF EMERGENCY LOCATOR TRANSMITTER

1 GENERAL

The emergency locator transmits radio beacon signals simultaneously on the international distress frequencies 121.5 MHz, 243.0 MHz and 406.025 Mhz to aid helicopter search and rescue operations.

It can be actived manually or automatically in case of a crash.

2 DESCRIPTION

The KANNAD 406 AF beacons consist essentially of the following :
- A transmitter, located in the rear cargo compartment is fitted with "ARM-ON-OFF" switch,
- An antenna, located in the upper section of the intermediate structure,
- A remote control switch, located in instrument panel.

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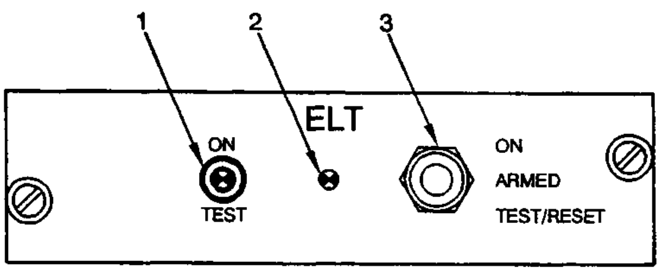


REMOTE CONTROL PANEL
KEY

REPERE	DESCRIPTION	FONCTION
1	Amber light	- ON : transmission is effective - Test mode : . One long flash indicates good test. . A series of short flashes indicates bad test. . Beginning of the test is indicated by a short flash.
2	Buzzer	- Aural signal
3	3 position switch	The switch of the ELT is in position "ARM" - ON : beacon is actived. - ARMED : arms the shock sensor circuit. - TEST/RESET : . Self-test mode. . In case of activation, the ELT can be reset by switching to TEST/RESET.

3 OPERATION

3.1 Pre-Flight Check

- On transmitter : check that ARM-OFF-ON switch is set to ARM.

- In cockpit : check that remote control switch is set to ARMED.

3.2 Operation Testing

The self-test mode is a temporary mode.

This mode is selected either :

- When switching from OFF to ARM the switch of the ELT.

- When switching to TEST/RESET on the remote control panel (provided that the switch of the ELT is in position ARM).

The buzzer operates during the self-test procedure.

NOTE : It is strictly prohibited to test the ELT by transmitting.

3.3 Post-Flight Check

After landing, set the VHF receiver to 121.5 MHz to ensure that the emergency locator transmitter has not accidentally been switched on.

4 OPERATING PROCEDURE

4.1 Automatic Operation

The transmitter is actuated automatically in the event of an impact assuming the switches are set to ARMED.

NOTE : The TEST/RESET position stops locator transmitting and resets the impact detector.

4.2 Manual Operation

The unit may be actuated manually by setting one control switch to ON.

4.3 Portable Operation

The transmitter may be used for self-contained operation on the ground as follows :

- Remove the transmitter from its mounting bracket.
- Disconnect the coax from the aircraft antenna.
- Select an unobstructed area.
- Extend the built-in tape antenna.
- Place the unit upright with the antenna on top.
- Switch on the transmitter by setting the ARM-OFF-ON switch to ON.

SECTION 9.3

SCHERMULY FLARES

1 GENERAL

SCHERMULY flares are used to illuminate the ground during night operations. Two flares are carried on a support on the port side of the fuselage.

2 PILOT'S CONTROLS

Firing of the flares is controlled electrically. The control system comprises :

- a "FLARES" push-button situated on the control,
- a firing push-button on the pilot's cyclic control grip.

The firing circuit is protected by a fuse situated on the control console fuse panel.

3 OPERATING INSTRUCTIONS

The maximum altitude for firing the flares is 1500 ft (500 m).
For maximum effectiveness, the second flare should be fired at an altitude of at least 800 ft (250 m).
It should be noted, however, that firing the flares below 1200 ft (400 m) may be dangerous if a fire hazard exists in the area to be illuminated.

SECTION 9.4

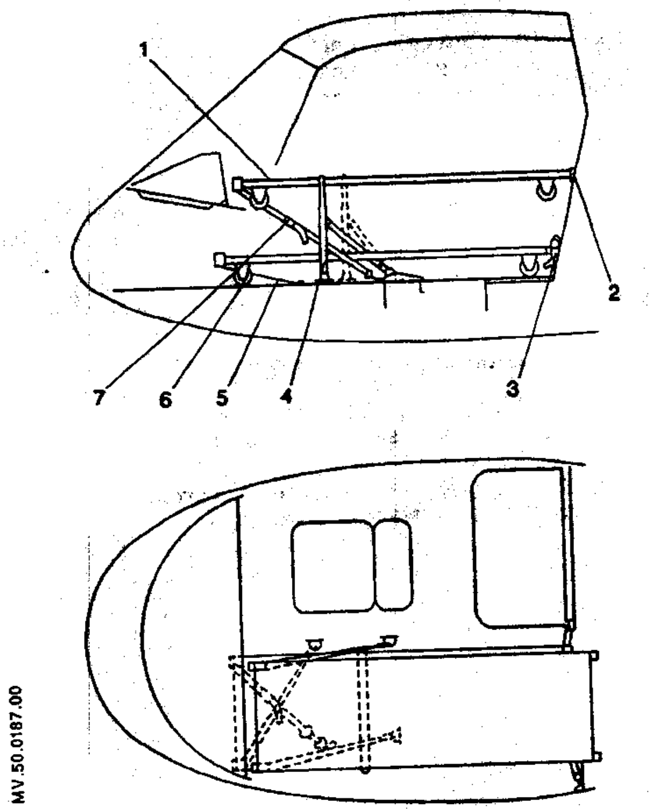
AIR AMBULANCE INSTALLATION

1 GENERAL

The air ambulance duty version is designed to carry one or two stretcher patients accompanied by one or two medical assistants seated on the R.H. rear bench seat.

2 DESCRIPTION

Fitting out in the air ambulance role involves removing the copilot's seat, the dual controls and if necessary the rear left hand bench seat.
The lower stretcher (6) rests on the cabin floor, it is secured with straps (3 and 5) to mooring rings and brackets. The top stretcher (1) is held by supports (2) on the rear bulkhead, a frame (4) at the front, and secured by straps (7) to the floor-mounted mooring rings.



3 UTILIZATION

Three configurations are possible :

- 1 stretcher (upper or lower)
- 2 stretchers

NOTE : If only one stretcher is being used it will be time-saving to use the lower stretcher.

When not in service the stretchers are folded and stowed with their straps in the baggage hold. The upper stretcher support frame folds down onto the cabin floor.

Stretchers are installed in the following order :

1. Lower stretcher (6)
2. Upper stretcher (1).

3.1 Preparation of the Cabin

Installation of the air ambulance duty version requires a number of preliminary cabin alterations.

3.1.1 Lower Stretcher

- Remove : dual controls, copilot's seat, seat cushions from L.H. rear passenger seat.
- Fold up L.H. rear passenger seat against rear bulkhead.

3.1.2 Upper Stretcher

- Remove : dual controls (tail rotor control pedals need not be removed), copilot's seat, seat cushions from L.H. rear passenger seat, L.H. carpeting.
- L.H. rear passenger seat remains open.
- Raise the support to vertical position and secure.

3.1.3 Upper and Lower Stretchers

- Remove : dual controls, copilot's seat, L.H. rear passenger seat cushions and seat, L.H. carpeting.

NOTE : For the "plush" version, both armrests of the L.H. rear passenger seat must be removed.

3.2 Installing the Stretchers

- Open the port side doors.
- Load the stretchers into place in the cabin forwards.
  . Set the lower stretcher on the cabin floor
  . Set the upper stretcher on the support post.
- Engage the rear handles of the stretchers in the brackets on the rear bulkhead.
- Secure the retaining straps and hooks at the front and "PIP" pins at the rear.

<u>CAUTION</u> : THE PATIENTS ARE STRAPPED TO THE STRETCHERS AND MUST BE EMBARKED FEET FORWARDS, HEAD TOWARDS THE TAIL.

SECTION 9.5

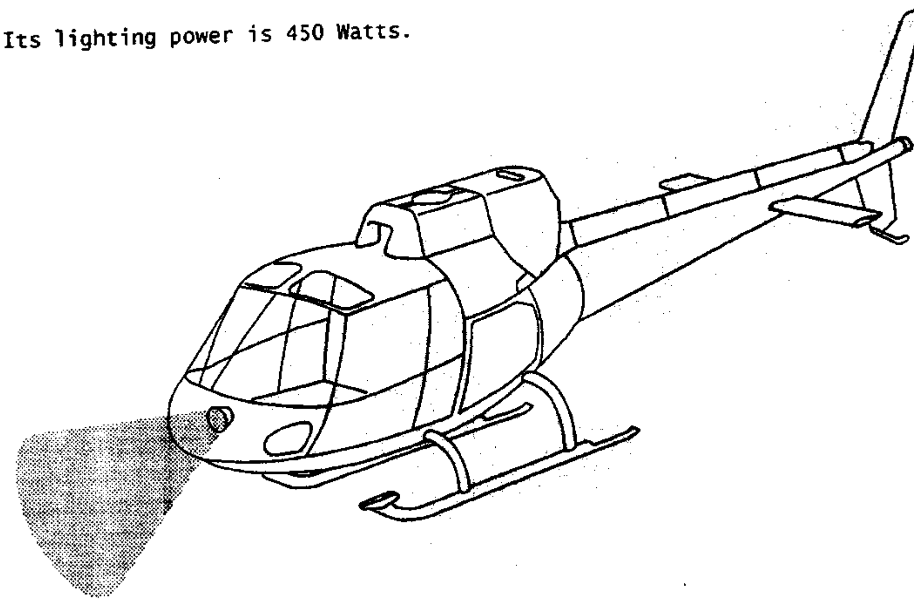
SWIVELLING LANDING LIGHT

1 GENERAL

This swivelling landing light that can be orientated in azimuth, is an optional equipment item designed to improve safety during the approach phase and taxiing operations.

This optional equipment is installed on the bottom, forward R.H. side of the lower structure.

Its lighting power is 450 Watts.



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2 CONTROLS

The controls of the swivelling landing light are located on the pilot's collective pitch lever handgrip assembly.

An ON/OFF switch is used to control the lighting which is confirmed by the illumination of an indicator light on the instrument panel or on the Warning-Caution-Advisory panel.

A four-way switch is used to retract and extend the landing light.

3 CIRCUIT PROTECTION

Circuits are protected as follows :

- a 2.5-Amp. fuse on the R.H. side panel for the control circuits,
- a 20-Amp. fuse in the electrical master box for the lighting circuit.

SECTION 9.6

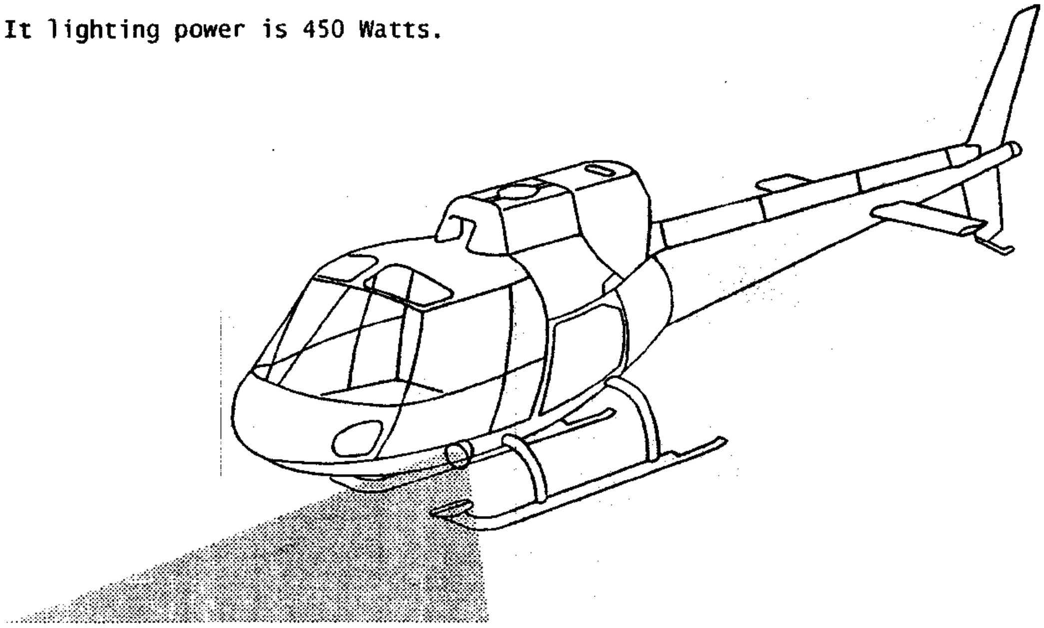
RETRACTABLE SWIVELLING LANDING LIGHT

1 GENERAL

This swivelling landing light that can be orientated both in elevation and azimuth, is an optional equipment designed to improve safety during the approach phase and taxiing operations.

