355 N

ERRATA:

An error has been found in SECTION 8.3 page 20.

The date code on the replacement page, which form the subject of the ERRATA is underlined and unchanged.

Consequently the page attached hereto is to replace the previously issued page.

REVISION TO AIRCRAFT PUBLICATION : 355 N

PUBLICATION CONCERNED : COMPLEMENTARY FLIGHT MANUAL

ISSUE : **REVISION No. : 8** **DATE-CODE : 97-28**

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

OUTLINE OF THE REVISION	SECTIONS	Pages
UPDATING OF THE LIST OF EFFECTIVE PAGES	0.0.P5	1 to 3
MINRO CORRECTIONS	6.1	3
HAILERS (WANDEL AND GOLTERMANN) AND SPECTROLAB SEARCHLIGHT INCORPORATED	6.1	15
INCORPORATION OF NOTE C	8.5	3
BIDIRECTIONAL CROSS BEAM INCORPORATED	8.5	4
SUPPLEMENTARY CHECK TO BE PERFORMED (ENGINE-MGB COWLINGS AND FLEXIBLE COUPLINGS	8.5	5
SUPPLEMENTARY CHECK TO BE PERFORMED (BIDIRECTIONAL CROSS BEAM AND FLEXIBLE COUPLINGS)	8.5	7
MODIFICATION OF SECTION 9.2 (EMERGENCY LOCATOR TRANSMITTER)	9.2	1 and 2
ADDITIONAL INFORMATION	9.7	4

REVISION TO AIRCRAFT PUBLICATION : 355 N

PUBLICATION CONCERNED : COMPLEMENTARY FLIGHT MANUAL

ISSUE : REVISION N° : 7 DATE-CODE : 97-03

- The outline of the revision is given below :
  . pages affected (added or modified),
  . major points of the revision.

- Check that pages in each section are those specified in the list of effective pages.

- Withdraw old and insert new pages affected by this revision.

- Return the acknowledgement card.

- This list of amended pages may be filed (apart from the manual).

OUTLINE OF THE REVISION	SECTIONS	Pages
- List of effective pages updated	0.0.P5	1 to 3
- Gross weight extended to 2600 kg (5732 lb)	6.1	9, 10
- Title corrected	8.5	9
- Updating of the table of contents	10.0.P6	1
- Gross weight extended to 2600 kg (5732 lb)	10.2	4, 6, 8, 10, 11, 13
- Additional information	10.3	1
- SECTION 10.4 incorporated (Sand filters)	10.4	1 to 8

EUROCOPTER

REVISION TO AIRCRAFT PUBLICATION : 355 N

PUBLICATION CONCERNED : COMPLEMENTARY FLIGHT MANUAL

ISSUE : REVISION N° : 6 DATE-CODE : 96-41

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

OUTLINE OF THE REVISION	SECTIONS	Pages
Up-dating of the list pages.	0.0.P5	1 to 3
Incorporation determination of lateral c.g. location.	6.1	13
Page shift + incorporation SURFAIR skis.	6.1	14
Page shift + incorporation BREEZE 400 lb hoist.	6.1	15
Minor correction.	7.0	3
Minor correction.	7.0	5
Modification of drawing (Bar PP12).	7.8	2
Modification of drawing (undervoltage sensing wiring).	7.8	9
Minor correction.	7.11	3
SECTION 8.3 has been re-issued further to the optimization of the flight programs in relation with the maintenance operations.	8.3	1 to 27
Ng value in percent.	8.4	2
Minor correction	8.4	7

eurocopter

COMPLEMENTARY FLIGHT MANUAL

AS 355 N

SERIAL N°

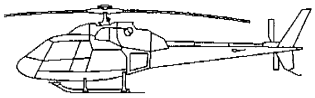
IMPORTANT NOTE

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

*

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

THIS DOCUMENT SHALL BE CARRIED IN AIRCRAFT AT ALL TIMES.



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

CUSTOMIZATION

A/C : AS 355 N - S/N :

LIST OF ADDITIONAL 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.

LIST OF THE LATEST NORMAL REVISIONS				NORMAL REVISION :
No	Date	No	Date	

PARTIE 2 - PART 2

COMPOSITION
OF CONDITIONAL REVISIONS (RC)

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

CAUTION

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

Section Page Date	Applicable before condition is met :

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

COMPOSITION
OF RUSH REVISIONS (RR)

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

No	SECTION - PAGE	DATE	No	SECTION PAGE	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	91-50		7. 2	1	94-24	
0. 0	P1 3	91-20		7. 3	1	89-24	
0. 0	P2 1	89-24		7. 3	2	89-24	
0. 0	P3 1	91-20		7. 3	3	94-24	
0. 0	P4 1	91-20		7. 3	4	91-20	
0. 0	P5 1/03	97-28	N	7. 3	5	91-20	
6. 0	P6 1	89-24		7. 3	6	91-20	
6. 1	1	94-24		7. 3	7	94-24	
6. 1	2	89-24		7. 3	8	94-24	
6. 1	3	97-28	R	7. 4	1	94-24	
6. 1	4	89-24		7. 4	2	89-24	
6. 1	5	89-24		7. 4	3	89-24	
6. 1	6	91-20		7. 5	1	89-24	
6. 1	7	91-20		7. 5	2	91-20	
6. 1	8	94-24		7. 5	3	89-24	
6. 1	9	97-03		7. 5	4	94-24	
6. 1	10	97-03		7. 5	5	94-24	
6. 1	11	89-24		7. 6	1	89-24	
6. 1	12	94-24		7. 6	2	89-24	
6. 1	13	96-41		7. 7	1	89-24	
6. 1	14	96-41		7. 7	2	94-24	
6. 1	15	97-28	R	7. 7	3	89-24	
7. 0	P6 1	94-24		7. 8	1	94-24	
7. 0	1	89-24		7. 8	2	96-41	
7. 0	2	89-24		7. 8	3	94-24	
7. 0	3	96-41		7. 8	4	94-24	
7. 0	4	94-24		7. 8	5	89-24	
7. 0	5	96-41		7. 8	6	94-24	
7. 1	1	94-24		7. 8	7	89-24	

SECTION	PAGE	DATE	(1)	SECTION	PAGE	DATE	(1)
7. 8	8	89-24		8. 3	13	96-41	
7. 8	9	96-41		8. 3	14	96-41	
7. 8	10	89-24		8. 3	15	96-41	
7. 8	11	89-24		8. 3	16	96-41	
7. 8	12	89-24		8. 3	17	96-41	
7. 8	13	89-24		8. 3	18	96-41	
7. 8	14	89-24		8. 3	19	96-41	
7. 9	1	89-24		8. 3	20	96-41	
7. 9	2	89-24		8. 3	21	96-41	
7.10	1	89-24		8. 3	22	96-41	
7.10	2	89-24		8. 3	23	96-41	
7.11	1	89-24		8. 3	24	96-41	
7.11	2	89-24		8. 3	25	96-41	
7.11	3	96-41		8. 3	26	96-41	
8. 0 P6	1	94-24		8. 3	27	96-41	
8. 1	1	89-24		8. 4	1	94-24	
8. 1	2	89-24		8. 4	2	96-41	
8. 2	1	94-24		8. 4	3	91-20	
8. 2	2	94-24		8. 4	4	89-24	
8. 2	3	94-24		8. 4	5	89-24	
8. 2	4	94-24		8. 4	6	89-24	
8. 2	5	94-24		8. 4	7	96-41	
8. 3	1	96-41		8. 5	1	94-24	
8. 3	2	96-41		8. 5	2	94-24	
8. 3	3	96-41		8. 5	3	97-28	R
8. 3	4	96-41		8. 5	4	97-28	R
8. 3	5	96-41		8. 5	5	97-28	R
8. 3	6	96-41		8. 5	6	94-24	
8. 3	7	96-41		8. 5	7	97-28	R
8. 3	8	96-41		8. 5	8	94-24	
8. 3	9	96-41		8. 5	9	97-03	
8. 3	10	96-41		8. 5	10	94-24	
8. 3	11	96-41		9. 0 P6	1	93-05	
8. 3	12	96-41		9. 1	1	89-24	

SECTION	PAGE	DATE	(1)
9. 1	2	89-24	
9. 1	3	89-24	
9. 2	1	97-28	R
9. 2	2	97-28	R
9. 3	1	89-24	
9. 4	1	89-24	
9. 4	2	89-24	
9. 4	3	89-24	
9. 5	1	89-24	
9. 5	2	94-24	
9. 6	1	89-24	
9. 6	2	89-24	
9. 7	1	89-24	
9. 7	2	89-24	
9. 7	3	89-24	
9. 7	4	97-28	R
9. 7	5	89-24	
9. 8	1	93-05	
10. 0	P6 1	97-03	
10. 1	1	94-24	
10. 1	2	94-24	
10. 1	3	94-24	
10. 1	4	94-24	
10. 1	5	94-24	
10. 1	6	94-24	
10. 1	7	94-24	
10. 2	1	94-24	
10. 2	2	94-24	
10. 2	3	94-24	
10. 2	4	97-03	
10. 2	5	94-24	
10. 2	6	97-03	
10. 2	7	94-24	
10. 2	8	97-03	

SECTION	PAGE	DATE	(1)
10. 2	9	94-24	
10. 2	10	97-03	
10. 2	11	97-03	
10. 2	12	94-24	
10. 2	13	97-03	
10. 2	14	94-24	
10. 2	15	94-24	
10. 3	1	97-03	
10. 4	1	97-03	
10. 4	2	97-03	
10. 4	3	97-03	
10. 4	4	97-03	
10. 4	5	97-03	
10. 4	6	97-03	
10. 4	7	97-03	
10. 4	8	97-03	

LIST OF THE LATEST NORMAL REVISIONS

No	Date	No	Date
0	89-24	5	94-24
1	91-20	6	96-41
2	91-50	7	97-03
3	93-05	8	97-28
4	93-18		

NORMAL REVISION : 8

SECTION 6

WEIGHT AND BALANCE

CONTENTS

WEIGHING AND DETERMINATION OF C.G.

1 GENERAL

The purpose of this section is to provide data for use when evaluating a proposed loading configuration or calculating the weight and centre of gravity of an aircraft in service.

2 WEIGHT AND BALANCE

2.1 Weight - Standard Definitions

2.1.1 Empty weight (E.W.)

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.

E.W. then, is constant for a given aircraft.

2.1.2 Equipped empty weight (E.E.W.)

This is the sum of :
- Empty weight (E.W)
- Specific mission equipment.

E.E.W. varies according to the proposed mission.

2.1.3 All-up weight (AUW)

This is the sum of :
- Equipped empty weight (E.E.W.)
- Crew
- Payload
- Usable fuel

2.1.4 Maximum weight

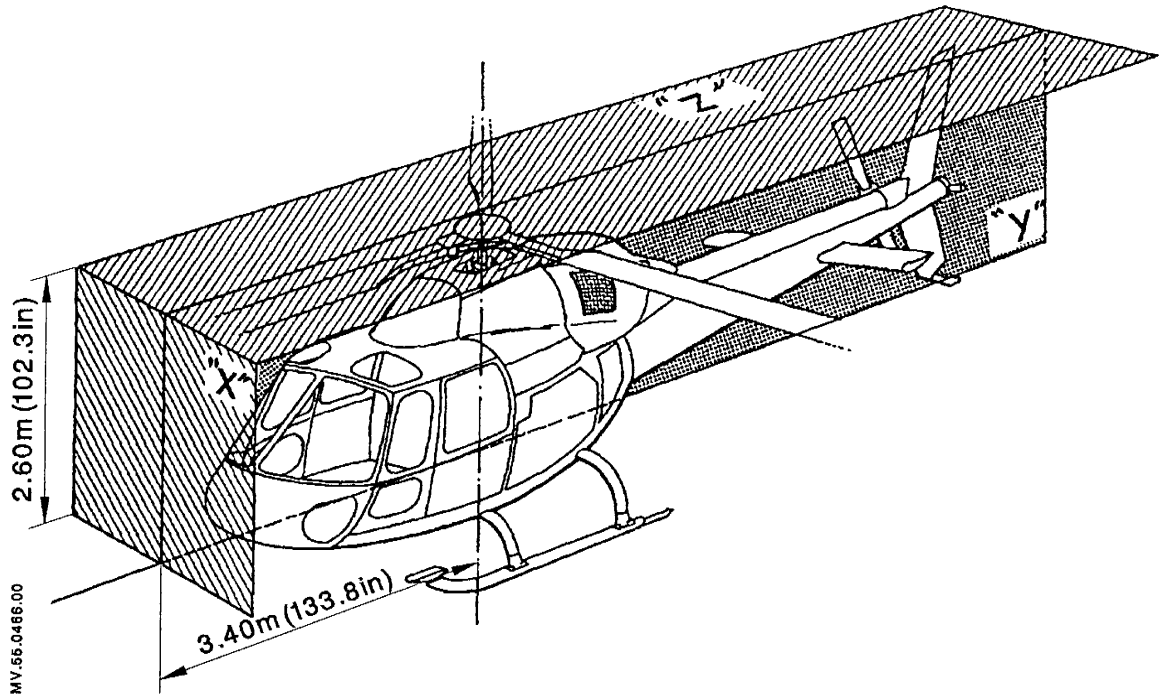
Weight is limited on take-off and landing. See limitations (Section 2).

2.2 Centre of gravity conventional terms

2.2.1 The centre of gravity is defined by dimensions measured perpendicular to the three basic datum planes. These planes are as follows :

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 c.g. positions are measured.

R



2.2.2 C.G. location limits are never to be exceeded (See Limitations section).

CAUTION : A C.G. LOCATION WHICH IS CORRECT ON TAKE-OFF MAY VARY IN THE COURSE OF THE MISSION, DUE TO THE REDUCTION IN THE FUEL WEIGHT AND THE LOADING CHANGES AND SO EXCEED ACCEPTABLE LIMITS.

a) Longitudinal C.G. must be the more closely watched.
b) Lateral C.G. need be considered only in very asymmetrical loading configurations.

3 WEIGHING

Weighing is the only reliable way of obtaining :
. Equipped empty weight (E.E.W.).
. Aircraft centre of gravity (CG) location.

The aircraft must be weighed :
. On leaving the works.
. Following any major modification.

4 LONGITUDINAL C.G. LOCATION

4.1 Calculating C.G.

4.1.1 Procedure

The distance from the aircraft centre of gravity to the datum plane is obtained using the formula :

$$\frac{\text{Sum of moments}}{\text{Sum of weights}} = \text{C.G. in flight order.}$$

4.1.2 Example : Analysis for a passenger transport mission.

4.1.2.1 Before take-off :

1) Determine the maximum authorized take-off weight.
2) Note the equipped empty weight and the moment. R
3) Refer to tables given below to determine loading conditions; totalize weights and moments.
4) Calculate the C.G. location.
5) Check that C.G. falls within permissible limits.

Example :

	Kg	m.Kg
E.E.W.	1600	5696
Crew	160	248
Passengers	140	356
Side cargo hold	50	160
Fuel - Front 35 %	202	654
Rear 35 %	202	778
TOTAL :	2354	7892

C.G. : $\frac{7892}{2354} = 3.352$ m

i.e. C.G. is within the permissible limits.

4.1.2.2 In flight or on landing

Same procedure as above, taking into account the weight and moment of the fuel remaining.

Example : - Initial C.G. before mission : 3.352 m
- C.G. after consumption of 288 kg of fuel.

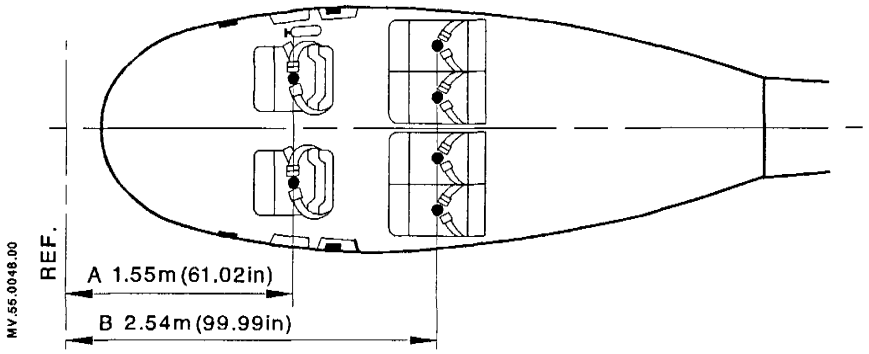
	Kg	m.Kg
E.E.W.	1600	5696
Crew	160	248
Passengers	140	356
Side cargo hold	50	160
Fuel - Front 10 %	58	188
Rear 10 %	58	223
TOTAL :	2066	6871 R

C.G. becomes : $\frac{6871}{2066} = 3.326$ m R

i.e. C.G. is within permissible limits.

4.2 Loading data

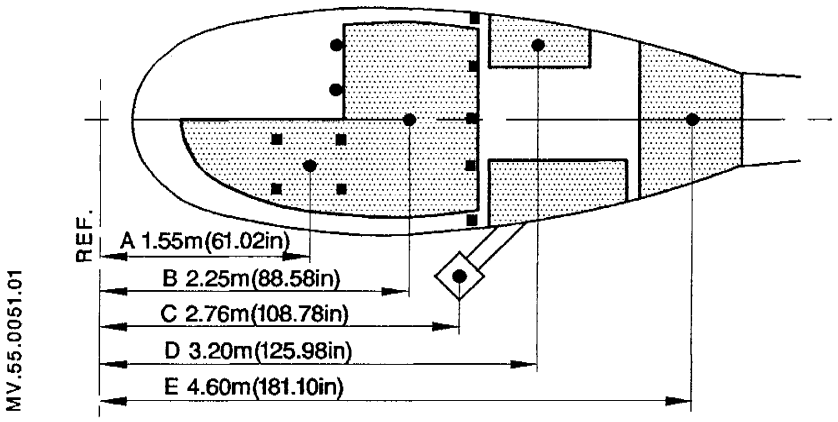
4.2.1 Crew and passengers



METRIC UNITS		
WEIGHT kg	MOMENT : m.kg (A)	(B)
60	93	152
80	124	203
100	155	254
120	186	305
140	219	356
160	248	406
180	279	457
200	310	508
220	341	559
240		610
260		660
280		711
300		762
320		812

ENGLISH UNITS		
WEIGHT lb	MOMENT : in.lb (A)	(B)
100	6102	9999
150	9153	12999
200	12204	19998
250	15255	24997
300	18306	29997
350	21357	34996
400	24400	39996
450	27459	44995
500	30510	49995
550		54994
600		59994
650		64993
700		69993

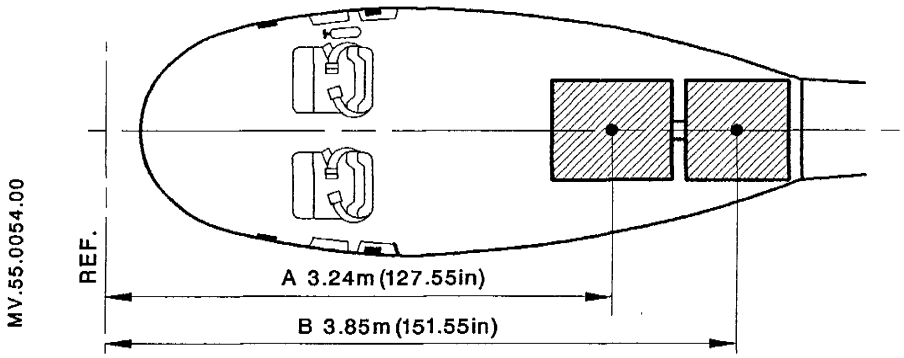
4.2.2 Freight and baggage transport



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	
136	210.8	306.0	375.4		
150	232.5	337.5			
200		450.0			
250		562.5			
300		675.0			
310		697.5			

ENGLISH 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			
400		35432			
500		44290			
600		53148			
682		60412			

4.2.3 Fuel



NOTE : Fuel specific gravity : 0.79

METRICS UNITS					
FUEL			MOMENT : m.kg		
%	Litres	(Kg)	FRONT TANK (A)	REAR TANK (B)	
55	401.5	317		1220	R
50	365	288		1109	R
45	328.5	260	842	1001	R
40	292	231	748	889	R
35	255.5	202	654	778	R
30	219	173	561	666	R
25	182.5	144	467	554	R
20	146	115	373	443	R
15	109.5	86	279	331	R
10	73	58	188	223	R
5	36.5	29	94	112	R
0					R

ENGLISH UNITS						
FUEL				MOMENT : in.lb		
%	Us gal	Uk gal	lb	FRONT TANK (A)	REAR TANK (B)	
55	106.0	88.1	699		105933	R
50	96.4	80.3	636		96386	R
45	86.8	72.3	572	72959	86687	R
40	77.1	64.2	509	64923	77139	R
35	67.5	56.2	449	57270	68046	R
30	57.8	48.2	381	48597	57741	R
25	48.2	40.2	318	40561	48193	R
20	38.6	32.1	254	32398	38494	R
15	28.9	24.1	191	24362	28946	R
10	19.3	16	127	16199	19247	R
5	9.6	8.0	64	8163	9699	R
0						R
						R
						R

4.3 C.G. charts

The following charts (metric units and English 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.

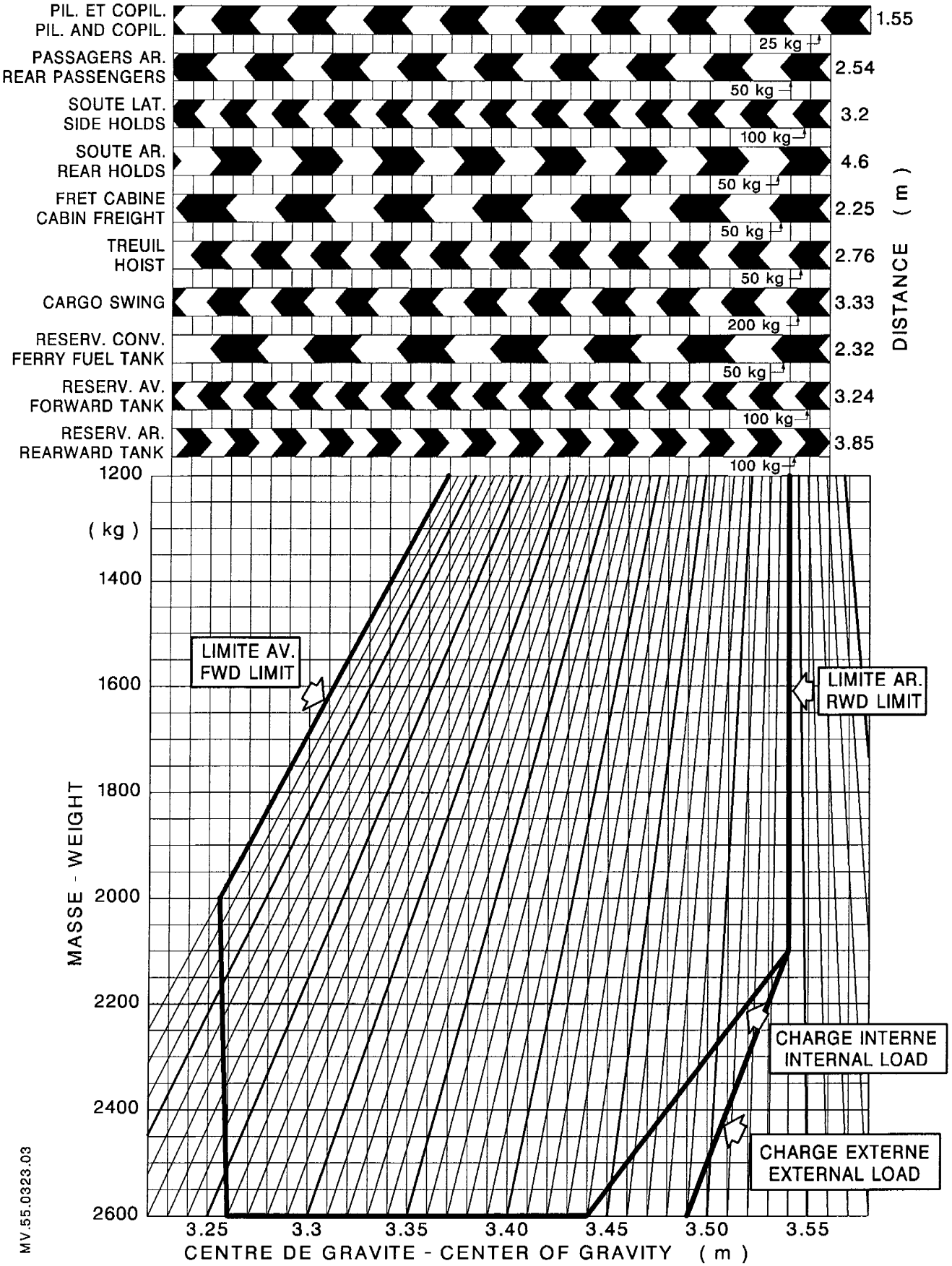
These charts are designed so that the variations in the fuel weight make c.g. move along a vertical line when the tanks contain the same amount of fuel. Should the contents of each tank be different, follow the "FWD tank and AFT tank" line to determine c.g. location and evolution.

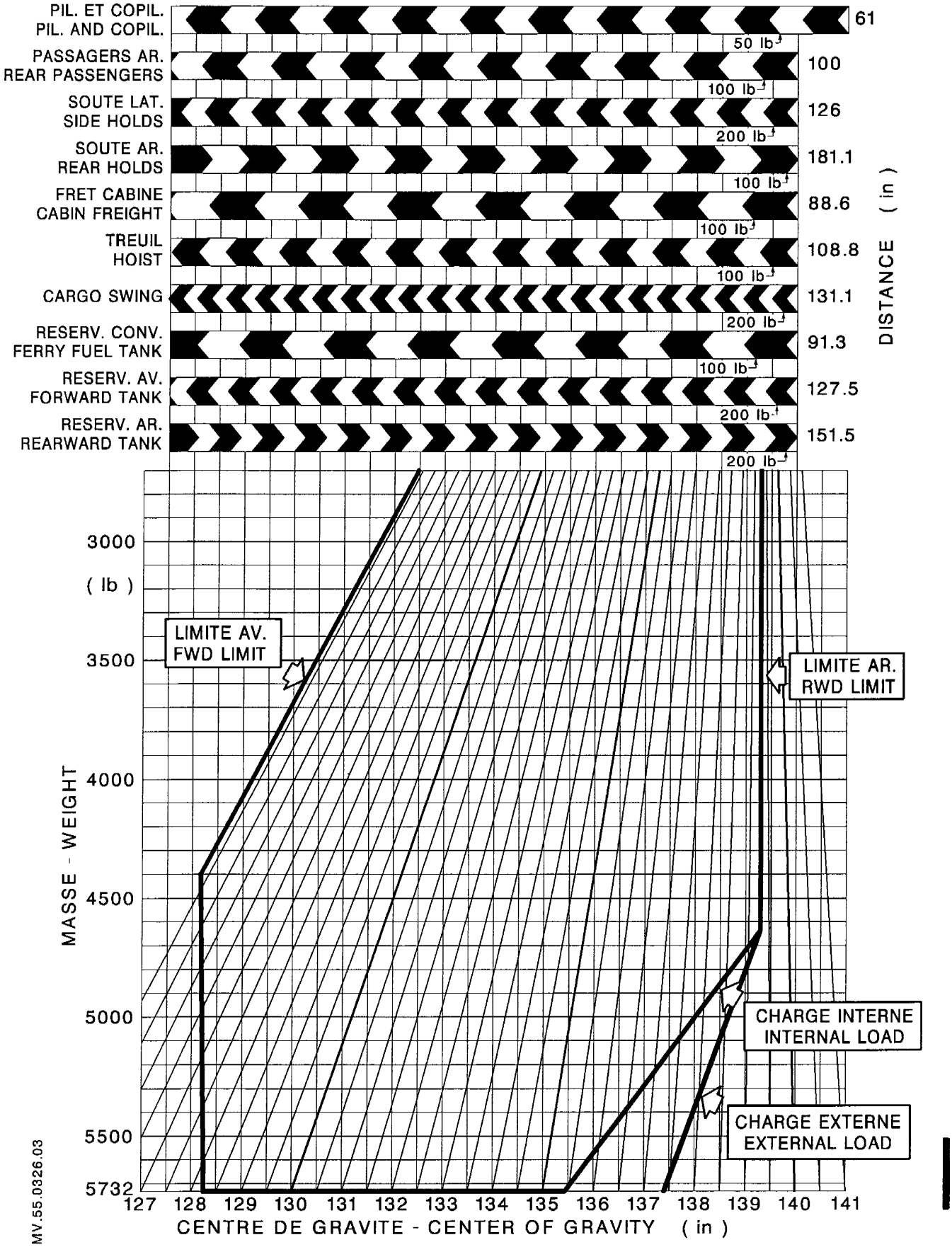
The weight and c.g. limits are given in the LIMITATIONS section and may be modified by the Supplements corresponding to the optional items fitted.

R

R
R
R

R

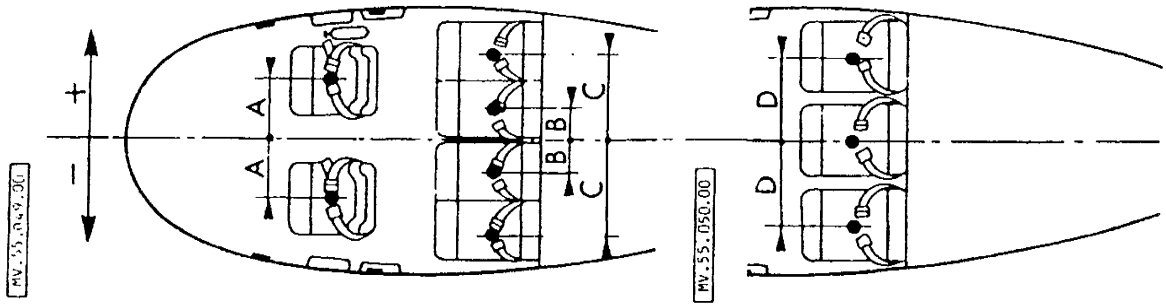

PIL. ET COPIL.
PIL. AND COPIL.
1.55
25 kg
PASSAGERS AR.
REAR PASSENGERS
2.54
50 kg
SOUTE LAT.
SIDE HOLDS
3.2
100 kg
SOUTE AR.
REAR HOLDS
4.6
50 kg
FRET CABINE
CABIN FREIGHT
2.25
50 kg
TREUIL
HOIST
2.76
50 kg
CARGO SWING
3.33
200 kg
RESERV. CONV.
FERRY FUEL TANK
2.32
50 kg
RESERV. AV.
FORWARD TANK
3.24
100 kg
RESERV. AR.
REARWARD TANK
3.85
100 kg
DISTANCE (m)
1200
(kg)
1400
1600
1800
2000
2200
2400
2600
MASSE - WEIGHT
LIMITE AV.
FWD LIMIT
LIMITE AR.
RWD LIMIT
CHARGE INTERNE
INTERNAL LOAD
CHARGE EXTERNE
EXTERNAL LOAD
3.25
3.3
3.35
3.40
3.45
3.50
3.55
CENTRE DE GRAVITE - CENTER OF GRAVITY (m)
MV.55.0323.03


PIL. ET COPIL.
PIL. AND COPIL.
61
50 lb
PASSAGERS AR.
REAR PASSENGERS
100
100 lb
SOUTE LAT.
SIDE HOLDS
126
200 lb
SOUTE AR.
REAR HOLDS
181.1
100 lb
FRET CABINE
CABIN FREIGHT
88.6
100 lb
TREUIL
HOIST
108.8
100 lb
CARGO SWING
131.1
200 lb
RESERV. CONV.
FERRY FUEL TANK
91.3
100 lb
RESERV. AV.
FORWARD TANK
127.5
200 lb
RESERV. AR.
REARWARD TANK
151.5
200 lb
DISTANCE (in)
MASSE - WEIGHT
(lb)
3000
3500
4000
4500
5000
5500
5732
LIMITE AV.
FWD LIMIT
LIMITE AR.
RWD LIMIT
CHARGE INTERNE
INTERNAL LOAD
CHARGE EXTERNE
EXTERNAL LOAD
127 128 129 130 131 132 133 134 135 136 137 138 139 140 141
CENTRE DE GRAVITE - CENTER OF GRAVITY (in)
MV.55.0326.03

5 LATERAL C.G.

The tables below give the lateral C.G. positions for different weights and their moments with respect to the Y plane (positive dimensions on the right, negative dimensions on the left).

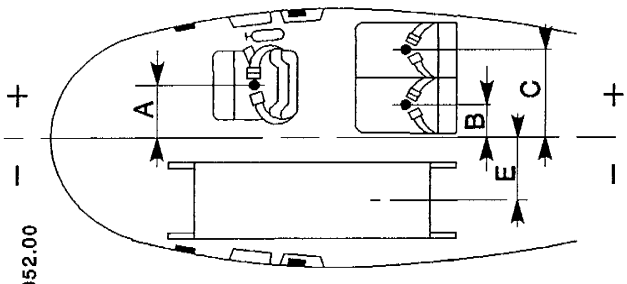
5.1 Crew and passengers



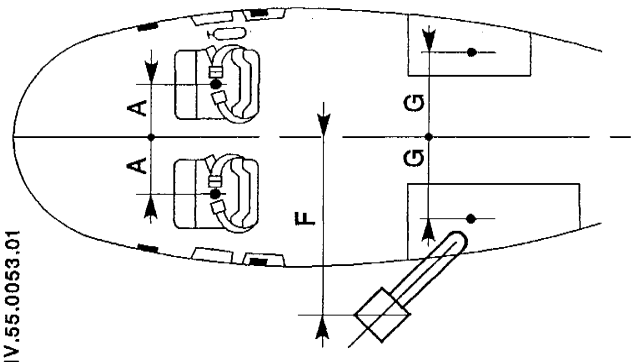
METRIC UNITS								
WEIGHT kg	MOMENT : m.kg							
	A +	A -	B +	B -	C +	C -	D +	D -
50	+ 18	- 18	+ 10	- 10	+ 31	- 31	+ 27	- 27
60	+ 22	- 22	+ 12	- 12	+ 37	- 37	+ 32	- 32
70	+ 25	- 25	+ 14	- 14	+ 43	- 43	+ 37	- 37
80	+ 29	- 29	+ 17	- 17	+ 50	- 50	+ 43	- 43
90	+ 32	- 32	+ 19	- 19	+ 56	- 56	+ 48	- 48
100	+ 36	- 36	+ 21	- 21	+ 62	- 62	+ 54	- 54
110	+ 40	- 40	+ 23	- 23	+ 68	- 68	+ 59	- 59
120	+ 43	- 43	+ 25	- 25	+ 75	- 75	+ 64	- 64

ENGLISH UNITS								
WEIGHT lb	MOMENT : in.lb							
	A +	A -	B +	B -	C +	C -	D +	D -
100	+1417	-1417	+ 815	- 815	+2445	-2445	+2106	-2106
120	+1700	-1700	+ 978	- 978	+2934	-2934	+2528	-2528
140	+1984	-1984	+1141	-1141	+3423	-3423	+2949	-2949
160	+2267	-2267	+1304	-1304	+3912	-3912	+3370	-3370
180	+2551	-2551	+1467	-1467	+4401	-4401	+3791	-3791
200	+2834	-2834	+1630	-1630	+4890	-4890	+4213	-4213
220	+3117	-3117	+1793	-1793	+5379	-5379	+4634	-4634
240	+3401	-3401	+1956	-1956	+5868	-5868	+5055	-5055
260	+3684	-3684	+2119	-2119	+6357	-6357	+5476	-5476

5.2 Air ambulance and hoist



MV.55.0052.00



MV.55.0053.01

METRIC UNITS								
WEIGHT kg	MOMENT : m.kg A +	A −	B +	C +	E −	F −	G +	G −
50	+ 18	− 18	+ 10	+ 31	− 21	− 77	+ 28	− 28
60	+ 22	− 22	+ 12	+ 37	− 25	− 93	+ 33	− 33
70	+ 25	− 25	+ 14	+ 43	− 29	− 108	+ 39	− 39
80	+ 29	− 29	+ 17	+ 50	− 33	− 124	+ 44	− 44
90	+ 32	− 32	+ 19	+ 56	− 37	− 139	+ 50	− 50
100	+ 36	− 36	+ 21	+ 62	− 41	− 154	+ 56	− 56
110	+ 40	− 40	+ 23	+ 68	− 46	− 170		− 61
120	+ 43	− 43	+ 25	+ 75	− 50	− 185		− 67
130	+ 47	− 47	+ 27	+ 81	− 54	− 201		
136	+ 49	− 49	+ 28	+ 84	− 56	− 210		

R

ENGLISH UNITS								
WEIGHT lb	MOMENT : in.lb A +	A −	B +	C +	E −	F −	G +	G −
100	+ 1417	− 1417	+ 815	+ 2445	− 1634	− 6079	+ 2189	− 2189
120	+ 1700	− 1700	+ 978	+ 2934	− 1961	− 7294	+ 2627	− 2627
140	+ 1984	− 1984	+ 1141	+ 3423	− 2287	− 8510	+ 3065	− 3065
160	+ 2267	− 2267	+ 1304	+ 3912	− 2614	− 9726	+ 3502	− 3502
180	+ 2551	− 2551	+ 1467	+ 4401	− 2941	−10942	+ 3940	− 3940
200	+ 2834	− 2834	+ 1630	+ 4890	− 3268	−12157	+ 4378	− 4378
220	+ 3117	− 3117	+ 1793	+ 5379	− 3595	−13373	+ 4816	− 4816
240	+ 3401	− 3401	+ 1956	+ 5868	− 3921	−14589		− 5254
260	+ 3684	− 3684	+ 2119	+ 6357	− 4248	−15805		− 5691
280	+ 3968	− 3968	+ 2282	+ 6846	− 4575	−17020		
300	+ 4252	− 4252	+ 2445	+ 7335	− 4902	−18236		

5.3 Determination of lateral c.g. location

The computation method is the same as that used for determining the longitudinal c.g. location (§ 4.1).
- Note the equipped empty weight and the lateral moment.
- Add the weights and moments of the variable loads (refer to the tables in the preceding pages).
- Calculate the lateral c.g. location.

Lateral c.g. location values during the mission shall fall within the permissible limits.

Example during hoisting operation

	Kg	m Kg	
Equipped Empty Weight	1600	+ 32	
Pilot	80	+ 29	
Hoist operator	80	- 43	(negative moment : hoist located left to aircraft symmetry plane)
Hoisted load	136	- 210	
Fuel during hoisting	200	0	
	2096	- 192	

Lateral c.g. location : $\frac{-192}{2096} = -0.09$ m

This value falls within the permissible limits.

