FLIGHT MANUAL

AS 355 F1

CAA TYPE CERTIFICATE No. FR.15

REGISTRATION No. SERIAL No.

APPROVED BY :

The DIRECTION GENERALE DE
L'AVIATION CIVILE (DGAC)

Date of approval : 06.02.1984

L'INGENIEUR EN CHEF DE L'ARMEMENT
A. RICHARD

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

This RFM is CAA approved for UK registered aircraft and consist of all uncoded and coded [E] pages marked "DGAC approved".

IMPORTANT NOTE
The practical value of this manual depends entirely upon its being correctly up-dated. The revisions are recorded on the last page. At this revision, the effectivity of the manual is specified overleaf.

THIS DOCUMENT SHALL BE CARRIED IN AIRCRAFT AT ALL TIMES

Normal revision : 2

Société Nationale Industrielle aerospatiale
Division Hélicoptères - 13723 MARIGNANE Cedex (FRANCE)

MANUAL EFFECTIVITY

This Manual at the revision mentioned on first page contains the pages and Sections below identified by the following date-codes :

SECTION	PAGE	DATE	SECTION	PAGE	DATE
SECTION 0			SECTION 5.2		84-20
0.0.P1	1 *07*	87-10	SECTION 6		88-27
0.0.P1	2 *07*	88-27			
0.0.P2	1 *00*	84-20	SECTION 7		87-05
0.0.P5	1 *07*	87-10			
0.0.P5	2 *07*	87-10	SECTION 8		88-27
0.0.P8	1 *00*	84-20			
0.0.P8	2 *00*	87-10	SECTION 9		87-05
SECTION 1		87-10	SECTION 10	See	10.0P Page 1
SECTION 2	See	0.0.P5	SECTION 11	See	11.0P Page 1
SECTION 3	See	0.0.P5	99.99	1	WITHOUT
			99.99	2	WITHOUT
SECTION 4	See	0.0.P5	99.99	3	WITHOUT
			99.99	4	WITHOUT
SECTION 5.1	See	0.0.P5			

NOTE : The date-code consits of the last two digits of the year followed by the week number.

SECTION 1

GENERAL

CONTENTS

LIST OF PAGES CONTAINED IN THE SECTION

This Section at the revision mentioned on first page contains the pages below identified by the following date-codes :

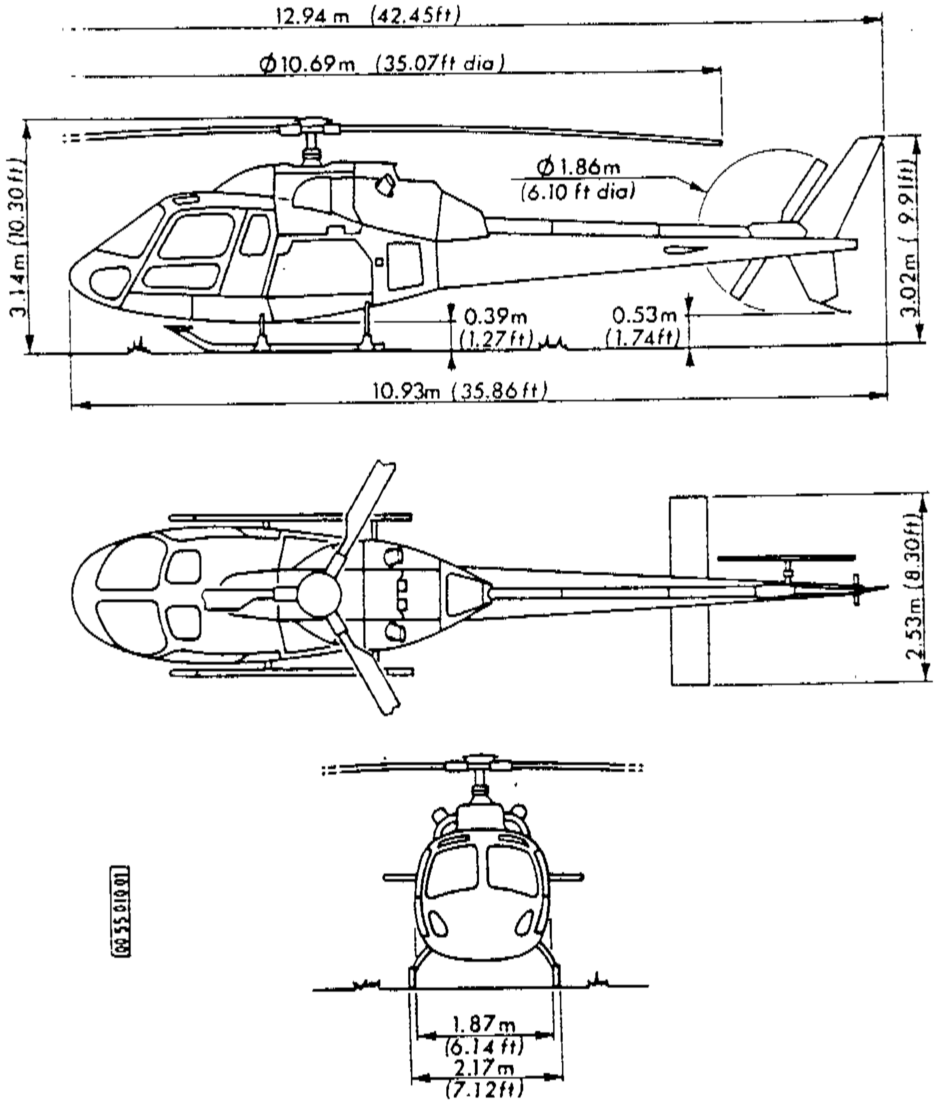
SECTION	PAGE	DATE	SECTION	PAGE	DATE
1.0.P	1 *01*	87-10			
1.0.P	2 *01*	87-10			
SECTION 1.1					
1.1	1 *00*	84-20			
1.1	2 *00*	82-23			
1.1	3 *00*	84-20			
1.1	4 *01*	83-19			
1.1	5 *00*	87-10			
SECTION 1.2					
1.2	1 *00*	81-16			
1.2	2 *00*	81-16			
1.2	3 *00*	81-16			
1.2	4 *00*	81-16			
1.2	5 *00*	81-16			
1.2	6 *00*	81-16			
1.2	7 *00*	87-10			
1.2	8 *00*	81-16			

NOTE : The date-code consists of the last two digits of the year followed by the week number.

SECTION 1.1

LEADING PARTICULARS

1 MAIN AIRCRAFT DIMENSIONS

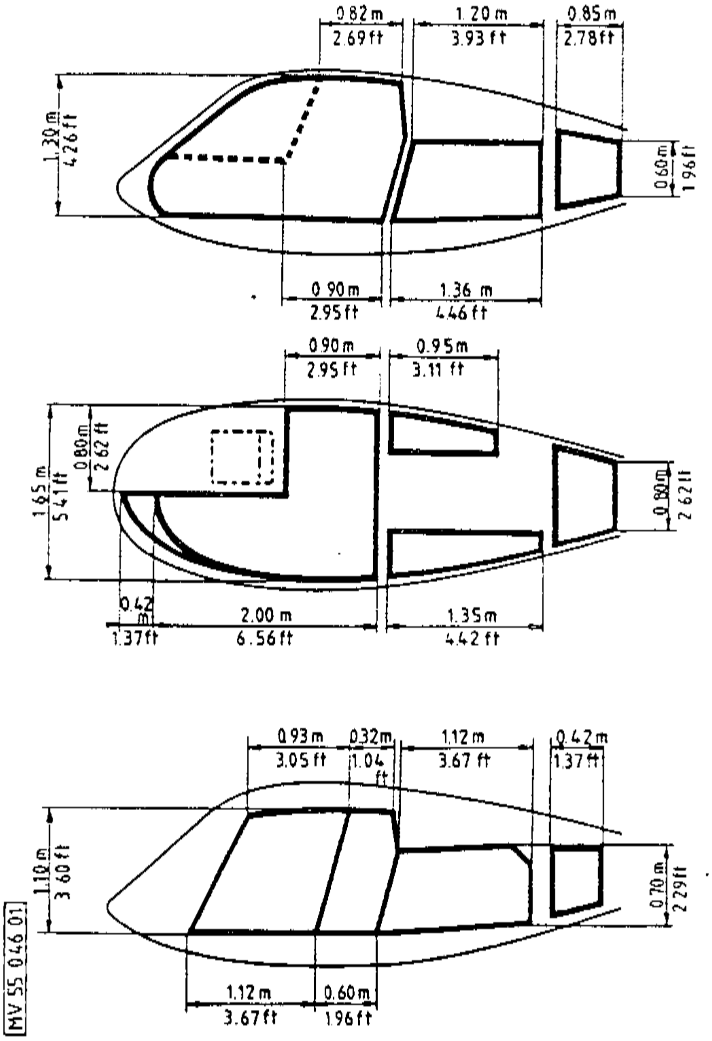


Overall dimensions of helicopter

- Overall length, rotor turning	12.94 m	42.45 ft	R
- Main rotor diameter	10.69	35.07	R
- Height to top of fin, low L/G *	3.02	9.91	R
- Length, blades folded	10.93	35.86	R
- Width, blades folded	2.53	8.30	R
- Height to rotor head, low L/G *	3.14	10.30	R
- Ground clearance below cabin, low L/G*	0.39	1.27	R
- Width of fuselage	1.87	6.14	R
- Length of fuselage	10.93	35.86	R

* Plus 0.20 m (0.65 ft) when aircraft equipped with high L/G

2 ACCESS DOORS AND COMPARTMENTS DIMENSIONS



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

- Forward doors

. Width	1.12 m	3.67 ft
. Height	1.10 m	3.60 ft
. Area	1.29 m2	13.89 sq.ft

- Rear subdoors

. Width	0.60 m	1.97 ft
. Height	1.10 m	3.60 ft
. Area	0.69 m2	7.43 sq.ft

Baggage compartment 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 compartment 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

R

3 ENGINE DATA

The aircraft is fitted with two free-power turbine ALLISON 250 C20F turboshaft engines of modular design.
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 1.042 m 41.059 in
  - . Overall height 0.589 m 23.196 in
  - . Overall width 0.482 m 19.006 in
- Approximate weight of complete engine : 158 lb 71.6 kg

The general concept of this engine is very specific. Air collected axially goes into the compressor and is then taken by two ducts to the combustion chamber located at the rear of the engine. In the chamber the air is deflected through 180° to go to the generator turbines and then the free-power turbines. Exhaust air exits through two orifices located practically at the top centre of the engine.

3.2 Design data

The engine comprises :

- A 6-stage axial flow compressor followed by :
  - . a centrifugal compressor
  - . two air ducts
  - . a combustion chamber with fuel injection and ignition
  - . a two-stage axial flow turbine coupled to the compressors
  - . a two-stage axial flow free-power turbine
- A pneumatic governor assembly comprising :
  - . the free-power turbine governor holding the speed constant by acting on the Ng set on the gas generator governor
  - . the gas generator speed governor acting on the fuel flow.

4 GENERAL TRANSMISSION DATA

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

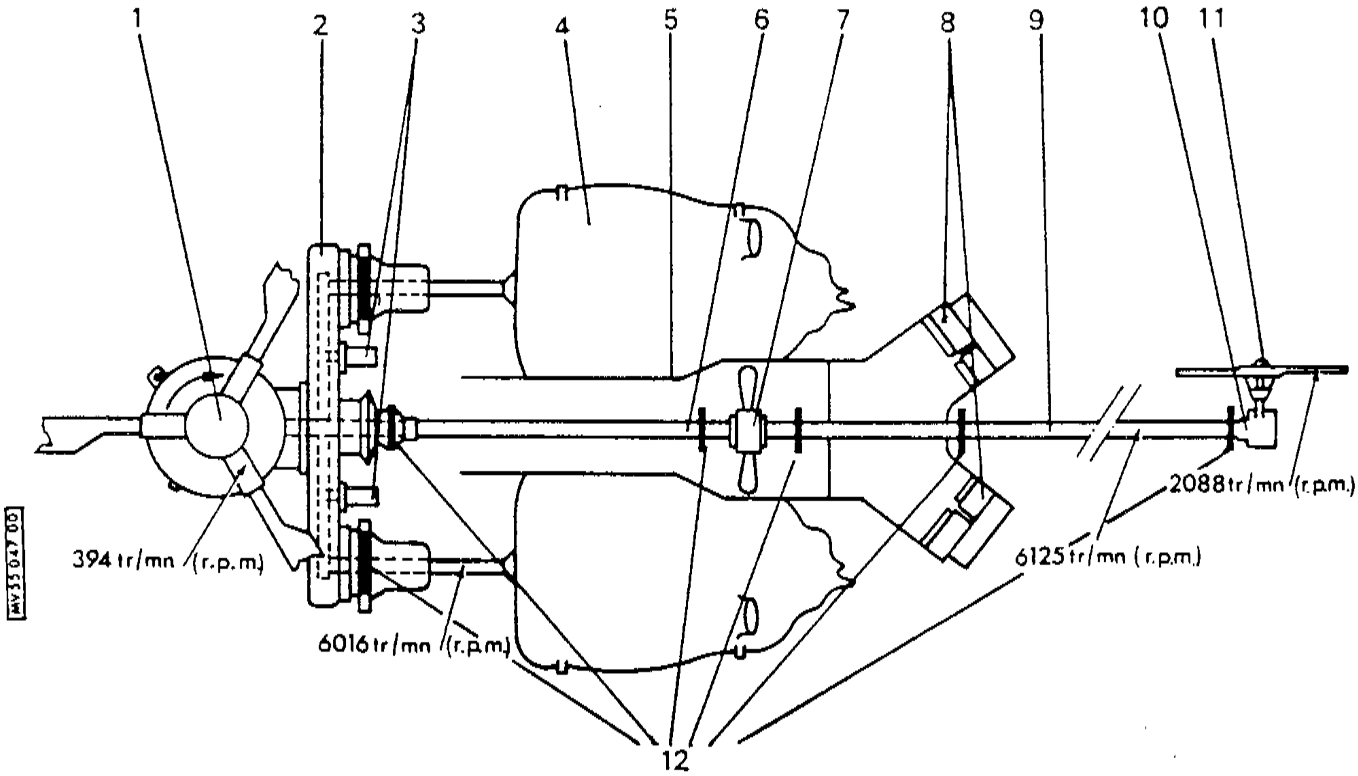
- Engine coupling shafts
- Interconnection casing
- Main gearbox (MGB)
- Tail rotor drive shaft (in 3 sections)
- Tail gearbox (TGB)

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

- 6016 for the free-power turbines
- 6125 for the tail rotor drive shaft
- 2088 for the tail rotor

Certified power is :

- 510 kW -- both engines operating
- 328 kW -- one engine operating



1 MGB 2 Interconnection casing 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 :

	Litre	US gal	UK gal
MGB lubrication system	11	2.904	2.409
TGB lubrication system	0.33	0.087	0.072
Oil capacity for one engine	5.7	1.5	1.25
Oil capacity for one hydraulic system	3	0.79	0.66

R

2 CONVERSION TABLES

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

SECTION 1.2

SYMBOLS AND CONVERSION TABLES

1 SYMBOLS AND ABBREVIATIONS

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

	m ------ ft			m ------- ft	
m -------- ft			m -------- ft		
0.305	1	3.281	15.545	51	167.326
0.610	2	6.562	15.850	52	170.607
0.914	3	9.843	16.154	53	173.888
1.219	4	13.124	16.459	54	177.169
1.524	5	16.405	16.764	55	180.450
1.829	6	19.685	17.069	56	183.730
2.134	7	22.966	17.374	57	187.011
2.438	8	26.247	17.678	58	190.292
2.743	9	29.528	17.983	59	193.573
3.048	10	32.809	18.288	60	196.854
3.353	11	36.090	18.593	61	200.135
3.658	12	39.371	18.898	62	203.416
3.962	13	42.652	19.202	63	206.697
4.267	14	45.933	19.507	64	209.978
4.572	15	49.214	19.812	65	213.259
4.877	16	52.494	20.117	66	216.539
5.182	17	55.775	20.422	67	219.820
5.486	18	59.056	20.726	68	223.101
5.791	19	62.337	21.031	69	226.382
6.096	20	65.618	21.336	70	229.663
6.401	21	68.899	21.641	71	232.944
6.706	22	72.180	21.946	72	236.225
7.010	23	75.461	22.250	73	239.506
7.315	24	78.742	22.555	74	242.787
7.620	25	82.023	22.860	75	246.068
7.925	26	85.303	23.165	76	249.348
8.230	27	88.584	23.470	77	252.629
8.534	28	91.865	23.774	78	255.910
8.839	29	95.146	24.079	79	259.191
9.144	30	98.427	24.384	80	262.472
9.449	31	101.708	24.689	81	265.753
9.754	32	104.989	24.994	82	269.034
10.058	33	108.270	25.298	83	272.315
10.363	34	111.551	25.603	84	275.596
10.668	35	114.832	25.908	85	278.877
10.973	36	118.112	26.213	86	282.157
11.278	37	121.393	26.518	87	285.438
11.582	38	124.674	26.822	88	288.719
11.887	39	127.955	27.127	89	292.000
12.192	40	131.236	27.432	90	295.281
12.497	41	134.517	27.737	91	298.562
12.802	42	137.798	28.042	92	301.843
13.106	43	141.079	28.346	93	305.124
13.411	44	144.360	28.651	94	308.405
13.716	45	147.641	28.956	95	311.686
14.021	46	150.921	29.261	96	314.966
14.326	47	154.202	29.566	97	318.247
14.630	48	157.483	29.870	98	321.528
14.935	49	160.764	30.175	99	324.809
15.240	50	164.045	30.480	100	328.090

kg ---- lb			kg ----- lb		
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

Litre	Litre ----- US gal	US gal	Litre	Litre ----- US gal	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

	mm ---- inch			mm ----- inch	
mm -------- inch			mm -------- inch		
25.4	1	0.039	1 295.4	51	2.008
50.8	2	0.079	1 320.8	52	2.047
76.2	3	0.118	1 346.2	53	2.087
101.6	4	0.157	1 371.6	54	2.126
127.0	5	0.197	1 397.0	55	2.165
152.4	6	0.236	1 422.4	56	2.205
177.8	7	0.276	1 447.8	57	2.244
203.2	8	0.315	1 473.2	58	2.283
228.6	9	0.354	1 498.6	59	2.323
254.0	10	0.394	1 524.0	60	2.362
279.4	11	0.433	1 549.4	61	2.402
304.8	12	0.472	1 574.8	62	2.441
330.2	13	0.512	1 600.2	63	2.480
355.6	14	0.551	1 625.6	64	2.520
381.0	15	0.591	1 651.0	65	2.559
406.4	16	0.630	1 676.4	66	2.598
431.8	17	0.669	1 701.8	67	2.638
457.2	18	0.709	1 727.2	68	2.677
482.6	19	0.748	1 752.6	69	2.717
508.0	20	0.787	1 778.0	70	2.756
533.4	21	0.827	1 803.4	71	2.795
558.8	22	0.866	1 828.8	72	2.835
584.2	23	0.906	1 854.2	73	2.874
609.6	24	0.945	1 879.6	74	2.913
635.0	25	0.984	1 905.0	75	2.953
660.4	26	1.024	1 930.4	76	2.992
685.8	27	1.063	1 955.8	77	3.031
711.2	28	1.102	1 981.2	78	3.071
736.6	29	1.142	2 006.6	79	3.110
762.0	30	1.181	2 032.0	80	3.150
787.4	31	1.220	2 057.4	81	3.189
812.8	32	1.260	2 082.8	82	3.228
838.2	33	1.299	2 108.2	83	3.268
863.6	34	1.339	2 133.6	84	3.307
889.0	35	1.378	2 159.0	85	3.346
914.4	36	1.417	2 184.4	86	3.386
939.8	37	1.457	2 209.8	87	3.425
965.2	38	1.496	2 235.2	88	3.465
990.6	39	1.535	2 260.6	89	3.504
1 016.0	40	1.575	2 285.0	90	3.543
1 041.4	41	1.614	2 311.4	91	3.583
1 066.8	42	1.654	2 336.8	92	3.622
1 092.2	43	1.693	2 362.2	93	3.661
1 117.6	44	1.732	2 387.6	94	3.701
1 143.0	45	1.772	2 413.0	95	3.740
1 168.4	46	1.811	2 438.4	96	3.780
1 193.8	47	1.850	2 463.8	97	3.819
1 219.2	48	1.890	2 489.2	98	3.858
1 244.6	49	1.929	2 514.6	99	3.898
1 270.0	50	1.969	2 540.0	100	3.937

R

355 F1

	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

SECTION 2

LIMITATIONS

CONTENTS

COMPLIANCE WITH THE LIMITATIONS PRESCRIBED IN THIS SECTION IS IMPERATIVE

SECTION 2.1

OPERATING LIMITATIONS

1 TYPES OF OPERATION APPROVED

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

- Day VFR flight
- Night VFR flight, when the required equipment items are installed, and in accordance with the flight regulations of the country concerned.
- Operation : "Transport category (passenger)".
- Performance : "Groups A and B".

For the aircraft which are not equipped with the engine automatic R
relighting system (Mod. 1823), Flights in heavy precipitation are R
temporarily prohibited at indicated OAT below + 5°C. R
This restriction does not apply to flights in snow at indicated OAT below R
- 5°C nor in light drizzle. R

The engines are equipped with an anti-icing system that shall be operated R
when indicated OAT is below + 5°C in any precipitation and visible R
humidity conditions. R

2 OVER WATER FLIGHT

The helicopter is approved for flight above water when the emergency flotation gear is installed.
See SECTION 4.1 paragraph 8.

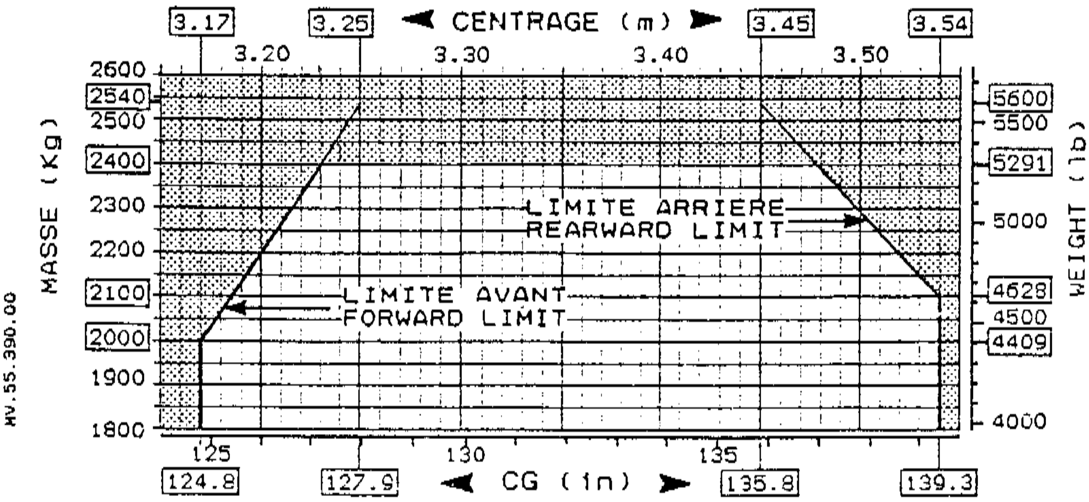
3 WEIGHT LIMITS

- Maximum permissible weight : ---------------- 2400 kg (5291 lb)
  Depending on external conditions (altitude and temperature), for compliance with performance requirements the maximum take-off or landing weight may be limited to less than 2300 kg (5070 lb) in accordance with SECTION 5.1.

4 CENTRE-OF-GRAVITY LIMITS

4.1 Longitudinal c.g.

The C.G. datum is located -3.40 m (133.8 in) forward of the main rotor head centre line.
The longitudinal c.g limits are given by the graph below :



4.2 Lateral c.g.
- L.H. limit :--------------------------- 0.16 m (6.30 in)
- R.H. limit :--------------------------- 0.09 m (3.54 in)

The datum is the aircraft symmetry plane

5 MAXIMUM SPEED

5.1 VNE with doors closed

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

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

5.2 VNE with doors removed

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

. 4 doors removed
. 2 R.H. doors removed
. 2 L.H. doors removed

Any other configuration is prohibited

5.3 VNO

Maximum speed in normal operation, speed not to be intentionally exceeded.
VNO is obtained by subtracting 15 knots (28 km/hr - 17 MPH) from the power-on VNE as defined above.

5.4 Maximum sideways and backward speed

See SECTION 5.1 paragraph 2.2.

6 FLIGHT ENVELOPE APPROVED

6.1 Altitude

Maximum pressure-altitude (substantiated) ------- 16000 ft (4875 m)

6.2 Temperature

- Minimum temperature ------------------ - 40°C
- Maximum temperature ------------------ ISA + 35°C limited to + 50°C

7 MANOEUVRING LIMITATIONS

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

8 MAIN ROTOR SPEED

8.1 Power-on

. two engines running (stabilizer r.p.m.)-------------- 390 $^{+4}_{-5}$ rpm

. one engine running ---------------------------- from 375 to 394 rpm

8.2 Power-off

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

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

9 ROTOR BRAKE LIMITATION

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

10 TORQUE LIMITATIONS

10.1 Takeoff torque R
- Both engines operative (IAS below 55 kt - 102 km/h - R
63 MPH)--- 78 % per engine R

R

10.2 Maximum continuous torque R
- Both engines operative in forward flight ----------- 73 % per engine R
- One engine inoperative : -------------------------- 100 % R

R

10.3 Maximum transient torque R
One engine inoperative (16 seconds max.) -------------- 112 % R

R

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

11 ENGINE LIMITATIONS

This aircraft is equipped with 2 "ALLISON 250 - C20F" engines.
Operating limitations are determined by Gas Generator Rotational Speed Ng, by Exhaust Gas Temperature (t4) or by Free Turbine Speed (Nf) according to operating conditions.

11.1 Gas generator speed (Ng)
- Maximum continuous ---------------------------------- 105 %
- Maximum transient (15 seconds) --------------------- 106 %

11.2 Exhaust gas temperature (t4)
- Maximum during engine start-up ----------------------------- 927°C
(1 second max. and less than 10 sec. above 810°C)
- Maximum transient (12 sec. max.) --------------------------- 899°C *
- Maximum on take-off with both engines operative (5 mn) ----- 810°C
- Maximum continuous with both engines operative ------------- 738°C
- Maximum continuous with one engine inoperative ------------- 810°C

* Should 810°C be exceeded for more than 6 seconds or t4 be above 843°C outside the starting sequences refer to the engine manufacturer's publications.

11.3 Free turbine speed (Nf)

- Power-on
  - . Maximum -- 406 rpm
  - . Minimum -- 335 rpm
- Power-off
  - . Maximum -- 425 rpm

Note : 394 rpm read on indicator corresponds to a free turbine speed of 33290 rpm.

11.4 Engine anti-icing

At temperatures below + 5°C, in visible moisture conditions, operate the engine air intake ainti-icing system by means of the levers on the cabin floor between the front seats. Check for effective anti-icing by a significant increase in t4.

11.5 Fuels

11.5.1 Normal use

- MIL-T-5624 (JP4)
- MIL-T-5624 (JP5)
- ASTM-D-1655 (JET A)
- ASTM-D-1655 (JET A1) or ALLISON EMS-64 specification
- ASTM-D-1655 (JET B)

R

11.5.2 Emergency use

Using gasolines - all grades - is temporarily prohibited ; gasoline 80/87 can however be mixed with JP5 - JET A - JET A1 providing that the restrictions on use specified in ALLISON document No 10W2 "250 C 20 OPERATION AND MAINTENANCE MANUAL" be complied with.

11.6 Fuel pressure

- Maximum -- 1.5 bar (21.7 psi)
- Minimum -- 0.5 bar (7.2 psi)

11.7 Fuel additives

Fuels containing TRI-CRESYL-PHOSPHATE (T.C.P.) are not to be used.

11.7.1 Anti-ice additive

For operation at temperatures below + 4°C an anti-ice additive is mandatory (min. 0.08 % by volume).
The additive must be in conformance with MIL-I-27686 specification or equivalent specifications : AIR 3652-D, Eng RD 2451, S 748, PHILLIPS PFA/55MB. Concentration must not exceed 0.15 % by volume.
For the mixing procedure, refer to SECTION 8.

11.7.2 Anti-static additive

SHELL anti-static additive ASA-3 is approved.
(Maximum concentration must not exceed a fuel conductivity of 300 picomhos per meter.)

12 LUBRICATION SYSTEMS LIMITATIONS

12.1 Lubricants approved for use in MGB and TGB

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

NOTE : In cold weather (below - 25°C), the operating instructions specified in SECTION 11, SUPPLEMENT 11.1 have to be observed.

Mineral and synthetic oils must not be mixed.
In the event of any change in oil specification refer to operations laid down in the Maintenance Manual.

12.2 M.G.B. oil pressure and temperature

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

In flight these warning lights must be off.

12.3 Lubricants approved for use in engines

Approved lubricants :

- Synthetic oil 3 cst ----------------------- NATO O 148 or MIL-L-7808
- Synthetic oil 5 cst ----------------------- NATO O 156 or MIL-L-23699

The 5-cst synthetic oil NATO O156 or MIL-L-23699 can be used in the engines when the outside air temperature is between - 25°C and + 50°C.

NOTE : TURBONICOIL 150 JA commercial oil is not approved for use.

12.4 Engine oil pressure and temperature

12.4.1 Oil pressure

. Minimum --------------------------------- 3.5 bar (50 psi)
. Maximum --------------------------------- 9 bar (130 psi)
. Normal with Ng above 78.5 % ------------- 6.2 to 9 bar (90 to 130 psi)

R

12.4.2 Oil temperature

. Minimum before collective pitch application--0°C

Note : The normal temperature for continuous operation is between 54 and 107°C.

. Maximum continuous ---------------------- 107°C
. Maximum emergency (10 mn) --------------- 120°C

If the temperature is between maximum continuous (107°C) and maximum emergency (120°C), checks must be carried out in accordance with engine manufacturer's literature.

13 ELECTRICAL AND HYDRAULIC POWER SYSTEMS LIMITATIONS

13.1 Hydraulic system

13.1.1 Fluid used

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

13.1.2 Hydraulic system pressure

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

In flight the warning light must be off.

13.2 Electrical system (direct current)

- Maximum voltage ----------------------------- 32 V
- Maximum current :
  . Pre-mod. AMS 07.1123 ---------------------- 100 A per generator
  . Post-mod. AMS 07.1123 --------------------- 150 A per generator

14 LANDING AND STOPPING LIMITATIONS ON SLOPES

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

15 RESTRICTIONS

The following are prohibited :

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

16 MINIMUM CREW

One pilot, in starboard seat.

17 TRANSPORT OF PERSONNEL

Number of persons carried : 6 maximum (pilot included)

18 OPTIONAL EQUIPMENT LIMITATIONS

If optional equipment items are installed they may involve additional, specific limitations. (See SECTION 10)
Refer to the appropriate Supplement for relevant information.

19 LIFED COMPONENTS

Lifed components, and the corresponding S.L.L. are indicated in the AS 355 Master Servicing Recommendations (P.R.E.), SECTION 5.99, and must be replaced in accordance therewith.

SECTION 2.2

PLACARDS AND INSTRUMENT MARKINGS

1 PLACARDS

- Operating limitations plate

MV.50.054.00

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

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

- Loading instruction plates

. On side face of control pedestal

MV.50.051.00

CHARGES REPARTIES MAXI
DISTRIBUTED LOADS, MAXI

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

. In rear cargo compartment

MV.50.050.00

CHARGE REPARTIE, MAXI	80Kg
DISTRIBUTED LOAD, MAXI	176 Lb

. In port cargo compartment

MV.50.052.00

CHARGE MAXI. 120 kg
MAX.LOAD 264 lb

. In starboard cargo compartment

MV.50.053.00

CHARGE MAXI. 100 kg
MAX.LOAD 220 lb

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

2 INSTRUMENT MARKINGS

Colour code

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

INTRUMENTS		MARKINGS	RANGE
AIRSPEED INDICATOR		Red with white hatching Red line Green arc	120 Knots-222 Km/hr-138 MPH 150 Knots-278 Km/hr-173 MPH 0 - 150 Knots or 0 - 278 Km/hr-0-173 MPH
TORQUE INDICATOR	ON ONE ENGINE (outer arc)	Green arc Red line Red triangle	0 - 100 % 100 % 112 %
	ON TWO ENGINES (inner arc)	Green arc Yellow arc Red line	0 - 73 % 73 - 78 % 78 %
ROTOR AND FREE TURBINE TACHOMETER	ROTOR	White triangle Red line Yellow arc Green arc Yellow arc Red line	170 rpm 330 rpm 330 - 375 rpm 375 - 394 rpm 394 - 425 rpm 425 rpm
	FREE TURBINE	Red line Yellow arc Green arc Yellow arc Red line	335 rpm 335 - 375 rpm 375 - 406 rpm 406 - 425 rpm 425 rpm
DUAL GAS GENERATOR (Ng) TACHOMETER		Green arc Red line Red triangle	64 - 105 % 105 % 106 %
EXHAUST GAS TEMPERATURE (T4) INDICATOR		Green arc . Pre-mod's AMS 0878 and 1170 . Post-mod's AMS 0878 and 1170 Yellow arc Red line Red triangle	 100 - 738°C 300 - 738°C 738 - 810°C 810°C 899°C
ENGINE OIL PRESSURE INDICATOR		Red line Yellow arc Green arc Red line	3.5 bar (50 psi) 3.5 - 6.2 bar (50 to 90 psi) 6.2 - 9 bar (90 to 130 psi) 9 bar (130 psi)

INTRUMENTS		MARKINGS	RANGE
ENGINE OIL TEMPERATURE INDICATOR		Yellow arc Green arc Red line Red triangle	0 - 54°C 54 - 107°C 107°C 120°C
FUEL PRESSURE INDICATOR		Green arc	0.5-1.5 bar(7.2 to 21.7 psi)
VOLTMETER		Green arc Yellow arc Red line	26 - 29 volts 29 - 32 volts 32 volts
FUEL CONTENTS GAUGE	FRONT	White line	45 %
	REAR	White line	55 %
AMMETER		Red line . Pre-mod. AMS 07.1123 . Post-mod.AMS 07.1123	 100 Amps 150 Amps
MGB OIL TEMPERATURE INDICATOR		Red line Green arc	115°C 0 - 115°C
MGB OIL PRESSURE INDICATOR		Red arc Green arc Red line	0 to 1 bar (0 to 14.5 psi) 1 to 10 bars(14.5 to 145psi) 10 bars (145 psi)

SECTION 3

EMERGENCY PROCEDURES

CONTENTS

SECTION 3.1

EMERGENCY PROCEDURES

1 INTRODUCTION

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

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

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

2 AUTOROTATIVE LANDING

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

2.1 On land or on water with emergency flotation gear

- Reduce collective pitch to obtain an NR near to the nominal speed (380 to 400 rpm). Do not exceed 425 rpm.
- Fly at an IAS of 65 Kt (120 km/h - 75 MPH) into wind
- Proceed as follows :
  . Fuel shut-off control levers in closed position) Except if engine
  . Fuel flow control levers in closed position) re-light is
  . Booster pumps off) attempted
  . Master switch (on final approach) off)
- At a height of between 50 and 100 feet (15 and 30 m), depending on the weight and external conditions (wind, terrain), start to flare out to a nose-up attitude of 15 to 20° to reduce the forward speed and the rate of descent. Monitor NR.
- At a height of between 10 and 15 feet (3 and 5 m) reduce the nose-up attitude to approximately 5° and start to apply collective pitch.
- Immediately prior to touch-down apply collective pitch progressively up to the high pitch stop if necessary whilst holding back slightly on the cyclic pitch control R
- After touch-down, reduce the collective pitch slowly to prevent an abrupt stop if any forward speed is present R
- Carry out the safety procedures if necessary (master switch, fire extinguisher)
- Apply the rotor brake
- Evacuate the aircraft by jettisoning the doors if necessary.

2.2 On water (without emergency flotation gear)

If an autorotative landing is made on water, apply the same procedures as for landing on ground with the following additions :
- Land into wind
- Jettison the doors before flaring-out
- Allow the forward speed to drop as much as possible during the flare-out
- After touch-down, hold the aircraft level as long as possible by keeping the collective pitch against the high pitch stop
- Release the seat belts when the cabin is submerged
- Evacuate the aircraft and then inflate the life vests (if appropriate)

3 ENGINE FAILURES

3.1 Single-engine failure on take-off

There is no unsafe area up to 7000 feet and 2150 Kg. For heavier weights refer to section 5.1 para. 3.

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

3.2 Single-engine failure in flight

The flight may be continued on one engine ; the flight restrictions must be observed.
The symptoms are :
- Slight jerk in the yaw axis
- Change in the noise level
- Loss of synchronisation of : torques - Ng - Nf - t4
- "GENE" (GEN) light comes on for defective engine
- Drop in oil pressure
- "PH MOT" (ENG OIL PRESS) light, comes on.
- Audible warning operates if NR is 360 rpm or less

Under these conditions :
- On the remaining engine :
  . Reduce the hot bleed air if appropriate
- On the defective engine, proceed as follows :
  . Fuel flow control lever ------------------- closed position gate
  . Booster pump ------------------------------ off
  . Generator --------------------------------- off
  If necessary open the fuel tank crossfeed valve

Dependent on the origin of the failure, attempt to re-light the engine in accordance with the normal procedure.
- In order to prevent the turbine turning when the engine is shut down, it is recommended not to exceed 100 kts (185 km/h - 115 MPH).

3.3 Single-engine failure on approach

- The symptoms are the same as for a failure in flight : the jerk in the yaw axis may not be noticed
- Approach at an IAS of 60 kts (111 km/h - 69 MPH) down to 200 ft (60 m)
- Below 200 ft steadily reduce the forward and vertical speed to perform a spot landing, if necessary using power from the remaining engine without exceeding the transient limitations.

4 PROCEDURE FOR INTENTIONAL ENGINE SHUTDOWN IN FLIGHT

For the engine to be shut down :

- Fuel flow control lever in the idle position gate (do not exceed the limitations for the remaining engine)
- Wait two minutes if possible and then proceed as follows :
  . Fuel flow control lever ---------------------- closed position gate
  . Booster pump --------------------------------- off
  . Generator ------------------------------------ off
  If necessary :
  . Shed load from the electric systems
  . Open the fuel tank crossfeed valve

5 PROCEDURE FOR RELIGHTING AN ENGINE IN FLIGHT

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

·6 GOVERNOR FAILURE

The engine governing system is defective if :

- On altering collective pitch, the parameters (Ng, t4 and torque) do not change. In such cases :
  . Observe the limitations on the remaining engine when increasing collective pitch
  . On reducing collective pitch, and particularly on approach if the power from the defective engine is excessive (more than 40 % torque) gently close the fuel flow control lever to obtain approximately 40 % torque. After landing and before reducing the collective pitch to the low pitch stop, place the fuel flow control lever for the defective engine in the idle position gate.

- At constant pitch the engines become desynchronized without the pilot operating the trim. Under such conditions :
  . Ensure that the engine producing most power remains within its limitations
  . Slightly reduce the collective pitch
  . If the power drops on the engine producing most power : the defective governor is that on the engine producing the least power.

. If the power does not drop on the engine producing most power, this engine has a defective governor system.
1) Increase the collective pitch if necessary to maintain NR in the green sector
2) Gently close the fuel flow control lever for the defective engine and check that power increases on the other engine
3) Set the defective engine at 40 % torque
4) After landing and before reducing the collective pitch to the low pitch stop, place the fuel flow control lever for the defective engine in the idle position gate .

7 FIRE IN FLIGHT

7.1 Fire in the engine compartment

Fire in the engine compartment is indicated by the corresponding "FIRE" (FEU) warning light.
If this light comes on, apply the following procedure :
- Reduce power if necessary

Proceed as follows for the engine affected :
- Fuel shut-off control lever ---------------------- closed position gate
- Booster pump ------------------------------------ off
- Generator --------------------------------------- off
- Heating and air conditioning --------------------- off
- If the FIRE light does not go out
  SET OFF THE FIRST EXTINGUISHER (if fitted) when Ng is below 50 %
- If the FIRE light remains on
  SET OFF THE SECOND EXTINGUISHER
- If the fire does not go out, land as soon as possible

7.2 Fire in the M.G.B. compartment

LAND IMMEDIATELY
Monitor the engine oil temperature during this manoeuvre.
If the temperature exceeds 120°C, shut down the engines (fire in the MGB compartment may cause failure of the engine and MGB oil cooling systems).

8 SMOKE IN THE CABIN

8.1 Source of smoke identified

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

8.2 Source of smoke not identified

- Shut off the heating and de-icing systems
- Switch on the emergency overhead lights if necessary
- Press the EMERGENCY CUT-OUT button. R

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

. Release all push-buttons and switch off all electrical consumers.
. Release the EMERGENCY CUT-OUT button. R

CAUTION : DO NOT PRESS THE "EXT.PWR/BATT" BUTTON (S). R

- Switch on the following components in the order indicated below :
  a) L.H. generator (GEN LH push-button)
     If necessary attempt to rearm generator (REARM GEN)
  b) R.H. generator (GEN RH push-button)
     If necessary attempt to rearm generator (REARM GEN)

If the two power generating systems operate correctly :

  c) Press the EXT.PWR/BATT push-button (s). R
  d) Switch on the necessary consumers one by one.

9 TAIL ROTOR MALFUNCTION

9.1 Tail rotor drive shaft failure

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

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

Land quickly to prevent excessive rotation occurring.

9.1.2 Loss of tail rotor in cruising flight

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

9.2 Tail rotor control failure

- Set IAS at 60 to 70 kt (111 to 130 km/h - 69 to 81 MPH)
- Recenter the tail rotor servo-unit to reduce the pitch if necessary by switching off the hydraulic system (switch on collective pitch lever).
- Make a shallow approach to a clear landing area with a slight side slip to the left. Perform a run-on landing ; the side slip will be reduced progressively as power is applied.

10 ICING

If the O.A.T. is close to 0°C and in the presence of visible dampness, or if unexpected icing occurs, move away from the area of icing as quickly as possible. R R R

Check :

- Heating of the PITOT head (if fitted)
- Operation of the anti-icing system for the engine air intakes.

NOTE : Do not put the latter system into service on both engines simultaneously. R R

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

After embodiment of Mod. 1823, the operation of the engine automatic relighting system is indicated by the illumination of the AUTOR1 or AUTOR2 warning light. Should this occur, press the lighted push-button to extinguish the light. R R R R

NOTE : In case of relighting system operation a jerk in the yaw channel may be felt. R R

11 FAILURE OF PILOT'S AIR DATA INSTRUMENTS

11.1 Complete failure

Should the pilot's air data instruments fail go by the indications of the co-pilot's instruments if fitted.
- Set the STBY STATIC selector to STBY
  In so doing static pressure can be taken from inside the cabin.
- Close the front vent, the ventilation nozzles and the clear vision window.

If failure is confirmed :
- Avoid attitude variations
- Reduce power
- Land as soon as practicable.

11.2 Airspeed indicator failure

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

- Check pitot heating system for correct operation.
- Avoid sharp attitude variations
- Land as soon as practicable.

SECTION 3.2

SYSTEMS MALFUNCTION

1 FUEL SYSTEM FAILURES

Low or zero fuel pressure.

- Check the quantity of remaining fuel on the appropriate gauge
- Check the corresponding PUMP ENGINE push-button. Should a booster pump fail , make a descent , within the next ten minutes, to on altitude below that specified in the following chart.
  When such a manoeuvre cannot be archieved or appears to be dangerous, it shall be required to inspect the high-pressure pump after the flight, in accordance with the Maintenance Manual.

FUEL TYPE USED	LIMITING Hp FURTHER TO FAILURE
JET A-JET A1-ALLISON EMS.64 specif-JP5	15000 ft (4572 m)
JP 4 - JET B - Spare fuels	10000 ft (3048 m)

2 ENGINE OIL SYSTEM FAILURES

2.1 Low or zero engine oil pressure

Check the engine oil pressure red light on the warning panel.
If it is on, shut down the engine.
If it is off, since the torquemeter is fed by engine oil pressure, a defect on this instrument confirms the failure.

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

2.2.1 On one engine

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

2.2.2 On two engines

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

Shut down the engines when the engine oil temperatures reach 120°C.

3 TORQUE - Ng - t4 INDICATOR FAILURES

3.1 Torquemeter failure

Equalize t4 temperatures on the trim without exceeding 65 % on the other torquemeter.

3.2 Ng indicator failure

- Continue the flight
- Monitor the readings on the other instruments for the engine concerned.

3.3 t4 indicator failure

Equalize the torques on the trim without exceeding 700°C on the other t4 indicator.

4 HYDRAULIC SYSTEM FAILURES

4.1 HYD - SERVO - LIMIT lights come on

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

4.2 Abnormal loads on yaw control

- HYD - SERVO lights come on.
  The RH hydraulic system is defective - Refer to SECTION 3.3. paragraph 2 " FAILURE WARNING PANEL" (Amber lights)

In certain flight configurations, especially in hover with heavy weight and L.H. cross-wind, these loads may become significant (R.H. foot) and affect aircraft controllability. In that case head the aircraft into wind, reduce power and initiate forward flight. Accomplish a slightly-sliding landing with no final hover.

- HYD-SERVO lights do not come on.
  The yaw servo-unit slide valve is jammed
  . In hover : if the angular speed is zero, land normally. Otherwise switch off the hydraulics using the button on the collective pitch lever.
  . In cruising flight : reduce the speed, with side slip if necessary, and then switch off the hydraulics using the button on the collective pitch lever.
  Should the loads remain abnormally high after switching off the hydraulics, the failure comes from the mechanical control. In this case, restore the hydraulic assistance, controlling the aircraft remains possible. Land as soon as practicable.

5 ELECTRICAL POWER SYSTEM FAILURES

5.1 D.C. power system failures

5.1.1 Failure of a generator

- Check the relevant push-button
- Attempt to reset by depressing the GEN REARM push-button

If this does not work :

- Release the push-button for the relevant generator.
- Check that the current from the other generator is below the limit value.
  If above this value, shed load.
- Continue the flight.

5.1.2 Failure of two generators

- Check the generator push-buttons.
- Attempt to reset by depressing the GEN REARM push-button.

If this is impossible :

- Release the generator push-buttons.
- Depress the BUS SHED push-buttons.
- Land as soon as practicable.

Maximum endurance on battery using minimum equipment required : R

. Day : 45 minutes
. Night : 30 minutes.

R

CAUTION : INSTRUCTIONS FOR FLIGHT WITH BOOSTER PUMPS OFF ARE SPECIFIED IN PARA. 1 OF THIS SECTION.

5.1.3 System voltage over 29 Volts

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

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

- Release the push-button for the generator concerned.

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

- Release the EXT.PWR/BATT push-button.

If necessary :

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

5.1.6 DIRECT BATT push-button illuminated (Post-mod. AMS 1123)

- If aircraft electrical system is not supplied :
  DIRECT BATT push-button is pressed in.
- If aircraft electrical system is supplied :
  Direct battery circuit has gone off-line.
  Check that DIRECT BATT push-button is pressed in.

6 FAILURE IN M.G.B. OIL SYSTEM

6.1 Low or zero MGB oil pressure (below 1 bar)

- Reduce power
  Failure is confirmed by illumination of the MGB.P (PH BTP) warning light.
  Refer to section 3.3, paragraph 2.1.

6.2 High MGB oil temperature (above 115°C)

Failure is confirmed by illumination of the MGB.T (TH BTP) warning light.
Refer to section 3.3, paragraph 2.1.
Should the MGB.T (TH BTP) warning light fail to illuminate :
- Test the captions for checking illumination of the MGB.T (TH BTP) warning light.
- Check engine oil temperatures :
  . Normal temperatures : reduce power, continue flight while monitoring MGB oil pressure.
  . Abnormal temperatures : refer to section 3.2, paragraph 2.2.

SECTION 3.3

WARNING CAUTION ADVISORY PANEL AND AURAL WARNING R

1 AURAL WARNING

The warning horn sounds to indicate :

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

It will operate only if the HORN push-button is pressed in. Otherwise, at nominal rotor speed the HORN light illuminates on the warning caution R
advisory panel. R

Proceed as follows if the horn sounds :

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

2 WARNING CAUTION ADVISORY PANEL R

The warning caution advisory panel located on the instrument panel R
incorporates lights of different colours : R

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

One or two "ALARM" (WARN) lights provided on either side of the instrument R
panel flash should one red warning light illuminate. R

2.1 Red lights

Indicator lights	Fault indicated	Pilot action	
MGB P (PH BTP) + ALARM	Minimum MGB oil pressure warning	- Reduce power - Check MGB pressure and temperature gauges and MGB T light . If they are within the limits and light MGB T is OFF LAND AS SOON AS PRACTICABLE . If one gauge is out of the limits and/or light MGB T is ON LAND AS SOON AS POSSIBLE NOTE : MGB strength is such that flight can be continued for 45 minutes at an airspeed (55 kt) corresponding to minimum engine power in level flight to permit accurate and safe landing.	R R R R R R R R R
MGB T (TH BTP) + ALARM	Maximum MGB oil temperature warning	- Check MGB temperature and pressure gauges and MGB P light . If they are within the limits and light MGB P is OFF LAND AS SOON AS PRATICABLE . If one gauge is out of the limits and/or light MGB P is ON LAND AS SOON AS POSSIBLE	
FIRE ENG LH (FEU MOT G) or FIRE ENG RH (FEU MOT D) + ALARM	Fire in engine compartment	Refer to SECTION 3.1 § 7.1	
ENG. OIL PRESS (PH MOT) + ALARM	Minimum engine oil pressure warning	- Check engine oil pressure. If failure is confirmed, refer to SECTION 3.2 § 2.1	
BATT TEMP (T° BATT) + ALARM	Maximum battery temperature warning	- Switch off the battery - Land as soon as possible	

2.2 Amber lights

Indicator lights	Fault indicated	Pilot action	
BATT RH and BATT LH (BATT D and BATT G)	Cutting out of battery (charging is no longer guaranteed)	- Check that one or both PWR BATT push-buttons are engaged.	R
DIRECT BATT	Cutting out of direct battery circuit (post-mod AMS 1091 and pre-mod. AMS 1123)	- Check that direct battery switch (if fitted) is engaged	R
BATT RH or BATT LH (BATT D or BATT G)	RH or LH battery contactor failure	- Continue the flight.	
FUEL (COMB)	Light comes on when one of the gauges has reached 6 %	- Avoid large changes in attitudes - Equalize the tanks if necessary - Close the crossfeed valve when the tanks are equalized. NOTE : Below 20 % the rear tank (RH indicator tends to empty into the front tank. Equalizing is obtained with 4 % difference i.e. 10 % front - 6 % rear. - With both tanks at 6 %, 18 min flying time remains in level flight at maximum continuous power. - When the gauge reads zero: LAND IMMEDIATELY	
GEN LH (GEN G) or GEN RH (GEN D)	DC power supply failure	Refer to SECTION 3.2 § 5 "Electrical power system failures"	
CHIP ENG LH (LIMAILLE MOT G) or CHIP ENG RH (LIMAILLE MOT D)	Metal particles in the engine oil system concerned	- Monitor oil pressure and temperature for the engine concerned - Depending on the flight conditions, shut down the engine and land as soon as practicable. - Relight the engine for landing if necessary	

2.2 Amber lights (continued)

Indicator lights	Fault indicated	Pilot action
FILTER LH (FILTRE G) or FILTER RH (FILTRE D)	Pre-clogging of fuel filter	- Reduce power on the engine concerned by means of : . the collective pitch or . the engine trim or . the fuel flow control lever - If the light goes out, continue the flight - If the light stays on, shut down the engine. Relight for landing if necessary. NOTE:1)If both lights come on, land as soon as possible. 2)Do not tranfer fuel unless absolutely necessary
DOORS (PORTES)	One or both of the baggage compartment side doors not locked NOTE : If sliding doors fitted see relevant supplement.	- Reduce IAS (Max. 120 kt - 222 km/h - 138 MPH) - Check visually that doors are closed - Land if possible or continue the flight at reduced speed - Make a descent at low rate and terminate with a shallow approach
PITOT	No supply to pitot heating system	- Check push-button (in) - Monitor ASI readings
CHIP MGB (LIM BTP) (if fitted)	Metal particles in the MGB oil	- Reduce power - Check MGB P and MGB T light - Monitor MGB pressure and temperature on the gauges .If light are OFF and gauges within the limits LAND AS SOON AS PRATICABLE .If one light is ON and or gauge reads abnormal indication, refer to the related failure.

R
R
R

Amber lights (continued)

Indicator lights	Fault indicated	Pilot action
CHIP TGB (LIM BTA) (if fitted)	Metal particles in the TGB oil	- Continue the flight - Avoid prolonged hover flights
BATT FUSE (FUSIBLE BATT)	Battery isolated from dc power system. Charging will not occur (battery short-circuit)	- Check the battery temperature light - Check the voltage (normally 0.5 to 1 volt above nominal voltage) CAUTION : DO NOT SWITCH OFF BOTH GENERATORS - THEY COULD NOT BE SWITCHED ON AGAIN.
HORN (KLAXON)	Horn not set	- Press HORN push-button on overhead panel. If the light stays on, the audible warning system is defective.
HYD RH (HYDR D) + SERVO	Loss of hydraulic pressure in RH system. - Load is present on control pedals (See Section 3.2 § 4.2)	In both cases land as soon as practicable and limit manoeuvres.
HYD LH (HYDR G) + SERVO	Loss of hydraulic pressure in LH system. In this case : - At high collective pitch the LIMIT light also is on	
SERVO	Main servo-unit slide valve jammed	Continue the flight
LIMIT	Main servo-unit stall point reached	- Lower collective pitch - Reduce the load factor

SECTION 4

NORMAL PROCEDURES

CONTENTS

SECTION 4.1

OPERATING PROCEDURES

1 EXETERNAL CHECKS

NOTE : Ensure that the inspection before the first flight of the day has been carried out in accordance with the Master Servicing Recommendation (P.R.E.).