This optional equipment is installed on the bottom, forward LH side of the lower structure.

It lighting power is 450 Watts.



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2 CONTROLS

The controls of the retractable swivelling landing light are located on the collective pitch lever handgrip assembly. R

An ON/OFF switch is used to control the lighting which is confirmed by the illumination of an indicator light on the instrument panel or on the Warning-Caution-Advisory panel.

The rear (spring return) position of the "ON" switch must be used to R
retract the searchlight. R
This ensures that the searchlight is always switched off when it is in R
the "RETRACTED" position. R
The extension and orientation of the searchlight are carried out using R
the four-way control button. R

3 CIRCUIT PROTECTION

Circuits are protected as follows :
- a 2.5-Amp. fuse on the RH. side panel for the control circuits.
- a 20-Amp. fuse in the electrical master box for the lighting circuit.

SECTION 9.7

SEARCHLIGHT

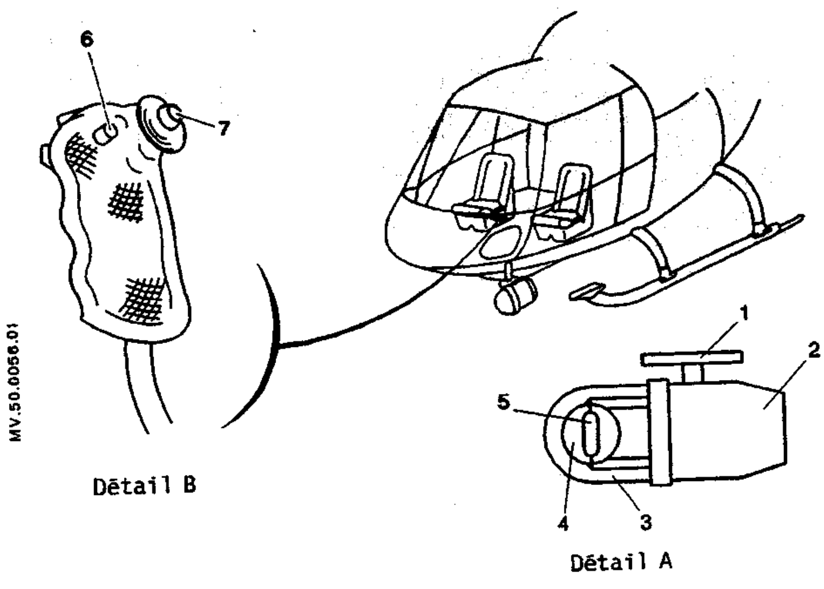
1 GENERAL

The LOCATOR searchlight installation is intended to illuminate the ground by a swivelling light beam in order to facilitate certain missions (search, rescue, surveillance...).

2 COMPONENT LOCATIONS

This installation consists mainly of :

- A 450-W power light (Detail A) secured to the bottom, forward LH side of the lower structure, forward LH side, comprising :
  . a glass dome (3),
  . a swivelling parabolic reflector (4),
  . a fixed-arc lamp (5),
  . a housing (2),
  . a mount (1).
- A control handgrip (Detail B) which, when not used, is hooked onto a support located between the two seats.
- An amber light near the control handgrip support, which illuminates to indicate that the searchlight is on.



3 OPERATION

An ON/OFF push-button (6) located on the control grip is used to switch on and off the LOCATOR searchlight installation.

Full brightness is obtained 15 seconds after the searchlight has been switched on. This is confirmed by the illumination of the amber indicator light.

A four-way button (7) is used to operate the reflector for orientating the light beam in the desired direction.

NOTE : To prevent any premature damage to the lamp it is advisable :

- after the searchlight has been switched on, to wait 15 seconds before switching it off,
- after the searchlight has been switched off, to wait 30 to 60 seconds before switching it on again.

SECTION 9.9

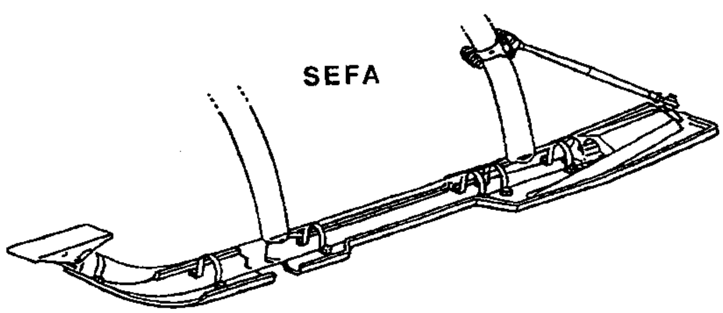
SKI INSTALLATION

1 GENERAL

The ski installation is designed for takeoff or landing on normal or snow-covered ground.

2 DESCRIPTION

The skis are secured to the pads via clamps. SEFA skis have a glass-fiber/resin laminate structure and SURFAIR skis have a metal structure. The rear spatula of the ski is reinforced with one or two struts. SURFAIR skis enable 4 pairs of Alpine skis to be carried.



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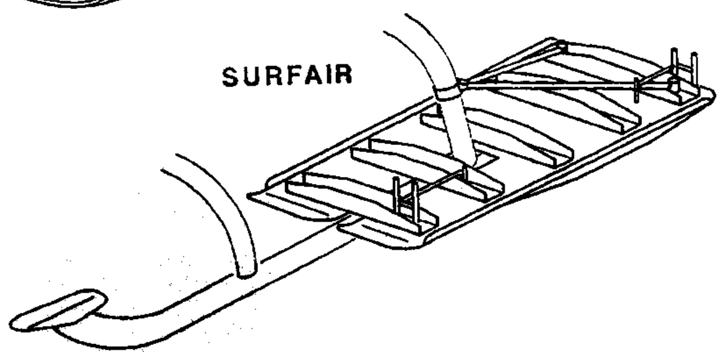

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3 OPERATION

Special attention is required to the tail rotor ground clearance when landing in deep snow.

SECTION 9.10

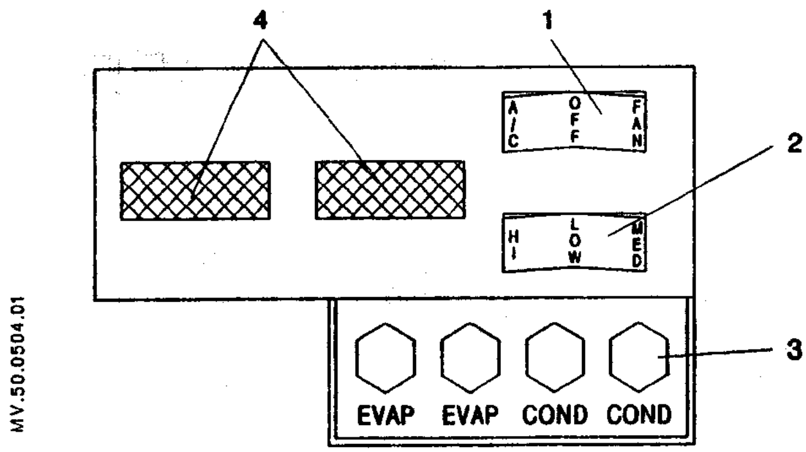
FREON AIR CONDITIONER

1 GENERAL

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

2 SYSTEM CONTROLS AND INDICATORS

- Available to the pilot



ITEM	DESCRIPTION	FUNCTION
1	Rocker switch : . OFF neutral . FAN engaged . A/C engaged	Stops system operation Switches on ventilation Switches on ventilation and air conditioning
2	Rocker switch : . LOW neutral . HI engaged . MED engaged	Slow ventilation Fast ventilation Medium ventilation
3	Protection fuses for condenser and fan blowers	
4	Ventilation outlets	

- Available to the passengers

Six swivelling and adjustable outlets used to obtain the desired ventilation rate.

3 UTILIZATION

System operation

- Set rocker switch 1 to FAN to obtain cabin ventilation
  to A/C to obtain air conditioning.

- Select ventilation rate using rocker switch 2.

NOTE : It is recommended to close the external ventilation flap, when using the system in the air-conditioning mode, to get a better efficiency. R R R

System shutdown

- Set rocker switch 1 to OFF (neutral position).

- Should the system fail, set rocker switch 1 to OFF.

4 PERFORMANCE DATA

The impact of the air conditioning system on the performance data given in the Basic Flight Manual is negligible.