6 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	
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	
SEFA skis complete with struts	23.3	51.4	81.5	7078	R
SEFA skis not including struts	21.2	46.7	72.6	6296	R
SURFAIR skis	26,8	59,2	113,4	9871	R
Emergency floatation gear	67.4	148.6	226.8	19682	
Sling	13.3	29.3	45.9	3977	
Wheels for soft ground					
Ferry tank	35.0	77.2	82.3	7143	
Provisions for single stretcher installation (not including stretcher)	0.7	1.5	1.1	95	

DESCRIPTION	WEIGHT kg	WEIGHT lb	MOMENT m.kg	MOMENT in.lb	
Provisions for double stretcher installation (not including stretchers)	3.0	6.6	5.0	441	
BREEZE electric hoist 136 Kg-300 lb (boom, winch, grip, pulley-block,belt,shears)	26.0	57.4	68.4	5947	
AIR EQUIP.electric hoist (boom, winch, grip, pulley-block,belt,shears)	33.4	73,7	87,9	7637	
LOCATOR search light	10.1	22.3	9.3	809	
Low landing gear	42.9	94.6	145.6	12637	
High landing gear	55.5	122.4	187.1	16239	
Footstep	2.9	6.4	5.5	477	
BREEZE electric hoist 204 Kg-450 lb (boom,faired winch, grip, pulley-block,belt,shears)	44.0	97.1	115.8	10060	
WANDEL and GOLTERMANN hailers	16.6	36.6	63.9	5548	R R
SPECTROLAB searchlight (stirrup, light outside harness)	18.1	39.8	91.07	7904.8	R R R

SECTION 7

SYSTEMS AND DESCRIPTION

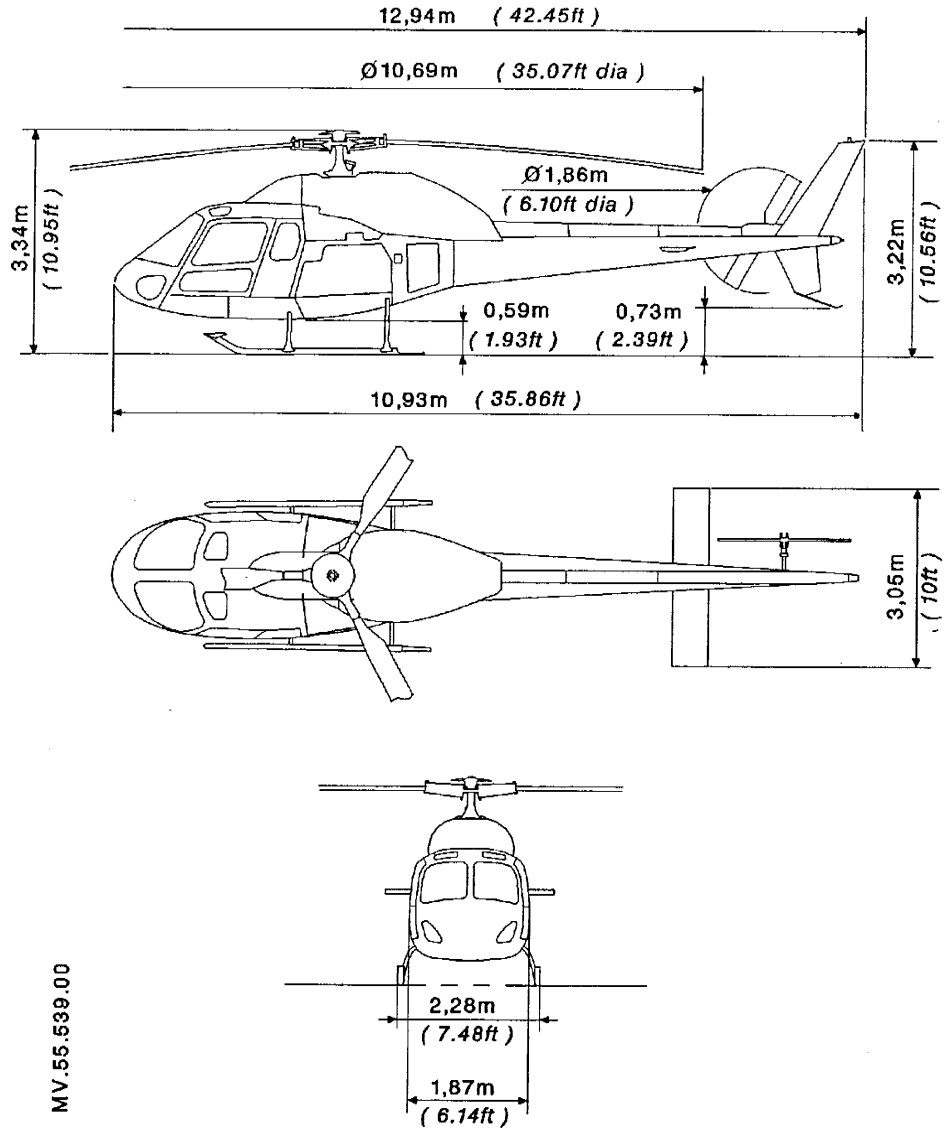
R
R
R
R

CONTENTS

SECTION 7.0

LEADING PARTICULARS

1 MAIN AIRCRAFT DIMENSIONS

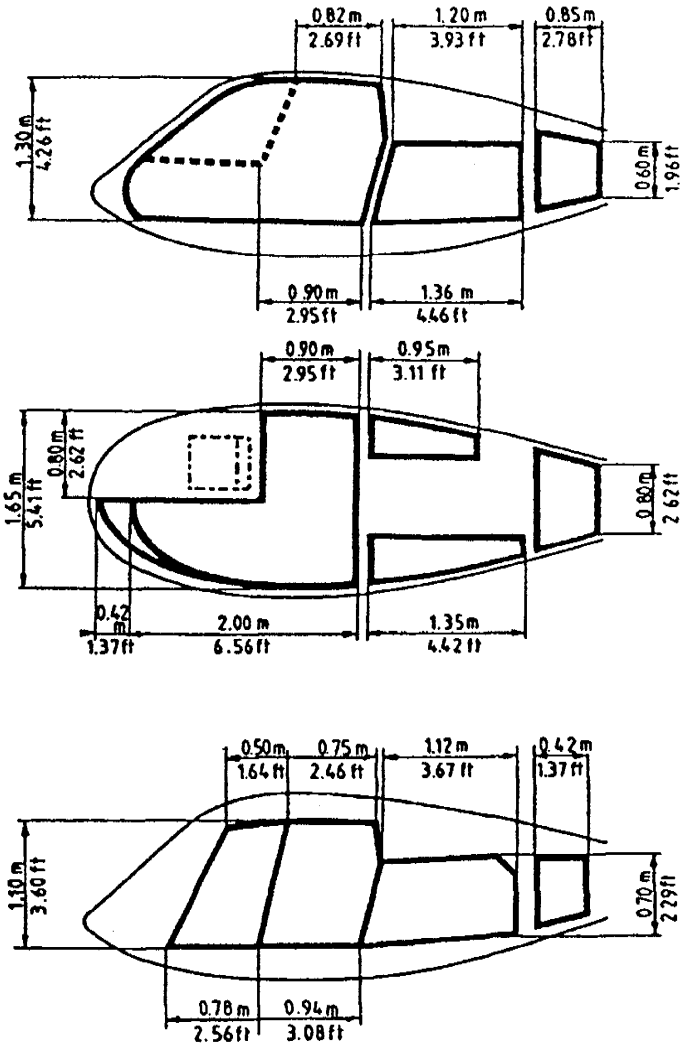


Overall dimensions of helicopter

- Overall length, rotor turning	12.94 m	42.45 ft
- Main rotor diameter	10.69	35.07
- Height to top of fin, high type L/G*	3.22	10.56
- Length, blades folded	10.93	35.86
- Width, blades folded	3.05	10.01
- Height to rotor head, high type L/G*	3.34	10.96
- Ground clearance below cabin, high type L/G*	0.59	1.93
- Width of landing gear (high type)	2.28	7.48
- Width of landing gear (low type)	2.17	7.12
- Length of fuselage	10.93	35.86

* Less 0.20 m (0.65 ft) when aircraft equipped with low type L/G

2 ACCESS DOORS AND COMPARTMENTS DIMENSIONS



MV.55.0461.00

Cabin

- Max. length	2.42 m	7.94 ft
- Max. width	1.65 m	5.41 ft
- Max. height	1.30 m	4.26 ft
- Available floor area	2.60m2	27.98 sq.ft
- Available volume	3.00m3	105.94 cu.ft

Cabin doors

- Sliding doors

. Width	0.94 m	3.08 ft
. Height	1.10 m	3.60 ft
. Area	1.034 m2	11.13 sq.ft

- Forward doors

. Width	0.78 m	2.56 ft
. Height	1.10 m	3.60 ft
. Area	0.85 m2	9.15 sq.ft

Baggage hold areas

- 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

Baggage hold volumes

- 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

3 ENGINE DATA

The aircraft is equipped with two modular-design TURBOMECA ARRIUS 1 A R turboshaft engines incorporating a free-power turbine and a full-authority digital governor. These engines are mounted at the top of the fuselage to the rear of the MGB in two separate fire-proof compartments.

3.1 General data

- Direction of rotation (viewed looking forwards) : clockwise
- Main dimensions :
  - . Overall length 0.787 m 30.98 in
  - . Overall height 0.540 m 21.26 in
  - . Overall width 0.337 m 13.27 in
- Approximate weight of complete engine : 92 kg 203 lb

The general concept of this engine is very specific. Air collected on the sides goes into the compressor and is then taken to the annular reverse-flow combustion chamber. It is then returned to the gas generator turbine, then to the free turbine.
Exhaust is made through a pipe located at the rear.

3.2 Design data

The engine comprises :

- a centrifugal compressor
- a radial, then axial diffuser assembly
- an annular, reverse-flow combustion chamber provided with fuel injectors
- a single-stage gas generator turbine
- a single-stage, axial-flow free turbine

An electronic governor system processes several parameters to adjust the fuel flow rate in order to adapt the gas generator speed to the power required. It mainly consists of an electronic unit and various sensors.
The governor also ensures :
- optimum acceleration and deceleration of the gas generator during engine starting and shutdown phases.
- protection of engine limitations
- equalization of power loads, with two engines operative.

4 GENERAL TRANSMISSION DATA

The main transmission components driving the main and tail rotors are as follows :

- Engine coupling shafts
- Combiner gearbox
- Main gearbox (MGB)
- Tail rotor drive shaft (in 3 sections)
- Tail gearbox (TGB)

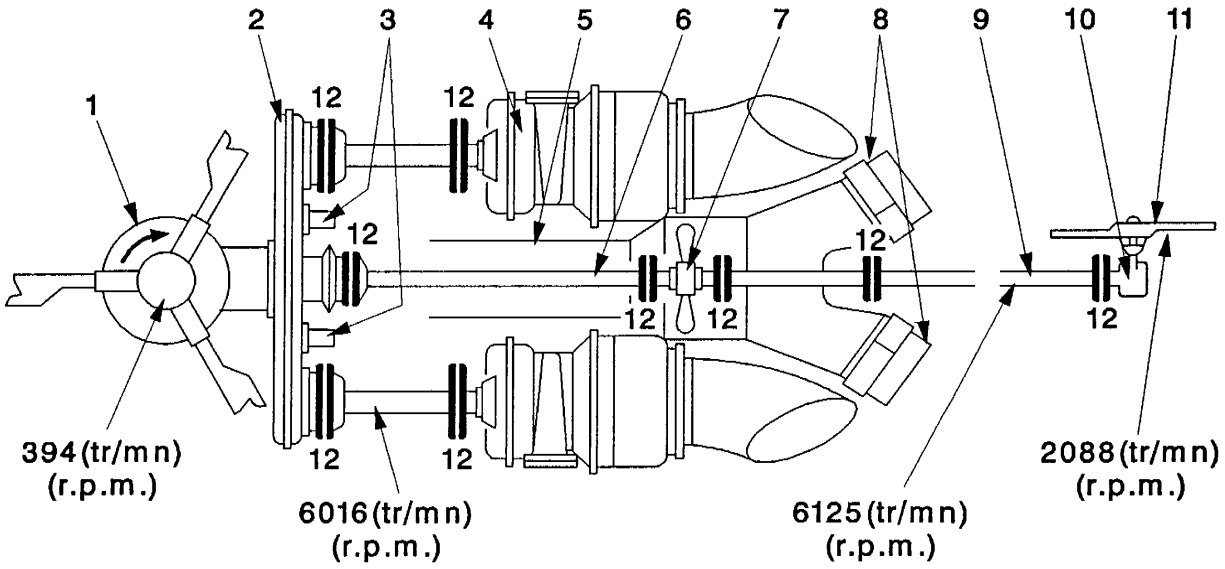
In power-on flight the rotor turns at a practically constant speed of 394 rpm. At this speed the transmission components rotate at :

- 6016 rpm for the output shaft
- 6125 rpm for the tail rotor drive shaft
- 2088 rpm for the tail rotor

R

Certified power is :

- 510 kW ---------- both engines operative ;
- 328 kW ---------- one engine inoperative, with no time limit.



MV.55.0465.01

1 MGB 2 Combiner gearbox 3 Hydraulic pumps 4 Engine 5 Cooling air duct 6 Tail rotor drive shaft (short section)	7 Ventilation unit 8 Engine and MGB cooler units 9 Tail rotor drive shaft (long section) 10 TGB 11 Tail rotor 12 Flexible couplings

Transmission Assembly

Figure 1

5 FUEL TANK CAPACITIES

Fuel quantity	Front tank			Rear tank			Front + rear		
	l	USgal	UKgal	l	USgal	UKgal	l	USgal	UKgal
Non-usable	3.5	0.92	0.77	3.2	0.85	0.70	6.7	1.80	1.50
Usable	330	87.2	72.6	400	105.7	88.0	730	192.9	160.6
Total	333.5	88.1	73.4	403.2	106.5	88.7	736.7	194.6	162.1
Gauge reading	45 %			55 %			100 %		

CONVERSION TABLE s.g. = 0.79

% GAUGES	CAPACITY			WEIGHT	
%	Litres	US gal	UK gal	Kg	lb
100	730	192.844	160.6	577	1 271
90	657	173.5	144.5	519	1 144
80	584	154.3	128.5	461	1 017
70	511	135.0	112.4	404	890
60	438	115.7	96.3	346	763
55	401.5	106.0	88.1	317	699
50	365	96.4	80.3	288	636
45	328.5	86.8	72.3	260	572
40	292	77.1	64.2	231	509
30	219	57.8	48.2	173	381
20	146	38.6	32.1	115	254
10	73	19.3	16.0	58	127
0	0	0	0	0	0

6 HYDRAULIC AND LUBRICATION SYSTEM CAPACITIES

The capacities of the hydraulic and lubrication systems are given in the table below :

	Litres	US gal	UK gal	
MGB lubrication system	6,5	1,7	1,4	R
TGB lubrication system	0.33	0.087	0.072	
Oil capacity for one engine	9	2,37	1.98	R
Oil capacity for one hydraulic system	3	0.79	0.66	

SECTION 7 .1

COCKPIT

This Section is customized.

SECTION 7.2

WARNING - CAUTION - ADVISORY PANEL

This Section is customized.

7.3 - POWERPLANT

1 DESCRIPTION

1.1 Installation

The engines are mounted at the upper part of the fuselage, aft of the main gearbox.
The engine power is transmitted through a shaft provided with two flexible couplings.

The engine power addition is achieved by a combiner module mounted aft of the M.G.B. This module incorporates two freewheels and drives two hydraulic pumps.

1.2 Brief description of the engine

The engine consists of three modules :

- Reduction gear module

Mounted at the front of the engine, this module is used for :
. stepping down the engine speed (from 45438 to 6016 rpm) through a gear train ;
. transmitting the engine power to the helicopter ;
. driving the accessories.

- Gas generator module

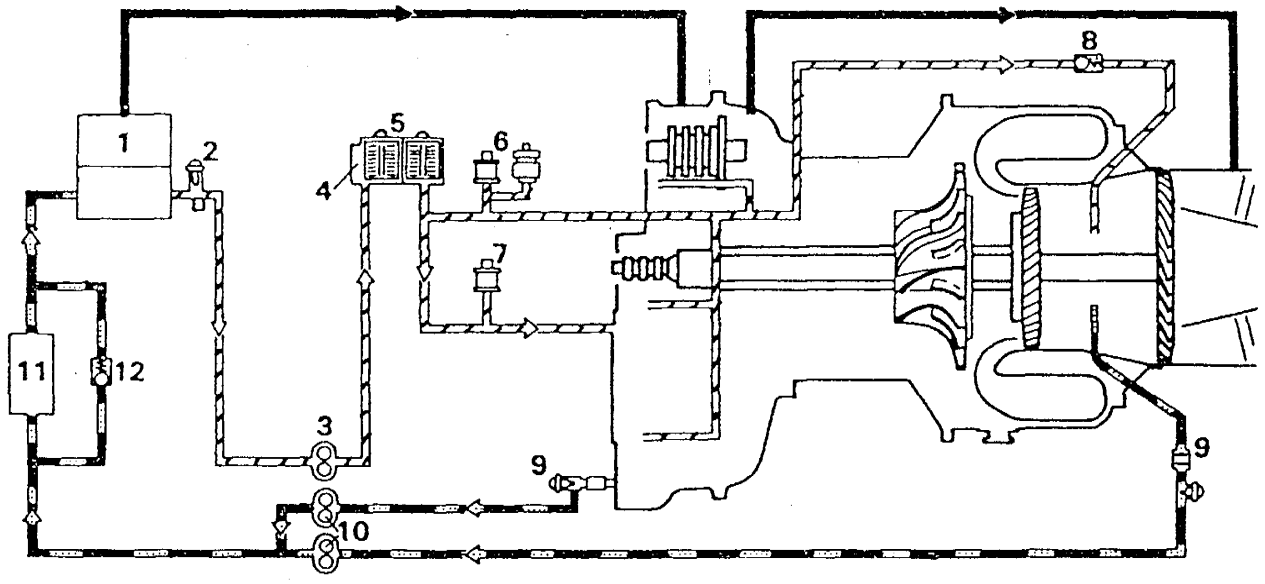
This centre module comprises :
. the air intake housing, of annular shape, provided with a lateral air inlet.
. the centrifugal compressor, with a diffuser assy. (1 radial stage, 1 axial stage).
. the combustion chamber, of the annular, reversed flow type ; the rear of the combustion chamber houses the injection system.
. the single-stage generator turbine driving the compressor and the accessories control linkage.

- Free turbine module

This module, mounted at the rear, comprises :
. the structure of the rear bearing
. the single-stage free turbine which drives the reduction gear through a shaft running concentrically with the gas generator shaft.

Each module is an interchangeable sub-assembly.

2 LUBRICATION SYSTEM



5355902 00

Supply
Alimentation

Return
Récupération

Vapours
Dégazage

1	Oil tank	7	Torque monitoring system
2	Temperature probe	8	Check valve
3	Pressure pump	9	Oil strainer and magnetic plugs
4	Clogging by-pass valve	10	Scavenge pumps
5	Fuel warm-up oil filter assembly	11	Oil cooler
6	Min. oil pressure detector and pressure switch	12	Thermostatic valve.

In flight, the lubrication system is monitored through the oil pressure and temperature indicators. A red warning light illuminates on the Warning Caution panel when the pressure drops below 1.1 bar and two amber warning lights illuminate when metal particles settle on the magnetic detectors.

3 ENGINE MONITORING

Flight control parameters

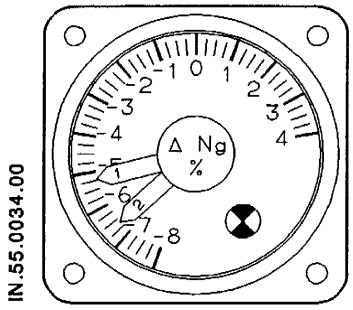
The flight control parameters to be considered are :

- the Ng, when the engine thermal limit is reached (hot weather at high altitude)
- the torque, in cold weather at low altitude.

NOTE : Except in case of anomaly, the t4 temp. never constitutes the first limitation.

Flight control instruments

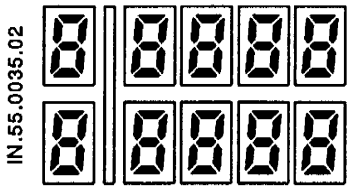
- Ng difference indicator



This instrument indicates the difference between the actual engine Ng and the "Ng. MAX T/O PWR" which is being constantly computed.
The built-in red warning light indicates :

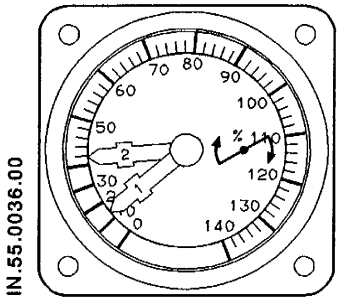
. illuminated steady : The intermediate Contingency Power limit is selected in the computer ;
. Flashing (before Mod. 2158 only): the R limit of the cumulated time at the Max. Contingency power, is exceeded.

- Alphanumerical display



When the associated selector is set to the "Ng" function (starting phase), the instrument displays the gas generator speed and allows the engines R to be governed, should the computer R fail. The readings are given on two R displays. The four digits on the right show the Ng in percentage ; the digit on the left shows that the overspeed protection is not ensured by the computer (below 25 % Nf). A vertical bar between the first and the second digit is visible when the computer message read is reliable.

- Torque indicator



This instrument shows the engine torque which is measured using the engine oil pressure. When the sum of the torques of the two engines is equal to or greater than 2 times the Max. Takeoff Power, the system causes illumination of the LIMIT light of the Warning-Caution panel.

Monitoring instruments

- t4 indicator
- NR/Nf indicator
- Oil pressure indicator
- Oil temperature indicator

4 ENGINE CONTROLS

4.1 Electric controls

- DIRECT BATT pushbutton :
  Self-test of the computer is initiated when power is applied.
- Three-position starting selector :

  . OFF (ARRET) : Engine shutdown
  Return of the selector to this position is protected by a foldable guard.

  . TRNG (ECOLE) : Free turbine speed governed at a lower value (355 rpm at zero power)

  NOTE : It is still possible to start the engine, but the Nf stabilizes at the governed lower speed.

  . FLT (VOL) : Normal position in flight.
  Automatic starting of the engine.

- Governing mode selector :

  . AUTO : Automatic engine governing

  . MAN : Blockage of the fuel metering unit in the governing system. R

- MAX. POWER (PMU-PIU) control pushbutton :

The pushbutton, located on the collective pitch lever, limits the engine power level. When power is applied to the computer, the computer is automatically set to the Max. Contingency Power. In case of failure, or for training, an action on the pushbutton causes the engine limit to be offset from Max. Contingency Power to Intermediate Contingency Power.

- Cranking pushbutton :

This pushbutton is used to make the starter run in the "cranking" mode.

- Equalizing trim :

This system allows the power loads to be equalized between the two engines, taking into account the parameter which is the closer to the limitations (either torque or Ng).

- Anticipator (automatic)

  Depending on the position of the collective pitch lever and yaw pedals, an electric signal is delivered to the computers in order to offset the governor static droop and thus optimize the NR.

- Overspeed arming and test :

  Two three-position switches, located in the rear baggage hold, above the computers, are used for : simulating an overspeed, checking the system which inhibits a reaction in case of two simultaneous overspeeds and rearming the system. On the instrument panel the information is read on the alphanumerical display.

4.2 Mechanical controls

- Emergency fuel flow levers :

  These levers, located on the overhead control quadrant, are mechanically connected to the governor levers ; they are used, in an emergency, to adjust the fuel flow rate of the engine whose governor is failed.
  When these levers are out of the normal " flight" gate, they are used to increase the fuel flow when pushed forwards, and to decrease it when pulled rearwards.

  An overridable stop inhibits inadvertent engine shutdown.

  Each lever is provided with a red warning light indicating a governor failure. R R

  Whenever the lever is moved out of the "normal" gate, its associated red warning light illuminates, as well as the amber REGUL warning light on the Warning-Caution-Advisory panel.

- Fuel shutoff control levers :

  These levers, located on the overhead control quadrant, control the fuel shut-off cocks. They are safetied with snap-wire.

- Rotor brake control lever :

  The rotor brake lever, located on the overhead control quadrant, is provided with a safety device consisting in a notch and a catch.

  When the lever is not against the forward stop (rotor brake released), engine starting is inhibited by a contactor.

4.2 Electric power supply to the engines

Panel 16 ALPHA, DIRECT BATTERY

C/B DESIGNATION	FUNCTIONS
IGNITER LH (ALLUMEURS G) IGNITER RH (ALLUMEURS D)	. Power supply to the igniters . "On" function for the solenoid of the main fuel electro-valve. . Power supply to the electro-valve of the starting injectors.
REGUL LH (REGUL G) REGUL RH (REGUL D)	. Power supply to the governor computer (redundant power supply, the other source being the engine own power supply).
FUEL METER. LH (DOS CARB SEC G) FUEL METER. RH (DOS CARB SEC D)	. Dual power supply to the computer

Panels 7 ALPHA 1 and 7 ALPHA 2

C/B DESIGNATION	FUNCTIONS
FUEL METER. LH (DOS CARB SEC G) FUEL METER. RH (DOS CARB SEC D)	. Dual power supply to the computer
LH. ENG. START (DEM MOT G) RH. ENG. START (DEM MOT D)	. Power supply to the auxiliary relay and starting contactor. . "Off" function for the solenoid of the main fuel electro-valve
OVERSPEED LH (SURVIT G) OVERSPEED RH (SURVIT D)	. Power supply to the overspeed protection system
LH. ENG. REGUL. (REGUL MOT G) RH. ENG. REGUL. (REGUL MOT D)	. Power supply to the warning light on the fuel flow lever
MAX POWER (PIU - PMU)	. Power supply to engine NG limitation function R

5 ENGINE FUEL SYSTEM

Operating principle

A low pressure pump delivers the fuel to a high pressure pump through a filter. The fuel flow rate is adjusted by a rotary type metering unit controlled by the electronic governor. Redundancy of the metering function is ensured by a manual control cock, used in case of governor failure. An electric cock allows the engine to be shut down intentionally, or to be stopped automatically in case of Nf overspeed. The fuel is sprayed from a duct by 10 injectors. During the starting phase, the fuel is sprayed by four other injectors, two of which are used for the ignition.

Governor system

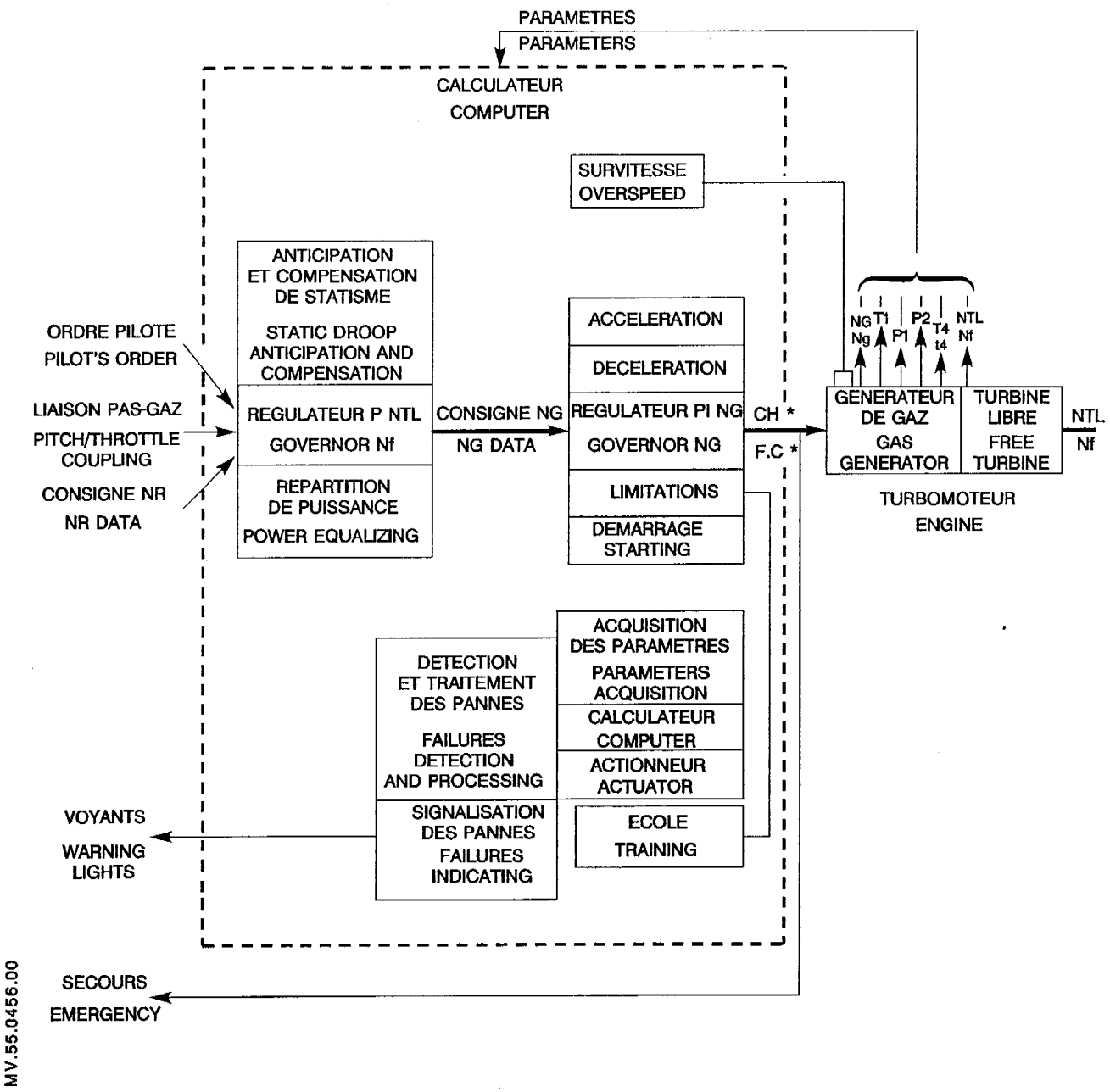
The governor system is based on the electronic digital design, using a total authority micro-processor.

The free turbine speed is held constant, whatever the engine power, by adaptation of the gas generator speed.

The digital governor ensures the following functions :

- Automatic starting
- Free turbine acceleration and deceleration
- "Normal" governing of the free turbine speed whose limit is offset in the "training" mode.
- Gas generator acceleration and deceleration
- Anticipation
- Equalization of power loads by compliance with the static droop laws.
- Limitation of the " Max. Contingency Power" or "Training Max. Contingency Power".
- Limitation of the "Intermediate Contingency Power" or "Training Intermediate Contingency Power".
- Indication of a deviation with respect to the Max. Takeoff Power.
- Protection against free turbine overspeed.
- Engine shutdown.

GOVERNOR SYSTEM BLOCK DIAGRAM



* CH = Consommation horaire R
* F.C = Fuel consumption R

7.4 - FUEL SYSTEM

1 FUEL TANKS

The fuel is contained in two tanks mounted in tandem in the body structure below the transmission deck.

The forward tank supplies the port engine and the rear tank the starboard engine. Fuel balance is provided by a transfer circuit isolated by a valve.

2 TRANSFER CIRCUIT (See Figure 1)

It consists of a flexible pipe connecting both tanks and an electrical control valve that precludes fuel transfer. Valve opening is controlled by the "FUEL XFER"(INTERCOM) pushbutton (15) provided on panel 5 ALPHA 2. The pushbutton illuminates when the valve is opened.

3 SUPPLY CIRCUITS (See Figure 1)

Both supply circuits are identical. The following items are successively mounted in the direction of fuel flow :

- a booster pump (14) fitted on fuel tank bottom
- a manual control fuel shut-off valve (9)
- a fuel pressure inlet to the pressure indicator
- a fuel filter (6) located on the engine between the low pressure pump and the high pressure pump. It is associated with the oil filter, in order to warm up the fuel and limit the use of anti-icing additive. R R
- a filter bypass (7) fitted with a pressure-switch that indicates filter clogging (8).

4 SUPPLY CIRCUIT CONTROLS AND MONITORING (See Figure 1)

For each circuit, the following control and monitoring items are available to the pilot :

- a fuel shut-off lever operating a valve provided on the engine supply circuit. The levers are locked in forward position (valves opened)
- a fuel contents gauge (3)
- a fuel pressure indicator (4)
- a warning light (2) which comes on when the filter is clogged
- a warning light (22) which comes on when the low safety level is reached in the fuel tank.

KEY TO FIGURE 1

1	Warning-Caution-Advisory panel
2	FILTER RH warning light
3	Fuel contents indicator
4	Fuel pressure indicator
5	R.H. engine
6	Warmed-up filter
7	Bypass valve
8	Pressure differential switch
9	Fuel shut-off valve
10	Forward fuel tank
11	Crossfeed valve
12	Fuel contents gauge
13	Rear tank
14	Booster pump
15	FUEL XFER (INTERCOM) push-button
16	Panel 5 ALPHA 2
17	Fuel shut-off lever
18	PUMP ENGINE (POMP.MOT.) push-button
19	Low level indicator
20	L.H. engine
21	FILTER L.H. (FILT G.)warning light
22	FUEL (COMB) low level warning light

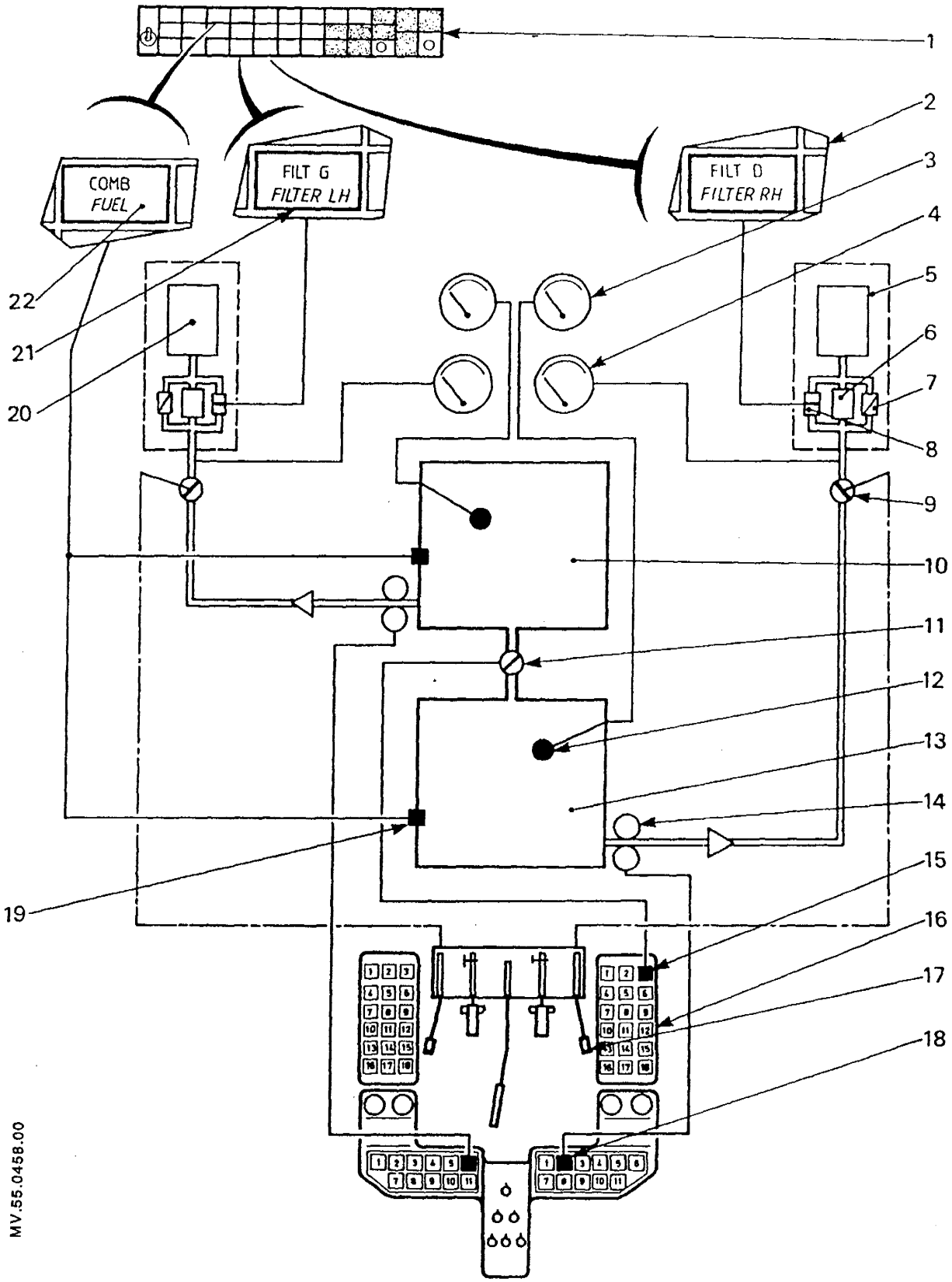

COMB
FUEL
FILT G
FILTER LH
FILT D
FILTER RH
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
MV.55.0458.00

Figure 1

7.5 - ROTORS AND TRANSMISSIONS

1 ROTORS

1.1 Main rotor (Figure 1)

The main rotor head and shaft transmit M.G.B. rotation and flying controls motions to the main rotor blades. As viewed from the top, the main rotor turns clockwise.

The STARFLEX type semi-rigid main rotor head is made from new materials (resin glass fibre, laminated thrust bearings, self-lubricating bearings) allowing all conventional bearings and lubrication systems to be eliminated.

The three main rotor blades of the glass-resin laminate flexible construction are attached to the rotor hub through flanges (1) and star (2). Pitch variation is achieved through distortion of elastomer items (3).

The vibration dampening device (4) mounted in centre of the rotor head consists of a weight oscillating between three springs fitted 120° apart.

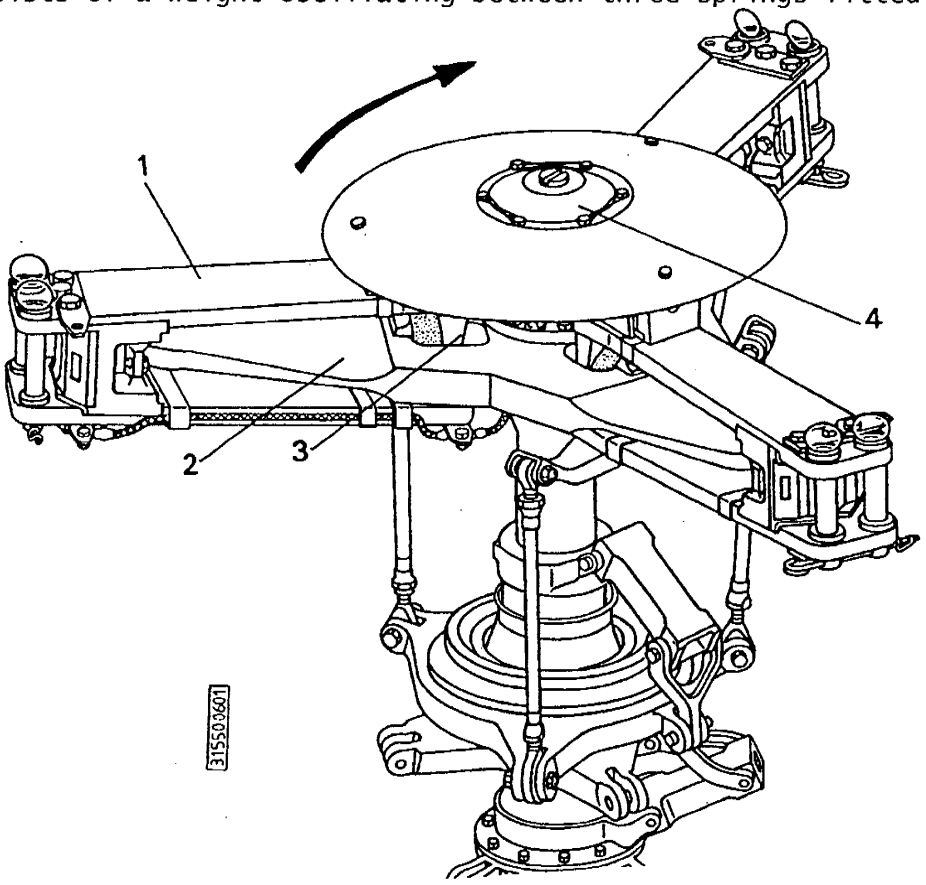


Figure 1

1.2 Tail rotor

The two-blade tail rotor is see-saw mounted on the T.G.B. The tail rotor blades rotate anti-clockwise as viewed from the right side of the aircraft.

2 TRANSMISSION

The transmission system consists of :

- engine-to-main gearbox coupling systems
- main gearbox (M.G.B.)
- tail rotor drive shaft
- tail gearbox (T.G.B.).

2.1 Engine-to-M.G.B. coupling systems

They transmit the power of each engine to the M.G.B. through one shaft and two flexible couplings turning inside a coupling tube. R R

2.2 Main gearbox (M.G.B.) (Figure 2)

The main gearbox is intended to :

- transmit the power developed by the engines to the main and tail rotors
- reduce the rotational speeds transmitted to the rotors
- drive the accessories :
  . oil pump (4)
  . hydraulic pump (2)
  . NR sensor (7).

The M.G.B. consists of three modules :

- Input module (1) or combiner gearbox made up of five cylindrical gears and two roller freewheels. The input/output speed ratio is 0.982.
- Centre module (5) accommodating the bevel reduction gear (9). The step-down ratio is 3.59.
- Output module (6) accommodating the five-planet pinion epicyclic reduction gearbox (8). The step-down ratio is 4.33.

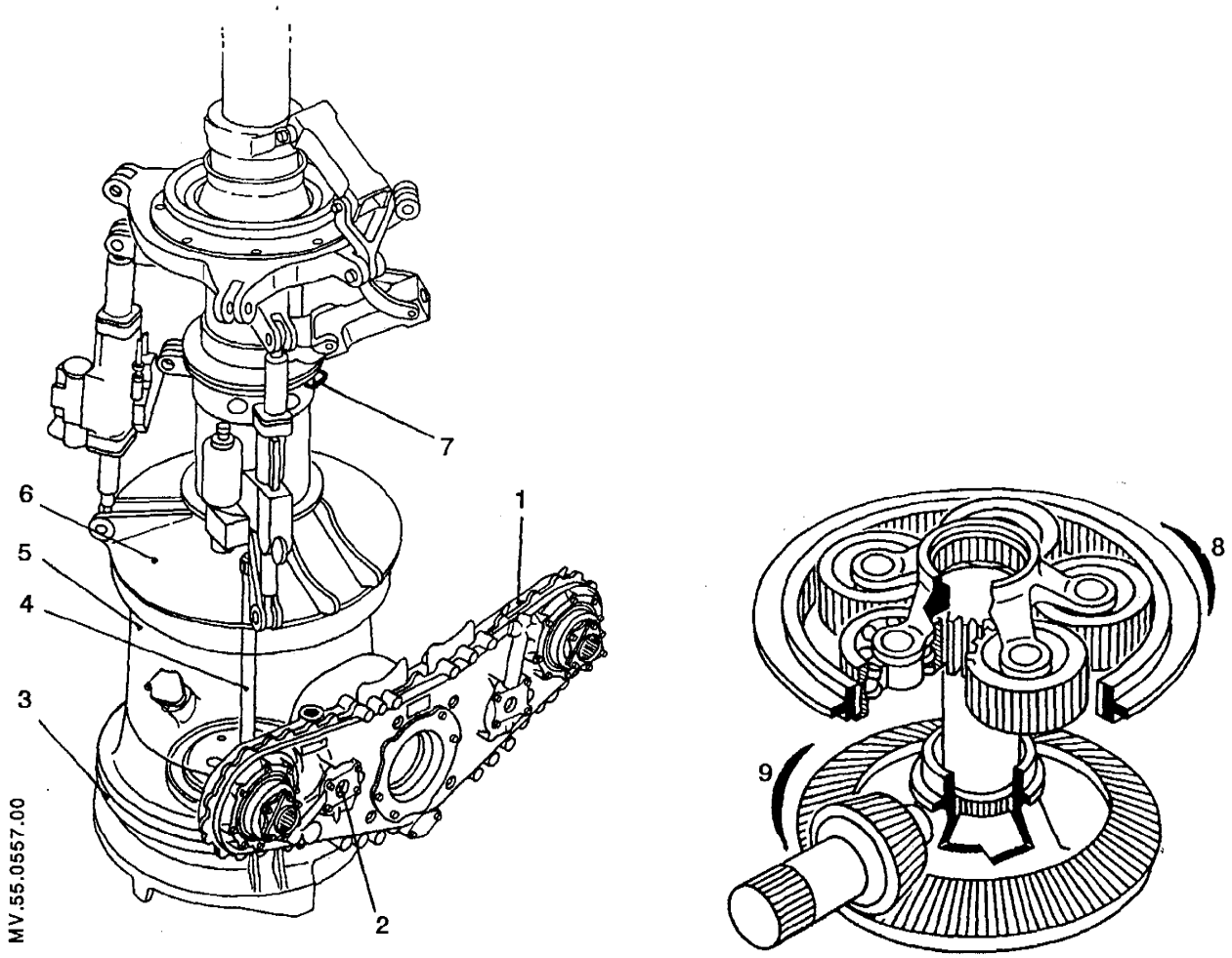


Figure 2

The gears, bearings and freewheels are lubricated by a pressurized oil system. The bottom (3) of the M.G.B. casing is used as an oil tank and houses the pump.