- Check that the ground round the aircraft is clean and unobstructed.
- Carry out the following check :

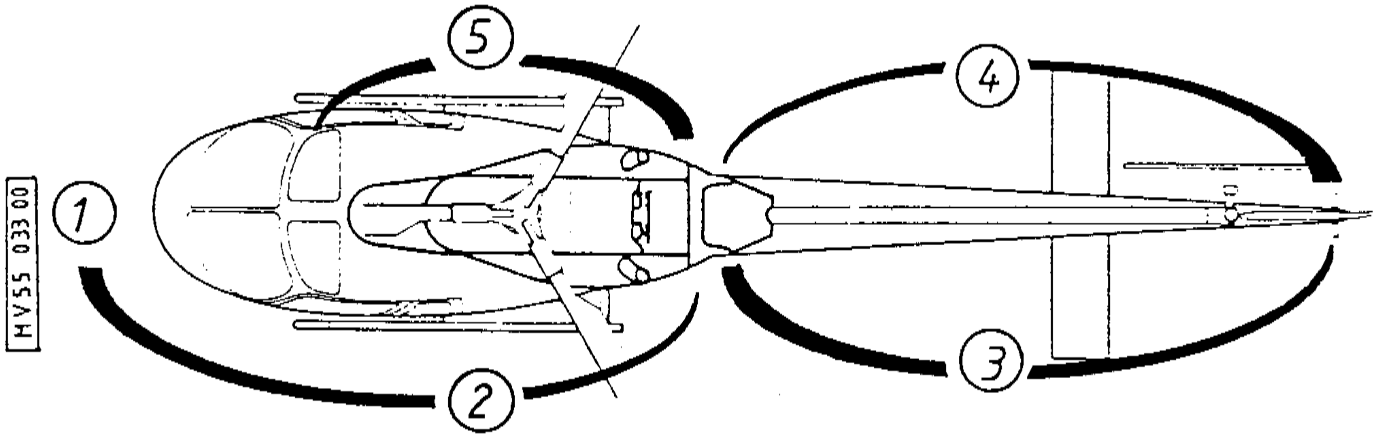


Figure 1

Position 1

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

Position 2

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

R

EXTERNAL CHECKS (continued)

Position 3

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

Position 4

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

Position 5

- R.H. engine cowling --------------- Closed. Tail pipe condition.
- All lower cowlings ---------------- Closed.
- External power receptacle flap ---- Closed
- R.H. engine air intake ------------ Clear
- M.G.B. cowling -------------------- Check engine oil level
  Check hydraulic oil level
- Rotor head ------------------------ Visual inspection, star, sleeves (bond failure), spherical thrust bearings, frequency adapters (delamination), swashplates, flying controls.
- Landing gear (cross members, skids, wear-resistant plates) ------------ Secure, visual checks
- R.H. door ------------------------- Condition

2 INTERNAL CHECKS

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

3 CHECKS BEFORE STARTING THE ENGINES

Determine aircraft performance limits for the expected flying conditions (see PERFORMANCE section).
Ensure that the weight and C.G. limits are observed.

NOTE 1 : If the fuel tanks are unevenly filled, ensure that the longitudinal C.G. remains within permissible limits (worst case : one lightweight pilot, front tank on minimum, rear tank full). R

NOTE 2 : It is advisable to use JP4 - JET B fuels in OAT below plus 4°C to ensure correct engine starting R
R

RR N° 3B

AMS 1732 Protection des génératrices au démarrage des GTM.

Après application de cet AMS les génératrices pourront être conjonctées avant la mise en route du 1er GTM.

Le paragraphe 3 est à modifier comme suit :

Après

- Batterie ---------------------------- Marche-Tension vérifiée
(voir nota)

Lire :

- Génératrices ------------------------ Marche

MOD. 1732 Protection of generators on engine starting.

After embodiment of this modification, the generators can be cut in before starting the first engine.

Paragraph 3 is to modified as follows :

After :

"- Battery ---------------------------- On-Voltage checked"
(see Note)

Read :

"- Generators ------------------------- On"

- Doors ------------------------------- Closed
- Seats and control pedals ---------- Adjusted
- Seat belts ------------------------ Fastened.

NOTE : Check particularly that the co-pilot seat belt is fastened when this seat is not occupied.

- "STANDBY STATIC" switch ----------- Set to NORMAL position R
- Direct battery switch (if fitted)-- On. Associated light on
- Battery --------------------------- On. Voltage checked
- Anti-collision light -------------- On
- Fuel contents gauges -------------- Quantities checked
- Fuel tank crossfeed valve --------- Closed or as required
- Warning caution advisory panel ---- . Test lights
  . Dimmer as required
- Instruments ----------------------- Checked. Readings correct.
- Heater and air conditioner -------- Off
- Engine air intake de-ice ---------- Off
- Rotors ---------------------------- Clear
- Yaw control pedals ---------------- Freedom of travel
- Servo controls--------------------- Test SERVO-CONTROLS light goes out

R

- Collective pitch control lever ---- Locked in low pitch position
- Cyclic pitch control stick -------- Neutral. Friction clamp tight
- Fuel shut-off control ------------- Levers forward. Locked
- Rotor brake ----------------------- Off. Front stop
- Fuel flow control levers ---------- Aft gate

NOTE : 1) Lights on using aircraft battery
GEN LH (GENE G), GEN RH (GENE D), HORN (KLAXON), SERVO-CONTROLS (SERVO), PITOT AUX*, ENG OIL PRESS (PH MOT)*, HYD (HYDR), MGB P (PH BTP). AC LH (CONV G) *, AC RH (CONV D) *. R

2) Lights on using external power
GEN LH (GENE G), GEN RH (GENE D), HORN (KLAXON), SERVO CONTROLS (SERVO), PITOT PIL, PITOT AUX*, ENG OIL PRESS (PH MOT)*, HYDR,
MGB P (PH BTP), BATT LH (BATT G), BATT RH (BATT D) AC LH R
(CONV G) *, AC RH (CONV D) *. R

4 STARTING

4.1 Starting No. 1 engine

- Switch on the booster pump ------ Pressure correct
- Operate the starter ------------- Ng increases

When Ng = 15 % :

- Push the fuel flow control lever forwards in start gate ---------- Monitor the Ng, t4, engine oil pressure, NR/Nf, torque

Note : If t4 increases quickly, move the fuel flow control lever back slightly.

When Ng = 60 % :
- Release the start button
- Extinguish the AUTOR1 or AUTOR2 warning light (post Mod. 1823) R
- Accelerate the engine by pushing the fuel flow control lever forward to the "Flight" gate --- Check for normal response of engine and rotor parameters. Check that the HYD (HYDR), MGB P (PH BTP) and SERVO-CONTROLS (SERVO) lights go out at 200 rpm approx. Check that the HORN light blinks when rotor speed is above 250 rpm (NR alarm circuit). Check that horn sounds at 350 rpm approx.

NOTE 1 : During engine acceleration do not allow rotor speed to remain constant between 300 and 320 rpm.

NOTE 2 : In low OAT conditions, during the starting sequence, the maximum engine oil pressure may temporarily be exceeded, it is therefore recommended to move the fuel flow control lever forward slowly.

4.2 Starting No. 2 engine

- Proceed as for No. 1 engine with No. 1 engine generator not engaged. When No. 2 engine is running at idle speed :
- Engage both generators -------------- Lights out
- Engage a.c. power system (optional)-- Lights out
- Accelerate No. 2 engine by moving fuel flow control lever to flight gate.

NOTE : Should battery charge be insufficient to start No. 2 engine while observing the limitations engage No. 1 engine generator before re-starting No. 2 engine.

5 CHECKS AFTER STARTING

- Ground power unit (if used) ------- Disconnected
- Voltage and current --------------- Correct
- All engine and rotor parameters --- Correct
- Instruments on instrument panel --- Working
- Radio - Radio navigation equipment- On
- Pitot heating system -------------- On
- Hydraulics
  Yaw servo-unit -------------------- Cut-off tests (button on collective pitch lever)
  Check for load on yaw control pedals
- Aural warning system -------------- On (button pressed)

6 CHECKS BEFORE TAKE-OFF

- Instruments------------------------ Checked, readings correct
- All indicator lights -------------- Out
- AUTOR1 and AUTOR2 warning lights R
  (post Mod. 1823) ------------------ Off R
- Fuel flow control levers ---------- "Flight" gate
- Flying controls ------------------- Free, friction clamps adjusted
- Heater, demister ------------------ Off
- Engine anti-ice ------------------- As required
- Position lights ------------------- On (as required)

7 TAKE-OFF AND CLIMB

- Establish hover I.G.E.
- Synchronize engines using trim
- Check :
  . All indicator lights ------------ Out
  . Pressures, temperatures --------- Correct
  . Limitations --------------------- Observed

  . NR ------------------------------ $390 \begin{smallmatrix} +4 \\ -5 \end{smallmatrix}$ rpm

- Initiate forward flight in a slight climb to an IAS of 55 kt (102 km/h - 63 MPH) by steadily increasing collective pitch to reach max. take-off power if required : observe the limitations.

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

- Adjust the power during the climb to remain within the limitations (torque or t4 temperature).

8 CRUISING FLIGHT

- The maximum cruise speed is obtained by following the "maximum continuous" limitations (C = 2 x 73 % or t4 = 2 x 738°). If necessary synchronize the engines using the trim.
- Maximum range is obtained by reducing the maximum continuous power by about 10 %.
- Maximum endurance is obtained by flying at the optimum climbing speed (55 kt).
- Heating/demisting is obtained by opening the valves as required whilst observing limitations (20 to 30° increase in t4 per engine if valves are fully open).
- When flying over water, the cruise speed considered for proving compliance with the regulation regarding flight above water is :
  .120 knots (222 km/h - 138 MPH) with two engines in operation
  . 90 knots (167 km/h - 104 MPH) with one engine in operation

9 IN-FLIGHT MANOEUVRES

9.1 Fuel transfer

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

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

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

9.2 Engine anti-icing

At temperatures below + 5°C, and depending on external conditions (visible dampness), operate the engine air intake anti-icing system by means of the levers located between the front seats. Check for effective anti-icing by significiant increase in t4. (20°C min.).

The engine automatic relighting system (Mod. 1823) may be tested by pressing the "TEST R" push-button. R
Ensure that both AUTOR1 and AUTOR2 warning lights illuminate, then extinguish then. R

10 APPROACH AND LANDING

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

11 RDTOR AND ENGINE SHUT-DOWN

- Collective pitch ------------------ Locked, minimum pitch position
- Cyclic pitch and yaw control pedals ---------------------------- Neutral
- Fuel flow control lever ----------- Idle gate for two minutes *
- Radio, radio navigation equipment - Off
- All electrical equipment ---------- Off (Fuel Xfer, pitot, horn ...)
- Fuel flow control lever ----------- Shut-down gate
- On the aircraft equipped with the engine automatic relighting system (Mod. 1823), check that both AUTOR1 and AUTOR2 warning lights illuminate, then extinguish them. R
- Generators and booster pump ------- Off
- Rotor brake ----------------------- On when NR drops :
  . to 140 rpm (normal condition)
  . to 170 rpm max. (high wind condition)
- Battery --------------------------- Off.
- Direct battery switch (if fitted)-- Off. Associated light out

* NOTE : In high wind condition for instance, these two minutes' idle might be accomplished at nominal power rating.

RR N° 3B

Paragraphe 4.1 ligne 7

Ajouter la vérification de l'extinction du voyant GENE (GEN) après application de l'AMS 1732.

Paragraph 4.1, line 7,

Add the check of the GEN light extinction, after embodiment of MOD. 1732.

R.R. N° 3 A

Compléter le paragraphe 4.1 par :

NOTA 3 : Si le GTM a été arrêté depuis plus de 15 minutes attendre au ralenti (Ng environ 60%) pendant une minute avant d'accélérer jusqu'au cran "VOL".

Complete paragraph 4.1 by the following :

NOTE 3 : If the engine has been shut down for more than 15 minutes, stabilize at idle speed (Ng = 60% approx.) for one minute before accelerating by pushing the fuel flow control lever into the 'FLIGHT" gate.

SECTION 4.2

ENGINE CONDITION CHECK

1 CHECKING THE ENGINE POWER IN FLIGHT

The check is to be carried out in flight with the two fuel flow control levers in the "flight" gates.

- Fly at max. continuous power in level flight.
  (Hp less than 12000 ft (3657 m), heater, demister and engine anti-icing off)
- Keeping the pitch constant, increase power on each engine in turn by pushing the trim to the end of its travel or by stopping when the first single-engine limitation is reached.
- Note the following parameters : torque, NR, Hp, O.A.T, t4.

2 CHECKING THE ENGINE POWER ON THE GROUND

The check is to be carried out on the ground and the aircraft must be positioned nose into wind on a clear area.

- After starting the engines, move the fuel flow control lever of the engine to be checked to the flight position and retard the fuel flow control lever of the other engine to ground idle.
- Switch off any P2 bleed air consumer.
- Gently increase collective pitch to reach the highest possible power limit at which the aircraft just lifts off the ground.
- Record the following parameters :
  Torque, rotor rpm, pressure altitude, O.A.T., t4.
- Perform the same check on the other engine.

NOTE : By selecting the same torque or t4 temperature setting, it will then be possible to compare both engines.

In the event of doubtful results or poorly stabilized parameters mainly due to the wind, proceed with several tests and, if necessary, confirm by making a power check in flight the result of which will be decisive.

3 USING THE ENGINE CONDITION CHECK CHARTS

3.1 Point P determination

- Using figure 1, determine the corrected t4 from the indicated t4.

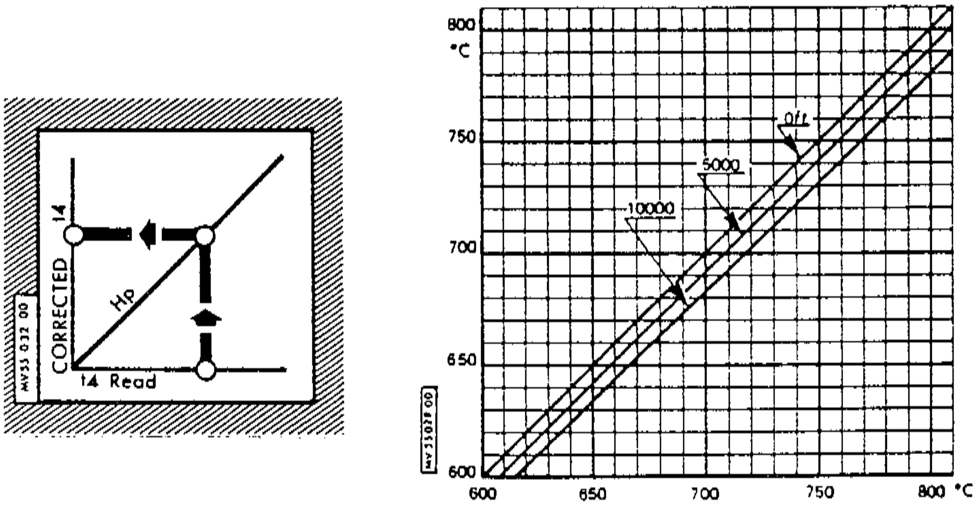


Figure 1

- Refer to figure 2 and determine point P from line A as in the example below (reference line applies to both in-flight and ground checking procedures).

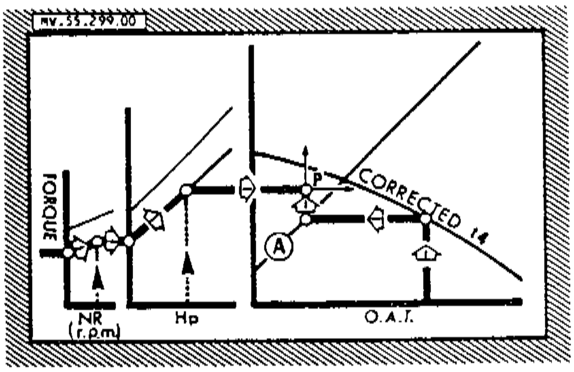


Figure 2

3.2 Engine condition

The condition of the engine is satisfactory if point P lies in the area as in the example of Figure 2 which is limited, as the case may be, by :
- line A when parameters have been measured in flight (para. 1),
- line B when parameters have been measured on the ground (para. 2).

R

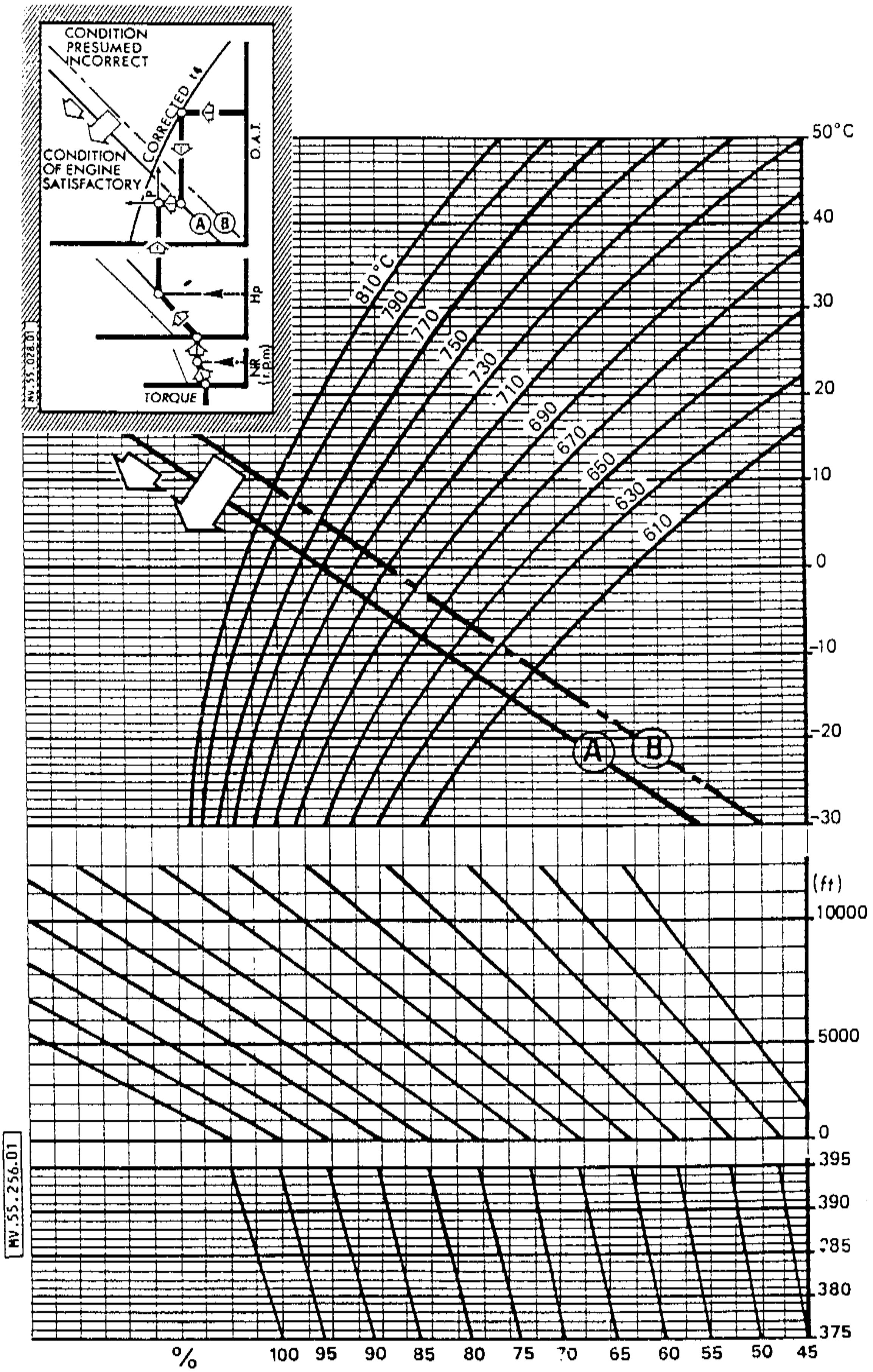


Figure 2 - Engine condition check

SECTION 5.1

REGULATORY PERFORMANCE DATA

CONTENTS

SECTION 5.1

REGULATORY PERFORMANCE DATA

1 INTRODUCTION

The following performance curves apply to the basic version of the aircraft. Refer to the supplements in SECTION 10 when optional equipment is fitted.

2 SUBSTANTIATED WIND ENVELOPE

2.1 Wind envelope for spinning and stopping the rotors

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

2.2 Wind envelope in hover

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

3 HEIGHT-VELOCITY DIAGRAM

For weights not exceeding 2150 kg (4740 lb), there is no unsafe aera. For weights above 2150 kg, the height - velocity diagram is specified in figure 1. An example of operation is given in page 3.

4 ASI AND ALTIMETER CALIBRATION

4.1 Calibration of pilot's and copilot's airspeed indicator

The calibration curve is plotted on Figure 2

4.2 Calibration of pilot's and copilot's altimeter

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

R

4.3 Use of Standby static system

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

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

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

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

These performance data are specified in Figure 3 of page 6

6 HOVER PERFORMANCE O.G.E. ON 2 ENGINES

These performance data are specified in Figure 4, page 7 and Figure 5, page 8.

7 RATES OF CLIMB

The rates of climb on 1 and 2 engines are specified in Figures 7 to 14. An example of how to use the charts is given in page 9.

8 HOVER I.G.E. AND O.G.E. PERFORMANCE ON 1 ENGINE

Hover IGE and OGE performance data specified in Figures 15 and 16.

9 RATE OF CLIMB/SLOPE CORRESPONDENCE ON 1 ENGINE

R/C - slope correspondence on 1 engine in climb at max. continuous power is given by Figure 17.

HOW TO USE THE FIGURE RELATED TO HEIGHT - VELOCITY

For an all-up weight above 2150 kg (4720 lb), the aera to be avoided is defined by the three points A, B and C.

Determining point B

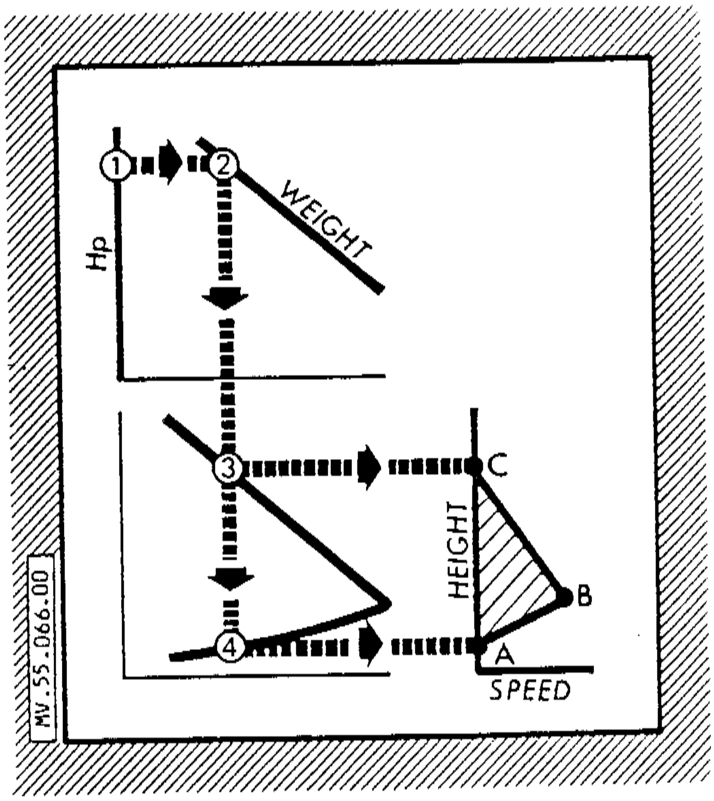
Point B is fixed and located at a 50 ft (15 m) height for a 30 kt (56 km/h - 35 MPH) velocity.

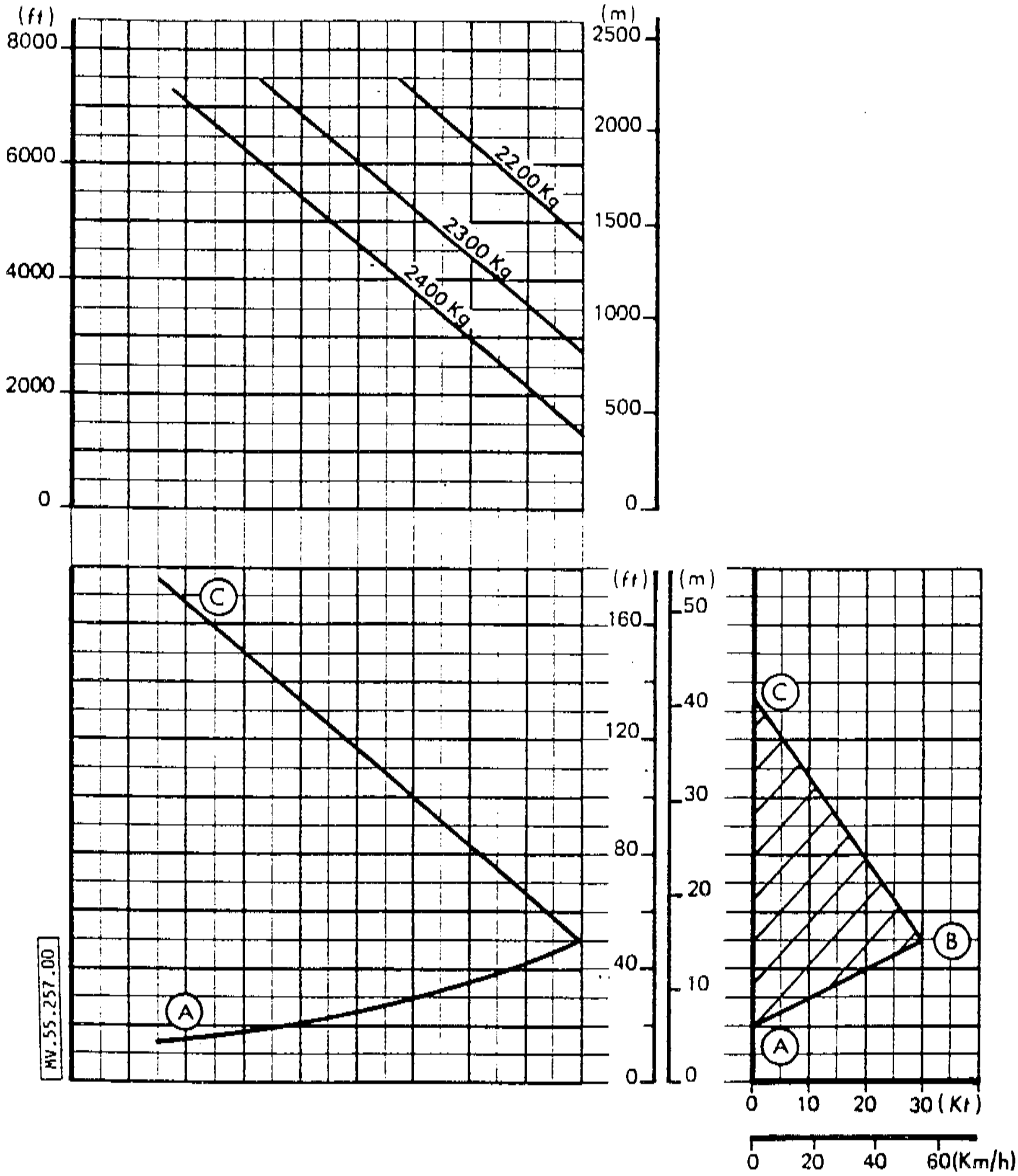
Determining points C and A

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

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

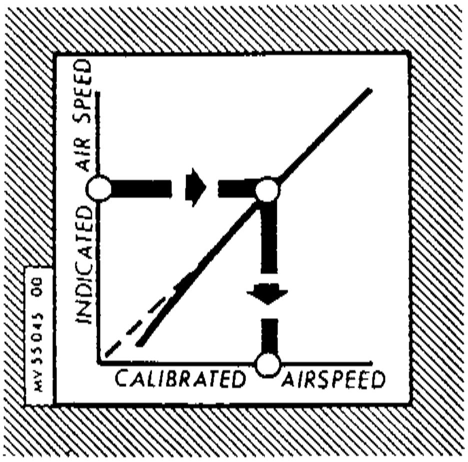
NOTE : When points C and A coincide, there is no unsafe area any longer
Example : 2000 ft and 2300 kg

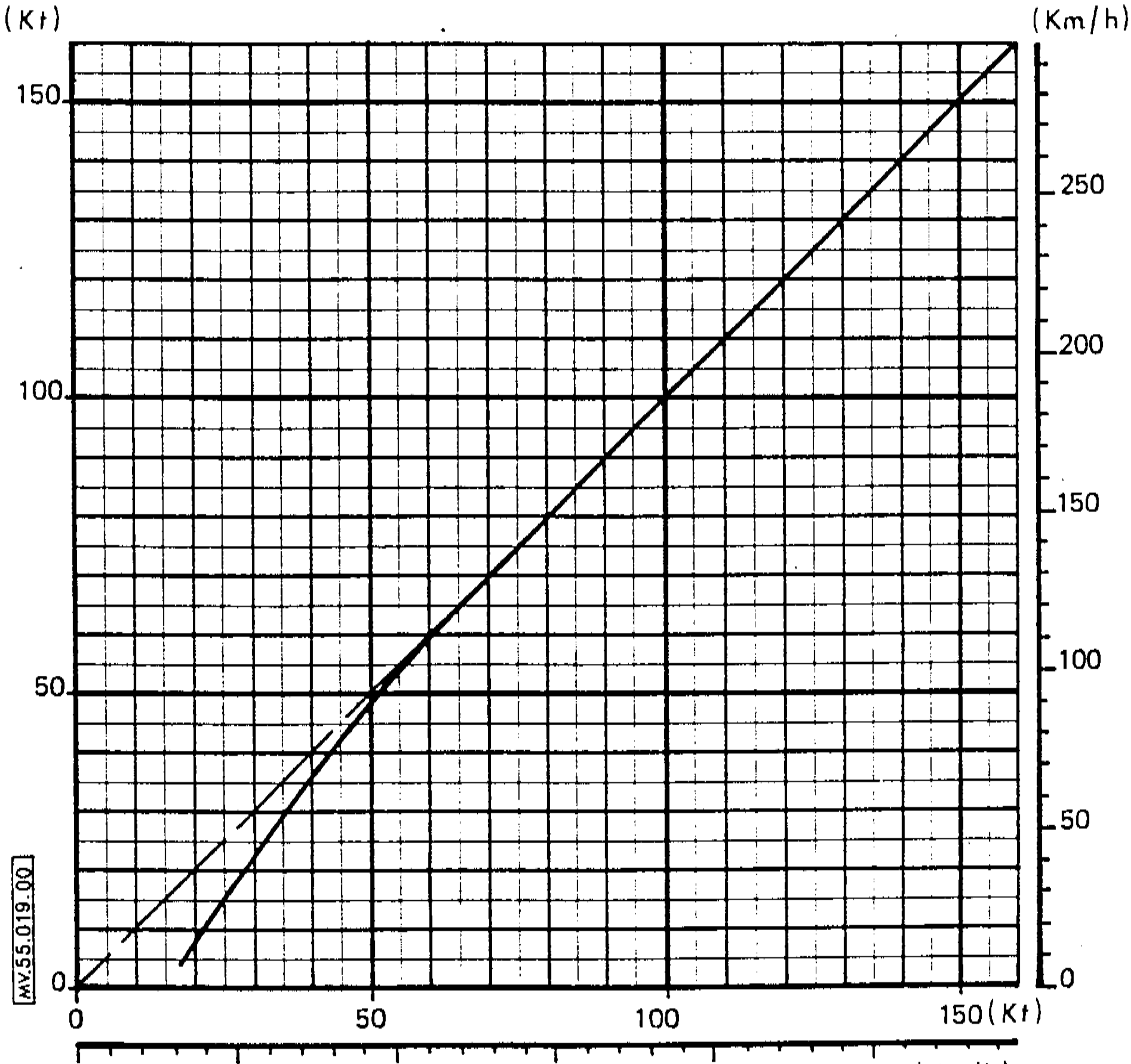




DETERMING THE
HEIGHT - VELOCITY
DIAGRAM

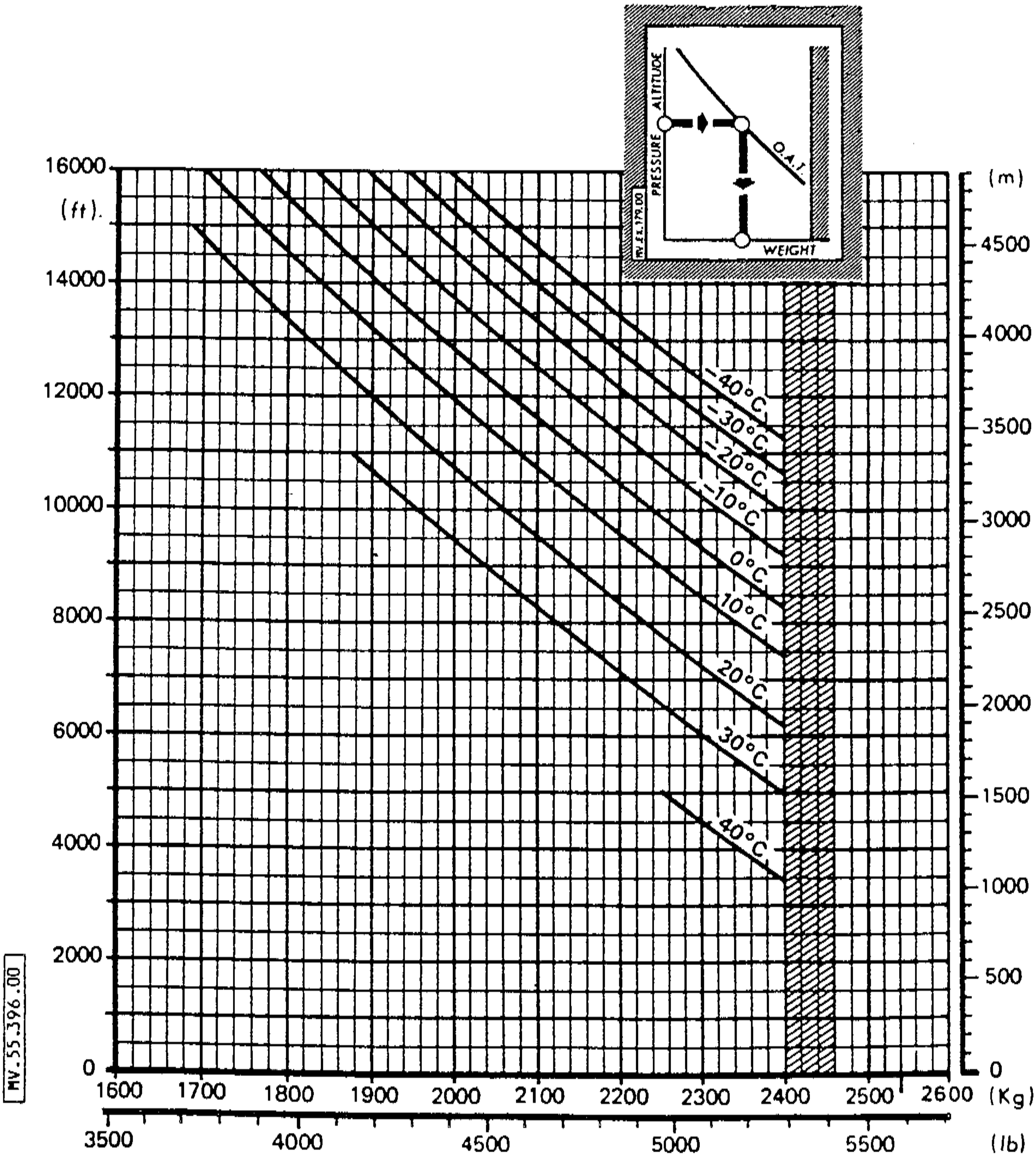
Figure 1





AIRSPEED SYSTEM
CALIBRATION

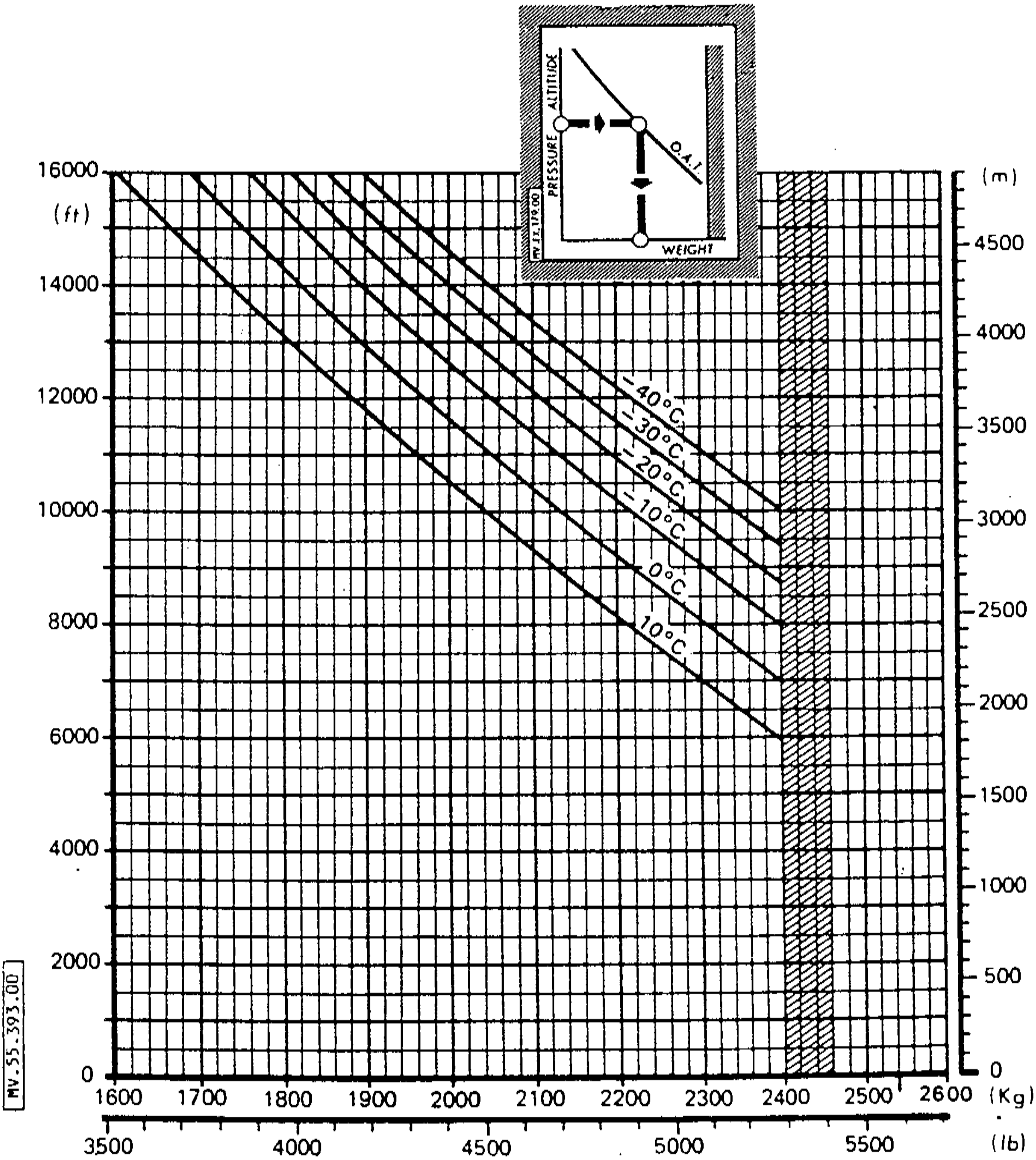
Figure 2



CONDITIONS :
- Height : 6 ft (2 m)
- Heater and demister off
- Engine air intake anti-ice off
- t4 temperature limited to 810°C

HOVER PERFORMANCE I.G.E
ON 2 ENGINES

Figure 3



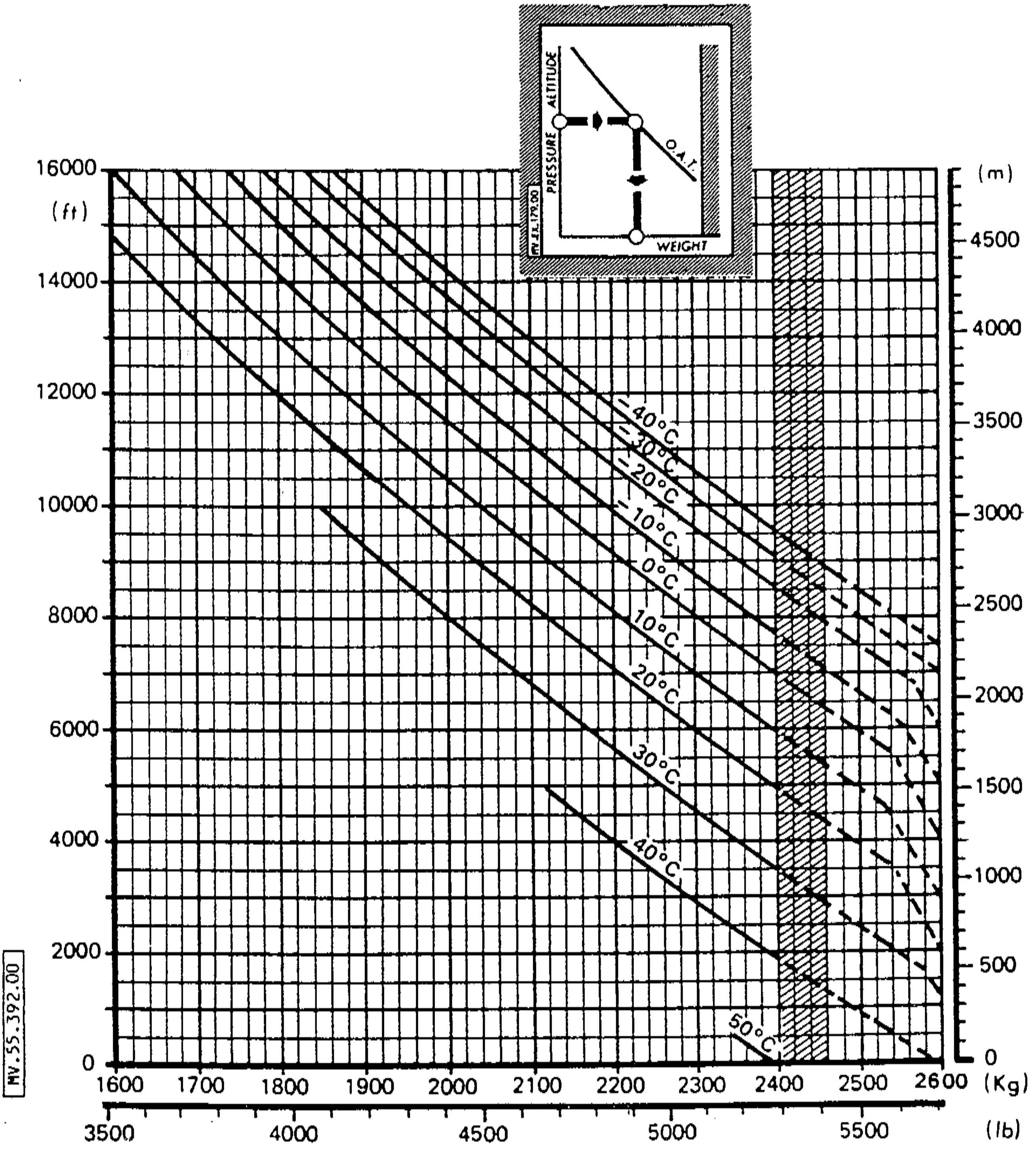
R R R R R R R R R R R R R R R R R R R R R R R R R R R R R R R R

CONDITIONS

- Height : 6 ft (2 m)
- Heater and demister off
- Engine air intake anti-ice on
- t4 limited to 810°C

HOVER PERFORMANCE
I.G.E. ON 2 ENGINES

Figure 4

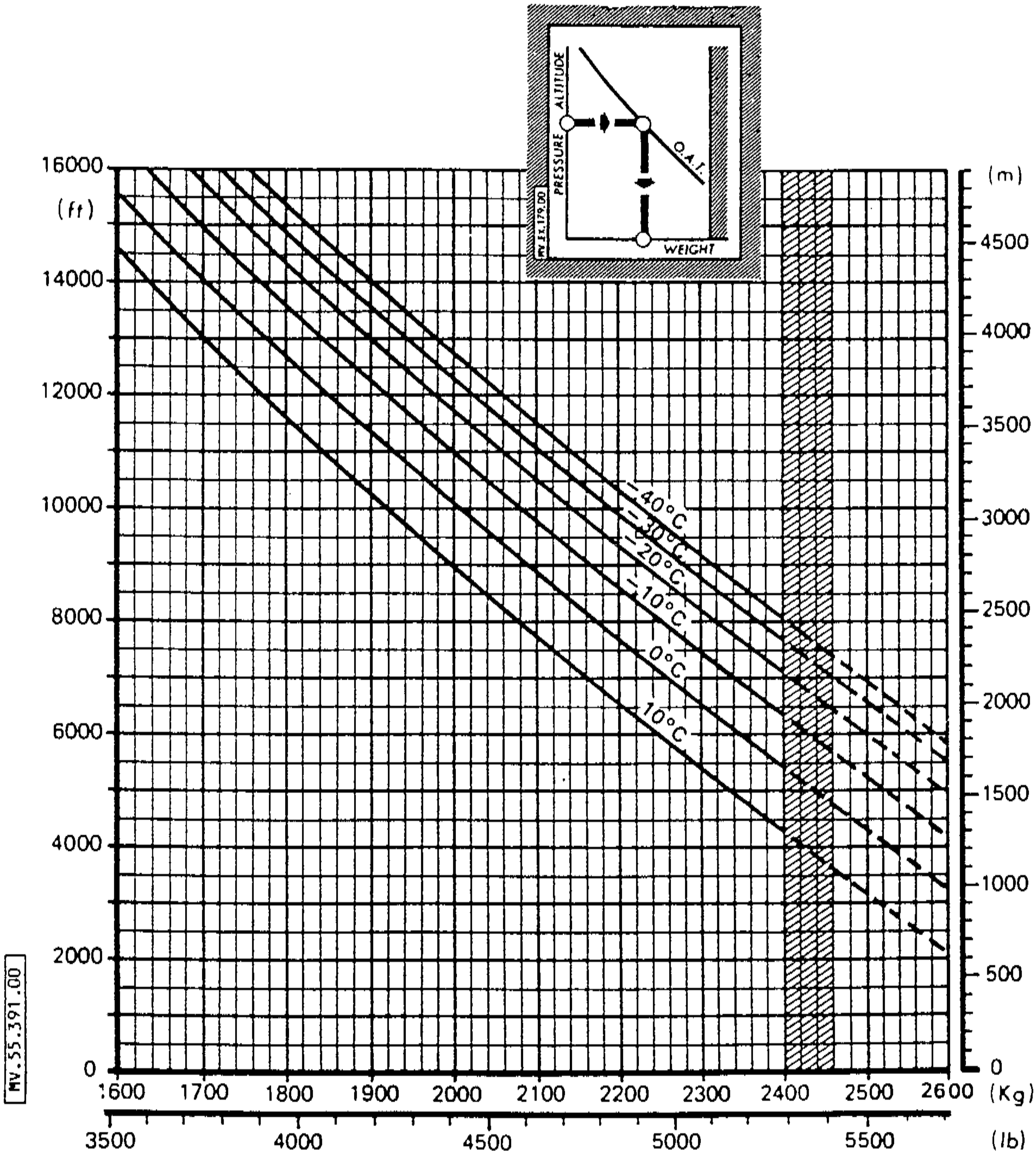


CONDITIONS

- Zero wind
- No P2 air bleed (heater or air conditioner off)
- Engine air intake anti-ice off
- t4 limited to 810°C

HOVER PERFORMANCE
O.G.E. ON 2 ENGINES

Figure 5



CONDITIONS

- Zero wind
- No P2 air bleed (heater or air conditioner off).
- Engine air intake anti-ice on
- t4 limited to 810°C

HOVER PERFORMANCE
O.G.E. ON 2 ENGINES

Figure 6

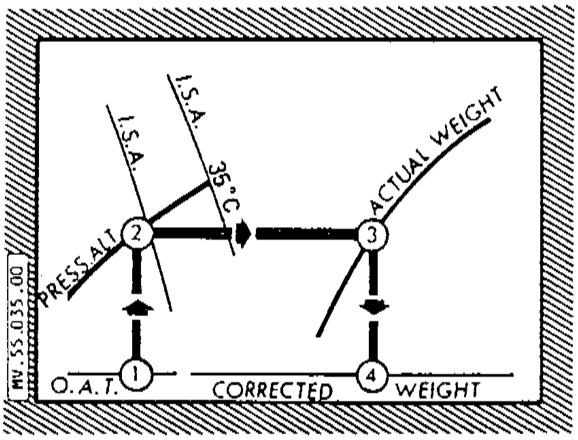
HOW TO USE THE FIGURES RELATED TO THE RATES OF CLIMB

The rates of climb are given in the figures below with respect to the hot bleed air.

The corrected weight is first to be determined from the figure on the facing page when calculating the rates of climb.

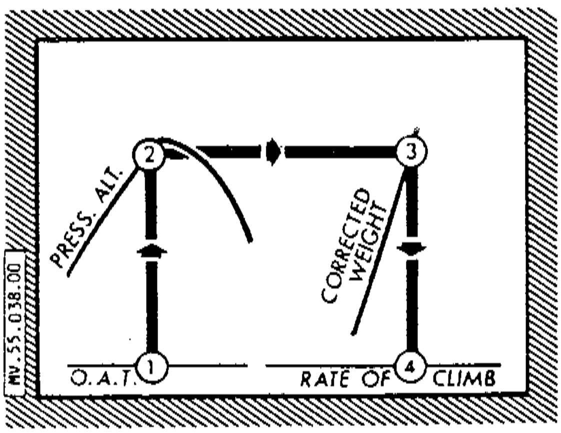
Determining the corrected weight

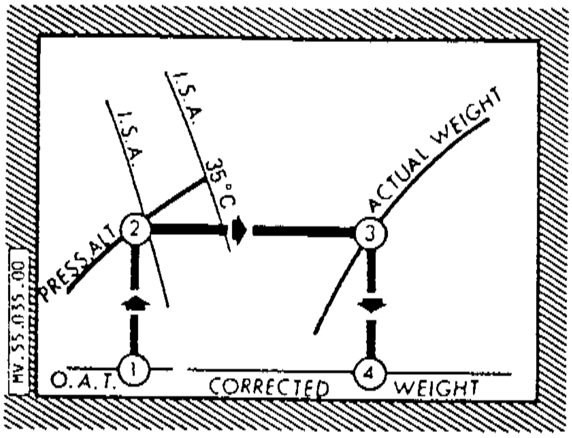
- Read vertically upwards from the O.A.T. (1) up to the pressure altitude curve (2)
- Read across to the actual weight (3)
- Read the corrected weight (4) which is to be used in determining the rate of climb.

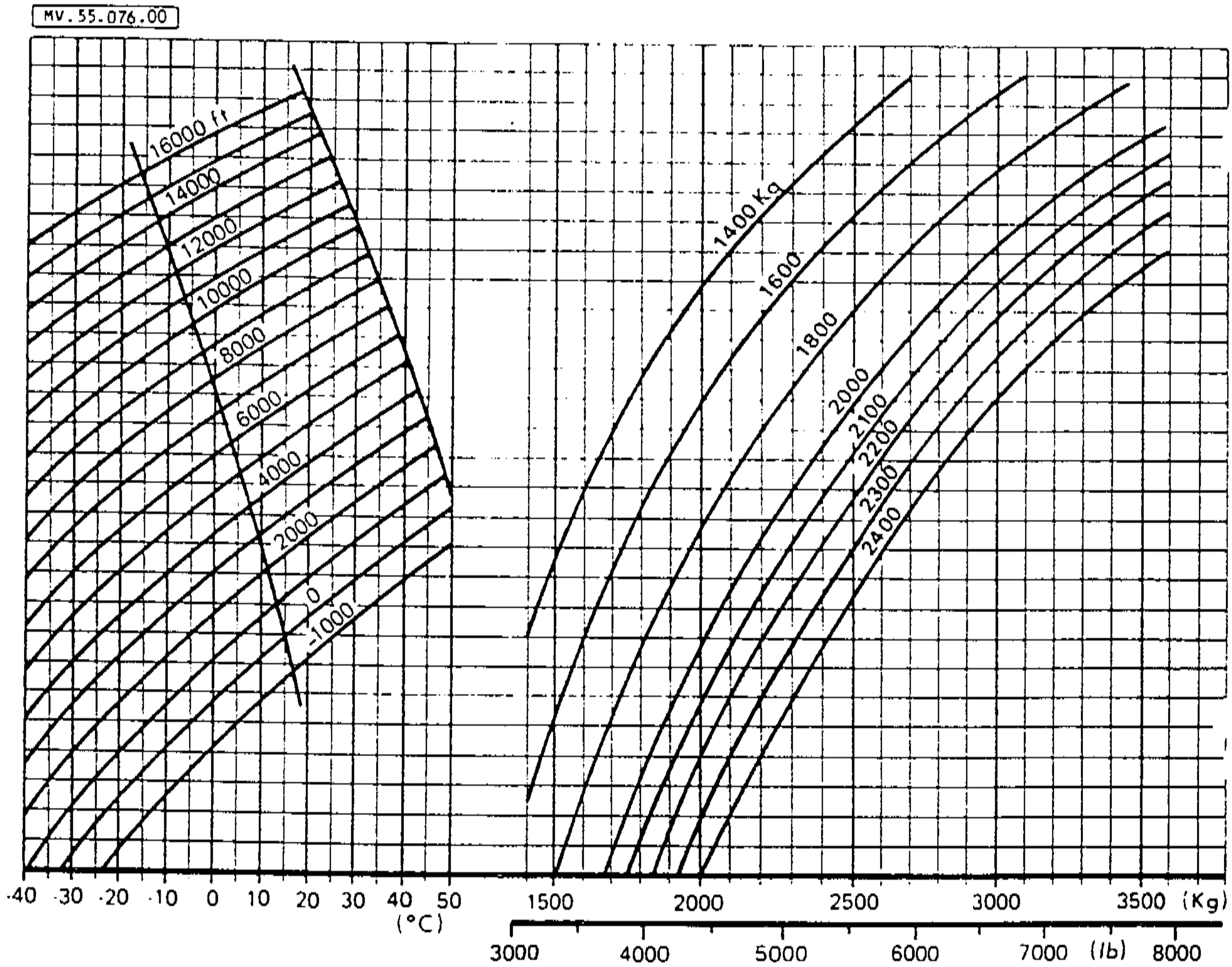


Determining the rate of climb

- Read vertically upwards from the O.A.T. (1) up to the pressure altitude curve (2)
- Read across to the corrected weight (3) already determined from the facing page
- Follow vertically down and read off the rate of climb (4).