SECTION 10

ADDITIONAL PERFORMANCE DATA

CONTENTS

10.1 BASIC PERFORMANCE DATA

10.2 EFFECT OF EQUIPMENT ITEMS ON PERFORMANCE DATA

10.3 PERFORMANCE DATA WITH SANS FILTER INSTALLED AND PROTECTION OF THE AIR INTAKE AGAINST INDUCTION OF SNOW R R

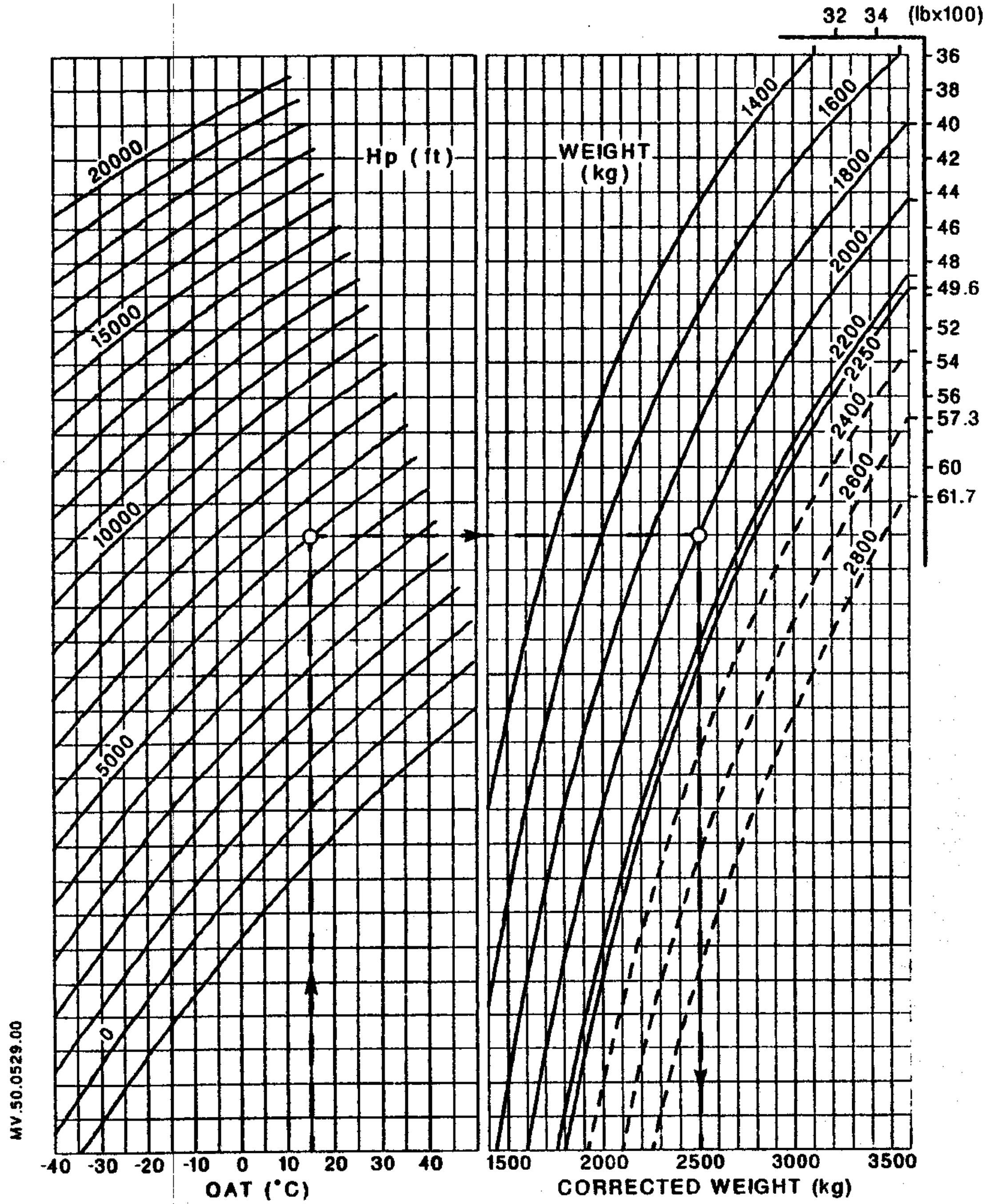
SECTION 10.1

BASIC PERFORMANCE DATA

	Figures
– DETERMINING THE CORRECTED WEIGHT	1
– TAS/CAS IN FAST CRUISE	2
– TAS/CAS IN RECOMMENDED CRUISE	3
– FUEL CONSUMPTION – RANGE IN FAST CRUISE	4
– FUEL CONSUMPTION – ENDURANCE IN RECOMMENDED CRUISE	5
– RANGE IN RECOMMENDED CRUISE	6
– FUEL CONSUMPTION – ENDURANCE IN CRUISE AT MINIMUM HOURLY FUEL CONSUMPTION	7

CONDITIONS
- WEIGHT LIMITATIONS WITH INTERNAL LOADS : 2250 kg (4961 lb)
-
-
-
-
-

CORRECTED WEIGHT TO DETERMINE SPEEDS (on facing page)



EXAMPLE : OAT = 15°C WEIGHT = 2000 kg

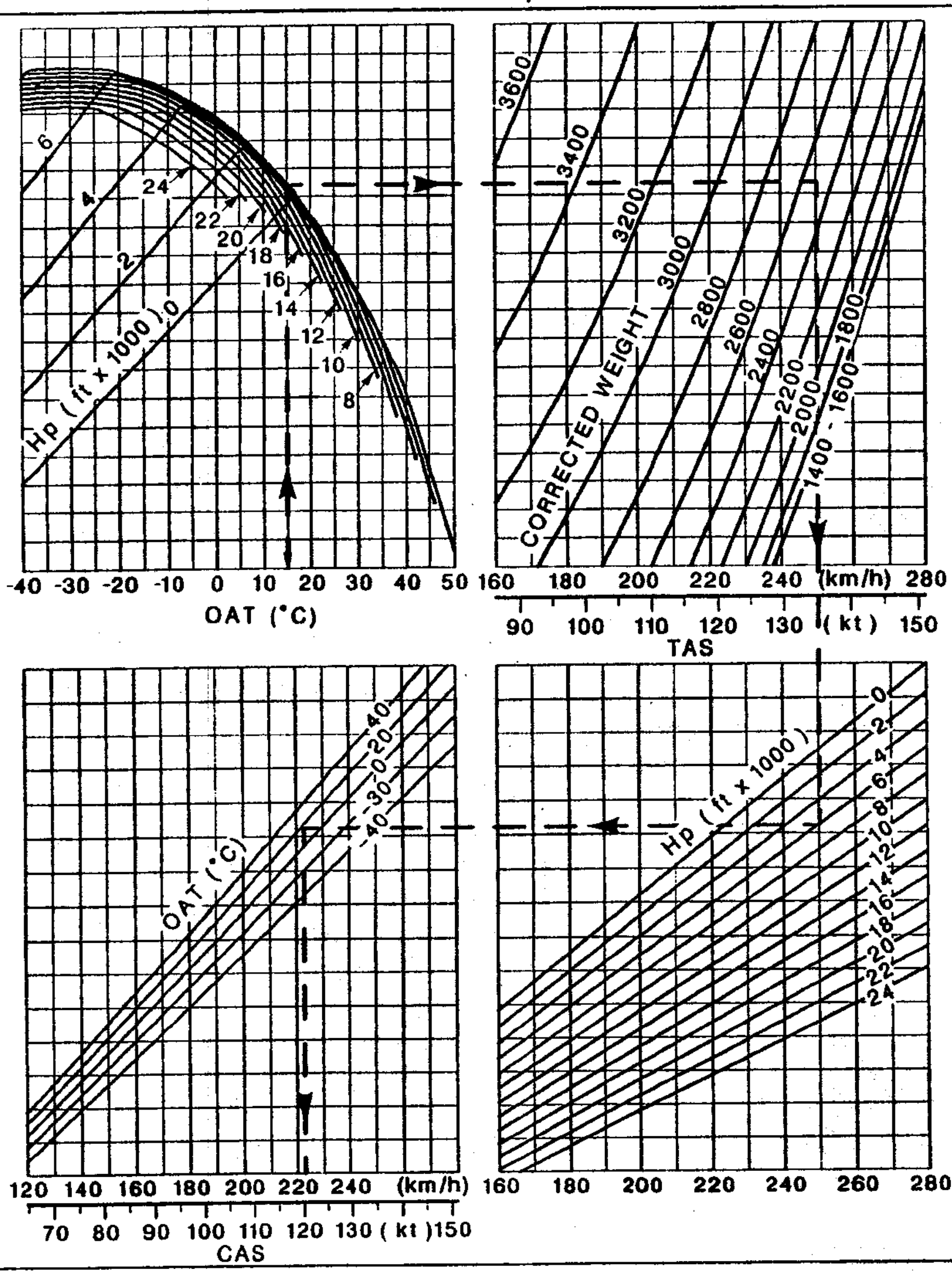
Hp = 6000 ft ⇒ CORRECTED WEIGHT = 2500 kg

Figure 1

CONDITIONS

- STABILIZED LEVEL FLIGHT WITH ELECTRICAL COMSUMPTION ⩽ 50 A

TAS/CAS IN FAST CRUISE



EXAMPLE : OAT = 15°C CORRECTED WEIGHT = 2500 kg

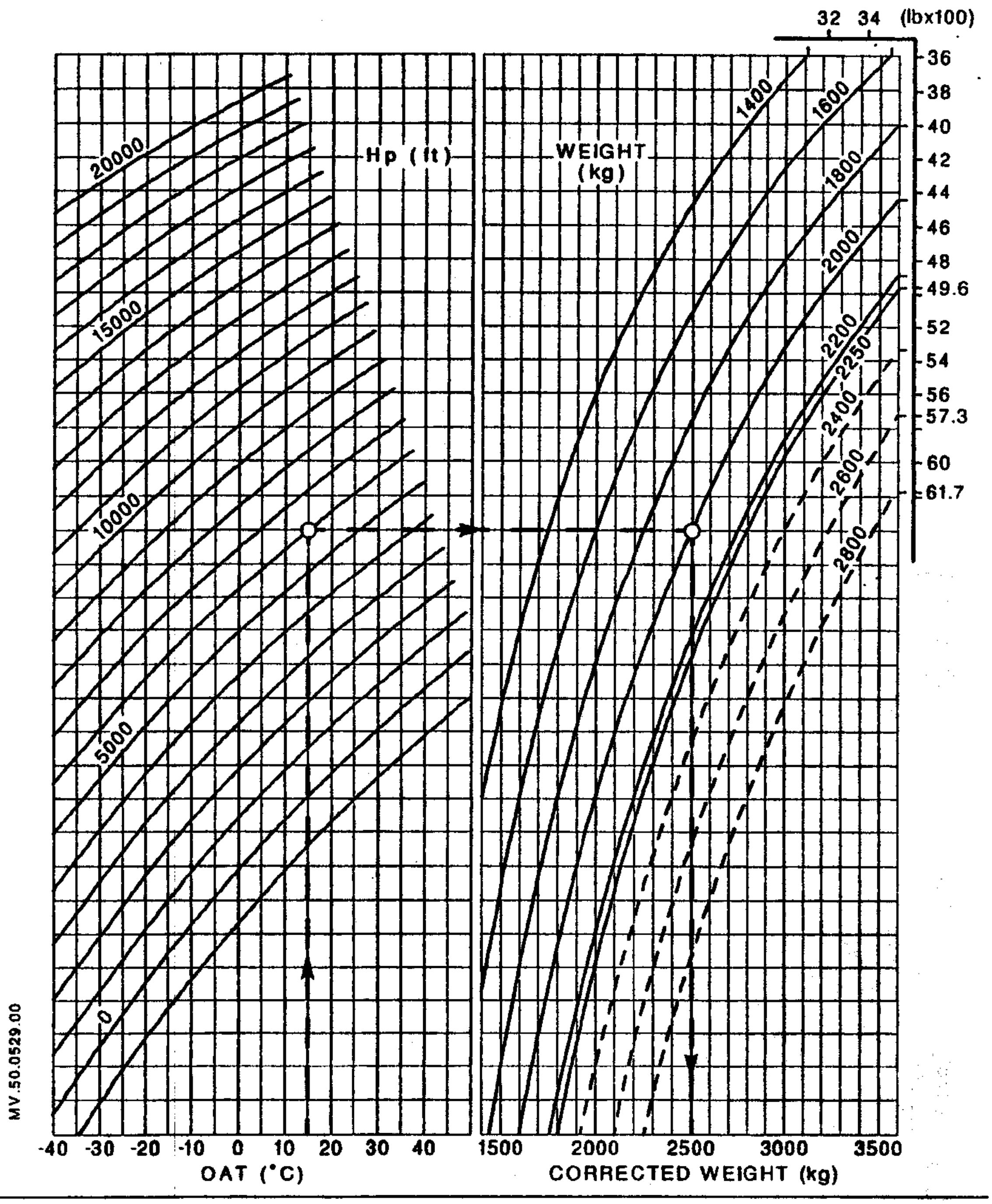
Hp = 6000 ft ⇒ CAS = 223 km/h

Figure 2

CONDITIONS

- WEIGHT LIMITATIONS WITH INTERNAL LOADS : 2250 kg (4961 lb)
-
-
-
-
-

CORRECTED WEIGHT TO DETERMINE SPEEDS (on facing page)