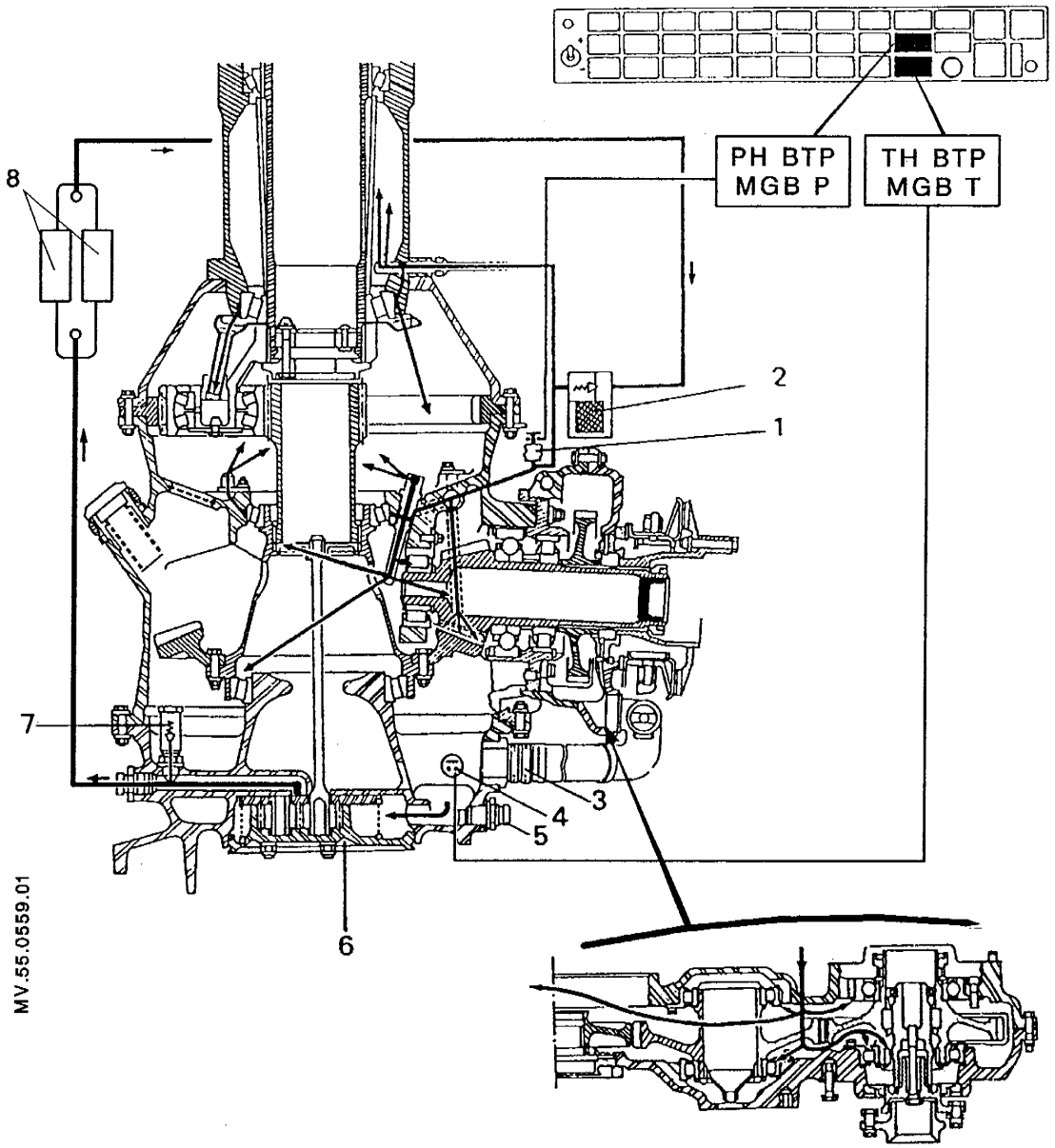
The pump draws the oil through a strainer and forces it to the oil coolers. After cooling, the oil flows through the main filter to the oil jets. A by-pass valve mounted on the main filter allows the oil to flow to the main gearbox when the filtering elements are clogged.

Lubrication of the M.G.B. is monitored through :

- a pressure switch causing the MGB. P. (PH BTP) light to illuminate on the Warning Caution Advisory panel when the pressure drops below 1 bar (14.50 p.s.i.)
- a thermal switch causing the MGB. T. (TH BTP) light to illuminate on the Warning-Caution-Advisory panel when the temperature reaches 115°C.

The presence of metallic particles in the MGB oil system causes a warning light to illuminate on the Warning-Caution-Advisory panel.

- as optional equipment, an MGB oil pressure and temperature indicator can be fitted in complement to the lubrification monitoring system.



R

1	Oil pressure switch (minimum pressure)	5	Magnetic plug
2	Oil filter and by-pass valve	6	Oil valve
3	Oil level sight	7	Relief valve
4	Thermal switch	8	Oil coolers

M.G.B. lubrication system

2.3 Tail rotor drive system (Figure 3)

The tail rotor drive system is intended to transmit rotation from the M.G.B. to the tail rotor.
It consists of three items :

- a forward short shaft (1) at M.G.B. output
- a fan unit which constitutes an intermediate bearing (2)
- a long shaft supported by six ball bearing assemblies (3).

These items are connected to each other by means of flexible couplings (5).

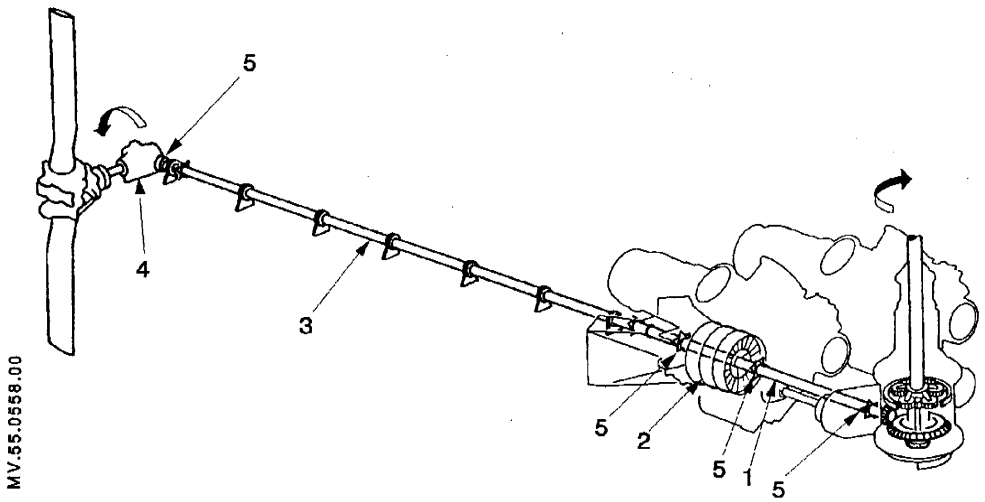


Figure 3

2.4 Tail gearbox (T.G.B.)

The T.G.B. (4) is a right-angle drive that steps the rotational speed from 6125 down to 2088 r.p.m.

It is splash-lubricated and is provided with an oil level sight.

2.5 Rotor brake

The rotor brake is mechanically controlled by the centre lever provided on the cockpit overhead panel.

When the lever is FORWARD, the rotor brake is released ; the lever is locked in the FORWARD gate by means of the catch on the lever.
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.

Automatic starting of engines is inhibited by an electric contactor when the lever is not in the FORWARD position.

7.6 - FLYING CONTROLS

The flying controls are used to fly the helicopter through variation of the pitch angle of main and tail rotor blades.

The basic aircraft is fitted with controls at pilot's station (RH seat). As an optional item, the aircraft can be provided with dual controls if flown with a copilot. These controls can quickly be removed for transportation of loads inside the cabin.

The flying controls consist of three channels :

- a lateral and fore-and-aft cyclic pitch channel
- a collective pitch channel
- a yaw channel.

The main rotor controls are of the rigid type (control rod) and the tail rotor controls are of two types : rods and ball-type control cables.

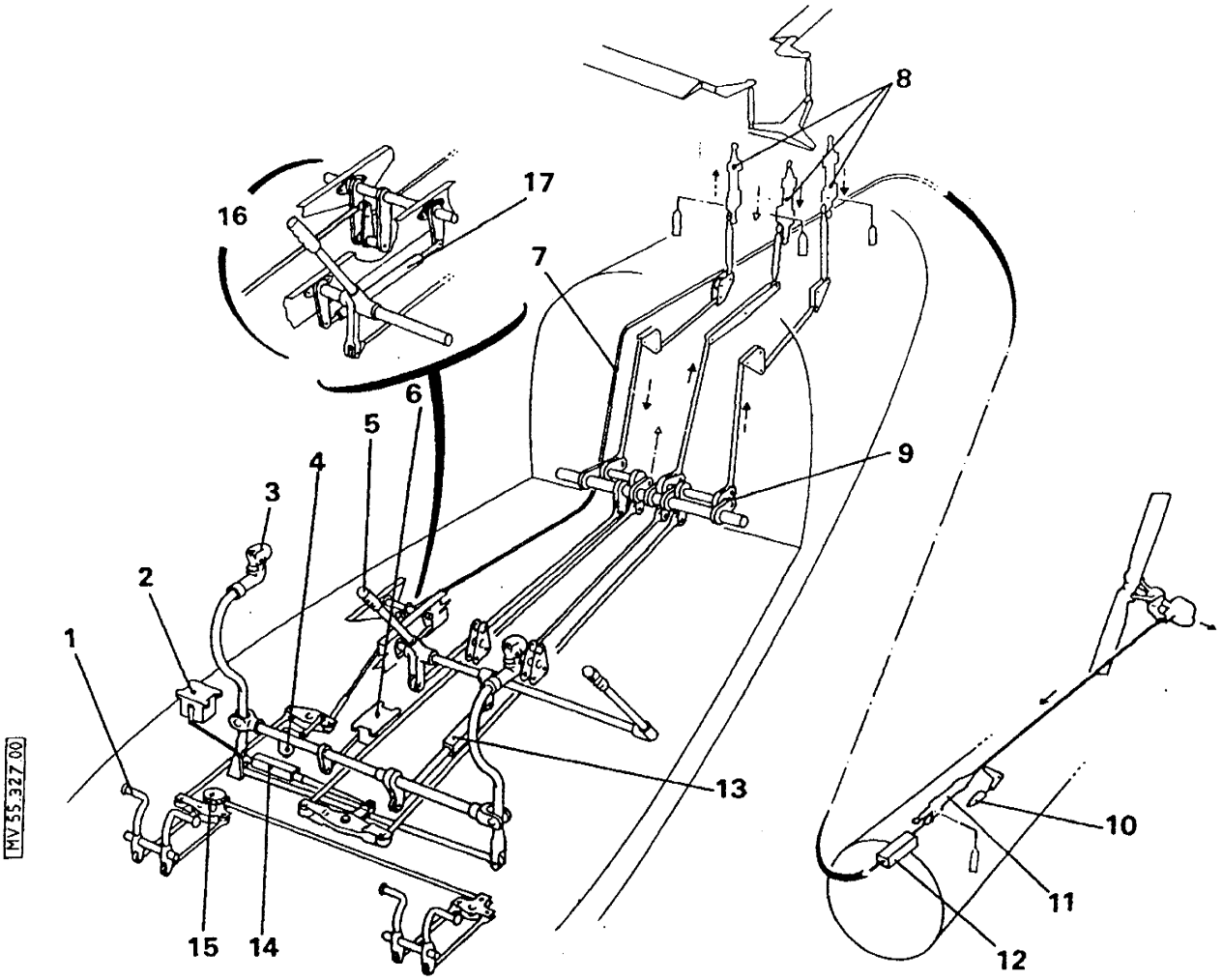
Three mobile cylinder servo-controls whose piston rod is integral with the M.G.B., directly operate the swashplate (two in lateral, one in fore-and-aft). These servo-controls allow the aircraft to be flown manually in the event of a hydraulic supply failure.

A tail rotor servo-control mounted on the tail boom actuates a rod which controls the tail rotor plate bellcrank.

The mixing unit allows operation of the cyclic and collective pitch controls separately and without interaction.

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.



Item	Description	Item	Description
1	Yaw control pedals	10	Load compensator
2*	Roll channel trim actuator	11	Yaw servo-unit
3	Cyclic stick	12*	Yaw channel actuator
4*	Yaw movement detector	13*	Pitch channel actuator
5	Collective lever	14*	Roll channel actuator
6*	Pitch channel trim actuator	15*	Pedal friction lock
7	Ballflex control	16*	Collective pitch-yaw coupling
8	Main servo-units	17*	Spring-loaded rod
9	Mixing unit		

* Optional autopilot

Flight control linkage

7.7 - HYDRAULIC SYSTEMS

1 GENERAL

The hydraulic systems make flying smoother by introduction of hydraulic power assistance to the servo-controls which operate the flying controls.
Two separate hydraulic systems supply the servo-controls.
The hydraulic fluid used must comply with specification MIL H 83 282 (recommended) or MIL H 5606 (AIR 3520).
The total volume of fluid in each system is 3 litres (0.79 US Gal. - 0.66 UK Gal.) when the reservoir is at max. level line.

2 DESCRIPTION OF THE SYSTEMS (Figure 1)

2.1 LH system

The LH system which supplies the upper cylinder of the main servo-controls (1-2-3) mainly consists of :
- a gear pump (11) driven by the M.G.B. combiner unit on the LH side
- a regulation unit secured to the LH side of the M.G.B. including :
  . a pressure regulation valve (14)
  . a low pressure switch (15)
  . a filter (13)
- a hydraulic reservoir (12) that boosts the pump.

2.2 RH system

The RH system supplies the lower cylinder of the main servo-controls (1-2-3) and the tail rotor servo-control (4).
It is identical with the LH system but in addition includes :
- an electro-valve (5) for cutting out hydraulic supply to the tail rotor servo-control.
- a load compensator comprising :
  . a power actuator (16)
  . a check-valve (17)
  . an electro-valve for discharging the accumulator (18)
  . a hydraulic accumulator (19)

2.3 Hydraulic system controls and monitoring

The following are available to the pilot :
. collective lever switch (7) to cut off supply to the tail rotor servo-control
. overhead panel pushbutton (9) to test that a main servo-control valve indicating circuit. R R

The systems are monitored through three lights on the failure warning panel :
- a "SERVO" light indicating that a main servo-control distributor valve is seized
- a "LIMIT" light indicating that significant load is induced on the upper cylinder of the RH main servo-control
- a "HYD" (HYDR) light indicating a hydraulic pressure drop.
- two optional lights, one marked RH HYD (HYDR D) for the RH system and one marked LH HYD (HYDR G) for the LH system, indicating a hydraulic pressure drop in the relevant system.

Item	Description	Item	Description
1	Roll servo-control	12	Hydraulic reservoir
2	Pitch servo-control	13	Filter
3	Roll servo-control	14	Pressure regulator
4	Yaw servo-control	15	Low pressure switch
5	Yaw hydraulic supply electro-valve	16	Load compensator actuator
		17	Check valve
6	Collective pitch grip	18	Accumulator discharge electro-valve
7	Yaw hydraulic supply switch		
8	Front panel	19	Accumulator
9	"SERVO" test pushbutton	20	Pressure relief valve
10	Warning-Caution-Advisory panel	21	Electro-valve control ACCU pushbutton
11	Hydraulic pump		

Key to Figure 1

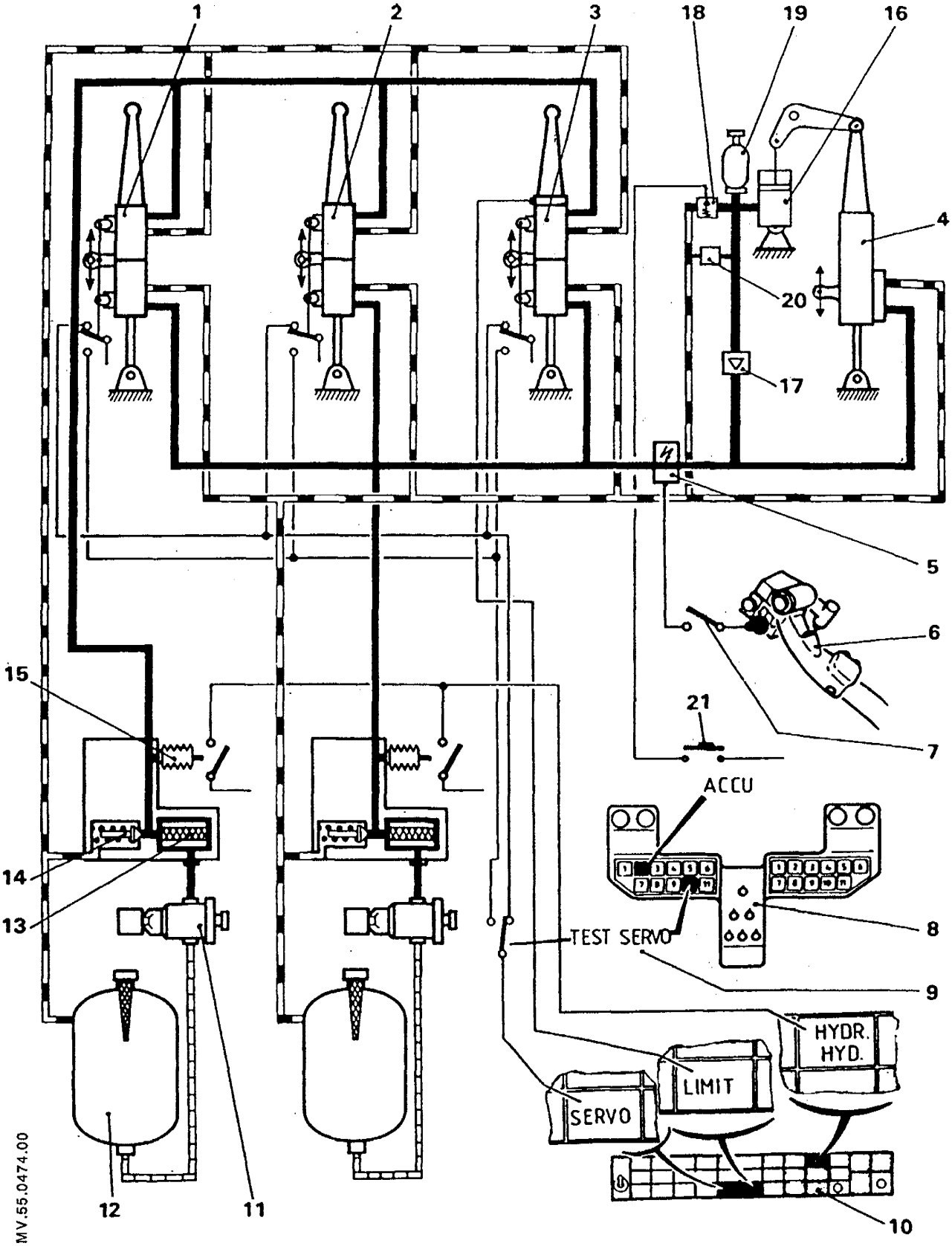

1
2
3
18
19
16
4
20
17
5
6
7
21
15
14
13
ACCU
TEST SERVO
8
9
HYDR.
HYD.
LIMIT
SERVO
10
12
11
MV.55.0474.00

Figure 1

7.8 - I - D.C. POWER SYSTEM

1 GENERAL

D.C. power is provided by two starter-generators (one per engine) and a 16 amp./hour buffer-mounted battery.

A second battery identical with the first one can be installed on option.

An external power receptacle mounted on the RH side of the aircraft supplies 28 V D.C. from a ground power unit.

Each generator supplies a primary bus and coupling is provided through a shed bus and two contactors. Should one generator fail, the power supply is ensured by the other generator. The total electrical load is such that each generator can supply all loads by itself.

2 GROUND POWER RECEPTACLE CIRCUIT

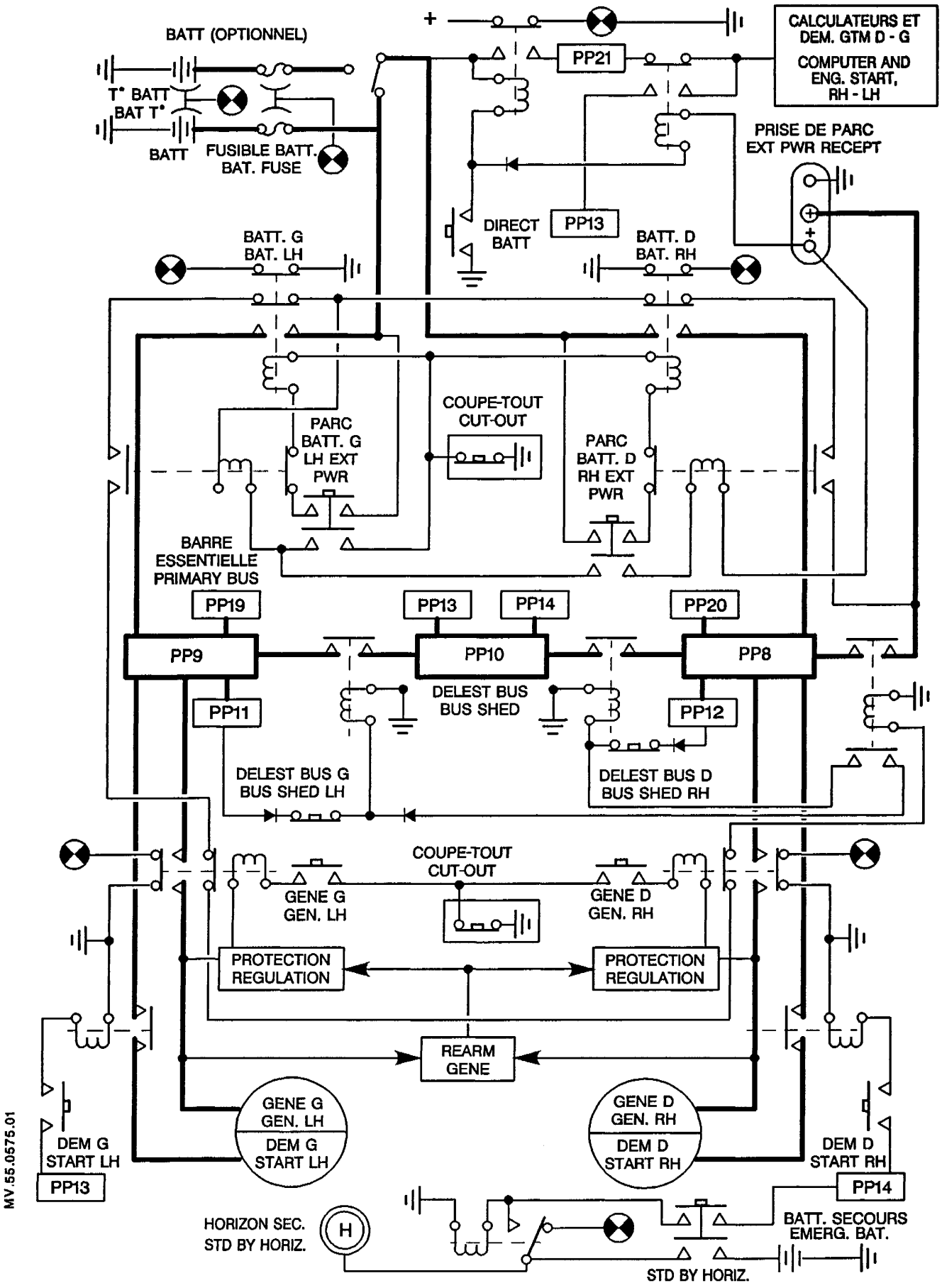
The ground power unit is coupled to the aircraft D.C. system through a contactor when :

- electrical power is available to the ground power receptacle
- dual EMERGENCY CUT-OUT (COUPE-TOUT) pushbutton is released.
- RH EXT. PWR/BATT and LH EXT. PWR/BATT (PARC BATT D and PARC BATT G) pushbuttons are engaged.
- BATT RH and BATT LH (BATT D and BATT G) warning lights are illuminated. The battery and generators are isolated from the aircraft system until the ground power unit is disconnected.
  All three primary bus bars PP8-PP9-PP10 are supplied.
- After Mod. 2076, the ground power receptacle circuit, once energized, supplies the engine computers when the DIRECT BATT. push-button is engaged. R R R

3 BATTERY CIRCUIT

The battery is coupled to primary buses PP8-PP9-PP10 through contactors when :

- ground power unit is not plugged in
- dual EMERGENCY CUT OUT (COUPE-TOUT) pushbutton is released
- the EXT.PWR/BATT pushbuttons are engaged.
  BAT. RH and BAT. LH (BATT.G and BATT. D) lights are off and the aircraft system is completely supplied providing the BUS SHED pushbutton(s) is(are) released.



D.C. POWER SYSTEM FUNCTIONAL DIAGRAM

The battery(ies) can be uncoupled from the primary shed bus bars :

- either manually through the EMERGENCY CUT OUT (COUPE-TOUT) and EXT PWR BATT (PARC BATT) pushbuttons,

- or automatically through connection of the ground power unit.

Each battery is protected by :

- a fuse connected to the BATT. FUSE (FUS. BATT) light indicating that the current in the internal circuit of the battery is too high

- a BATT. T°. (T° BATT) light warning the pilot of an abnormal rise in the battery temperature.

4 GENERATOR CIRCUIT

The generators are coupled to the primary buses through two contactors when :

- ground power unit is not connected

- EMERGENCY CUT OUT (COUPE-TOUT) CRANK RH ENG and CRANK LH ENG (VENTIL. MOT.D. and G.) START RH and LH (DEM. D. and G.) pushbuttons are released

- GEN. RH and GEN. LH (GENE D. and G.) are engaged

- voltage of each generator exceeds battery voltage by 0.5 volts.

The generators can be uncoupled from the network :

- either manually when engaging the following pushbuttons :
  . EMERGENCY CUT OUT (COUPE-TOUT)
  . START RH and/or START LH (DEM. D. and G.)
  . CRANK RH ENG. and/or CRANK LH ENG. (VENTIL. MOT. D. and G.)

- or automatically when :
  . generator voltage exceeds 32 volts
  . current reverses from the battery to the generator.

  The GEN REARM RH-LH (REARM GEN G-D) pushbutton allows resetting to be attempted.

  Should the generators be uncoupled from the network, the GEN.RH (GENE D) and/or GEN.LH (GENE G) lights illumante on the Warning-Caution Advisory panel.

5 SHEDDING CONTACTORS

These two contactors (normally cut in) energized through the "BUS SHED" (DELEST.BUS) pushbuttons allow shed bus PP10 to be isolated from the aircraft network.

6 DIRECT BATTERY SYSTEM

The direct battery system makes it possible, in the event of an electrical power failure, to supply the vital power-consuming equipment (busbar PP 21) from the battery.

Power supply from the battery to busbar PP 21 is achieved via the DIRECT BATT pushbutton and indicated by illumination of the pushbutton light.

7 ELECTRICAL POWER SYSTEM CONTROL AND MONITORING

7.1 Controls

7.1.1 Pushbuttons on the instrument panel :

- EMERGENCY CUT OUT (COUPE TOUT)	)
- BUS SHED LH (DELEST BUS G)	) On panel 9 ALPHA
- BUS SHED RH (DELEST BUS D)	)

7.1.2 Pushbuttons on the front panel :

- RH EXT. PWR BATT (PARC BATT D)	) On panel
- GEN. RH (GENE.D.)	) 14 ALPHA
- GEN. LH (GENE.G.)	) On panel
- LH EXT. PWR BATT (PARC BATT G)	) 15 ALPHA
- DIRECT BATT	) On panel 14 ALPHA

7.2 Monitoring lights

The Warning-Caution panel incorporates the lights related to operation and safety.

- BATT. T° (T° BATT.)	) Red light
- BAT. LH (BATT.G.)	)
- BAT. RH (BATT.D.)	)
- GEN. LH (GENE.G.)	) Amber lights
- GEN. RH (GENE.D.)	)
- BATT. FUSE (FUS BATT)	)

7.3 Monitoring indicators

Monitoring is achieved by :

- an ammeter
- a voltmeter

A selector switch is used to select :

- the current from RH or LH generator
- the voltage on RH or LH primary bus or shed bus.

8 STANDBY ARTIFICIAL HORIZON CIRCUIT (If installed)

In the event of an electrical power failure the standby artificial horizon can be supplied from a standby battery. In this case, the STDBY HORIZ (HORIZ. SEC.) or STDBY BATT (BATT. SEC.) pushbutton illuminates.

7.8 - II - A.C. POWER SYSTEM

1 GENERAL

The a.c. power system is an optional installation required when the aircraft is fitted with the automatic pilot and certain gyroscopic instruments. The alternating current is provided by one or two inverters from the d.c. system. The static inverters mounted underneath the cabin floor are identical and featured as follows :

- Input voltage	28 V.d.c.
- Output voltages	115 V and 26 V
- Frequency	400 Hz
- Power per output voltage	150 VA under 26 V, 250 VA under 115 V, maximum 250 VA under (115 V + 26 V)

Each static inverter is provided with an under-voltage detector indicating the loss of one or both a.c. power system(s).

2 DESCRIPTION - OPERATION

2.1 Single a.c. system

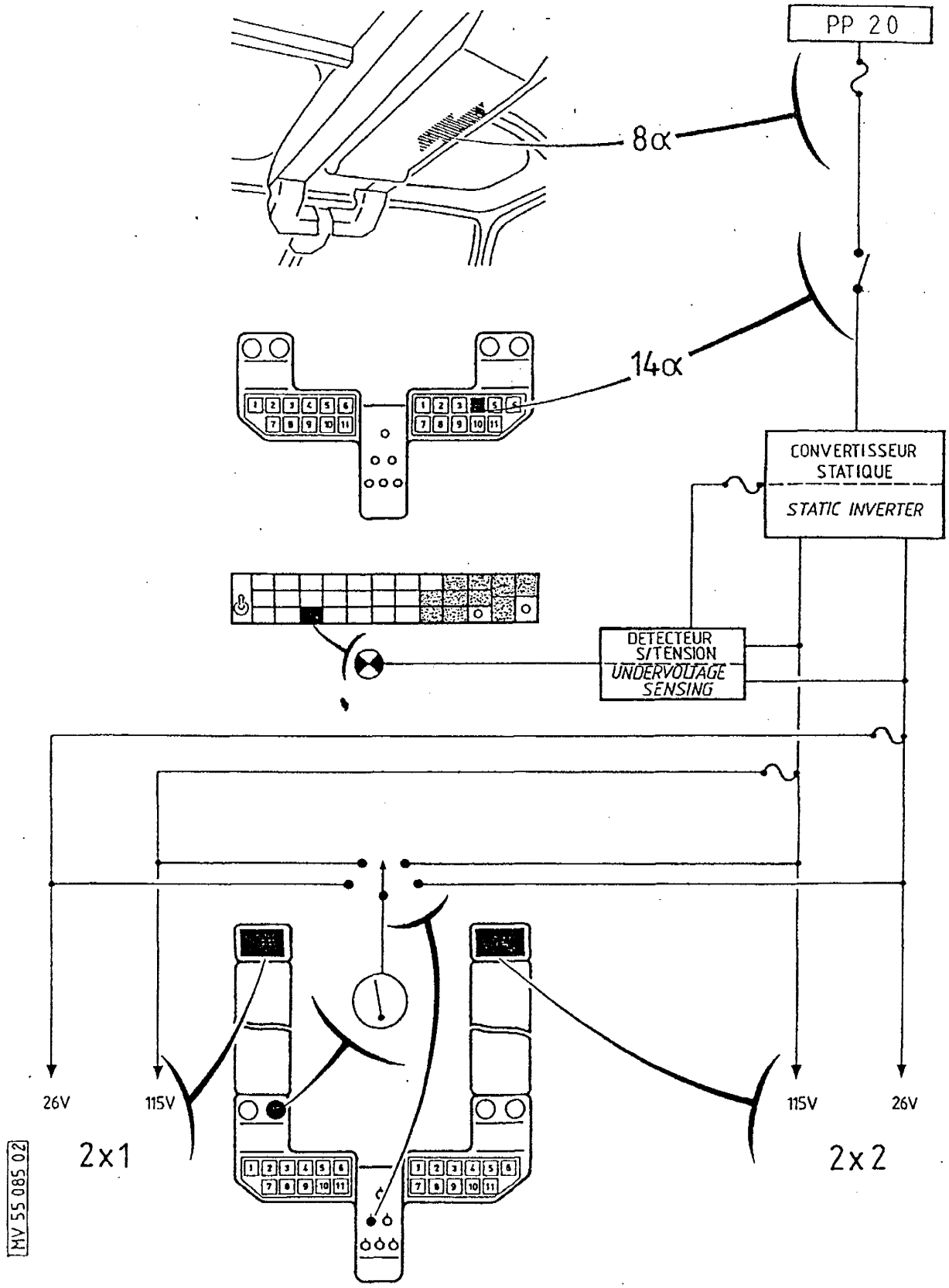
The static inverter is supplied from bus PP20 through a 16-Amp fuse on panel 8 ALPHA and operated by the "RH INV" (CONV.D.) pushbutton on overhead panel 14 ALPHA.
Bus PP20 supplies the under-voltage detector through a 2.5-Amp. fuse on the inverter.

Should one or both a.c. voltages drop or be lost, the detector causes the RH INV (CONV.D.) light to illuminate.

A voltmeter associated with a selector is used to check the various voltages.

Further to trip out, the inverter can be reset by releasing then re-engaging the "RH INV" (CONV.D.) pushbutton.

An amber caution light on the instrument panel indicates a failure of the A.C. power system. R R



Single a.c. system

2.2 Twin a.c. system

The twin a.c. system is made up of two associated single a.c. systems. Each of them is independent but should one fail, the other supplies all the consumers owing to supply relays.

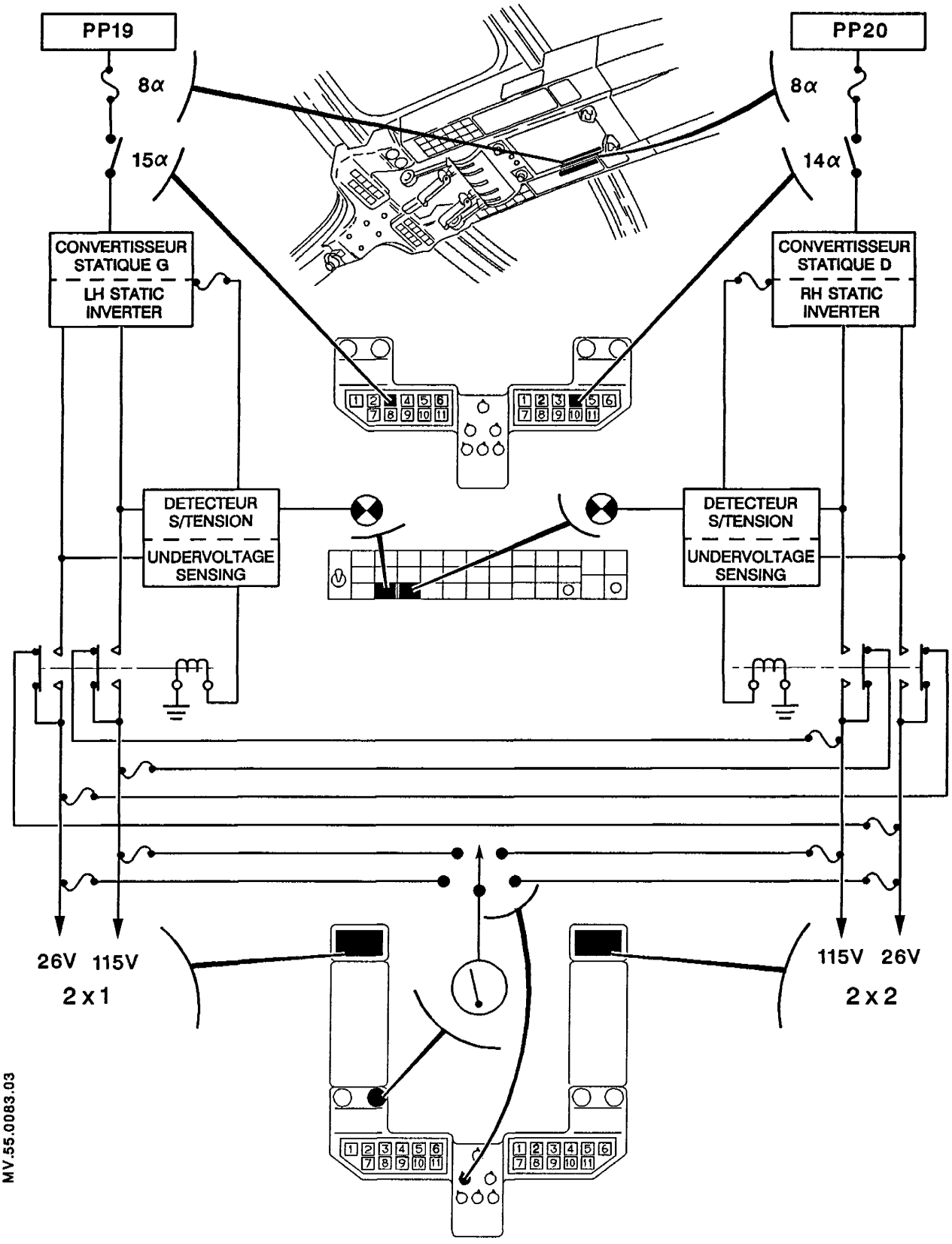
Each inverter is powered from bus PP19 or PP20 through the "RH INV." or "LH INV." (CONV.D/CONV.G) 16-Amp. fuse provided on panel 8 ALPHA and the "RH INV." or "LH INV." (CONV.D/CONV.G) pushbutton.

The buses also supply the under-voltage detectors and transfer relays through the fuses on the inverters.

Should either a.c. voltage drop or be lost, the associated under-voltage detector causes the light to illuminate on the Warning-Caution panel. The consumers of the faulty system are automatically supplied.

The warning light remains on. A voltmeter associated with a selector is used to check the various voltages.

Further to trip out, the inverter can be reset by releasing then re-engaging the "RH INV" or "LH INV" (CONV.D/CONV.G) pushbutton.