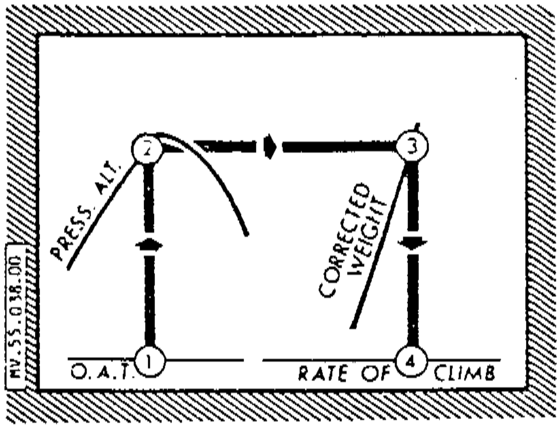


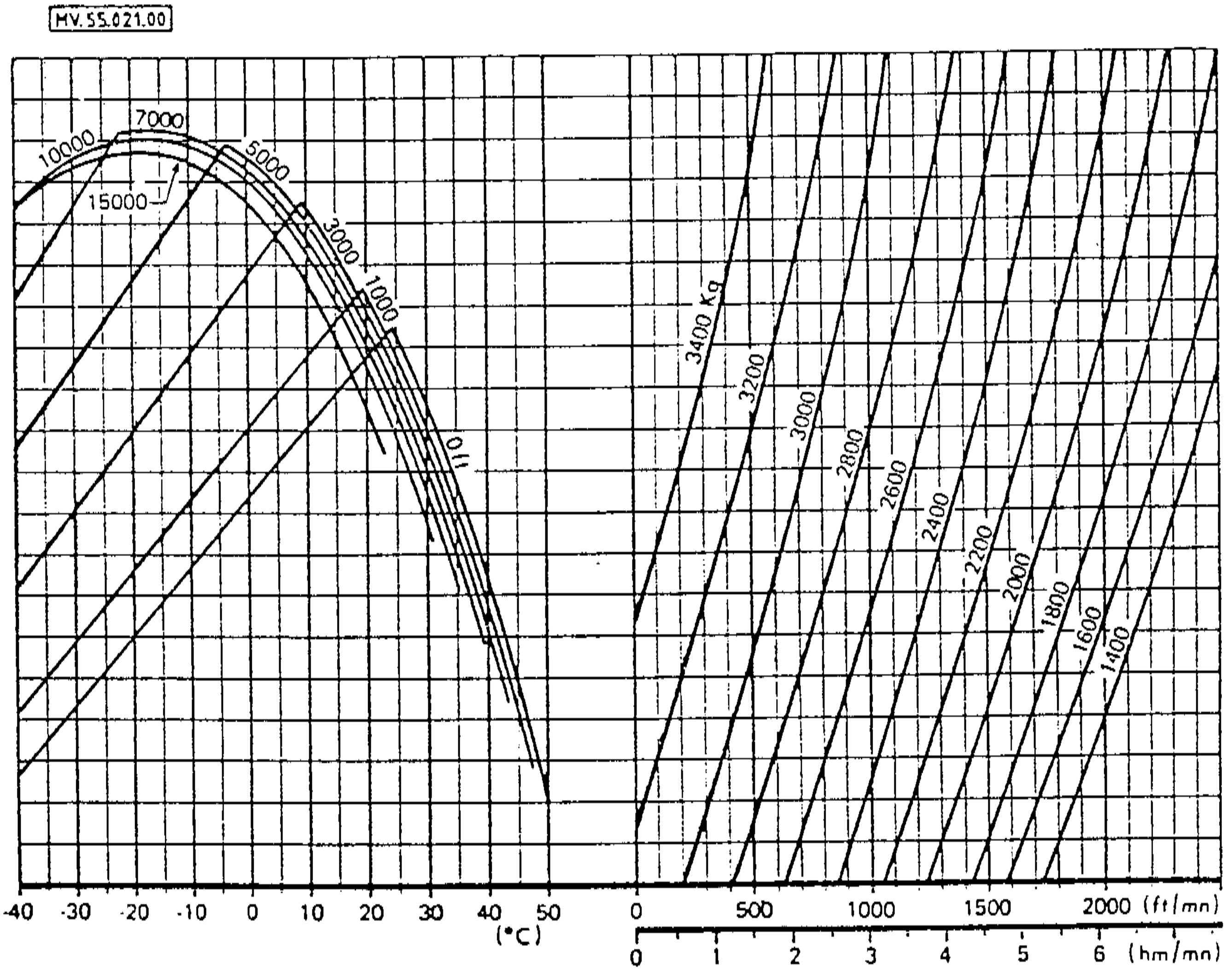




CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

Figure 6



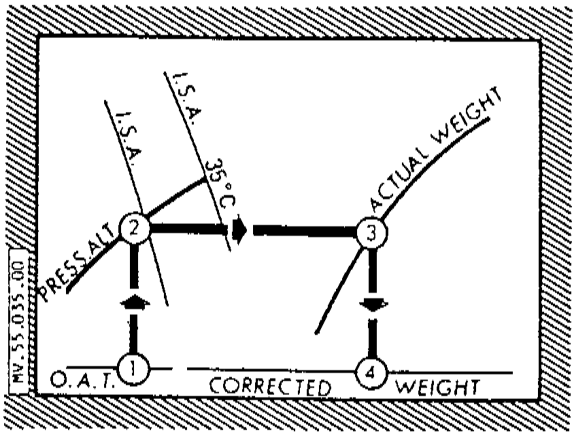


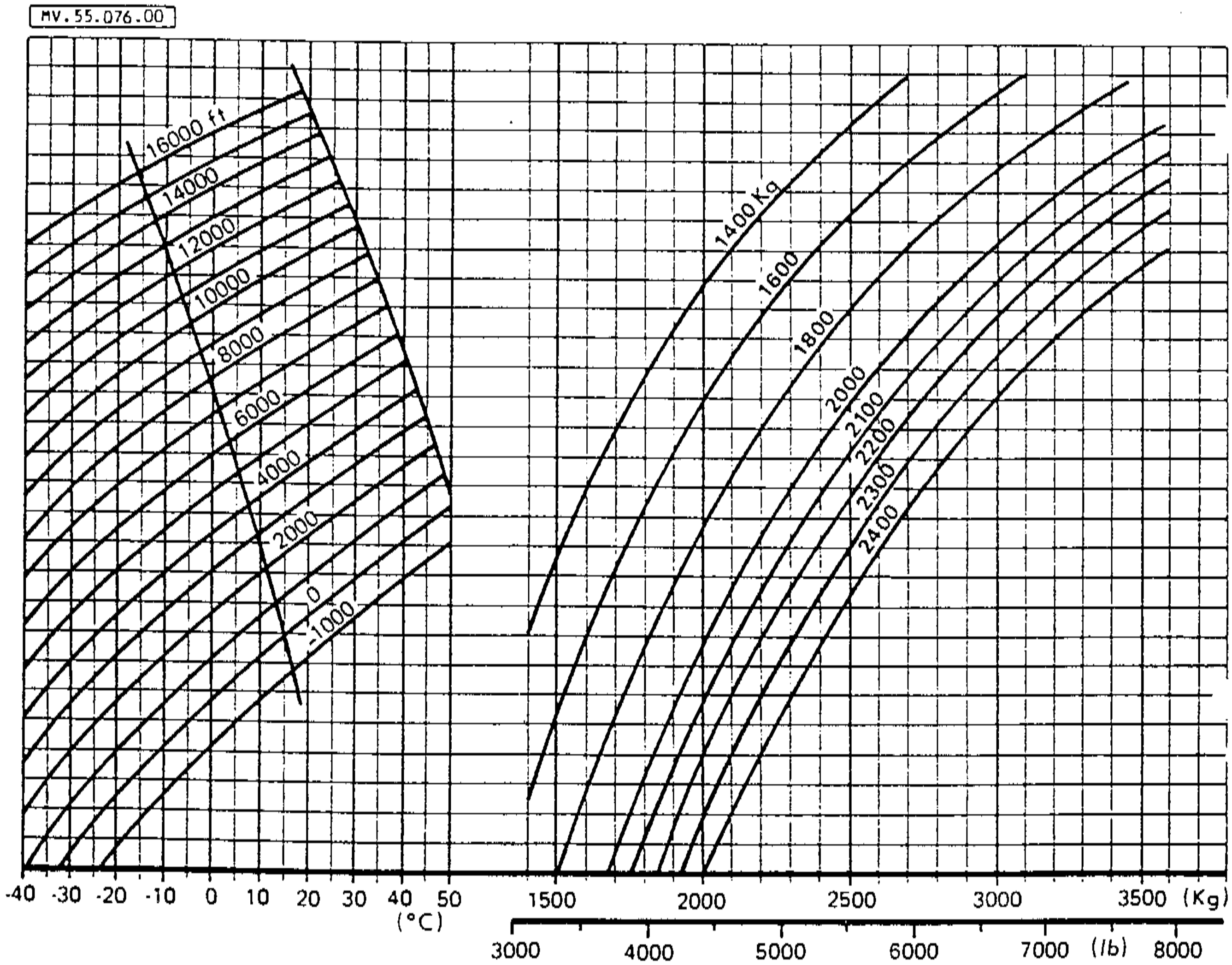
CONDITIONS :

- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister off
- Engine air intake anti-ice off

RATE OF CLIMB ON
2 ENGINES

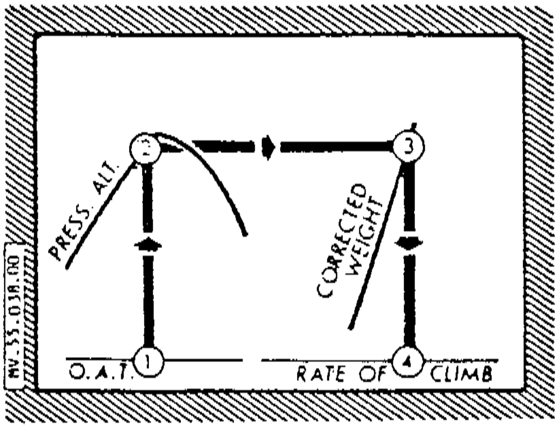
Figure 7

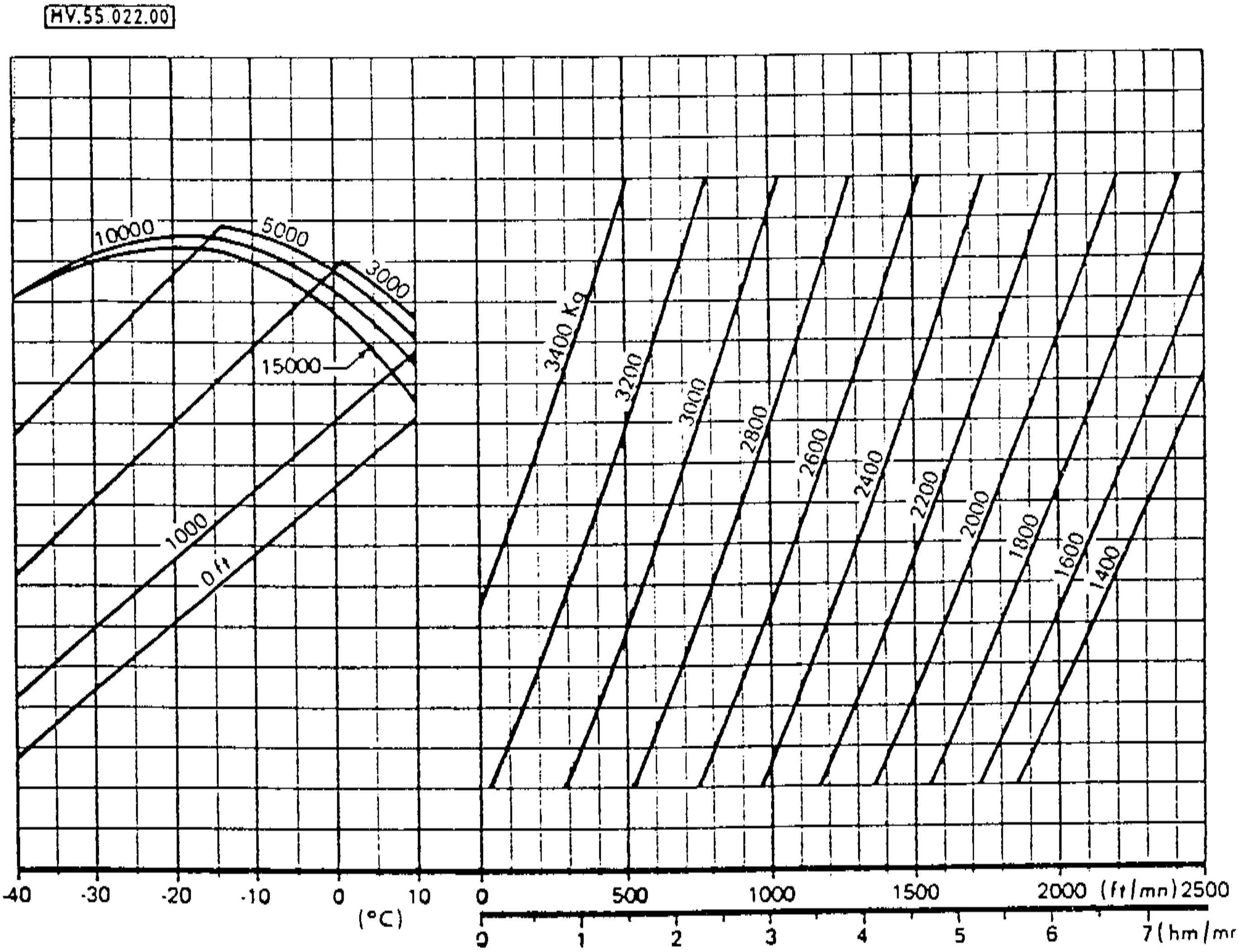




CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

Figure 6



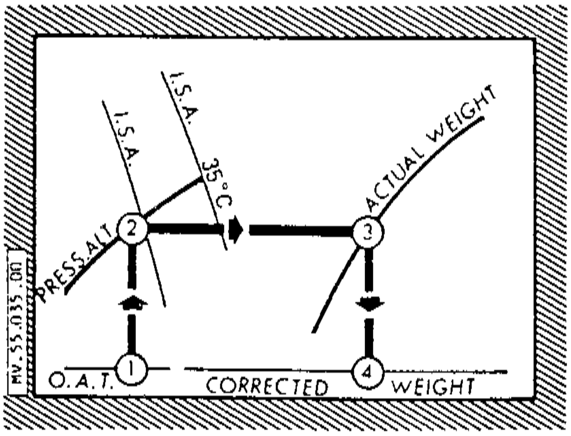


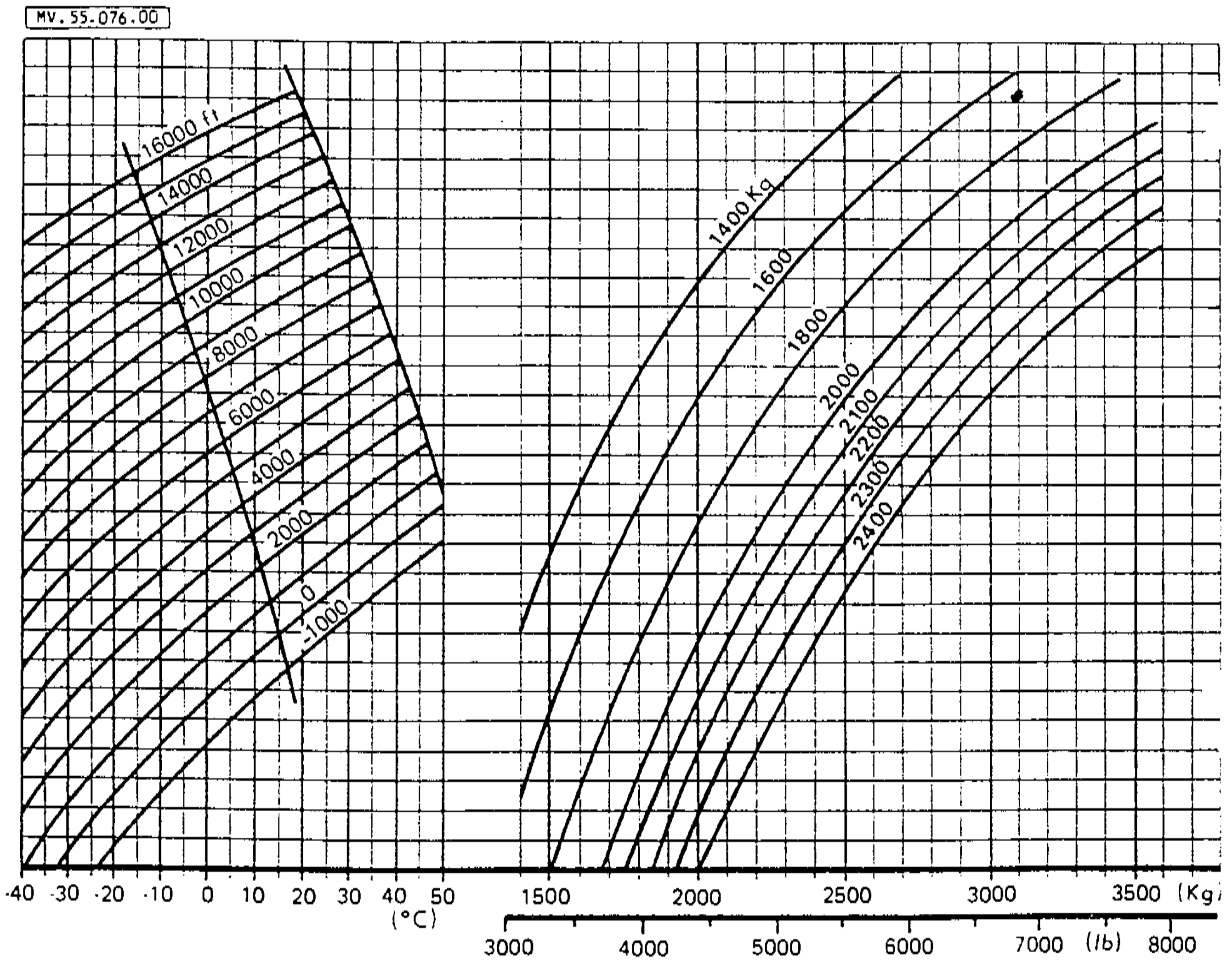
CONDITIONS :

- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister on
- Engine air intake anti-ice off

RATE OF CLIMB ON
2 ENGINES

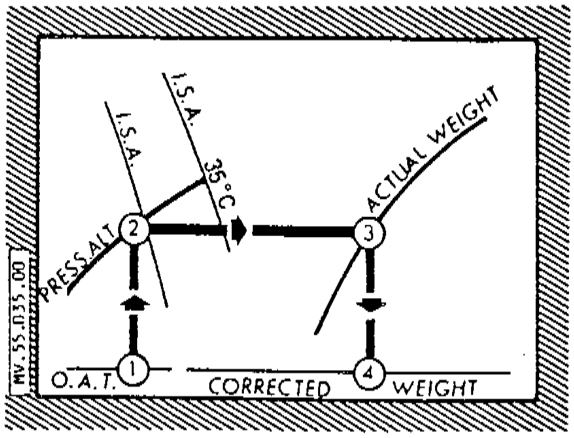
Figure 8

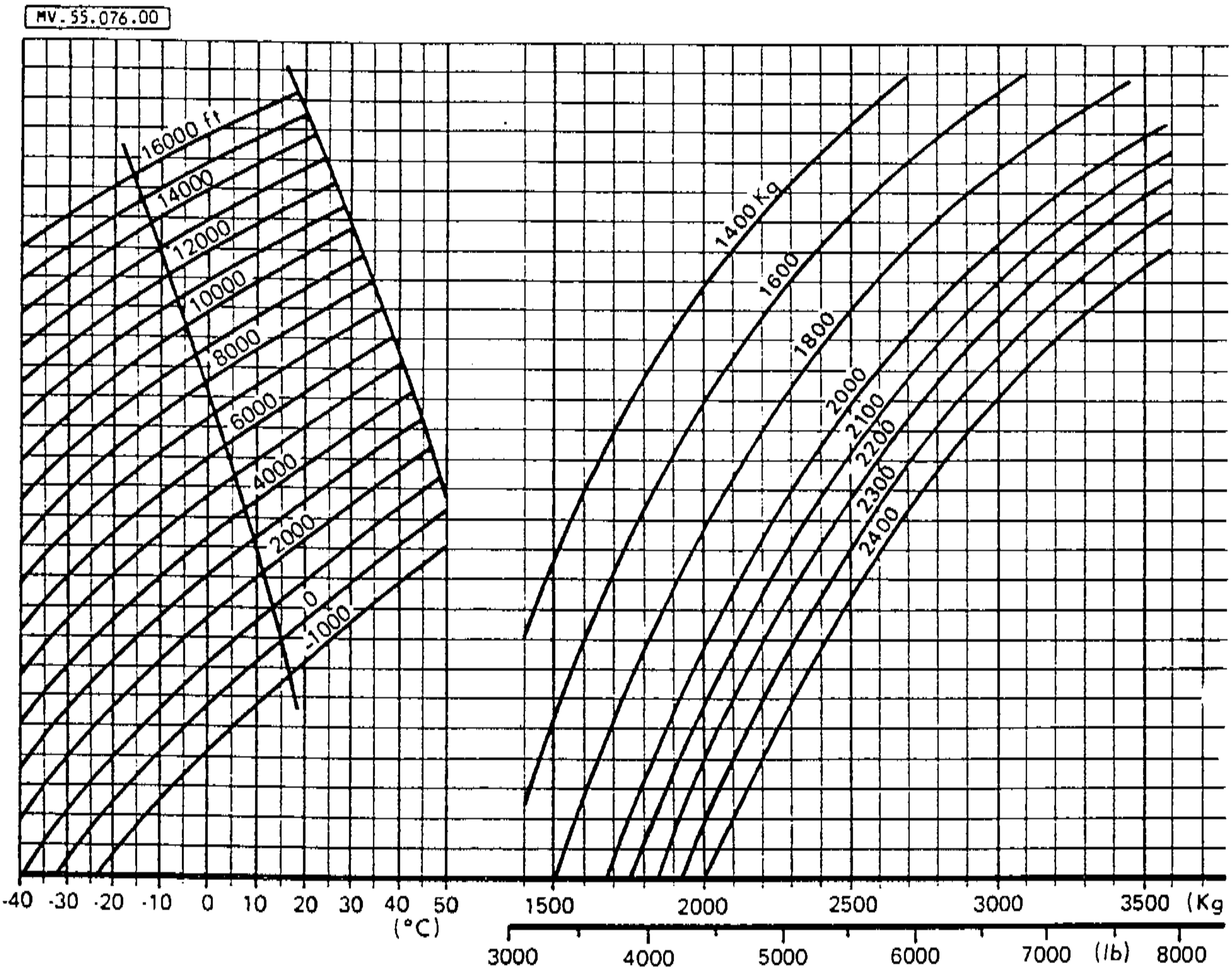




CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

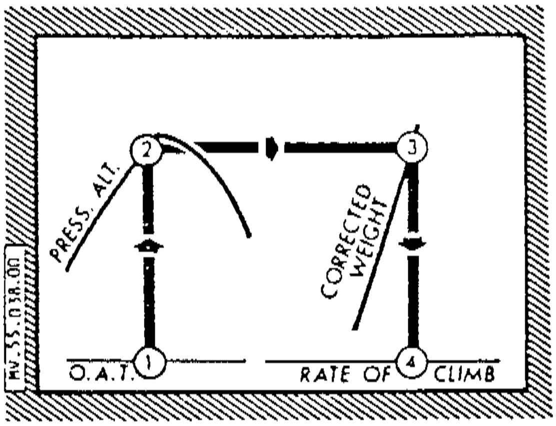
Figure 6

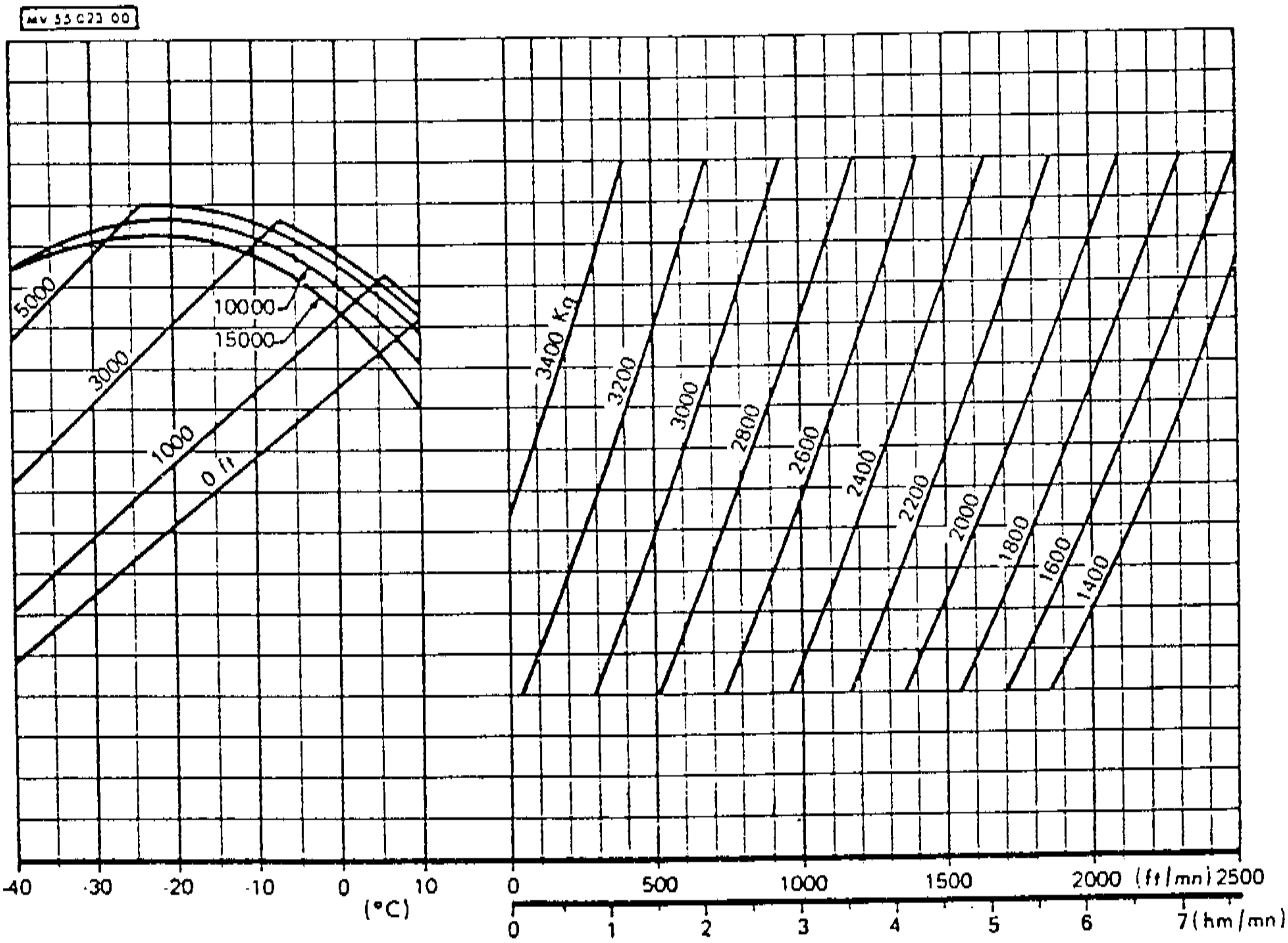




CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

Figure 6



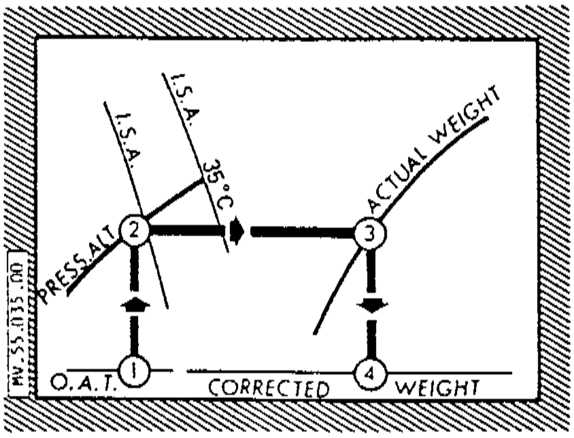


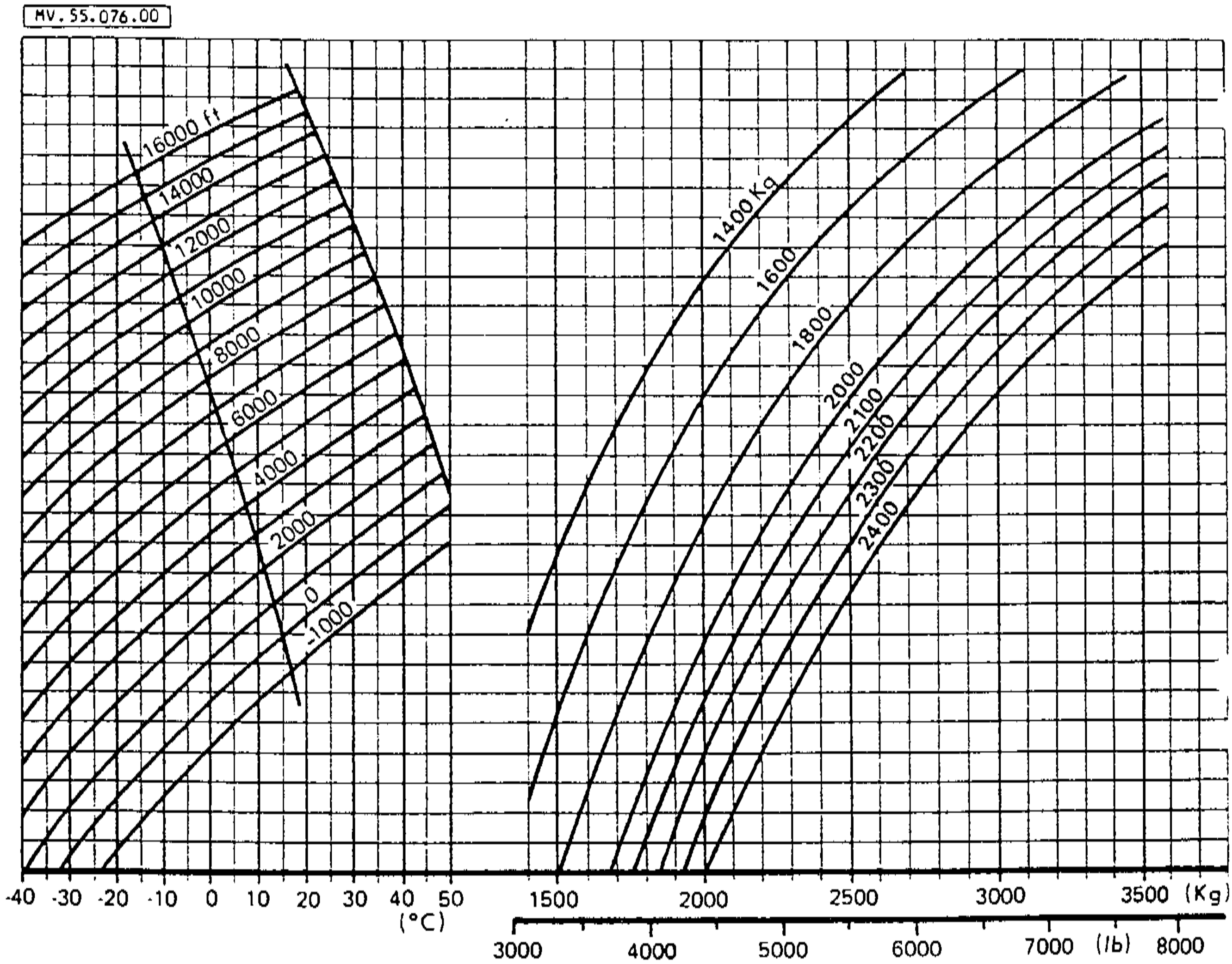
CONDITIONS :

- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister off
- Engine air intake anti-ice on

RATE OF CLIMB
ON 2 ENGINES

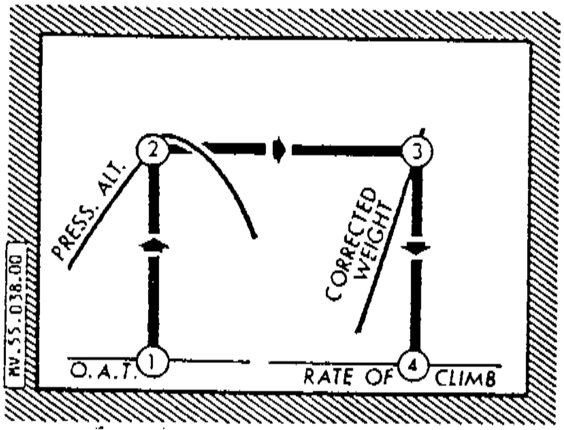
Figure 9

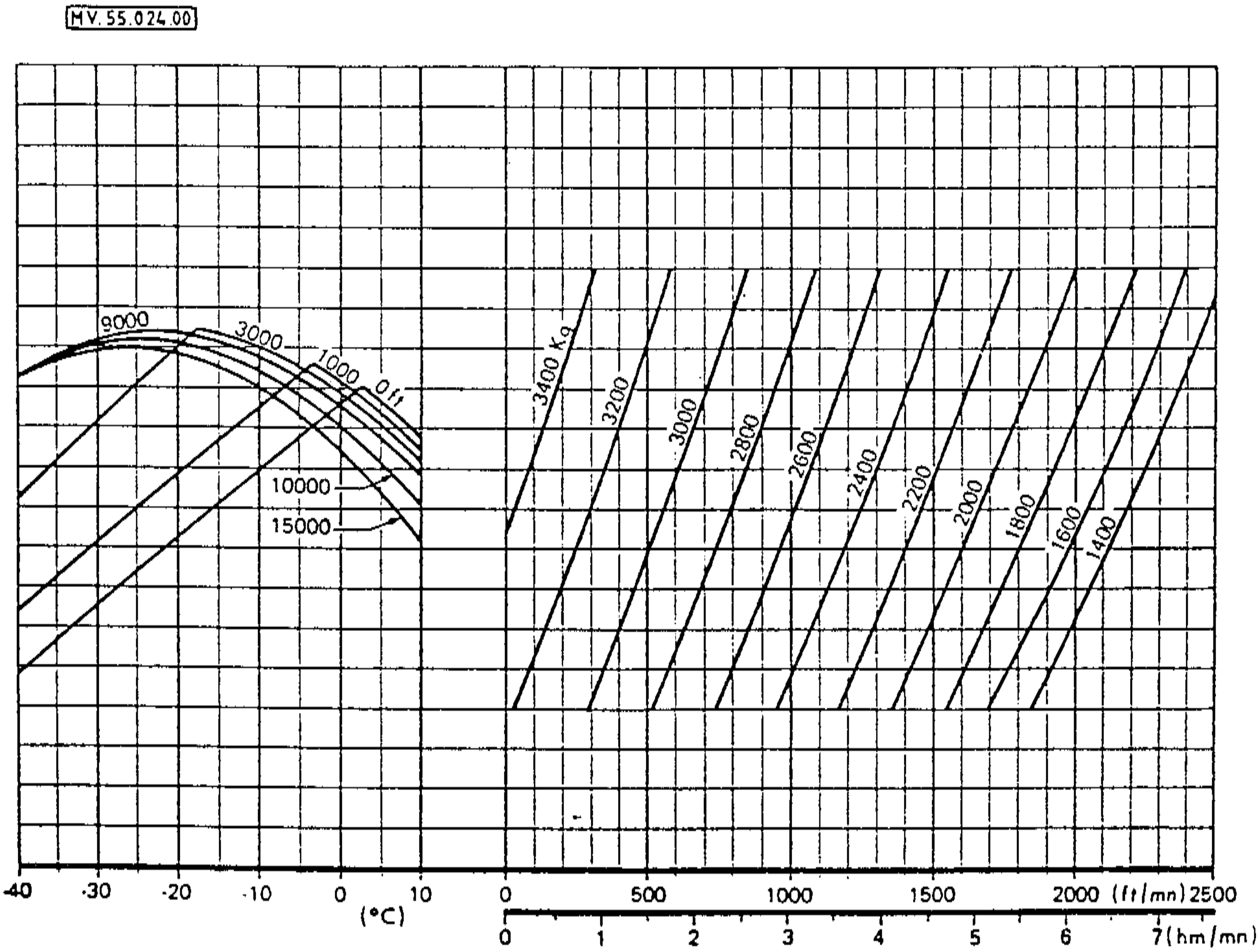




CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

Figure 6



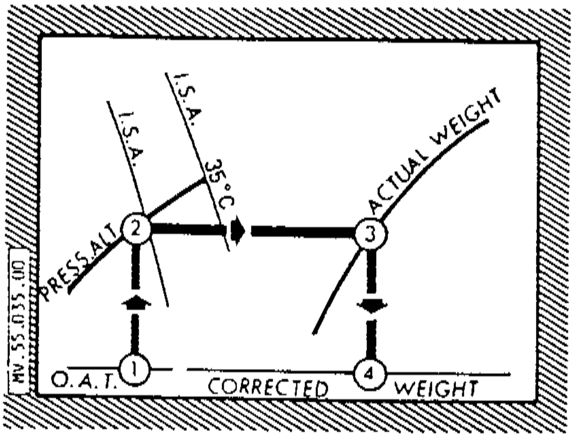


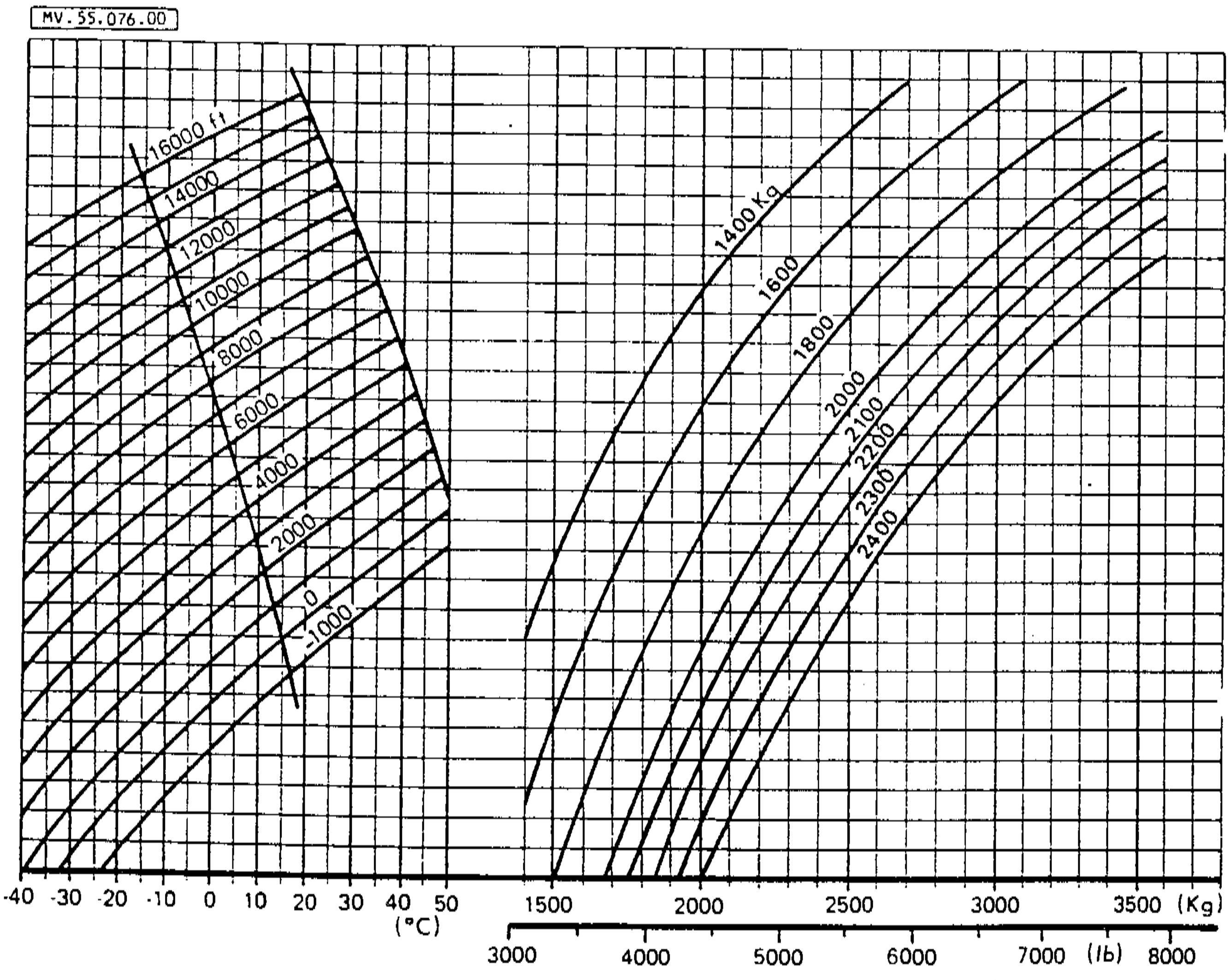
CONDITIONS :

- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister on
- Engine air intake anti-ice on

RATE OF CLIMB
ON 2 ENGINES

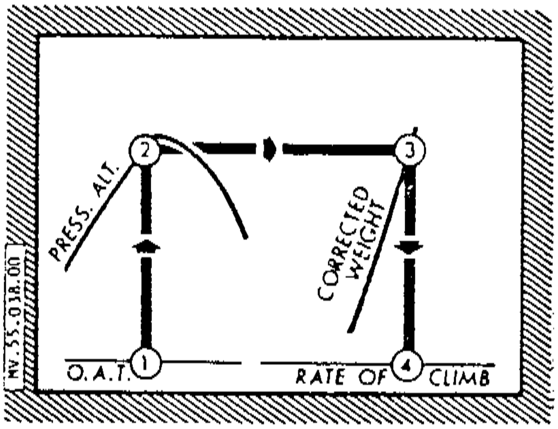
Figure 10

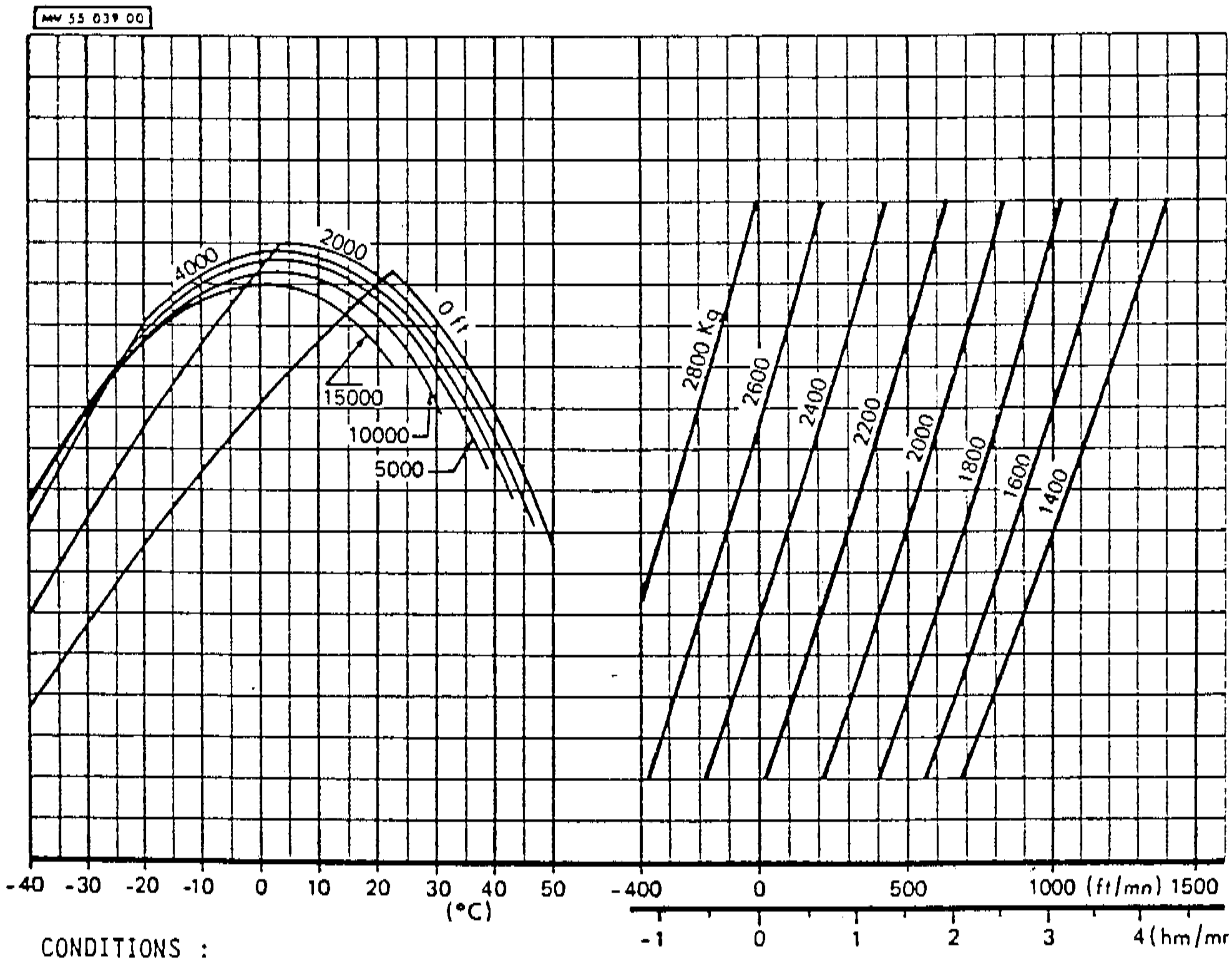




CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

Figure 6



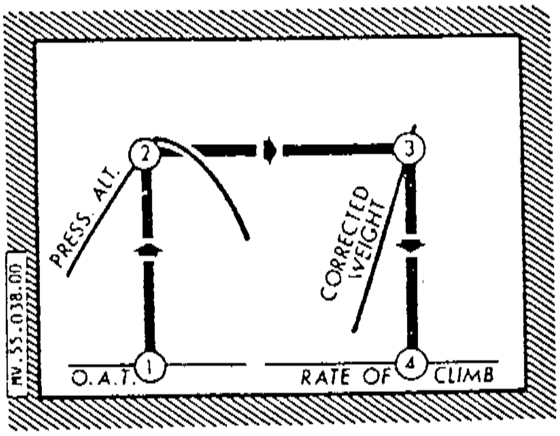


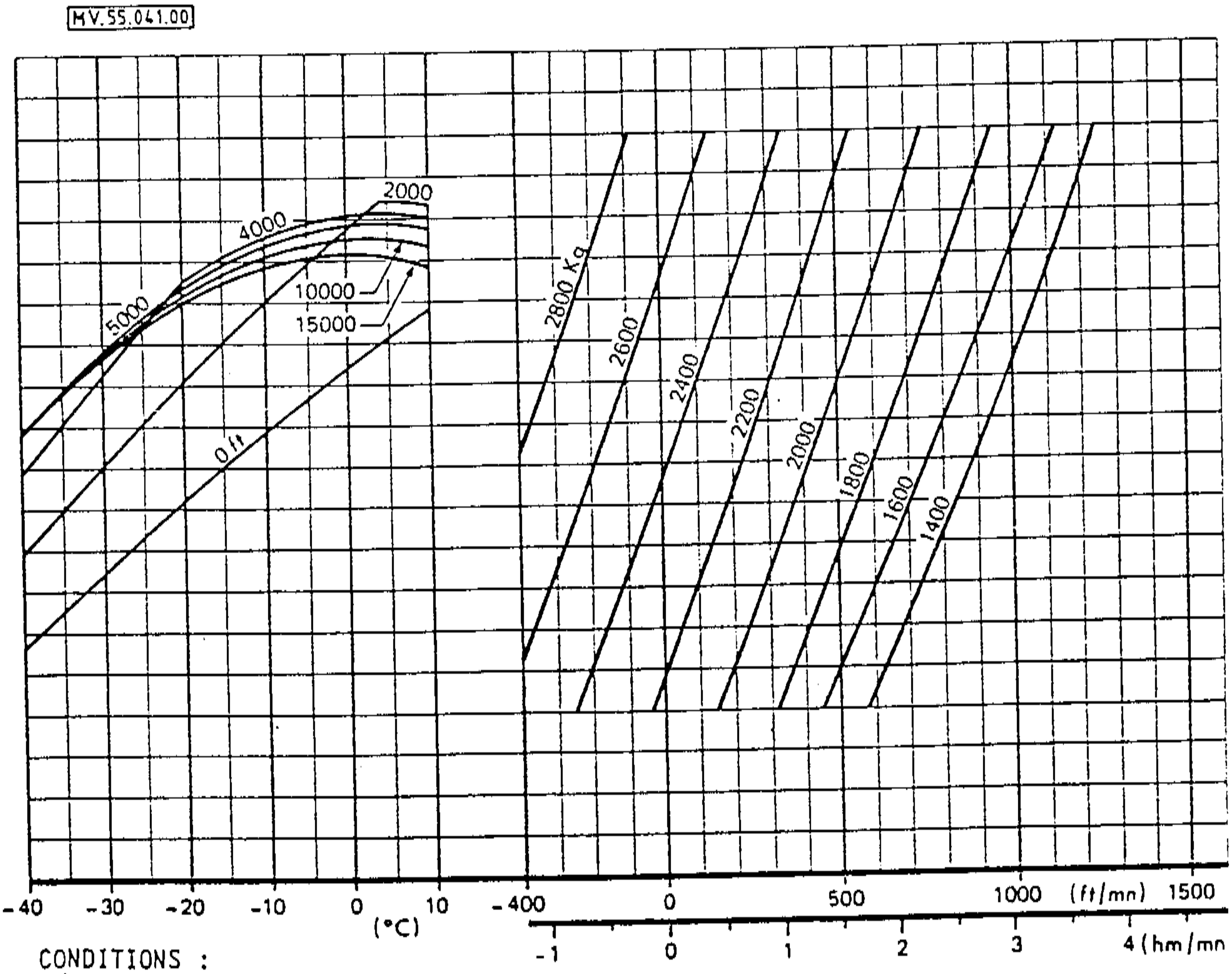
CONDITIONS :

- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister off
- Engine air intake anti-ice off

RATE OF CLIMB
ON 1 ENGINE

Figure 11



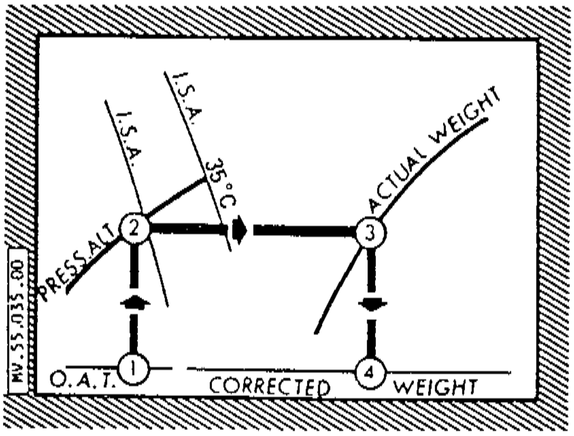


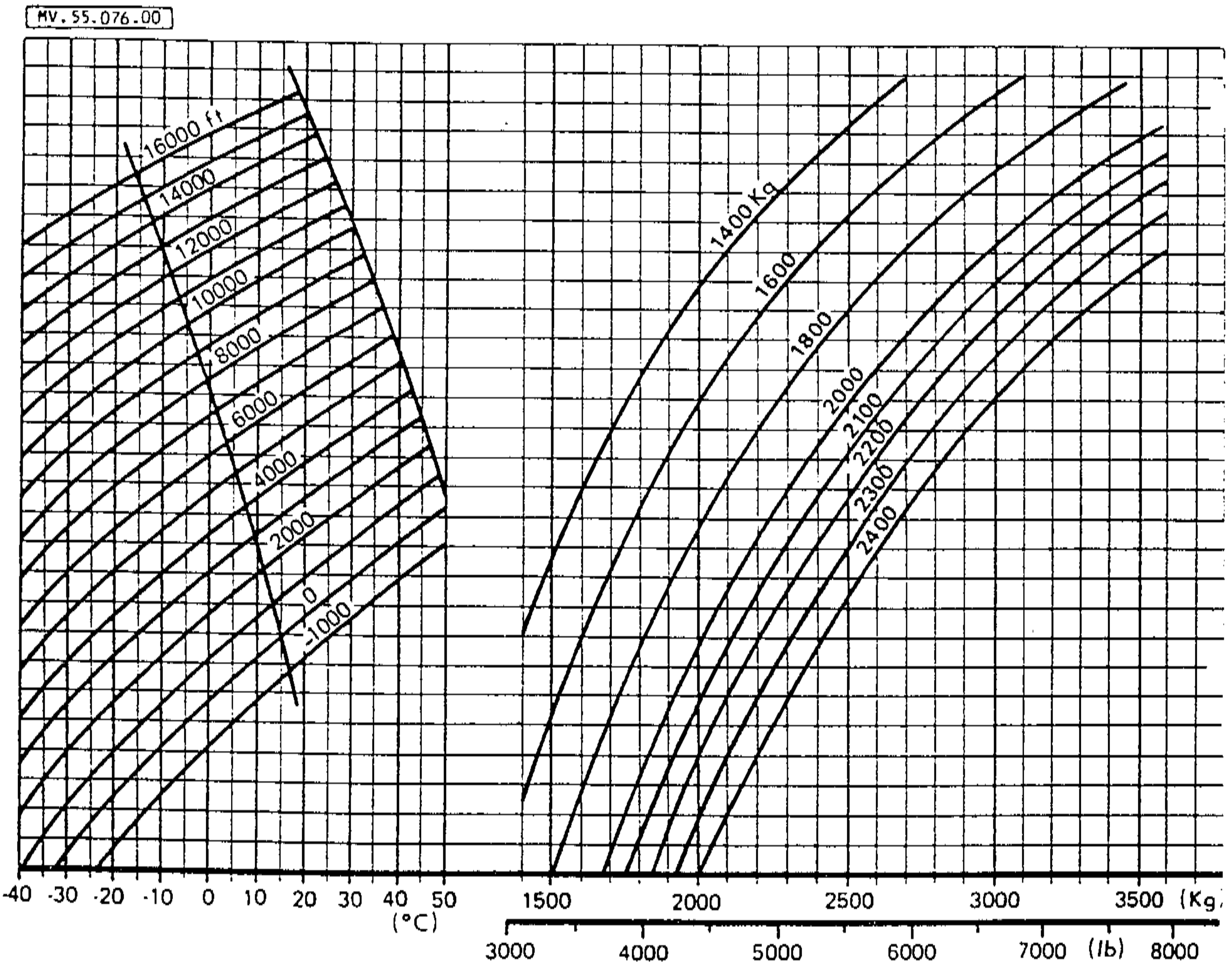
CONDITIONS :

- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister on
- Engine air intake anti-ice off