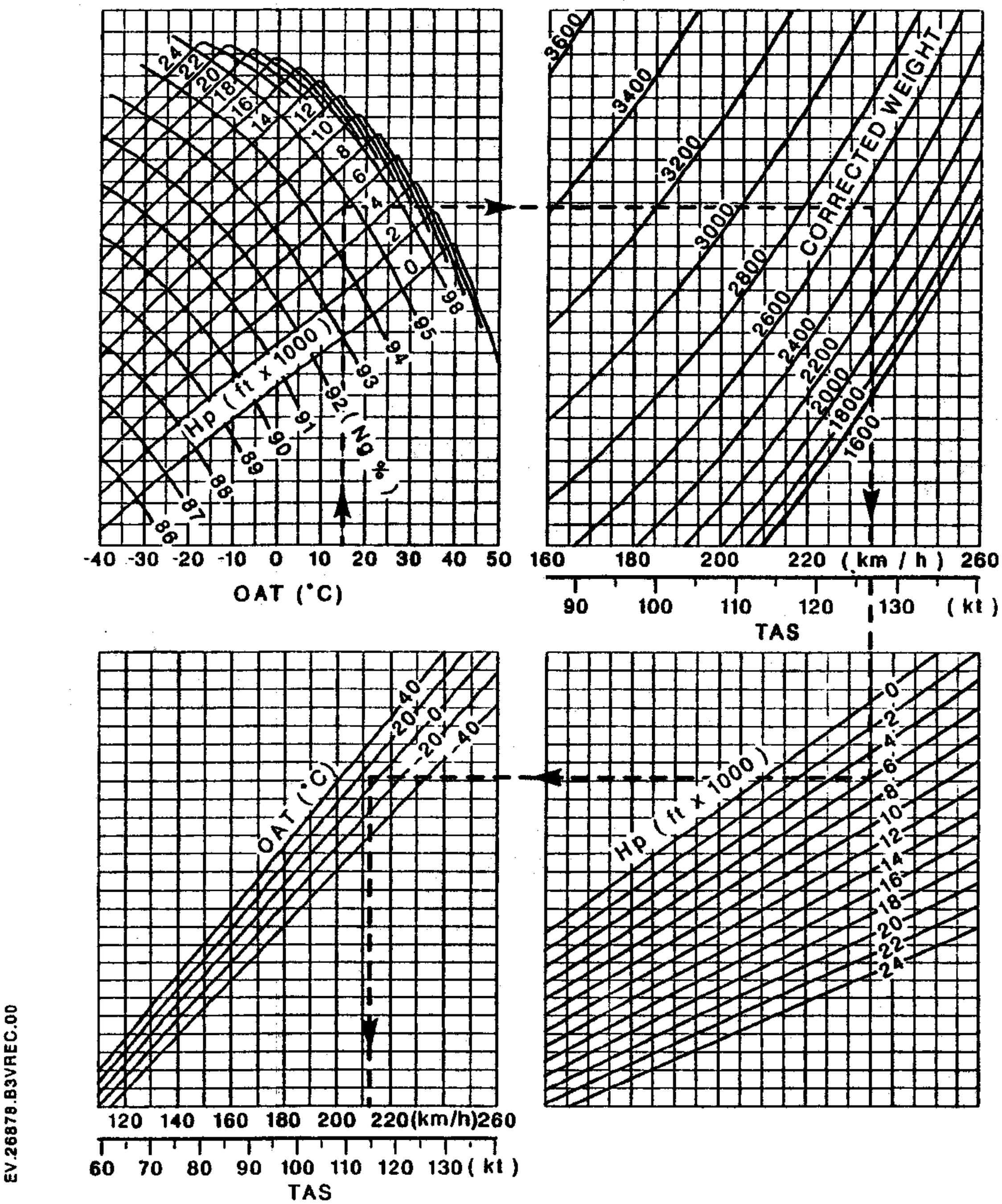
EXAMPLE : OAT = 15°C WEIGHT = 2000 kg
Hp = 6000 ft ⇒ CORRECTED WEIGHT = 2500 kg

Figure 1

CONDITIONS

- STABILIZED LEVEL FLIGHT
- TAS AND CAS CORRESPOND TO THE Ng READ ON THE UPPER LH PRESSURE ALTITUDE CURVES
-
-
-
-

TAS/CAS IN RECOMMENDED CRUISE



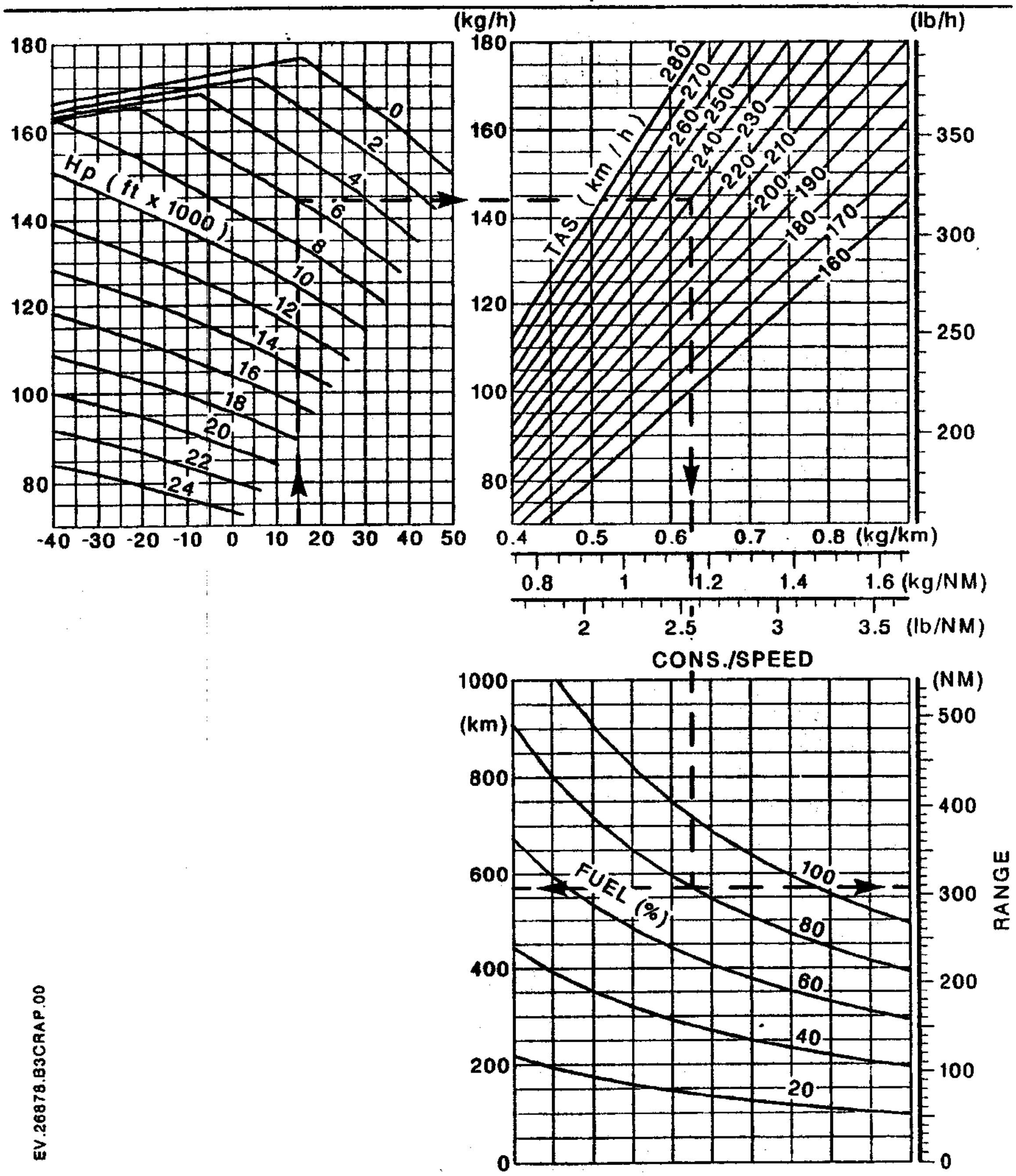
EXAMPLE : OAT = 15°C CORRECTED WEIGHT = 2500 kg

Hp = 6000 ft ⇒ CAS = 212 km/h

Figure 3

CONDITIONS
- STABILIZED LEVEL FLIGHT WITH ELECTRICAL CONSUMPTION ⩽ 50 A
-
-
-
-
-

FUEL CONSUMPTION RANGE IN FAST CRUISE



EXAMPLE : OAT = 15°C TAS = 230 km/h FUEL = 80 %

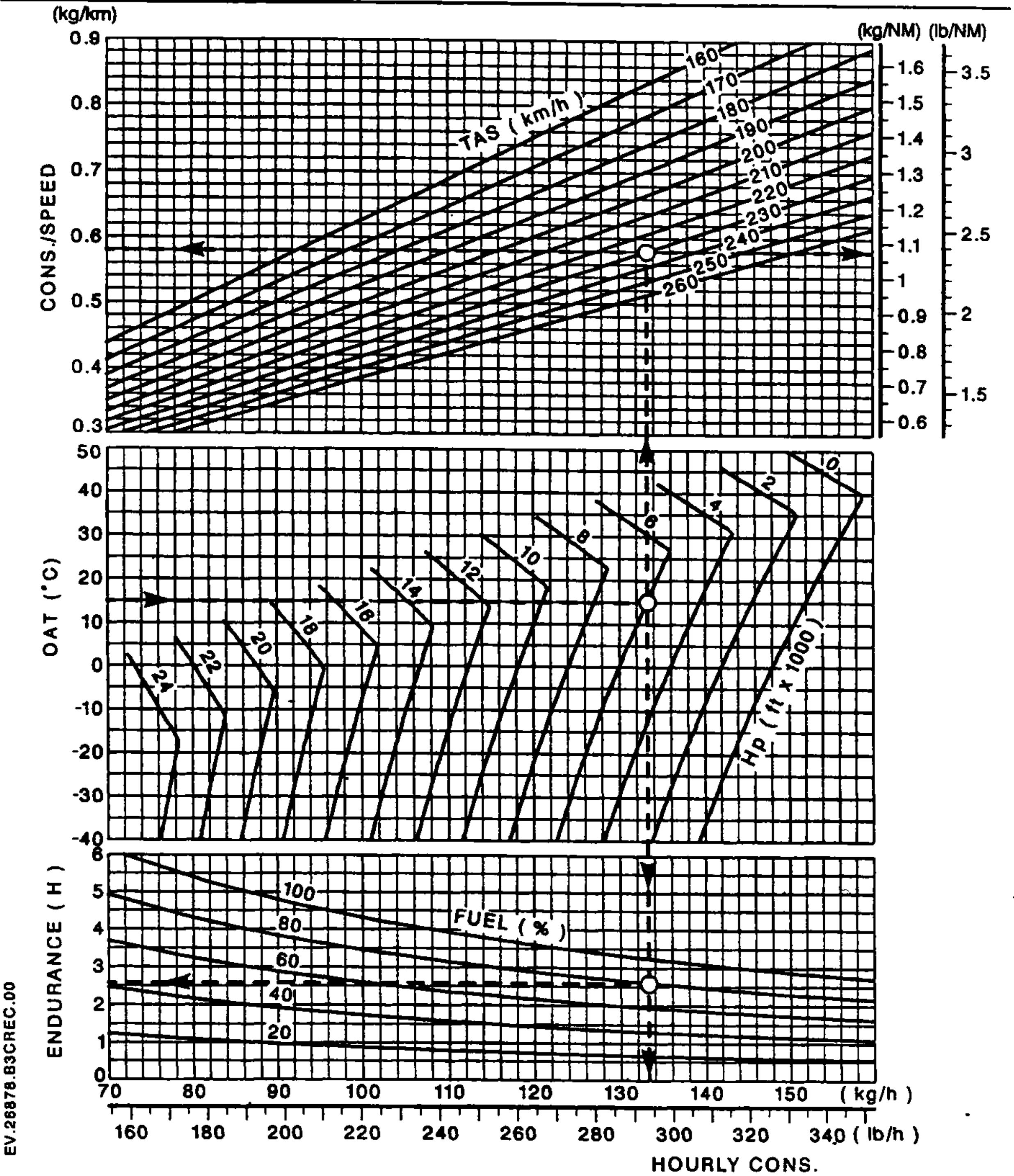
Hp = 6000 ft ⇒ RANGE = 570 km

Figure 4

CONDITIONS

- STABILIZED LEVEL FLIGHT WITH ELECTRICAL CONSUMPTION ⩽ 50 A
-
-
-
-
-

FUEL CONSUMPTION ENDURANCE IN RECOMMENDED CRUISE



EXAMPLE : OAT = 15°C TAS = 230 km/h ⇒ CONS./SPEED = 0.58 kg/km

Hp = 6000 ft FUEL = 80 % ⇒ ENDURANCE = 2 h 30 min.