Twin a.c. system

7.8 - III - ELECTRICAL POWER DISTRIBUTION

1 CONSUMERS SUPPLIED WITH D.C. POWER

1.1 Panel 16 ALPHA

Direct power supply from the battery to the following power consumers through bus bar PP21 :

- Pilot map light
- Copilot map light
- MGB fire detection
- IFF - Alticoder
- Aft fuel jettison system
- Fire extinguisher 1
- Flares
- Direct battery indicator light
- Fire extinguisher 2
- Supply to the computers of governors 1 and 2
- Emergency supply to metering units
- Supply to spark igniters

1.2 Panel 10 ALPHA

Dual power supply (from LH primary bus and RH primary bus) to the following consumers through bus bars PP 11 and PP12 :

- VHF 2
- Radio altimeter
- Auto pilot
- * DME
- * VOR 2 - ILS - MKR
- Normal ICS
- * ADF 1
- Pilot gyro compass
- Pilot gyro horizon
- LH engine torquemeter
- RH engine torquemeter
- Max. T/O Power warning
- t4 temp.
- LH engine oil indicator
- RH engine oil indicator
- Trim
- Pilot windcreen wiper
- Fwd fuel gauge indicator
- Aft fuel gauge indicator
- Landing light control
- Pilot pitot
- Fuel transfer
- AP coupler
- * Emergency release
- Hydraulics
- Warning-Caution-Advisory panel
- AP - coupler annunciator panel
- LH engine fire detection
- RH engine fire detection
- NR warning
- * RMI
- Pilot windscreen wiper control
- Position lights
- Direct battery shed light
- Copilot gyro horizon

Single power supply to the following consumers through bus bar PP11 :

- LH engine fire extinguisher
- LH bus shed

Single power supply to the following consumers through bus bar PP12 :

- RH engine fire extinguisher
- RH bus shed

* Optional installations

1.3 Panel 8 ALPHA

Dual power supply (from LH primary bus and RH primary bus) to the following consumers through bus bars PP 19 and PP 20 :

- Auxiliary Pitot
- VHF 1
- Landing light
- * Radar

Single power supply to the following consumer through bus bar PP 19 :

- LH inverter

Single power supply to the following consumer through bus bar PP 20 :

- RH inverter

1.4 Panel 7 ALPHA 1

Single power supply to the following consumers through bus bar PP 13 :

- LH engine Ng
- LH overspeed
- Emergency fuel metering unit 1
- LH engine governor
- Accumulators
- * Copilot's gyrocompass
- * Copilot's NR
- * VOR 1
- Mission selector
- * LH/RH landing lights transfer
- * Flares
- * Fuel flowmeter
- LH Nf
- * Copilot's auto-pilot indicators
- * Hour counter
- * Copilot's windshield wiper control
- * Strobe lights
- LH engine starter
- Passengers'lighting
- t4 temp.
- LH engine fuel pressure
- LH engine pump
- * Copilot's windshield wiper
- * MGB oil pressure and temperature
- * Swivelling light
- Copilot's instrument panel lighting
- Ancillaries connector
- * Locator searchlight
- Taxi light

* Optional

1.5 Panel 7 ALPHA 2

Single power supply to the following consumers through bus bar PP 14 :

- RH engine Ng
- RH overspeed
- MAX. POWER (PIU-PMU) control
- * Sling load
- * Fwd. fuel jettison syst.
- Engine trim
- Anti-collision lights
- Pilot's emergency ICS
- Pilot's NR
- RH engine Nf
- Check list
- * Particle separators
- RH engine fuel pressure
- RH engine cranking
- RH. aux. starting
- Copilot's emergency ICS
- * ADF 2
- RH engine starting
- Emergency horizon
- RH engine pump
- * Sling
- * Storm lighting
- Console lighting
- * HF SSB

* Optional

2 CONSUMERS SUPPLIED WITH A.C. POWER

Panel 2X1

Through bus bar 1XP 10A

- * 115-V transfer protection
- * 115-V voltmeter

Panel 2X1

Through bus bar 1XP 11A

- * 26-V transfer protection
- * 26-V voltmeter

Panel 2X2

Through bus bar 2XP 10A

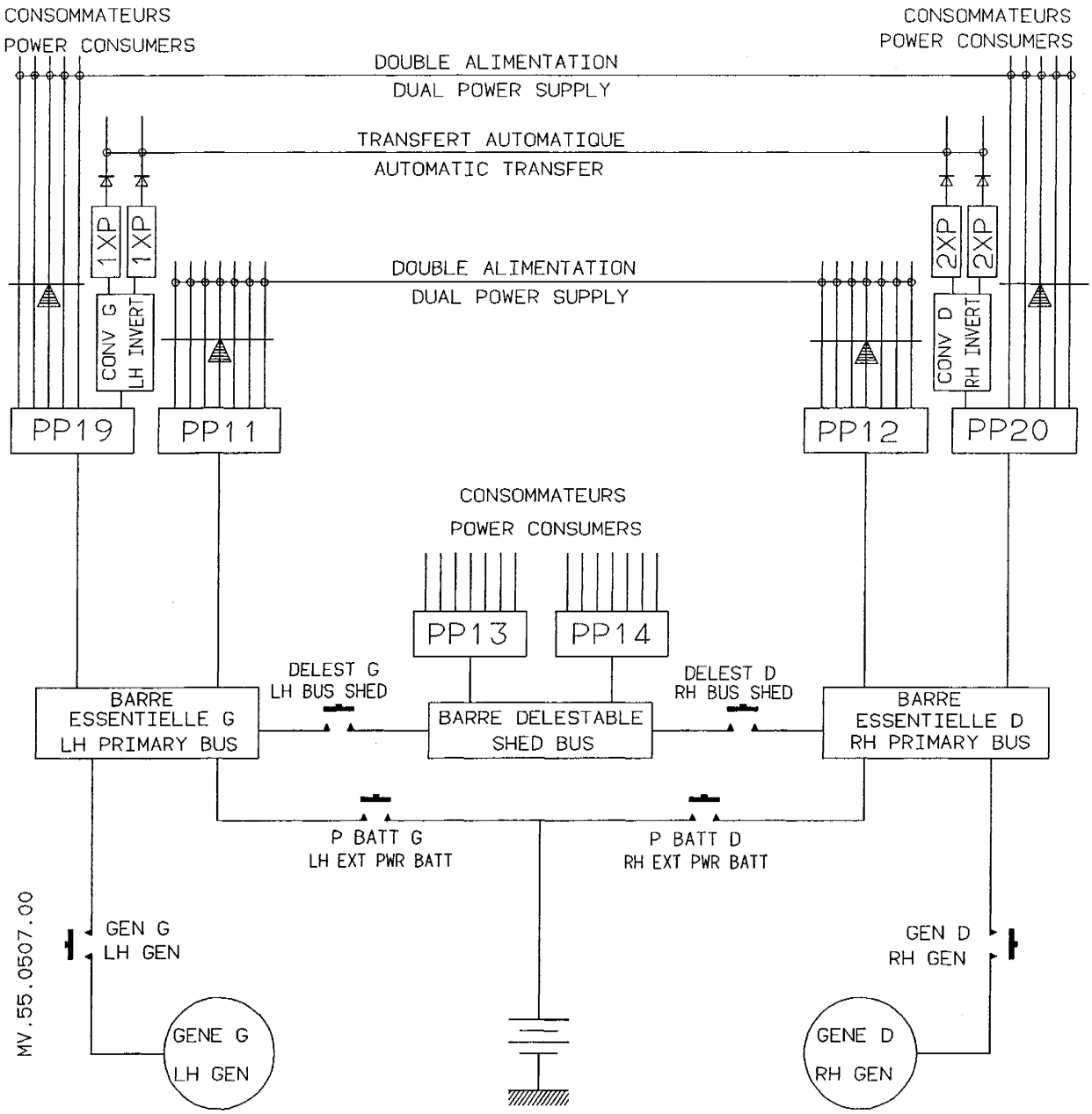
- * Radar
- * Vertical gyro
- * 115-V transfer protection
- * 115-V voltmeter

Panel 2X2

Through bus bar 2XP 11A

- * Pilot gyro horizon
- * AP coupler
- * AP
- * AP failure monotoring unit
- * 26-V transfer protection
- * Copilot gyro horizon
- * Copilot gyro compass
- * Pilot gyro compass
- * RMI
- * 26-V voltmeter

* Optional



Electric power distribution block diagram

7.9 - AIR DATA SYSTEMS

1 PILOT'S PITOT-STATIC SYSTEM (Figure 1)

It consists of :

- A total pressure circuit
- A static pressure circuit
- Three flying instruments
  . an airspeed indicator
  . a rate-of-climb indicator
  . an altimeter.

The static pressure port is provided underneath the cabin, slightly off the aircraft centreline. The static pressure circuit supplies the three instruments.

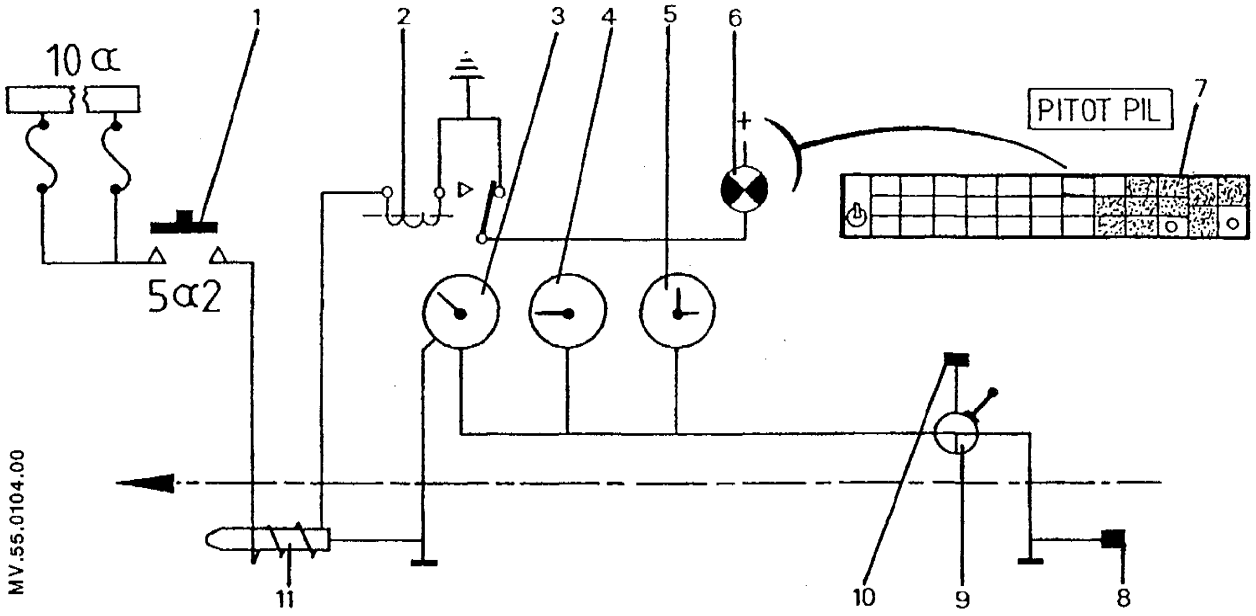
In the event of supply failure, an emergency valve provided on the console allows static pressure from the cabin to be used.

The total pressure pick-off is mounted on the nose slightly to the left of the aircraft centreline. It includes a heating resistor operated by the "PITOT" pushbutton on panel 5 ALPHA 2. A "PITOT PIL." light illuminates on the Warning-Caution-Advisory panel :

- when the pushbutton is released
- in the event of failure of the heating resistor
- in the event of power supply failure.

The total pressure circuit supplies the airspeed indicator.

A drain provided on each pressure circuit allows condensation water to be drained off.



Item	Description	Item	Description
1	"PITOT" pushbutton	7	Failure warning panel
2	Winding	8	Static pressure port
3	Airspeed indicator	9	Stand-by static pressure valve
4	Rate-of-climb indicator	10	Stand-by static pressure port
5	Altimeter	11	Heated total pressure pick-off
6	"PITOT" light		

Figure 1

2 COPILOT'S PITOT-STATIC CIRCUIT

This optional circuit is identical with the pilot's circuit. It separately supplies the copilot's instruments but is not provided with a "stand-by static" selector.

The pitot heating supply is protected by a fuse mounted on panel 8 ALPHA and controlled from the pilot's circuit "PITOT" pushbutton. The "PITOT AUX." light allows the installation to be monitored.

3 AUTO-PILOT AIR DATA CIRCUIT

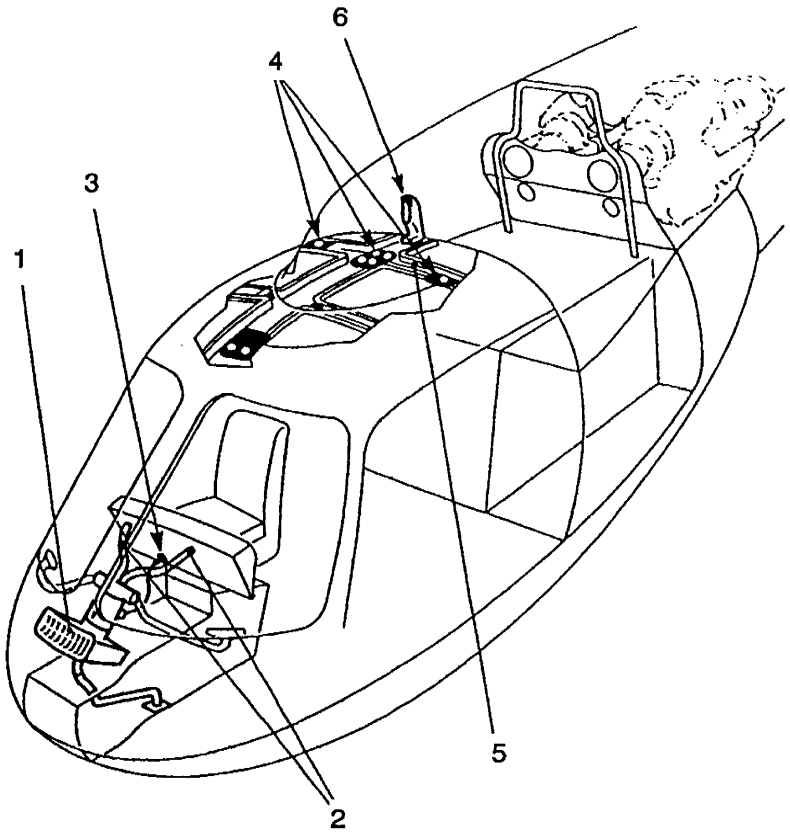
When the aircraft is fitted with the auto-pilot, an air data unit supplied with static and total pressure complements the copilot's system.

7.10 - AIR CONDITIONING

1 CABIN VENTILATION (Figure 1)

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.



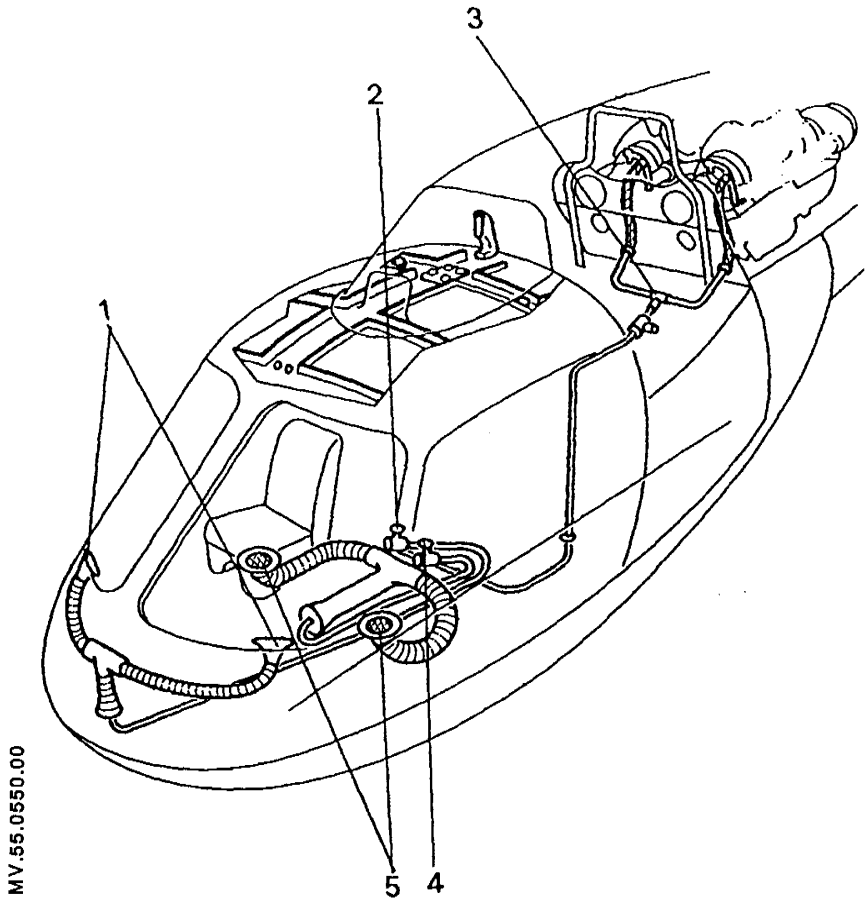
Item	Description	Item	Description
1	FRONT aerator	4	Overhead air outlets
2	FRONT air outlets	5	Ventilation duct
3	Control pull-knob	6	Ram air scoop

Figure 1

2 HEATING AND DEMISTING SYSTEM (Figure 2)

This system provides cabin heating and windscreen demisting by mixing of hot P2 air taken from the engines with air taken from under the floor.

The air mixture is circulated through two separate circuits to the heating diffusers provided under the front seats and to the demisting air diffusers. Two manually operated valves mounted on the P2 lines are used to control air distribution.



Item	Description	Item	Description
1	Demisting air diffusers	4	Heating control valve
2	Demisting control valve	5	Heating diffusers
3	P2 air ducts		

Figure 2

7.11 - LIGHTING

1 CABIN LIGHTING

The cabin lighting consists of two dome lights provided on the overhead panel, one at the front available to the crew and the other at the rear for the passengers.

Each dome light comprises two rotatable diffuser units. Lamp lighting is controlled by rotating the diffuser.

Each front diffuser unit includes a dimmer mounted on the overhead panel.

The cockpit dome light is directly supplied from the battery through two circuits and protected by two fuses provided on panel 16 ALPHA. The cabin dome light is supplied through one single circuit and protected by a fuse mounted on panel 7 ALPHA 1.

After embodiment of Mod. 1827, the cabin dome light is supplied from the Direct Battery bus bar and lighting is controlled through the switch located on the overhead panel (emergency lighting).

2 INSTRUMENT PANEL AND CONSOLE LIGHTING (Figure 1)

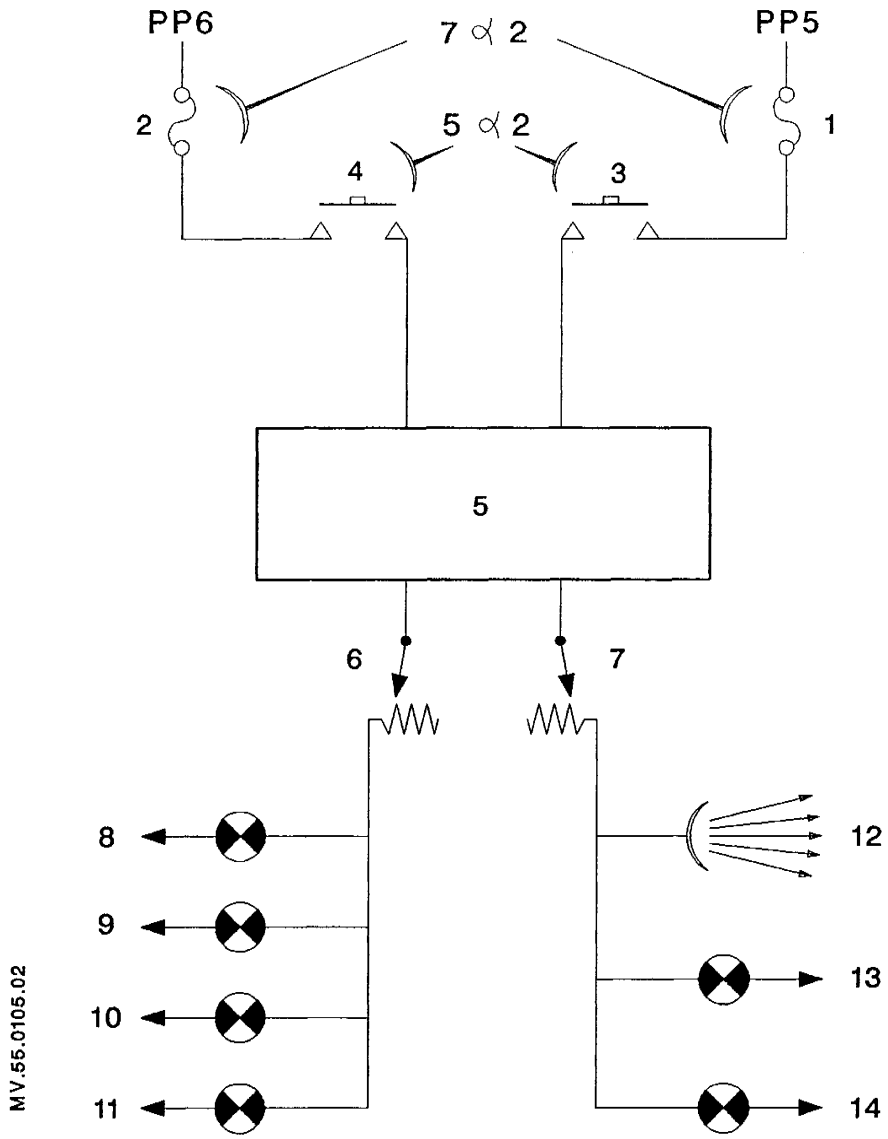
The instruments are lighted by two separate circuits :

- Lighting circuit 1 provides lighting to :
  - . The instrument panel indicators from a light generator
  - . The stand-by compass
  - . The thermometer
- Lighting circuit 2 provides lighting to :
  - . The instrument panel pushbuttons
  - . The overhead panel pushbuttons
  - . The overhead panel potentiometers
  - . The console control panels
  - . The overhead panel fuses.

The instruments are lighted from a light generator made up of a halogen lamp and a loom of optical fibers each component of which is conducted to a light diffuser arranged close to the instrument to be lighted.

The CONSOLE LT (ECL PUPIT) and INST. PANEL LT.(ECL PDB PIL) pushbuttons control the lighting system. The CONSOLE (PUPITRE) and PIL. INST. PANEL (PDB PILOTE) potentiometers respectively control the brightness of the consumers.

Should one circuit fail, the light dimming unit automatically provides supply through the remaining circuit. The lighting intensity of the faulty circuit drops and its potentiometer is inoperative.



Item	Description	Item	Description
1	INST LTS 1 (ECL.1) fuse	7	PIL.INST. PANEL (PDB PILOTE) potentiometer
2	INST LTS 2 (ECL.2) fuse	8	Console lighting
3	CONSOLE LT (ECL.PUPIT) pushbutton	9	Instrument panel pushbuttons lighting
4	INST. PANEL LT (ECL. PDB PIL) pushbutton	10	Overhead potentiometers lighting
5	Light dimming unit	11	Overhead fuses lighting
6	CONSOLE (PUPITRE) potentiometer	12	Light generator
		13	Thermometer lighting
		14	Stand-by compass lighting

Instrument panel and console lighting circuits

Figure 1

3 POSITION LIGHTS

The aircraft is fitted with three position lights :

- one red light on port end of the horizontal stabilizer
- one green light on starboard end of the horizontal stabilizer
- one white light at rear end of the fuselage.

The circuit is protected by two POS. LT.(FEU DE POSITION) fuses provided on overhead panel 10 ALPHA. The installation is controlled by the POS. LT. (FEU DE POSITION) pushbutton mounted on overhead panel 14 ALPHA. The side position lights installation can be completed by two optional strobe lights ; the strobe lights are controlled by the STROBE LIGHT (FEU STROBOS) push-button.

4 ANTI-COLLISION LIGHT

The red anti-collision strobe light fitted at the top of the vertical fin indicates the aircraft's presence at a great distance.

The circuit is protected by the ANTI COLL LT (FEU ANTI-COLL) fuse provided on overhead panel 7 ALPHA 2. The anti-collision light is controlled by the ANTI COLL. LT (FEU ANTI-COLL) pushbutton provided on overhead panel 14 ALPHA.

5 LANDING LIGHT

The landing light mounted on forward RH side of the aircraft and having a power of 450 W makes approach and landing by night easier.

It is controlled by an ON/OFF switch provided on the collective pitch lever.

6 TAXI LIGHT

This light improves the safety of the helicopter when flying near the ground.

The 150 W taxi light mounted on forward LH side of the aircraft is controlled by a TAXI LT. (PHARE PARK.) pushbutton provided on overhead panel 5 ALPHA 2 and is protected by the TAXI LT. (PHARE PARK.) fuse.

7 STORM LIGHTING

This optional installation is used to illuminate the instrument panel and thus reduce the light contrast caused by the flashes of lightning. Lighting is obtained by means of a 20-Watt halogen flood light fitted on the cabin ceiling. The flood light is controlled by a push-button located on overhead panel 5 ALPHA 2. The installation is protected by a fuse. R

SECTION 8

SERVICING

R

CONTENTS

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 (Figure 1)

. 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.

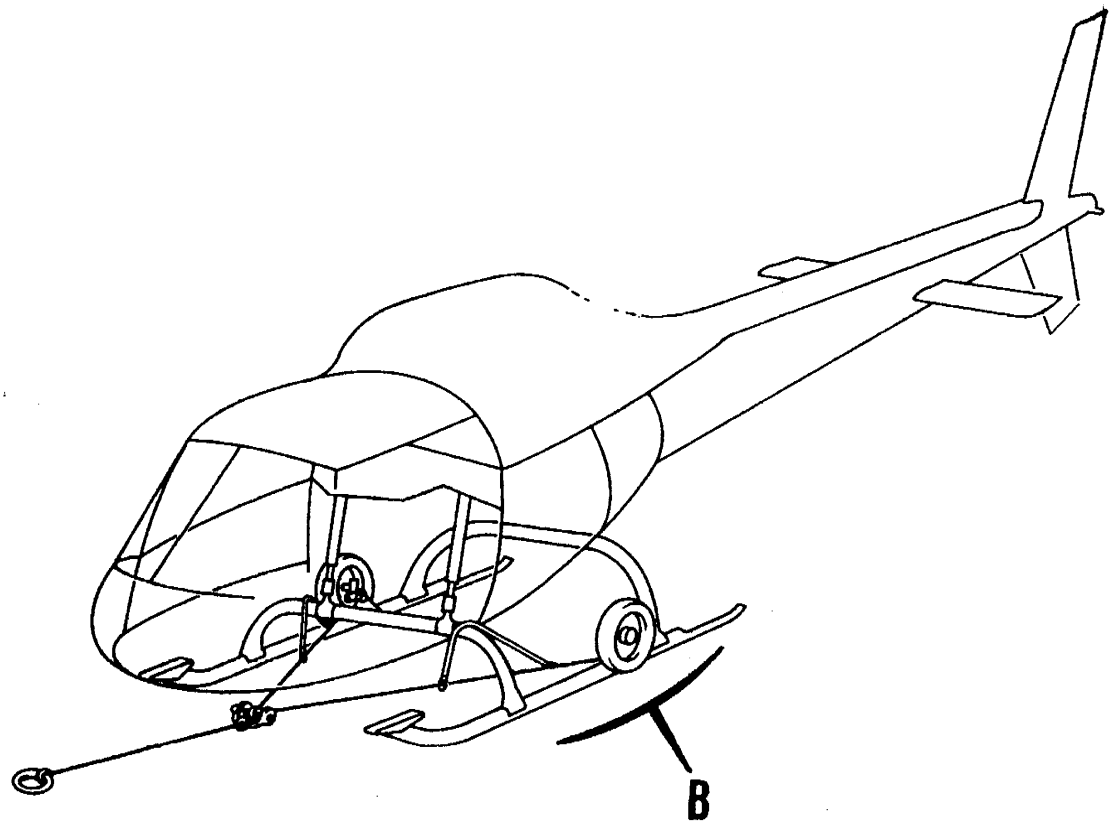
On rough ground

Use twin ground handling wheels.
Install as described above.

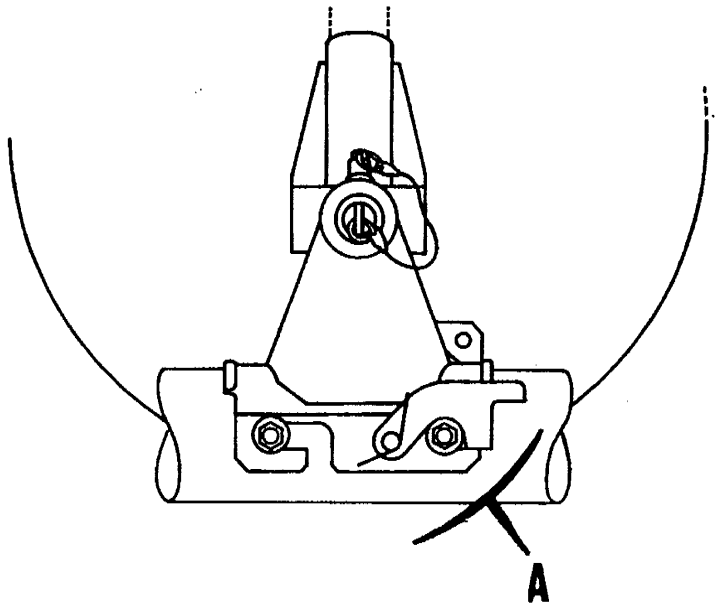
- Towing the helicopter with a tractor

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.



MV.50.0181.00



MV.50.0182.00

8.2 SERVICING INSTRUCTIONS

1 FUELS

1.1 Normal fuels

Unrestricted use

TYPE OF FUEL	NATO CODE	SPECIFICATIONS			ANTI-ICING ADDITIVE
		U.S.	U.K.	FRANCE	
KEROSENE-50 (AVTUR-FS II) JP 8	F 34	MIL-T-83 133 JP 8	D.ENG.RD. 2453	AIR 3405 F-34	INCORPORATED
KEROSENE-50 (AVTUR) JET A1	F 35	ASTM-D-1655 JET A1	D.ENG.RD. 2494	AIR 3405 F-35	NOT INCORPORATED
KEROSENE	———	ASTM-D-1655 (JET A)	———	———	NOT INCORPORATED

R

Restricted use

HIGH FLASH POINT JP5 KEROSENE (AVCAT)	F 43	———	D.ENG.RD 2498	AIR 3404 F 43	NOT INCORPORATED
HIGH FLASH POINT JP5 KEROSENE (AVCAT FS II)	F 44	MILT-T-5624 JP 5	D.ENG.RD 2452	AIR 3404 F 44	INCORPORATED

1.2 Alternative fuel

		P E N D I N G			

NOTE : To be used at the current amendment and dash number.

2 FUEL ADDITIVES

2.1 Use of anti-icing additive in the fuel

When the outside air temperature is expected to be lower than -20°C in operation, the fuel shall contain anti-icing additive.

It is recommended to use a type of fuel already containing such an additive ; if not, the anti-icing additive shall be incorporated.

The additive shall meet the requirements of the following standards :

- AIR 3652
- MIL-I-27686
- D Eng RD 2451
- NATO S 748

or be equivalent to other products already complying with these standards, such as :

- ESSO METHOXYETHANOL
- PHILLIPS PFA 55 MB ("PRIST" product under commercial designation PZB 103)

The concentration of additive in the fuel shall be between 0.10 and 0.15 % by volume. R

The mixture obtained after incorporation of the additive shall be homogeneous. It may be carried out by means of an approved equipment, generally supplied by the vendor of the additive and used in compliance with the vendor's instructions.

If there is any doubt as to the anti-icing additive content or if it is not known the fuel shall be drained from the tank and replaced by fuel already containing additive, unless it is possible to determine the concentration with accuracy, by means of a special measuring equipment.

3 LUBRICANTS

3.1 Engine Oil System

3.1.1 Lubricants and Commercial Descriptions

- Authorized lubricants : Refer to LIMITATIONS section.
- Commercial descriptions : Refer to the TURBOMECA publications.

3.1.2 Capacity

Quantity of oil for each system at the tank MAXIMUM mark :

9 l (2.37 US gal or 1.98 Imp gal).

3.2 Dynamic Systems

3.2.1 Lubricants

The authorized lubricants are given in the LIMITATIONS section.

3.2.2 Capacity

Quantity of oil at the system maximum mark :

MGB : 6.5 l (1.7 US gal or 1.4 Imp gal)
TGB : 0.33 l (0.08 US gal or 0.07 Imp gal)

3.3 Specifications

TYPE OF OIL	NATO CODE	SPECIFICATIONS		
		FRANCE	U.S.	U.K.
Synthetic 5 CST	0 156	-	MIL-L 23699	-
Synthetic 5 CST	0 160	-	-	D-ENG RD 2497
Synthetic 3 CST	0 148	-	MIL-L 7808	-
	0 150	AIR 3514		
Synthetic 3,9 CST	-	-	-	-
Mineral	0 155	AIR 3525	MIL-L 6086	DTD 581

4 HYDRAULIC FLUIDS R

4.1 Hydraulic fluids R

The authorized hydraulic fluids are given in the LIMITATIONS section. R

4.2 Capacity R

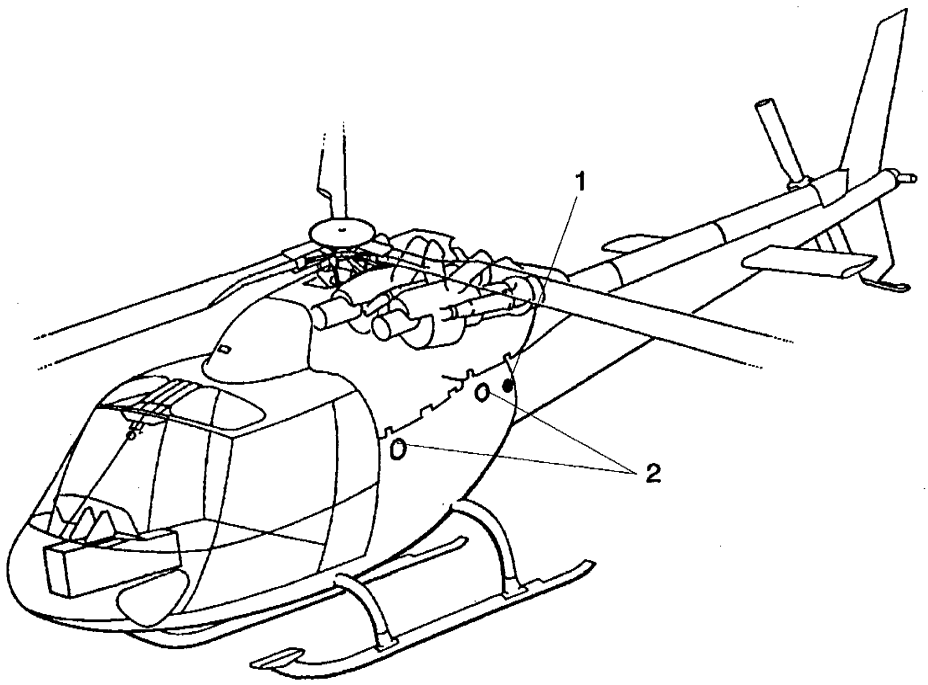
Quantity of fluid for each system at the reservoir MAXIMUM mark : R

3 litres (0.79 US gal or 0.66 Imp. gal) R

4.3 Specifications of fluids R

TYPE OF FLUID	NATO CODE	SPECIFICATIONS (To be used at the current amendment and dash number)		
		U.S.	U.K.	FRANCE
Hydraulic fluid	H 515	MIL-H-5606	DTD 585	AIR 3520
	———	MIL-H-83282	———	———

5 REFUELING (Figure 1)



MV.55.0016.01

Figure 1

- 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 gauges, 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 refuelling (or de-fuelling), that the bowser (or the de-fuelling 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 plugs (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.

Refuelling with rotors turning

WARNING : REFUELLING 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 $\pm$ 45° if wind above 10 kt.
- Check main rotor is at nominal speed with fuel flow control levers in flight detents.
- Lock the collective pitch lever in full low pitch position.
- Limit refuelling to 40 % for the forward tank and 50 % for the rear tank in order to prevent any fuel spillage.
- The pilot must have someone well in sight to signal the mechanic to stop refuelling.
- After refuelling give filler plug keys to the pilot.

R

R
R
R
R

R

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. R R R

The test sheets are in the form of reproducible sheets which can directly be filled in by the crew. R

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 RESPONSABILITY.

LIST OF TEST SHEETS

N° 0 FLIGHT REPORT

N° 1 CHECKS AFTER ENGINE OR MODULE REPLACEMENT

N° 2 CHECKS AFTER MRH FREQUENCY ADAPTER OR MAIN ROTOR BLADE REPLACEMENT

N° 3 CHECKS AFTER MGB REPLACEMENT

N° 4 CHECKS AFTER TRH OR TAIL ROTOR BLADE REPLACEMENT

N° 4 A CHECKS AFTER TAIL ROTOR DRIVE SHAFT REPLACEMENT

N° 5 CHECKS AFTER OPERATIONS ON FLYING CONTROLS

N° 6 CHECKS AFTER GENERATOR, ELECTRICAL MASTER BOX OR STATIC INVERTER REPLACEMENT

N° 7 SYSTEM CHECKS

OPERATIONS ON ENGINE OR MODULE

- TESTS TO BE CONDUCTED ACCORDING TO THE COMPONENT REPLACED.

TEST	Engine Removal/ Installation	Engine Repla-cement	HP pump metering unit replacement	Digital computer replacement	Module Replacement	
					No. 1	No. 2
Starting Ground Run	●	●	●	●	●	●
Hover Flight		●				
Acceleration		●				●
Engine condition (Power check) (Thermal check)		●			●	●
Max. Ng		●				
Engine coast-down		●			●	●

SHEET No. 0	HELICOPTER AS 355N	FLIGHT REPORT

DATE : CREW : AREA :	Start : Duration : Number of landings :	WEATHER QFE : QMU : QAN : - Direction : - Force :

EQUIPPED EMPTY WEIGHT ------ :
Crew ------ :
Ballast ------ :
WEIGHT WITHOUT FUEL ------ :
Fuel ------ :
GROSS WEIGHT ------ :

CG LOCATION :

MAJOR WORK CARRIED OUT BEFORE FLIGHT	REMARKS MADE BY CREW AFTER FLIGHT

UNITS USED
(cross out as applicable)

WEIGHT	FUEL	ALTITUDE	AIRSPEED
kg - lb	kg - lb - l - %	m - ft	km/h - kt - MPH

SPECIAL INSTALLATIONS	WRITER'S VISA

SHEET No. 1	HELICOPTER AS 355N	CHECKS AFTER ENGINE OR MODULE REPLACEMENT Starting - Ground run

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
STARTING OF 1st ENGINE		
Comply with the Normal Procedures of the Flight Manual, SECTION 4.1.		
LH and RH batteries ON.	- Voltage equal to or greater than 24 V	U : ☐
DIRECT BATT. switch ON.		
Perform engine computer test sequence.	- Refer to the Flight Manual, SECTION 4.1.	Correct ☐ Incorrect ☐
Booster pump ON.	- Pressure equal to or greater than 0.4 bar	Pressure : ☐
Generator ON. Starting selector switch to FLIGHT position. Check :	. Battery voltage equal to or higher than 18 V	U : ☐
	. Governed t4 = 700° C approx. Max. t4 : 750° C 870° C (during less than 5 sec.).	t4 : ☐
	CAUTION : If T4 EXCEEDS THE LIMITS, SET THE STARTING SELECTOR SWITCH TO OFF.	
Check :	. The overspeed digit S goes out before Nf reaches 100 rpm (equivalent NR value).	Correct ☐ Incorrect ☐
	. Engine oil pressure rises.	Correct ☐ Incorrect ☐

SHEET No. 1	HELICOPTER AS 355N	CHECKS AFTER ENGINE OR MODULE REPLACEMENT Starting - Ground run

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
STARTING OF 2nd ENGINE		
Booster pump ON.	. Pressure equal to or higher than 0.4 bar	Pressure : ☐
Set starting selector switch to FLIGHT position.		
Check :	. Governed t4 = 700° C approx. Max. t4 : 750° C 870° C (during less than 5 sec.).	t4 : ☐
	CAUTION : IF T4 EXCEEDS THE LIMITS, SET THE STARTING SELECTOR SWITCH TO OFF.	
Check :	. The overspeed digit S goes out before Nf reaches 100 rpm (equivalent NR value).	☐ Correct ☐ Incorrect
	. Engine oil pressure rises.	☐ Correct ☐ Incorrect

NOTE : Starting procedure when engine oil temperature is lower than - 30° C (Flight Manual, SUP. 1) :
- Place the fuel flow control lever against the rear (overridable) stop.
- Apply the normal starting procedure.
- As soon as engine oil temperature rises above 0° C, advance the fuel flow control lever into the flight gate.
- Wait until the engine oil temperature is equal to or higher than + 10° C before increasing collective pitch.

SHEET No. 1	HELICOPTER AS 355N	CHECKS AFTER ENGINE OR MODULE REPLACEMENT Starting - Ground run

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
<u>CHECKING</u> After 1 minute's stabilization and after aligning the Ng's of the two engines by means of the trim, record parameters :		
Switch off the booster pump of each engine in turn.	t4 and Ng remain stable.	Correct ☐ Incorrect ☐
<u>Engine trim travel</u> Using the trim, increase the Ng of engine 1 to the maximum.	. Ng 1 increases . Ng 2 decreases	Ng 1 ☐ Ng 2 ☐
Perform the symmetrical manoeuvre on the other engine.	. Ng 2 increases . Ng 1 decreases The extreme values should be symmetrical within less than 3 %.	Ng 1 ☐ Ng 2 ☐

	Eng. 1	Eng. 2
Δ Ng		
Ng		
t4		
Fuel press.		
Oil press.		
Oil temp.		
Nf		
NR		

SHEET No. 1	HELICOPTER AS 355N	CHECKS AFTER ENGINE OF MODULE REPLACEMENT Hover flight - Acceleration

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
HOVER IGE (6 ft) All air bleeds shut off. Using the trim, align the engines at the 1st limitation. Record parameters :	Refer to Limitations in the Flight Manual, SECTION 2.1.	Hp [ ] OAT [ ]

	Eng. 1	Eng. 2
Δ Ng		
Ng		
t4		
Fuel press.		
Oil press.		
Oil temp.		
Nf		
NR		

Fuel contents	LH	RH

ACCELERATION

Aircraft on the ground.
Increase pitch from full low pitch, to hover IGE flight pitch within 2 to 3 sec.

- No engine surge
- The engines accelerate simultaneously
- Min. NR equal to or more than 360 rpm.