RATE OF CLIMB
ON 1 ENGINE

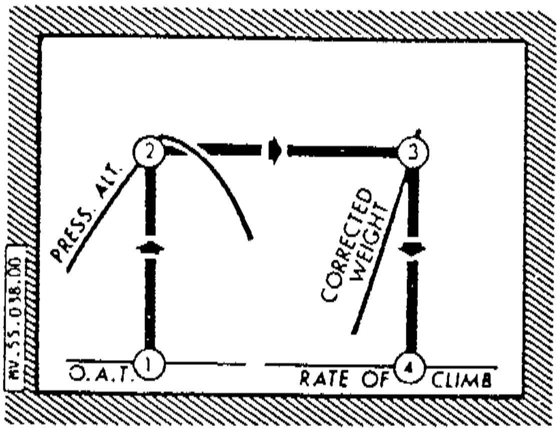
Figure 12



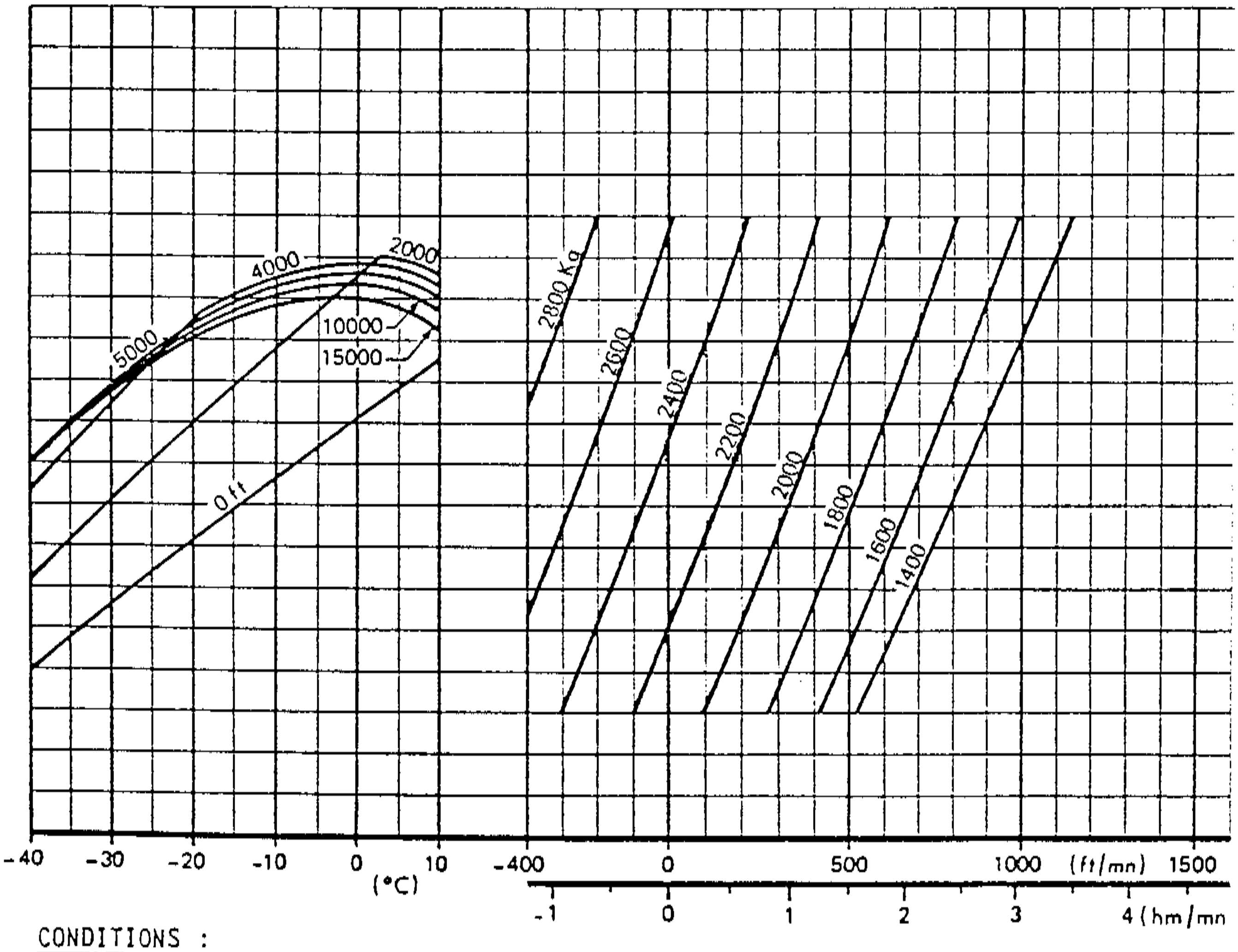


CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

Figure 6



MV.55.042.00

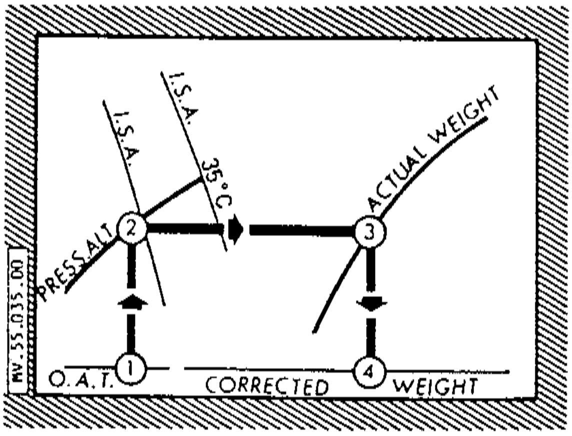


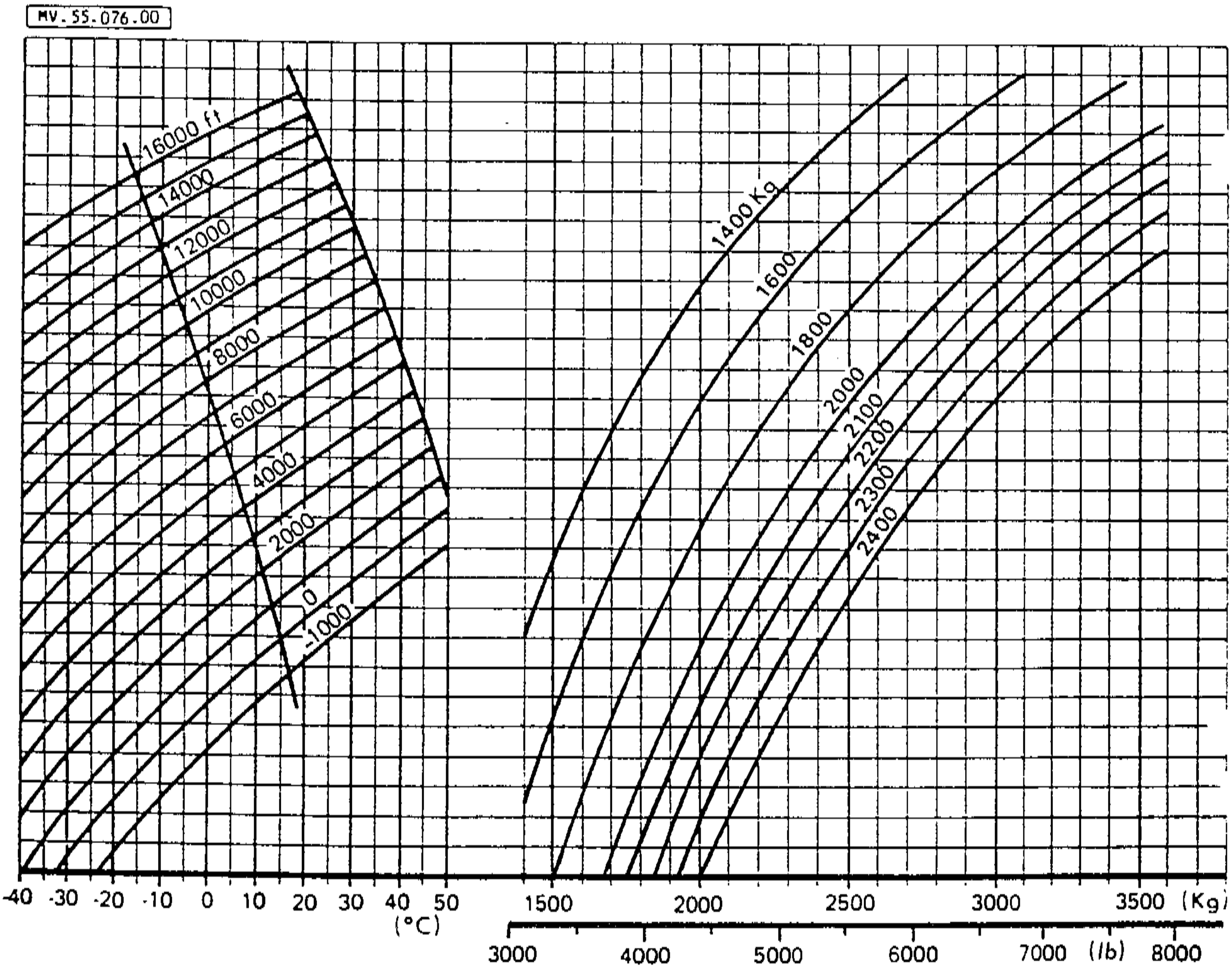
CONDITIONS :

- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister off
- Engine air intake anti-ice on

RATE OF CLIMB
ON 1 ENGINE

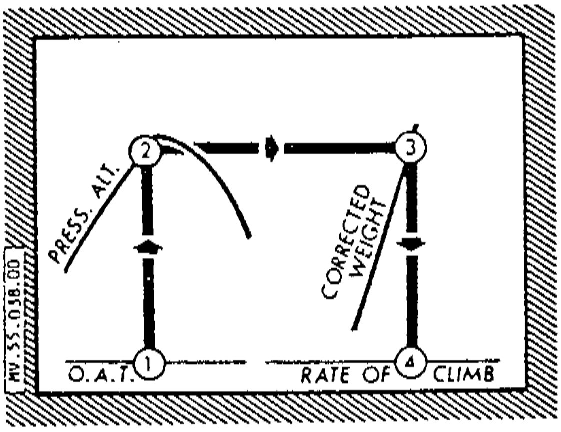
Figure 13

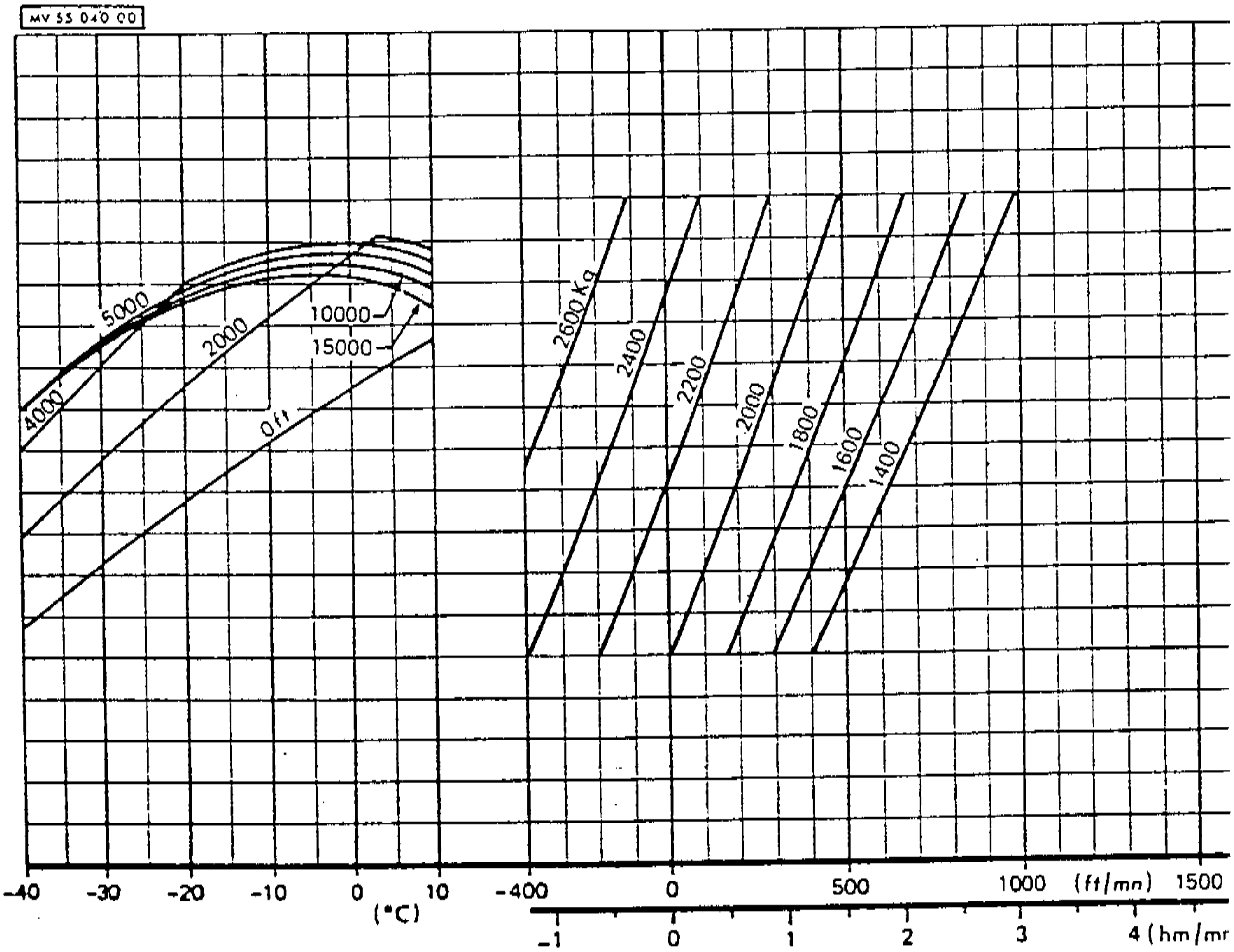




CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

Figure 6



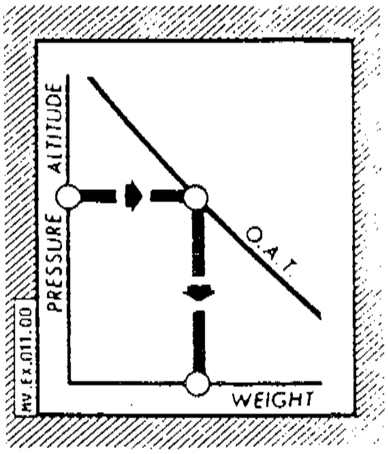


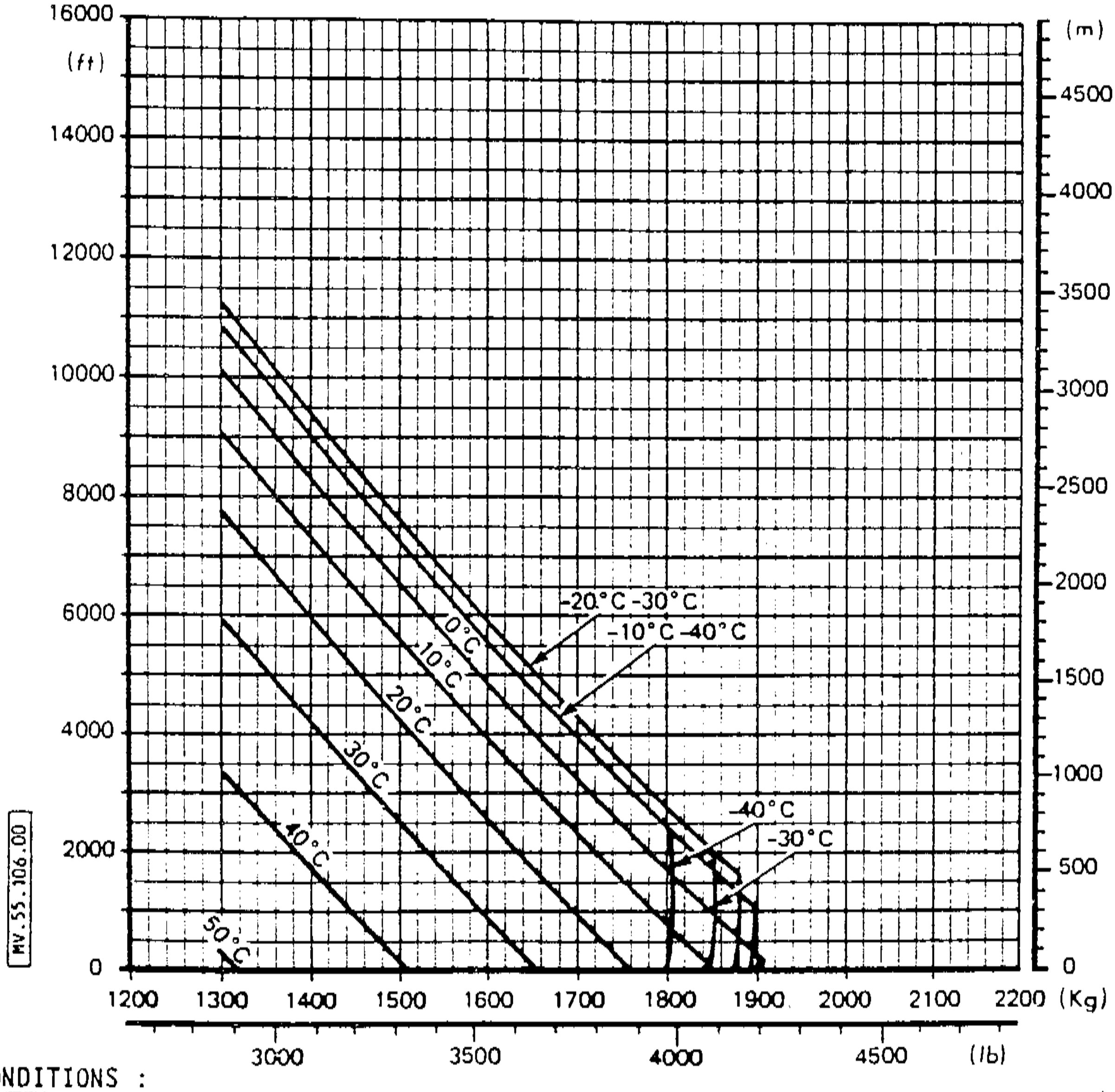
CONDITIONS :

- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister on
- Engine air intake anti-ice on

RATE OF CLIMB
ON 1 ENGINE

Figure 14



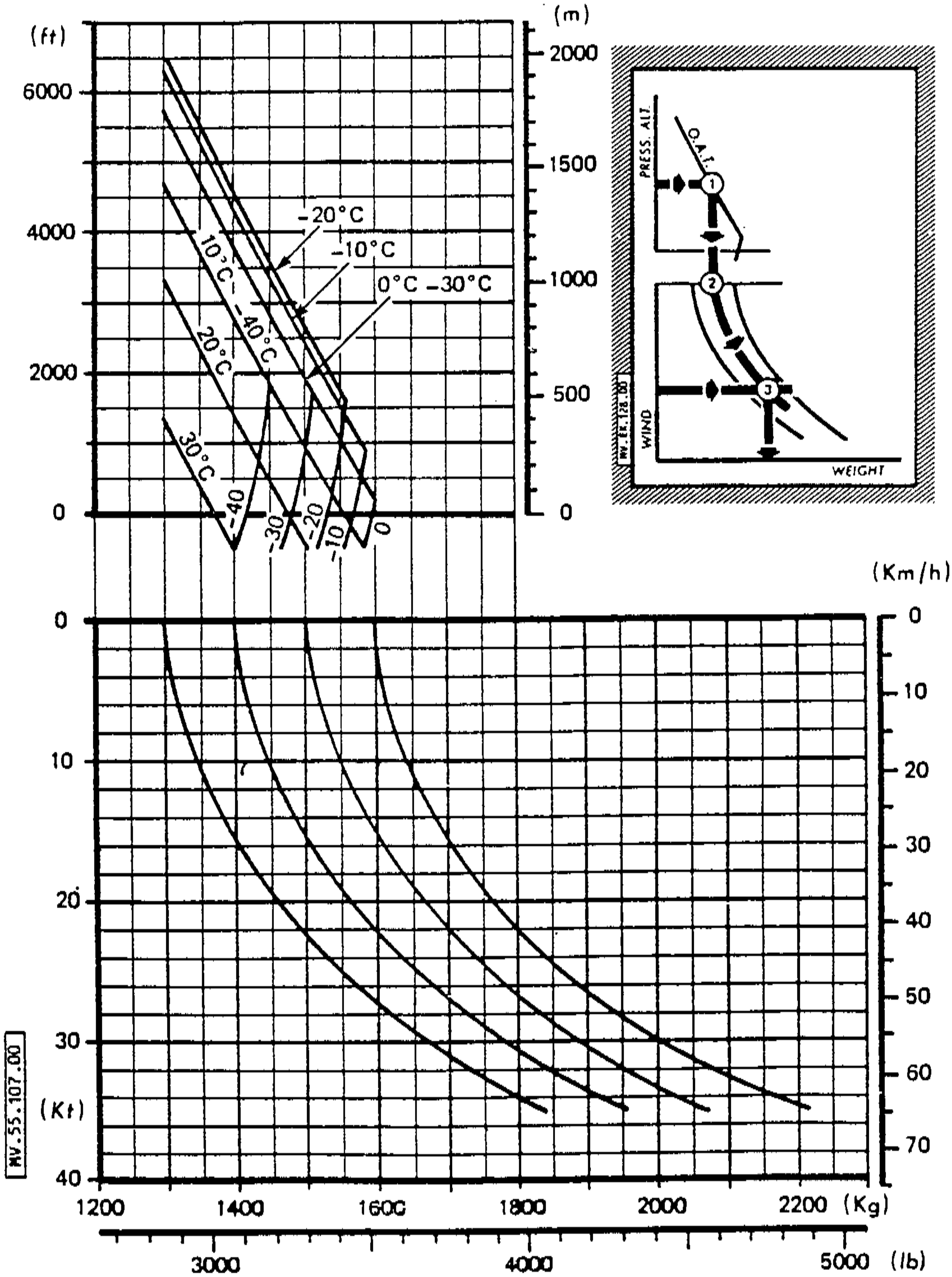


CONDITIONS :

- Height : 6 ft (2m)
- Heater and demister off
- Engine air intake anti-ice on or off

PERFORMANCE IN HOVER
I.G.E. ON ONE ENGINE

Figure 15

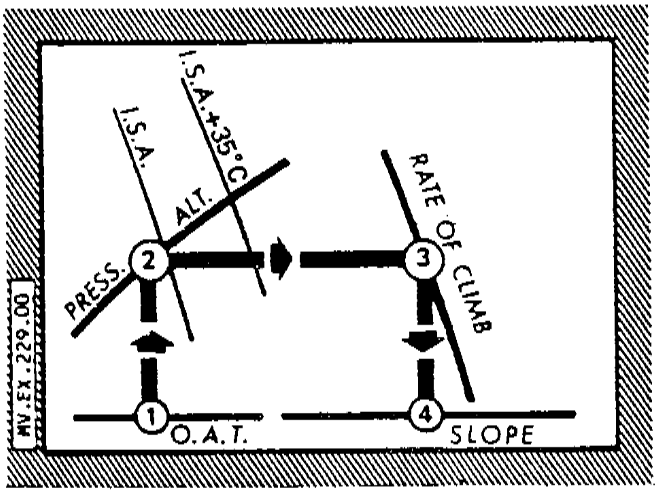


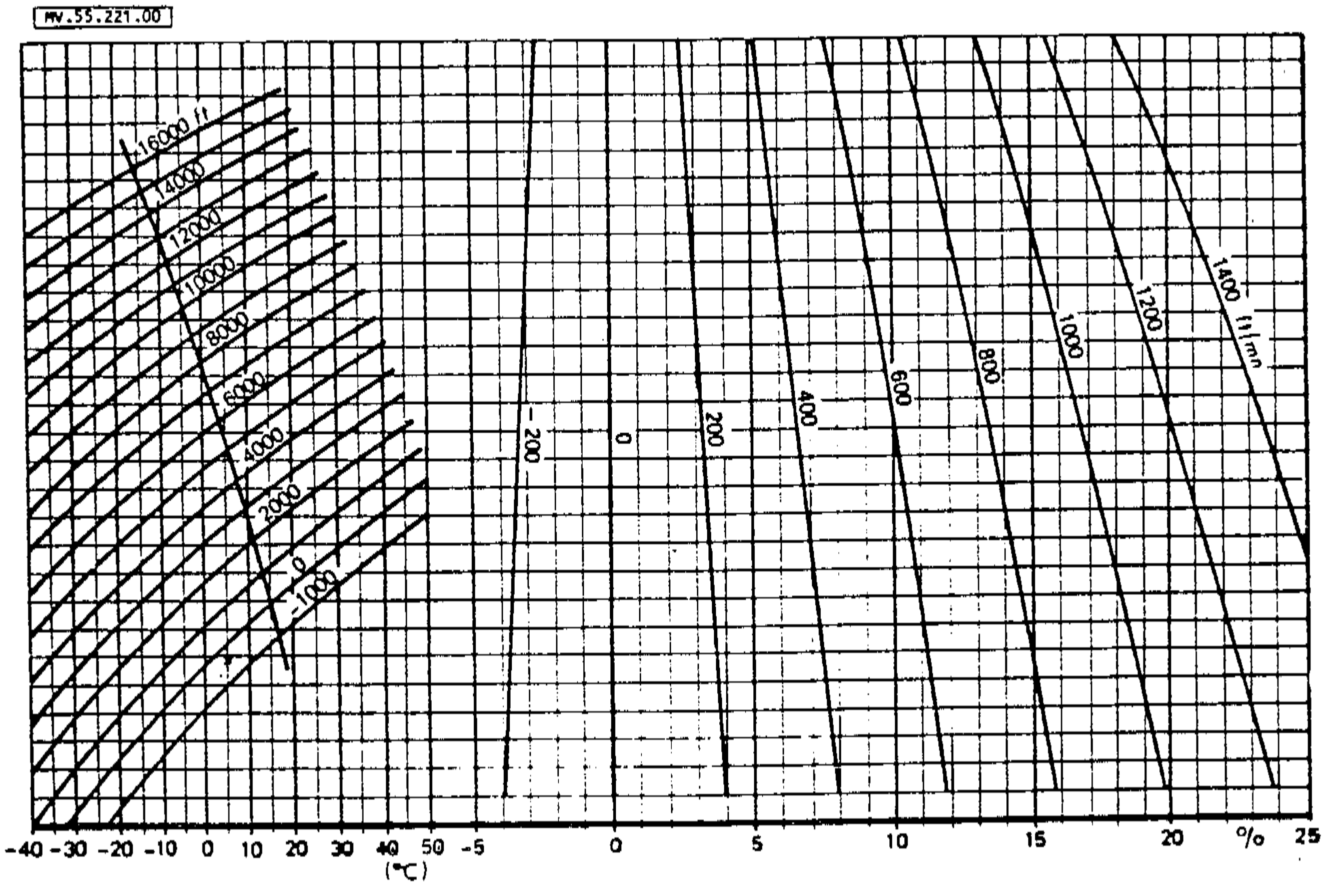
CONDITIONS :

- Heater and demister off
- Engine air intake anti-ice on or off

PERFORMANCE IN HOVER O.G.E. ON ONE ENGINE

Figure 16





CONDITIONS :

- Max. continuous power
- IAS = 55 Kts (102 Km/h-63 MPH) on or off

R/C-SLOPE CORRESPONDENCE ON ONE ENGINE

Figure 17

SECTION 5.2

ADDITIONAL PERFORMANCE DATA

CONTENTS

Revision : 1
Date code : 84-20

LIST OF PAGES CONTAINED IN THE SECTION

This Section at the revision mentioned on first page contains the pages below identified by the following date-codes :

NOTE : The date-code consists of the last two digits of the year followed by the week number.

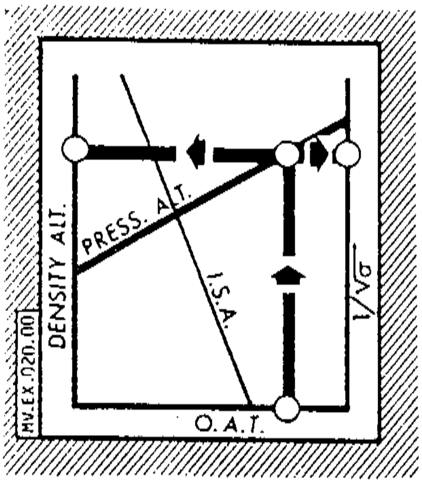
SECTION 5.2

ADDITIONAL PERFORMANCE DATA

1 EFFECT OF EQUIPMENT ITEMS ON THE LEVEL FLIGHT PERFORMANCE

Equipment installed	Fast cruise				Recommended cruise			
	Airspeed km/h	Airspeed kt	Hourly fuel consumption	Range	Airspeed km/h	Airspeed kt	Hourly fuel consumption	Range
Normal heating system *	- 5	- 3	+ 3 %	- 5 %			+ 6 %	- 6 %
Improved heating system or engine air intake anti-icing system *	-10	- 6	+ 4 %	- 6 %			+ 8 %	- 8 %
Normal heating system and engine air intake anti-icing system *	-15	- 8	+ 6 %	- 10 %			+ 14 %	- 14 %
Improved heating system and engine air intake anti-icing system *	-20	-11	+ 7 %	- 12 %			+ 16 %	- 16 %
Electric hoist	- 6	- 3		- 2 %	- 6	- 3		- 2 %
Emergency flotation gear	- 4	- 2		-1,5 %	- 4	- 2		-1,5 %
Sand filters - Not in operation / In operation	REFER TO SUPP. 10.9							
High type landing gear	- 4	- 2			- 4	- 2		
Skis	2	- 1			- 2	- 1		
Float type landing gear	-10%	-10%		- 10%	-10%	-10%		- 10 %
Bubble door	- 9	- 5		- 3%	- 9	- 5		- 3 %

* Reduction in fast or recommended cruise performance is not to be taken into account when engines are running at max. torque
- Increase in hourly fuel consumption and decrease in range are to be taken into account in all cases.



PRESSURE-ALTITUDE
VERSUS DENSITY-ALTITUDE

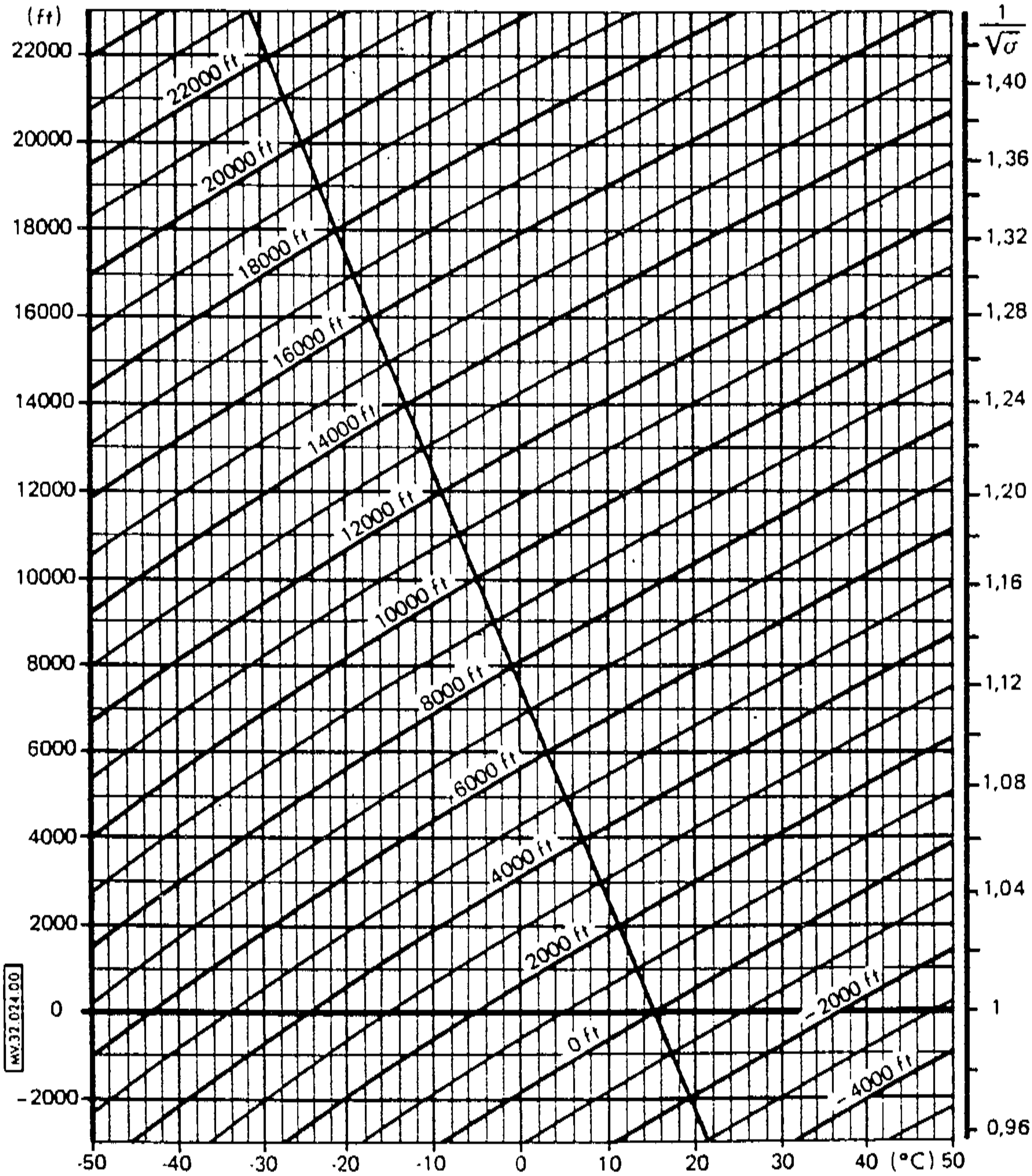


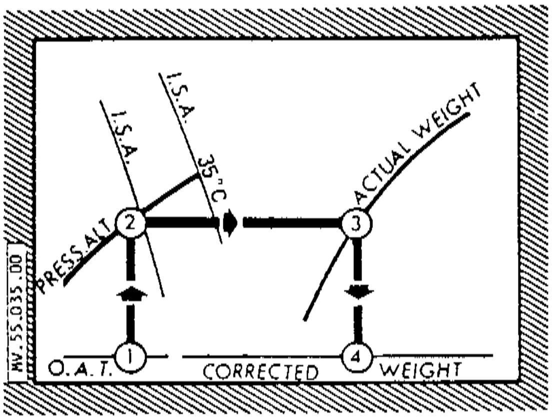
Figure 1

HOW TO USE THE FIGURE RELATED TO THE CRUISE SPEEDS

The fast and recommended cruise speeds are given in the figures below.
The corrected weight is first to be determined from the figure on the facing page when calculating the cruise speeds.

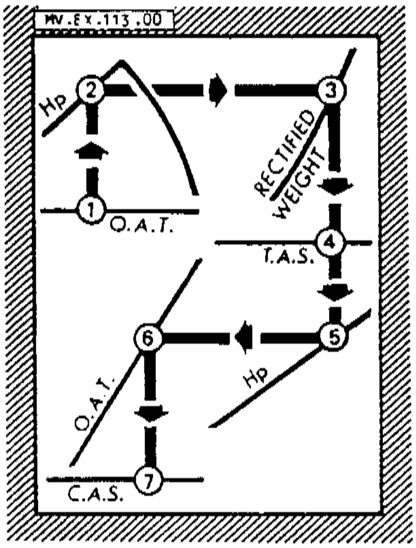
Determining the corrected weight

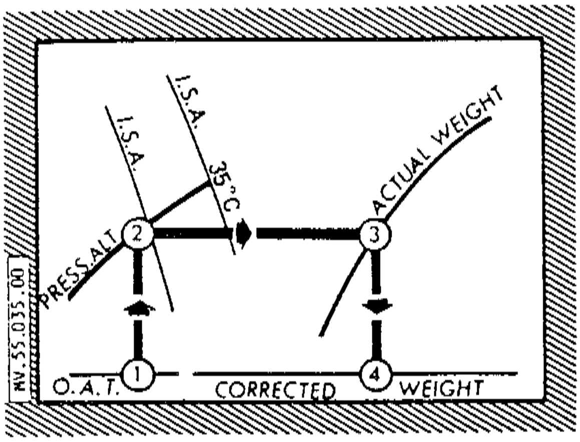
- Follow vertically from the O.A.T. (1) up to the pressure-altitude curve (2).
- Read across to the actual weight (3).
- Read the corrected weight (4) which is to be used in determining the rate of climb.



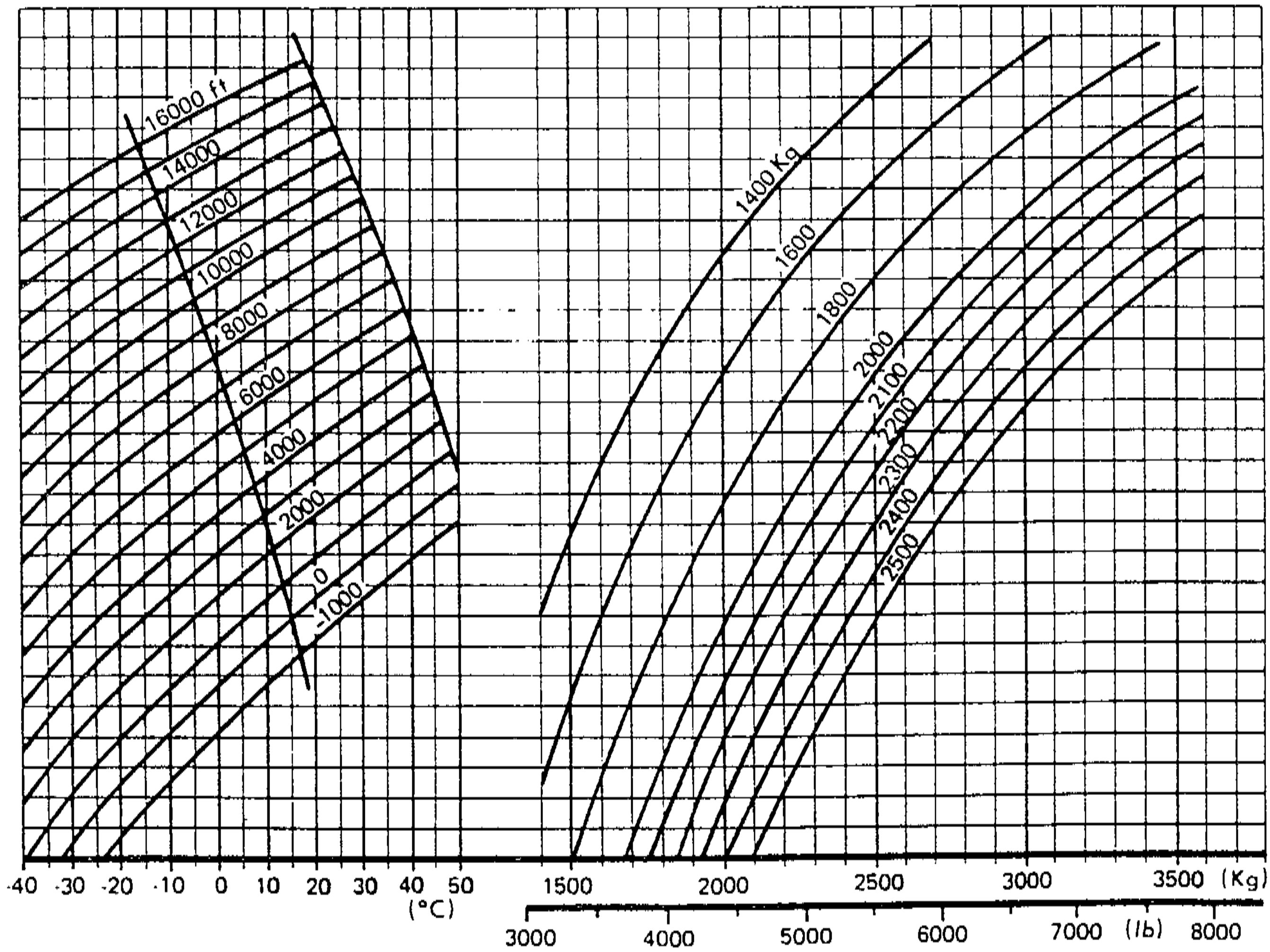
Determining the true airspeed and calibrated airspeed

- Follow vertically from the O.A.T.(1) up to the pressure-altitude curve (2).
- Read across to the corrected weight (3) as determined on the facing figure.
- Follow vertically down and read off the true airspeed (4).
- Enter pressure-altitude (5).
- Read across to the O.A.T. (6).
- Follow vertically down and read off the calibrated airspeed (7).



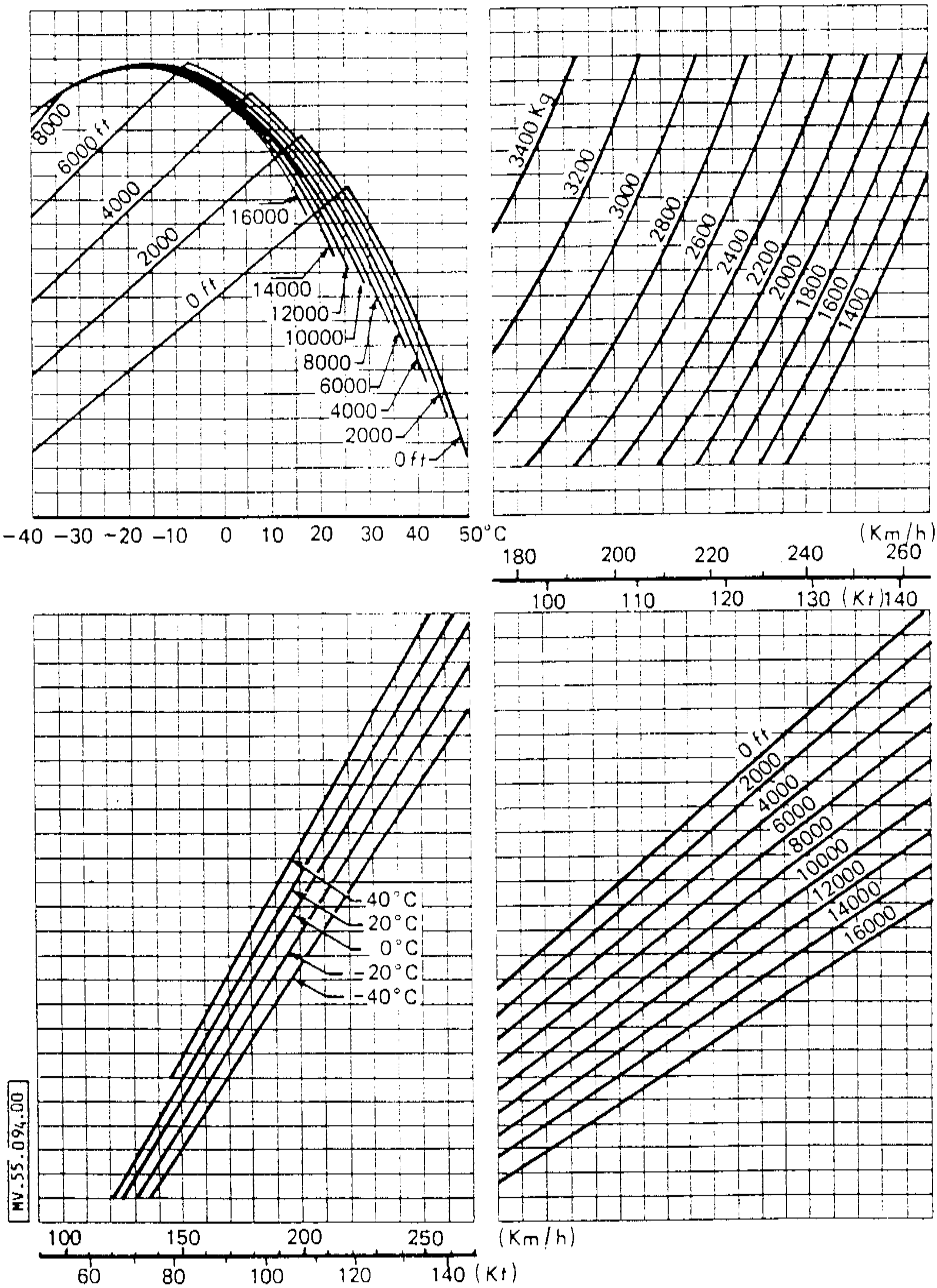


MV.55.078.00



CORRECTED WEIGHT FOR DETERMINING THE CRUISE SPEEDS

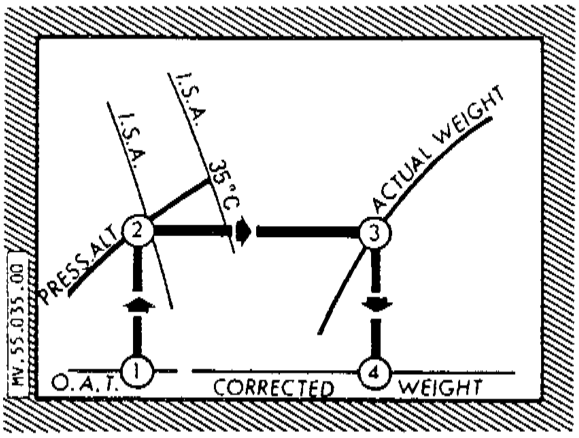
Figure 2



CONDITION
- Stabilized level flight

TAS-CAS
IN FAST CRUISE

Figure 3



MV.55.078.00

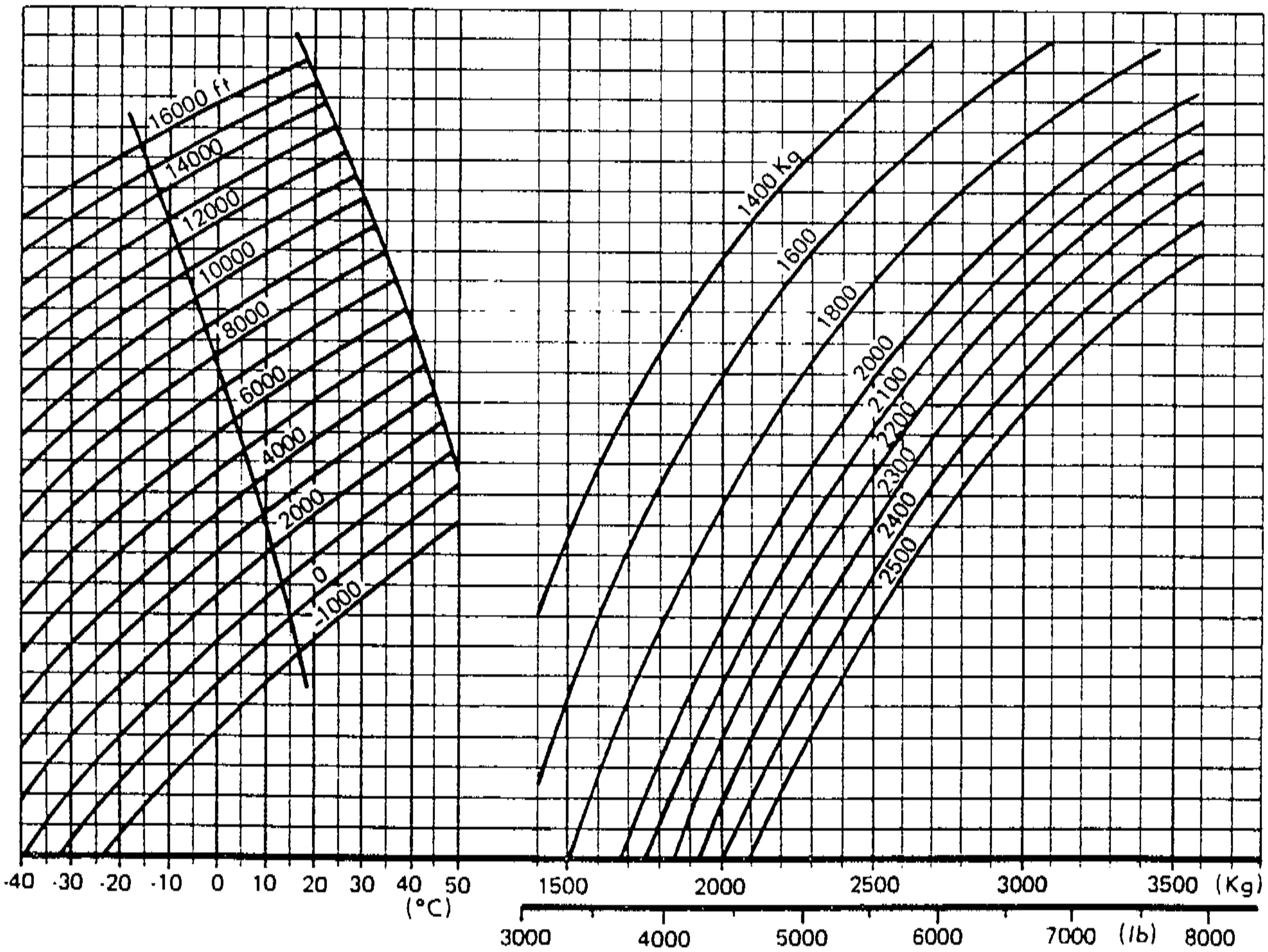
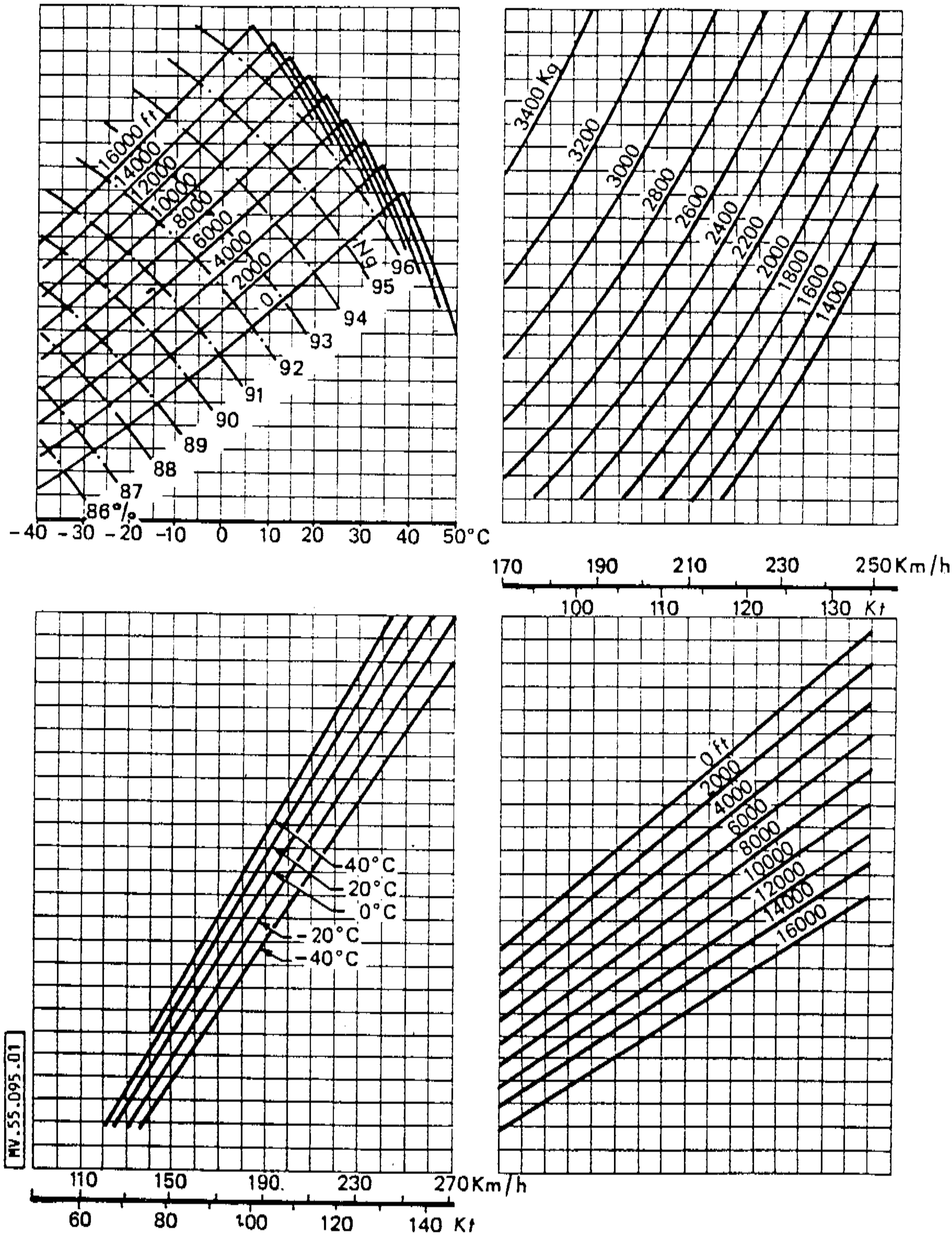


Figure 2

CORRECTED WEIGHT FOR DETERMINING THE CRUISE SPEEDS

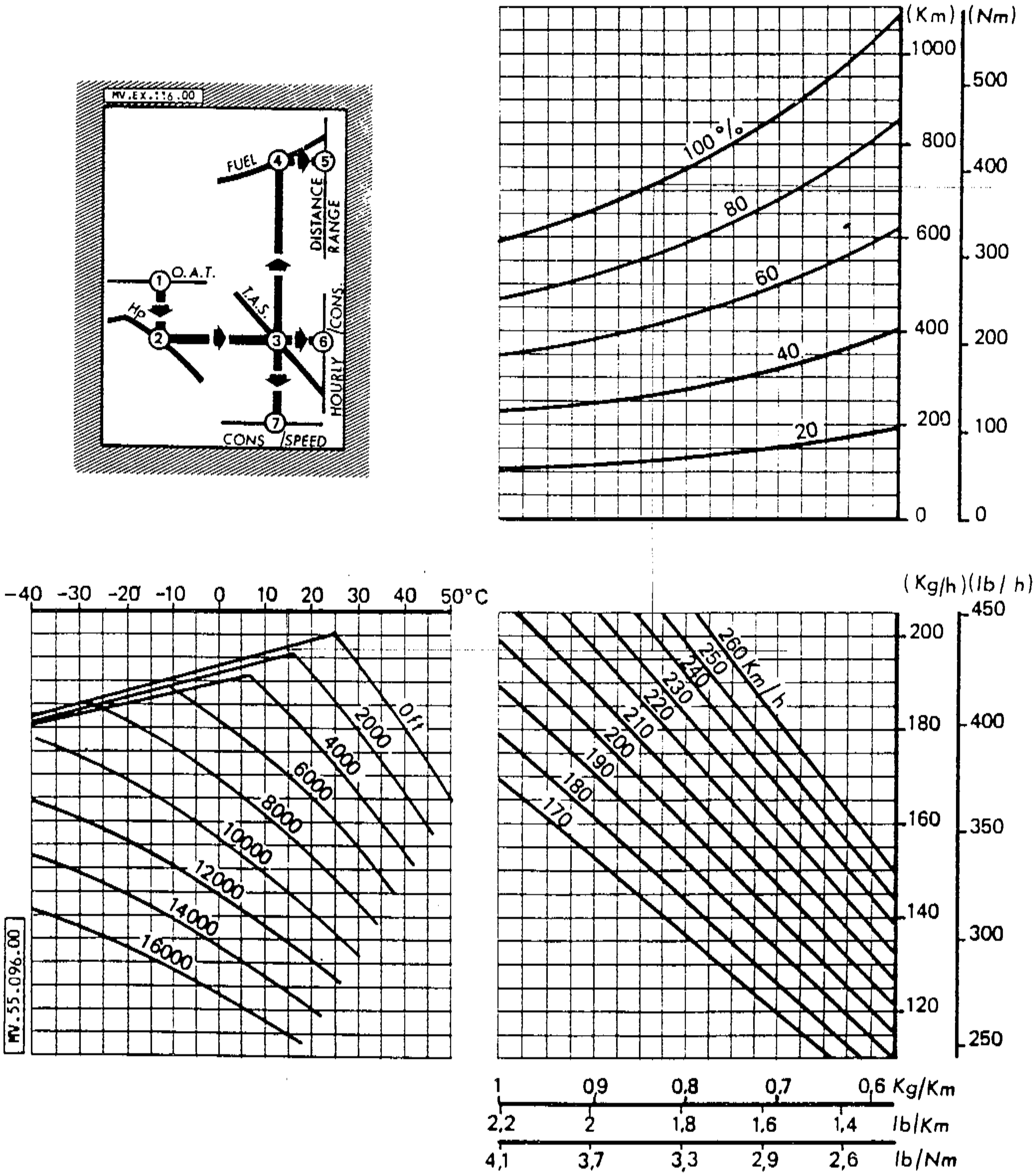


R

CONDITIONS
- Stabilized level flight
- TAS and CAS correspond to the Ng recorded from the pressure-altitude curves on top left hand.