⇒ HOURLY CONS. = 133 kg/h

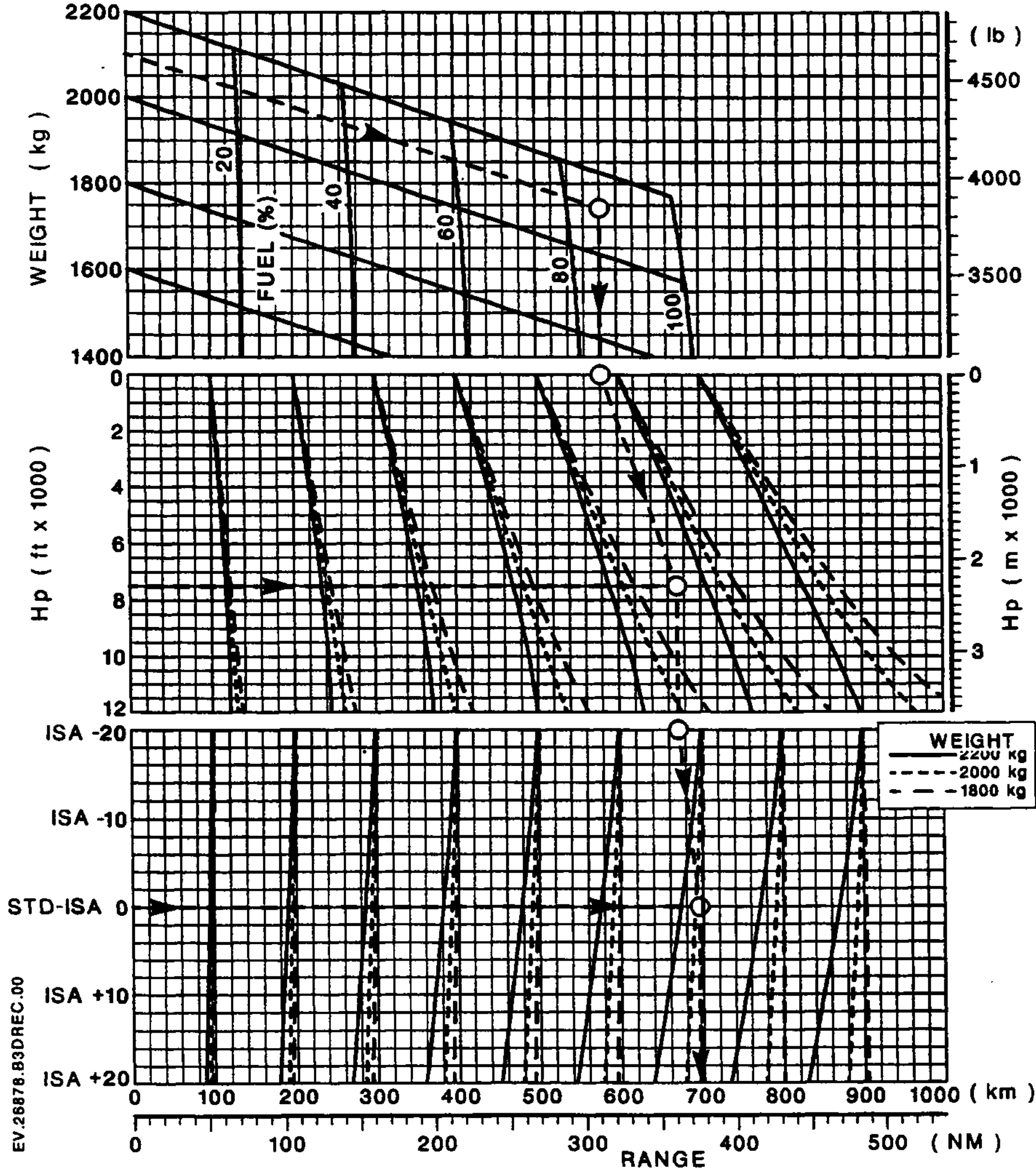
Figure 5

R

CONDITIONS

- STABILIZED LEVEL FLIGHT WITH ELECTRICAL CONSUMPTION ⩽ 50 A
-
-
-
-
-

RANGE IN RECOMMENDED CRUISE



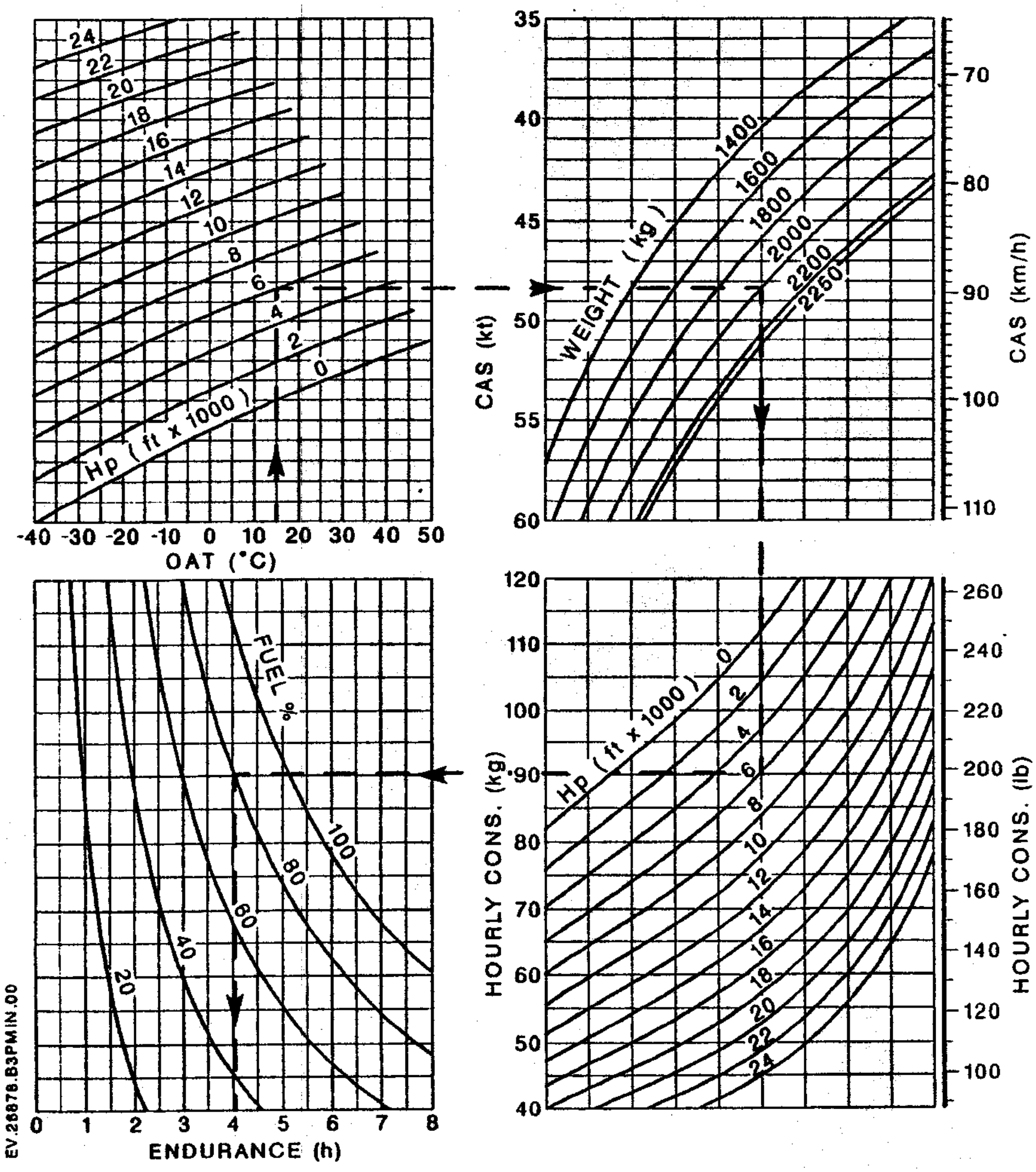
EXAMPLE : OAT = 0°C WEIGHT = 2100 kg FUEL = 85 %

Hp = 7500 ft ⇒ RANGE = 700 km

Figure 6

CONDITIONS
- STABILIZED LEVEL FLIGHT
-
-
-
-
-
-

FUEL CONSUMPTION
ENDURANCE IN CRUISE
AT MINIMUM HOURLY
FUEL CONSUMPTION



EXAMPLE : OAT = 15°C WEIGHT = 2000 kg
Hp = 6000 ft FUEL = 80 % ⇒ ENDURANCE = 4 h

Figure 7

RR 4B

RR 4B SUPERSEDES RR 4A

SECTION 10.2

EFFECT OF EQUIPEMNT ITEMS ON PERFORMANCE DATA

Disregard the information given in RR 4A

RR 4A

SECTION 10.2

Complete the « EFFECT OF EQUIPMENT ITEMS ON PERFORMANCE DATA »
description table by the following :

Equipment installed	Fast cruise				Recommended cruise			
	Airspeed km/h	kt	fuel consumption	Range	Airspeed km/h	kt	fuel consumption	Range
Bubble window "AIR GRISCHA AG"	- 1,5 %			- 1,5 %	- 1,5 %			- 1,5 %

SECTION 10.2

EFFECT OF EQUIPMENT ITEMS ON PERFORMANCE DATA

Equipment installed	Fast cruise				Recommended cruise			
	Airspeed km/h	Airspeed kt	Hourly fuel consumption	Range	Airspeed km/h	Airspeed kt	Hourly fuel consumption	Range
Heating and demisting systems exceeding t4 limitations *			+ 4 %	- 4 %			+ 4 %	- 4 %
Heating and demisting systems within t4 limitations *	- 8	- 4	+ 4 %	- 4 %	- 8	-4	+ 4 %	- 4 %
Electrical consumption > 50 A	- 4	- 2	- 1 %	- 2 %			+ 2 %	- 2 %
High landing gear	- 4	- 2		- 1.5 %	- 4	-2		- 1.5 %
Skis	- 2	- 1		- 1 %	- 2	-1		- 1 %
Electric hoist	- 6	- 3		- 2 %	- 6	-3		- 2 %
Emergency flotation gear	- 4	- 2		- 1.5 %	- 4	-2		- 1.5 %
Long footstep	- 4	- 2		- 1.5 %	- 4	-2		- 1.5 %
Hailers OP 1810 and 1811	- 4 %			- 4 %	- 4 %			- 4 %

R

* Reduction in fast or recommended cruise performance is not to be taken into account when engine is running at max. torque

SECTION 10.3

LEVEL FLIGHT PERFORMANCE

SAND FILTER INSTALLED AND PROTECTION OF THE AIR INTAKE AGAINST INDUCTION OF SNOW

1 SAND FILTER NO OPERATING (Protection against induction of snow)

Figures

- DETERMINING THE CORRECTED WEIGHT ------------------ 1
- TAS/CAS IN FAST CRUISE ------------------------ 2
- TAS/CAS RECOMMENDED CRUISE DATA ------------------ 3
- FUEL CONSUMPTION - RANGE IN FAST CRUISE -------------- 4
- FUEL CONSUMPTION - ENDURANCE IN RECOMMENDED CRUISE -------- 5
- RANGE IN RECOMMENDED CRUISE -------------------- 6

2 SAND FILTER OPERATING

The level flight performances are modified as follow :

2.1 In Torque limit

	FUEL CONSUMPTION	RANGE
Fuel consumption range in fast cruise (Figure 4)	+ 1 %	- 1 %