Correct [ ] Incorrect [ ]

SHEET No. 1	HELICOPTER AS 355N	CHECKS AFTER ENGINE OR MODULE REPLACEMENT Level flight - Engine condition - Training power stops

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
LEVEL FLIGHT AT MAX. CONTINUOUS POWER All air bleeds shut off. Low altitude (lower than 3000 ft). Using the trim, align the engines at the 1st limitation.		
Record parameters :	Refer to Limitations in the Flight Manual, SECTION 2.1.	Hp [ ] OAT [ ]
		Eng. 1 / Eng. 2 ΔNg Ng t4 ♪ Fuel press. Oil press. Oil temp. Nf
	NR : 393 rpm ± 1	NR
ENGINE CONDITION To be performed according to the procedures of the Flight Manual, SECTION 4.2.		IAS [ ]
Record parameters :	. Refer to Figures in the Flight Manual, SECTION 4.2.	Hp [ ] OAT [ ]
		Eng. 1 / Eng. 2 ΔNg Ng t4 ♪ NR

SHEET No. 1	HELICOPTER AS 355N	CHECKS AFTER ENGINE OR MODULE REPLACEMENT Checks in altitude

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
CHECKS IN ALTITUDE Recommended according to the type of operation. LEVEL FLIGHT AT MAX. CONTINUOUS POWER Altitude higher than 10000 ft. IAS = 65 kt approx. All air bleeds shut off. Using the trim, align the engines at the 1st limitation. Record parameters :	Refer to Limitations in the Flight Manual, SECTION 2.1.	Hp [ ] OAT [ ]
Increase pitch from re-synchronization (NR = 395 rpm approx.) to Max. Continuous Power in 2 to 3 sec.	. No engine surge . Min. NR equal to or greater than 360 rpm	Correct [ ] Incorrect [ ]

	Eng. 1	Eng. 2
Δ Ng		
Ng		
t4		
		
Fuel press.		
Oil press.		
Oil temp.		
Nf		
NR		

SHEET No. 1	HELICOPTER AS 355N	CHECKS AFTER ENGINE OR MODULE REPLACEMENT Level flight - Engine condition - Training power stops

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
<u>CHECK OF MAX. CONTINGENCY POWER AND OF INTERMEDIATE CONTINGENCY POWER IN TRAINING MODE</u> Altitude = 5000 ft approx. IAS = 55 kt approx. All air bleeds shut off. Set the selector switch of the other engine to the TRNG position.	Nf comes close to 355 rpm (equivalent NR value).	
Progressively increase the collective pitch to bring NR close to 370 rpm	ΔNg + 2.7 % t4 equal to or less than 800° C.	
Decrease collective pitch.		
Engage Intermediate Conting. Power (on collective lever).	The Intermediate Conting. Power warning light (in Ng indicator) comes on.	Correct ☐ Incorrect ☐
Progressively increase the collective pitch to bring NR close to 370 rpm	ΔNg + 1,1 %. t4 equal to or less than 765° C.	
Record parameters :		Hp ☐ OAT ☐

Eng. 1	Max. Conting. Power	Interm. Conting. Power
ΔNg		
Ng		
Hourly consump.		
t4		

Eng. 2	Max. Conting. Power	Interm. Conting. Power
ΔNg		
Ng		
Hourly consump.		
t4		

SHEET No. 2	HELICOPTER AS 355N	CHECKS AFTER MRH, FREQUENCY ADAPTER OR MAIN ROTOR BLADE REPLACEMENT Ground run Blade track - Unbalance

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
Aircraft on the ground Full low pitch		
BLADE TRACK		
Record blade track.	Deviation less than 6 mm.	
UNBALANCE NOTE : The unbalance is to be checked only after obtaining a correct blade track. Record unbalance (Accelerometer on base of MGB flared housing).	Unbalance equal to or less than : - 0.2 ips aircraft with low L/G - 0.3 ips aircraft with high L/G	Final result obtained : ips Time Nunber of balancing plates Y R B

SHEET No. 2	HELICOPTER AS 355N	CHECKS AFTER MRH, FREQUENCY ADAPTER OR MAIN ROTOR BLADE REPLACEMENT **Hover flight IGE**

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
<u>HOVER IGE</u> (6 ft) All air bleeds shut off. Using the trim, align the two engines at the 1st limitation. Record parameters :	Refer to Limitations in the Flight Manual, SECTION 2.1.	Hp [ ] OAT [ ] ΔNg Ng t4 Nf NR MGB press.* MGB temp.* * CAA certified aircraft Fuel contents LH RH
Check and, if required, adjust the blade track.	Deviation less than 6 mm.	
Check and, if required, adjust the unbalance.	Unbalance equal to or less than 0.2 ips.	Unblance [ ]

SHEET No. 2	HELICOPTER AS 355N	CHECKS AFTER MRH, FREQUENCY ADAPTER OR MAIN ROTOR BLADE REPLACEMENT Level flight at Max. Continuous Power and VNE (low altitude)

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
<u>LEVEL FLIGHT AT MAX. CONTINUOUS POWER</u> Altitude equal to or less than 3000 ft. All air bleeds shut off. Using the trim, align the engines at the 1st limitation.		
Record parameters :	Refer to Limitations in the Flight Manual, SECTION 2.1.	Hp [ ] OAT [ ]
		Eng. 1 / Eng. 2 ΔNg Ng t4 √t4 Nf NR MGB press.* MGB temp.* * CAA certified aircraft Fuel contents : LH / RH
Check performance data :	IAS : Refer to Flight Manual, SECTION 10.	IAS : [ ]
Record the blade track and the value given by the aircraft nose accelerometer :		
a) In stabilized level flight at Max. Continuous Power.	. Blade track deviation equal to or less than 6 mm	
	. γz (a/c nose) : equal to or less than 0.2 ips	γz in level flight : [ ]

SHEET No. 2	HELICOPTER AS 355N	CHECKS AFTER MRH, FREQUENCY ADAPTER OR MAIN ROTOR BLADE REPLACEMENT Level flight at Max. Continuous Power and VNE (Low altitute)

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
b) In 45° turn at the speed corresponding to level flight at Max. Continuous Power.	. Blade track deviation equal to or less than 12 mm	
	. γz (a/c nose) : equal to or less than 0.35 ips	γz in 45° turn : ☐
c) From level flight at Max. Continuous Power, accelerate at constant power up to VNE.	. No significant variation of the vibratory level.	☐ Correct ☐ Incorrect
d) Record 3 Ω p vibration level. Using an accelerometer placed on the floor along the aircraft Z datum line, at the front of the pilot's seat, record the vibratory level in level flight at Max. continuous power.	. 3 Ω p peak level equal to or lower than 0.2 g. NOTE : If the result is incorrect, i.e. if the level is higher than 0.2 g, the adjustment of the cabin antivibrators is to be checked.	☐ Correct ☐ Incorrect

SHEET No. 2	HELICOPTER AS 355N	CHECKS AFTER MRH, FREQUENCY ADAPTER OR MAIN ROTOR BLADE REPLACEMENT Level flight at Max. Continuous Power and VNE (Low altitute)

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
CHECK OF MAX. NR Altitude higher than 5000 ft In autorotation, with collective pitch lever against low pitch stop and IAS = 65 kt. Progressively increase the load factor, if necessary (pull-up or turn to the left), in order to bring the rotor speed, transiently, to the aural warning threshold.	REMINDER : Aural warning threshold : 410 rpm Max. NR : 425 rpm . No significant variation of the vibratory level during or after the manoeuvre (unbalance).	Correct Incorrect Correct Incorrect

SHEET No. 2	HELICOPTER AS 355N	CHECKS AFTER MRH, FREQUENCY ADAPTER OR MAIN ROTOR BALDE REPLACEMENT Lvel flight at Max. Continuous Power and VNE (high altitude)

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
HIGH ALTITUDE Recommended according to the type of operation. Level flight at Max. Continuous Power Altitude equal to or higher than 10000 ft. All air bleeds shut off. Using the trim, align engines at the 1st limitation.		
Record parameters :	Refer to Limitations in the Flight Manual, SECTION 2.1.	Hp [ ] OAT [ ]
Check performance data :	IAS : Refer to Flight Manual, SECTION 10.	IAS [ ]

	Eng. 1	Eng. 2
ΔNg		
Ng		
t4		
Nf		
NR		

MGB press.*	
MGB temp.*	

* CAA certified aircraft

Fuel contents	LH	RH

SHEET No. 2	HELICOPTER AS 355N	CHECKS AFTER MRH, FREQUENCY ADAPTER OR MAIN ROTOR BLADE REPLACEMENT Level flight at Max. Continuous Power and VNE (high altitude)

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
Record the blade track and the value given by the a/c nose accelerometer.		
a) In stabilized level flight at Max. Continuous Power.	. Blade track deviation equal to or less than 12 mm	
	. γz (a/c nose) equal to or less than 0.35 ips	γz in level flight ☐
b) In 30° turn, at the speed corresponding to level flight at Max. Continuous Power.	. No significant variation of the vibratory level.	☐ Correct ☐ Incorrect
c) From level flight at Max. Continuous Power, accelerate, at constant power, up to VNE.	. No significant variation of the vibratory level.	☐ Correct ☐ Incorrect

SHEET No. 3	HELICOPTER AS 355N	CHECKS AFTER MGB OR COMBINER UNIT REPLACEMENT Ground run - Hover flight

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
Start engine as prescribed in the Normal Procedures of the Flight Manual, SECTION 4.1.	MGB.P warning light goes out before NR is 200 rpm	Correct ☐ Incorrect ☐
Perform 5 to 10 minutes' hover flight IGE (6 ft) at a weight approaching the maximum takeoff weight. Refer to Flight Manual, SECTION 5.	Refer to Limitations in Flight Manual, SECTION 2.1.	Hp ☐ OAT ☐

	Eng. 1	Eng. 2
ΔNg		
Ng		
t4		
		
Nf		
NR		

MGB press.*	
MGB temp.*	

* CAA certified aircraft

Fuel contents	LH	RH

SHEET No. 4	HELICOPTER AS 355N	CHECKS AFTER TRH OR TAIL ROTOR BLADE REPLACEMENT Ground run - TRH unbalance

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
CHECK OF TRH UNBALANCE Aircraft on the ground. Full low pitch. Increase NR up to 270 rpm. Record unbalance value. Make required corrections.	. If unbalance is greater than 1 ips, do not increase NR beyond 270 rpm When unbalance at NR = 270 rpm is less than 1 ips, increase rotor speed up to flight idle. The correction to be applied shall be a compromise between the values found at the two rotor speeds to obtain an unbalance of less than 0.35 ips.	ips ☐ Time ☐ Chordwise balancing : Recordings Sector A ☐☐☐ Sector B ☐☐☐ Spanwise balancing : Recordings Blade 1 ☐☐☐ Blade 2 ☐☐☐ ips ☐

SHEET No. 4	HELICOPTER AS 355N	CHECKS AFTER TAIL ROTOR DRIVE SHAFT REPLACEMENT Tail rotor drive shaft balancing

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
Aircraft on the ground. Full low pitch. Record the unbalance value.	Unbalance less than 1.75 ips	Correct ☐ Incorrect ☐

SHEET No. 5	HELICOPTER AS 355N	CHECKS AFTER OPERATIONS ON FLYING CONTROLS Hydraulic checks

TEST PHASES AND REQUIREMENTS	RESULTS 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 before NR is 200 rpm	Correct / Incorrect
Aircraft on the ground. Full low pitch. Cut out tail rotor servo-unit on the collective pitch lever.	- The loads at the pedals remain weak.	Correct / Incorrect
Press the ACCU pushbutton.	- The loads at the pedals can still be controlled.	Correct / Incorrect
Cut in the tail rotor servo-unit again.		
Press the SERVO test pushbutton.	- The SERVO warning light comes on.	Correct / Incorrect

SHEET No. 5	HELICOPTER AS 355N	CHECKS AFTER OPERATIONS ON FLYING CONTROLS **Check of the low pitch stop adjustement**

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
ADJUSTMENT OF THE LOW PITCH STOP Altitude lower than 5000 ft. Perform autorotation with collective lever against low pitch stop. IAS = 65 kt.	LIMITATIONS : Max. NR : 425 rpm	
NOTE : Select the weight and altitude values which allow an NR between 395 and 415 rpm to be obtained at full low pitch. Do not pull back the fuel flow control levers.		
Record the following parameters:	NR in compliance with the values computed by means of Figure 1 $^{+\ 0}_{+10}$ rpm	Hp OAT Fuel contents Computed weight NR obtained Design NR

SHEET No.	HELICOPTER	CHECKS AFTER OPERATIONS ON FLYING CONTROLS
5	AS 355N	Check of the low pitch stop adjustment

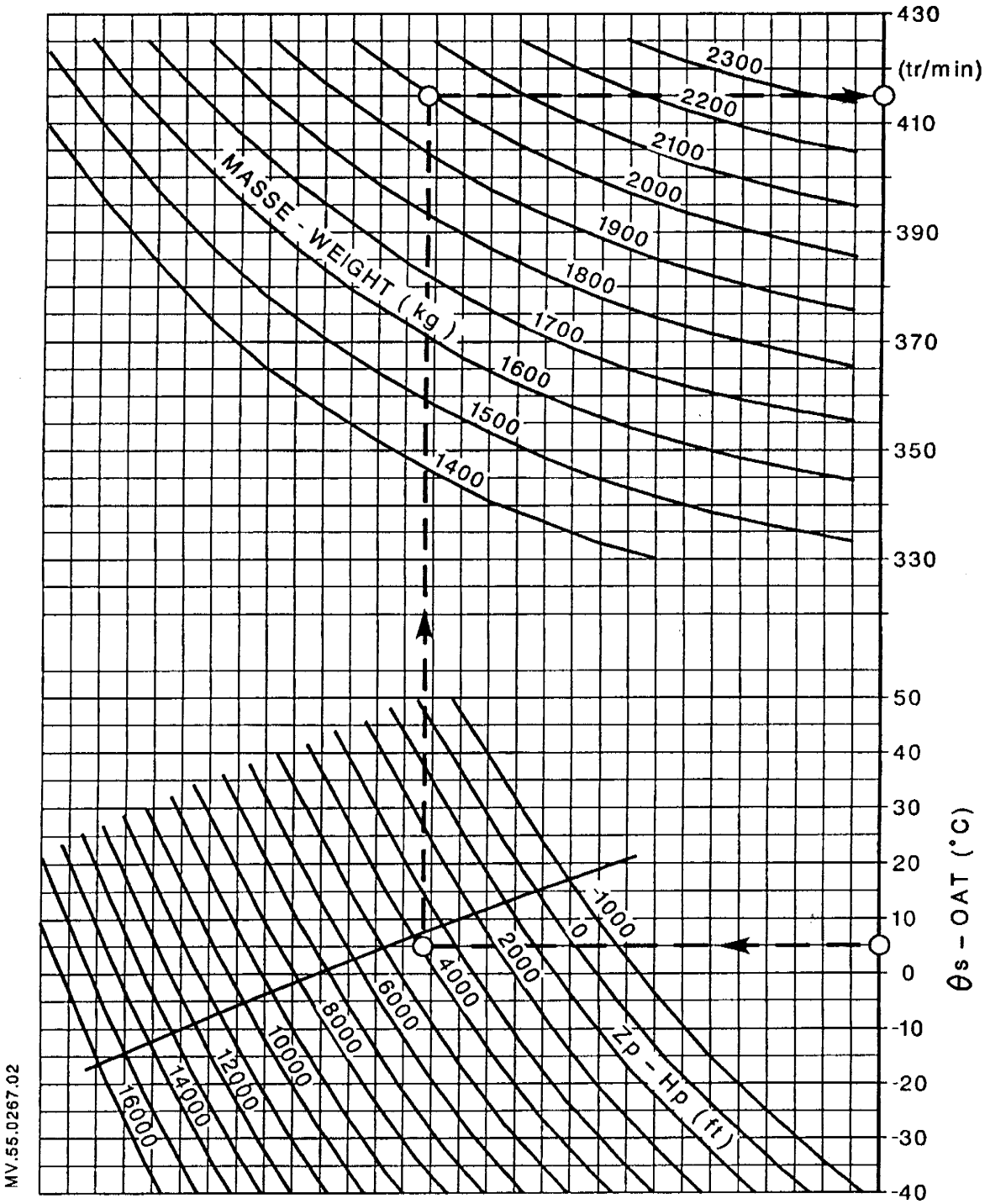


FIGURE 1

SHEET No. 5	HELICOPTER AS 355N	CHECKS AFTER OPERATIONS ON FLYING CONTROLS Level flight at Max. Continuous Power

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
Level flight at Max. Continuous Power. Altitude equal to or less than 3000 ft.		
Record parameters :	Refer to Limitations in Flight Manual, SECTION 2.1.	Hp [ ] OAT [ ]
		Eng. 1 / Eng. 2 ΔNg Ng t4 Nf
	NR : 393 rpm ± 1	NR
		MGB press.* MGB temp.* * CAA certified aircraft
		Fuel contents: LH [ ] RH [ ]
Check performance data :	IAS : Refer to Flight Manual, SECTION 10.	IAS [ ]
	Vibratory level.	Correct / Incorrect

SHEET No. 6	HELICOPTER AS 355N	CHECKS AFTER GENERATOR, ELECTRICAL MASTER BOX OR STATIC INVERTER REPLACEMENT

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
Start engine as prescribed in the Normal Procedures of the Flight Manual, SECTION 4.1.	The GEN. warning light goes out at Ng = 50 % approx.	Correct ☐ Incorrect ☐
<u>D.C. POWER SUPPLY SYSTEM</u>		
Both engines at flight idle. Both generators ON.	. Voltage of both generators : 28.5 V ± 0.5 V	LH voltage ☐ RH voltage ☐ Load shedding voltage ☐
	. Current : roughly equivalent.	LH current ☐ RH current ☐
Set GEN LH and LH EXT. PWR BATT to OFF.	. GEN. and BAT. warning lights come on, on the Warning-Caution-Advisory panel.	Correct ☐ Incorrect ☐
Depress the LH BUS SHED pushbutton.	. LH gen. voltage = 0	RH voltage ☐
	. The LH load shedding light illuminates on the pushbutton U = 28.5 V ± 0.5 V	Load shedding voltage ☐
	. The consumers receiving a dual power supply (10 ALPHA) should still be supplied.	Correct ☐ Incorrect ☐

SHEET No. 6	HELICOPTER AS 355N	CHECKS AFTER GENERATOR, ELECTRICAL MASTER BOX OR STATIC INVERTER REPLACEMENT

TEST PHASES AND REQUIREMENTS	RESULTS TO BE OBTAINED OR LIMITATIONS	RESULTS OBTAINED
Set GEN LH back to ON. Press REARM.	. LH voltage = 28.5 V	LH voltage ☐
Perform the symmetrical manoeuvre for the RH engine.		
Load shedding check : Depress the LH and RH Bus SHED pushbuttons.	. The LH and RH load-shedding lights illuminate on the pushbuttons. Load shedding voltage = 0 V.	
	The consumers supplied via 7 ALPHA 1 and 7 ALPHA 2 are no longer supplied.	☐ Correct ☐ Incorrect
Check Emergency Cut out function. Depress EMERG. CUT OUT button.	. Direct battery line is still supplied (16 ALPHA).	☐ Correct ☐ Incorrect
A.C. POWER SUPPLY		
Both static inverters ON.	. AC voltages : 26V + 2 V + 0 V and 115 V + 5 V + 0 V	26 V, LH ☐ 26 V, RH ☐ 115 V, LH ☐ 115 V, RH ☐
Set LH static inverter to OFF.	. Automatic transfer from LH network to RH network.	☐ Correct ☐ Incorrect
Perform a symmetrical test on the RH static inverter.		

SHEET No. 7	HELICOPTER AS 355 N	SYSTEM CHECKS

THE PERFORMANCE DATA OF THE SYSTEMS TO BE CHECKED UPON COMPLETION OF A MAJOR INSPECTION ARE INDICATED IN THE STANDARD PRACTICES MANUAL (MTC)

	Ch	Sect	Subj	Task
- 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

8.4 MAINTENANCE ASSISTANCE SYSTEM

1 GENERAL

Alphanumerical displays are provided on the instrument panel to supply information concerning the engines (failures, state of computers, values recorded by the sensors), in addition to the Ng, which is the mode normally selected in flight.

The system mainly consists of :

- An electronic unit which controls the system

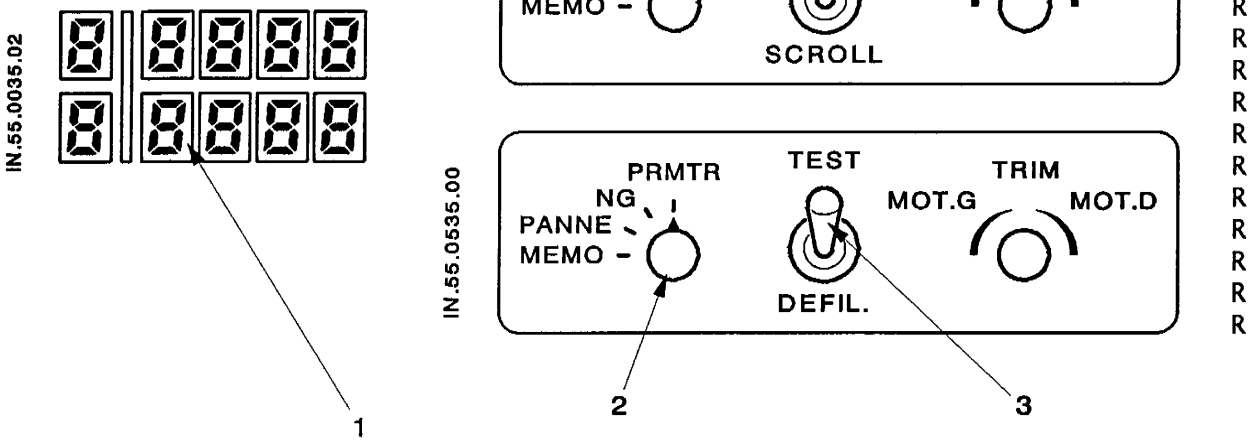
- Alphanumerical displays (1)

- A control panel fitted with :

  . A mode selector (2)
  . A switch with 3 positions : OFF, TEST, SCROLL (DEFIL)

In TEST position, the displays illuminate, then indicate :

  . engine 1 data in upper windows
  . engine 2 data in lower windows
  . then 355 in both upper and lower windows.



2 PROCEDURES

The rotary knob (2) is used to select the desired modes on displays (1) :

- "Ng" mode

Normal position in flight. This mode is used to monitor the Ng on engine starting.

The four digits on the right show the Ng value in percent ; this value is renewed every second. R

The last digit on the left displays letter "S" if the overspeed system is not armed.

- "FAIL" mode

This mode may be selected in flight. With this mode, the codes shown on the indicator correspond to the failures existing on the engine and its governor at the time the information is displayed. Should several failures occur on the same engine, the relevant codes are displayed in sequence every 3 seconds.

Key to failure display codes

DISPLAY CODE	FAILURE	INDICATION
FUEL	Metering unit failure	Red REG light on
T1	Air intake temperature probe	Amber REG light on
PCOL	Incorrect anticipator voltage	Amber REG light on
TRIM	Incorrect trim voltage	Amber REG light on
P2	Incorrect compressor pressure	Amber REG light on
t4	Incorrect value : impossible to ensure automatic starting	
PO	Incorrect Po pressure	Amber REGUL light on
Ng	One Ng lane incorrect	No warning at nominal Nf
NP	One Nf lane incorrect	No illumination at nominal Nf
ALIM	Loss of one of the two computer power supplies (Direct Batt. or alternator).	No warning at nominal Nf
EBUS	Line cut between computer and alphanumerical displays.	The bar between the 2 digits on the left disappears
S	Overspeed not armed	
OVSP	Overspeed engaged	
OILF	Engine oil filter pre-clogging	

When the computer considers that the parameter values transmitted are erroneous, it uses the following values :

T1 = 50°C	P2 = 12.78 bar
Pcol = 58 %	t4 = 768° C
TRIM = 50 %	Po = 700 mbar

- MEMO (memory) mode

This mode is used after the flight. The system monitors some parameters and stores in memory any failures encountered during the flight. The switch (2), in SCROLL (DEFIL)position is used to make the parameters scroll.

Key to failure display codes

Example : OILF

DISPLAY CODE	FAILURE
OILF	Pre-clogging of engine oil filter
EBUS	Line cut between the computer and the alphanumerical displays
DITI	T1 temperature difference between the two engines
DIPO	Po pressure difference between the two engines.

The failures computer are represented as a code made up of :

. 1 letter (A, B, C...) on the LH digit
. 4 figures on the four RH digits.

The signification is given in the following tables :

Example : A 4020

R

Key

F = Failure
Mod. = Module
Res. = Reserved

Key

Monit. = Monitoring
PWR S = Power supply

0	No failure
1	Input mod.
2	Internal F.
3	Input mod. + internal F.
4	External F.
5	Input mod. + external F.
6	Internal F+ external F.
7	Input mod. + internal F. + external F.
8	Nil
9	
A	
B	
C	
D	
E	
F	

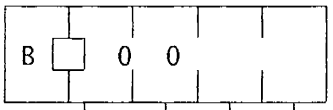
0	No failure
1	Power mod.
2	Output mod.
3	Power mod. + output mod.
4	Airspeed mod.
5	Power mod. + airspeed mod.
6	Output mod.+ airspeed mod.
7	Power mod. + output mod. + airspeed mod.
8	
9	
A	
B	
C	
D	
E	
F	

0	No failure
1	Pitch lane
2	t4 lane
3	Pitch lane + t4 lane
4	t1 lane
5	Pitch lane + t1 lane
6	t4 lane + t1 lane
7	Pitch lane + t4 lane + t1 lane
8	P2 lane
9	P2 lane + pitch lane
A	P2 lane + t4 lane
B	P2 lane + pitch lane + t4 lane
C	P2 lane + t1 lane
D	P2 lane + pitch lane + t1 lane
E	P2 lane + t4 lane + t1 lane
	P2 lane + pitch lane + t4 lane + t1 lane

0	no failure
1	Res.
2	Res.
3	Res. + Res.
4	Selectors lane
5	Selectors lane + Res .
6	Selectors lane + Res.
7	Selectors lane + Res. + Res.
8	Trim lane
9	Trim lane + Res.
A	Trim lane + Res.
B	Trim lane + Res. + Res.
C	Trim lane + selectors lane
D	Trim lane + selectors lane + Res.
E	Trim lane + selectors lane + Res.
F	Trim lane + selectors lane + Res. + Res.

Key

F = Failure
Mod. = Module
Res. = Reserved



Key

Monit. = Monitoring
PWR S = Power supply

0	No failure
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

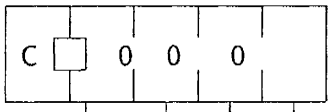
0	No failure
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

0	No failure
1	Low Nf lane
2	Low Ng lane
3	Low Ng lane+ Low Nf lane
4	High Nf lane
5	High Nf lane +low Nf lane
6	High Nf lane +low Ng lane
7	High Nf lane +low Ng lane +low Nf lane
8	High Ng lane
9	High Ng lane +low Nf lane
A	High Ng lane +low Ng lane
B	High Ng lane +low Nf lane +low Ng lane
C	High Nf lane + high Ng lane
D	High Nf lane + high Ng lane + low Nf lane
E	High Ng lane +high Nf lane +low Ng lane
F	High Ng lane +low Nf lane +low Ng lane +high Nf lane

0	no failure
1	Resolver metering unit
2	Engine lane metering unit
3	Resolver lane metering unit+ engine lane metering unit
4	28V. lane
5	28V. lane + resolver lane metering unit
6	28V. lane +engine lane metering unit
7	28V. lane + resolver lane metering unit + engine lane metering unit
8	Res.
A	
B	
C	
D	
E	
F	

Key

F = Failure
Mod. = Module
Res. = Reserved



Key

Monit. = Monitoring
PWR S = Power supply

0		0		0		0	No failure
1		1		1		1	Watch dog
2		2		2		2	Clock monit.
3		3		3		3	Watch dog + clock monit.
4		4		4		4	Logic output lane
5		5		5		5	Logic output lane + watch dog
6		6		6		6	Logic output lane + clock monit.
7		7		7		7	Logic output lane + clock monit. + watch dog
8		8		8		8	Power supply redundancy F.
9		9		9		9	Power supply redundancy F. + watch dog
A		A		A		A	Power supply redundancy F. + clock monit.
B		B		B		B	Power supply redundancy F. + watch dog + clock monit.
C		C		C		C	Power supply redundancy F. + logic output lane
D		D		D		D	Power supply redundancy F. + logic output lane + watch dog
E		E		E		E	Power supply redundancy F. + logic output lane + clock monit.
F		F		F		F	Power supply redundancy F. + logic output lane + watch dog + clock monit.

- PRMTR (parameters) mode

This mode is used to find out present failures or perform adjustments. It can be used on the ground, with engines either running or stopped, and during test flights.

This mode is used in the same way as the MEMORY mode. Each parameter is identified by a letter on the LH digit and a code on the four RH digits. The signification of letters is as follows :

- Letters A, B, C — Present failure code. Refer to MEMO mode.

  Example : | A 4020 |

- Letters D, E, F, G, H, J — Logic code for the position of switches.

  Example : | H 0000 |

R

- Letters associated with parameter values :

L	Anticipator in %	Example :	L 25.7
M	Trim in %	Example :	M 51.0
N	Temperature T1 in °C	Example :	N 21.4
P	Atmospheric pressure in mb	Example :	P 1013

SECTION 8.5

DAILY OPERATING CHECKS

The daily checks must be conducted in accordance with standard aircraft practices and the appropriate manufacturer's recommendations, by qualified maintenance personnel or by a specially trained pilot. R R R
Any alteration or detailed inspection to determine serviceability as a result of these checks must be done under the supervision of a properly endorsed Aircraft Maintenance Engineer and duly entered in the Aircraft Log Book.

NOTE : Some certification authorities may require specific qualifications from the operators. R R

1 DAILY OPERATING CHECKS APPLICABLE TO THE BASIC AIRCRAFT

Daily helicopter operation requires three checks :

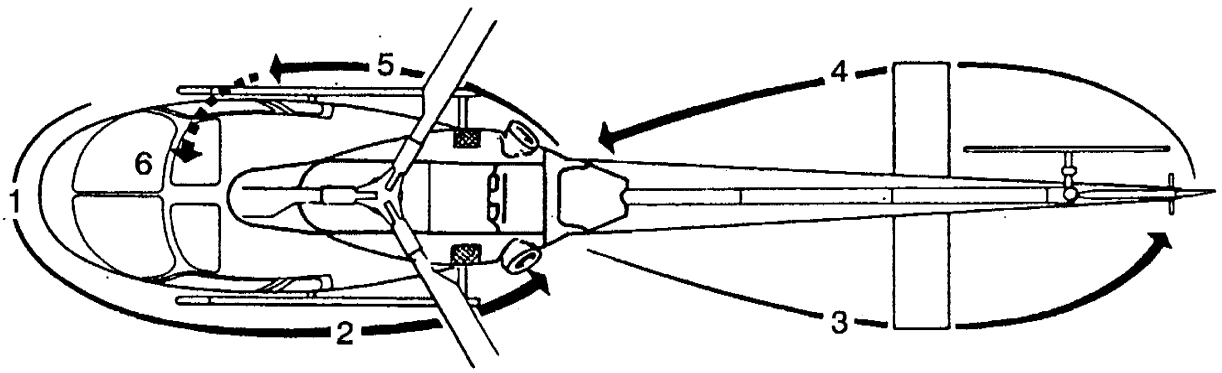
- check before the first flight of the day,
- check in conjunction with flight,
- check after the last flight of the day.

1.1 Checks before the first flight of the day (BFF)

Remark :

IF THE AIRCRAFT HAS BEEN GROUNDED FOR MORE THAN ONE WEEK, BEFORE OPERATING THE FLYING CONTROLS, WIPE THE SERVOCONTROL PISTON RODS WITH A RAG IMPREGNATED WITH SERVICE FLUID. I

- Check that the area is clean and clear.
- Remove the blade socks, if applicable.
- Perform the following checks.



MV.55.0405.00

STATION 1

- transparents panels ..... cleanliness
- pitot heads and static vents ..... blanking cover removed, drain
- sideslip indicator ..... condition

N

STATION 2

- Engine air intake ..... Blanking cover removed
- MGB ..... Oil level
- Open the engine cowling :
  . Transmission deck and engine ..... Condition, cleanliness
- Close the engine cowling ..... Correctly locked
- Tail pipe cover ..... Removed
- Fuel tank ..... Purge
  . Filler cap ..... Closed
- Hydraulic reservoir ..... Level, filler cap closed
- LH baggage compartment door ..... Loads tied down, door locked
- Lower cowlings ..... Closed
- Aft baggage compartment ..... No foreign matter, closed
- Main rotor blades ..... No dents

STATION 3

- Tail boom and TGB fairings ..... Security
- TGB ..... Oil level

STATION 4

- Tail rotor blades ..... Condition of skin
- Tail boom and TGB fairings ..... Security

STATION 5

- RH baggage compartment ..... Open
  . Battery ..... Connection
  . Loads ..... Tied down, close and lock compartment
- Ground power receptacle door ..... Closed
- Open the engine cowling :
  . Transmission deck and engine ..... Condition, cleanliness
  . Engine oil tank ..... Oil level
- Close the engine cowling ..... Correctly locked
- Tail pipe cover ..... Removed

STATION 6

- Collective pitch control and yaw pedals ..... Free travel
- Cyclic pitch control ..... Neutral position
- Gas generator controls ..... Free movement
- Rotor brake control ..... Free movement
- Fuel shut-off controls ..... Forward position, snap wire fitted
- Fire extinguisher ..... In place.

1.2 Turnaround checks (TA)

The turnaround checks consist in :

- checking fluid levels,
- a rapid check of the main and tail rotor blade skins,
- checking that all loads are securely tied down, baggage compartment doors and cowlings are correctly locked.

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

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

1.3 Checks after the last flight of the day (ALF)

GENERAL : These checks maintain the aircraft flightworthy ; they consist in carrying out a visual or tactile examination of the condition of a component, or an assembly, so as to detect defects which could affect correct operation, but do not require the use of any special techniques or tooling.

Pay particular attention to the elements marked with an asterisk "*".

NOTE A : Magnetic plugs which do not have an electric indicating system may be checked for metal chips during the ALF check nearest to the 30-flying hour limit.

NOTE B : This check for defects can be performed during the ALF check before the 30-flying hour limit. R R

NOTE C : This check for defects can be performed during the ALF check before the 30-flying hour or 150 operating cycle limit. R R

(ALF CHECKS)

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
- Sliding window (PRE MOD 072573 and 072582) ..... Free from faults, cracks, unbonding, loss or slide
- Pitot heads and static vents..... Fit blanking covers

STATION 2

- LH baggage compartment door ..... Condition, security, open, all objects tied down, close and lock
- Shock absorber, LH landing gear ..... Condition, absence of leaks
  . Wear resistance plate ..... Condition
- MGB cowlings ..... Open : condition of locking systems
- MGB oil ..... Check level
- Transmission deck ..... Cleanliness
- Bidirectional cross beam R
  (PRE MOD 072720) ..... Check for cracks on laminate R
  bearing upper face, on MGB R
  pick-up side SEE NOTE C R
- Check of the MGB suspension bar end-fittings (all part numbers) : attachment
- MGB suspension bars P/N 355A36.0040.02,03,04,05,06,07 :
  . Areas to be checked :
  Upper and lower and-fittings of the MGB suspension bars.
  . Visual check without disassembly
  Check that the "Roving" winding fitted inside the MGB suspension bar is not loose (slipping out).
- Servocontrols, hydraulic system..... Security, absence of leaks, lines
- Hydraulic reservoir ..... Check fluid level, security
- Engine oil tank ..... Check lines, level, security, leak-tightness
- Universal joint assembly ..... Security, pins in place and locked
- MAIN ROTOR SHAFT
  * Swasplate 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 colour nor scaling of paint.

. Scissors, swasplates, rods, swivel bearings	Condition, security ; no friction point or play	
. Swashplate/pitch change rod end-fitting interface	No traces of contact, paint scaling on swashplate attachment yokes	
* Pitch change rods P/N 350A37.1508.00 to 05	Rod upper and lower end-fitting paint marks must be visible and aligned	
* Rotor shaft P/N 350A37.1076.00 to .06 inclusive. All visible sections of the shaft, particularly under the hub	Condition of paint, no craks, crazing, blistering, corrosion or tool marks.	
- MAIN ROTOR HUB	Security, general condition	
* Star	No delamination (splinters)	
* Star recesses	No cracks	
* Spherical thrust bearings and 3-ply frequency adapters	No elastomer faults, unbonding, scratches, blisters, extrusion, cracks.	
. Self-lubricating bearings	No debris nor play. SEE NOTE B	
- Flared housing magnetic plug	No metal chips. SEE NOTE A	
- Shock mount	Security	
* MAIN ROTOR BLADES	Security, condition of skin, no bonding separation of stainless steel leading edge and no dents.	
- Engine air intake	Security, blanking cover fitted	
- 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	Interface	
. Transmission deck drain	Not plugged	
- "ENGINE OUTPUT" and MGB INPUT" flexible couplings	Impact damage and/or broken discs.	R R R
- Tail pipe	Security, blanking cover fitted	
- Aft baggage compartment door	Security, closing	
- Engine and MGB cowlings	Closing, locking.	R

STATION 3

- Engine and MGB oil coolers	Security, absence of leaks
- Horizontal stabilizer, fin, tail bumper	Security, condition
- TGB	Oil level, absence of leaks

STATION 4

- Engine and MGB oil coolers	Security, absence of leaks
- TGB	Security by applying a load on the drive shaft
. Bellcrank hinge pin	No play
. Sealant bead	Condition
. Magnetic plug	No metal chips. SEE NOTE A
- Horizontal stabilizer, fin, tail bumper	Security, condition
* TAIL ROTOR BLADES	Security, general condition of skin, no dents, no bonding separation on the stainless steel leading edge.
* Tail rotor blade spar	Check for abnormal spar noise when the rotor is bent inwards and outwards to form an arc. SEE NOTE B
. Laminated half-bearing	No bonding separation, deep crack or emergence
. Blade horn	No play
- TRH	Condition, security
. Pitch change control	
. Pitch change rod swivel bearing	No play, SEE NOTE B
* "SEE-SAW" HINGE : (Flapping hinge bearing) according to type :	
. Type 1 : cups on either side of the pin	Visual play and no metallic particle
. Type 2 : flapping bearings	No play
. Type 3 : bearing outside cone rubber	No cracks, extrusion, bronze chips
- Tail boom fairing	Security

STATION 5

- Battery ..... Security
- RH baggage compartment door ..... Security, condition, locking
- RH landing gear
  . Shock absorber ..... Condition, absence of leaks
  . Wear resistance plate ..... Condition
- MGB cowling ..... Open : condition of locking systems
- Transmission deck ..... Cleanliness
- MGB ..... Leaktightness
  . Magnetic plug ..... No metal chips. SEE NOTE A
- Bidirectional cross beam R
  (PRE MOD 072720) ..... Check for cracks on laminate R
  bearing upper face, on MGB R
  pick-up side SEE NOTE C R

- Check of the MGB suspension bar end-fittings (all part numbers) : attachment
- MGB suspension bars P/N 355A38.0040.02,03,04,05,06,07 :

  . Areas to be checked :
  Upper and lower end-fittings of the MGB suspension bars.

  . Visual check without disassembly
  Check that the "Roving" winding fitted inside the MGB suspension bar is not loose (slipping out).

- Servocontrols, hydraulic system ..... Security, absence of leaks, lines
- Engine oil tank, lines ..... Oil level, security, tightness
- Hydraulic reservoir ..... Security,absence of leaks, lines
- Engine and MGB oil coolers ..... Security, no leaks
- Engine air intake ..... Security, blanking cover fitted
- Universal joint assembly ..... Security, pin fitted
- Engine mount ..... Condition, security
- Engine and engine compartment
  . Engine and accessories ..... General condition, cleanliness
  . Systems ..... No leaks
  . Controls ..... Interference
  . Transmission deck drain ..... Not plugged
- "ENGINE OUTPUT" and MGB INPUT" flexible R
  couplings ..... Impact damage and/or broken R
  discs. R

- Engine and MGB cowlings ..... Closing, locking

STATION 6

- Seat ..... Security, pin in place
- Cabin ..... General cleanliness

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 daily checks may be carried out by any person qualified for maintenance or by a suitably trained pilot.
Any alteration or detailed inspection to determine serviceability as a result of these checks must be done under the supervision of a properly endorsed Aircraft Maintenance Engineer and duly entered in the Aircraft Log Book.

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.

ENGINE FIRE EXTINGUISHING

. Check the pressure in the cylinders.

AIR EQUIPEMENT OR BREEZE ELECTRIC HOIST INSTALLATION 136 Kg-300 lb 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 ALF check nearest to 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 pushbutton :

  . 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.

- Actions to be taken every 50 hoisting operations :

  . grease the hoist brake assembly,
  . clean then grease the cable winding screw.

EMERGENCY FLOATATION GEAR INSTALLATION

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 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.

CARGO SWING

- After the last flight, lightly grease (G354) the end of the load hook at the lock input.

FUEL JETTISON SYSTEM

- Before the first flight

  . Bleed water from each of the two elbows located below each electric valve of the jettison system.

USE IN COLD WEATHER :

- Check before the first flight (BFF) : refer to Supplement 1 of this Manual.

CAUTION : DO NOT DRAIN WATER FROM FUEL SYSTEM AT TEMPERATURES EQUAL TO OR LESS THAN MINUS 10°C.

N

SECTION 9

R

CONTENTS

9.1 - GUIDANCE FOR CARGO SLING OPERATIONS

1 PERSONNEL TRAINING

Cargo sling operations may only be conducted by pilots who already have considerable experience with their aircraft.

No pilot may make solo cargo-carrying flights without first having accomplished such operations in the company of an instructor.

Mechanics on ground duty must be fully informed by the pilot before each new operation, in particular as regards :

- their position on the ground considering the proposed flight path ;
- the direction in which to move away ;
- the hook-up operation ;
- hand signals to be used or radio instructions ;
- protective equipment : helmets, gloves, glasses (if applicable) ;
- the number of round trips between replenishments ;
- the manner of retrieving slings and nets.