TAS-CAS
IN RECOMMENDED CRUISE

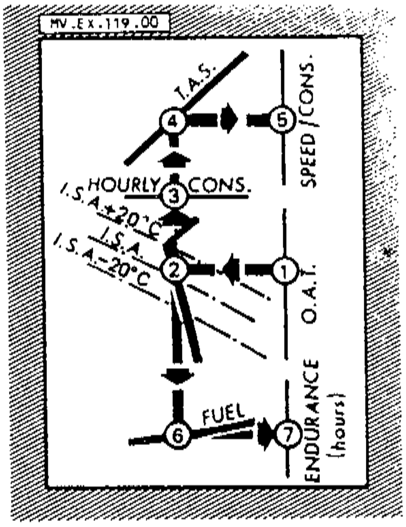
Figure 4

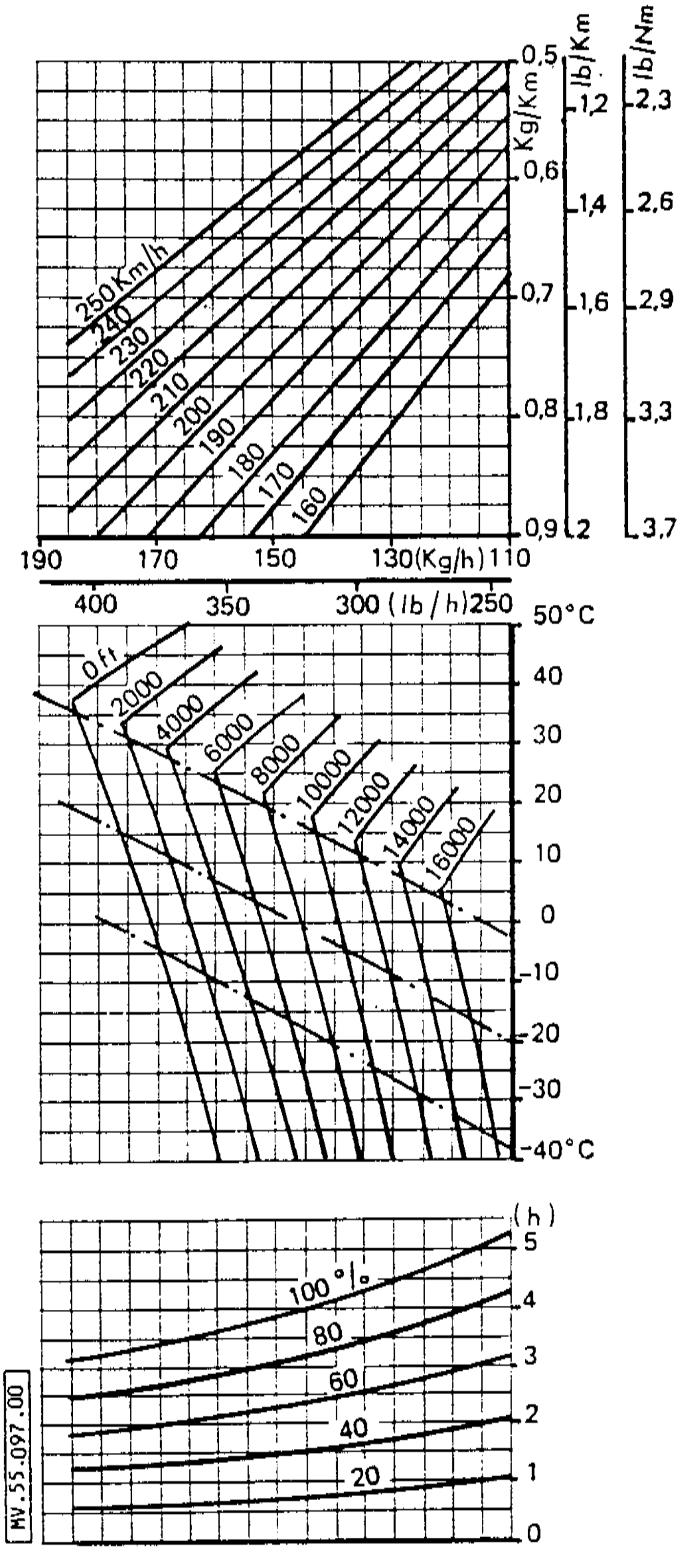


CONDITION
- Stabilized level flight

- FUEL CONSUMPTION
- RANGE
IN FAST CRUISE

Figure 5

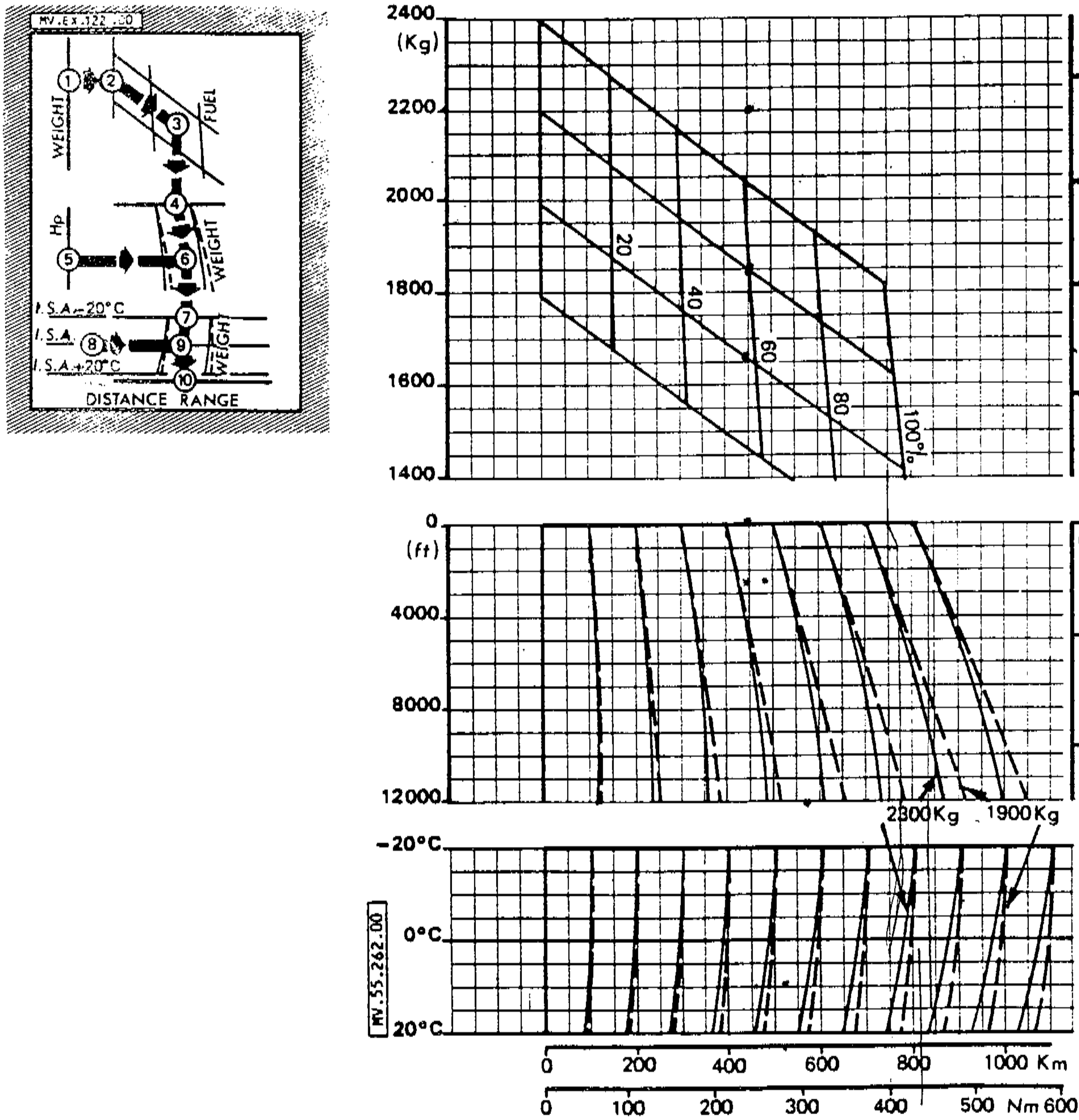




CONDITION
- Stabilized level flight

- FUEL CONSUMPTION
- ENDURANCE
IN RECOMMENDED CRUISE

Figure 6



CONDITION
- Stabilized level flight

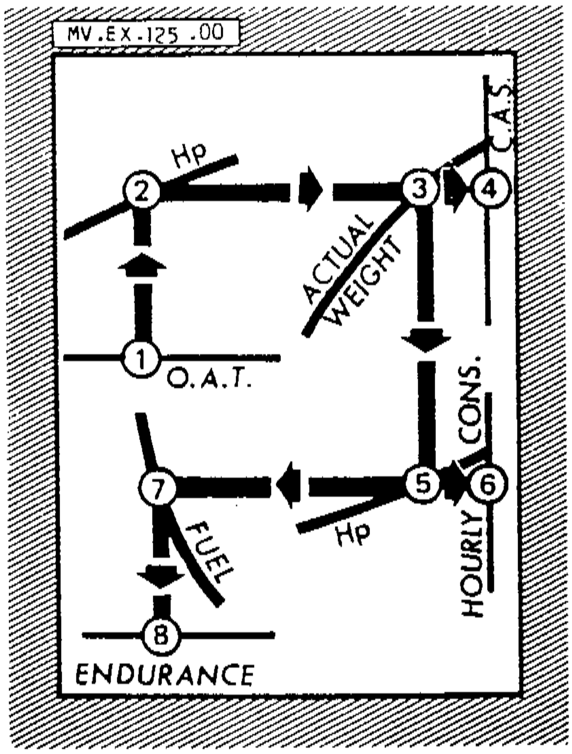
RANGE
IN RECOMMENDED CRUISE

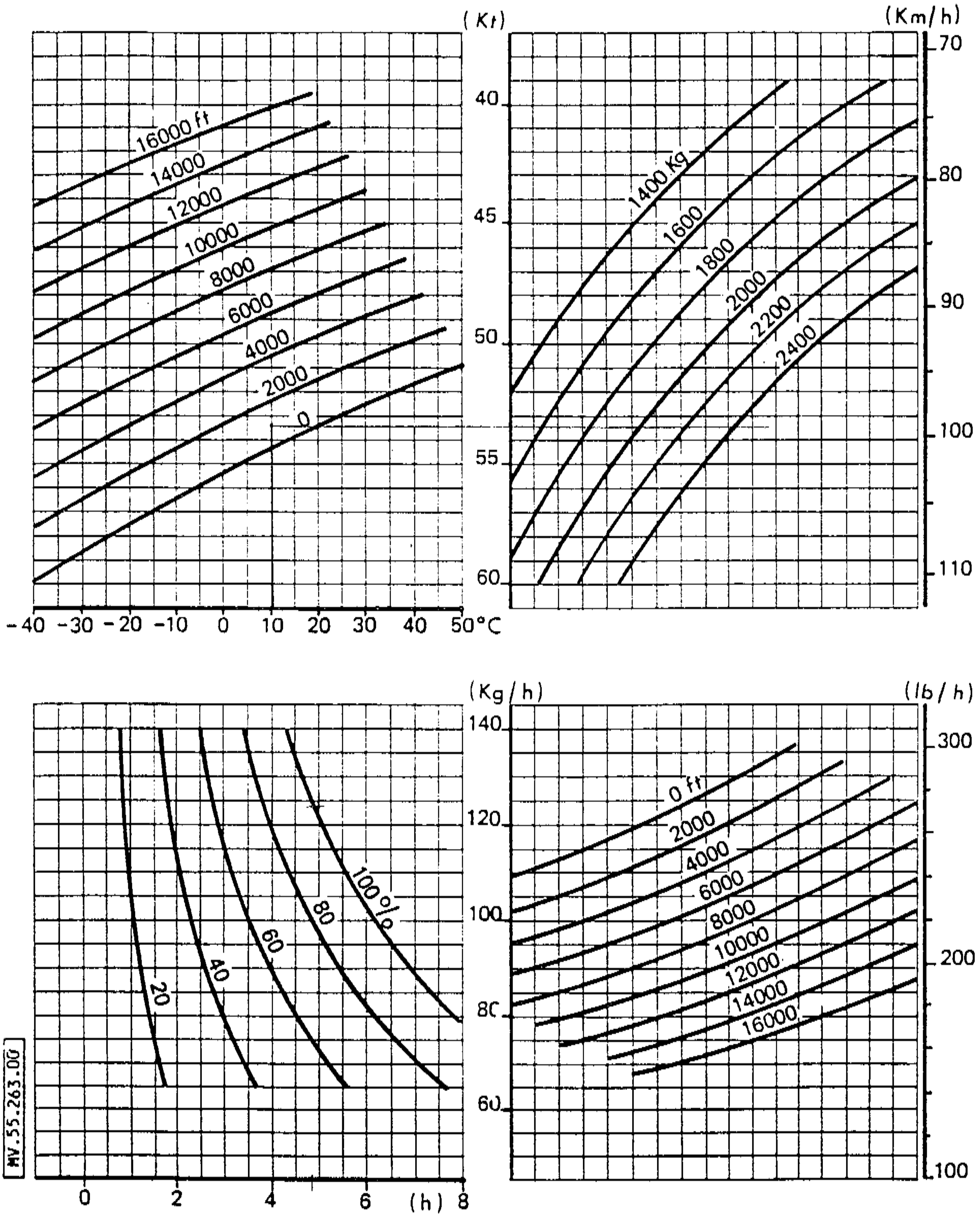
Figure 7

HOW TO USE THE FIGURE RELATED TO THE MINIMUM HOURLY FUEL CONSUMPTION

The figure below gives the calibrated airspeed in stabilized level flight thus allowing to know the minimum hourly fuel consumption and maximum endurance.

- Follow vertically from the O.A.T. (1) up to the pressure-altitude (2).
- Read across to the actual weight (3) and read the calibrated airspeed (4).
- Follow vertically from (3) down to the pressure-altitude (5).
- Read across
  . to the right to the minimum hourly fuel consumption (6)
  . to the left to the fuel quantity (7).
- Follow vertically down and read off the endurance (8).

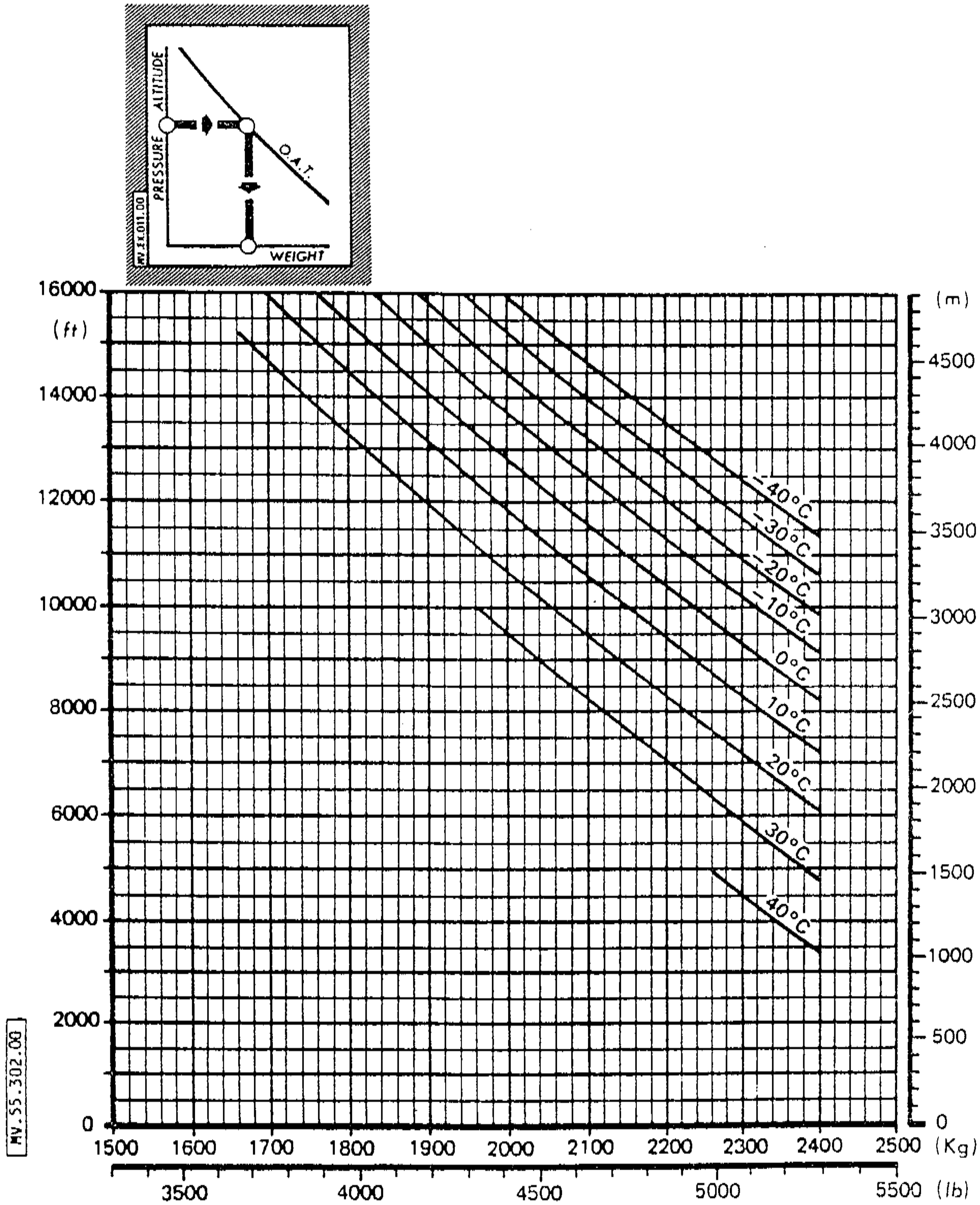




- FUEL CONSUMPTION
- ENDURANCE IN CRUISE AT MINIMUM HOURLY FUEL CONSUMPTION

CONDITION
- Stabilized level flight

Figure 8



CONDITIONS :
- Height : 3 ft (0.90 m)
- Heater and demister off
- Engine air intake anti-ice off
- t4 temperature limited to 810°C

HOVER PERFORMANCE
I.G.E. ON 2 ENGINES

Planche 9

SECTION 6

WEIGHT AND BALANCE

CONTENTS

Revision : 5
Date code : 88-27

LIST OF PAGES CONTAINED IN THE SECTION

This Section at the revision mentioned on first page contains the pages below identified by the following date-codes :

SECTION	PAGE	DATE	SECTION	PAGE	DATE
6.0.P	1 *00*	88-27			
6.0.P	2 *03*	88-27			
6.1	1 *00*	81-46			
6.1	2 *00*	81-46			
6.1	3 *00*	88-27			
6.1	4 *00*	81-46			
6.1	5 *00*	87-05			
6.1	6 *00*	81-46			
6.1	7 *00*	81-46			
6.1	8 *00*	81-46			
6.1	9 *03*	88-27			
6.1	10 *03*	88-27			
6.1	11 *00*	81-46			
6.1	12 *00*	88-27			
6.1	13 *00*	88-27			
6.1	14 *00*	88-27			

NOTE : The date-code consists of the last two digits of the year followed by the week number.

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 operational or mission equipment.

E.E.W. (O.E.W.) varies according to the proposed mission.

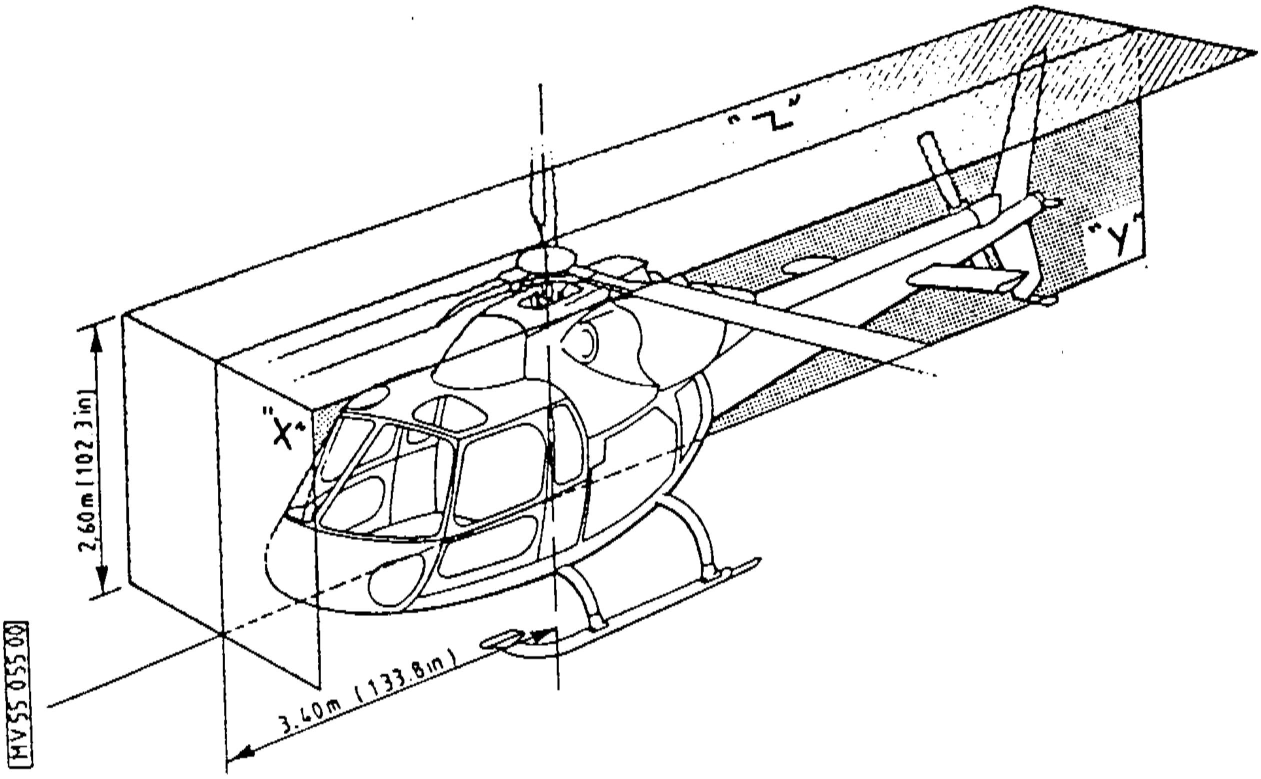
2.1.3 All-up weight (AUW)
This is the sum of :
- Equipped empty weight (E.E.W.)
- Crew
- Payload
- Usable fuel

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.



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 LOAD 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 permissible take-off weight.
2) Note the equipped empty weight. 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.	1300	4628
Crew	160	248
Passengers	140	356
Side cargo hold	50	160
Fuel - Front	200	648
Rear	200	770
TOTAL :	2050	6810

C.G. : $\frac{6810}{2050} = 3.322$ 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. : 3.247 m
- C.G. after consumption of 300 kg of fuel.

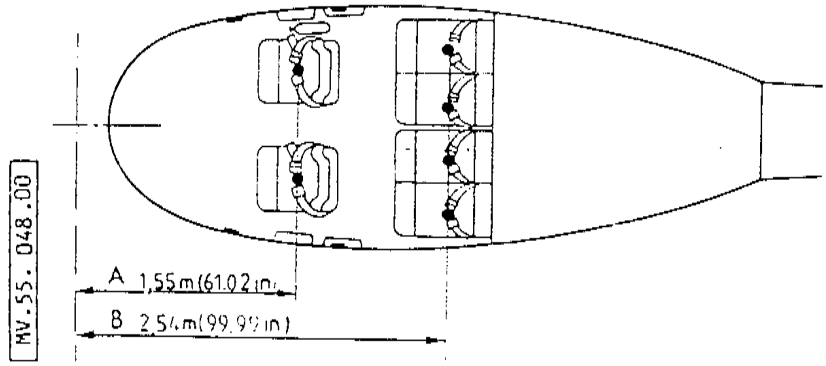
	Kg	m.Kg
E.E.W.	1300	4628
Crew	160	248
Passengers	140	356
Side cargo hold	50	160
Fuel - Front	50	162
Rear	50	192
TOTAL :	1750	5746

C.G. for fuel becomes : $\frac{5746}{1750} = 3.283$ m

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

4.2 Loading data

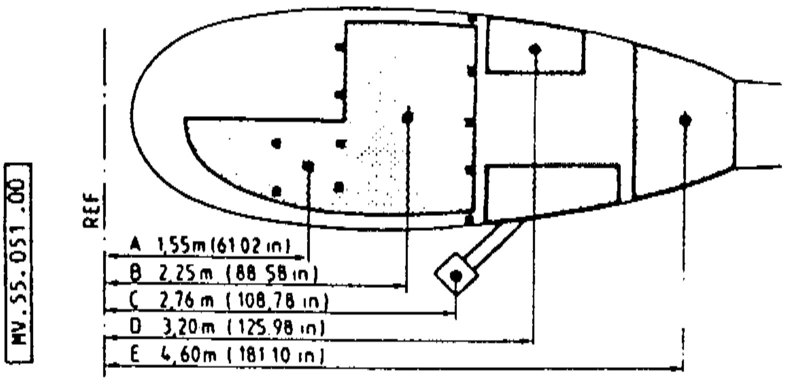
4.2.1 Crew and passengers



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

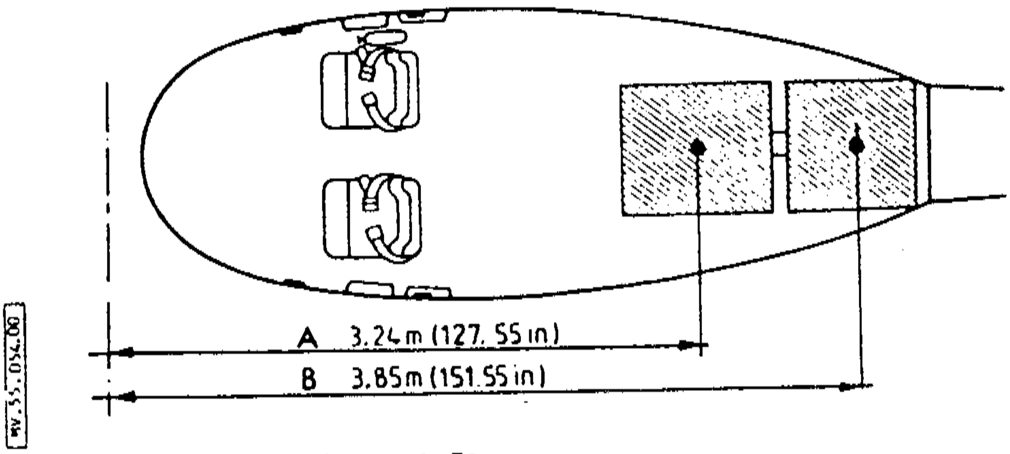
4.2.2 Freight and baggage transport



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

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				R
400		35432				R
500		44290				R
600		53148				R
682		60412				R
						R

4.2.3 Fuel



NOTE : Fuel specific gravity : 0.79

METRIC UNITS			
FUEL		MOMENT : m.kg	
Litres	Kg	FRONT TANK (A)	REAR TANK (B)
10	8	26	30
20	16	51	61
40	32	102	122
60	47	154	182
80	63	205	243
100	79	256	304
150	119	384	456
200	158	512	608
250	198	640	760
300	237	768	912
330	261	845	1004
350	277	896	1065
400	316	1024	1217
404	319	1034	1229

ENGLISH UNITS			
FUEL		MOMENT : in.lb	
UK gal	Lb	FRONT TANK	REAR TANK
5	40	5049	5999
10	79	10099	11999
15	119	15148	17998
20	158	20197	23998
25	198	25247	29997
30	238	30296	35997
35	271	35346	41996
40	317	40395	47996
50	396	50494	59995
60	475	60592	71994
70	554	70691	83992
72.3	575	73327	87125
80	633	80790	95991
88.4	703	89668	106540

ENGLISH UNITS			
FUEL		MOMENT : in.lb	
US gal	Lb	FRONT TANK	REAR TANK
5	33	4205	4996
10	66	8409	9991
15	99	12614	14987
20	132	16818	19983
25	165	20023	24978
30	198	25227	29974
35	231	29432	34970
40	264	33636	39965
45	297	37841	44961
50	330	42045	49957
60	396	50455	59948
70	462	58864	69940
80	527	67273	79931
87.2	575	73327	87125
90	593	75682	89922
100	659	84091	99914
106.5	703	89668	106540

4.3 C.G. charts R

The following charts (metric units and English units) are used to easily R
know the aircraft centre-of-gravity. When the point obtained is close R
to the limits, it should be confirmed by calculations. R

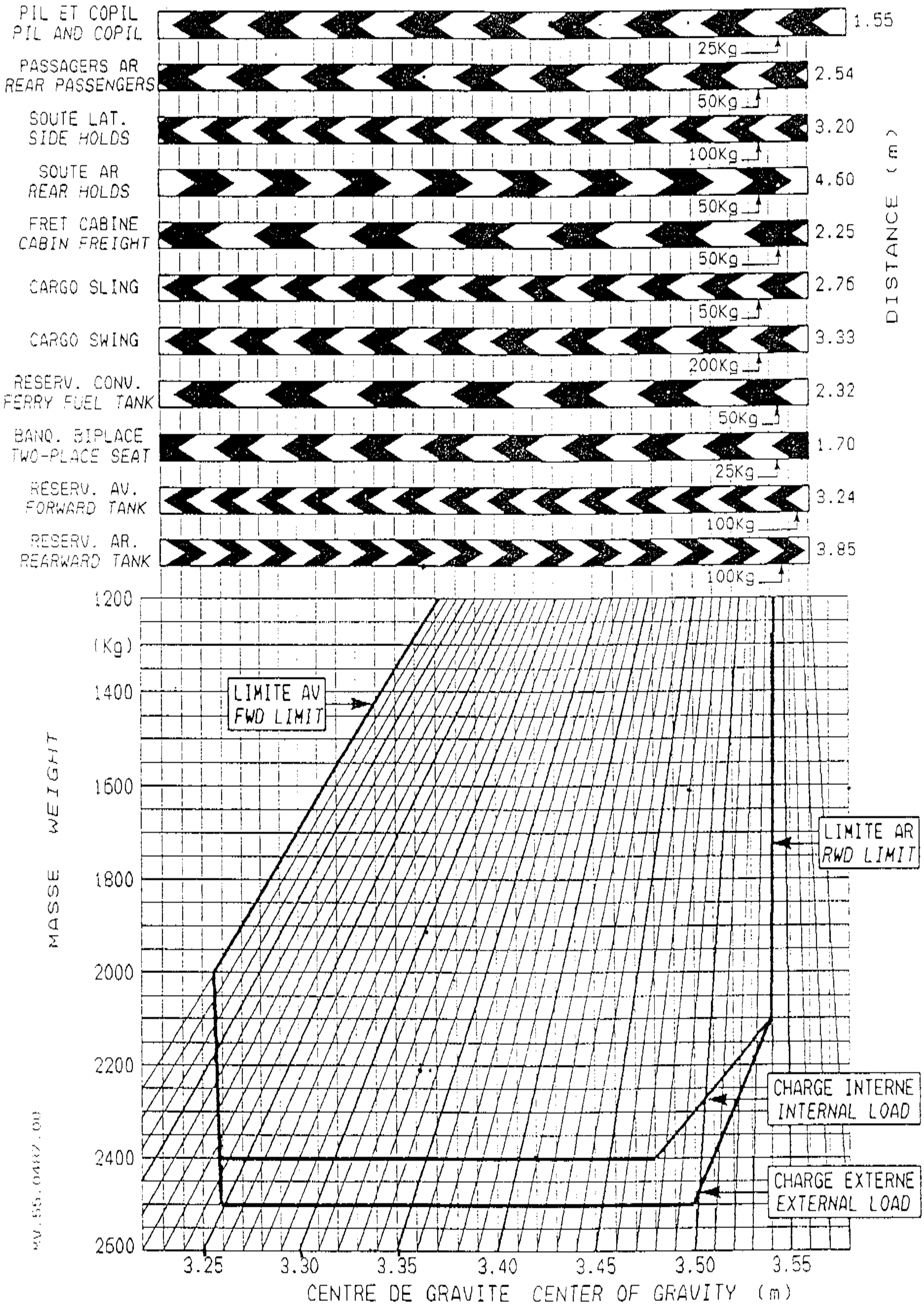
These charts are designed so that the variations in the fuel weight make R
c.g. move along a vertical line when the tanks contain the same amount R
of fuel. Should the contents of each tank be different, follow the R
"FWD tank and AFT tank" line to determine c.g. location and evolution.

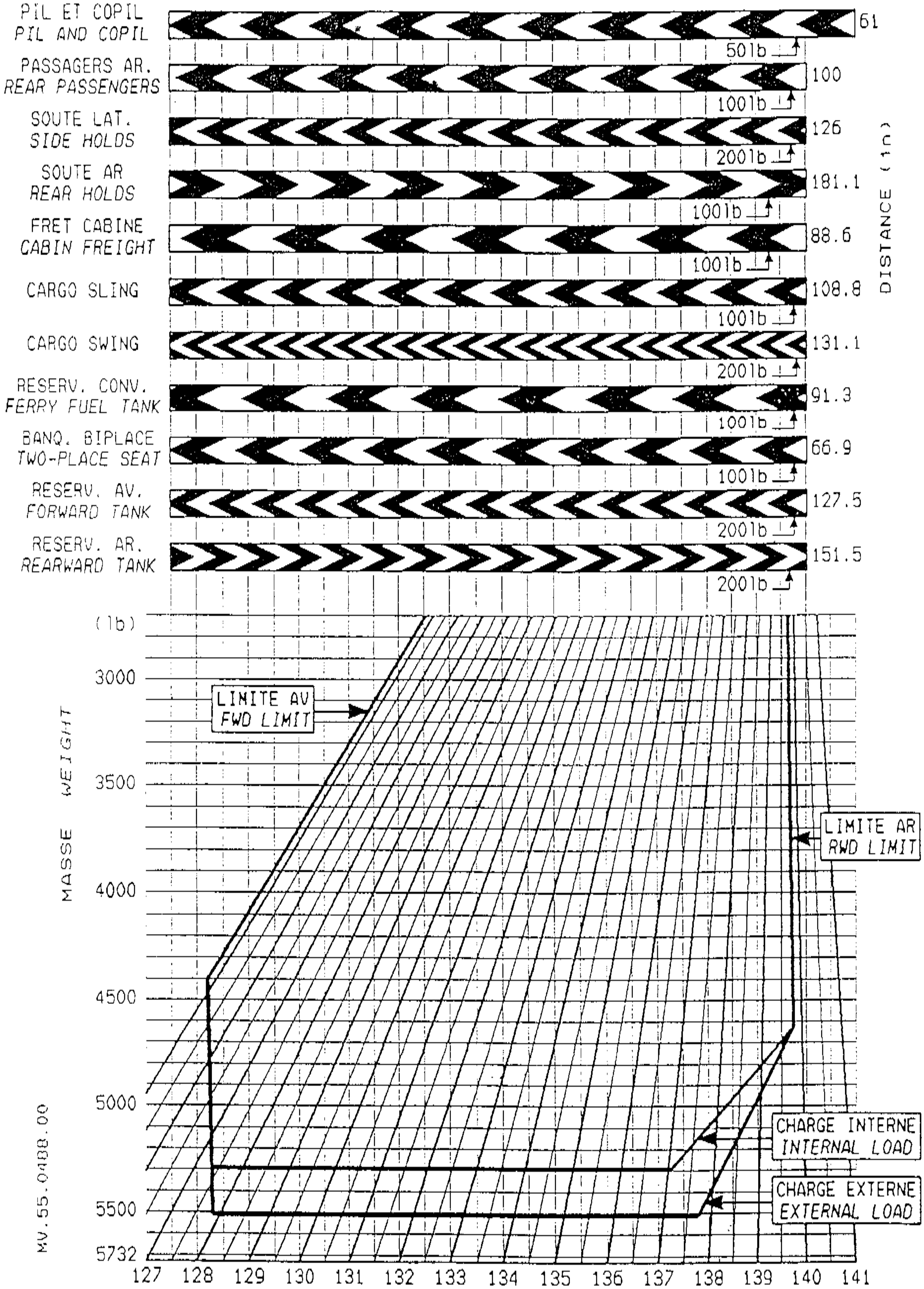
The weight and c.g. limits are given in the LIMITATIONS section and may R
be modified by the Supplements corresponding to the optional items R
fitted.

These charts may be obtained in large size from : R

AEROSPATIALE R
Division Hélicoptères - Central Documentation R
Boîte Postale 13 R

13722 MARIGNANE R

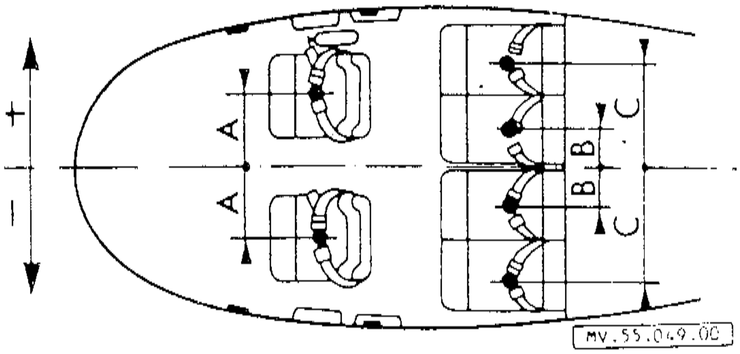

PIL ET COPIL
PIL AND COPIL
1.55
25Kg
PASSAGERS AR
REAR PASSENGERS
2.54
50Kg
SOUTE LAT.
SIDE HOLDS
3.20
100Kg
SOUTE AR
REAR HOLDS
4.60
50Kg
FRET CABINE
CABIN FREIGHT
2.25
50Kg
CARGO SLING
2.76
50Kg
CARGO SWING
3.33
200Kg
RESERV. CONV.
FERRY FUEL TANK
2.32
50Kg
BANQ. BIPLACE
TWO-PLACE SEAT
1.70
25Kg
RESERV. AV.
FORWARD TANK
3.24
100Kg
RESERV. AR.
REARWARD TANK
3.85
100Kg
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
3.30
3.35
3.40
3.45
3.50
3.55
CENTRE DE GRAVITE CENTER OF GRAVITY (m)
20.55.0482.00

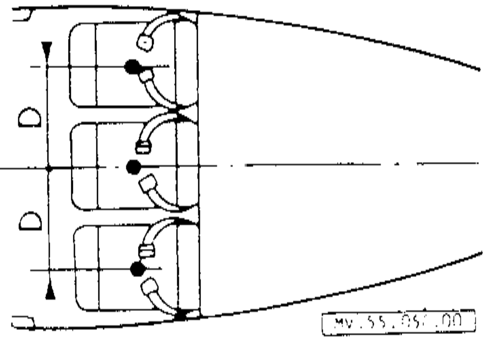

PIL ET COPIL
PIL AND COPIL
61
50 lb
PASSAGERS AR.
REAR PASSENGERS
100
100 lb
SOUTE LAT.
SIDE HOLDS
126
200 lb
SOUTE AR
REAR HOLDS
181.1
100 lb
FRET CABINE
CABIN FREIGHT
88.6
100 lb
CARGO SLING
108.8
100 lb
CARGO SWING
131.1
200 lb
RESERV. CONV.
FERRY FUEL TANK
91.3
100 lb
BANQ. BIPLACE
TWO-PLACE SEAT
66.9
100 lb
RESERV. AV.
FORWARD TANK
127.5
200 lb
RESERV. AR.
REARWARD TANK
151.5
200 lb
DISTANCE (in)
(lb)
3000
3500
4000
4500
5000
5500
5732
MASSE WEIGHT
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.55.0488.00

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

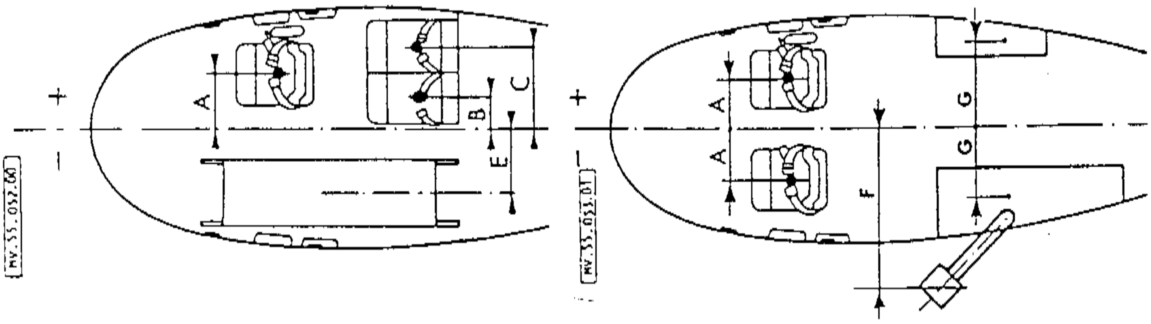




METRIC UNITS									
WEIGHT kg	MOMENT : m.kg								
	A +	A -	B +	B -	C +	C -	D +	D -	
50	+ 18	- 18	+ 10	- 10	+ 31	- 31	+ 27	- 27	R
60	+ 22	- 22	+ 12	- 12	+ 37	- 37	+ 32	- 32	R
70	+ 25	- 25	+ 14	- 14	+ 43	- 43	+ 37	- 37	R
80	+ 29	- 29	+ 17	- 17	+ 50	- 50	+ 43	- 43	R
90	+ 32	- 32	+ 19	- 19	+ 56	- 56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

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

5.2 Air ambulance, hoist and baggage



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	+ 34	- 34
70	+ 25	- 25	+ 14	+ 43	- 29	- 108	+ 39	- 39
80	+ 29	- 29	+ 17	+ 50	- 33	- 124	+ 45	- 45
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	+ 62	- 62
120	+ 43	- 43	+ 25	+ 75	- 50	- 185	+ 67	- 67
130	+ 47	- 47	+ 27	+ 81	- 54	- 201		
136	+ 49	- 49	+ 28	+ 84	- 56	- 1210		

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	- 5254
260	+ 3684	- 3684	+ 2119	+ 6357	- 4248	-15805	+ 5691	- 5691
280	+ 3968	- 3968	+ 2282	+ 6846	- 4575	-17020		
300	+ 4252	- 4252	+ 2445	+ 7335	- 4902	-18236		

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	
Skis complete with struts	23.3	51.4	81.5	7078	R
Skis not including struts	21.2	46.7	72.6	6296	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	
Single stretcher installation (not including stretcher)	0.7	1.5	1.1	95	

DESCRIPTION	WEIGHT kg	WEIGHT lb	MOMENT m.kg	MOMENT in.lb	
Double stretcher installation (not including stretcher)	3,0	6.6	5,0	441	R
Stretcher	15,1	33.3	26,7	2318	R
BREEZE electric hoist (boom, winch, grip, pulley-block)	24.4	53.8	67.8	5885	
AIR EQUIP.electric hoist (boom, winch, grip, pulley-block)	31.7	69.9	88.0	7638	
LOCATOR search light	10.1	22.3	9.3	809	
Low landing gear	42,9	94.6	145,6	12637	R
High landing gear	55,5	122.4	187,1	16239	R
Footstep	2,9	6.4	5,5	477	R

SECTION 7

SYSTEMS AND DESCRIPTION

Some sub-sections covering installations or procedures not used on this helicopter may be withdrawn from this manual. However they still appear in the table of contents and in the list of effective pages. R R R R

CONTENTS

Revision : 3
Date code : 87-05

LIST OF PAGES CONTAINED IN THE SECTION

This Section at the revision mentioned on first page contains the pages below identified by the following date-codes :

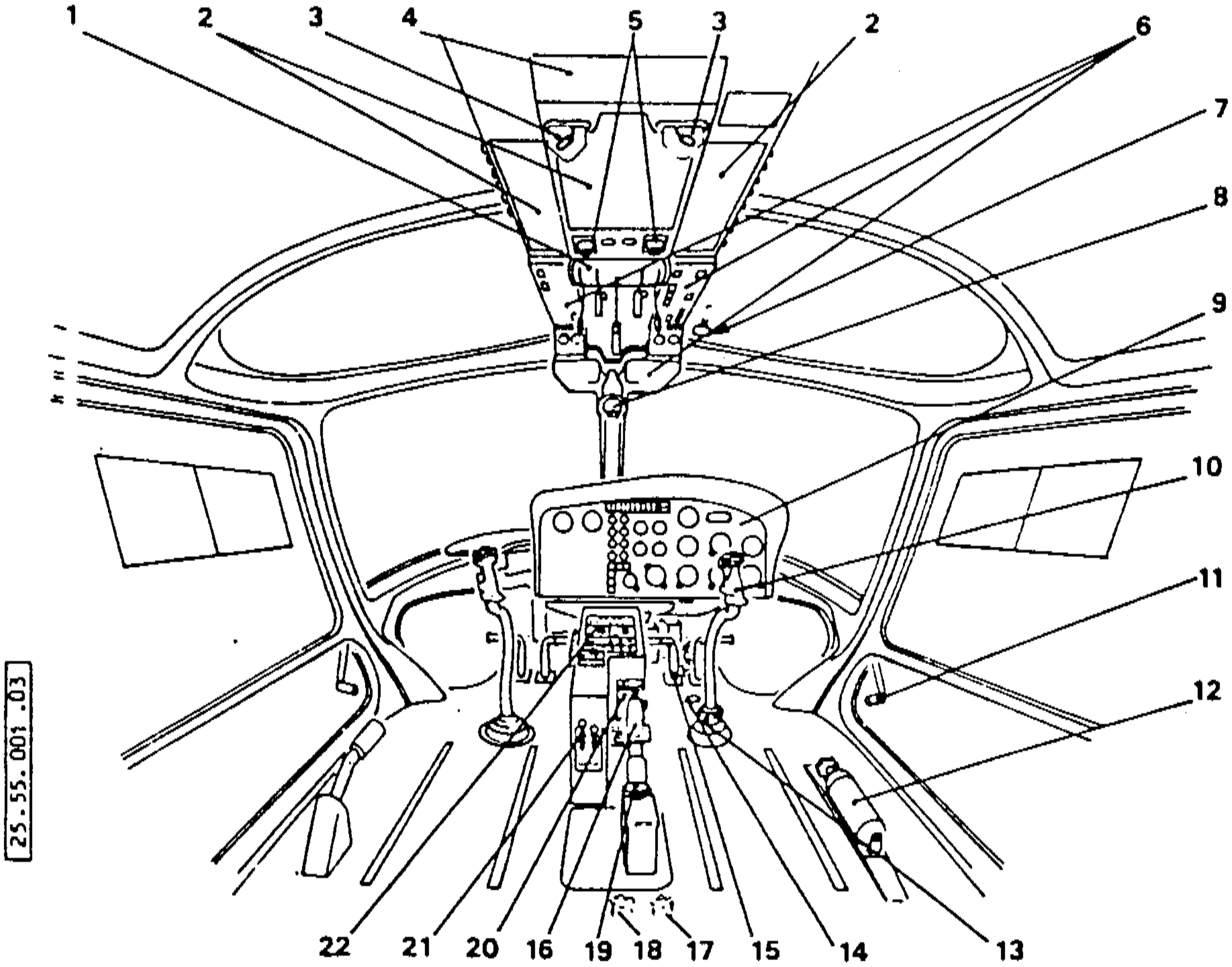
SECTION	PAGE	DATE
7.0.P	1 *01*	87-05
7.0.P	2 *01*	87-05
7.1	1 *01*	87-05
7.1	2 *01*	87-05
7.1	3 *01*	87-05
7.1	4 *01*	87-05
7.1	5 *01*	87-05
7.1	6 *01*	87-05
7.1	7 *01*	87-05
7.1	8 *01*	87-05
7.1	9 *01*	87-05
7.1	10 *01*	87-05
7.1	11 *01*	87-05
7.1	12 *01*	87-05
7.1	13 *01*	87-05
7.1	14 *01*	87-05
7.1	15 *01*	87-05
7.1	16 *01*	87-05
7.1	17 *01*	87-05
7.1	18 *01*	87-05
7.1	19 *01*	87-05
7.1	20 *00*	87-05
7.1	21 *00*	87-05
7.2	1 *01*	87-05
7.3	1 *00*	87-05
7.3	2 *00*	87-05
7.3	3 *00*	87-05
7.4	1 *00*	87-05
7.4	2 *00*	87-05
7.4	3 *00*	87-05

SECTION	PAGE	DATE
7.5	1 *00*	87-05
7.5	2 *00*	87-05
7.5	3 *00*	87-05
7.5	4 *00*	87-05
7.5	5 *00*	87-05
7.6	1 *00*	87-05
7.6	2 *00*	87-05
7.7	1 *01*	87-05
7.7	2 *01*	87-05
7.7	3 *01*	87-05
7.8	1 *01*	87-05
7.8	2 *01*	87-05
7.8	3 *02*	87-05
7.8	4 *01*	87-05
7.8	5 *01*	87-05
7.8	6 *01*	87-05
7.8	7 *01*	87-05
7.8	8 *01*	87-05
7.8	9 *01*	87-05
7.8	10 *00*	84-20
7.8	11 *00*	84-20
7.8	12 *00*	84-20
7.8	13 *00*	84-20
7.8	14 *00*	84-20
7.8	15 *00*	84-20
7.9	1 *00*	87-05
7.9	2 *00*	87-05
7.10	1 *00*	87-05
7.10	2 *00*	87-05
7.11	1 *00*	87-05
7.11	2 *00*	87-05
7.11	3 *00*	82-06

NOTE : The date-code consists of the last two digits of the year followed by the week number.