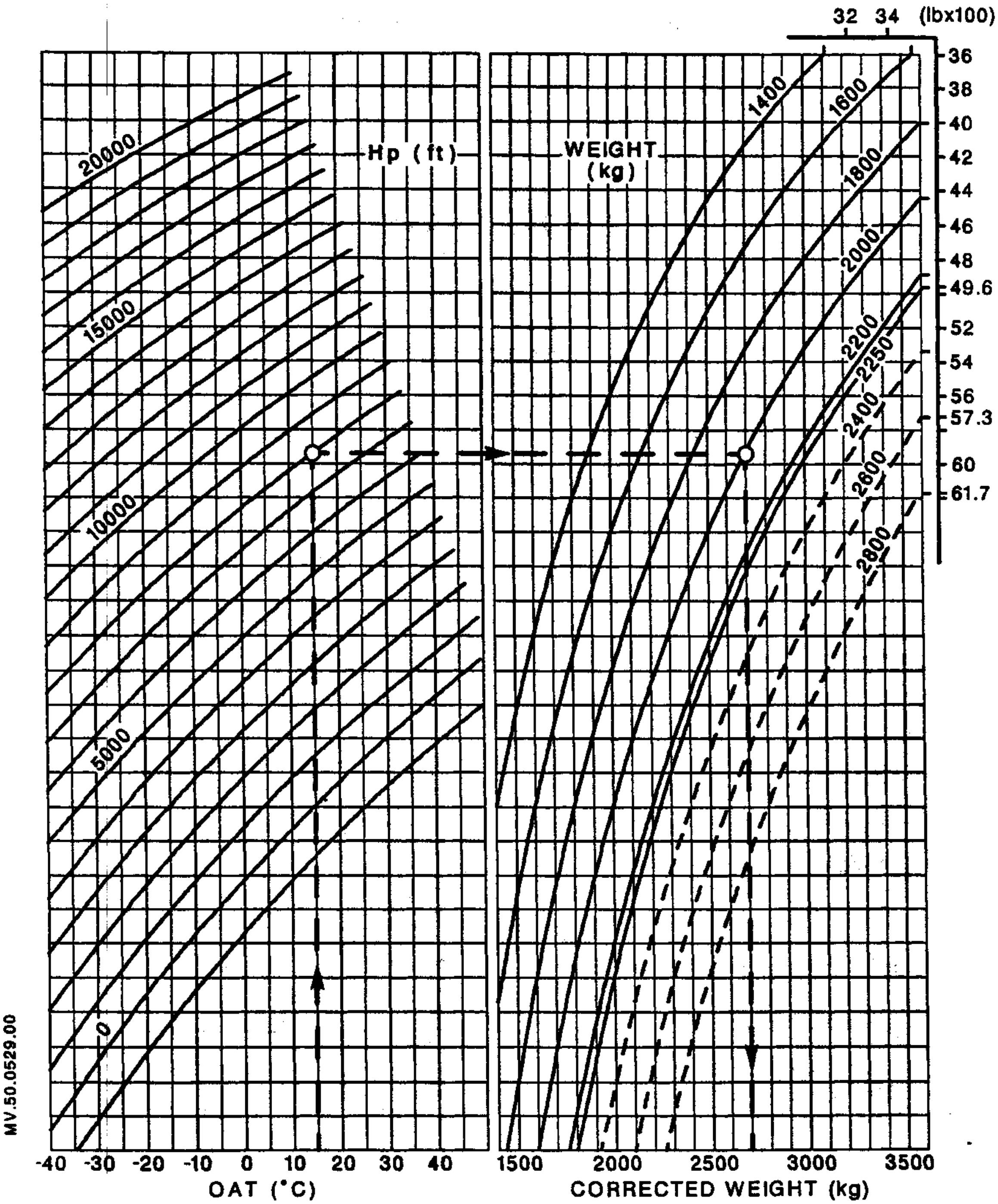
2.2 In Engine limit

	OUTSIDE AIR TEMPERATURE	
	LOWER THAN STANDARD + 15°C	HIGHER THAN OR EQUAL STANDARD + 15°C
TAS/CAS in fast cruise (Figure 2)	(- 1.1 kt) (- 1.3 MPH) (- 2 km/h)	(- 2.7 kt) (- 3.1 MPH) (- 5 km/h)
TAS/CAS in recommended cruise (Figure 3)	0 kt - 0 MPH 0 km/h	(- 2.7 kt) (- 3.1 MPH) - 5 km/h
Fuel consumption in fast cruise (Figure 4)	0 %	- 1 %
Fuel consumption in recommended cruise (Figure 5)	+ 1 %	- 1%
Range in recommended cruise (Figure 6)	- 1 %	- 3 %

CONDITIONS

- WEIGHT LIMITATIONS WITH INTERNAL LOADS : 2250 kg (4961 lb)
-
-
-
-
-

CORRECTED WEIGHT FOR DETERMINING THE SPEEDS (using the graph opposite)



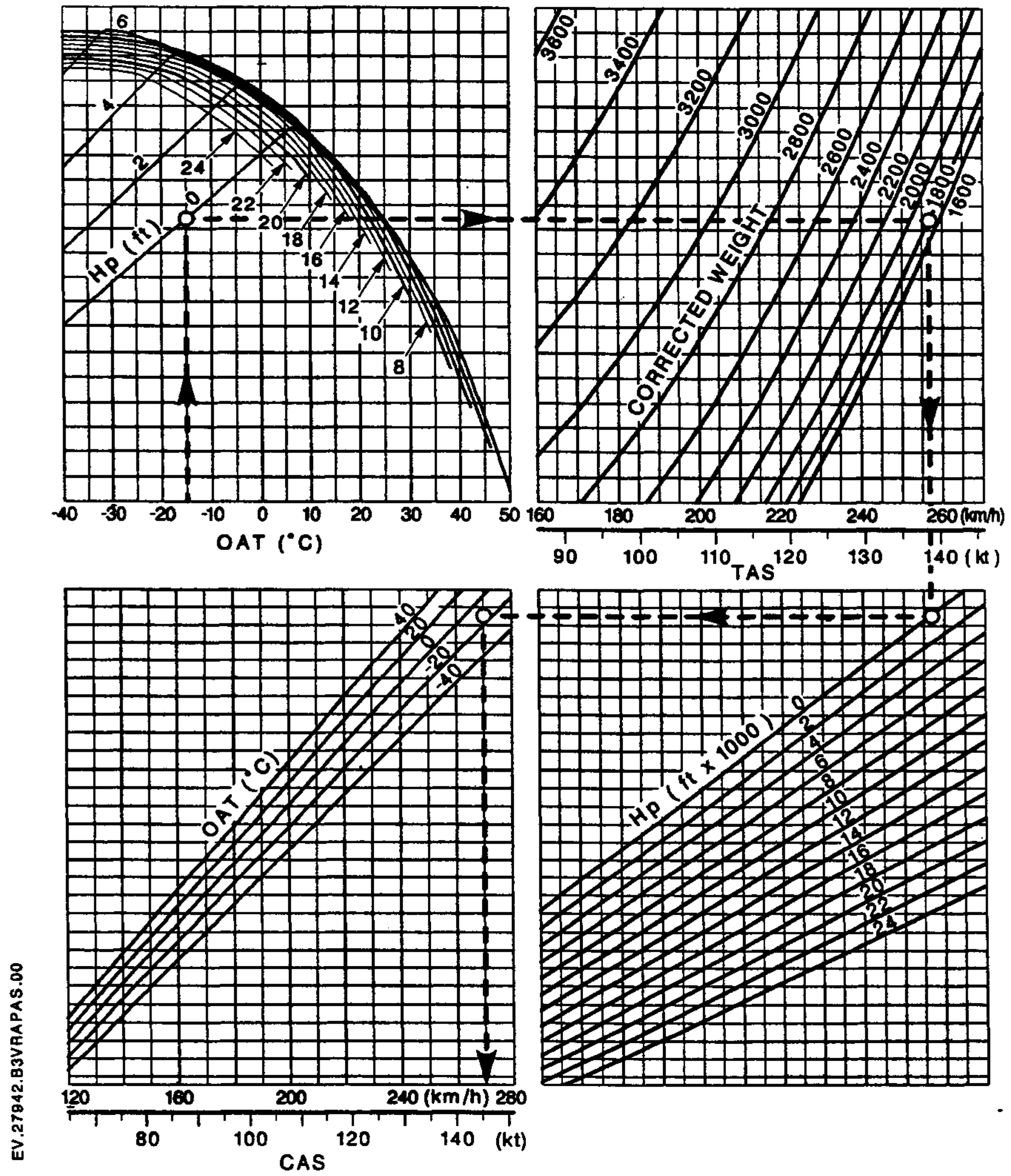
EXAMPLE : OAT = 15°C WEIGHT = 2000 kg
Hp = 8000 ft ⇒ CORRECTED WEIGHT = 2700 kg

Figure 1

CONDITIONS

- STABILIZED LEVEL FLIGHT
- SAND FILTER NOT OPERATING OR PROTECTION AGAINST INDUCTION OF SNOW
-
-
-
-

TAS - CAS IN FAST CRUISE



EXAMPLE : OAT = -15°C   CORRECTED WEIGHT = 1800 kg

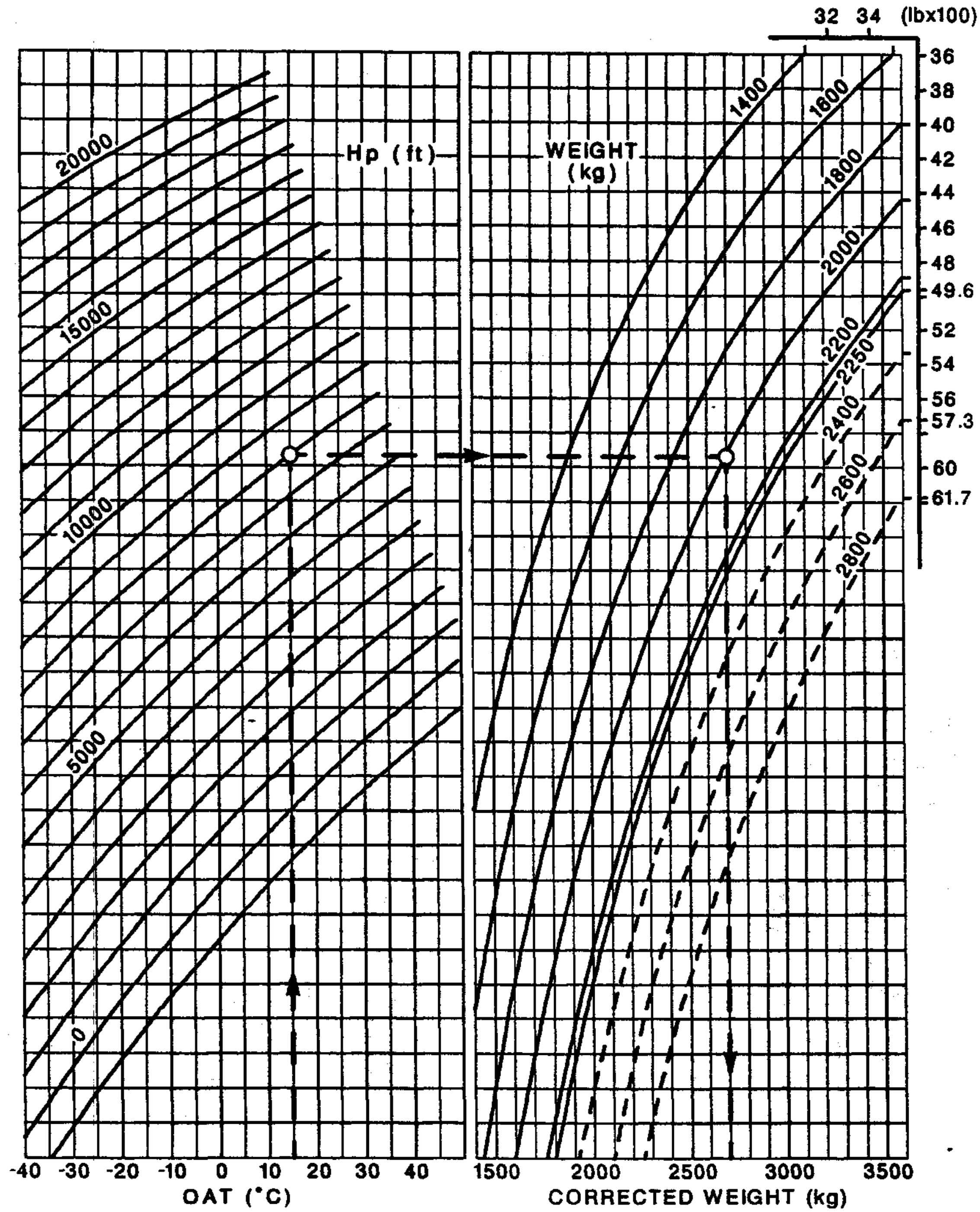
Hp = 0 ft   ⇒ CAS = 270 km/h

Figure 2

CONDITIONS

- WEIGHT LIMITATIONS WITH INTERNAL LOADS : 2250 kg (4961 lb)
-
-
-
-
-

CORRECTED WEIGHT FOR DETERMINING THE SPEEDS (using the graph opposite)