2 IMPERATIVE PRE-OPERATIONAL CHECKS

2.1 Helicopter condition

In addition to the usual examination of the helicopter, the release unit must be carefully examined and the mechanism checked for correct release operation.

2.2 Condition of sling equipment

The nets, strops ans slings must be examined thoroughly. Any worn or frayed components are to be discarded.

The cables, strops and shackles must be capable of carrying three times the maximum anticipated load.

2.3 Preparation of loads

Make sure that all participants are well aware of the weight of the loads. Ensure that the method of suspension is understood.

2.4 Condition of loading and unloading areas

Remove or tie down all that might be displaced by the rotor downwash.

2.5 Total weight of helicopter with slung load

Define maximum acceptable load compatible with terrain configuration and atmospheric conditions. Unless the platforms are in clear surroundings and fairly large, consider as maximum weight that which can be held in hover O.G.E. in calm air over the higher of the two platforms (take-off or landing).

3 AIRBORNE LOADS

Heavy loads, such as bags of cement or drums of kerosene, which are carried in a net, present no particular problem.

Special precautions must be taken in the case of bulky loads, which have a tendency to oscillate and even to "float" during transport on the sling. Permeability to air can have a stabilizing effect on a bulky load : for example, a teleferic car should be carried with both its doors open.

Never carry an airfoil alone : there is a great risk of the airfoil flying up into the tail rotor.

If several cables are used to sling the load, they must be long enough to form an angle of less than 45° between cables at the point of suspension under the helicopter ; experience shows that oscillation of the load is thus less likely to occur.

On the other hand, if the load is slung on a single sling cable, it is preferable that a fairly short cable be used as there is then less risk of the load swinging, and it is easier to judge the height of the load during approach.

For the retrieval of crashed helicopters it is generally possible to use a lifting ring on the rotor shaft.

Airplanes are carried using straps passing under the fuselage or under the wings. The cables must be attached in such a way that the airplane is in a slightly nose-down attitude when the helicopter is in the hover.

4 FLIGHT PRECAUTIONS

After hooking on the load the ground mechanic is to check the position of the sling cables then move away. The pilot must then make sure that the mechanic has moved clear and then confirm by signs that he may lift off the load.

Power must be applied slowly enough to allow the helicopter to centre itself above the load.

A vertical take-off must be made, avoiding dragging the load along the ground or striking any obstacle.

Carefully avoid flying over houses, vehicles and persons.

If the load starts to swing, reduce speed.

Approach must be made head into the wind with gradual reduction in airspeed, and transition into hover high enough above the ground to eliminate the risk of dragging the load.

Set the load down, then reduce collective pitch sufficiently to slacken the cables before opening the release unit hook ; this also allows the pilot to ensure that the load is deposited. If the cables are long enough, move sideways a little before opening the hook, to prevent the ring and tackle from falling onto the freight.

Even after the mechanic has signalled that the load is released, move away as if it were not ; this is an advisable precaution against possible misinterpretation of signals.

Never fly away with an empty net or an unballasted sling.

9.2 EMERGENCY LOCATOR TRANSMITTER

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 be means of a switch on the transmitter front panel, or by means of a remote control switch. R R

2 COMPONENTS - LOCATIONS

- A locator beacon is attached to the structure and is located inside the rear luggage bay. R R
- A beacon location label is attached to the outside of the aircraft. R
- A control switch is fitted underneath the instrument panel on the pilot's side. R R
- An antenna is located on the tail boom.
- A label fitted close to the switch reads : R

EMERGENCY LOCATOR TRANSMITTER R
FOR AVIATION EMERGENCY USE ONLY R

3 CHECKS

R

3.1 Pre-flight inspection

On the instrument panel :

- Check that remote control switch is set to "ARM" or "AUTO". R

On transmitter, check that :

- The switch is set to AUTO R
- On old design locator beacons, RESET pushbutton is engaged. R

3.2 Pre-flight checks

- Select the international distress frequency on the aircraft VHF or UHF system.
- Set switch beneath instrument panel to "M" or "ON" for approximately one second. R
- The transmitter output signal should be audible in the headphones.
- Set switch back to "ARM" or "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 "ARM" (AUTO). R R

Impact detector reset : R
- New generation locator beacon (NG) : R
  Select the locator switch to OFF/RST, hold it in this position for 2 to 3 seconds then select it back to AUTO. R R
- Old generation locator beacon : R
  The impact detector may be reset by means of the "RESET" pushbutton on the transmitter front panel ; the reset pushbutton also stops the transmitter output signals if the unit is operating. R R R

4.2 Manual operation

The unit may be actuated manually by setting the switch to "ON" (M). 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. R

9.3 - SCHERMULY FLARES

1 GENERAL

The two SCHERMULY flares mounted on a support on the fuselage L.H. side are designed for lighting the ground when flying at night

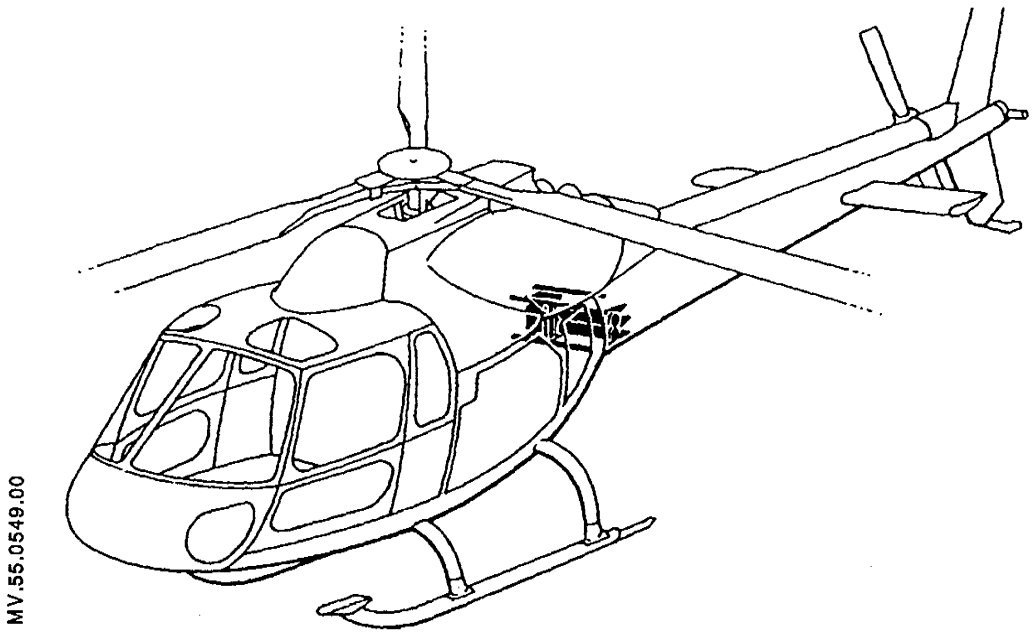


Figure 1 - Arrangement of flares installation

2 CONTROLS AVAILABLE TO THE PILOT

A FLARES ARM (ARMT FUSEES) push-button on panel 5 ALPHA 2 make the electrical power available to the flares system.
The flares are fired from a push-button provided on the pilot's cyclic stick. After release of the first flare, an automatic selector makes the second flare ready to be fired.
The flare installation is protected by two fuses.

3 OPERATING INSTRUCTIONS

The maximum altitude for firing the flares is 1500 ft (500 m). For maximum efficiency, the second flare shall be fired at a 800 ft (250 m) altitude at least.
It should however be noted that any firing operation below 1200 ft (400 m) may be dangerous if the area to be illuminated is likely to ignite.

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 seat.

Folding stretchers are used, they are of the type : CARRIER 431 R.

2 DESCRIPTION (Figure 1)

The air ambulance installation occupies the L.H. portion of the cabin and thus precludes any other use of the L.H. side of the aircraft.
It is therefore necessary to remove the copilot's seat, the dual controls and in some cases the L.H. rear passenger seat. The lower stretcher (6) is placed on the cabin floor and is secured by straps (3 and 5) to tie-down rings and fittings.
The upper stretcher (1) is held by brackets (2) on the rear bulkhead, carried by a support frame (4) at the front, and secured by straps (7) to the floor tie-down rings.

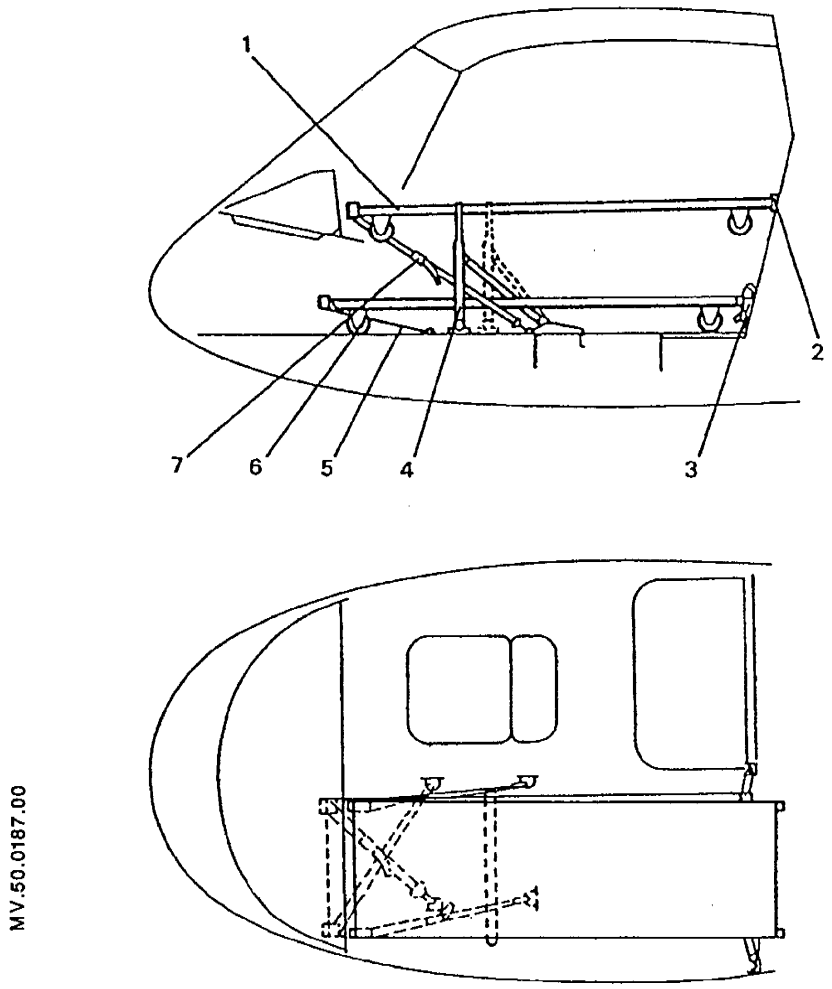


Figure 1

3 UTILIZATION (Figure 1)

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.

CAUTION : THE PATIENTS ARE STRAPPED TO THE STRETCHERS AND MUST BE EMBARKED FEET FORWARDS, HEAD TOWARDS THE TAIL.

9.5 - SWIVELING LANDING LIGHTS

1 GENERAL (Figure 1)

Swiveling landing lights are optional equipment items designed to improve safety during approach phase and taxiing.

These two landing lights may be installed at the same time or separately, in replacement of fixed landing lights.

The RH light can be orientated in elevation, the LH light can be orientated both in elevation and azimuth.
The power of each light is 450 W. The LAND LT (PHARE ATTER.) caption illuminates on the failure warning panel to indicate that the landing light(s) is (are) switched on.

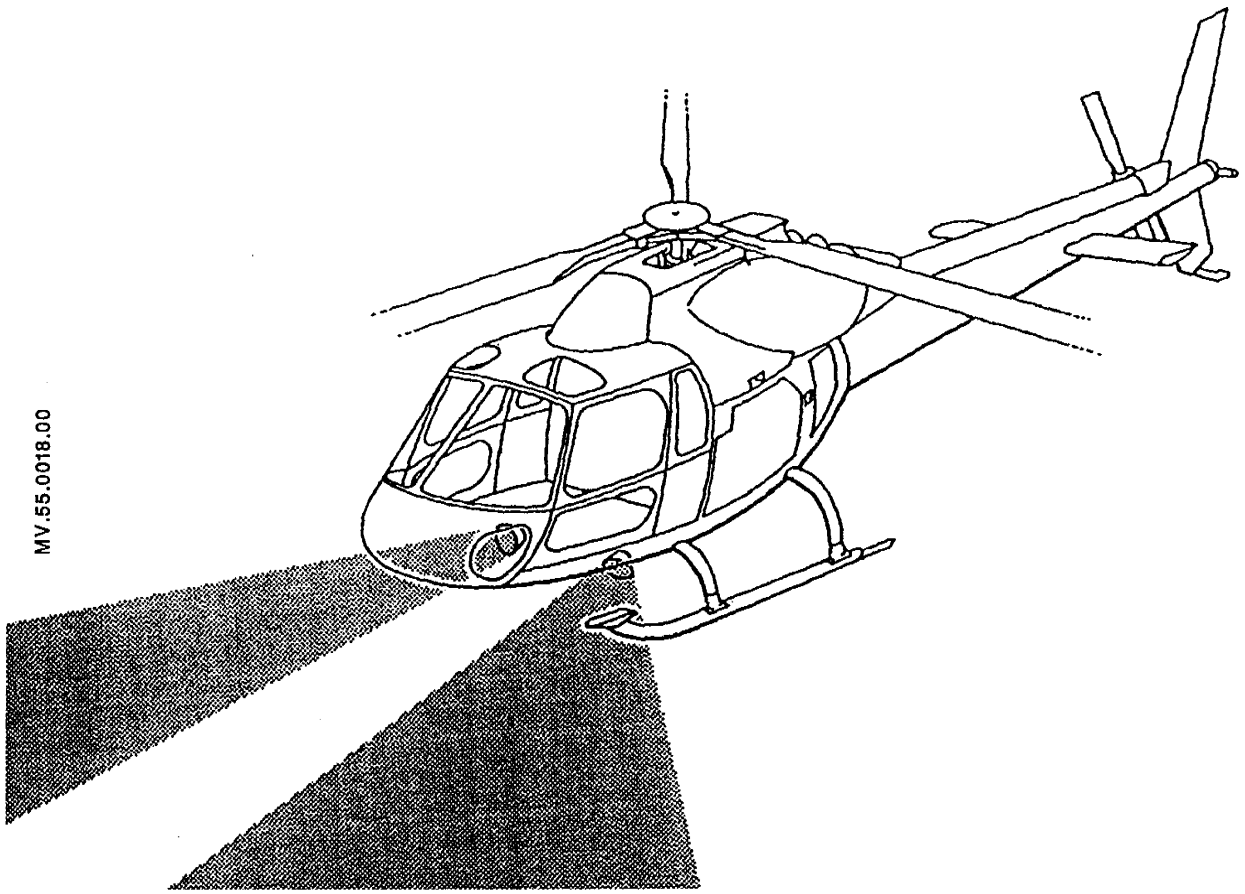


Figure 1

2 CONTROLS

RH landing light

RH light controls are located on pilot's collective lever grip. See Section 7.1.

LH landing light

LH light controls are located on copilot's collective lever. See Section 7.1.

When both landing lights are installed

- With "LTS TRANSF LH - RH" (TRANSF. PHARES G.D.) push-button located on 5 ALPHA 2 panel depressed, the pilot controls the LH light and the copilot controls the RH light.

- The automatic retraction of landing lights is controlled from the "ON/OFF" (MARCHE/ARRET) switches. See Section 7.1 R

NOTE : If the copilot's collective lever is not fitted or not equipped with the landing light control, the pilot can operate the LH landing light by depressing the "LH-RH LANDING LIGHT TRANSFER" (TRANSF. PHARES G.D.) push-button.

3 CIRCUIT PROTECTION

Circuits are protected as follows :

- RH landing light circuit
  . 2 fuses on 8 ALPHA panel
  . 2 fuses on 10 ALPHA panel

- LH landing light circuit
  . 2 fuses on 7 ALPHA 1 panel

9.6 - LOCATOR 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...).

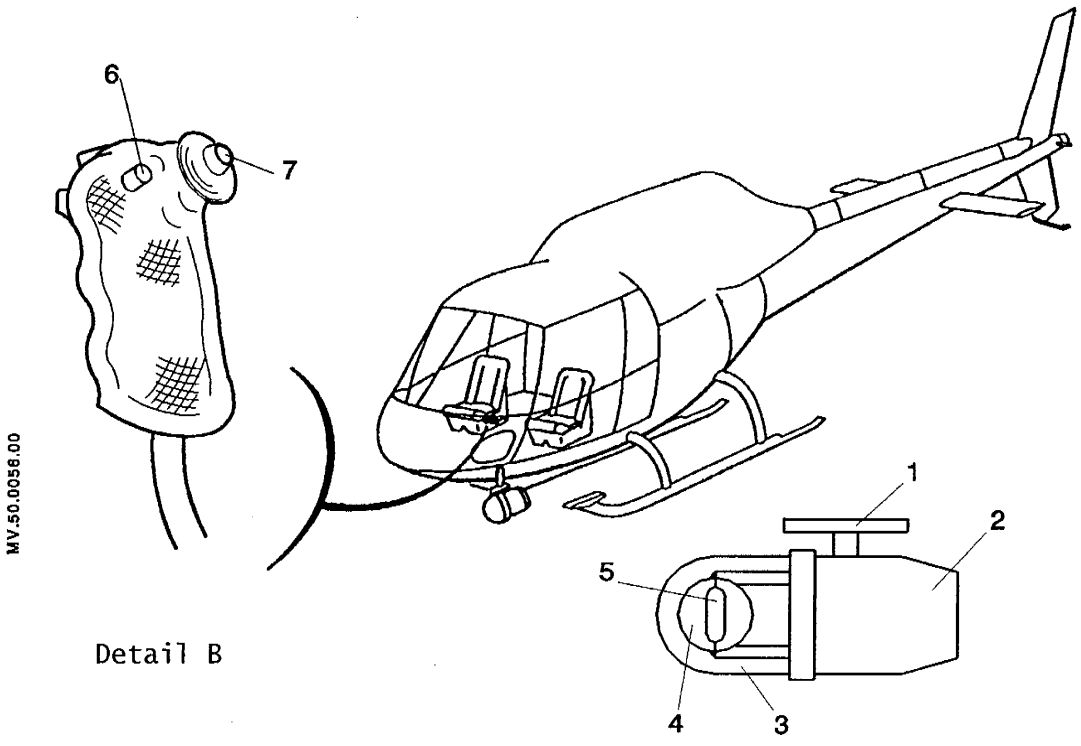
2 COMPONENTS - LOCATION (Figure 1)

This installation mainly consists of :

- A 450-W power light (Detail A) secured to the bottom 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.



Detail B

Detail A

Figure 1

3 OPERATION (Figure 1)

An ON/OFF pushbutton (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,

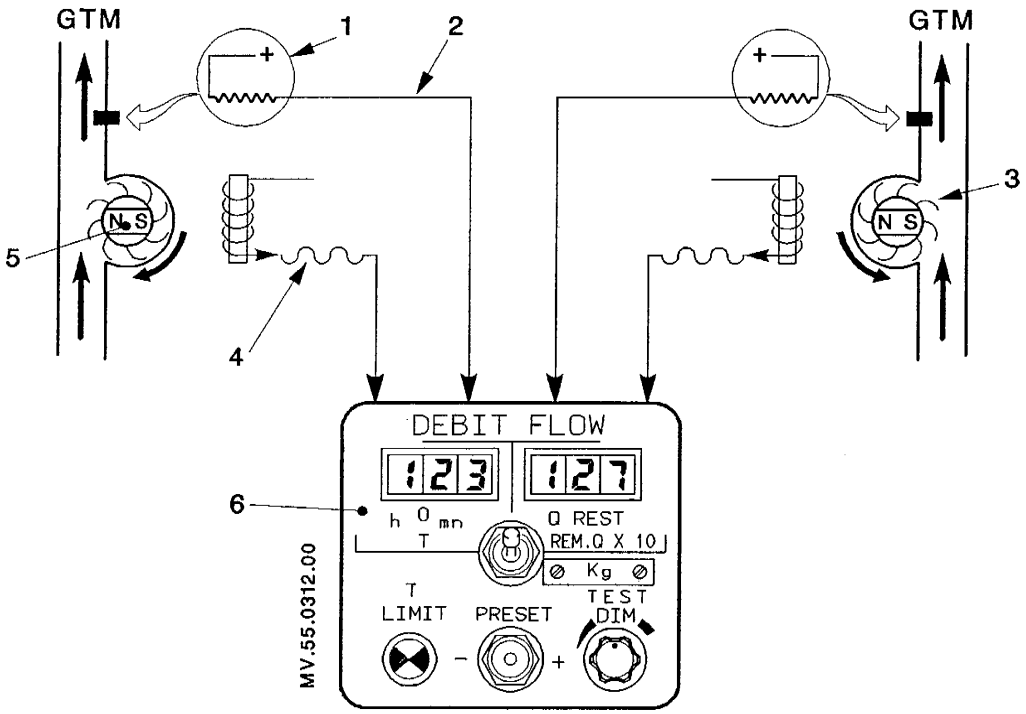
- after the searchlight has been switched off, to wait 30 to 60 seconds before switching it on again.

9.7 - FAURE HERMAN FUEL FLOWMETER SYSTEM

1 GENERAL

This equipment provides the crew with a continuous indication of :

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



KEY

1. Temperature probe
2. Temperature signal
3. Turbine
4. Flowrate signal
5. Permanent magnet
6. Digital indicator

Figure 1 - Functional diagram

2 OPERATING PRINCIPLE

Each LH and RH fuel compartment is fitted with a flow rate transducer. The passage of fuel through the transducer drives a rotor at a speed proportional to the volumetric flowrate. This rotation, detected by a magnet-coil mechanism supplies a frequency modulated signal proportional to the flow rate.
A thermistor ensures the temperature corrections for the fuel mass measurements.

The fuel flow rate data signal is adapted and transmitted to the digital indicator, together with the temperature data signal.

The indicator is fitted with a micro-processor which calculates the different parameters taking into account the volumetric flow rate and the fuel temperature according to the type of aircraft displayed by the switches on the back face.

The parameters calculated in this way are :

- the engine consumption,
- the total amount of fuel remaining in the helicopter,
- the remaining flight time,
- flight limit time indication.

Moreover, this indicator is fitted with a memory module which operates on internal batteries, which enables calculated data to be retained in the event of an aircraft power system failure.

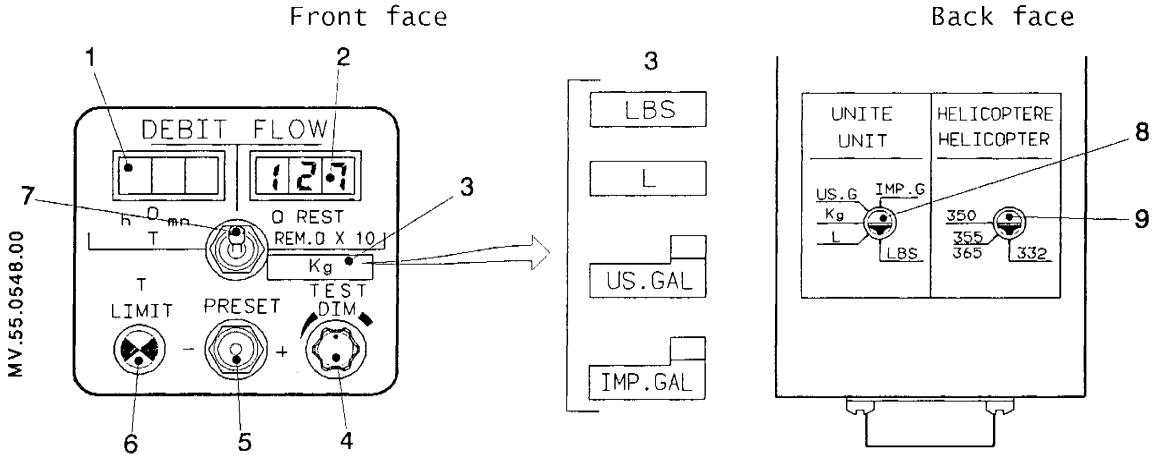
NOTE : The flowmeter is fitted with two 1.5 volt batteries, dimension AAA, type MN 2300-LR03.
These batteries may be replaced by an equivalent model.
The battery service-life is approximately one year.

2.1 Power supply

The system is supplied with 28 Vd.c via a 2.5 A fuse and is controlled by the "FLOWMETER" ("DEBITMETRE") push-button.

3 DESCRIPTION

3.1 Indicator



ITEM	Description	Function
1	LH side digital displays	- According to the position of switch (7),they indicate : . the hourly consumption rate of LH engine . the remaining flight time (in hours and minutes)
2	RH side digital displays	- According to the position of switch (7), they indicate : . the hourly consumption rate of RH engine . the amount of fuel remaining, . the amount of fuel loaded at the start, previously displayed by switch (5).
3	Removable units label	- Indicates the measuring unit according to the position of switch (8) on the rear face
4	"TEST-DIM" pushbutton	- When rotated, used to adjust the brightness of the display lighting. - When pressed, used to test the lighting of the displays by making the eights appear.
5	"PRESET" switch	- Used to display the amount of fuel when switch (7) is in down released position. Reading in tens of units is displayed in (2) - Switch position : . Centre : rest . I LH : amount displayed reduces slowly . II RH : amount displayed increases rapidly.

ITEM	Description	Function
6	"T.LIMIT" indicator light	- Comes on during test routine or when only 40 minutes of flight remain, providing that the. hourly fuel consumption remains the same. - Flashes when the indicator batteries are used
7	Three-position function switch	- Up position : indicates hourly fuel consumption of LH and RH engines. - Centre position : indicates remaining flight time, (LH display) and the amount of fuel remaining (RH display). - Down position : displays the amount of fuel available in the fuel tanks. This position is protected by a locking detent.
8	Unit switch	Used to select the desired measure unit.
9	"HELICOPTERS" switch	Allows switching of the computation module inside the indicator, depending on the type of helicopter on which it is installed.

4 OPERATION

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

4.1 In flight

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

4.2 On the ground

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

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

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

Actuating "PRESET" selector switch (5) : R

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

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

5 INDICATOR TEST PROCEDURE

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

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

SECTION 9.8

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 installation of this optional system does not affect the approved sections of the Flight Manual.

The effect 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 fixed two by two on the rear cross beam of the landing gear,
- 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 10

ADDITIONAL PERFORMANCE DATA CONTENTS

SECTION 10.1
CONVERSION TABLES

km/h	kt	km/h ---- kt	km/h	kt	km/h ----- kt
km/h ------ kt			km/h ------ kt		
1,852	1	0,540	94,452	51	27,535
3,704	2	1,080	96,304	52	28,075
5,556	3	1,620	98,156	53	28,615
7,408	4	2,160	100,008	54	29,155
9,260	5	2,700	101,860	55	29,695
11,112	6	3,239	103,712	56	30,234
12,964	7	3,779	105,564	57	30,774
14,816	8	4,319	107,416	58	31,314
16,668	9	4,859	109,268	59	31,854
18,520	10	5,399	111,120	60	32,394
20,372	11	5,939	112,972	61	32,934
22,224	12	6,479	114,824	62	33,474
24,076	13	7,019	116,676	63	34,014
25,928	14	7,559	118,528	64	34,554
27,780	15	8,099	120,380	65	35,094
29,632	16	8,638	122,232	66	35,633
31,484	17	9,178	124,084	67	36,173
33,336	18	9,718	125,936	68	36,713
35,188	19	10,258	127,788	69	37,253
37,040	20	10,798	129,640	70	37,793
38,892	21	11,338	131,492	71	38,333
40,744	22	11,878	133,344	72	38,873
42,596	23	12,418	135,196	73	39,413
44,448	24	12,958	137,048	74	39,953
46,300	25	13,498	138,900	75	40,493
48,152	26	14,037	140,752	76	41,032
50,004	27	14,577	142,604	77	41,572
51,856	28	15,117	144,456	78	42,112
53,708	29	15,657	146,308	79	42,652
55,560	30	16,197	148,160	80	43,192
57,412	31	16,737	150,012	81	43,732
59,264	32	17,277	151,864	82	44,272
61,116	33	17,817	153,716	83	44,812
62,968	34	18,357	155,568	84	45,352
64,820	35	18,897	157,420	85	45,892
66,672	36	19,436	159,272	86	46,431
68,524	37	19,976	161,124	87	46,971
70,376	38	20,516	162,976	88	47,511
72,228	39	21,056	164,828	89	48,051
74,080	40	21,596	166,680	90	48,591
75,932	41	22,136	168,532	91	49,131
77,784	42	22,676	170,384	92	49,671
79,636	43	23,216	172,236	93	50,211
81,488	44	23,756	174,088	94	50,751
83,340	45	24,296	175,940	95	51,291
85,192	46	24,835	177,792	96	51,830
87,044	47	25,375	179,644	97	52,370
88,896	48	25,915	181,496	98	52,910
90,748	49	26,455	183,348	99	53,450
92,600	50	26,995	185,200	100	53,990

N

m	ft	m ------- ft
0,305	1	3,281
0,610	2	6,562
0,914	3	9,843
1,219	4	13,124
1,524	5	16,405
1,829	6	19,685
2,134	7	22,966
2,438	8	26,247
2,743	9	29,528
3,048	10	32,809
3,353	11	36,090
3,658	12	39,371
3,962	13	42,652
4,267	14	45,933
4,572	15	49,214
4,877	16	52,494
5,182	17	55,775
5,486	18	59,056
5,791	19	62,337
6,096	20	65,618
6,401	21	68,899
6,706	22	72,180
7,010	23	75,461
7,315	24	78,742
7,620	25	82,023
7,925	26	85,303
8,230	27	88,584
8,534	28	91,865
8,839	29	95,146
9,144	30	98,427
9,449	31	101,708
9,754	32	104,989
10,058	33	108,270
10,363	34	111,551
10,668	35	114,832
10,973	36	118,112
11,278	37	121,393
11,582	38	124,674
11,887	39	127,955
12,192	40	131,236
12,497	41	134,517
12,802	42	137,798
13,106	43	141,079
13,411	44	144,360
13,716	45	147,641
14,021	46	150,921
14,326	47	154,202
14,630	48	157,483
14,935	49	160,764
15,240	50	164,045

m	ft	m ------- ft
15,545	51	167,326
15,850	52	170,607
16,154	53	173,888
16,459	54	177,169
16,764	55	180,450
17,069	56	183,730
17,374	57	187,011
17,678	58	190,292
17,983	59	193,573
18,288	60	196,854
18,593	61	200,135
18,898	62	203,416
19,202	63	206,697
19,507	64	209,978
19,812	65	213,259
20,117	66	216,539
20,422	67	219,820
20,726	68	223,101
21,031	69	226,382
21,336	70	229,663
21,641	71	232,944
21,946	72	236,225
22,250	73	239,506
22,555	74	242,787
22,860	75	246,068
23,165	76	249,348
23,470	77	252,629
23,774	78	255,910
24,079	79	259,191
24,384	80	262,472
24,689	81	265,753
24,994	82	269,034
25,298	83	272,315
25,603	84	275,596
25,908	85	278,877
26,213	86	282,157
26,518	87	285,438
26,822	88	288,719
27,127	89	292,000
27,432	90	295,281
27,737	91	298,562
28,042	92	301,843
28,346	93	305,124
28,651	94	308,405
28,956	95	311,686
29,261	96	314,966
29,566	97	318,247
29,870	98	321,528
30,175	99	324,809
30,480	100	328,090

kg		lb	kg		lb
0,454	1	2,205	23,134	51	112,436
0,907	2	4,409	23,587	52	114,640
1,361	3	6,614	24,041	53	116,845
1,814	4	8,818	24,494	54	119,049
2,268	5	11,023	24,948	55	121,254
2,722	6	13,228	25,402	56	123,459
3,175	7	15,432	25,855	57	125,663
3,629	8	17,637	26,309	58	127,868
4,082	9	19,842	26,762	59	130,073
4,536	10	22,046	27,216	60	132,277
4,990	11	24,251	27,670	61	134,482
5,443	12	26,455	28,123	62	136,686
5,897	13	28,660	28,577	63	138,891
6,350	14	30,865	29,030	64	141,096
6,804	15	33,069	29,484	65	143,300
7,258	16	35,274	29,938	66	145,505
7,711	17	37,479	30,391	67	147,710
8,165	18	39,683	30,845	68	149,914
8,618	19	41,888	31,298	69	152,119
9,072	20	44,092	31,752	70	154,323
9,526	21	46,297	32,206	71	156,528
9,979	22	48,502	32,659	72	158,733
10,433	23	50,706	33,113	73	160,937
10,886	24	52,911	33,566	74	163,142
11,340	25	55,116	34,020	75	165,347
11,794	26	57,320	34,474	76	167,551
12,247	27	59,525	34,927	77	169,756
12,701	28	61,729	35,381	78	171,960
13,154	29	63,934	35,834	79	174,165
13,608	30	66,139	36,288	80	176,370
14,062	31	68,343	36,742	81	178,574
14,515	32	70,548	37,195	82	180,779
14,969	33	72,752	37,649	83	182,983
15,422	34	74,957	38,102	84	185,188
15,876	35	77,162	38,556	85	187,393
16,330	36	79,366	39,010	86	189,597
16,783	37	81,571	39,463	87	191,802
17,237	38	83,776	39,917	88	194,007
17,690	39	85,980	40,370	89	196,211
18,144	40	88,185	40,824	90	198,416
18,598	41	90,389	41,278	91	200,620
19,051	42	92,594	41,731	92	202,825
19,505	43	94,799	42,185	93	205,030
19,958	44	97,003	42,638	94	207,234
20,412	45	99,208	43,092	95	209,439
20,866	46	101,413	43,546	96	211,644
21,319	47	103,617	43,999	97	213,848
21,773	48	105,822	44,453	98	216,053
22,226	49	108,026	44,906	99	218,257
22,680	50	110,231	45,360	100	220,462

N

Litre	US gal	Litre	US gal	Litre	US gal	Litre	US gal
3,785	1	0,264	193,055	51	13,473		
7,571	2	0,528	196,841	52	13,737		
11,356	3	0,793	200,626	53	14,001		
15,142	4	1,057	204,412	54	14,265		
18,927	5	1,321	208,197	55	14,529		
22,712	6	1,585	211,982	56	14,794		
26,498	7	1,849	215,768	57	15,058		
30,283	8	2,113	219,553	58	15,322		
34,069	9	2,378	223,339	59	15,586		
37,854	10	2,642	227,124	60	15,850		
41,639	11	2,906	230,909	61	16,114		
45,425	12	3,170	234,695	62	16,379		
49,210	13	3,434	238,480	63	16,643		
52,996	14	3,698	242,266	64	16,907		
56,781	15	3,963	246,051	65	17,171		
60,566	16	4,227	249,836	66	17,435		
64,352	17	4,491	253,622	67	17,699		
68,137	18	4,755	257,407	68	17,964		
71,923	19	5,019	261,193	69	18,228		
75,708	20	5,283	264,978	70	18,492		
79,493	21	5,548	268,763	71	18,756		
83,279	22	5,812	272,549	72	19,020		
87,064	23	6,076	276,334	73	19,284		
90,850	24	6,340	280,120	74	19,549		
94,635	25	6,604	283,905	75	19,813		
98,420	26	6,868	287,690	76	20,077		
102,206	27	7,133	291,476	77	20,341		
105,991	28	7,397	295,261	78	20,605		
109,777	29	7,661	299,047	79	20,869		
113,562	30	7,925	302,832	80	21,134		
117,347	31	8,189	306,617	81	21,398		
121,133	32	8,453	310,403	82	21,662		
124,918	33	8,718	314,188	83	21,926		
128,704	34	8,982	317,974	84	22,190		
132,489	35	9,246	321,759	85	22,454		
136,274	36	9,510	325,544	86	22,719		
140,060	37	9,774	329,330	87	22,983		
143,845	38	10,038	333,115	88	23,247		
147,631	39	10,303	336,901	89	23,511		
151,416	40	10,567	340,686	90	23,775		
155,201	41	10,831	344,471	91	24,039		
158,987	42	11,095	348,257	92	24,304		
162,772	43	11,359	352,042	93	24,568		
166,558	44	11,623	355,828	94	24,832		
170,343	45	11,888	359,613	95	25,096		
174,128	46	12,152	363,398	96	25,360		
177,914	47	12,416	367,184	97	25,624		
181,699	48	12,680	370,969	98	25,889		
185,485	49	12,944	374,755	99	26,153		
189,270	50	13,209	378,540	100	26,417		

Litre	UK gal	Litre ---- UK gal	Litre	UK gal	Litre ---- UK gal
4,546	1	0,220	231,846	51	11,218
9,092	2	0,440	236,392	52	11,438
13,638	3	0,660	240,938	53	11,658
18,184	4	0,880	245,484	54	11,878
22,730	5	1,100	250,030	55	12,098
27,276	6	1,320	254,576	56	12,318
31,822	7	1,540	259,122	57	12,538
36,368	8	1,760	263,668	58	12,758
40,914	9	1,980	268,214	59	12,978
45,460	10	2,200	272,760	60	13,198
50,006	11	2,420	277,306	61	13,418
54,552	12	2,640	281,852	62	13,638
59,098	13	2,860	286,398	63	13,858
63,644	14	3,080	290,944	64	14,078
68,190	15	3,300	295,490	65	14,298
72,736	16	3,520	300,036	66	14,518
77,282	17	3,739	304,582	67	14,738
81,828	18	3,959	309,128	68	14,958
86,374	19	4,179	313,674	69	15,178
90,920	20	4,399	318,220	70	15,398
95,466	21	4,619	322,766	71	15,618
100,012	22	4,839	327,312	72	15,838
104,558	23	5,059	331,858	73	16,058
109,104	24	5,279	336,404	74	16,278
113,650	25	5,499	340,950	75	16,498
118,196	26	5,719	345,496	76	16,718
122,742	27	5,939	350,042	77	16,938
127,288	28	6,159	354,588	78	17,158
131,834	29	6,379	359,134	79	17,378
136,380	30	6,599	363,680	80	17,598
140,926	31	6,819	368,226	81	17,818
145,472	32	7,039	372,772	82	18,038
150,018	33	7,259	377,318	83	18,258
154,564	34	7,479	381,864	84	18,477
159,110	35	7,699	386,410	85	18,697
163,656	36	7,919	390,956	86	18,917
168,202	37	8,139	395,502	87	19,137
172,748	38	8,359	400,048	88	19,357
177,294	39	8,579	404,594	89	19,577
181,840	40	8,799	409,140	90	19,797
186,386	41	9,019	413,686	91	20,017
190,932	42	9,239	418,232	92	20,237
195,478	43	9,459	422,778	93	20,457
200,024	44	9,679	427,324	94	20,677
204,570	45	9,899	431,870	95	20,897
209,116	46	10,119	436,416	96	21,117
213,662	47	10,339	440,962	97	21,337
218,208	48	10,559	445,508	98	21,557
222,754	49	10,779	450,054	99	21,777
227,300	50	10,999	454,600	100	21,997

N

mm	inch	mm ---- inch
25,4	1	0,039
50,8	2	0,079
76,2	3	0,118
101,6	4	0,157
127,0	5	0,197
152,4	6	0,236
177,8	7	0,276
203,2	8	0,315
228,6	9	0,354
254,0	10	0,394
279,4	11	0,433
304,8	12	0,472
330,2	13	0,512
355,6	14	0,551
381,0	15	0,591
406,4	16	0,630
431,8	17	0,669
457,2	18	0,709
482,6	19	0,748
508,0	20	0,787
533,4	21	0,827
558,8	22	0,866
584,2	23	0,906
609,6	24	0,945
635,0	25	0,984
660,4	26	1,024
685,8	27	1,063
711,2	28	1,102
736,6	29	1,142
762,0	30	1,181
787,4	31	1,220
812,8	32	1,260
838,2	33	1,299
863,6	34	1,339
889,0	35	1,378
914,4	36	1,417
939,8	37	1,457
965,2	38	1,496
990,6	39	1,535
1 016,0	40	1,575
1 041,4	41	1,614
1 066,8	42	1,654
1 092,2	43	1,693
1 117,6	44	1,732
1 143,0	45	1,772
1 168,4	46	1,811
1 193,8	47	1,850
1 219,2	48	1,890
1 244,6	49	1,929
1 270,0	50	1,969

mm	inch	mm ----- inch
1 295,4	51	2,008
1 320,8	52	2,047
1 346,2	53	2,087
1 371,6	54	2,126
1 397,0	55	2,165
1 422,4	56	2,205
1 447,8	57	2,244
1 473,2	58	2,283
1 498,6	59	2,323
1 524,0	60	2,362
1 549,4	61	2,402
1 574,8	62	2,441
1 600,2	63	2,480
1 625,6	64	2,520
1 651,0	65	2,559
1 676,4	66	2,598
1 701,8	67	2,638
1 727,2	68	2,677
1 752,6	69	2,717
1 778,0	70	2,756
1 803,4	71	2,795
1 828,8	72	2,835
1 854,2	73	2,874
1 879,6	74	2,913
1 905,0	75	2,953
1 930,4	76	2,992
1 955,8	77	3,031
1 981,2	78	3,071
2 006,6	79	3,110
2 032,0	80	3,150
2 057,4	81	3,189
2 082,8	82	3,228
2 108,2	83	3,268
2 133,6	84	3,307
2 159,0	85	3,346
2 184,4	86	3,386
2 209,8	87	3,425
2 235,2	88	3,465
2 260,6	89	3,504
2 286,0	90	3,543
2 311,4	91	3,583
2 336,8	92	3,622
2 362,2	93	3,661
2 387,6	94	3,701
2 413,0	95	3,740
2 438,4	96	3,780
2 463,8	97	3,819
2 489,2	98	3,858
2 514,6	99	3,898
2 540,0	100	3,937