7.1 - FLIGHT COMPARTMENT

1 FLIGHT COMPARTMENT

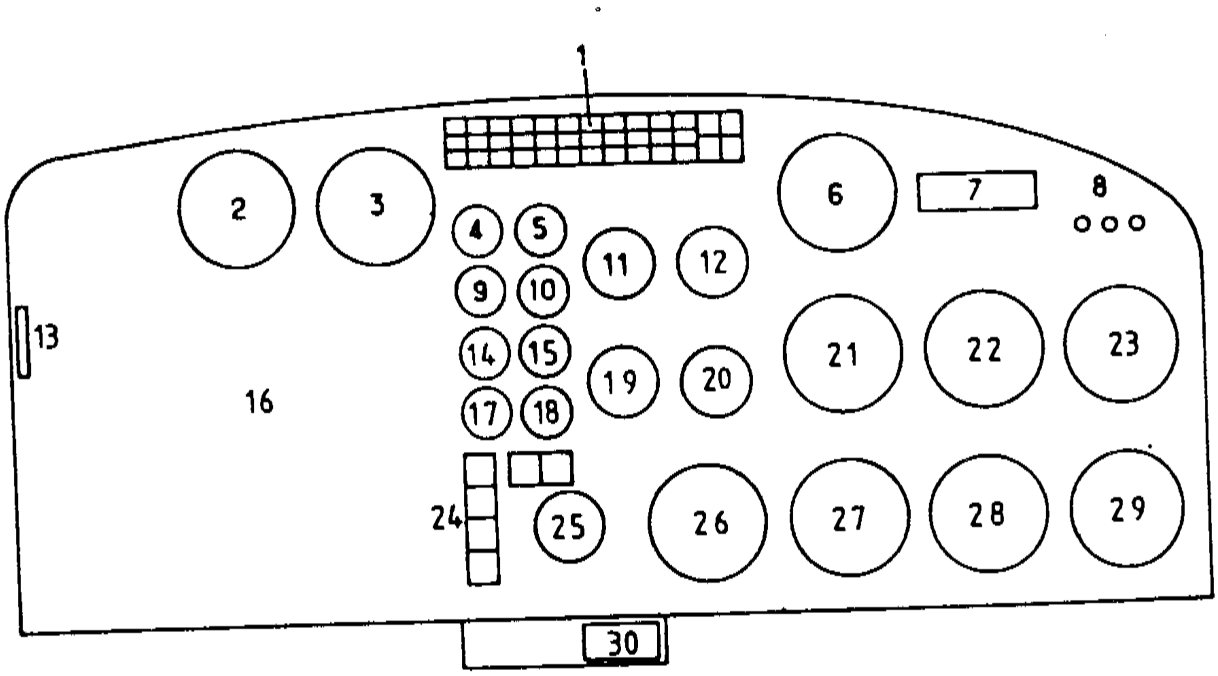


KEY

Item	Description	Item	Description
1	Control quadrant	13	Cyclic control friction ring
2	Fuse panels	14	Rudder pedals friction knob (optional)
3	Pilot's and copilot's jacks	15	Rudder pedals
4	Spare fuses	16	Collective pitch lever
5	Cabin lighting	17	Cabin heating control
6	Control and monitoring panels	18	Demisting control
7	O.A.T. thermometer	19	Collective control friction ring
8	Stand-by compass	20	Collective pitch lock (full low pitch)
9	Instrument panel	21	Engine air intake anti-icing control levers
10	Pilot's cyclic stick	22	Radio console
11	Door jettison handle		
12	Cabin fire extinguisher (optional)		

R

INSTRUMENT PANEL



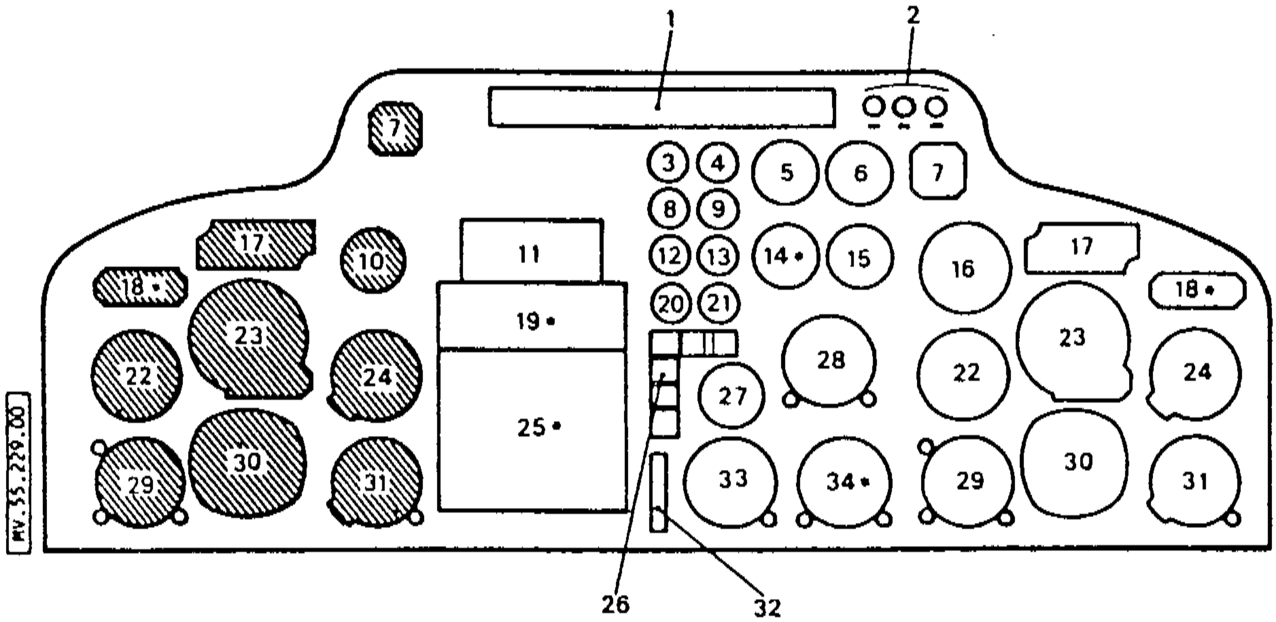
MV.55 004.01

KEY

Item	Description	Item	Description	
1	Failure warning panel	16	Radio optional unit	
2	Optional	17	LH engine oil temperature	R
3	Optional	18	RH engine oil temperature	R
4	Fuel contents gauge (Forward tank)	19	Load indicator (optional)	
		20	Dual t4 indicator	
5	Fuel contents gauge (Rear tank)	21	Airspeed indicator	
		22	Gyro-horizon, optional item	
6	NR - Nf1 - Nf2 indicator	23	Rate-of-climb indicator	
7	DME - AP optional unit	24	Panel 9 ALPHA	
8	AP optional unit	25	Clock	
9	LH engine fuel pressure	26	Optional	R
10	RH engine fuel pressure	27	Optional	R
11	Dual Ng indicator	28	Heading indicator or gyro-compass (optional)	
12	Dual torquemeter	29	Altimeter	
13	Marker optional unit	30	AP control unit (optional)	
14	LH engine oil pressure			
15	RH engine oil pressure			

2 INSTRUMENT PANEL

(IFR VERSION)



KEY

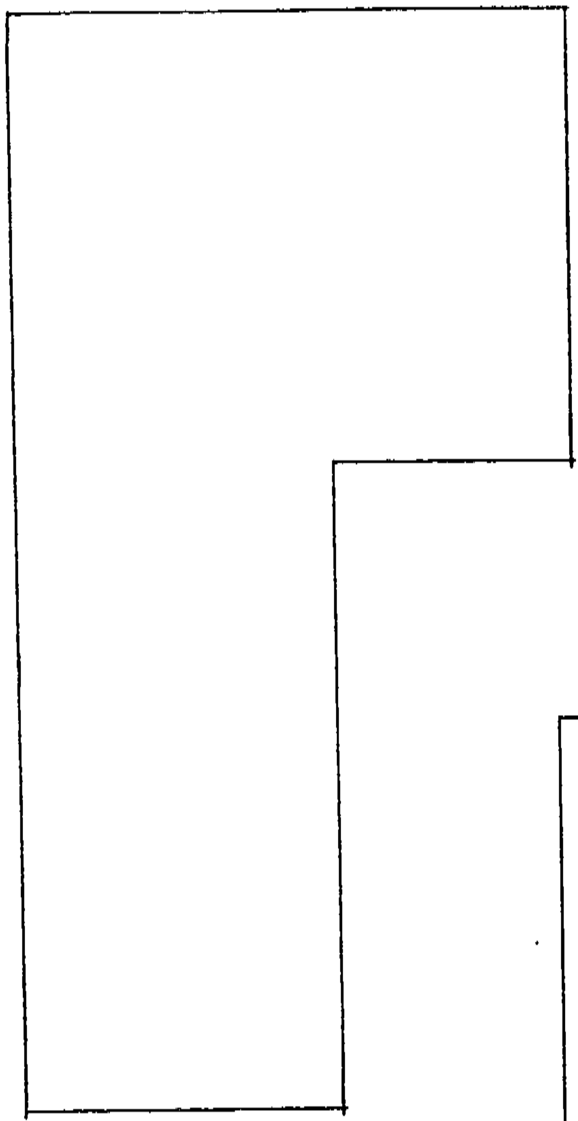
Item	Description	Item	Description
1	Failure warning panel	18*	DME (optional)
2	Galvanometers (AP)	19*	Optional)
3	Fuel contents gauge (Forward tank	20	LH engine oil temperature
4	Fuel contents gauge (Rear tank)	21	RH engine oil temperature
5	Dual Ng indicator	22	Airspeed indicator
7	Gyro slaving	23	Gyro horizon
8	LH engine fuel pressure	24	Altimeter
9	RH engine fuel pressure	25*	Radar (optional)
10	NR indicator	26	Panel 9 ALPHA
11	Copilot's ICS	27	Clock
12	LH engine oil pressure	28	Standby horizon
13	RH engine oil pressure	29	Radio altimeter
14*	Optional	30	HSI
15	Dual torquemeter	31	Vertical speed indicator
16	NR-Nf1-Nf2 indicator	32	Marker
17	AP monitoring panel	33	RMI
		34*	VOR/GLIDE indicator (optional)

R

* Optional equipment

R

3 RADIO CONSOLE



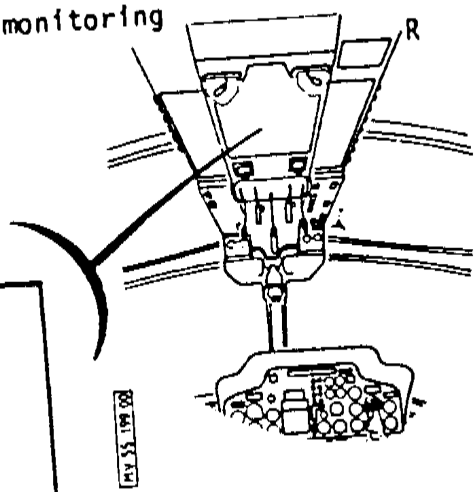
KEY

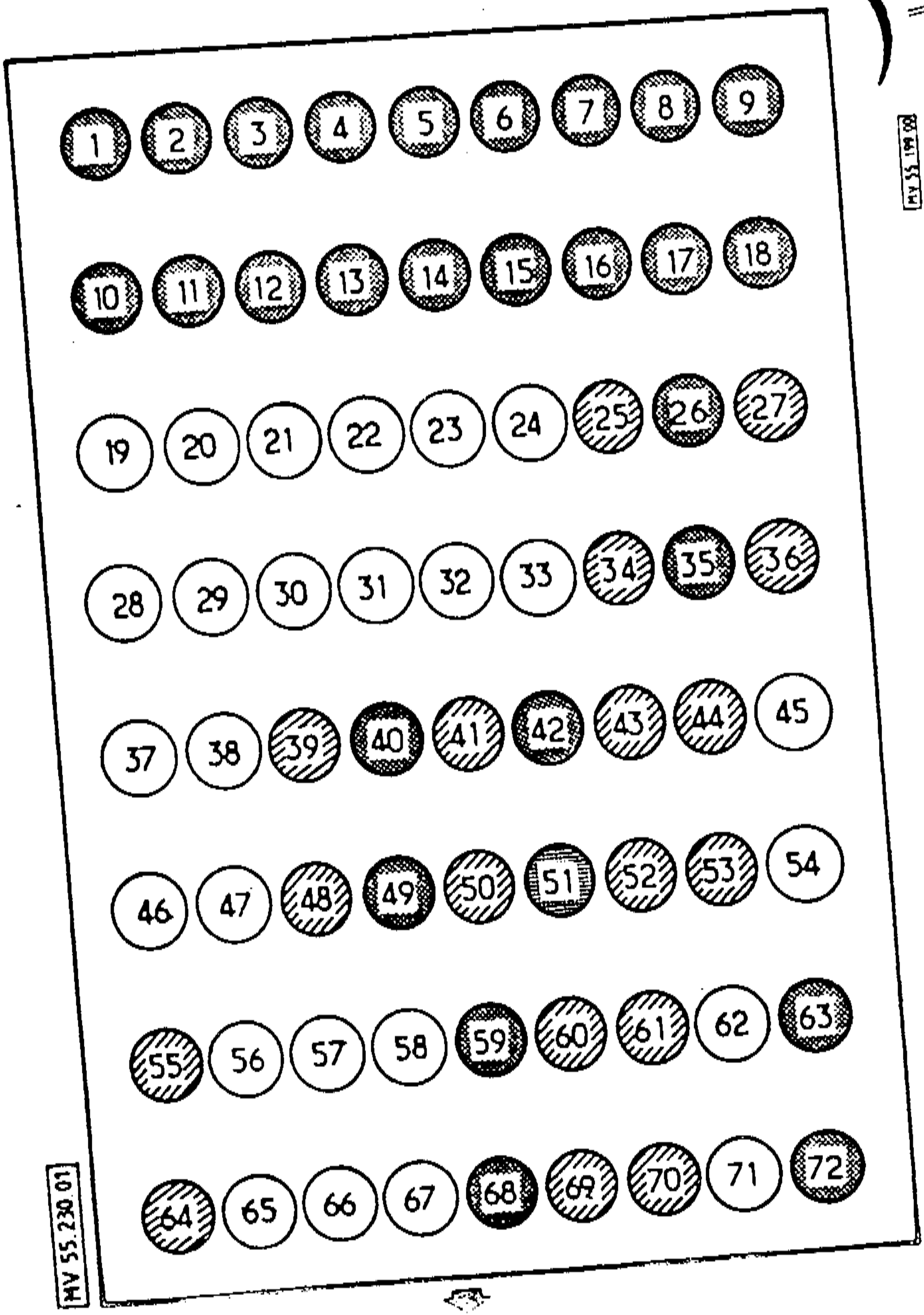
* Optional

FUSE PANELS

1 Fuses on centre overhead panel 10 ALPHA

- Yellow : Radio - Radio Nav - AP-CPL
- Black : Electrical and mechanical systems monitoring or unused positions
- Green : Electrical systems monitoring


R

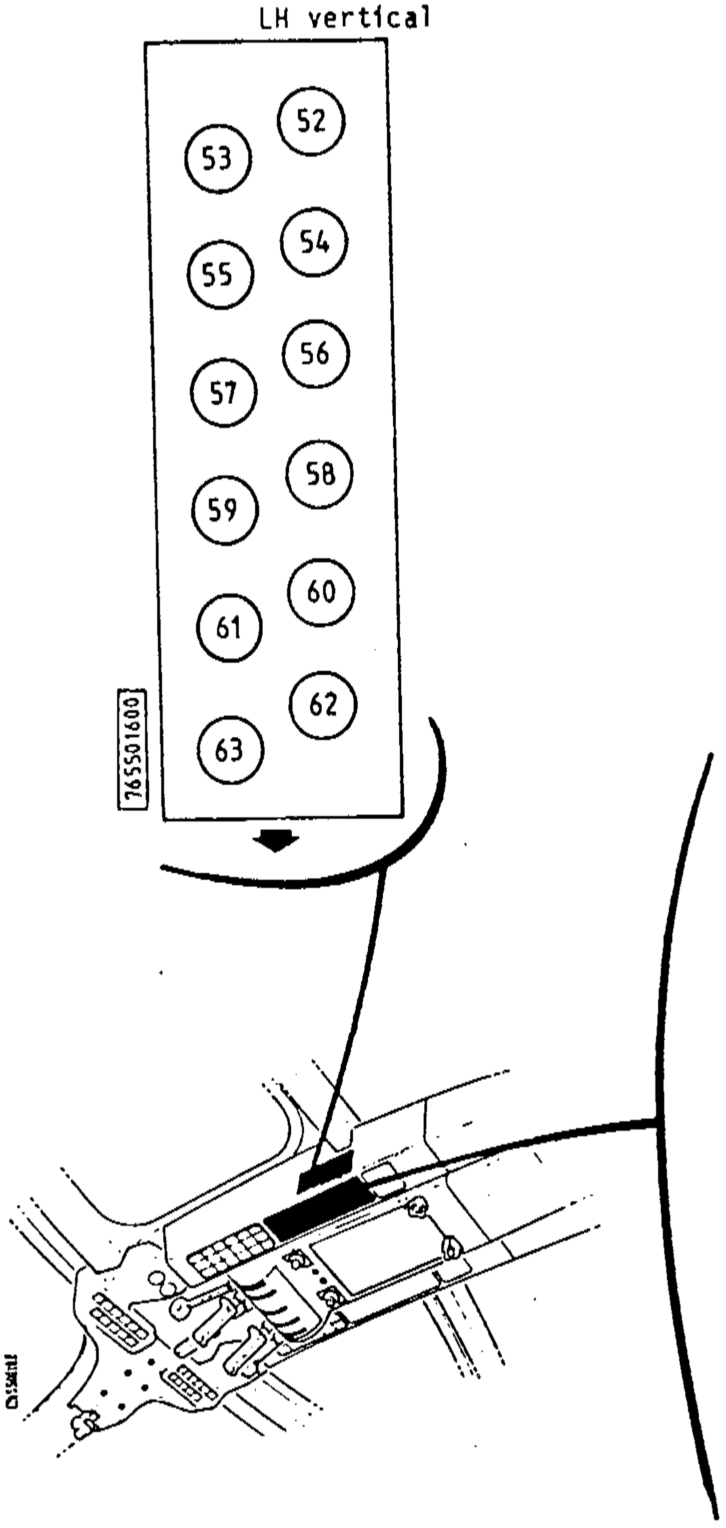


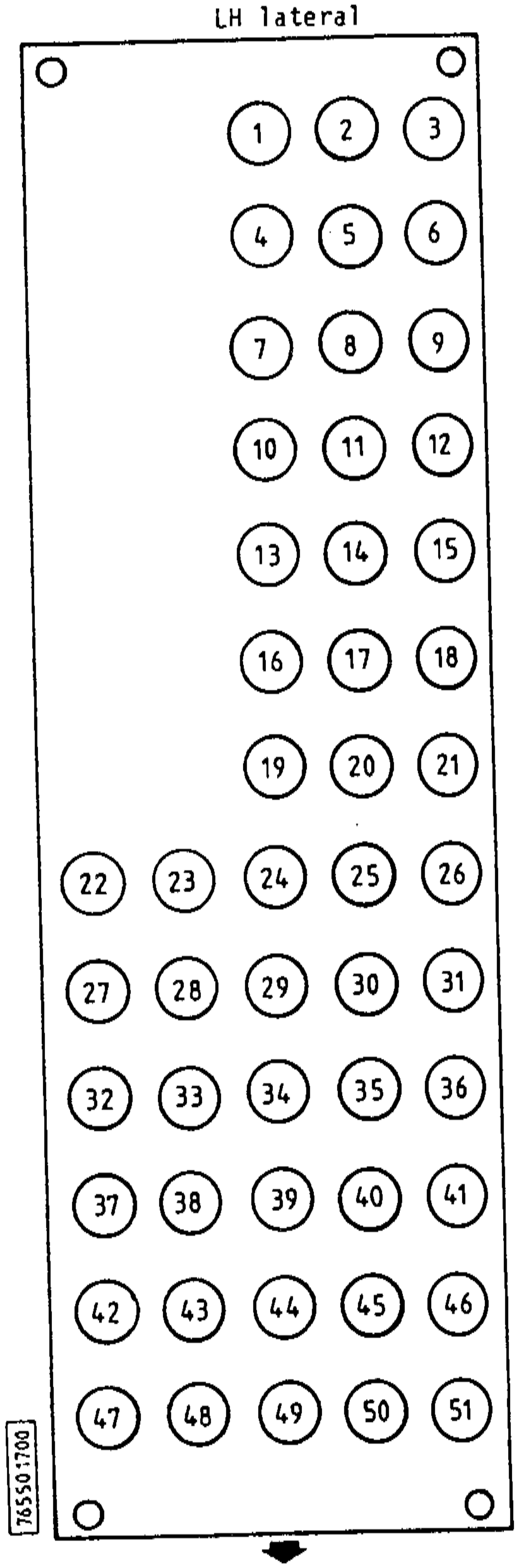
R

Fuses on centre overhead panel 10 ALPHA

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH	
1	VHF 2	VHF 2	36	ESS. GL PIL	WDS W PIL	
2	RADIO ALTI.	RAD ALT	37	INDIC. JAUG. AV	FUEL GAUGE FWD	
3	PA	AP	38	INDIC. JAUG. AR	FUEL GAUCHE REAR	
4	DME	DME	39	Cde PHARE ATTER	LAND LT CONT	
5	VOR2-ILS-MKR	VOR2-ILS-MKR	40	PITOT PIL	PITOT PIL	
6	TB Normal	ICS General	41	INTERCOM CARB.	FUEL INTERC.	R
7	RC 1	ADF 1	42	CPL	AP COUPLER	R
8	GYROCOMPAS PIL	PIL GYRO COMPASS	43	LARGAGE SEC.	EMERG. REL.	
9	HORIZ. PIL	PIL ATTIT	44	HYDR	HYD	
10	VHF 2	VHF 2	45	TABL. ALARME	WARN PANEL	R
11	RADIO ALTI	RAD ALT	46	INDIC. JAUG. AV	FUEL GAUCHE FWD	
12	PA	AP	47	INDIC. JAUG. AR	FUEL GAUGE REAR	
13	DME	DME	48	Cde PHARE ATTER	LAND LT CONT	
14	VOR	VOR	49	PITOT PIL	PITOT PIL	
15	TB Normal	ICS General	50	INTERCOM CARB.	FUEL INTERC.	R
16	RC 1	ADF 1	51	CPL	AP COUPLER	R
17	GYROCOMPAS PIL	PIL GYRO COMPASS	52	LARGAGE SEC.	EMERG. REL.	
18	HORIZ. PILOTE	PIL ATTIT	53	HYDR	HYD	
19	COUPLE MOT. G	TORQUE LH ENGINE	54	TABL. ALARME	WARN PANEL	R
20	COUPLE MOT. D	TORQUE RH ENGINE	55	DELEST BUS D	RH BUS SHED	R
21	N/G MOT. G	N/G LH ENG.	56	DETECT. INC. G	FIRE DETECT. LH	R
22	N/G MOT. D	N/G RH ENG.	57	DETECT. INC. D	FIRE DETECT. RH	R
23	INDC. HUILE	OIL IND LH ENG.	58	ALARME N/R	NR WARNING	
	MOT. G		59	RMI	RMI	
24	INDC. HUILE	OIL IND RH ENG.	60	Cde ESS GL PIL	PIL WDS W CONT	
	MOT. D		61	FEU DE POSITION	POS LT	
25	EXTIN. INC. D	FIRE EXT. RH	62	VOYANTS DELEST	1/LIGHTS LD SHED	R
26	TRIM	TRIM		DIRECT BATT.	DIRECT BATT.	
27	ESS. GL. PIL.	WDS. W. PIL	63	HORIZ.COPIL.	COPIL ATTIT	
28	COUPLE MOT. G	TORQUE LH	64	DELEST BUS G	LH BUS SHED	R
		ENGINE	65	DETECT. INC. G	FIRE DETECT LH	
29	COUPLE MOT. D	TORQUE RH	66	DETECT. INC. D	FIRE DETECT RH	
		ENGINE	67	ALARME N/R	NR WARNING	
30	N/G MOT. G	N/G LH ENG.	68	RMI	RMI	
31	N/G MOT. D	N/G RH ENG.	69	Cde ESS GL PIL	PIL WDS W CONT	
32	INDC. HUILE	OIL IND LH ENG.	70	FEU DE POSITION	POS LT	
	MOT. G		71	VOYANTS DELEST	1/LIGHTS LD SHED	R
33	INDC. HUILE	OIL IND RH ENG.		DIRECT BATT.	DIRECT BATT.	
	MOT. D		72	HORIZ COPIL	COPIL ATTIT	
34	EXTIN. INC. G	FIRE EXT. LH				
35	TRIM	TRIM				

4.2 Fuses on LH overhead panel 7 ALPHA 1





Yellow : Radio - Radio Nav - AP - CPL

Black : Electrical and mechanical systems monitoring or unused positions

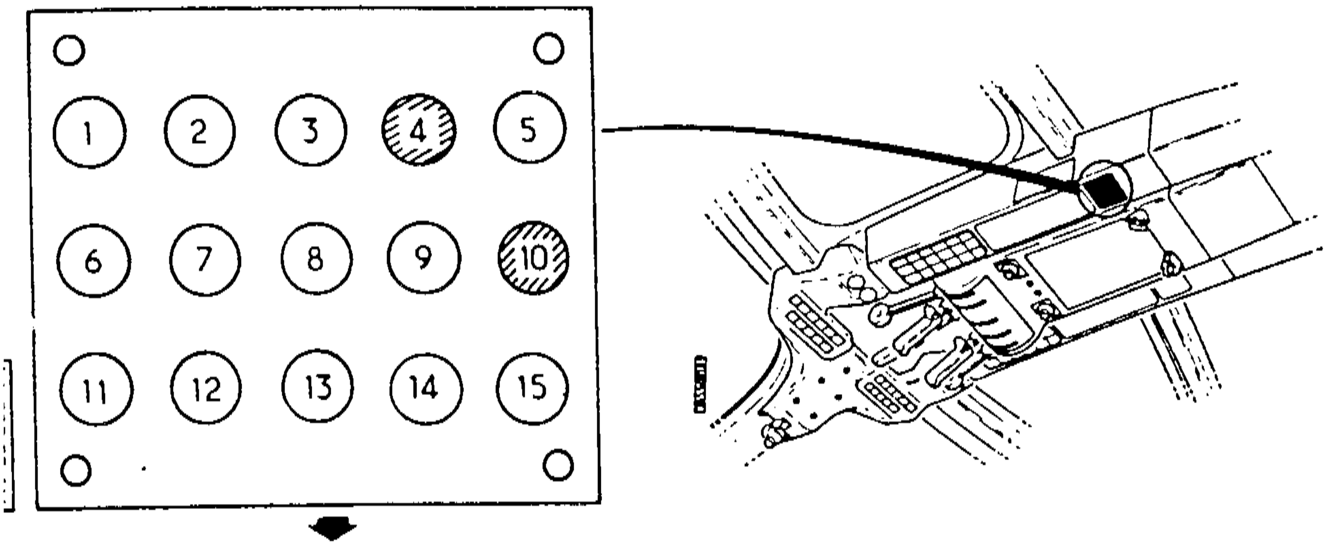
Green : Electrical systems monitoring

R

Fuses on LH lateral overhead panel 7 ALPHA 1

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH	
1			34	FUSEES ECL	FLARES	
2			35	DEBITMETRE	FLOWMETER	
3			36	NTL G	NTL LH	
4			37	SIGNALPA COPIL	AP COPIL SIG	
5						
6			38			
7			39	BTP T-P	MGB T-P	
8			40	AUX DEM G	LH START AUX	
9			41	VENTIL MOT G	CRANK LH ENG	
10			42			
11			43	COMPTEUR	COUNTER	
12				HORAIRE		
13			44	Cde ESS GLCOPIL	COPIL WDS WCONT	
14			45	FEU STROBOS	STROBE LT	R
15			46	DEM MOT G	LH ENG START	
16			47	ECL. PASS.	PASS LT	
17			48	t4	t4	
18			49	PRESS. G. CARB.	FUEL PRESS LH	R
19			50	POMPE MOT G	LH B.P.	
20			51	ESS. GL.	WDS. W.	R
21			52			
22			53			
23			54			
24			55			
25			56			
26			57			
27			58			
28	GYRO COMPAS	COPIL GYRO	59	PHARE	SWIVELING LIGHT	
	COPIL	COMPASS		ORIENTABLE		
29	NR COPIL	NR COPIL	60	ECL.PDB.COPIL	COPIL INST	R
30					PANEL LT	
31	VOR 1	VOR 1	61	PRISE SERV.	UTIL CONN.	R
32	SELECTEUR DE	MISSION SELECTOR	62	PHARE LOCATOR	SEARCH LIGHT	
	MISSION		63	PHARE PARK	TAXI LT	
33	TRANSF PHARES	LTS TRANSF				R

4.3 Fuses on LH lateral overhead panel 2 X 1



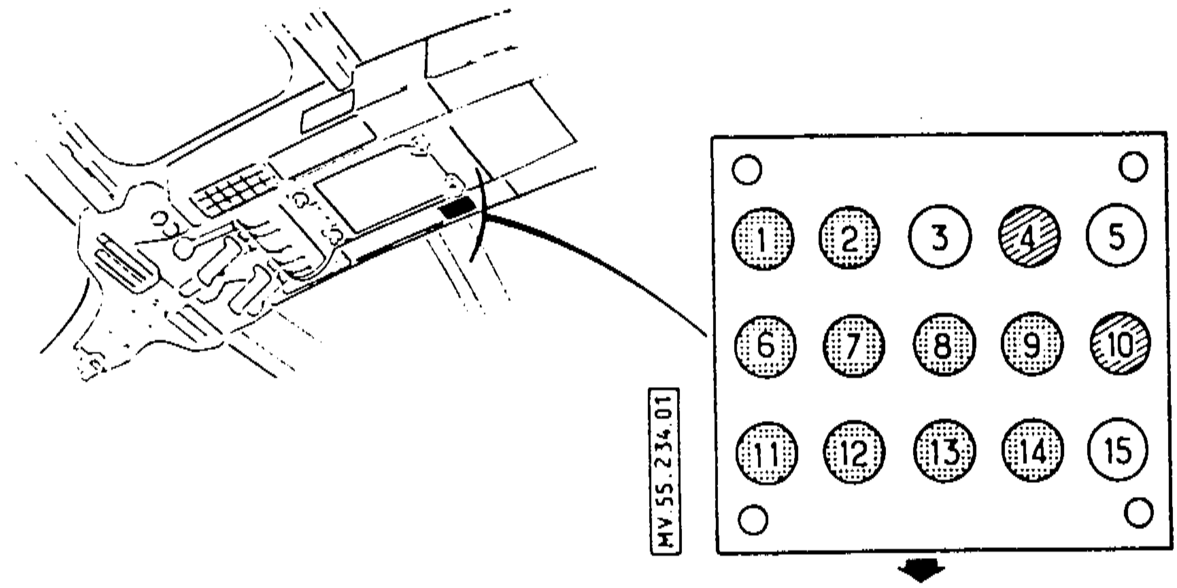
Yellow : Radio - Radio Nav - AP - CPL

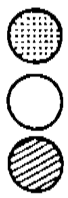
Black : Electrical and mechanical systems monitoring or unused positions

Green : Electrical systems monitoring

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH
1			9		
2			10	PROTEC TRANSF 26V	INVERT PROTEC 26V
3					
4	PROTEC TRANSF 115V	INVERT PROTEC 115V	11		
			12		
5	VOLT 115 V	VOLT 115 V	13		
6			14		
7			15	VOLT 26 V	VOLT 26 V
8					

4.5 Fuses on RH lateral overhead panel 2 X 2





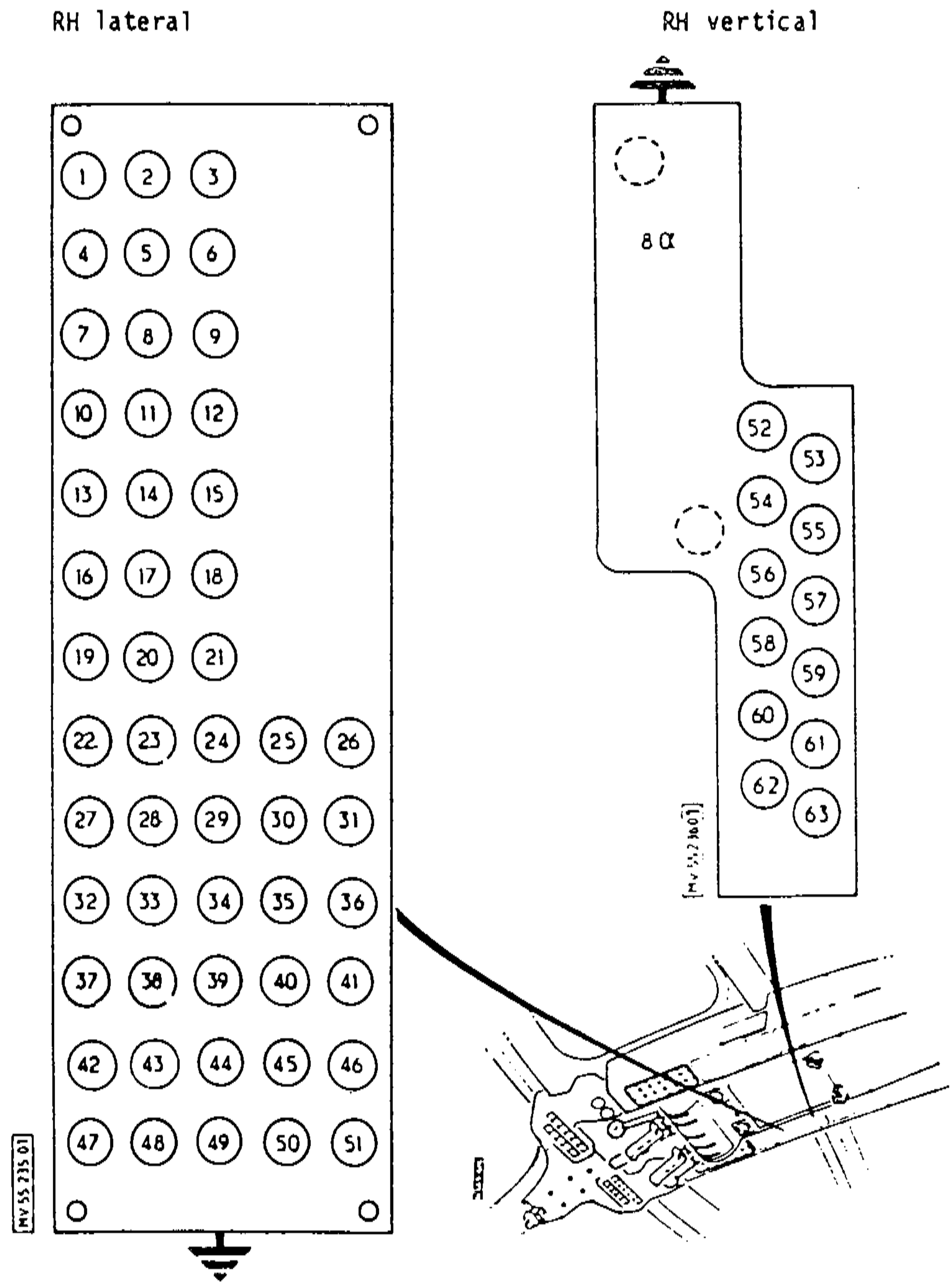
Yellow : Radio - Radio Nav - AP - CPL

Black : Electrical and mechanical systems monitoring or unused positions

Green : Electrical systems monitoring

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH
1	RADAR	RADAR	9	PA MONIT	MONIT
2	GYRO VERT	VERT GYRO UNIT	10	PROTEC TRANSF 26 V	INVERT PROTEC 26 V
3			11	HORIZ COPIL	COPIL ATTIT
4	PROTEC TRANSF 115 V	INVERT PROTEC 115 V	12	GYRO COMPAS COPIL	COPIL GYRO COMPASS
5	VOLT 115 V	VOLT 115 V	13	GYRO COMPAS PIL	PIL GYRO COMPASS R
6	HORIZ PIL	PIL ATTIT	14	RMI	RMI
7	COUPLEUR PA	AP COUPLER	15	VOLT 26 V	VOLT 26 V
8	PA	AP			

4.4 Fuses on overhead panels 7 ALPHA 2



Yellow : Radio - Radio Nav - AP - CPL

Black : Electrical and mechanical systems monitoring or unused positions

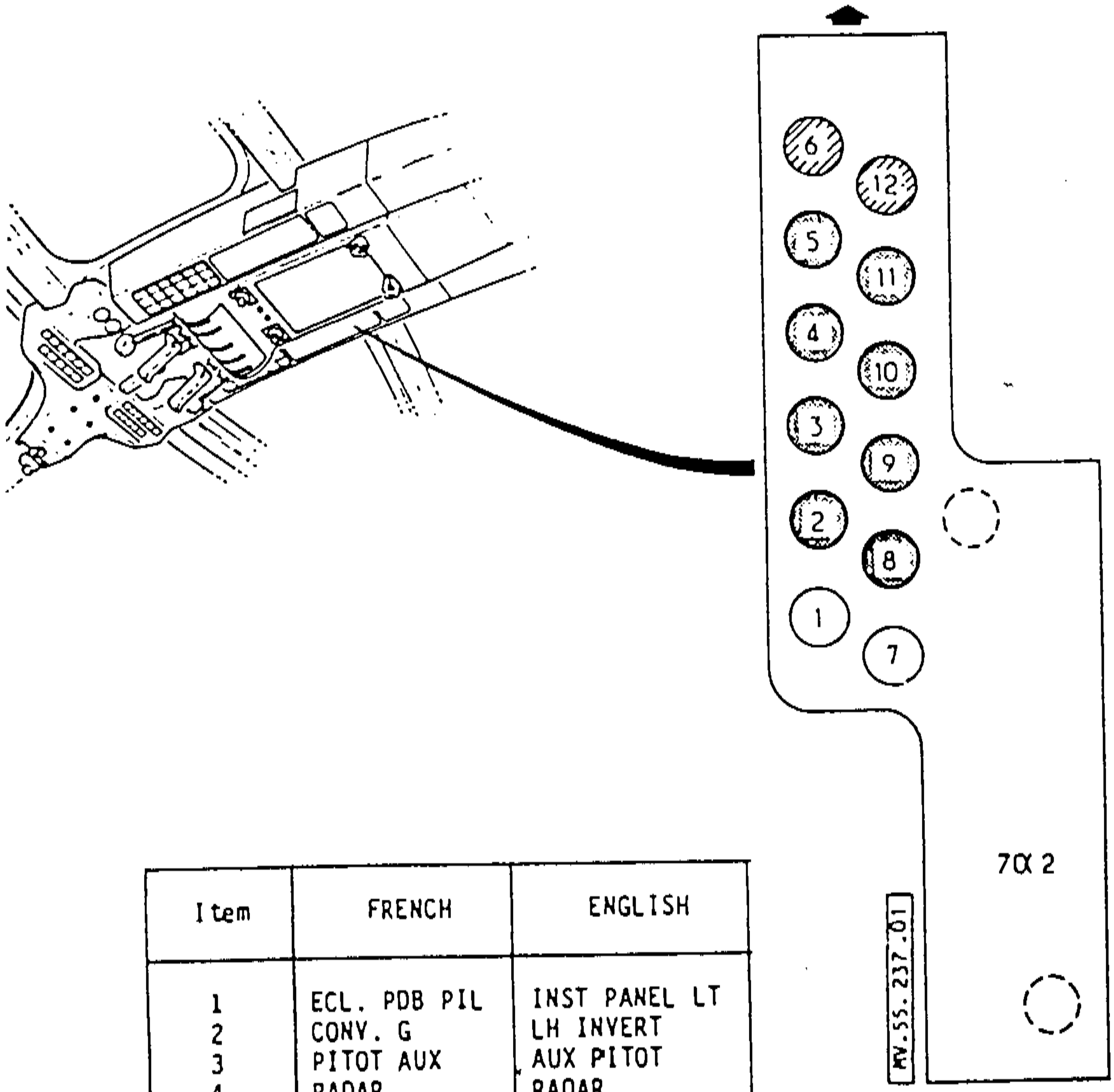
Green : Electrical systems monitoring

R

Fuses on overhead panels 7 ALPHA 2

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH
1			34		
2			35		
3			36	PRESS D. CARB	FUEL PRESS RH
4			37	VENTIL MOT D	CRANK RH ENG.
5			38	AUX DEM D	RH START AUX
6			39	TB COPIL	ICS COPIL
7	CHARGE ELINGUE	SLING LOAD	40	ADF 2	AOF 2
8			41		
9			42	DEM MOT D	RH ENG START
10			43	HORIZ SEC.	STD BY BATT
11			44		
12			45		
13			46	POMPE MOT D	RH BP
14			47		
15			48		
16			49		
17			50		
18			51		
19			52		
20	VIDE VITE AV.	FUEL JETTISON FWD	53	ELINGUE	CARGO SLING
			54		
21			55	ECL. PUPITRE	CONSOLE LT
22	TRIM MOT	ENG TRIM	56		
23	FEU ANTI-COLL	ANTI COLL LT	57		
24			58		
25			59		
26	TB PILOTE	ICS PILOT	60	H.P	L.S
27	N/R PILOTE	N/R PILOT	61	HF BLU	HS SSB
28	NTL D	NTL RH	62		
29			63		
30					
31	CHECKLIST	CHECKLIST			
32					
33	SEPAR PARTICULES	PARTICLE SEPARATOR			

.6 Fuses on RH vertical overhead panel 8 ALPHA



Item	FRENCH	ENGLISH
1	ECL. PDB PIL	INST PANEL LT
2	CONV. G	LH INVERT
3	PITOT AUX	AUX PITOT
4	RADAR	RADAR
5	VHF1	VHF1
6	PHARE ATTER.	LAND LT
7	ECL PDB PIL	INST PANEL LT
8	CONV. D	RH INVERT
9	PITOT AUX	AUX PITOT
10	RADAR	RADAR
11	VHF1	VHF1
12	PHARE ATTER.	LAND LT

R
R
R

R
R
R

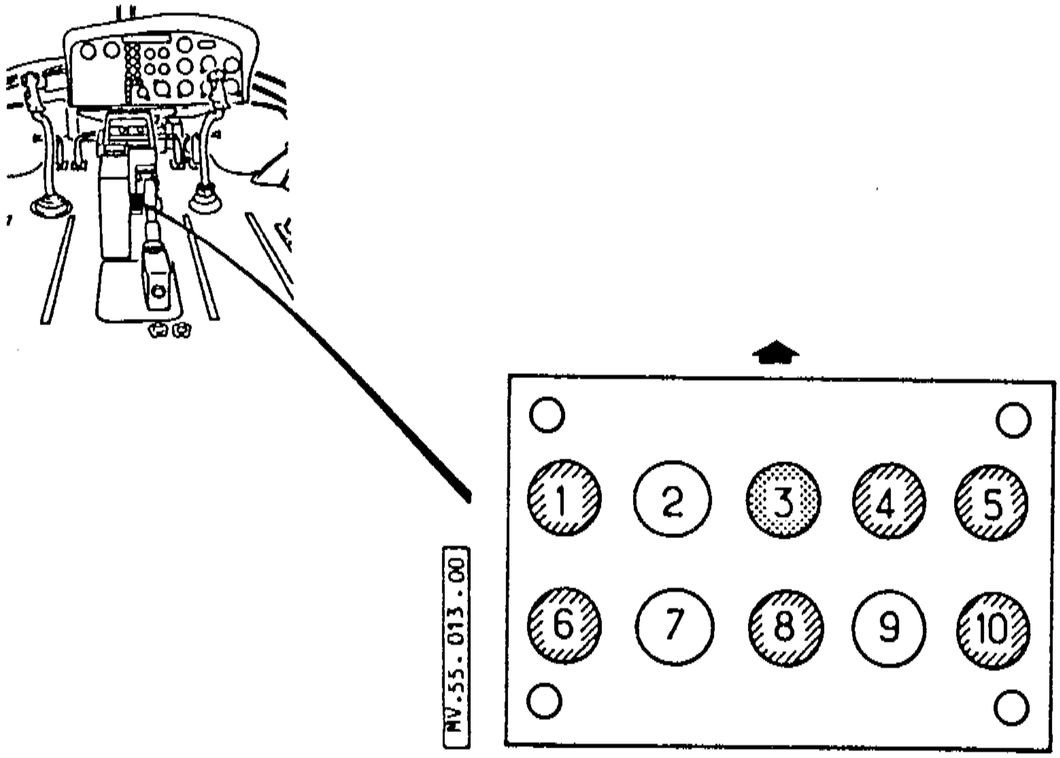
Yellow or brown : Radio - Radio Nav - AP - CPL

Black : Electrical and mechanical systems monitoring or unused positions

Green : Electrical systems monitoring

R

4.7 Fuses on console panel 16 ALPHA



Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH	
1	ECL. PLAF. COPIL	COPIL OVHD LT	6	ECL. PLAF. PIL	PILOT OVHD LT	
2	DETEC. INC. BTP	MGB FIRE	7	t4	t4	R
3	TRANSP. ALTI-CODEUR	TRANSP. ALTICODER	8	FUSEES ECL	FLARES	R
4	VIDE VITE AR	FUEL JETTISON REAR	9	SIGNAL DIRECT BATT.	SIGNAL DIRECT BATT.	R
5	EXTINC. INC.	FIRE EXT.	10	EXTIN. INC.	FIRE EXT	R R

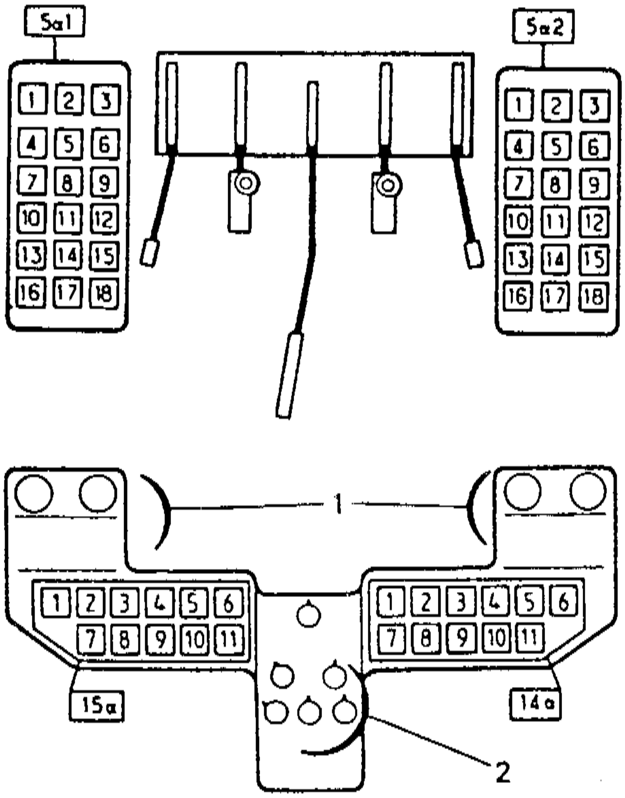
R

Yellow : Radio - Radio Nav - AP - CPL

Black : Electrcial and mechanical systems monitoring or unused positions R

Green : Electrical systems monitoring

5 CONTROL PUSHBUTTONS



MV 55 001 01

Figure 1 - Location

5.1 LH side overhead panel 5 ALPHA 1 (Figure 1)

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH
1*	VIDE VITE AV	FUEL JETTIS. FWD	10	EXT 2 MOT. G	FIRE EXT 2 LH
2*	VERIN TRIM TANGAGE	PITCH TRIM ACTUATOR	11		
3*	EFFORTS ARTIF	TRIM RELEASE	12*	FEU STROBOS	STROBE LT
4			13		
5*	VERIN TRIM ROULIS	ROLL TRIM ACTUATOR	14*	DEBITMETRE	FLOWMETER
6	VENTIL. MOT.G	CRANK LH ENG	15	ECL POB COPIL	INST PANEL LT
7	EXT. 1 MOT. G	FIRE EXT. 1 LH	16		
8			17*	ESSUIE GLACE COPIL.	W/W COPIL
9			18	CONF. PASS.	PASS. ICS

R
R

* Optional equipment R

5.2 RH side panel 5 ALPHA 2 (Figure 1)

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH	
1 *	VIDE VITE AR	FUEL JETTISON	10 *	EXTIN 2 MOT D	FIRE EXT. 2 RH	R
		REAR				R
2			11 *		STORM LT	
			12 *	PHARE PARK OU	TAXI LT OU	
3	INTER. COM.	FUEL INTERC		TRANS PHARE	LTS TRANSF	
	CARB.			G - D	LH - RH	
4			13 *	ARMT FUSEES	FLARES ARMT	
			14	ECL. PUPIT	CONSOLE LT	
5			15	ECL. P.D.B. PIL	INST PANEL LT	
6	VENTIL MOT D	CRANK RH ENG.	16 *	SEPAR. DE	PARTICLE	
7	EXTIN 1 MOT D	FIRE EXT 1 RH		PARTICULES	SEPARATOR	R
8			17 *	ARMT ESS GL	WDS W. ARM	
9 *	GEL DME	HOLD DME	18	PITOTS	PITOT	R

5.3 LH front panel 15 ALPHA (Figure 1)

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH	
1			7	KLAX	HORN	
2			8	TEST SERVO	SERVOTEST	
3 *	CONVERT. G	INVERT LH	9 *	GYROCOMPAS COP	COP GYROCOMPASS	
4	GEN G	GEN LH	10 *	HORIZ COPIL	COPIL ATTIT	
5	POMP MOT G	LH BP				R
6	BATT PARC G	LH EXT PWR BATT	11 *	HORIZ SEC	STD BY HORIZ	

5.4 RH front panel 14 ALPHA (Figure 1)

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH
1	BATT PARC D	RH EXT PWR BATT	7	DIRECT BATT	DIRECT BATT
2	POMPE MOT. D	RH BP	8 *	HORIZ. PIL.	PIL. ATTIT
3	GEN. D	GEN RH	9 *	GYROCOMPAS PIL	PIL. GYROCOMPASS
4 *	CONVERT D	INVERT RH	10	FEU DE POS.	POS LT
5			11	ANTI-COLL	ANTI COLL LT
6					

* Optional equipment

5.5 Instrument panel 9 ALPHA

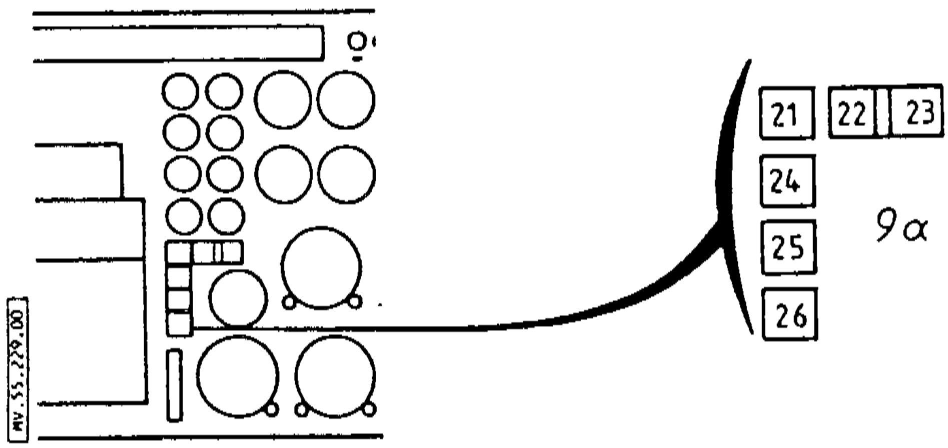
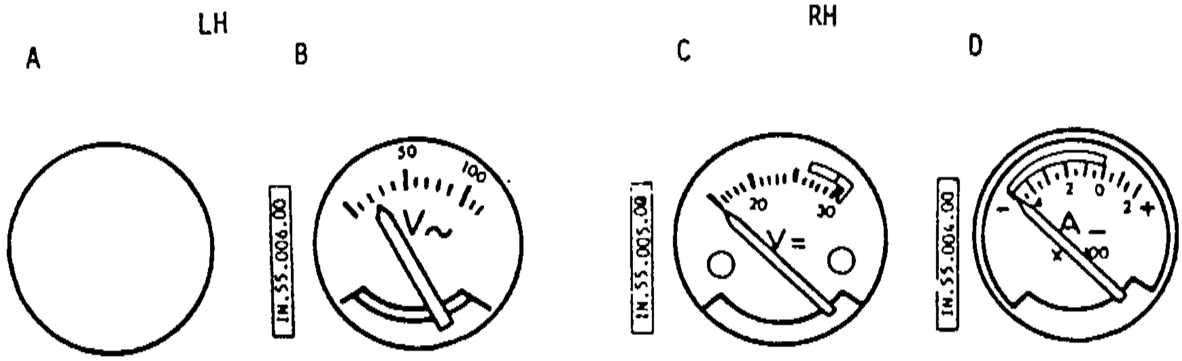


Figure 2

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH	
21	REARM GENE	GEN RESET	24	DELEST BUS D	BUS SHED RH	R
22	COUPE TOUT (DOUBLE)	EMERGENCY CUT OUT	25	DELEST BUS G	BUS SHED LH	R
23			26 *	ARM FLOT. S. G-D	EMERG. FLOAT ARM LH-RH	

6 MONITORING INSTRUMENTS ON FRONT PANEL (detail 1, figure 1)



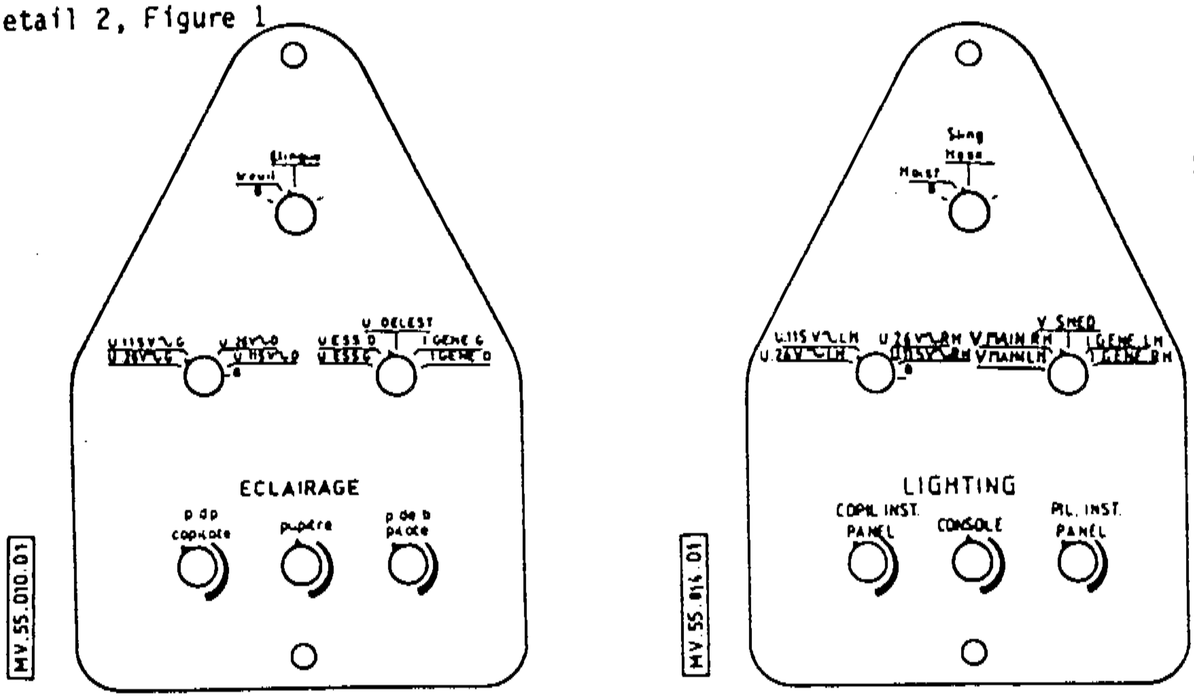
Item	Description
A	
B*	A.C. voltmeter
C	D.C. voltmeter
D	D.C. ammeter

* Optional equipment

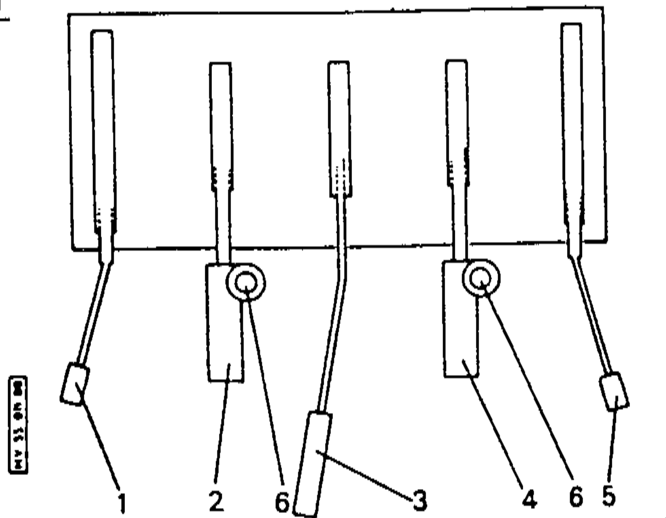
R

7 SWITCHES AND POTENTIOMETERS ON FRONT FACE PANEL

Detail 2, Figure 1



8 CONTROL QUADRANT

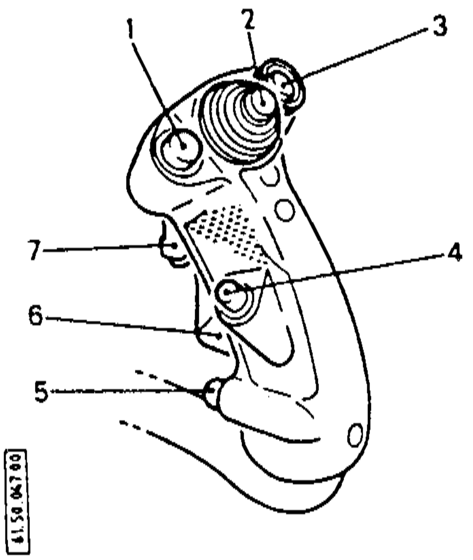


Item	Description
1	LH engine fuel shut-off lever
2	LH engine fuel flow control lever
3	Rotor brake control lever
4	RH engine fuel flow control lever
5	RH engine fuel shut-off lever
6	Start pushbutton

9 CONTROL ITEMS ON CYCLIC STICK AND COLLECTIVE LEVER GRIPS

9.1 Equipping the cyclic stick grip

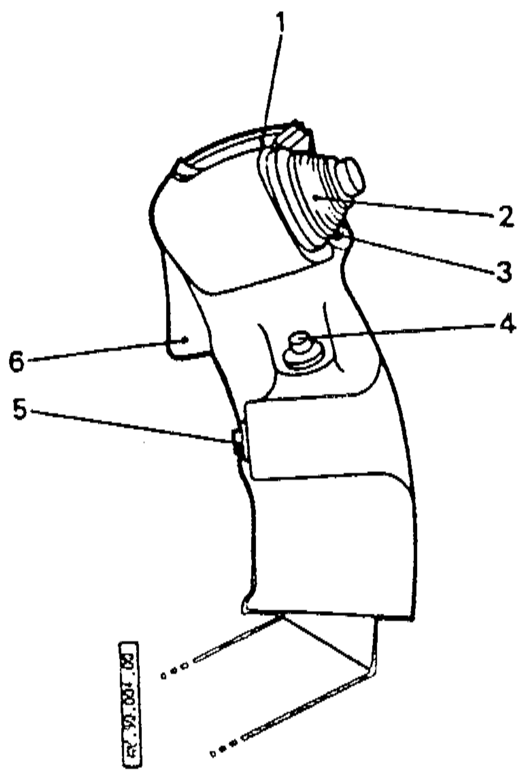
9.1.1 BENDIX grip



Item	Function
1 *	AP coupler
2 *	AP four-way button
3 *	-Flare firing (pre-mod AMS 952) -Sling release (post-mod AMS 952)
4 *	AP trim release
5 *	AP disengagement
6 *	I.C.S trigger
7 *	- Flare firing (Post-mod AMS 952) - Cargo sling release (Pre-mod AMS 952)

9.1.2 DUNLOP grip

This grip may be fitted on cyclic stick as an alternative item.