EXAMPLE : OAT = 15°C WEIGHT = 2000 kg

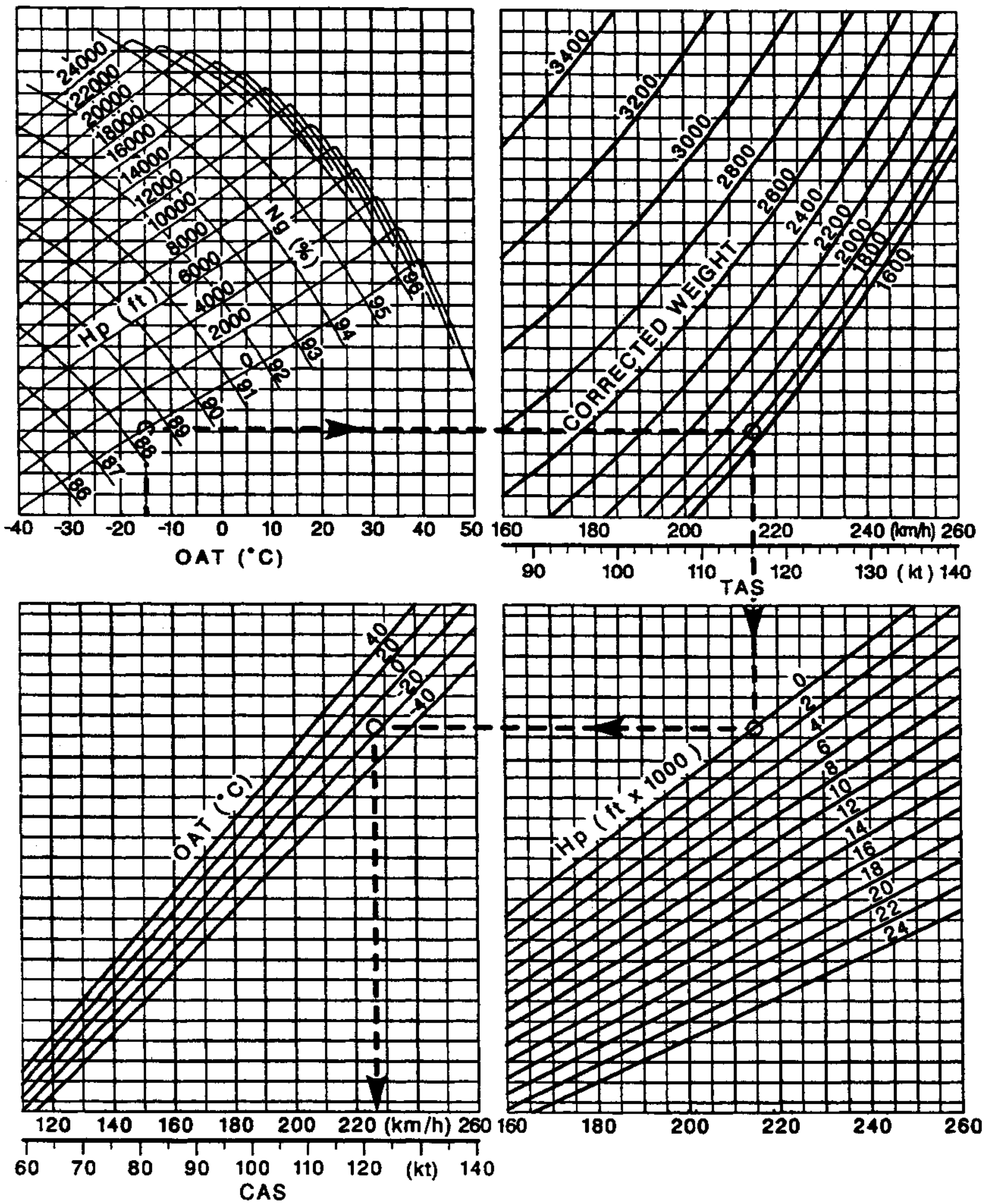
Hp = 8000 ft ⇒ CORRECTED WEIGHT = 2700 kg

Figure 1

CONDITIONS

- STABILIZED LEVEL FLIGHT
- SAND FILTER NOT OPERATING OR PROTECTION AGAINST INDUCTION OF SNOW
-
-
-
-

TAS - CAS IN RECOMMENDED CRUISE



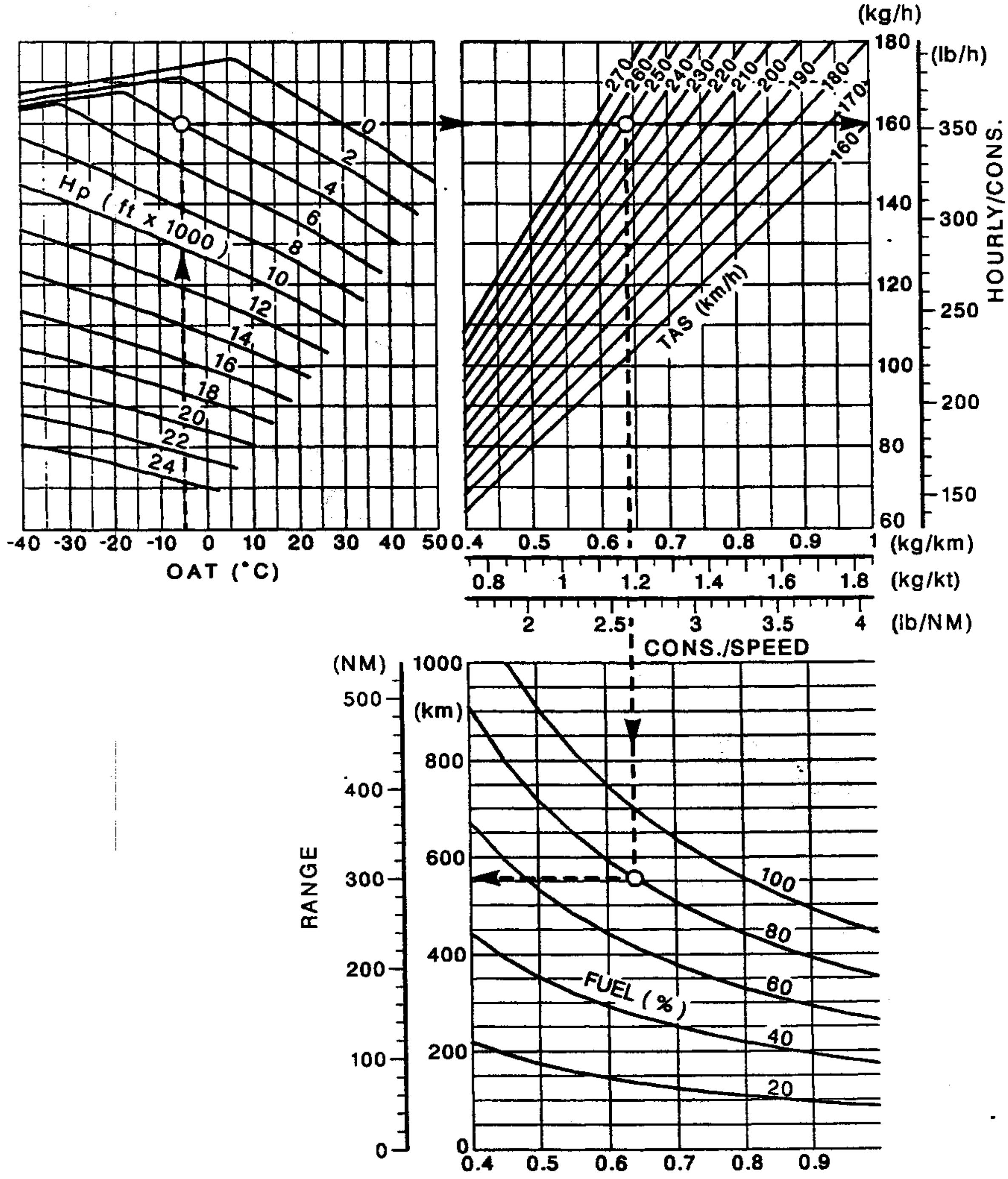
EXAMPLE : OAT = -15°C CORRECTED WEIGHT = 1800 kg

Hp = 0 ft => CAS = 225 km/h

Figure 3

CONDITIONS
- STABILIZED LEVEL FLIGHT
- SAND FILTER NOT OPERATING OR PROTECTION AGAINST INDUCTION OF SNOW
-
-
-
-

FUEL CONSUMPTION-RANGE IN FAST CRUISE



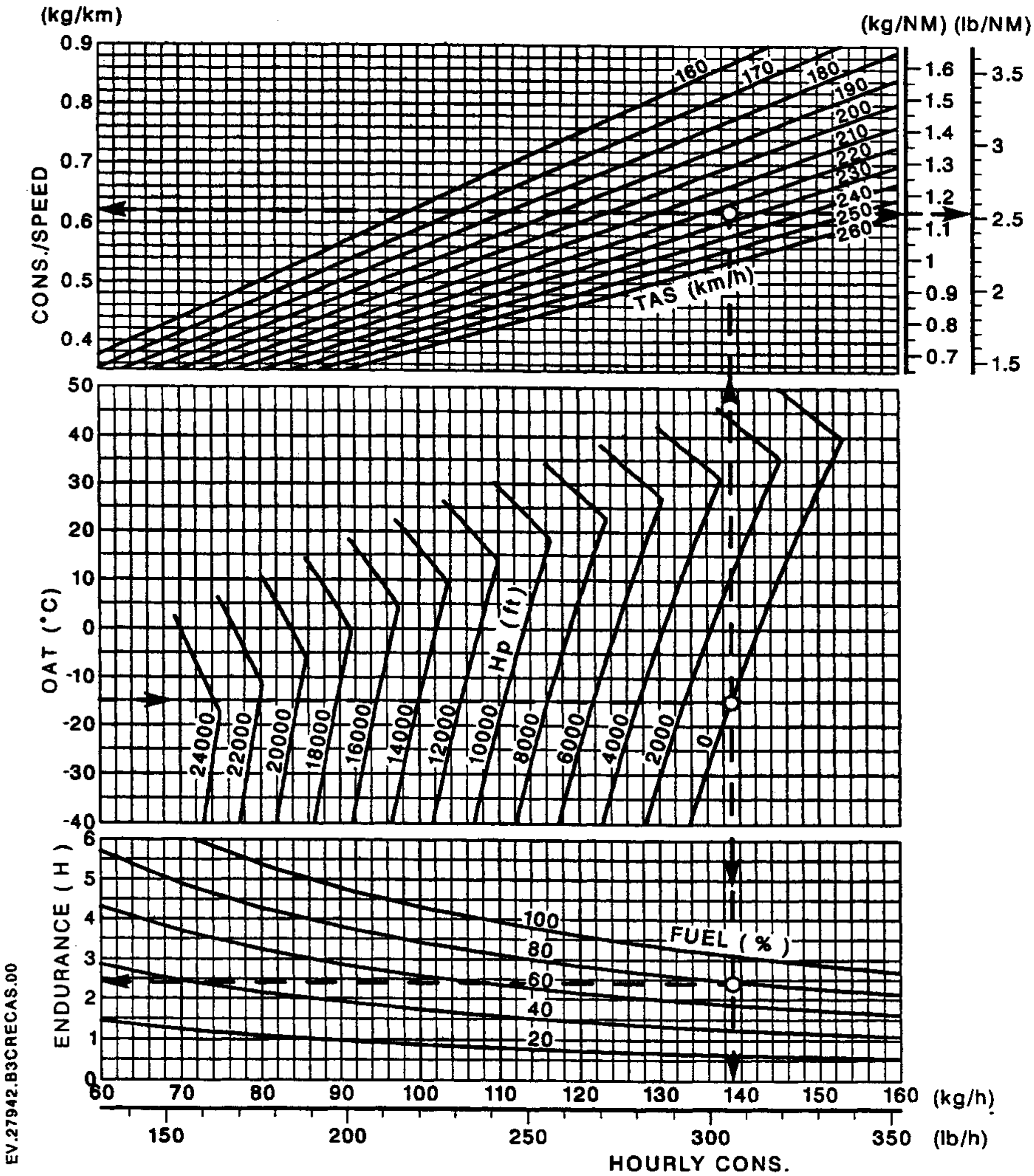
EXAMPLE : OAT = -5°C TAS = 250 km/h FUEL = 80%