N

bar ------- psi	bar ---- psi		bar ------- psi	bar ------ psi	
0,069	1	14,506	3,516	51	739,791
0,138	2	29,011	3,585	52	754,296
0,207	3	43,517	3,654	53	768,802
0,276	4	58,023	3,723	54	783,308
0,345	5	72,529	3,792	55	797,814
0,414	6	87,034	3,861	56	812,319
0,483	7	101,540	3,929	57	826,825
0,552	8	116,046	3,998	58	841,331
0,620	9	130,551	4,067	59	855,836
0,689	10	145,057	4,136	60	870,342
0,758	11	159,563	4,205	61	884,848
0,827	12	174,068	4,274	62	899,353
0,896	13	188,574	4,343	63	913,859
0,965	14	203,080	4,412	64	928,365
1,034	15	217,586	4,481	65	942,871
1,103	16	232,091	4,550	66	957,376
1,172	17	246,597	4,619	67	971,882
1,241	18	261,103	4,688	68	986,388
1,310	19	275,608	4,757	69	1.000,893
1,379	20	290,114	4,826	70	1.015,399
1,448	21	304,620	4,895	71	1.029,905
1,517	22	319,125	4,964	72	1.044,410
1,586	23	333,631	5,032	73	1.058,916
1,655	24	348,137	5,101	74	1.073,422
1,723	25	362,643	5,170	75	1.087,928
1,792	26	377,148	5,239	76	1.102,433
1,861	27	391,654	5,308	77	1.116,939
1,930	28	406,160	5,377	78	1.131,445
1,999	29	420,665	5,446	79	1.145,950
2,068	30	435,171	5,515	80	1.160,456
2,137	31	449,677	5,584	81	1.174,962
2,206	32	464,182	5,653	82	1.189,467
2,275	33	478,688	5,722	83	1.203,973
2,344	34	493,194	5,791	84	1.218,479
2,413	35	507,700	5,860	85	1.232,985
2,482	36	522,205	5,929	86	1.247,490
2,551	37	536,711	5,998	87	1.261,996
2,620	38	551,217	6,067	88	1.276,502
2,689	39	565,722	6,135	89	1.291,007
2,758	40	580,228	6,204	90	1.305,513
2,826	41	594,734	6,273	91	1.320,019
2,895	42	609,239	6,342	92	1.334,524
2,964	43	623,745	6,411	93	1.349,030
3,033	44	638,251	6,480	94	1.363,536
3,102	45	652,757	6,549	95	1.378,042
3,171	46	667,262	6,618	96	1.392,547
3,240	47	681,768	6,687	97	1.407,053
3,309	48	696,274	6,756	98	1.421,559
3,378	49	710,779	6,825	99	1.436,064
3,447	50	725,285	6,894	100	1.450,570

N

SECTION 10.2

BASIC PERFORMANCE DATA

PAGE INTENTIONALLY LEFT BLANK

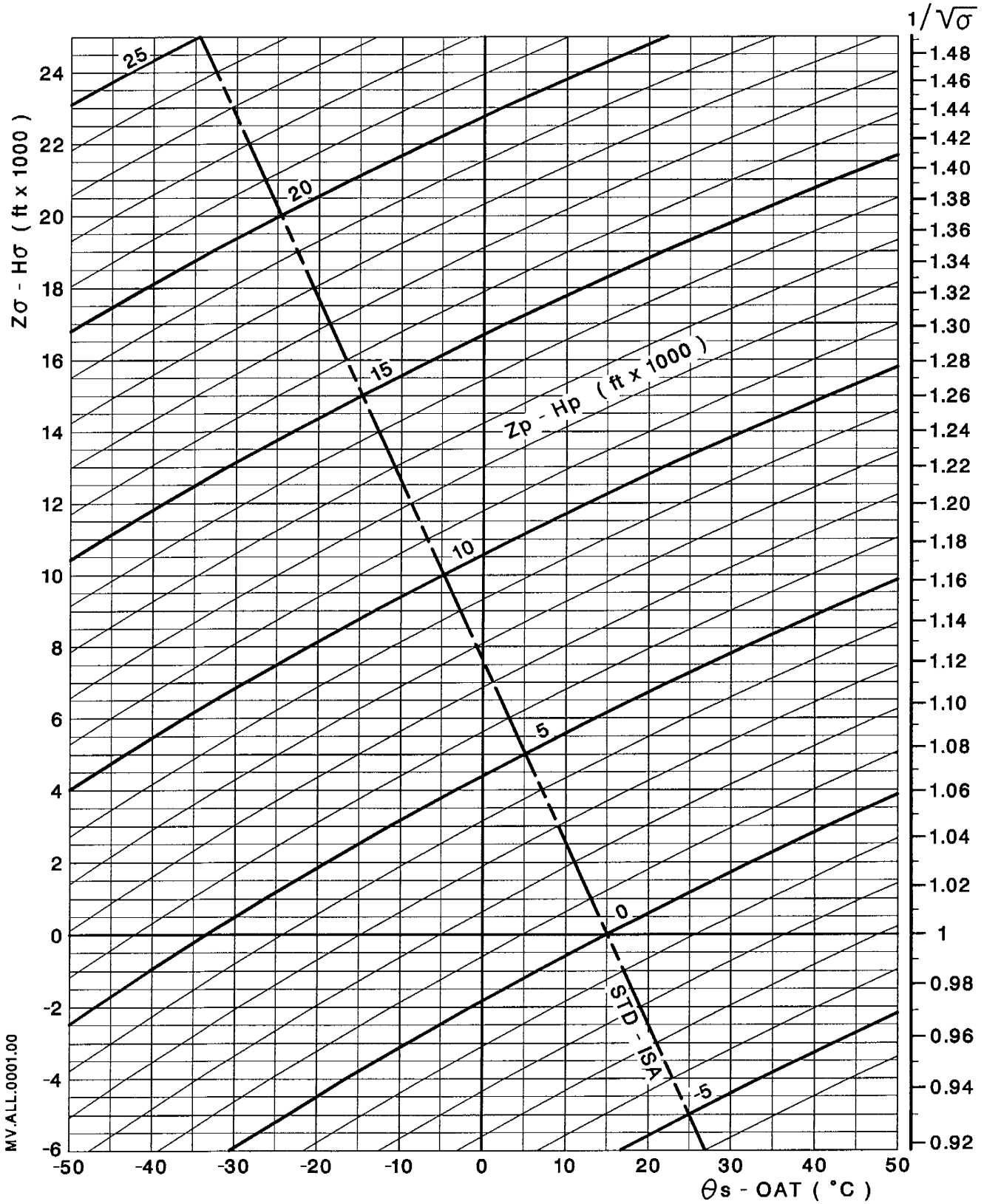
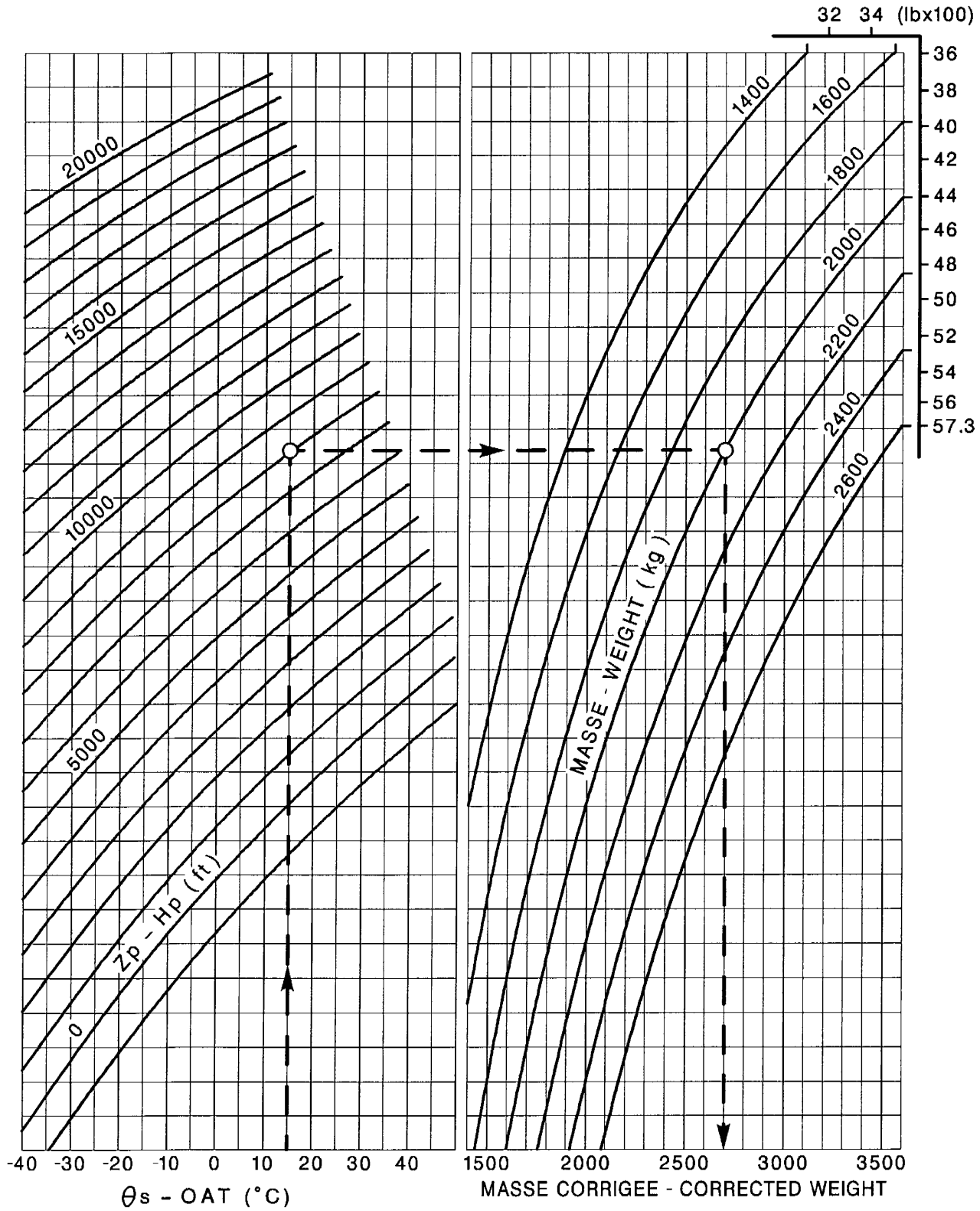

1/√σ
1.48
1.46
1.44
1.42
1.40
1.38
1.36
1.34
1.32
1.30
1.28
1.26
1.24
1.22
1.20
1.18
1.16
1.14
1.12
1.10
1.08
1.06
1.04
1.02
1
0.98
0.96
0.94
0.92
Zσ - Hσ (ft x 1000)
24
22
20
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
25
20
15
10
5
0
-5
STD - ISA
Zp - Hp (ft x 1000)
-50
-40
-30
-20
-10
0
10
20
30
40
50
θs - OAT (°C)
MV.ALL.0001.00

Figure 1



MV.55.0435.02

Figure 2

CORRECTED WEIGHTS FOR DETERMINING THE SPEEDS (see figure opposite) R R R

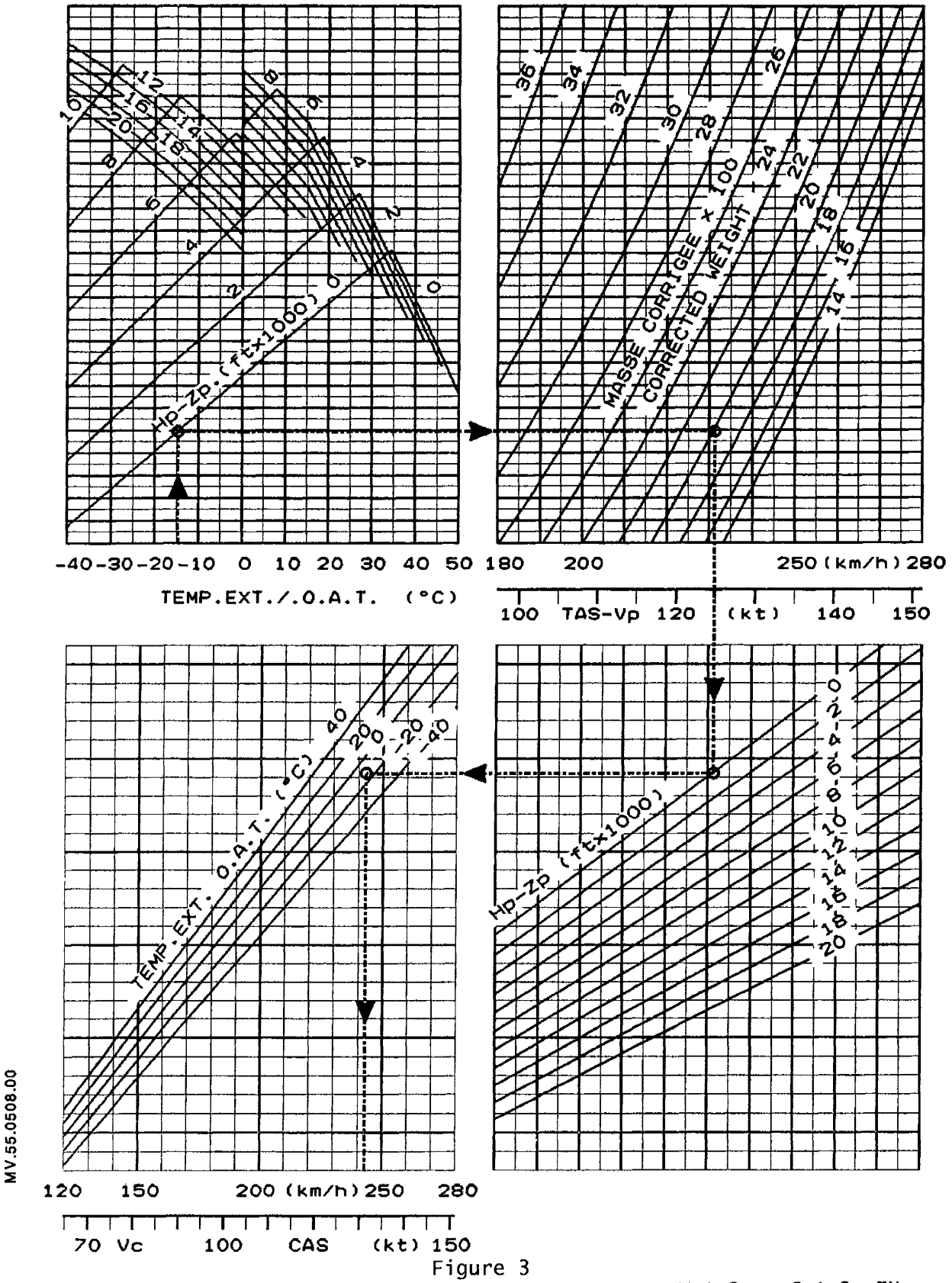


Figure 3

CONDITION

- Stabilized level flight

T.A.S. - C.A.S. IN FAST CRUISE

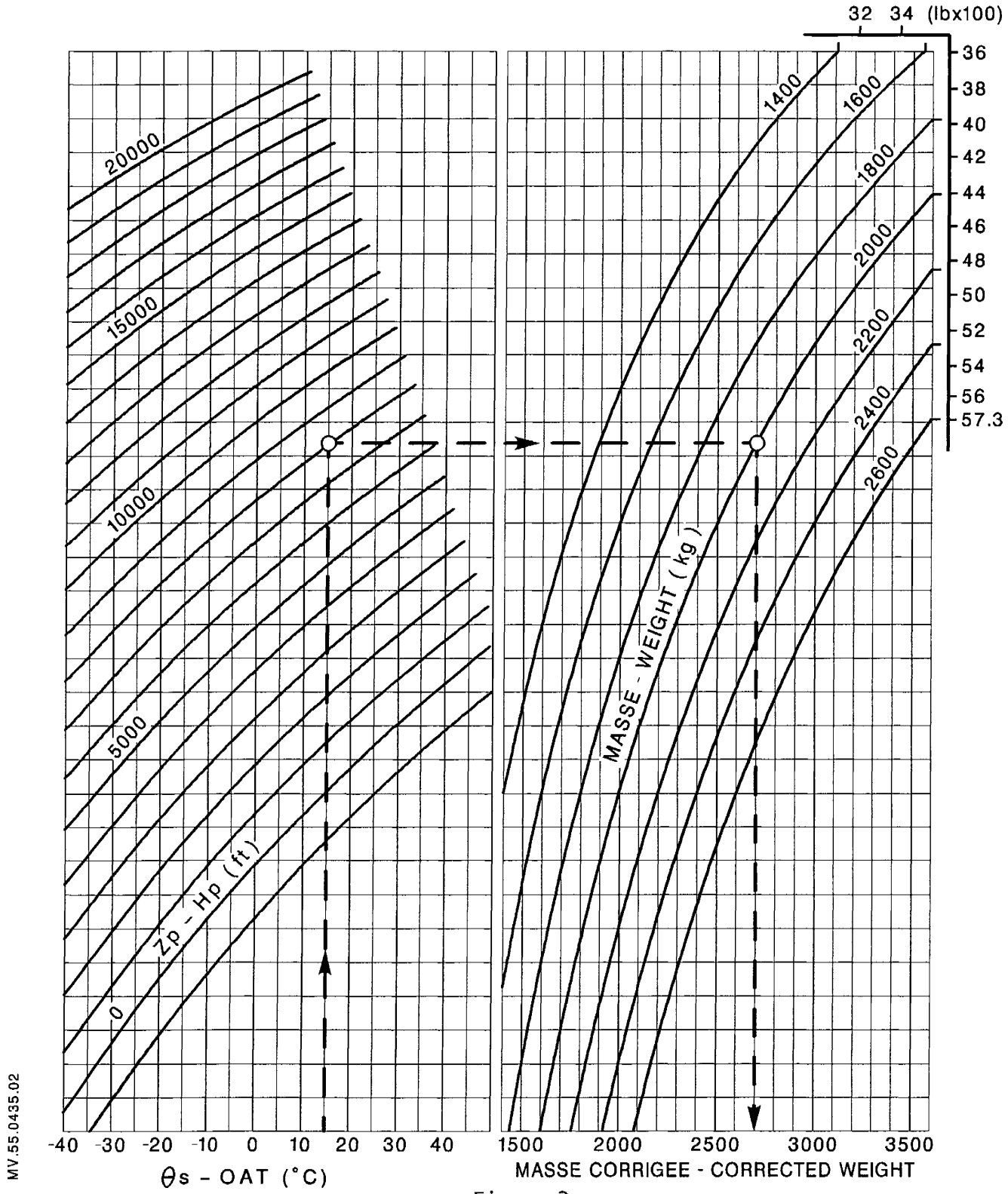


Figure 2

CORRECTED WEIGHTS FOR DETERMINING THE SPEEDS (see figure opposite) R R R

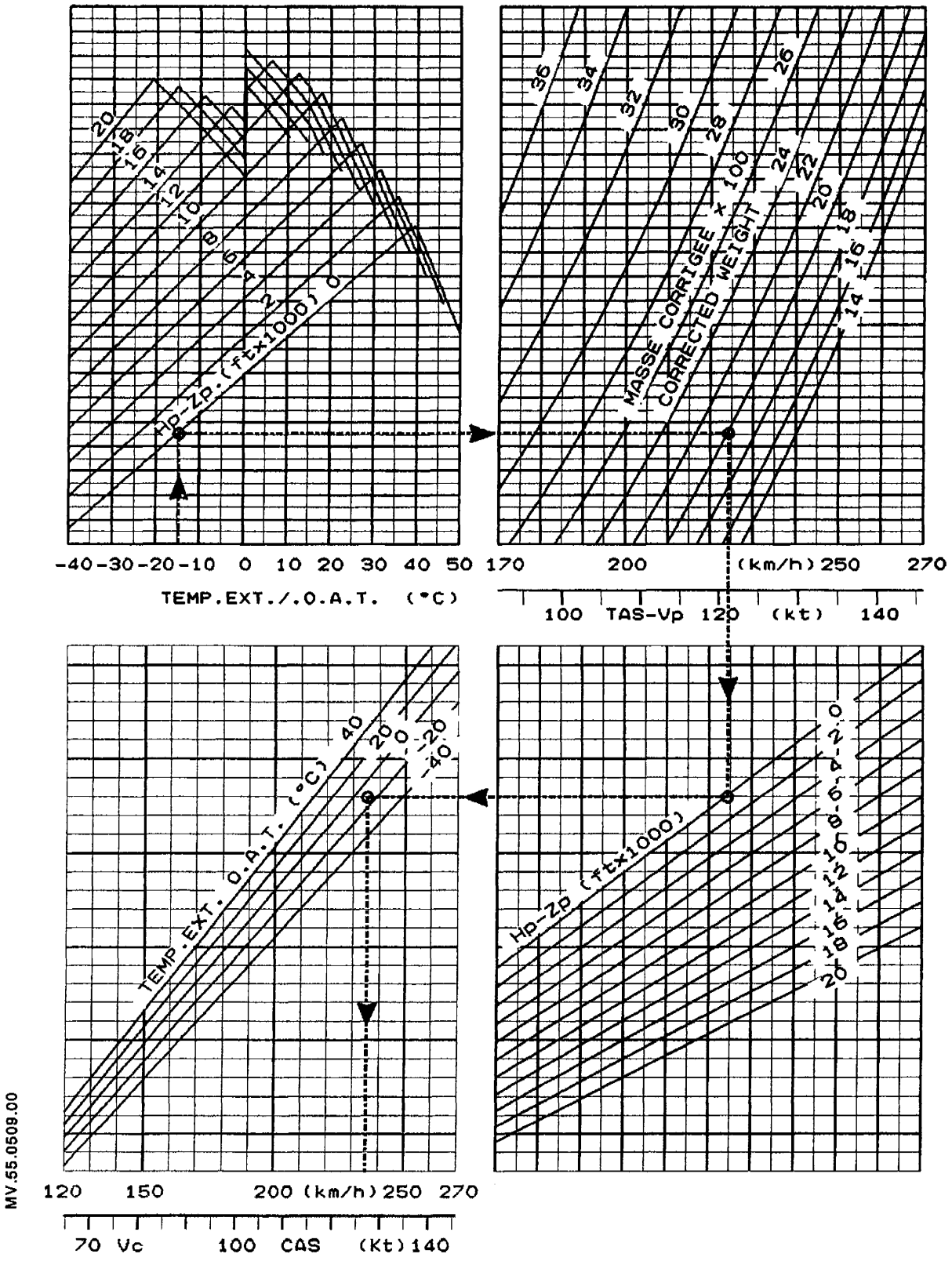


Figure 4

CONDITIONS

- Stabilized level flight
- Recommended torque

T.A.S. - C.A.S. IN RECOMMENDED CRUISE

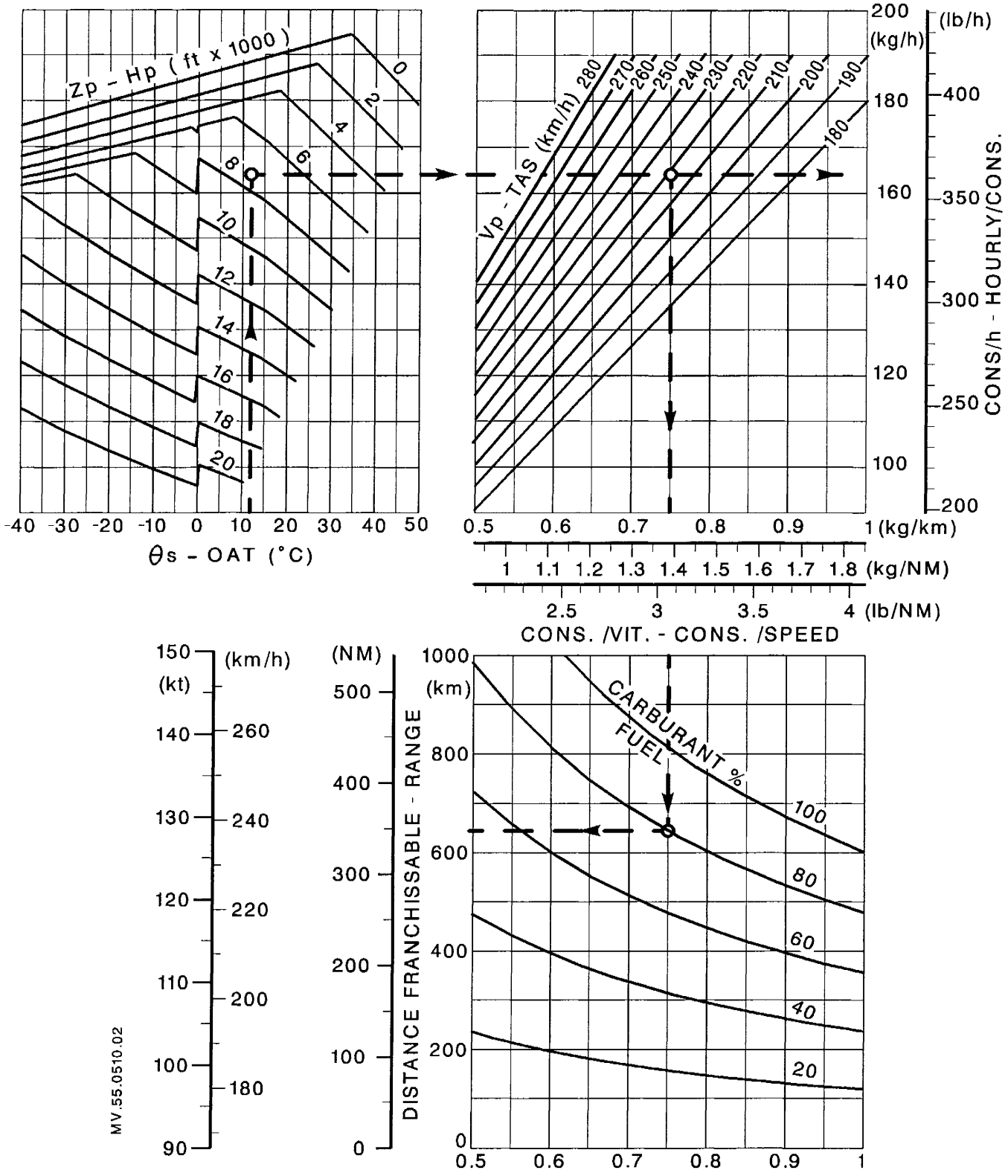


Figure 5

CONDITION

Stabilized level flight

- FUEL CONSUMPTION
- RANGE IN FAST CRUISE

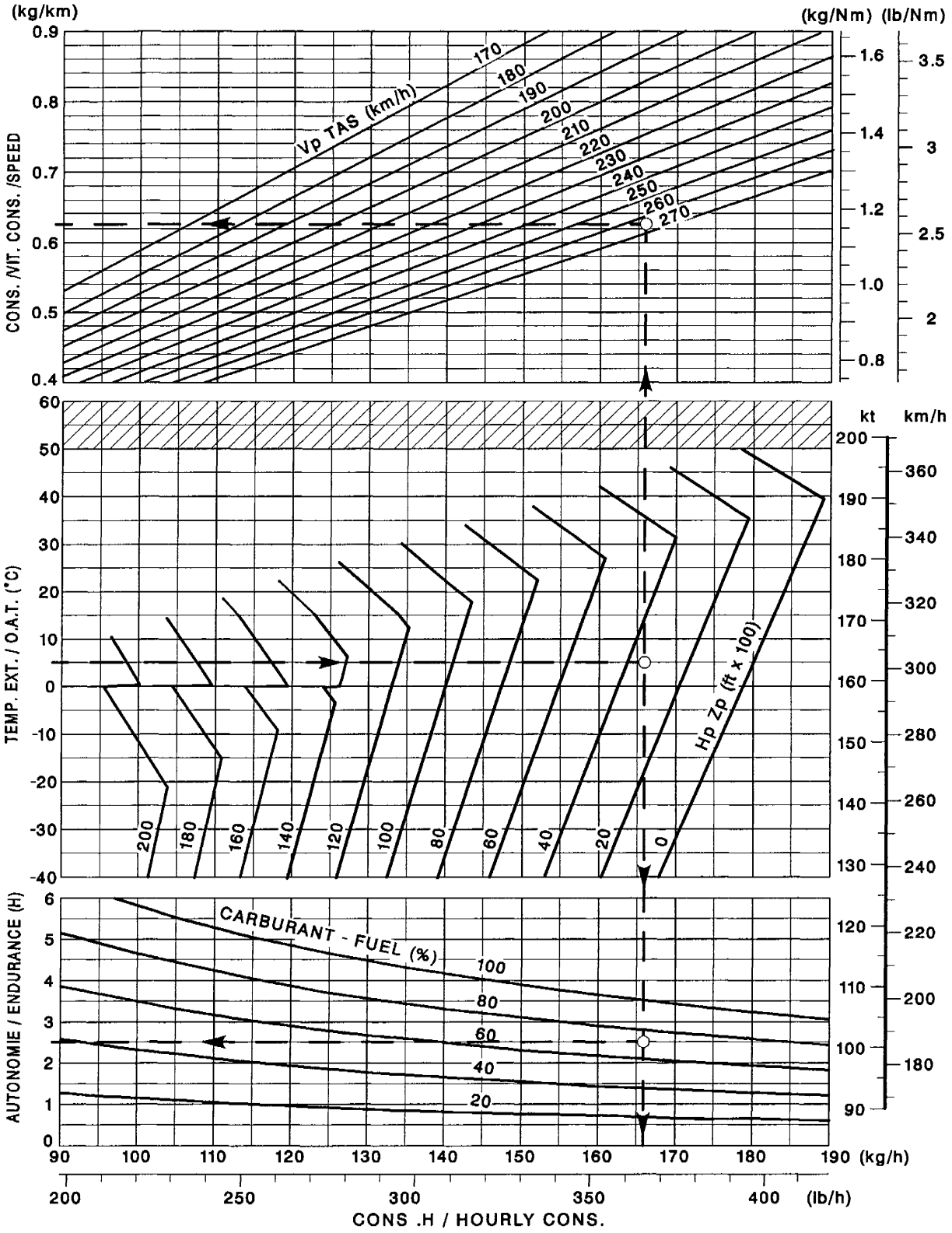
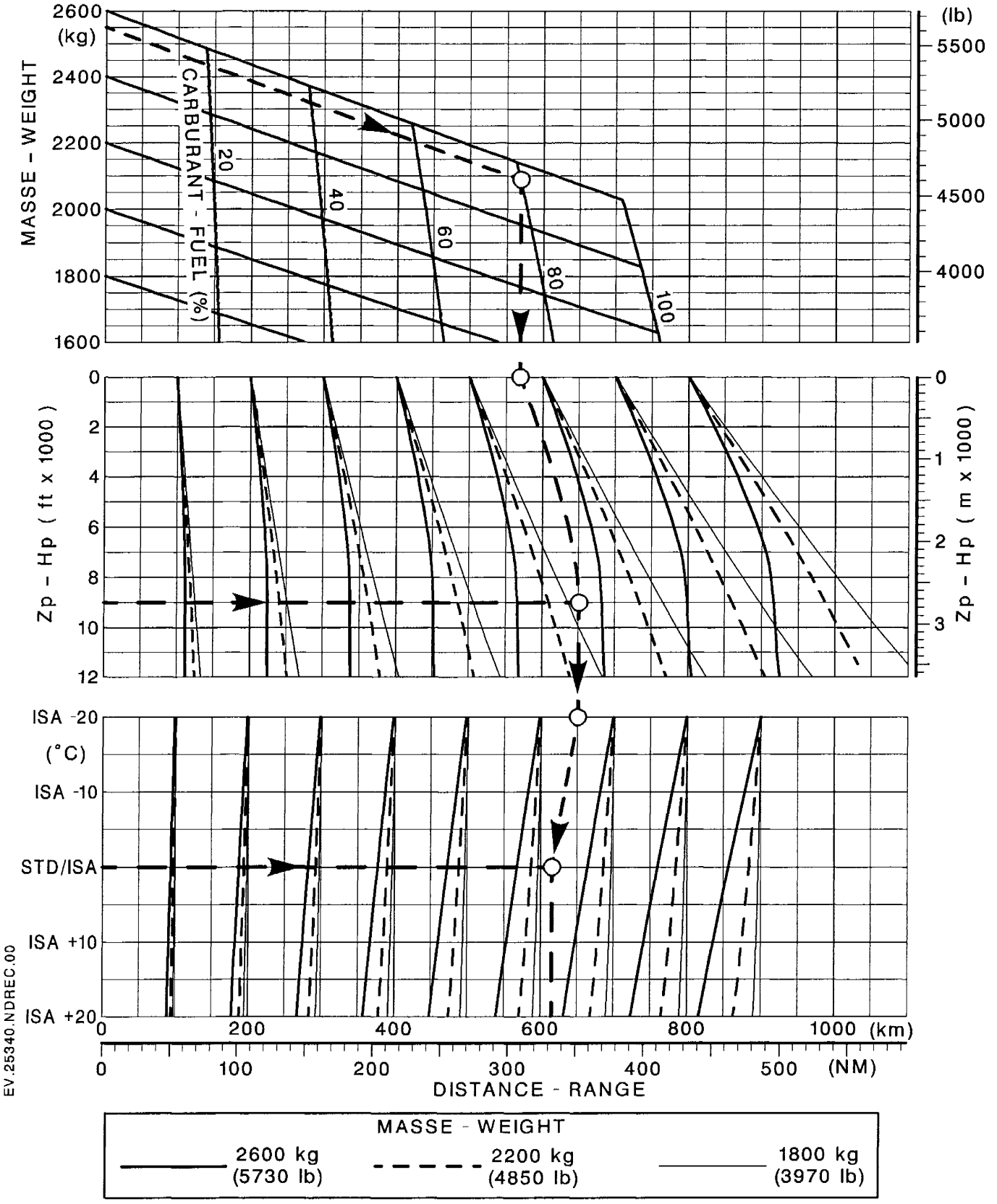