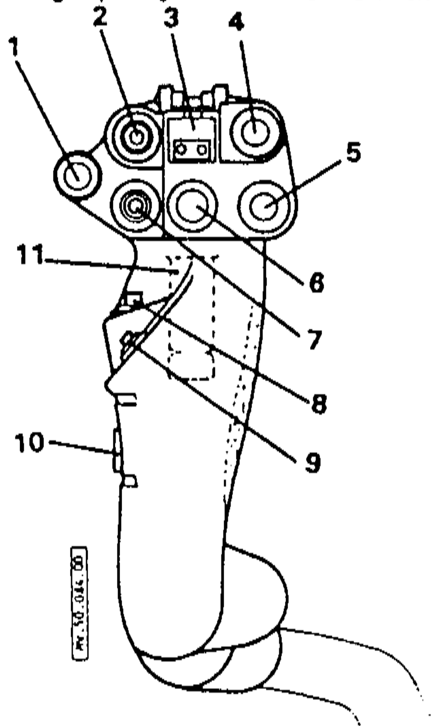


Item	Function
1 *	Folding tongue
2 *	AP four-way button
3 *	Sling release : . Emergency : pre-mod AMS 969 . Normal : post-mod AMS 969
4 *	AP trim release
5 *	AP disengagement
6	Radio or ICS P.T.T. switch

* Optional equipment

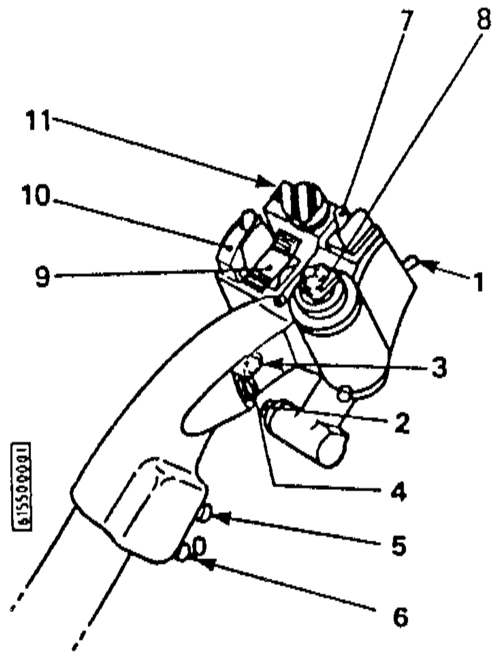
9.1.3 CROUZET grip

This grip may be fitted on the cyclic stick as an alternative item :



Item	Function
1 *	AP coupler disengagement
2 *	Hoist up/down control
3 *	Flares or weapons release
4 *	Sling release
5 *	AP master release
6 *	(Not used)
7 *	4-way AP control
8 *	AP trim release switch
9 *	(Not used)
10 *	(Not used)
11 *	Radio/ICS P-T-T switch

9.2 Equipping the collective lever grip

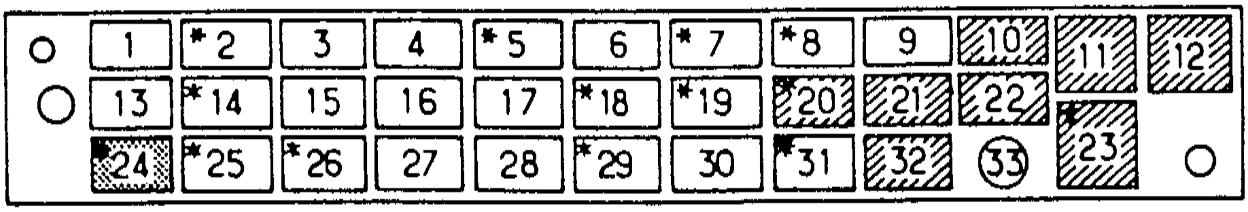


Item	Function
1	Collective lever lock
2 *	Emergency flotation gear
3	Available
4	Available
5	Available
6 *	Windshield wiper - On/off switch
7 *	Landing light - On/off switch
8 *	Landing light orientation
9	Engine trim
10	Tail rotor servo control hydraulic cut out
11 *	Emergency release button (hoist)

* Optional equipment

7.2 - FAILURE WARNING PANEL

Failure warning panel on instrument panel



MV.55.389.00

Voyants verts- *Green lights*

Voyants ambre _ *Amber lights*

Voyants rouges _ *Red lights*

* Optionnel _ *Optional items*

Item	FRENCH	ENGLISH	Item	FRENCH	ENGLISH	
1	PORTES	DOORS	18	LIMAILLE BTP	MGB CHIPS	
2*	GENE G	GEN LH	19	LIMAILLE BTA	TGB CHIPS	
3	GENE D	GEN RH	20*	PH MOT	ENG OIL PRESS	
4	COMB	FUEL	21	PH BTP	MGB P	R
5*	PA	AP	22	T° BATT	BATT TEMP.	
6	KLAXON	HORN	23*	FEU BTP	MGB FIRE	
7*	PITOT PIL	PITOT PIL	24*	PHARE ATTER	LAND LT	
8*	PITOT AUX	PITOT AUX	25*	CONV G	INVERT LH	
9	HYDR ou HYDR D	HYD ou HYD RH	26*	CONV D	INVERT RH	
10			27	FILTRE G	FILTER LH	
11	FEU MOT G	FIRE ENG LH	28	FILTRE D	FILTER RH	
12	FEU MOT D	FIRE ENG RH	29*	SERVO	SERVO CONTROL	
13	FUSIBLE BATT	BATT FUSE	30	LIMIT	LIMIT	
14*	BATT.G	BATT LH	31*	HYDR G	HYD LH	
15	BATT.D	BATT RH	32	TH BTP	MGB P	
16	LIMAILLE MOT G	CHIPS ENG LH	33	POUSSOIR TEST	TEST BUTTON	R
17	LIMAILLE MOT D	CHIPS ENG RH				R

NOTE : Warning lights (items 9 and 31) are red for the single hydraulic system and amber for the twin hydraulic system.

7.3 - POWERPLANT

1 DESCRIPTION

1.1 Installation

The engines are mounted at top of the fuselage aft of the main gearbox.

The engine power is transmitted through a shaft provided with a flexible coupling.

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

1.2 Brief description of the engine R

The engine consists of four modules :

- Compressor module,
  mounted at the front, and composed of :
  . an axial air intake
  . an axial six-stage compressor
  . a centrifugal compressor
  The pressure ratio is 7.1.
- Accessories module,
  it provides attachment and transmits power from the engine to the combiner module.
  Furthermore, it drives the accessories and steps down the engine speed from 33280 to 6016 r.p.m.
- Turbine module
  It consists of two groups of turbines :
  . generator turbines driving the compressor
  . free turbines transmitting the power to the M.G.B.
- Combustion module
  Mounted at rear, it is used for mixing and combustion of fuel with air.
  On starting, an ejector sprays fuel which is ignited by a centre R
  igniter.

The air absorbed by the compressor flows through two ducts into the combustion chamber aft of the engine, where it is deflected by 180° and then forced back to the generator turbines and to the free turbines.

The exhaust gases are discharged through two orifices nearly located in the engine centre sections.

2 LUBRICATION SYSTEM R

The ALLISON turbo-shaft engine incorporates a self-contained lubrication system complete with external cooling line and oil tank.

The lubrication system consists of :

- an oil tank - a lubrication gear pump
- a bypass filter - a pressure regulator
- a non-return valve
- four scavenge pumps
- two chip detectors
- oil coolers
- a thermostatic valve.

In flight, the lubrication system is monitored through the oil pressure and temperature indicators. A caption light illuminates on the failure warning panel when metal particles settle on the magnetic detectors.

KEY TO FIGURE 1 R

Oil suction line

Oil pressure line

Oil return line

Cooling line

Oil vapour line R

1	Oil tank	10	Bypass filter
2	Oil cooler	11	Non-return valve
3	Thermostatic valves	12	Pressure regulator
4	Oil temperature probe	13	Oil jets
5	Chip detectors	14	Air vent
6	Scavenge pumps	15	Oil separator
7	Pressure inlet	16	Torquemeter
8	Pressure pump	17	Breather
9	Filter		

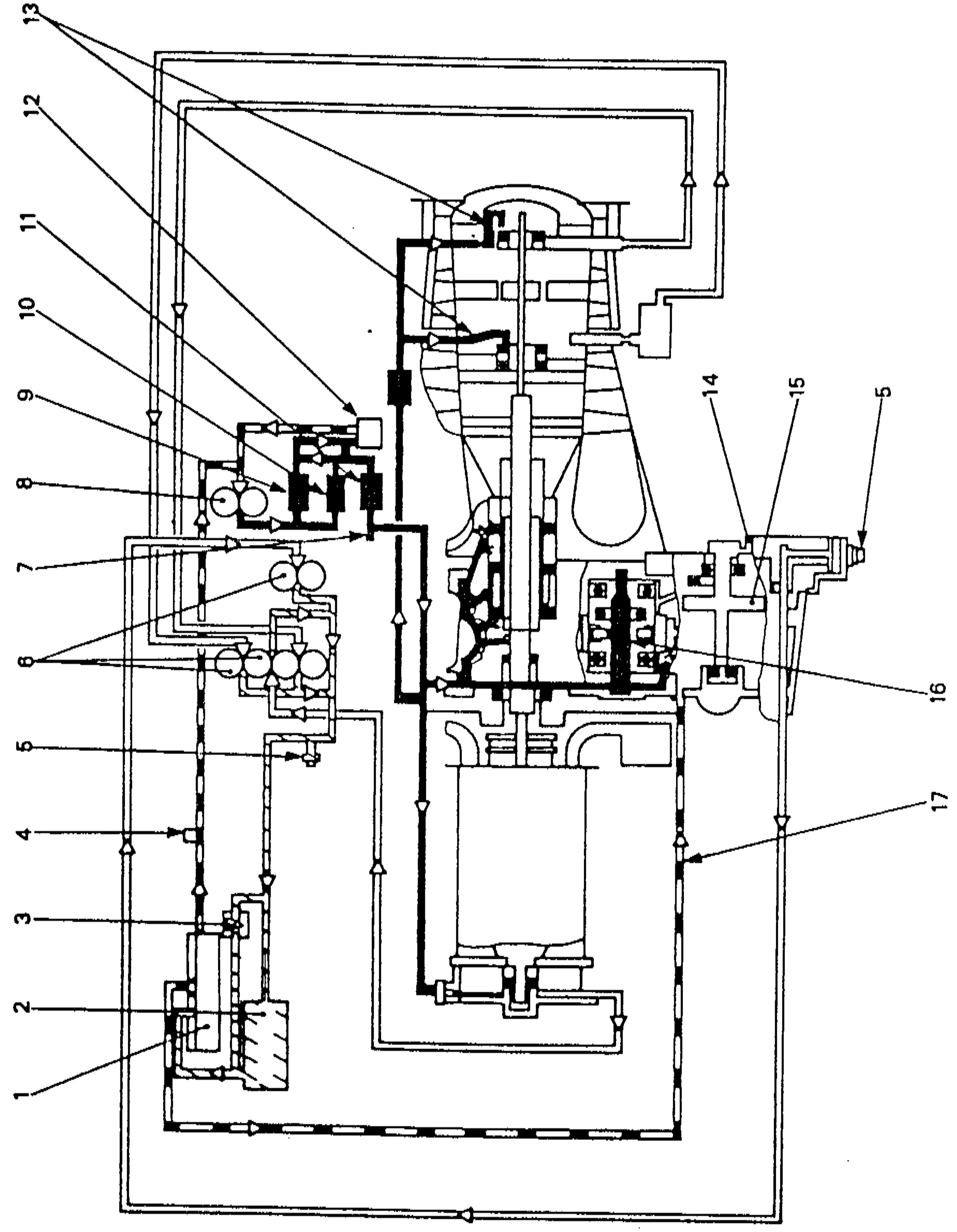


Figure 1 - Lubrication system

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. R

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 "INTERCOM" (FUEL XFER) pushbutton (15) provided on panel 5 ALPHA 2. R
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 R
- a manual control fuel shut-off valve (9) R
- a fuel pressure inlet to the pressure indicator
- a fuel filter (6)
- a filter bypass (7) fitted with a pressure-switch that indicates filter clogging (8). R

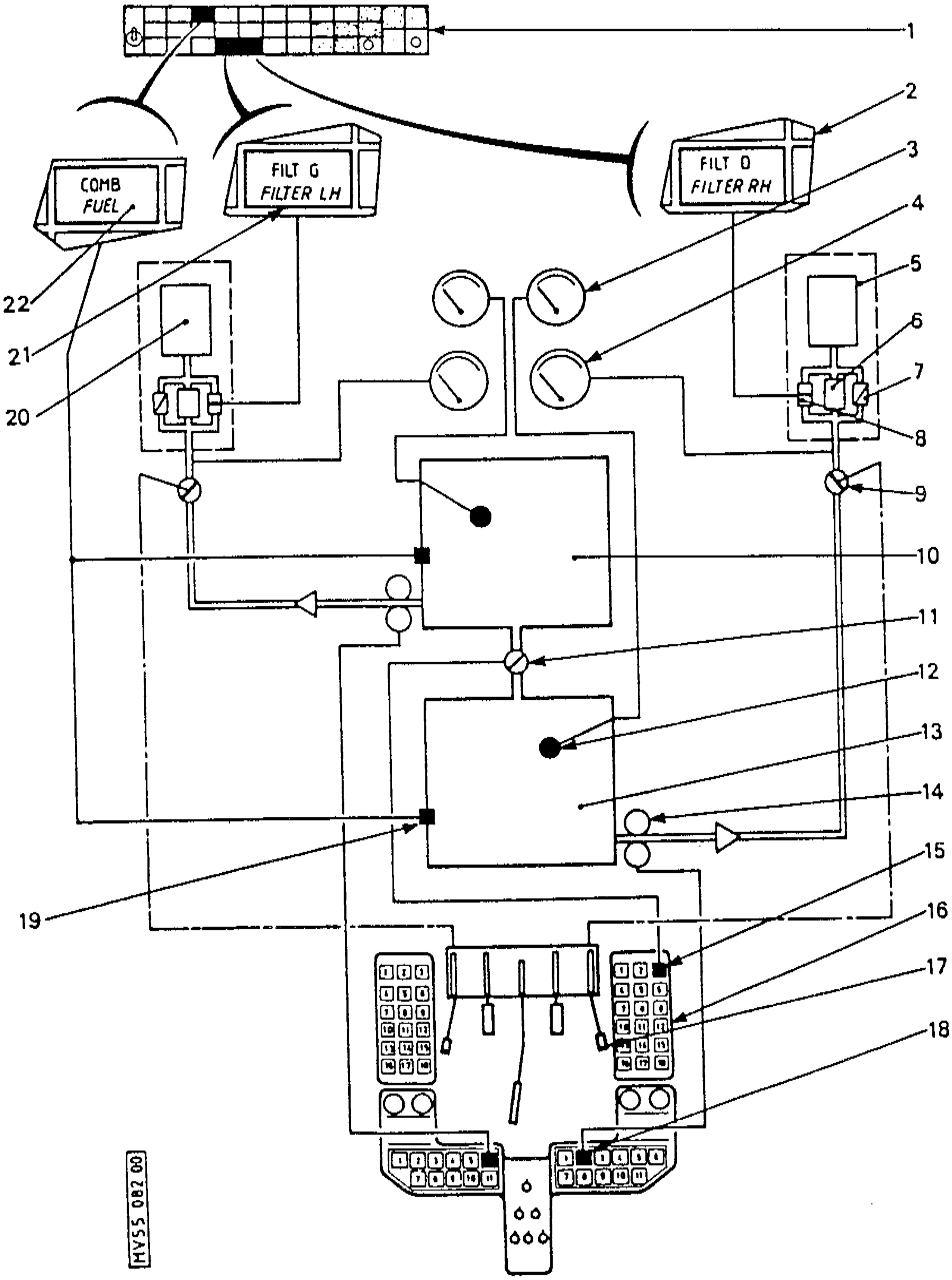
4 SUPPLY CIRCUIT CONTROLS AND MONITORING (See Figure 1) :

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 R
  in the fuel tank.

KEY TO FIGURE 1

1	Failure warning panel	
2	FILTER RH warning light	
3	Fuel contents indicator	R
4	Fuel pressure indicator	
5	R.H. engine	R
6	Filter	
7	Bypass filter	
8	Presure 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	INTER COM (FUEL XFER) pushbutton	
16	Panel 5 ALPHA 2	
17	Fuel shut-off lever	
18	Pump, RH (LH) engine	
19	Low level indicator	
20	L.H. engine	R
21	FILT G. (FILTER L.H.) warning light	
22	COMB (FUEL) low level warning light	



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
COMB
FUEL
FILT G
FILTER LH
FILT D
FILTER RH
MY55 082 00

R

Figure 1

R

7.5 - ROTORS ANO TRANSMISSIONS

1 ROTORS

1.1 Main rotor (Figure 1) R

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.

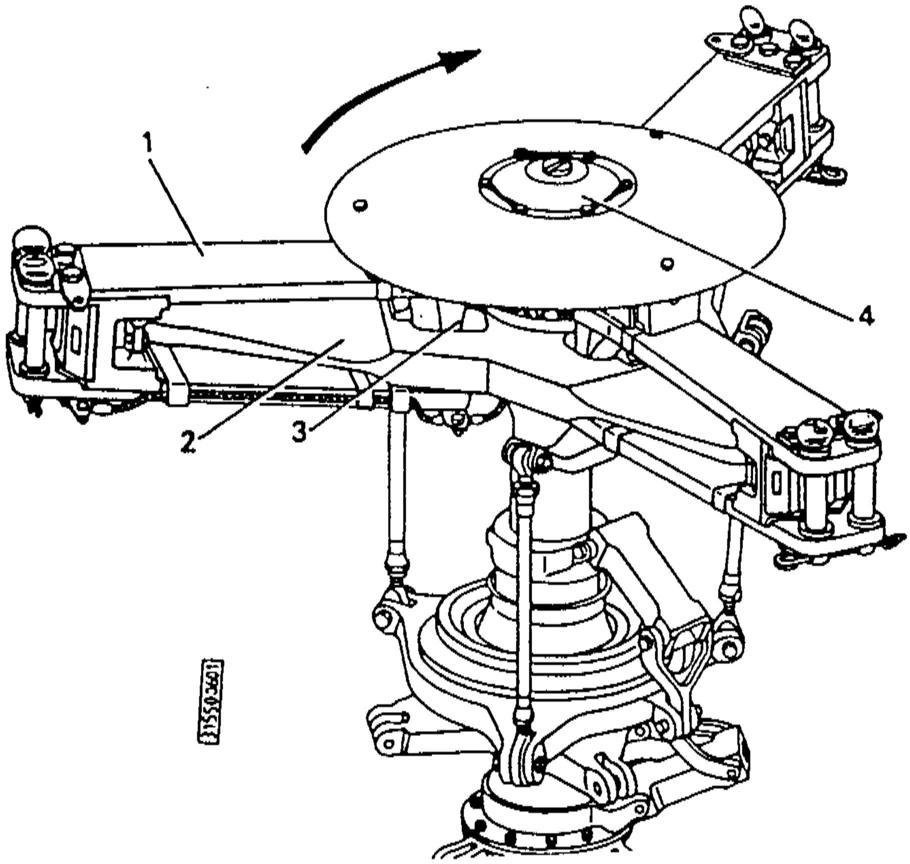


Figure 1 R

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 TRANSMISSIONS

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 shaft and flexible coupling turning inside a coupling flared tube.

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

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.

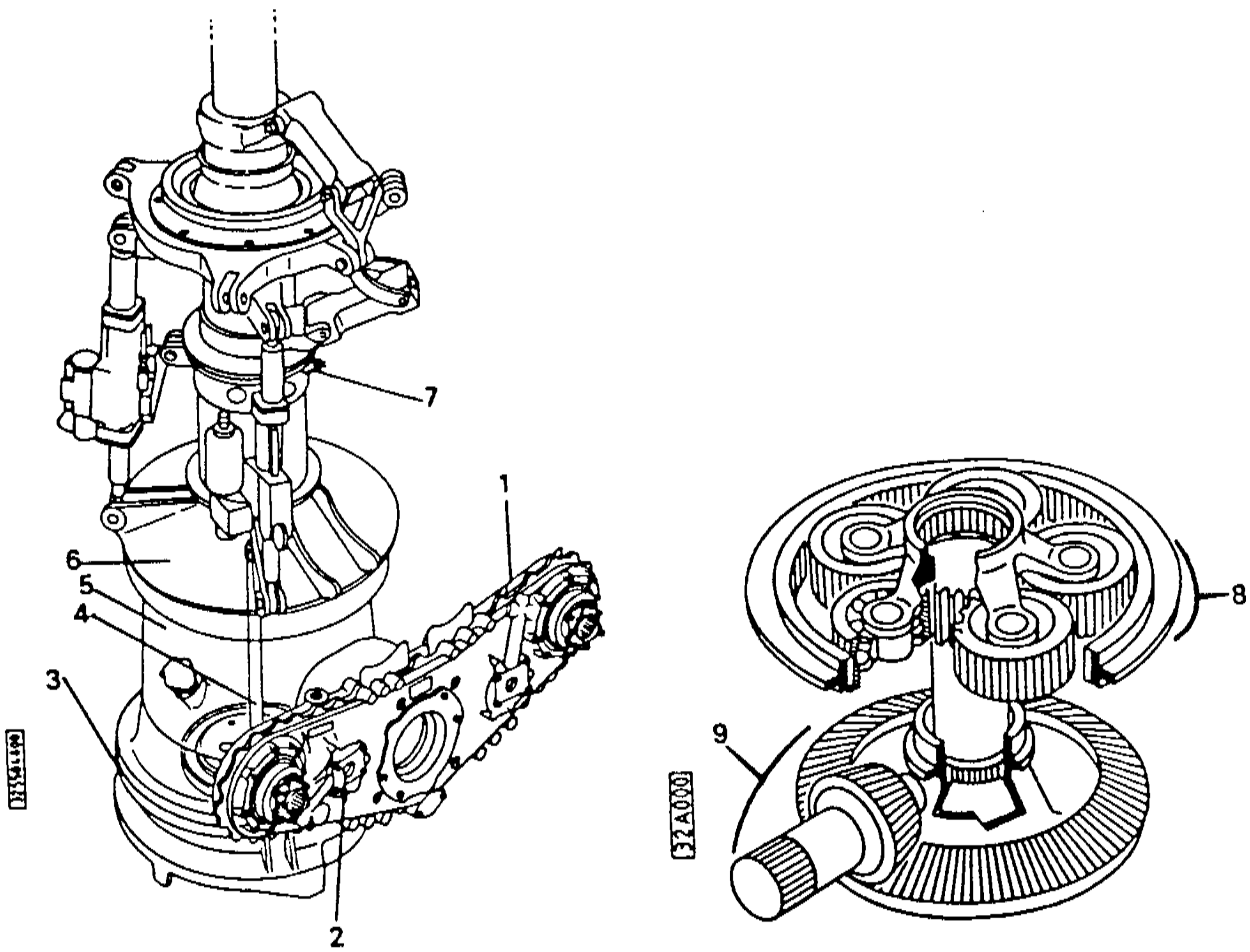


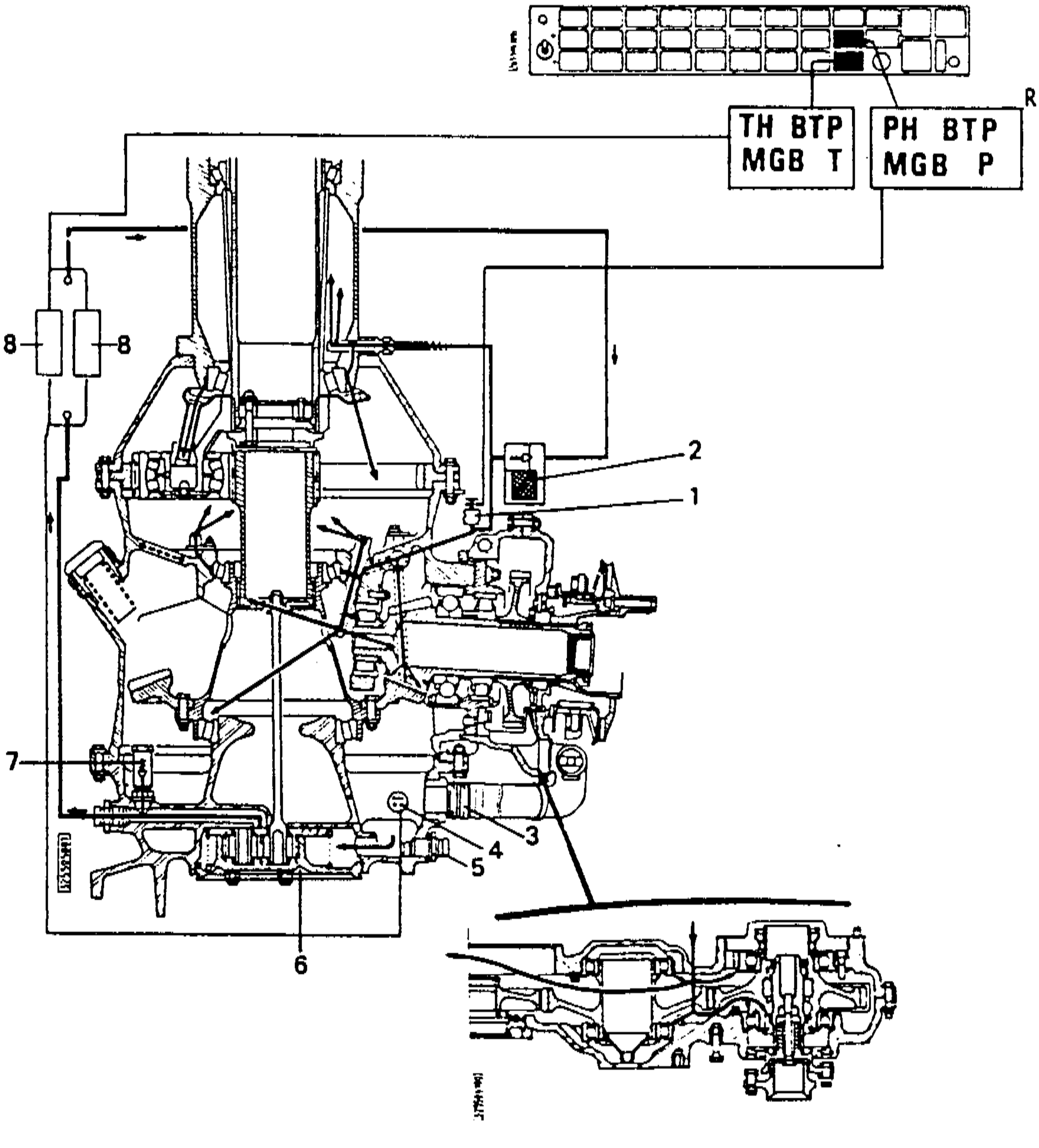
Figure 2 R

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 "PH BTP" (MGB. P.) light to illuminate on the failure warning panel when the pressure drops below 1 bar (14.50 p.s.i.)
- a thermal switch causing the "TH BTP" (MGB. T.) light to illuminate on the failure warning panel when the temperature reaches 115°C.
- as optional equipment :
  . a light comes on to indicate the presence of metallic particles on the magnetic plug
  . a MGB oil pressure and temperature indicator can be fitted as additional equipment in the lubrication monitoring system.



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 1) R

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).

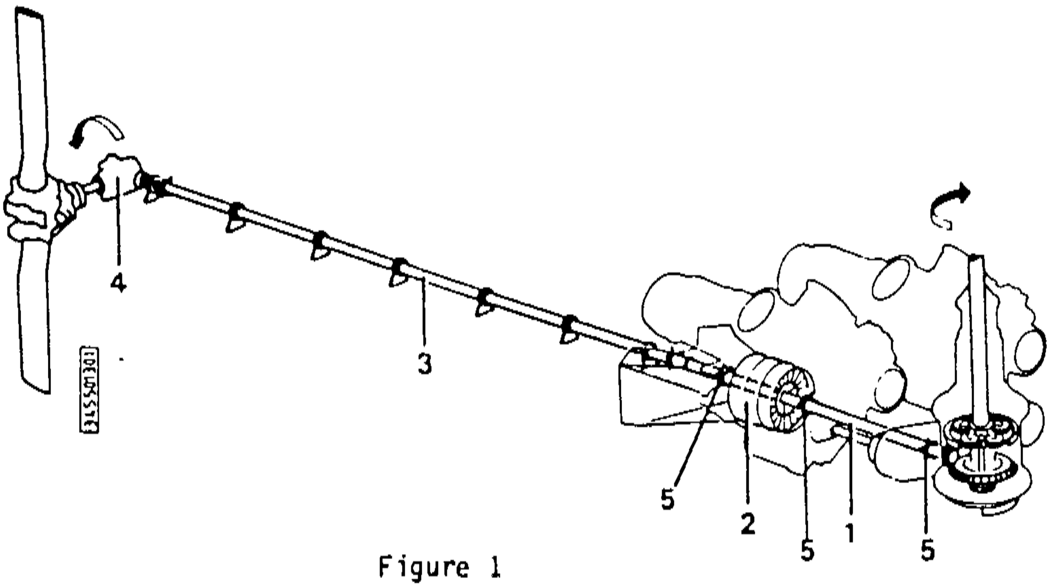


Figure 1 R

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 ; 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.

7.6 - FLYING CONTROLS R

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 long 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 mixed (ball type control cables and rods).

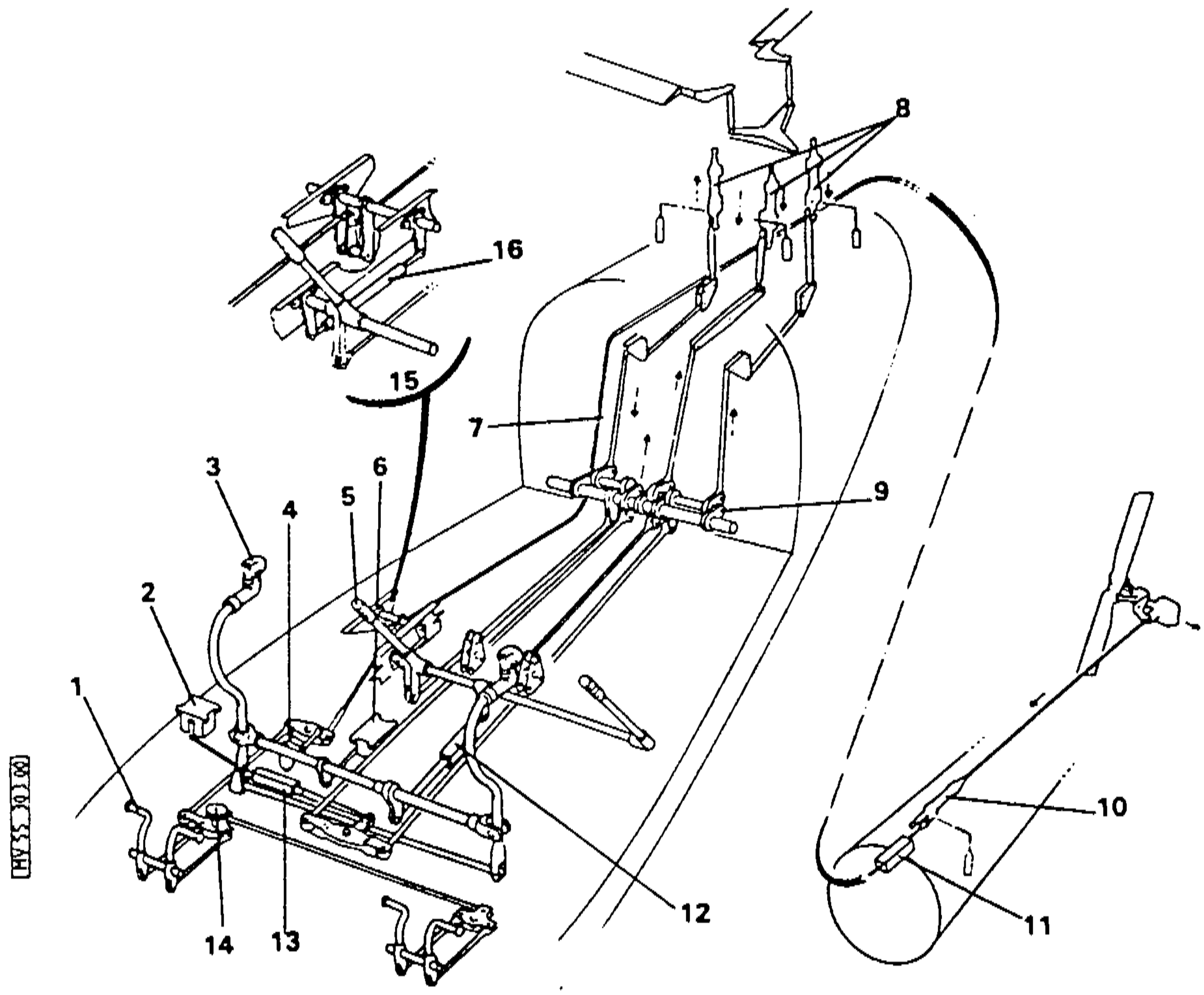
Three mobile cylinder servo-controls whose piston rod is integral with the M.G.B. directly operate the swashplate (two in lateral, one in fore-and-aft). These servo-controls allow the aircraft to be flown manually in the event of a hydraulic supply failure.

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

* Optional autopilot

Flight control linkage

R

7.7 - HYDRAULIC SYSTEMS R

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) R

2.1 LH system

The LH system which supplies the upper cylinder of the main servo-controls (1-2-3) consists mainly 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.

2.3 Hydraulic system controls and monitoring R

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 the hydraulic pressure drop indicating circuit.

The systems are monitored through three lights on the failure warning panel :
- a "SERVO" (SERVO-CONTROLS) 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 "HYDR" (HYD.) light indicating a hydraulic pressure drop.
- two optional lights, one marked "HYDR D" (RH HYD) for the RH system and one marked "HYDR G" (LH HYD) for the LH system, indicating a hydraulic pressure drop in the relevant system.

Item	Description	Item	Description	
1	Roll servo-control	8	Front panel	R
2	Pitch servo-control	9	"SERVO" test pushbutton	R
3	Roll servo-control	10	Failure warning panel	
4	Yaw servo-control	11	Hydraulic pump	
5	Yaw hydraulic supply electro-valve	12	Hydraulic reservoir	
		13	Filter	
6	Collective pitch grip	14	Pressure regulator	
7	Yaw hydraulic supply switch	15	Low pressure switch	R

Key to Figure 1

R

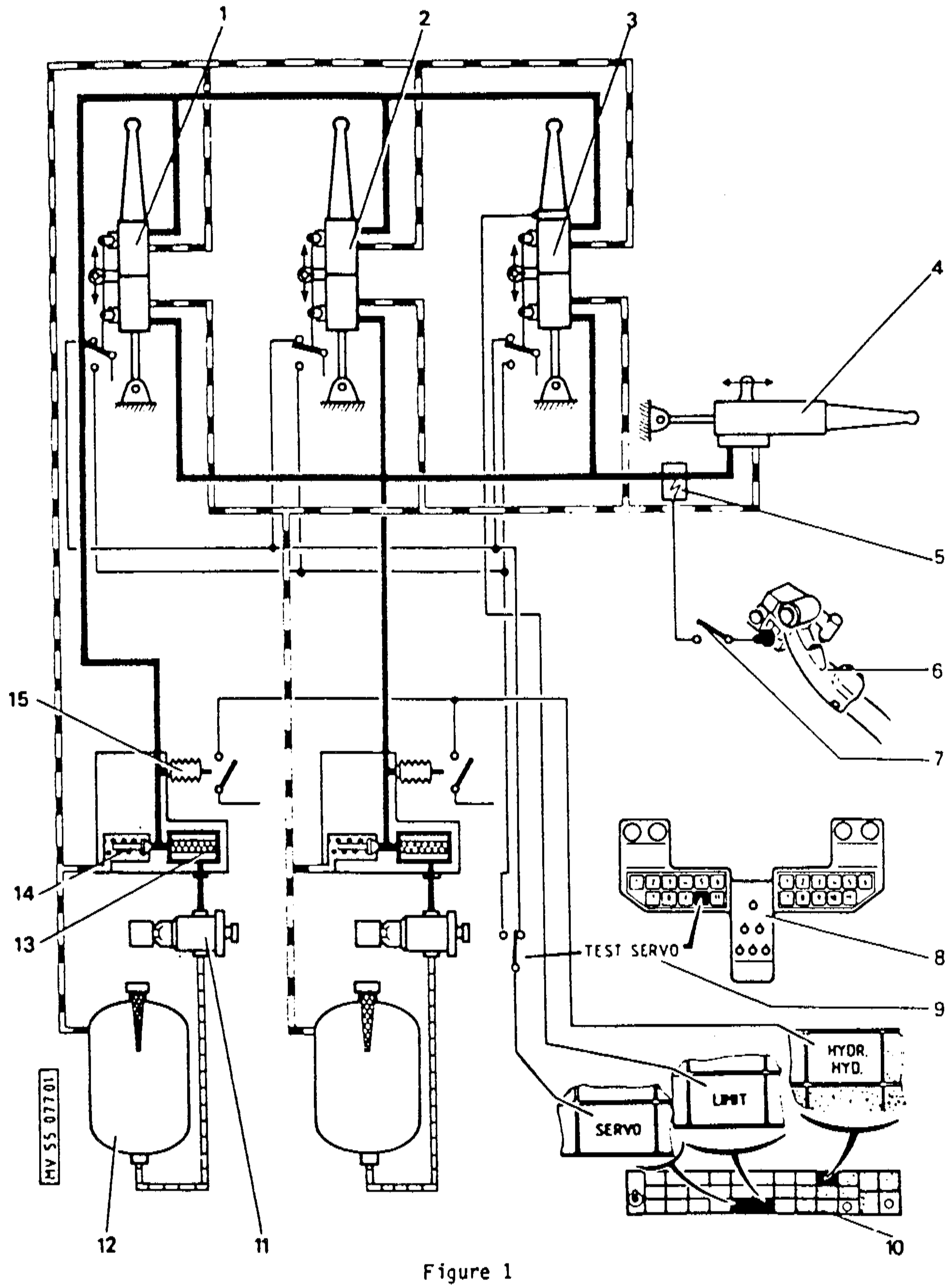

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
TEST SERVO
HYDR.
HYD.
LIMIT
SERVO
HV 55 077 01

Figure 1

R

7.8 - 1 - 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

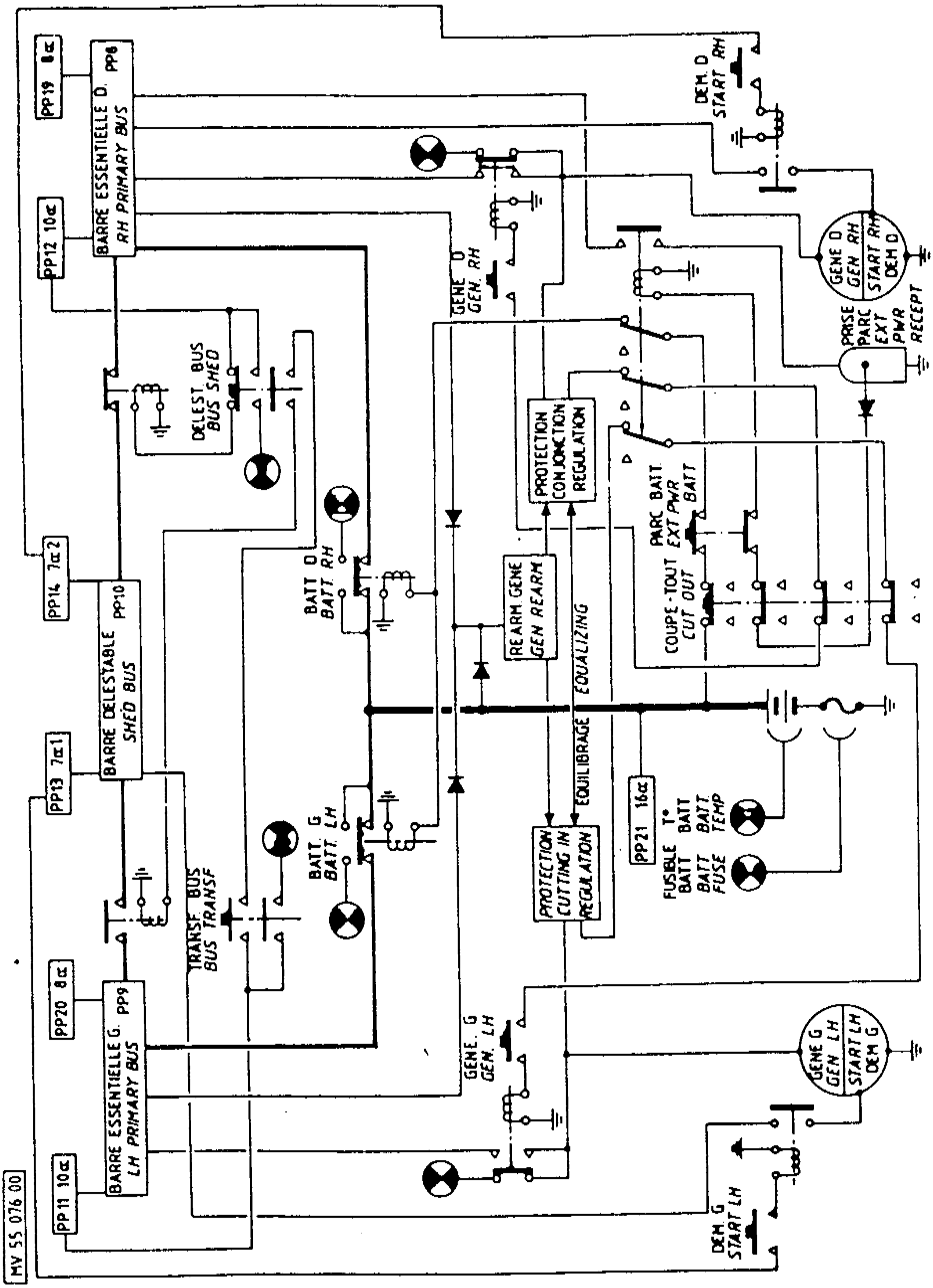
The ground power unit is coupled to the aircraft D.C. system through a contactor when :

- electrical power is available to the ground power receptacle
- dual EMERGENCY CUT-OUT pushbutton is released R
- EXT. PWR BATT pusbutton (Pre-mod. AMS 1123) or RH EXT.PWR/BATT and LH EXT.PWR/BATT pushbuttons (Post-mod. AMS 1123) are engaged. "BATT. D." and "BATT. G." (BATT. RH and BATT. LH) lights are illuminated. The battery and generators are isolated from the aircraft system until the ground power unit is disconnected.
  Pre-mod. AMS 1123 : Only the primary bus PP8 is supplied.
  Post-mod. AMS 1123 : All three primary bus bars PP8-PP9-PP10 are supplied.

3 BATTERY CIRCUIT

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

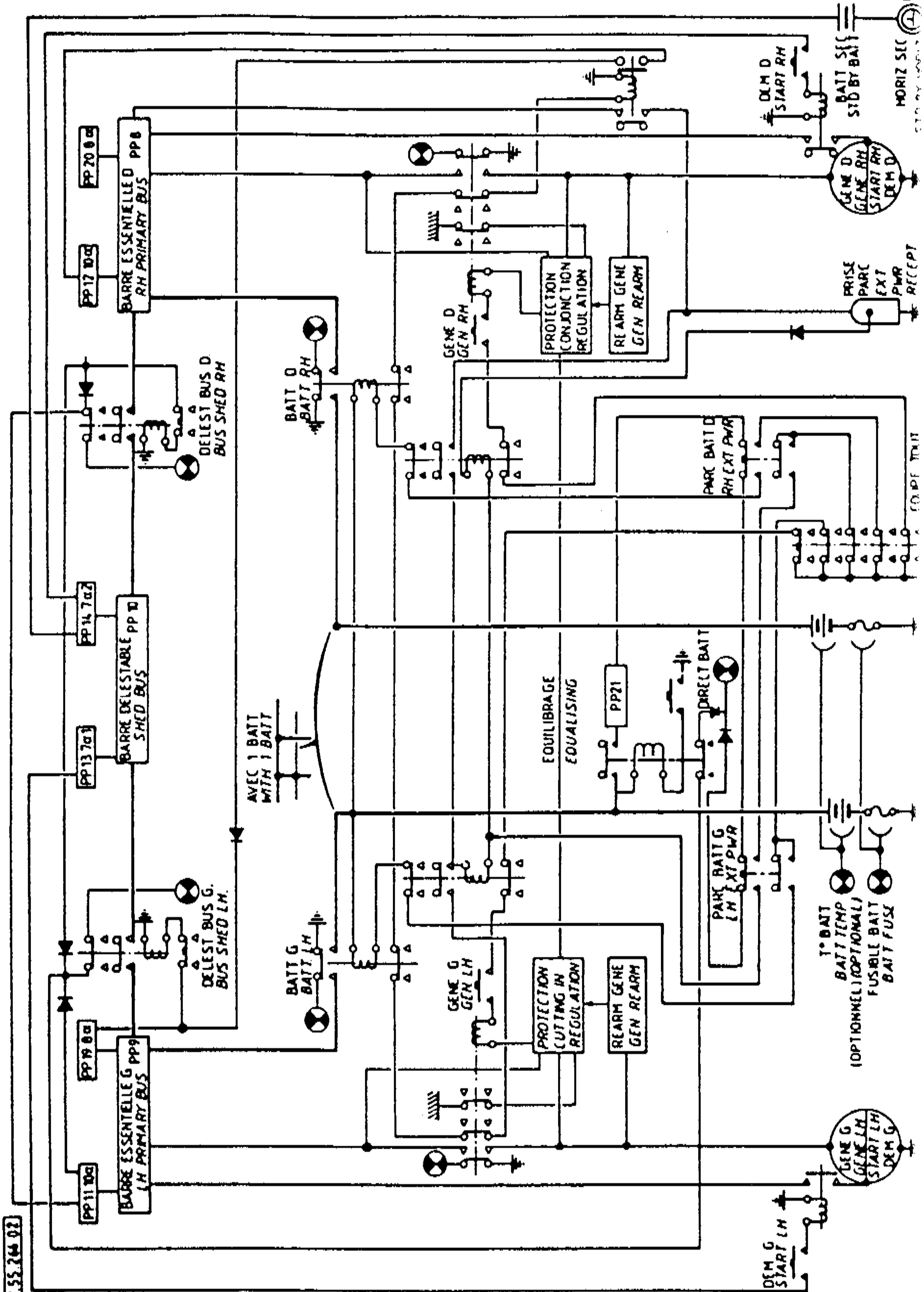
- ground power unit is not plugged in
- dual EMERGENCY CUT OUT pushbutton is released R
- LH EXT.PWR/BATT and/or RH EXT.PWR/BATT pushbuttons are engaged. BATT. RH and BATT. LH lights are off and the aircraft system is completely supplied providing the BUS SHED pushbutton(s) is(are) released.



D.C. POWER SYSTEM FUNCTIONAL DIAGRAM

Pre-mod AMS 1123

R



D.C. POWER SYSTEM FUNCTIONAL DIAGRAM

Post-mod AMS 1123

R

The battery(ies) can be uncoupled from the network :
- either manually through the "COUPE TOUT" (EMERGENCY CUT OUT) and "BATT PARC" (EXT PWR BATT) pusbuttons, R
- or automatically through connection of the ground power unit.

Each battery is protected by :

- a fuse connected to the "FUS. BATT" (BATT. FUSE) light indicating that the current in the battery is too high
- a "T° BATT." (BATT. TEMP.) 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, CRANK RH ENG and CRANK LH ENG, START RH and LH pushbuttons are released R
- GEN. RH and GEN. LH are pressed in
- 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 : R
  . EMERGENCY CUT OUT
  . START RH and/or START LH
  . CRANK RH ENG. and/or CRANK LH ENG.
- or automatically when :
  . generator voltage exceeds 32 volts
  . current reverses from the battery to the generator.

  A unit located aft of the main overhead fuse panel incorporates CPL and EXC circuit-breakers required for the protection of each generator. If allows the pilot to reset those circuit-breakers in flight if necessary.
  A "REARM GEN G-D" (GEN REARM RH-LH) pushbutton allows resetting to be attempted.
  Should the generators be uncoupled from the network, the "GEN.D" (GEN.RH) and/or "GEN.G" (GEN. LH) lights illuminate on the failure warning panel.
  On option, a remote rearming circuit allows the generator protections to be reset.

5 SHEDDING CONTACTOR

This contactor (normally cut in) energized through the "BUS SHED" pushbutton allows shed bus PP10 to be isolated from the aircraft network. Post-mod AMS 1123, isolation of shed bus is achieved by two contactors.

6 TRANSFER CONTACTOR (Pre-mod AMS 1123)

This contactor (normally open) energized through the "BUS TRANSF" pusbutton allows shed bus PP10 to be supplied when the shedding contactor is open and LH generator operates. R

7 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.
After embodiment of modification AMS 1091 the following power-consumers can be switched off via a switch vith an indicator light :

- MGB fire detector,
- alticoder,
- transponder,
- t4 temperature.

After embodiment of modification AMS 1123 power supply from the battery to busbar PP 21 is achieved via the DIRECT BATT pushbutton which illuminates to indicate system operation.

8.1 Controls

8.1.1 Pushbuttons on the instrument panel :

- EMERGENCY CUT OUT		On panel 9 ALPHA
- BUS SHED - BUS TRANSF.	Pre-mod AMS 1123	
- BUS SHED LH - BUS SHED RH	Post-mod AMS 1123	

R

8.1.2 Pushbuttons on the front panel :

- EXT.PWR BATT. - GEN. RH	On panel 14 ALPHA
- GEN. LH	On panel 15 ALPHA
- CRANK LH ENG.	On panel 5 ALPHA 1
- CRANK RH ENG.	On panel 5 ALPHA 2
- DIRECT BATT Post-mod AMS 1123	On panel 14 ALPHA

8.1.3 Pushbuttons on the fuel flow control levers :

- START LH on LH fuel flow control lever
- START RH on RH fuel flow control lever.

8.2 Monitoring lights

The failure warning panel incorporates the lights required for operation and safety.

- BATT. TEMP.	Red light
- BATT. LH - BATT. RH - GEN. LH - GEN. RH - BATT. FUSE	Amber lights

8.3 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.

9 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 or STBBY BATT pushbutton illuminates.

7.8 - 2 - A.C. POWER SYSTEM R

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 - - - - - - - - -	115 VA under 26 V, 250 VA under 115 V, maximum 250 VA (115 V +26 V)

Each static inverter is provided with an under-voltage detector indicating the loss of one or both a.c. voltages.

2 DESCRIPTION - OPERATION

2.1 Single a.c. system

The static inverter is supplied from bus PP19 through a 16-Amp fuse on panel 8 ALPHA and operated by the "RH INV" pushbutton on panel 14 ALPHA.

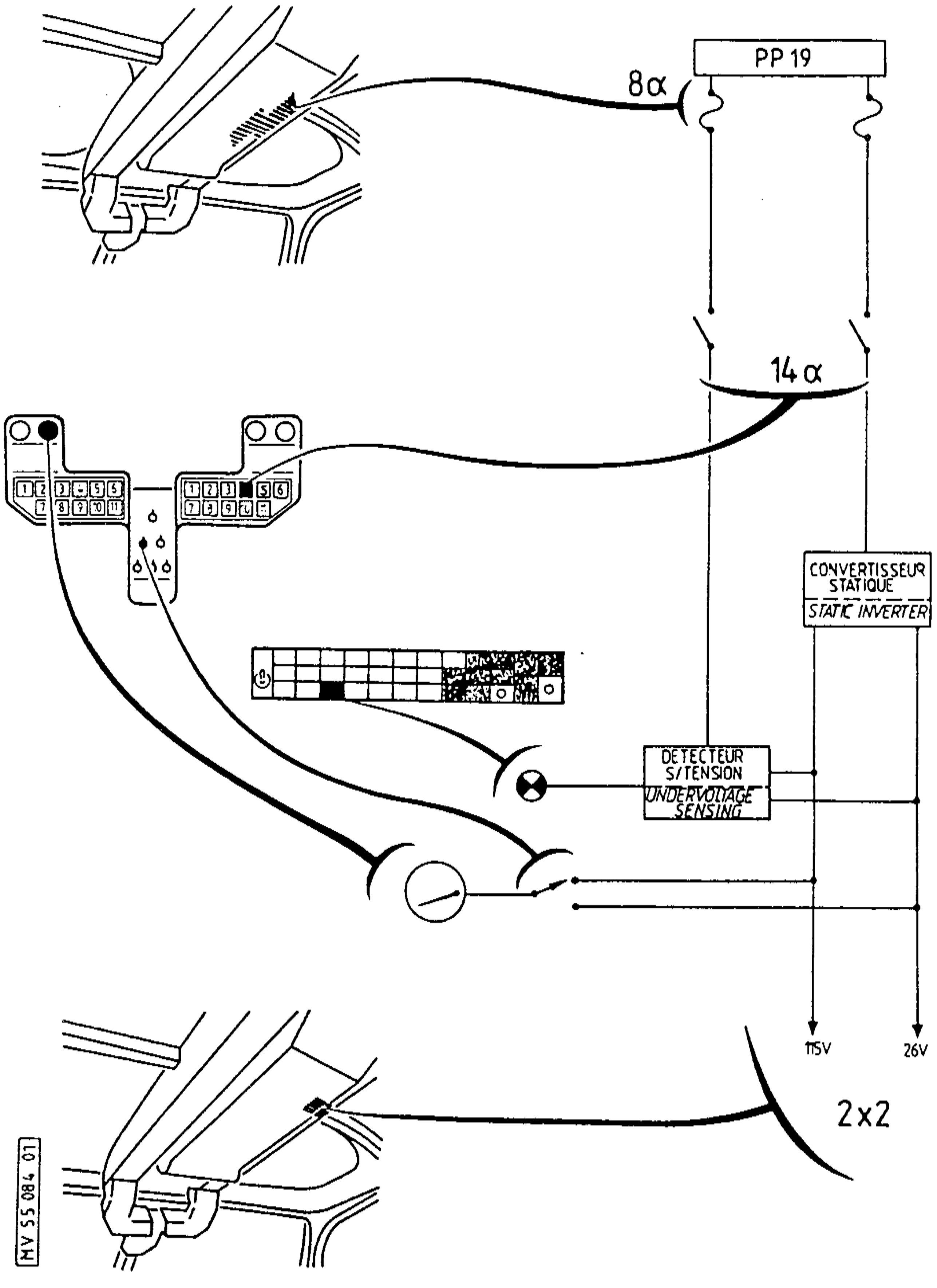
Bus PP19 supplies :

- pre-AMS 916 ; the under-voltage detector through a 2.5-Amp. fuse and "R ALTNR MON" on panel 14 ALPHA
- post-AMS 916 ; 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 light to illuminate.