Hp = 4000 ft => RANGE = 560 km

Figure 4

CONDITIONS
- STABILIZED LEVEL FLIGHT
- SAND FILTER NOT OPERATING OR PROTECTION AGAINST INDUCTION OF SNOW
-
-
-
-

FUEL CONSUMPTION-ENDURANCE IN RECOMMENDED CRUISE

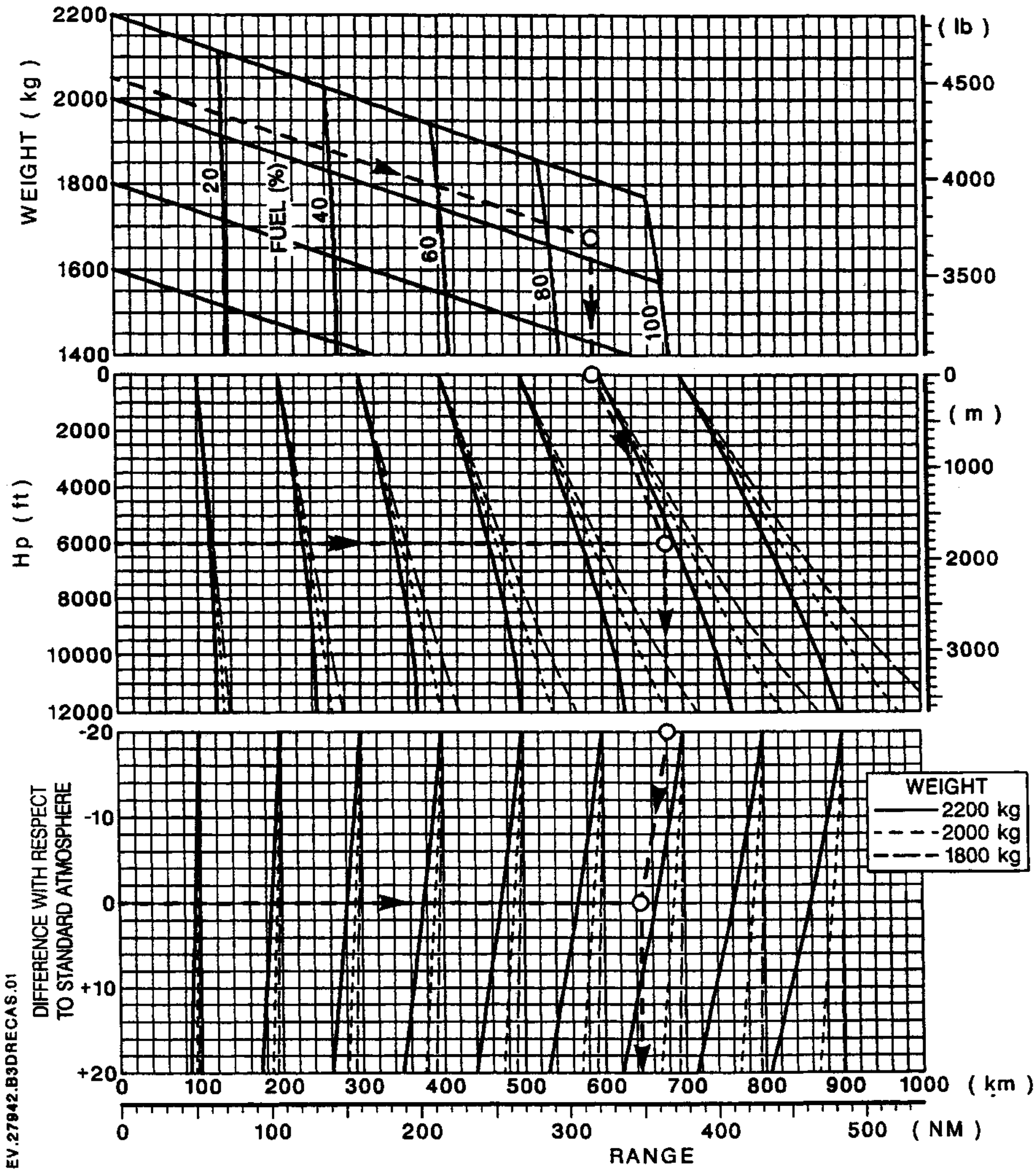


EXAMPLE : OAT = –15°C, Hp = 0 ft, TAS = 225 km/h, FUEL = 80%
⇒ CONS./SPEED = 0.62 kg/km
⇒ ENDURANCE = 2h 25min
⇒ HOURLY CONS. = 139 kg/h

Figure 5

CONDITIONS
- STABILIZED LEVEL FLIGHT
- SAND FILTER NOT OPERATING OR PROTECTION AGAINST INDUCTION OF SNOW
-
-
-
-

RANGE IN RECOMMENDED CRUISE



EXAMPLE : OAT = +3°C, Hp = 6000 ft } STANDARD ATMOSPHERE WEIGHT = 2050 kg FUEL = 88%

⇒ RANGE = 645 km

Figure 6

GREAT SLAVE HELICOPTERS LTD.

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AS350 Series Repetitive
Airworthiness Directives and Service Bulletins

A/C Reg.:___________ A/C W.O. No.:___________

A/C T.A.T.:_____________ Date:_______________

* Denotes certification by approved pilots is acceptable

AD or SB Number	Subject Description	Compliance Due At	Initial
*AD T2000-340-080 (A) R2	Inspection of T/R drive shaft fwd fairing IAW Alert Service Bulletin # 05.00.35. (Applicable to AVO only)	Daily & 100 hrs	
*AD 92-078(B) R2	MO5 chip plug inspection IAW SB 292-72-0157 (Applicable to IUX)	Daily or 8 hrs	
*AD 84-064-037(B) R3	Insp. of T/R spar without disassembly IAW SB 05-11R5	30 hrs	
SB 65-00-38	T/R spider bearing/plate assembly inspection	100 hrs	
AD 84-064-037(B) R3	Insp. of T/R spar without disassembly IAW SB 05-11R5	100 hrs	
*AD T2001-640-089 (A)	Insp. of T/R Blade trailing edge IAW Alert Telex 05.00.40 Paragraph 2.A **NOT TO EXCEED 10 HOURS**	**Daily or 10hrs**	
AD 89-155-054(B)R4	Greasing of M/R swash plate bearing with Aeroshell #7 IAW SB 62-12R2 (N/A to HMZ, HAF, IUX, GSC, AVO, GSW, GSP, FHN, RTM, RTL)	100 hrs	
AD 93-090-067	Insp. of sliding windows IAW SB 05-25R1 (N/A to GSC, AVO, GSP, FHN)	100 hrs	
AD 98-173-073(a)	Insp. of mounting and greasing of T/R drive shaft bearings with Aeroshell #22 IAW SB 05-00-08R5	100 hrs	
AD 2002-044(A)	Insp. of Siren Cargo Hook for corrosion on the lock catch. IAW SB 05-00-41 (Applicable to AVO only)	**Daily with underslung load**	
AD2002-344-093(A)	Insp. Of Sliding Door Aft Guide Roller and Middle Rail. IAW Alert Telex 05.00.41 (Applicable to HMZ, GSW, AVO, & FHN)	100 hrs	

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A/C Reg.:___________ A/C W.O. No.:___________

A/C T.A.T.:_____________ Date:_______________

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AD1990-064 (A) R1	Engine compressor erosion check IAW maintenance manual Chapter 71-00-08 SB A292-72-230 issue 1 (N/A to AVO)	400 hrs	
AD 84-064-037(B) R3	Insp of T/R spar with disassembly IAW SB 05-11R5	500 hrs	
AD 85-135-042(B)	Check that "FUEL" is engraved on A/F fuel filter every time the filter is replaced IAW SB 01-14 (N/A to AVO)	500 hrs	
AD 86-097-047(B)	A/F fuel filter bowl tightening procedure IAW SB 28-08 (N/A to AVO)	500 hrs	
AD 86-125-48(B) R1	Behavior of helicopter on the ground with rotors turning IAW SB 01-17A	500 hrs or at each occurrence	
AD 90-198-056(B)	Check presence of shunt on the battery temp probe IAW SB 01-29R1 (N/A to AVO OR ANY WIRING HARNESS WITH 3 WIRES ON THE BATTERY PROBE)	500 hrs or at each battery installation	
AD 2001-580-085(A)R1	Tail Servo control- Eye end fitting for proper locking IAW Alert Telex No. 05.00.37	550 hrs	

OPERATIONAL TIPS FOR A STAR OPERATORS

Here is a quick review of how to count cycles on the Arriel engines. The pilot should record both power turbine and gas turbine cycles with each entry made in the flight log book.

1. **Power Turbine (Np)**

   Power turbine cycles are straightforward: **1 FLIGHT = 1 CYCLE**

   where a flight is : One start followed by
   One engine acceleration to take off power followed by
   One shutdown.

2. **Gas Turbine (Ng)**

   Gas turbine cycles are calculated using the following formula: **Ng Cycles = K1 + K2 calculations**

   where K1 is the coefficient from table 1 corresponding to the maximum Ng reached during the flight and K2 is the coefficient from table 2 corresponding to the Minimum Ng reached at or below 85% during the flight.

TABLE 1

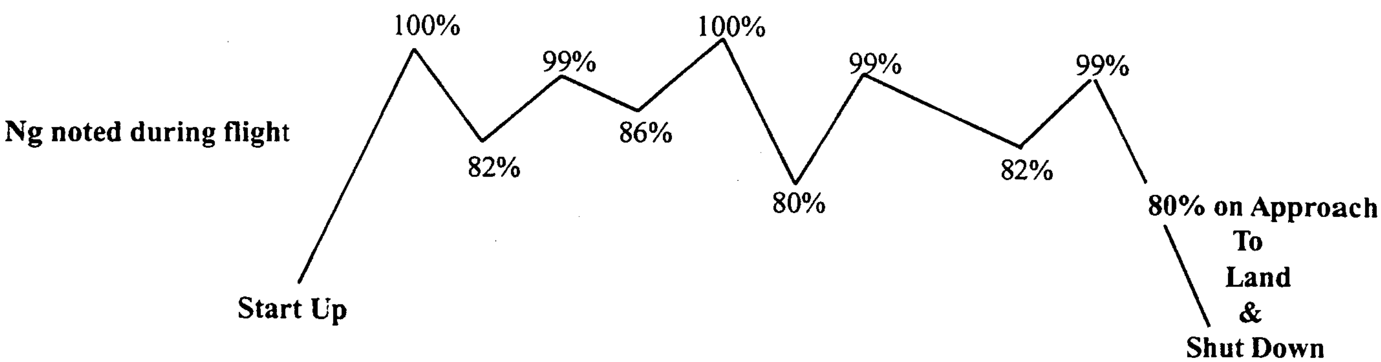
Max Ng during flight	K1 Coefficient
100	1.0
99	0.9
98	0.8
97	0.7
96	0.65
95	0.6
94	0.55
93 or lower	0.5

TABLE 2

Min Ng at or below 85%	K2 Coefficient
81-85	.05
76-80	.10
75 & lower	.15

Notes:
1. Do not include the Ng reached as part of the normal shut down
2. Do not count any cycles for ground runs (Np orNg).

Example:



Max Ng during flight = 100%	K1 = 1.0	**Ng cycles = 1.0 + (2 x 0.05) + .10 = 1.20**
Min Ng during flight = **two** times at 82%	K2 = 2 x 0.05	
one time at 80%	K2 = .10	**Np cycles = 1.0**