Figure 6

CONDITION

Stabilized level flight

FUEL CONSUMPTION AND ENDURANCE IN RECOMMENDED CRUISE



EV.25340.NDREC.00

Figure 7

CONDITION

Stabilized level flight

RANGE IN RECOMMENDED CRUISE

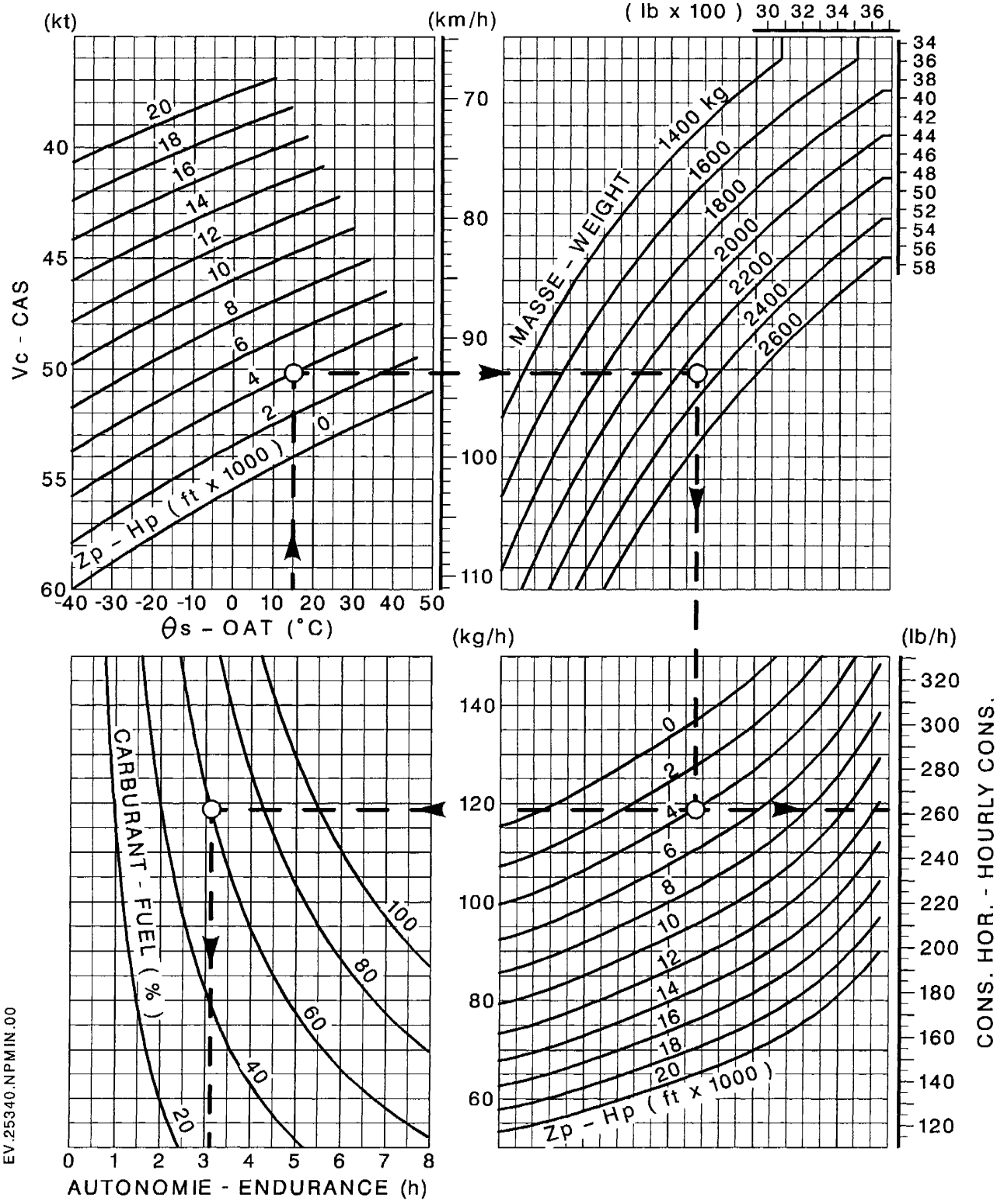


Figure 8

CONDITION

Stabilized level flight

- FUEL CONSUMPTION
- ENDURANCE IN "MIN. CONSUMPTION" CRUISE

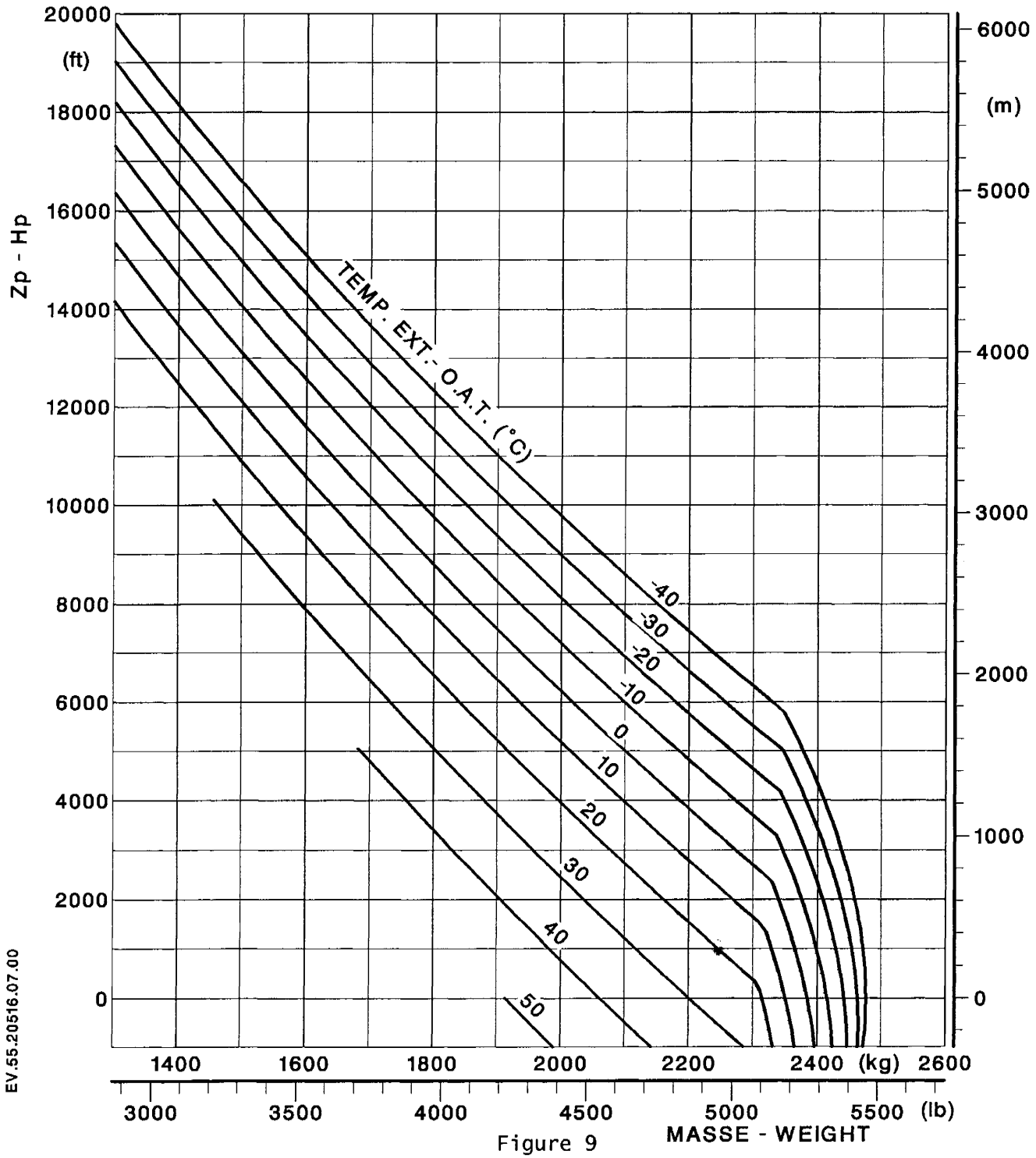


Figure 9

CONDITIONS

- Height : 6 ft (2m)
- No P2 air bleed
- Max. Contingency Power Limit

HOVER PERFORMANCE
I.G.E. ON ONE ENGINE

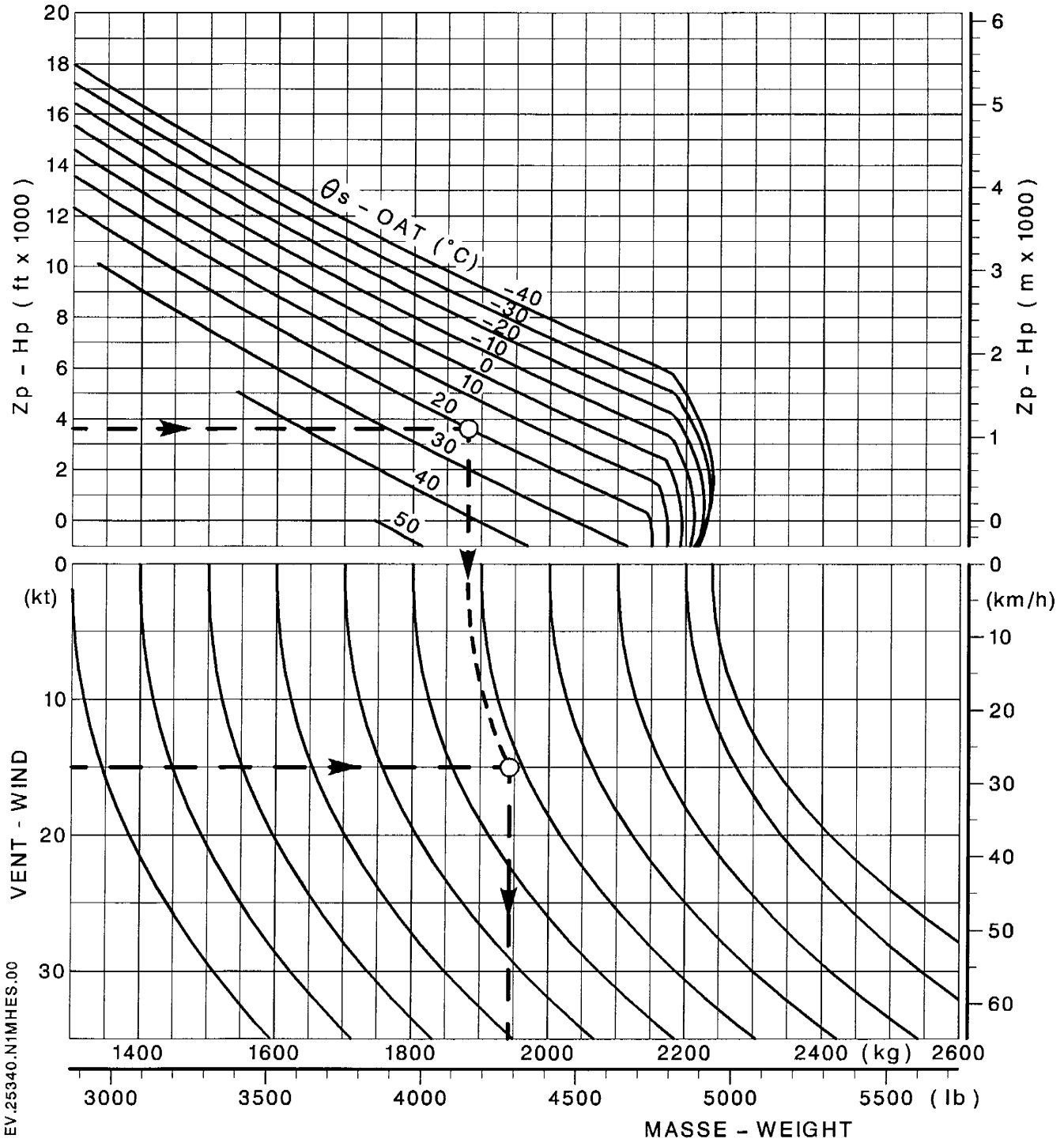


Figure 10

CONDITIONS

- Effect of head wind
- No P2 air bleed
- Max. Contingency Power Limit

HOVER PERFORMANCE
OGE ON ONE ENGINE

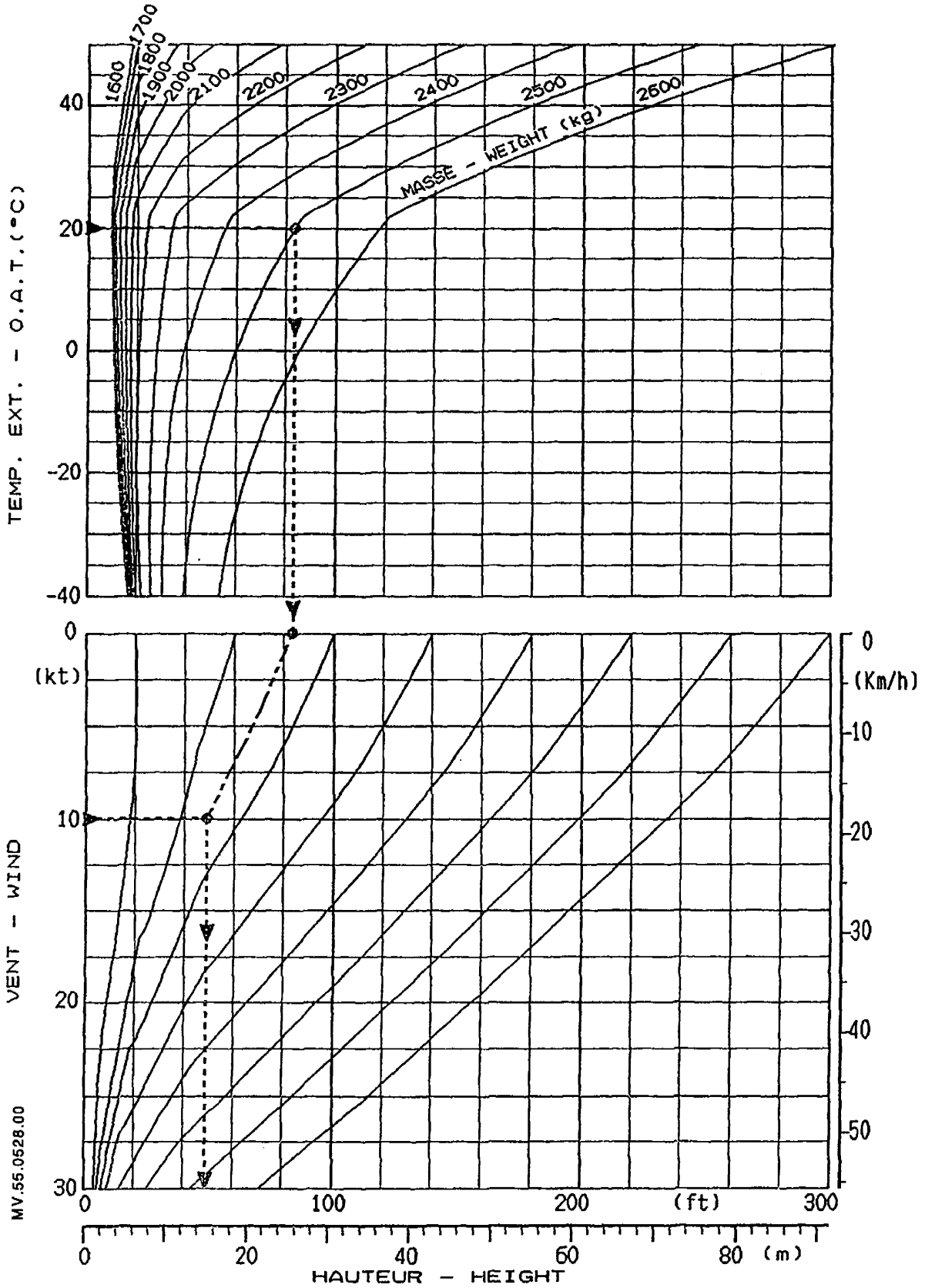


Figure 11

CONDITIONS
- One engine failed
- Zp = 0
- NORMAL mode

HEIGHT LOSS FROM HOVER TO V.TOSS (40 KT) AFTER FAILURE OF ONE ENGINE

N

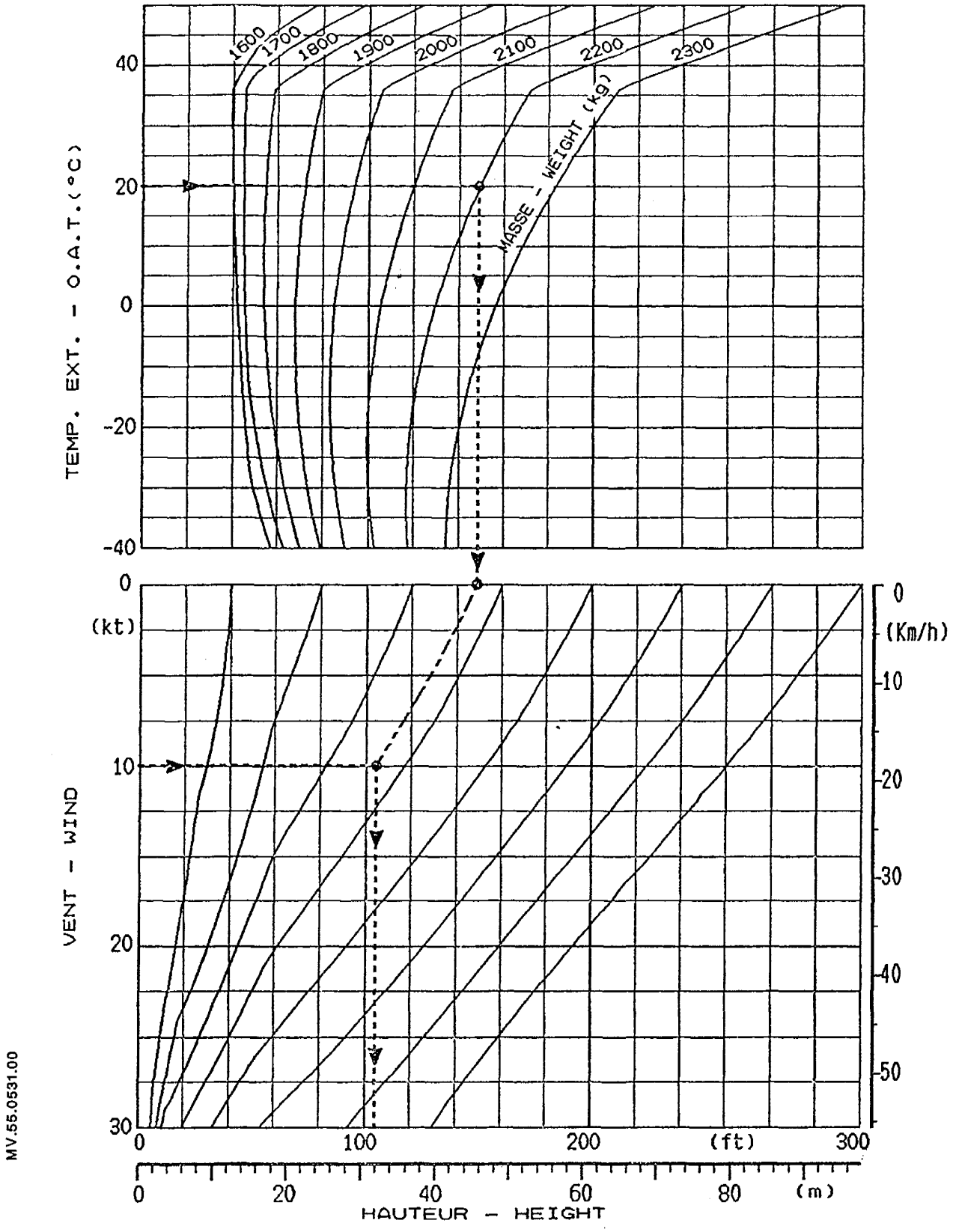


Figure 12

CONDITIONS
- One engine failed
- Zp = 0
- TRAINING mode

HEIGHT LOSS FROM HOVER TO V.TOSS (40 KT) AFTER FAILURE OF ONE ENGINE

N

SECTION 10.3

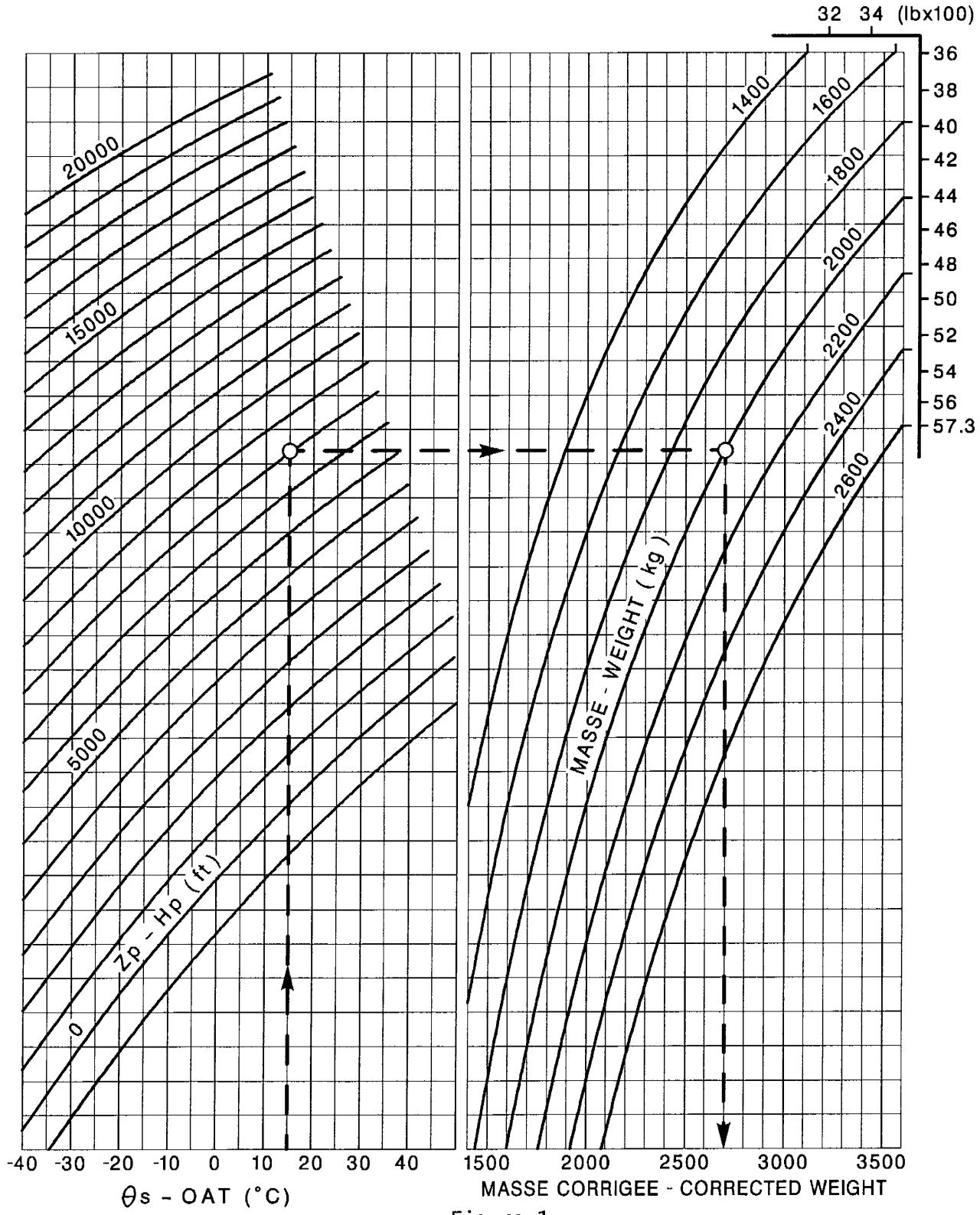
INFLUENCE OF EQUIPMENT ITEMS ON FLIGHT PERFORMANCE

Equipment items installed	Fast cruise				Recommended cruise				
	Airspeed Km/h	Kt	Hourly Fuel Consumption	Range	Airspeed Km/h	Kt	Hourly Fuel Consumption	Range	
Heating and demisting systems	-	-	+ 3 %	- 3 %					
Skis	- 2	- 1		- 1 %	- 2	- 1		- 1 %	R
Electric hoist	- 6	- 3		- 2%	- 6	- 3		- 2%	R
Emergency floatation gear				-1.5%	- 4	- 2		-1.5%	R
High type landing gear	- 4	- 2		-1.5%	- 4	- 2		-1.5%	
Locator searchlight	- 3	-1,5		-1.5%	- 3	- 1,5		-1.5%	R
Sand filters	See SECTION 10.4								R

SECTION 10.4

PERFORMANCE DATA WITH SAND FILTERS INSTALLED

The performances with operating and not operating sand filters are given in the charts 1 to 6 on pages :

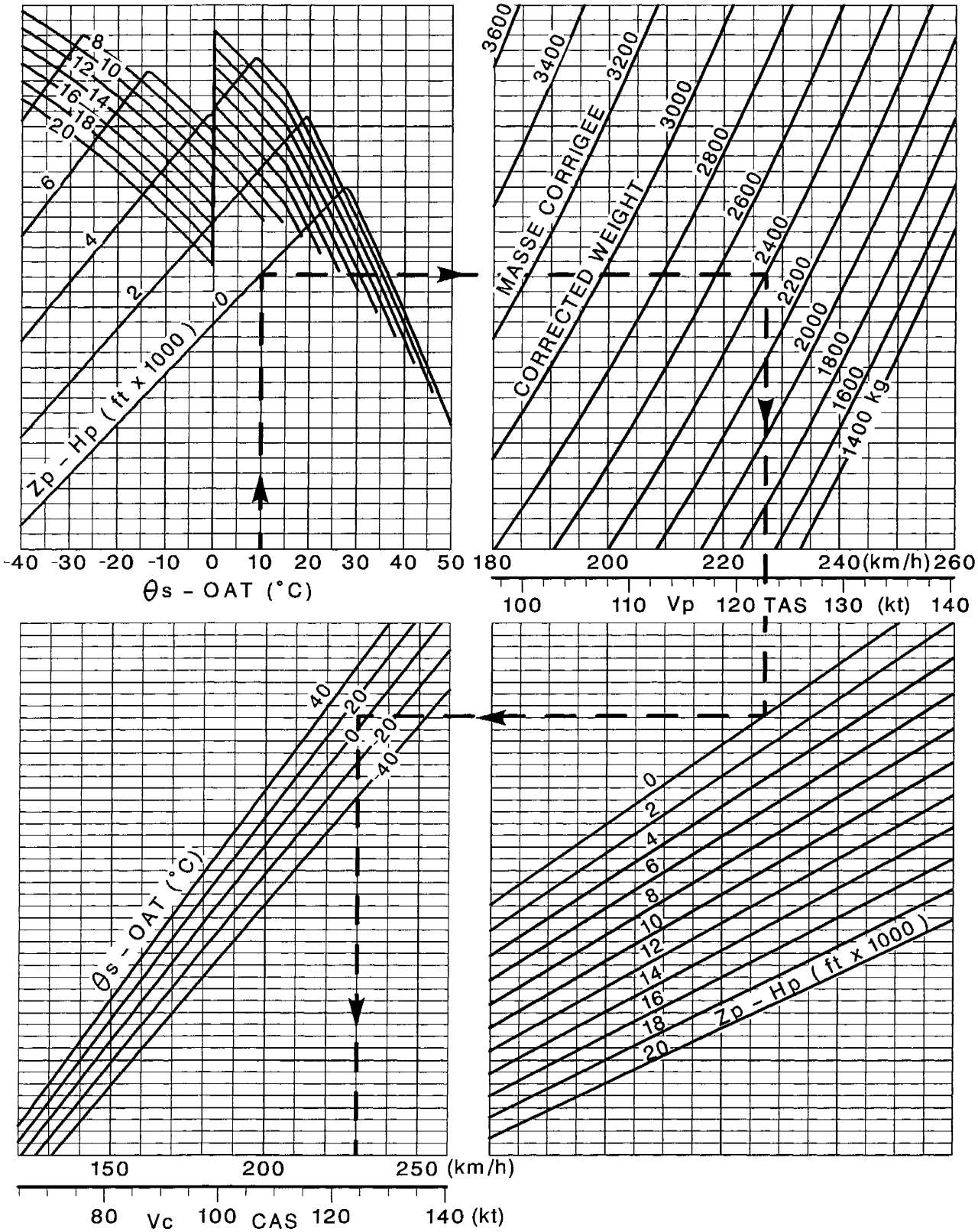


MV.55.0435.02

Figure 1

CORRECTED WEIGHT TO DETERMINE SPEEDS (on facing page)

N



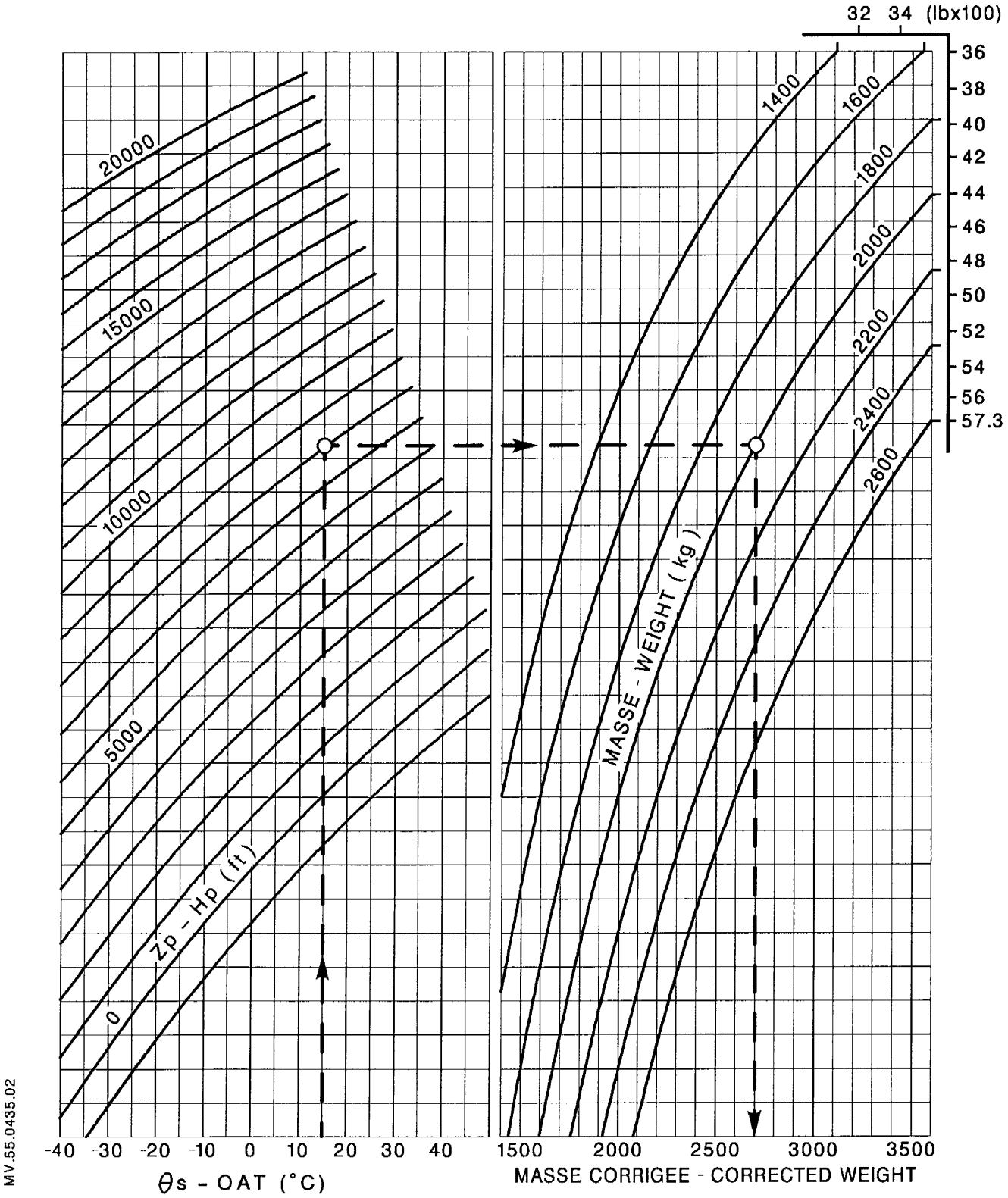
EV.25708.NVRAPAS.00

Figure 2

CONDITION
- Stabilized level flight
- Sand filter in operation or not in operation

TAS/CAS IN FAST CRUISE

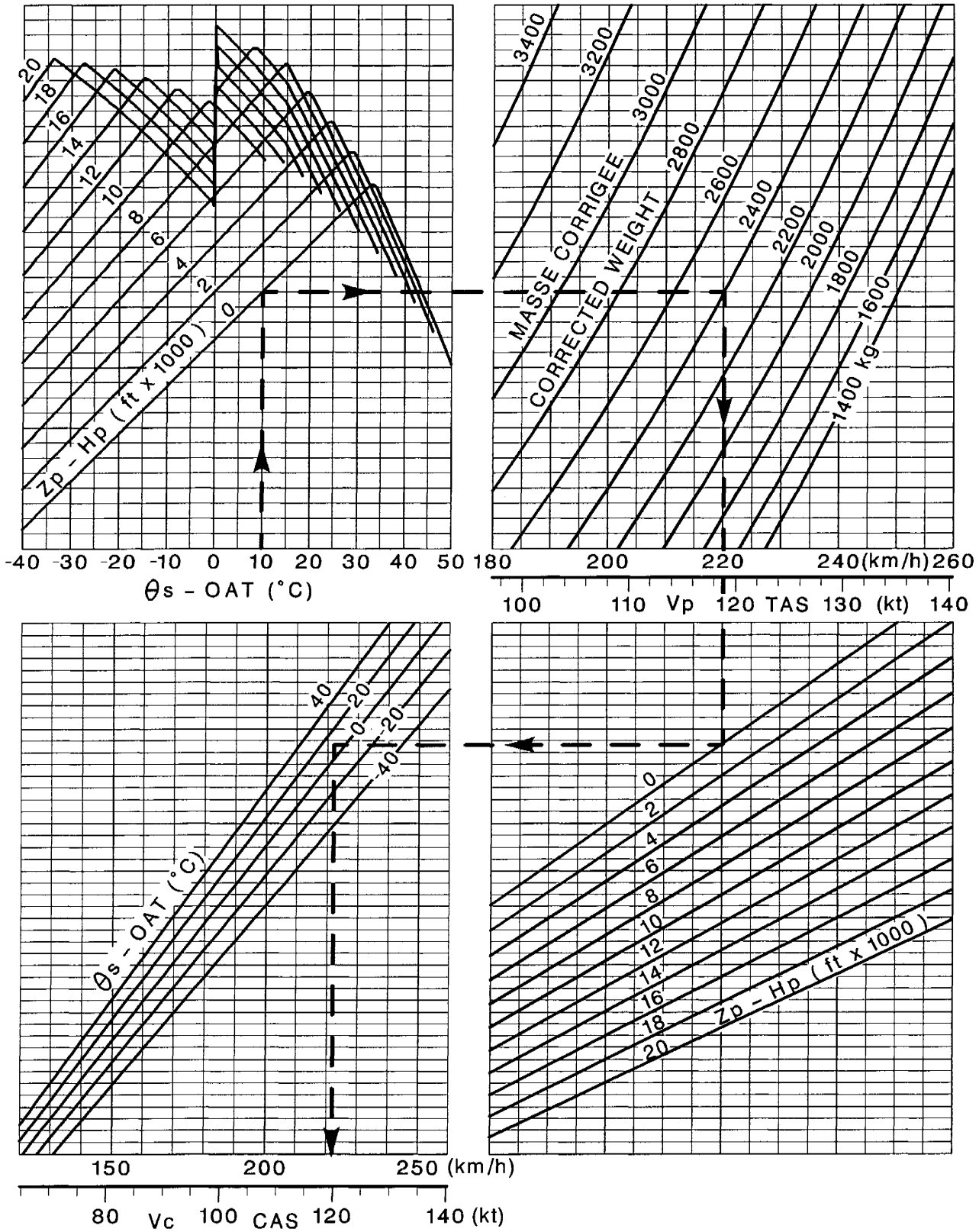
N



MV.55.0435.02

Figure 1

CORRECTED WEIGHT FOR DETERMINING THE SPEEDS (on facing page)



EV.25708.NVRECAS.00

Figure 3

CONDITIONS
- Stabilized level flight
- Recommended torque
- Sand filter in operation or not in operation

TAS/CAS IN RECOMMENDED CRUISE

N

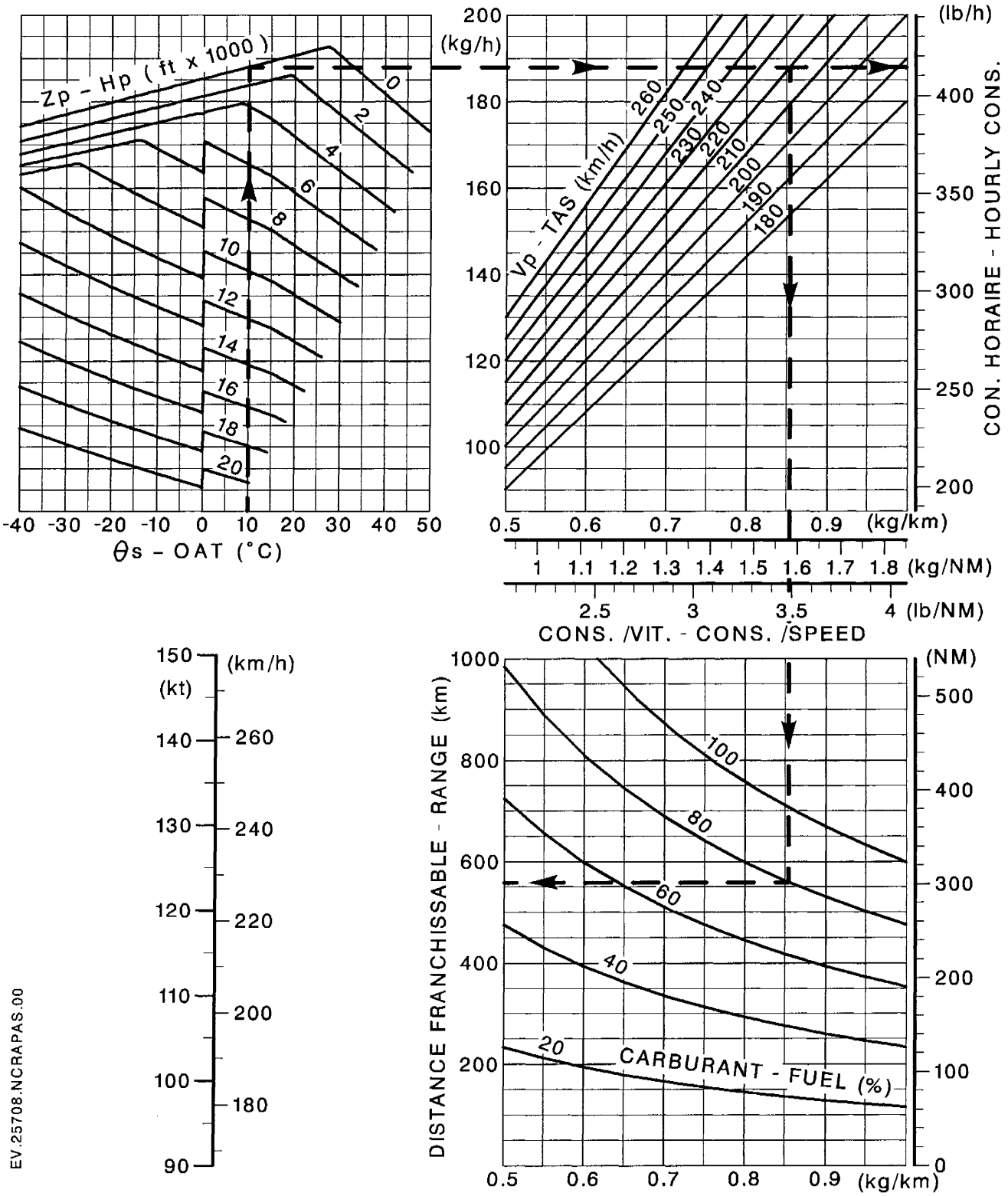


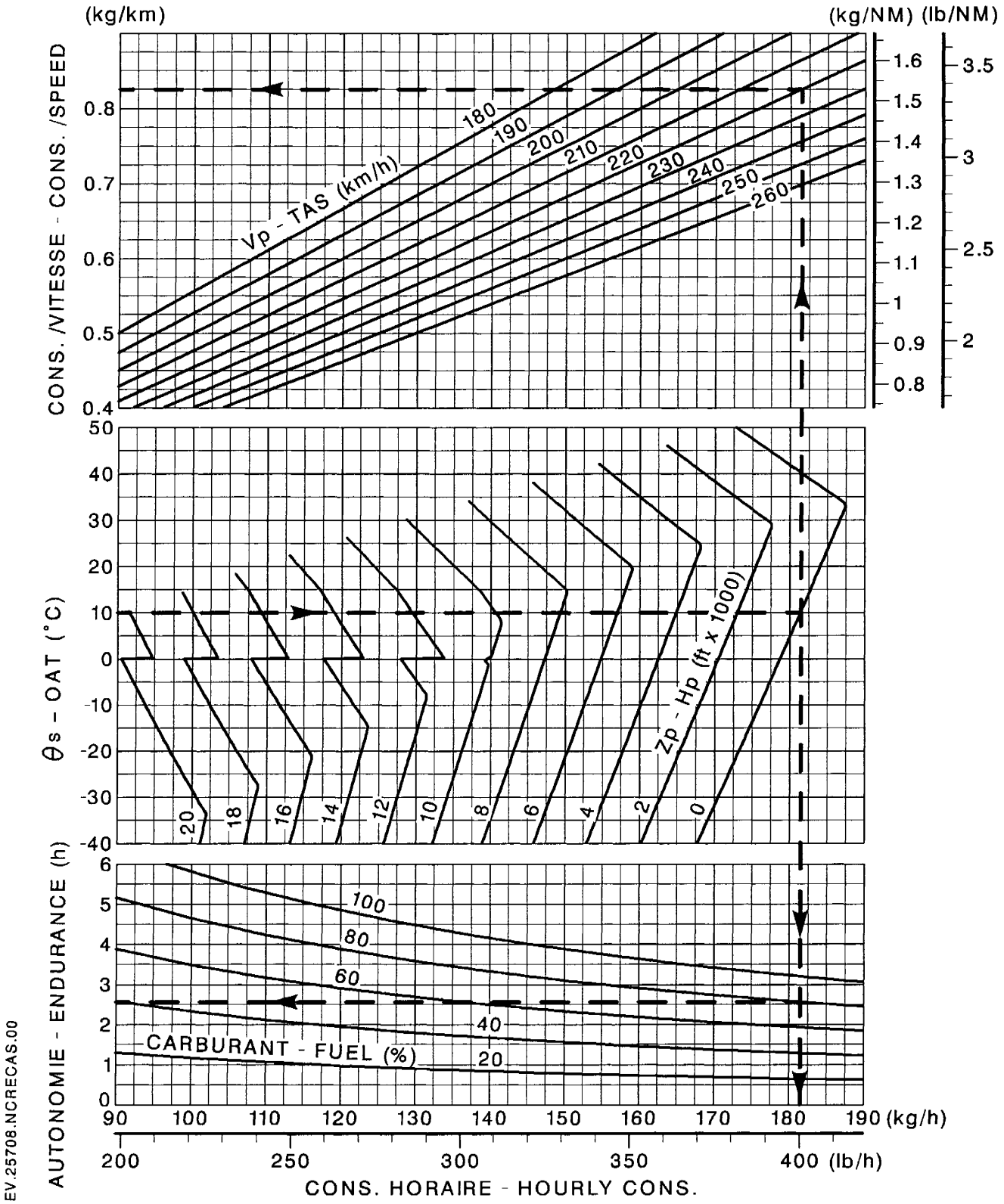
Figure 4

CONDITION
- Stabilized level flight,
- Sand filters not operating, or operating (see NOTE)

- FUEL CONSUMPTION
- RANGE IN FAST CRUISE

NOTE : Sand filters operating the consumptions are increased by 1 %, the range is reduced by 1 %.

EV.25708.NCRAPAS.00



EV.25708.NCRECAS.00

Figure 5

CONDITION
- Stabilized level flight
- Sand filters not operating, or operating (see NOTE)

FUEL CONSUMPTION - ENDURANCE IN RECOMMENCED CRUISE

NOTE : Sand filters operating the consumptions are increased by 1 %, the range is reduced by 1 %.

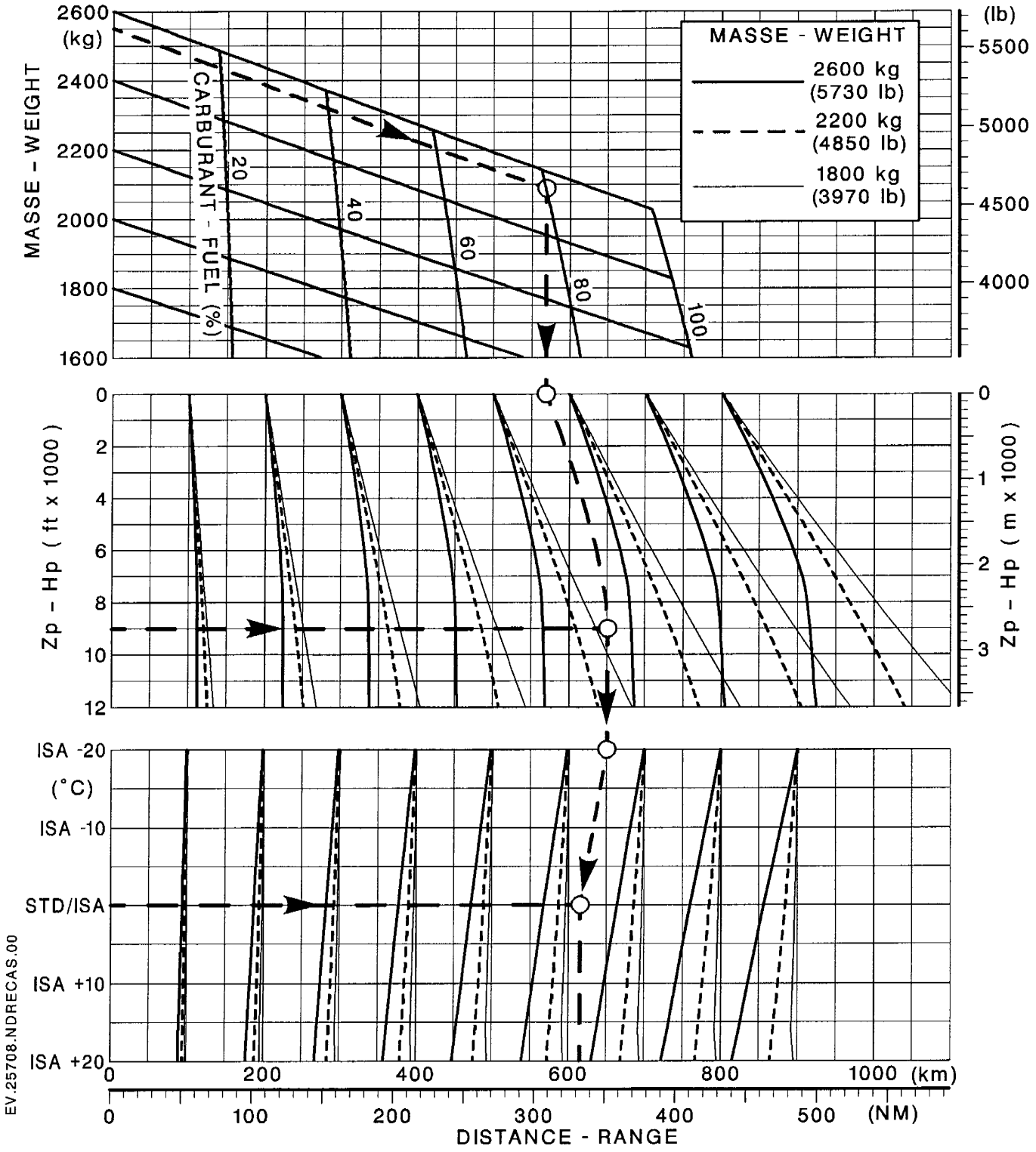


Figure 6

CONDITION
- Stabilized level flight,
- Sand filters not operating, or operating (see NOTE)

- RANGE IN
- RECOMMENCED CRUISE

NOTE : Sand filters operating the consumptions are increased by 1 %, the range is reduced by 1 %.