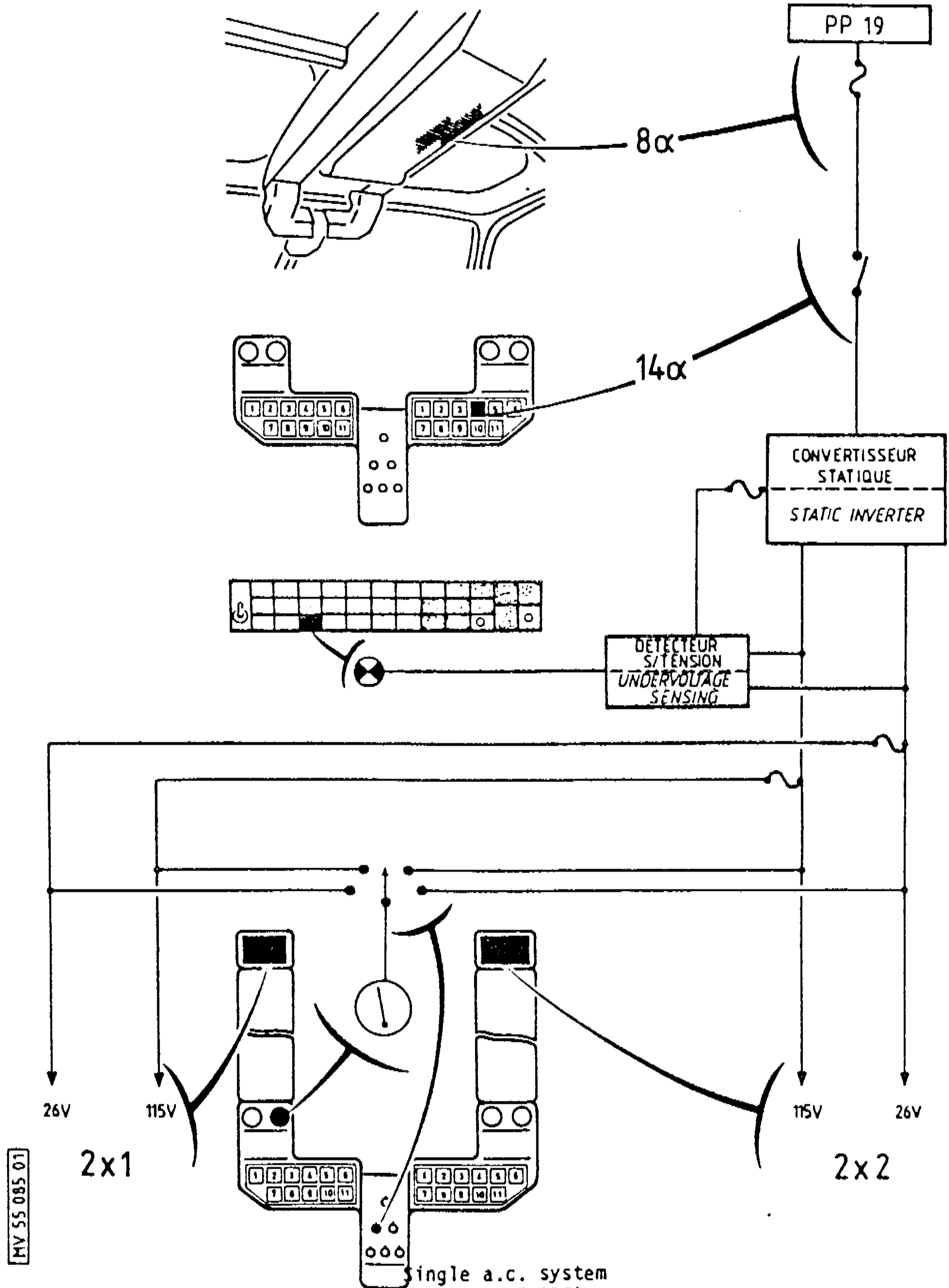
A voltmeter associated with a selector is used to check the various voltages.

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



Single a.c. system
(Pre-AMS 916)

R



Single a.c. system
(Post-AMS 916)

R

2.2 Twin a.c. system

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

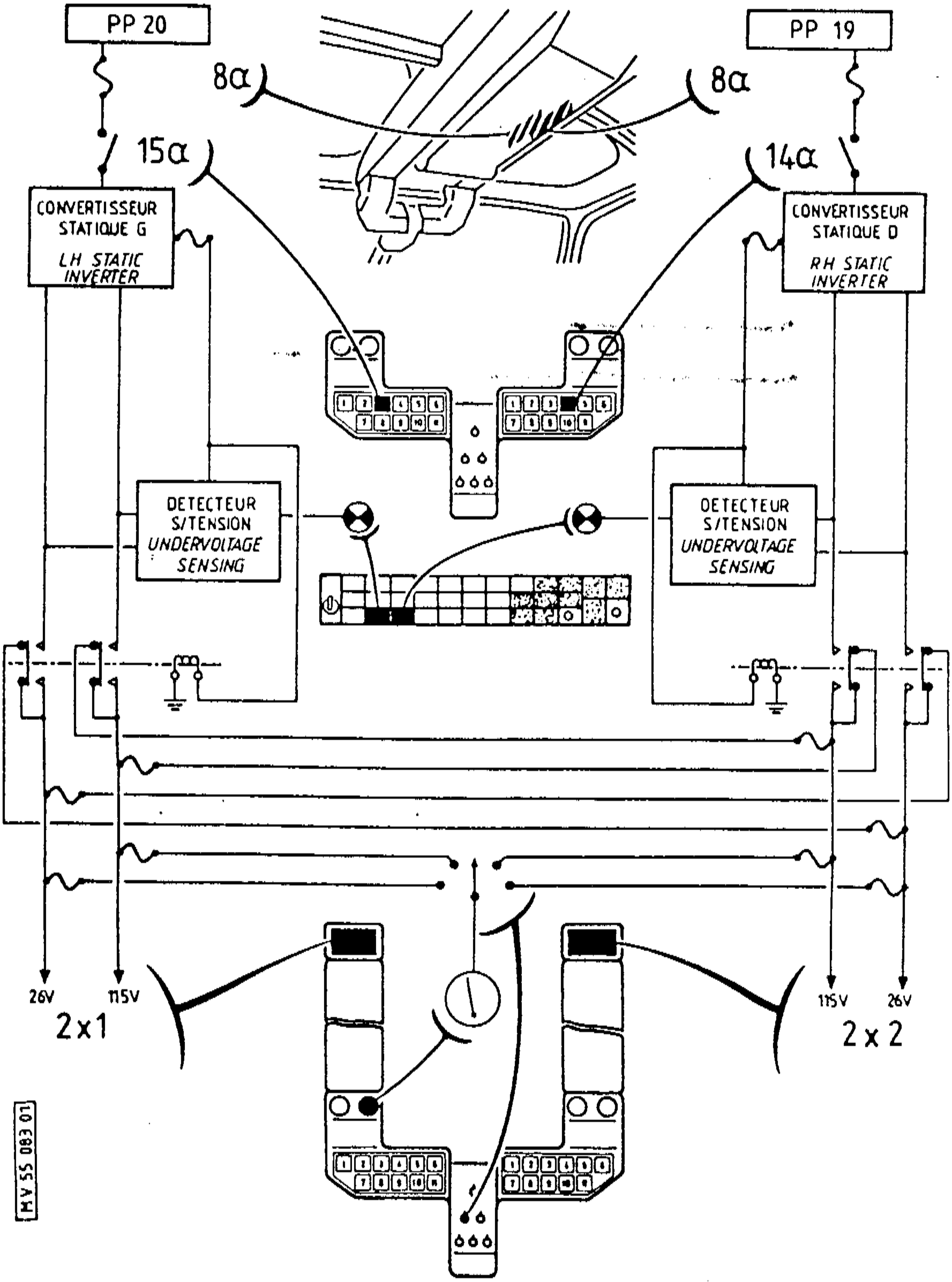
Each inverter is powered from bus PP19 or PP20 through the "RH INV." or "LH INV." 16-Amp. fuse provided on panel 8 ALPHA and the "RH INV." or "LH INV." pushbutton.

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 failure warning 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" pushbutton.



Twin a.c. system

SECTION 7.8

III - ELECTRICAL POWER DISTRIBUTION

1 CONSUMERS SUPPLIED WITH D.C. POWER

1.1 Power supply direct from battery

Bus PP 21 - Panel 16 ALPHA

- Copilot overhead lighting
- ~~MGB fire detection~~
- Transponder - Alticoder
- ~~Aft fuel jettison system~~
- Fire extinguisher 1

- Pilot overhead lighting
- t4 temperature
- * ~~Flares~~
- Direct battery light
- Fire extinguisher 2

1.2 Power supply from LH primary bus

Bus PP 11 - Panel 10 ALPHA

- 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
- LH engine NG
- RH engine NG
- LH engine oil indicator
- RH engine oil indicator
- LH engine fire extinguisher
- Trim
- Pilot windscreen wiper

- Fwd fuel gauge indicator
- Aft fuel gauge indicator
- Landing light control
- Pilot pitot
- Fuel transfer
- AP coupler
- * Emergency release
- Hydraulics
- Failure warning panel 2
  AP - coupler annunciator panel
- LH bus shed
- LH engine fire detection
- RH engine fire detection
- NR warning
- * RMI
- Pilot windscreen wiper control
- Position light
- Direct battery shed lights
- Copilot gyro horizon

Bus PP 19 - Panel 8 ALPHA

- * LH inverter
- * Auxiliary pitot
- * Radar

- VHF 1
- Landing light

* Optional equipment

1.3 <u>Power supply from RH primary bus</u>

Bus PP 12 - Panel 10 ALPHA

- VHF 2	- Fwd fuel gauge indicator
- Radio altimeter	- Aft fuel gauge indicator
- Auto pilot	- Landing light control
- * DME	- Pilot pitot
- * VOR - ILS - MKR	- Fuel transfer
- Normal ICS	- AP coupler
- * ADF 1	- * Emergency release
- Pilot gyro compass	- Hydraulics
- Pilot gyro horizon	- Failure warning panel 1
- LH engine torquemeter	Copilot AP annunciator panel
- RH engine torquemeter	- RH bus shed
- LH engine NG	- LH engine fire detection
- RH engine NG	- RH engine fire detection
- LH engine oil indicator	- NR warning
- RH engine oil indicator	- * RMI
- LH engine fire extinguisher	- Pilot windscreen wiper control
- Trim	- Position light
- Pilot windscreen wiper	- Direct battery shed lights
	- Copilot gyro horizon

Bus PP 20 - Panel 8 ALPHA

- Pilot instrument panel lighting	- * Radar
- * RH inverter	- VHF 1
- * Auxiliary pitot	- Landing light

* Optional equipment

1.4 Power supply from shed bus

Bus PP 13 - Panel 7 ALPHA

- * Copilot gyro compass
- * Copilot NR
- * VOR 1
- Mission selector
- * LH - RH lights transfer
- * Flares
- * Flowmeter
- LH engine free turbine speed
- Copilot AP light
- LH engine auxiliary start
- LH engine crank
- * Hourmeter
- * Copilot windscreen wiper control
- * Strobe lights
- LH engine start
- Passengers lighting
- t4 temperature
- LH engine fuel pressure
- LH engine booster pump
- * Copilot windscreen wiper
- * MGB oil pressure and temperature
- * Swivelling light
- Copilot instrument panel lighting
- Utility socket
- * Search light
- Parking light

Bus PP 14 - Panel 7 ALPHA 2

- Sling load
- Fwd fuel jettison system
- Engine trim
- Anti-collision lights
- Pilot emergency ICS
- Pilot NR
- RH engine free turbine speed
- Checklist
- * Particle separator
- RH engine fuel pressure
- RH engine crank
- RH auxiliary start
- Copilot emergency ICS
- * ADF 2
- RH engine start
- Standby gyro horizon
- RH engine booster pump
- * Cargo sling
- * Storm lighting
- Console lighting
- * HF SSB

* Optional equipment

2 CONSUMERS SUPPLIED WITH A.C. POWER

Bus 1XP 10A - Panel 2X1

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

Bus 1XP 11A - Panel 2X1

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

Bus 2XP 10A - Panel 2X2

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

Bus 2XP 11A - Panel 2X2

- * 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 equipment

7.9 - AIR DATA SYSTEMS

R

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.

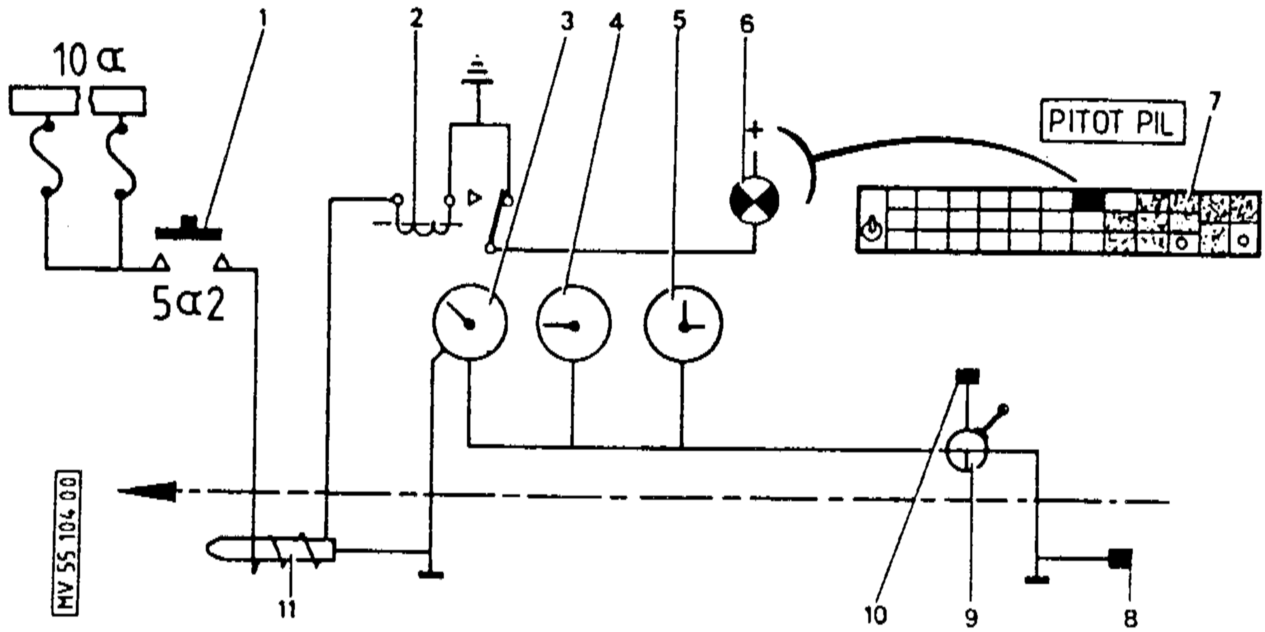
In the event of supply failure, an emergency valve provided on the console allows static pressure from the cabin to be used.

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 failure warning 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 to 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. R

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.

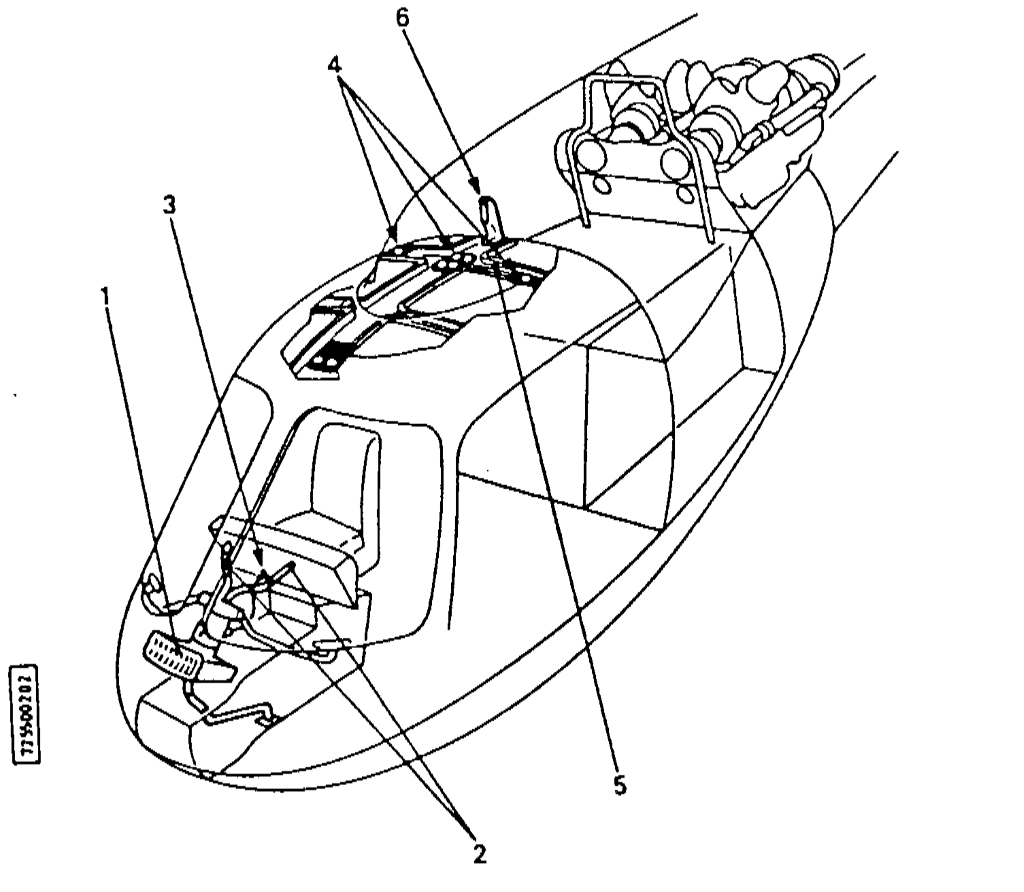
R

7.10 - AIR CONDITIONING R

1 CABIN VENTILATION (Figure 1) R

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.



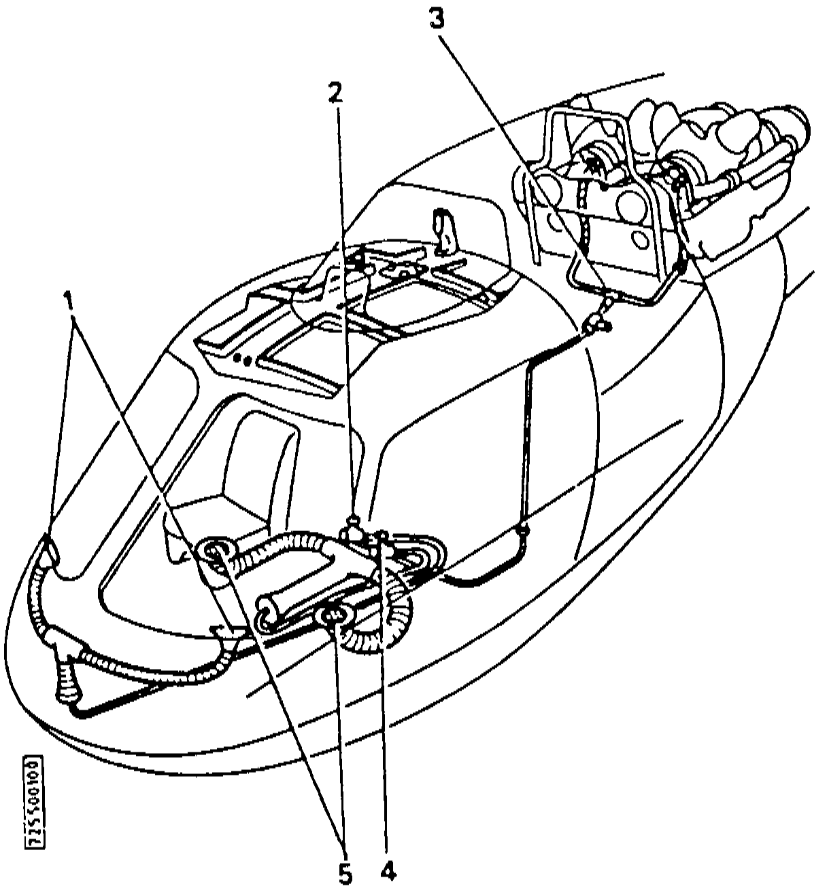
Item	Description	Item	Description
1	FRONT aerator	4	Overhead air outlets
2	FRONT air outlets	5	Ventilation duct
3	Control pull-knob	6	Ram air scoop

Figure 1 R

! HEATING AND DEMISTING SYSTEM (Figure 2) R

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

Figure 2 R

7.11 - LIGHTING R

1 CABIN LIGHTING

The cabin lighting consists of two dome lights provided on the overhead panel, one at front available to the crew and the other at 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 circuit and protected by a fuse mounted panel 7 ALPHA 1.

2 INSTRUMENT PANEL AND CONSOLE LIGHTING (Figure 1) R

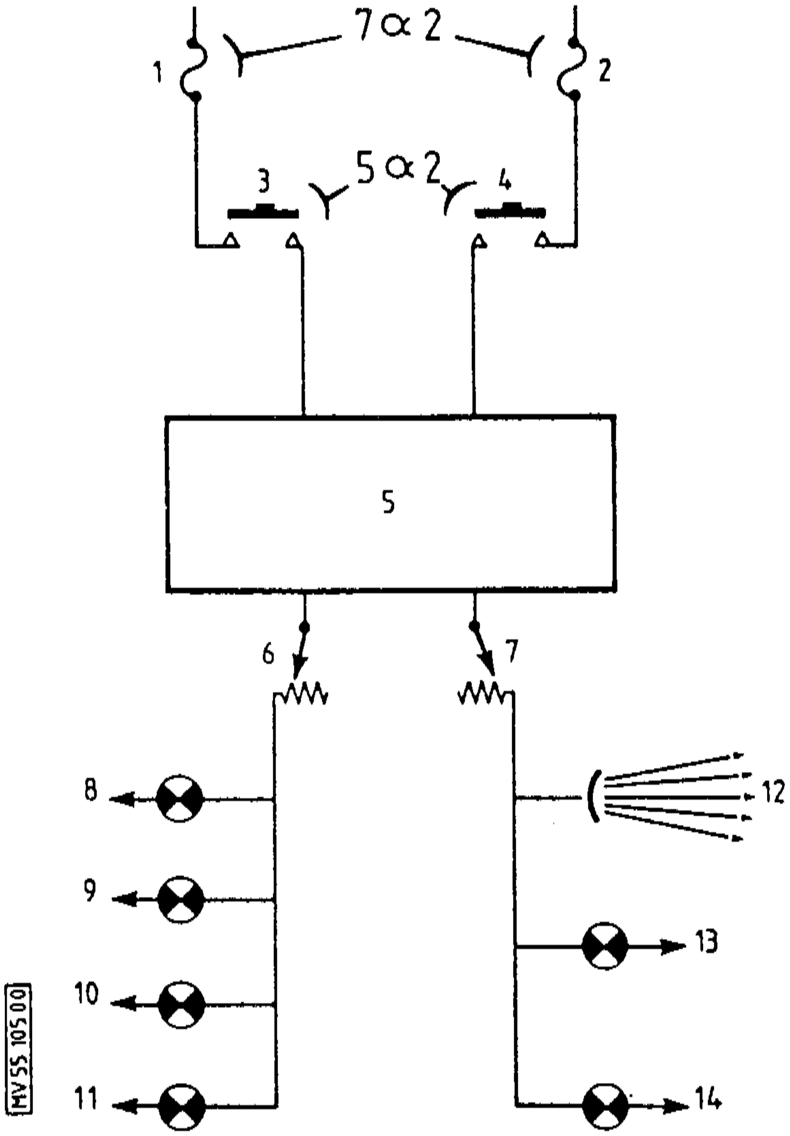
The instruments are lighted by two separate circuits :

- 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" and "INST. PANEL LT." pushbuttons control the lighting system. The "CONSOLE" and "PIL. INST. PANEL" 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	CONSOLE LT fuse	9	Instrument panel pushbutton lighting
2	INST. PANEL LT. fuse	10	Overhead potentiometer lighting
3	CONSOLE LT pushbutton	11	Overhead fuse lighting
4	INST. PANEL LT. pushbutton	12	Light generator
5	Light dimming unit	13	Thermometer lighting
6	CONSOLE potentiometer	14	Stand- by compass lighting
7	PIL. INST. PANEL potentiometer		
8	Console lighting		

Instrument panel and console lighting circuits

Figure 1

R

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 stabiliser
- one white light at rear end of the fuselage.

The circuit is protected by two "POS. LT." fuses provided on overhead panel 10 ALPHA. The installation is controlled by the "POS. LT." pushbutton mounted on overhead panel 14 ALPHA.

4 ANTI-COLLISION LIGHT

The anti-collision 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" fuse provided on overhead panel 7 ALPHA 2. The anti-collision light is controlled by the "ANTI COLL. LT" 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. As an optional provision, this landing light can be controlled and orientated from the switch 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." pushbutton provided on overhead panel 7 ALPHA 1 and is protected by the "TAXI LT." fuse.

SECTION 8

SERVICING

Some sub-sections covering installations or procedures not used on this helicopter may be withdrawn from this manual. However they still appear in the table of contents and in the list of effective pages.

CONTENTS

Revision : 3
Date code : 88-27

LIST OF PAGES CONTAINED IN THE SECTION

This Section at the revision mentioned on first page contains the pages below identified by the following date-codes :

SECTION	PAGE	DATE	SECTION	PAGE	DATE
8.0.P	1 *01*	88-27	8.3	1 *00*	87-05
8.0.P	2 *01*	88-27	8.3	2 *00*	87-05
			8.3	3 *01*	87-05
8.1	1 *00*	87-05	8.3	4 *00*	87-05
8.1	2 *00*	87-05	8.3	5 *01*	87-05
			8.3	6 *00*	87-05
8.2	1 *00*	87-05	8.3	7 *01*	87-05
8.2	2 *00*	82-05	8.3	8 *01*	87-05
8.2	3 *00*	87-05	8.3	9 *01*	87-05
8.2	4 *00*	87-05	8.3	10 *01*	87-05
8.2	5 *00*	88-27	8.3	11 *01*	87-05
			8.3	12 *01*	87-05
			8.3	13 *01*	87-05
			8.3	14 *02*	87-05
			8.3	15 *01*	87-05
			8.3	16 *01*	87-05
			8.3	17 *00*	87-05
			8.3	18 *00*	87-05

NOTE : The date-code consists of the last two digits of the year followed by the week number.

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) R

. 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.

R
R
R

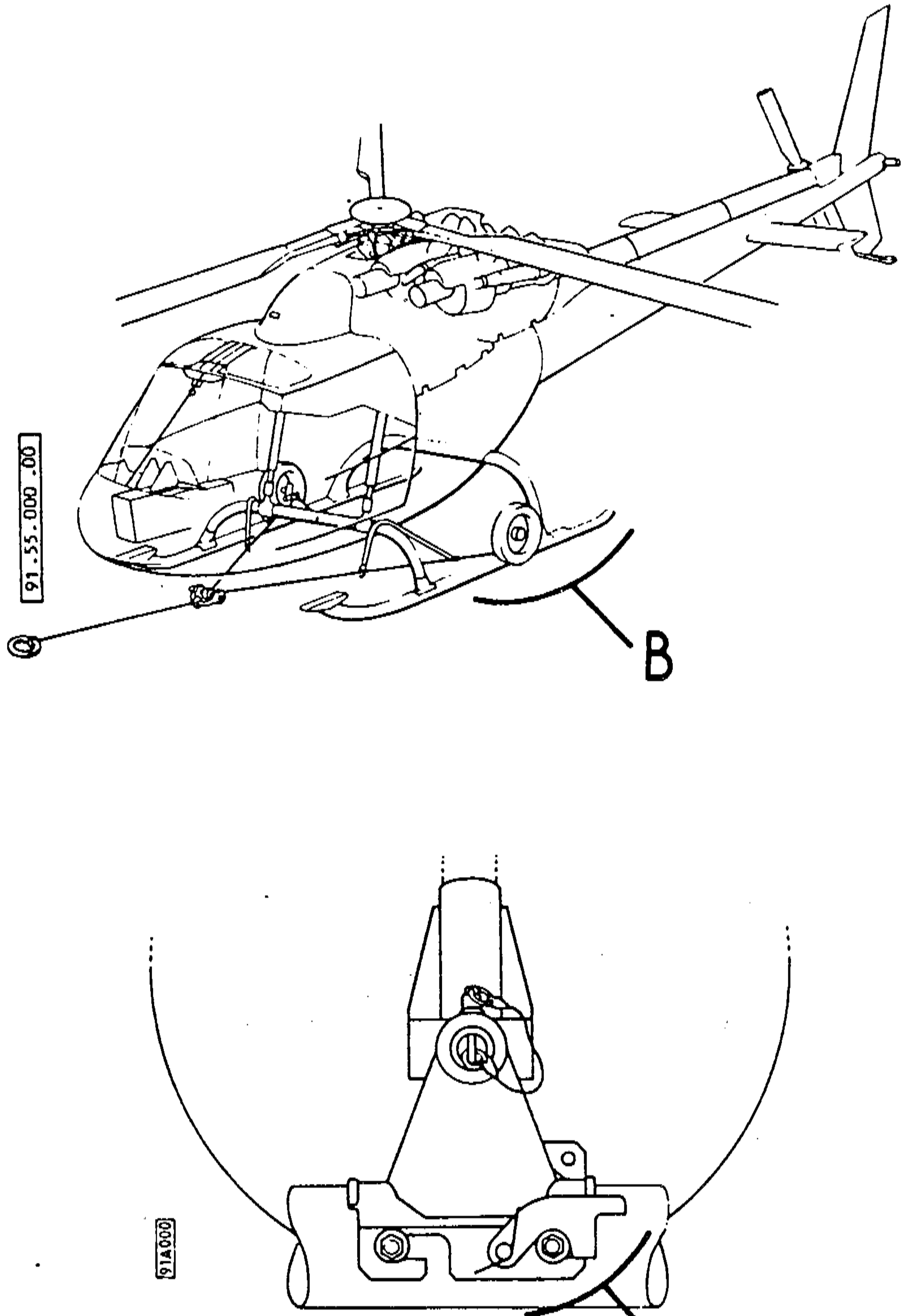


Figure 1

8.2 SERVICING INSTRUCTIONS

1 FUELS

1.1 Normal fuels

TYPE OF FUEL	NATO CODE	SPECIFICATIONS			ANTI-ICING ADDITIVE
		U.S.	U.K.	FRANCE	
WIDE CUT (JP4) (AVTAG)	F45 Code abandoned	MIL-T-5624 (JP4)	D Eng RD 2486	——	NOT INCORPORATED
HIGH FLASH POINT (JP5) (AVCAT)	F44	MIL-T-5624 (JP5)	D Eng RD 2498	——	NOT INCORPORATED IN : D Eng RD 2498 INCORPORATED IN : JP5
KEROSENE	——	ASTM-D-1655 (JET A)	——	——	NOT INCORPORATED
KEROSENE 50 (AVTUR) (JP1)	F35	ASTM-D-1655 (JET A1) or Allison specification EMS-64	D Eng RD 2494	AIR 3405 (F35) (TR 0)	NOT INCORPORATED
WIDE CUT	——	ASTM-D-1655 (JET B)	——	——	NOT INCORPORATED

It is advisable to use JP4 -JET B fuels in OAT below plus 4°C to ensure correct engine starting. R

1.2 Alternative fuel

AVIATION GAZOLINE (AVGAS)	F12	MIL-G-5572 (Gr.80/87)	——	AIR 3401 (80/87)	USE See below.

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

USE OF THE ALTERNATIVE FUEL

Mixing by volume of 1/3 of aviation gazoline MIL-G-5572 grade 80/87 with 2/3 of MIL-T-5624 (JP5) or ASTM-D-1655 (JET A and A1) is authorized.

When changing from one type of fuel to another, it is not necessary to drain the fuel system before replenishing. No modification in the fuel control adjustment is required.

2 FUEL ADDITIVES

2.1 Use of anti-icing additive in the fuel

When the outside air temperature is expected to be lower than +4°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 0.08 and 0.15 % by volume.

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

Commercial designation of oils

TYPE OF OIL	NATO CODE	SPECIFICATION (To be used at the current amendment and dash number)			COMMERCIAL DESIGNATION	VENDOR	
		U.S.	U.K.	FRANCE			
Synthetic oil 3 Cst	0-148	MIL-L-7808	—	—	BP AERO TURBINE OIL T5	BP	
					CASTROL 7808 H OIL	CASTROL	
					ESSO TURBO OIL 2389	ESSO	
					AVREX S TURBO 256	MOBIL	
					TURBONYCOIL 160	NYCO	
Synthetic oil 3 Cst	0-150	—	—	AIR 3514	ELF SYNTHETIC OIL 15	ELF FRANCE	
					TURBONYCOIL 13 B	NYCO	
Synthetic oil 3.9 Cst		—	—	—	AEROSHELL TURBINE OIL 390	SHELL	
Synthetic oil 5 Cst	0-156	MIL-L-23699	—	—	CASTROL 5000	CASTROL	
					JET SYNTHETIC OIL 25	ELF FRANCE	
					CHEVRON JET ENGINE OIL 5	ELF FRANCE	
					ESSO TURBO OIL 2380	ESSO	
					MOBIL JET OIL II	MOBIL	
					TURBONICOIL 525 2A	NYCO	
					AEROSHELL TURBINE OIL 500	SHELL	
Synthetic oil 5 Cst	0-160		D Eng RD 2497		AEROSHELL TURBINE OIL 555	SHELL	R R
					EXXON TURBINE OIL 25	EXXON	R R
Mineral oil	0-155	MIL-L-6086	DTD. 581	AIR 3525	CASTROL 581C	CASTROL	
					CASTROL 6086 B Grade M	CASTROL	
					AVIATION GEAR OIL MEDIUM	ESSO	
					NYCOLUBE 3525	NYCO	

NOTE : Commercial designation of oils authorized for engines is specified in ALLISON 250.C20 document.

4 HYDRAULIC FLUIDS

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

5 REFUELING (Figure 1) R

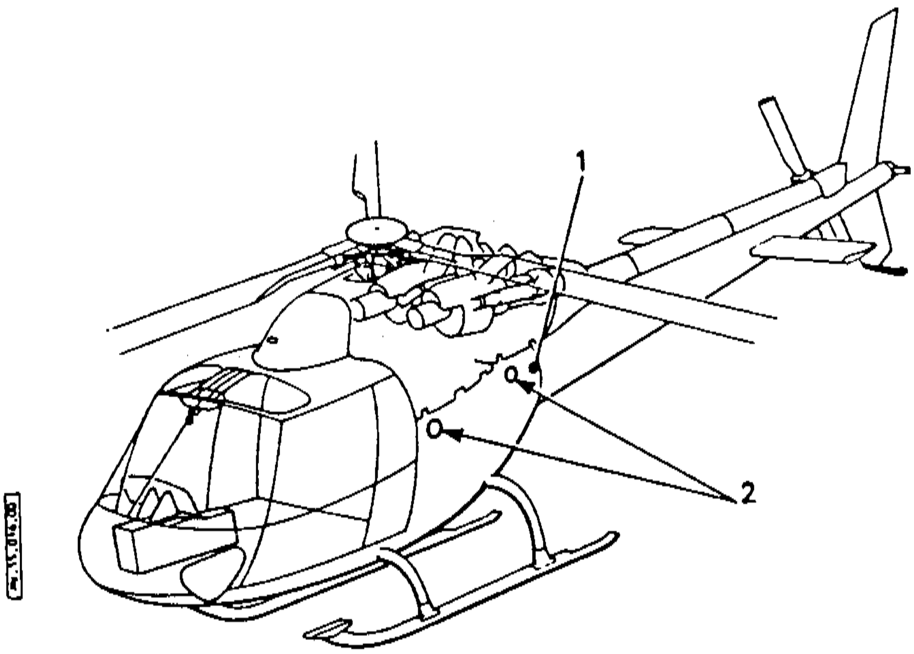


Figure 1 R

- 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 ± 45° if wind above 10 kt.
- Lock the collective pitch lever in full low pitch position. R
- Check main rotor is at nominal speed with fuel flow control levers in flight detents.
- 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.

6 DAILY CHECKS

The daily checks must be conducted by qualified personnel, for instance a properly instructed pilot, in accordance with standard aircraft practices and the appropriate manufacturer's recommendations. Information concerning the daily check, prescribed in the Master Servicing Recommendations, is detailed in the Maintenance Manual.

In order to perform the checks, have the required documents available.

8.3 TEST SCHEDULE

R

GENERAL

The following information is intended to sum up the checks to be carried out in flight or on the ground with the rotors turning, further to periodic inspections or after a major operation or replacement of major components.

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

To avoid any risk of discrepancy, the values already given are marked with an asterisk (*) and are not repeated on the various sheets.

CAUTION : SINCE THESE TESTS DO NOT FORM PART OF NORMAL HELICOPTER OPERATION, THEY SHALL BE CARRIED OUT ONLY BY QUALIFIED PERSONNEL UNDER THE OPERATOR'S RESPONSIBILITY.

<table>
<tr><td>SHEET
0</td><td colspan="3">HELICOPTER :</td></tr>
<tr><td colspan="4">FLIGHT REPORT</td></tr>
<tr><td colspan="2">DATE :
CREW :
FIELD :</td><td>Time of start :
Duration :
Number of landings :
Max. altitude :</td><td>WEATHER DATA
Q.F.E. :
Q.M.U. :
Q.A.N.) Direction :
) Speed :</td></tr>
<tr><td colspan="3">Empty weight :
Crew :
Ballast :
Fuel :
TOTAL WEIGHT :</td><td>Partial fuel load :
- fwd.
- rear
- total</td></tr>
<tr><td colspan="4">C.G. LOCATION :</td></tr>
<tr><td colspan="2">MAJOR WORK CARRIED OUT BEFORE FLIGHT</td><td colspan="2">REMARKS REPORTED BY THE CREW AFTER FLIGHT</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="4">UNITS USED
(Cross out as appropriate)</td></tr>
<tr><td>WEIGHT: kg - lb</td><td colspan="2">FUEL : l - kg - lb - %</td><td>ALTITUDE : m - ft
AIRSPEED: km/h - kt -MPH</td></tr>
<tr><td colspan="2">SPECIAL EQUIPMENT :</td><td colspan="2">WRITER'S SIGNATURE</td></tr>
</table>

SHEET 1	HELICOPTER	TEST ON GROUND

STARTING OF 1st ENGINE

TEST CONDITIONS :	
Carry out a cold starting, in compliance with the procedure given in the Flight Manual.	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE
	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED
- Minimum battery voltage	V #) 25 Volts	!V =
- Switch on booster pump Fuel pressure	Correct operation	Yes No P =
- Press starter push-button ; start stop-watch , check battery voltage	Minimum 18 V	V =
- At Ng = 15 %, push the fuel flow lever forwards into the "start" gate. Check : . Max. t4 on starting . Eng.oil press. (which may reach 10.3 bars/150 p.s.i. when starting engine in cold weather)	 * *	 t4 = P =
- Release starter push-button at Ng = 60 %	Continuous acceleration With increasing Ng (No Ng stagnation)	Yes No
- Push the fuel flow lever into the "flight" gate and check that : HYD and MGB.P lights go out.	)) 200 r.p.m. approx.	r.p.m. = r.p.m. =
- Check engine oil pressure	Between 6.2 and 9 bars(90 - 130 p.s.i.)	P =
- Check HORN light blinks	Between 250 and 360 rpm	Yes No
- Check aural warning system	Audible at NR #- 360 r.p.m.	r.p.m. =
- Switch on generator	Light goes out	Yes No
- Warning lights	All off.	Yes No

R
R
R

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

SHEET 2	HELICOPTER	TEST ON GROUND

STARTING OF 2nd ENGINE

TEST CONDITIONS : Carry out a cold starting, in compliance with the procedure given in the Flight Manual.	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE
	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED
- Switch on booster pump. Fuel pressure.	Correct operation	Yes No P =
- Press starter push-button ; start stop-watch. - At Ng = 15 %, push the fuel flow lever into the "start" gate. Check : . Max. t4 on starting . Eng.oil press. (which may reach 10.3 bars/150 p.s.i. when starting the engine in cold weather). - Release starter bush-button at NG = 60 %. - Push the fuel flow lever into the "flight" gate. - Check engine oil pressure - Switch on generator - Warning lights	 * * Continuous acceleration With increasing Ng (No Ng stagnation) Between 6.2 and 9 bars(90 - 130 p.s.i.) Light goes out All off.	 t4 = P = Yes No P = Yes No Yes No

R
R
R

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

SHEET 3	HELICOPTER	TEST ON GROUND

GROUND CHECKS

TEST CONDITIONS :	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE
Flight idle.	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED Eng. 1	Eng.2
- Align the two engines by means : of the trim device	t4 * Ng Torque NR * Fuel pressure * Engine oil press.* Engine oil temp.* Nf NR	t4 = Ng = Torque %= NR = Fuel P.= Oil P.= Oil T.= Nf = NR =	
- Engine trim rocker switch : check max. deflection for both engines.	- Record parameters - Symmetrical travels	t4 = Ng = Torque %= NR =	
- Test tail servo shut-off device	Symmetrical efforts	Yes No	

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

SHEET 4	HELICOPTER	TEST ON GROUND
GROUND CHECKS		

TEST CONDITIONS :	
Flight idle.	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE
	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED	
Test of electrical power systems PRE AMS 1123			
- Press master cut-out push-button	NR and t4 remain constant	Yes	No
- Release "EXT.PWR.BATT." push-button	LH and RH battery lights come on.	Yes	No
Check voltage of generators	Voltage approx. 30 Volts	V1 =	V2 =
- Release "GEN.LH", then "GEN.RH" push-buttons	"GEN.LH", then "GEN.RH" lights come on.	Yes	No
- Release "GEN.RH" push-button	Load shed bus is isolated	Yes	No
- Press "BUS SHED" push-button			
- Press "BUS TRANSF" push-button	Load shed bus is applied from the LH generator NOTE : The bus transfer system operates only when the bus bar is isolated from the RH system.	Yes	No

R

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

SHEET 4/bis	HELICOPTER	TEST ON GROUND

GROUND CHECKS

TEST CONDITIONS :	
- Flight idle	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE
	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED
Tests of electrical power systems POST AMS 1123		
- Press all consumers - Release . RH EXT PWR BATT (PARC BATT D) . GEN RH (GEN D) . RH BUS SHED (DELEST BUS D)	All DC consumers are supplied with power	Yes No
- Release . LH BUS SHED (DELEST BUS G) . LH EXT PWR BATT (PARC BATT G)	RH inverter inoperative	Yes No
- Press : . GEN RH (GENE RH) . GEN RESET (REARM GENE)	Voltage is 30 volts approx.	
- Release GEN LH (GENE G)	Nf1 and Nf2 lost All DC consumers are supplied with power LH inverter inoperative	Yes No
- Press GEN LH (GENE G) . GEN RESET (REARM GENE) . RH BUS SHED (DELEST BUS D)	Voltage is 30 volts approx.	Yes No

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

SHEET 4/ter	HELICOPTER	TEST ON GROUND

HOVER I.G.E. at 6 ft (2 m)

TEST CONDITIONS :	
- Flight idle	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE
	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED	
Test of electrical power systems POST AMS 1123			
- Press : . RH EXT PWR BATT (PARC BATT D) . LH EXT PWR BATT (PARC BATT G) . LH BUS SHED (DELEST BUS G)	All electrical system lights OFF	Yes	No
- Release DIRECT BATT	t4 still read	Yes	No
- Release LH and RH BUS SHED (DELEST BUS G and D)	t4 lost Standby horizon ON	Yes	No
- Press LH and RH BUS SHED (DELEST BUS G and D)	t4 operates		
- Press EMERGENCY CUT OUT (COUPE TOUT)	NR, t4 operate Standby horizon light ON and direct battery light ON	Yes	No
- Equipment general monitoring			

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

SHEET 5	HELICOPTER	TEST ON GROUND

GROUND CHECKS

TEST CONDITIONS :	
- Flight idle - From ground to hover I.G.E.	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE
	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED	
Ground resonance :		Hard ground	Grassy ground
- Check for spontaneous resonance at :			
. full low pitch	No ground resonance	Yes No	Yes No
. a torque of 30 % x 2	No ground resonance	Yes No	Yes No
- Check for ground resonance, inciting it with cyclic stick at :			
. full low pitch	No ground resonance	Yes No	Yes No
. a torque of 30 % x 2	No ground resonance	Yes No	Yes No
Engine governing system :			
Climb from ground, at full low pitch, to hover I.G.E. within 2 seconds approx.	- Absence of surging - Both engines accelerate simultaneously.	Yes	No

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

R

SHEET 6	HELICOPTER	TEST IN FLIGHT

HOVER I.G.E. at 6 ft (2 m)

TEST CONDITIONS :	
- Head wind of less than 5 knots - Stabilized hover - Cut off P2 pressure pick-off - Align the two engines with the trim device	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE O.A.T. Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED Eng. 1	Eng.2
- Parameters :			
Ng	*	Ng =	
t4	max. *	t4 =	
Torque	*	Torque=	
Fuel pressure	*	Fuel P=	
Engine oil press.	*	Oil P=	
Engine oil temp.	*	Oil T=	
Nf	*	Nf =	
NR	*	NR =	
- Performance data :			
Maximum weight on take-off	See "Performance" section	Yes	No
NOTE : If the wind speed is above 5 knots, it is illusive to try and check the performance data.			

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

R

SHEET 7	HELICOPTER	TEST IN FLIGHT

HOVER O.G.E. - Vertical climb

TEST CONDITIONS :	
- Stabilized hover.	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE
	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED Eng. 1	Eng.2
- Hover O.G.E. : Align the two engines with the trim device - Record parameters : Ng t4 Torque Fuel press. Eng. oil press. Eng. oil temp. Nf NR	* max. * * * * * * *	Ng = t4 = Torque= Fuel P.= Oil P.= Oil T.= Nf = NR =	
- Vertical climb at max. takeoff power Check clearance with RH pedal forwards	RH turn possible	Yes	No

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

R

SHEET 8	HELICOPTER	TEST IN FLIGHT
LEVEL FLIGHT AT VNE AND MAX. CONTINUOUS POWER		

TEST CONDITIONS :	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE
Stabilized level flight with 2 engines operative	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED Eng.1	Eng.2
Level flight at max. continuous power			
- Record parameters :			
Ng	*	Ng =	
t4	max. *	t4 =	
Torque	*	Torque=	
Fuel press.	*	Fuel P.=	
Eng. oil press.	*	Oil P.=	
Eng. oil temp.	*	Oil T.=	
Nf	*	Nf =	
NR	*	NR =	
- Switch off booster pumps	t4 and Ng stable	Yes	No
- Overall vibratory level	See Note and Sheet 2		
VNE			
- Overall vibratory level	See Note and Sheet 2		

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.
NOTE : The vibratory level is estimated by the pilot. In case of excessive vibratory level the measures to be taken are given in the Flight Manual.

R

SHEET 9	HELICOPTER	TEST IN FLIGHT

SERVO-CONTROLS, ENGINE GOVERNING, ENGINE MONITORING

TEST CONDITIONS :	
	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE R
	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	ESULTS OBTAINED	
TEST OF SERVO-CONTROLS Airspeed : 70 kt - 130 km/h - 81 MPH - Single hydraulic generation version			
. Test hyd. accumulators	After 20 seconds, no effort is felt, except on the pedals.	Yes	No
. Test hyd. shut-off system	Normal efforts on collective and cyclic pitch controls	Yes	No
- Twin hydraulic generation version : . Test tail servo cut-off system	Normal effort on pedals	Yes	No
ENGINE GOVERNING Airspeed : 55 kt - 102 km/h - 63 MPH			
- Decrease coll. pitch from max.continuous power to low pitch position	No engine flame-out (Watch max. NR)	Yes	No
- Increase coll. pitch in 2 or 3 sec. from re-synchronization (NR close to 395 r.p.m.) to max. continuous power.	No surging	Yes Min. NR Max. t4	No
NOTE : If the test is performed at low altitude, monitor torque limitations. R R R			
ENGINE MONITORING Refer to "Normal Procedures" section.			
REMARKS : Values marked with an asterisk * are to be found in the Flight Manual.			

SHEET 10	HELICOPTER	TEST IN FLIGHT

R.P.M. IN AUTOROTATION - FUEL CROSSFEED SYSTEM

TEST CONDITIONS :	
Hp less than 5000 ft - 1500 m IAS = 65 knots - 120 km/h - 75 MPH	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE R O.A.T. Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED
CHECK OF LOW PITCH STOP - Ensure that : . coll. lever is at full low pitch . NR #+ Nf If NR is not greater than Nf, climb to a higher altitude and repeat the test.	- Check that de-synchronization occurs - NR less than 425 r.p.m. - Theoretical NR : see sheet 1.	Yes No NR = Alt. = Temp.= Weight=
- Record : Temperature, altitude, NR, aircraft all-up weight.	- Max. Nf = 425 r.p.m.	Nf 1 = Nf 2 =
CHECK CLEARANCE AT VNE IN AUTOROTATION	- Heading constant	Yes No
CHECK OF FUEL CROSSFEED SYSTEM Check that transfer is effective with different fuel levels in tanks	- At opening, note - At closing, note	Quantity in fwd. tank : Quantity in rear tank : R Difference : R Quantity in fwd. tank : R Quantity in rear tank : Difference :

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

SHEET 11	HELICOPTER	TEST IN FLIGHT

OPTIONAL EQUIPMENT ITEMS

TEST CONDITIONS :	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE
	O.A.T.
	Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED	
Test of equipment items			
Radio communication	Correct operation	Yes	No
Radio navigation	Interference	Yes	No
Flight instruments	Accuracy, vibration	Yes	No
Heating	Efficiency	Yes	No
Demisting	Efficiency	Yes	No
Test of optional items	Correct operation	Yes	No
Depending on customer's selection.			

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

R

SHEET 12	HELICOPTER	TEST IN FLIGHT

SHUTDOWN

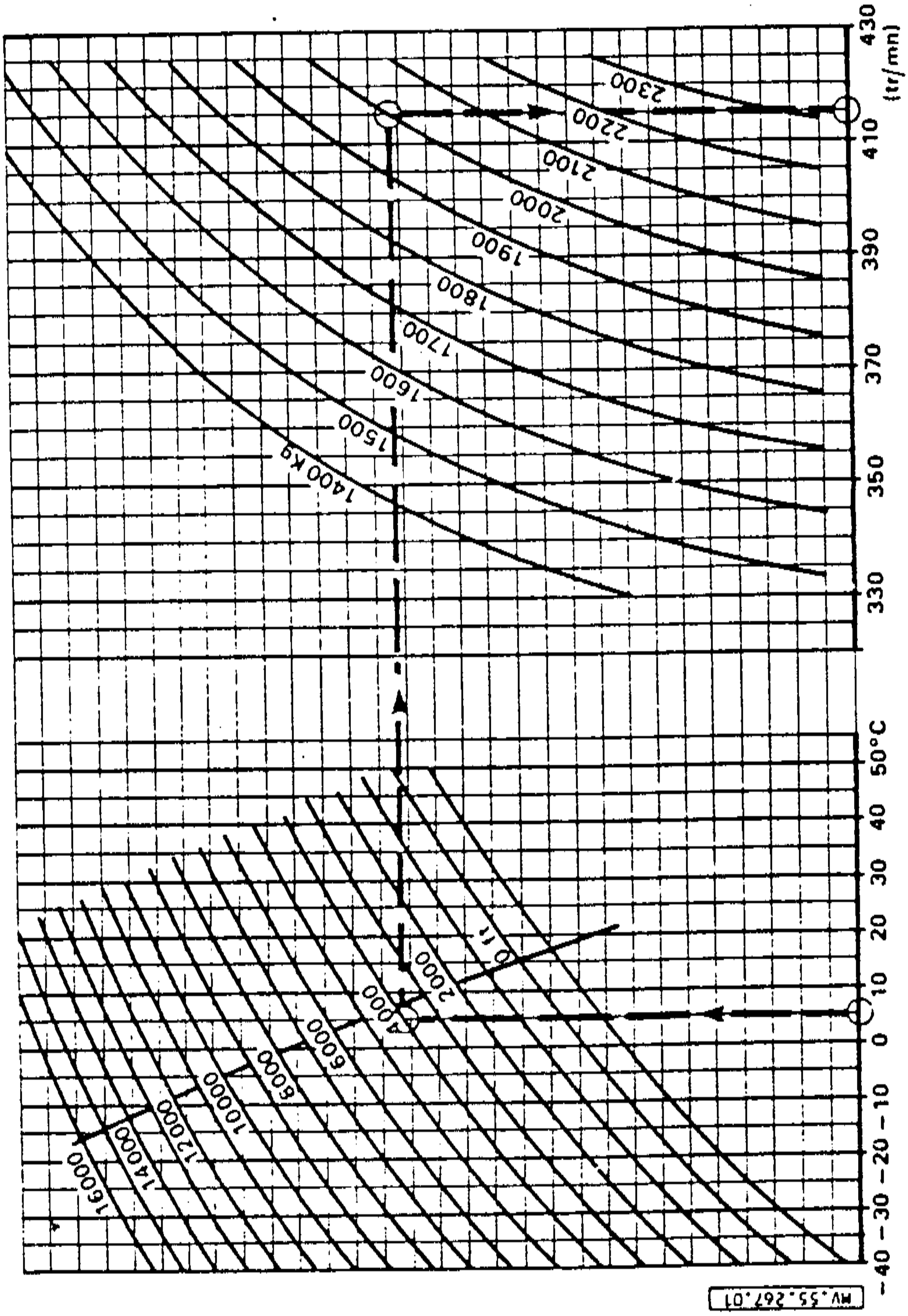
TEST CONDITIONS : After landing, shut down rotors and engines.	ATMOSPHERIC PRESSURE OR PRESSURE ALTITUDE O.A.T. Fuel quantity Fwd : Rear : TOTAL :

TESTS TO BE CARRIED OUT OR PARAMETERS TO BE RECORDED	RESULTS TO BE OBTAINED	RESULTS OBTAINED Eng.1	RESULTS OBTAINED Eng.2	
Full low pitch at ground idle During 2 mn Record parameters : Ng t4 Eng. oil press. Eng. oil temp.	 * * * *	 Ng = t4 = Eng.oil pres Eng.oil temp		
Engine shut-down Test the fuel shut-off cock system NOTE : One or more engine oscillations may occur and initiate engine surge Rotor brake	time approx. : . 15 sec. for the 1st engine . 10 sec. for the 2nd engine time not exceeding 25 s	Yes Yes time =	No No	R R R R R R

REMARKS :
Values marked with an asterisk * are to be found in the Flight Manual.

FIGURE 1	HELICOPTER	TEST

ROTOR RPM VARIATION IN AUTOROTATION
Coll. lever at full low pitch - Airspeed : 65 kt - 75 MPH - 120 km/h



R

FIGURE 2	HELICOPTER	TEST

VIBRATORY LEVEL

The following scale, worded in the pilot's language, is to be used whenever it is necessary to give an opinion about an aircraft (COOPER scale).

	Pilot's opinion	Scale No	Description	Main Mission Accomplished	Can be attained
Normal operation	Satis-factory	1	Excellent, optimum included	YES	YES
		2	Good, pleasant to fly	YES	YES
		3	Satisfactory but with slightly unpleasant characteristics	YES	YES
Emergency operation	Satis-factory	4	Acceptable but with unpleasant characteristics	YES	YES
		5	Unacceptable for normal operation	DOUBTFUL	YES
		6	Acceptable for emergency conditions only	DOUBTFUL	YES
Not usable	Unac-ceptable	7	Unacceptable, even for emergency conditions	NO	DOUBTFUL
		8	Unacceptable, dangerous	NO	NO
		9	Unacceptable, uncontrollable	NO	NO

R

SECTION 9

OPERATIONAL DATA

Some sub-sections covering installations or procedures not used on this helicopter may be withdrawn from this manual. However they still appear in the table of contents and in the list of effective pages. R R R R

CONTENTS

Revision : 5
Date code : 87-05

LIST OF PAGES CONTAINED IN THE SECTION

This Section at the revision mentioned on first page contains the pages below identified by the following date-codes :

SECTION	PAGE	DATE	SECTION	PAGE	DATE
9.0.P	1 *00*	87-05	9.4	1 *00*	87-05
9.0.P	2 *00*	87-05	9.4	2 *00*	87-05
			9.4	3 *00*	81-47
9.1	1 *00*	87-05	9.5	1 *00*	87-05
9.1	2 *00*	81-16	9.5	2 *00*	87-05
9.1	3 *00*	81-16			
			9.6	1 *00*	87-05
9.2	1 *00*	81-16	9.6	2 *00*	87-05
9.2	2 *00*	81-16			
			9.7	1 *00*	87-05
9.3	1 *00*	81-47	9.7	2 *00*	85-11
9.3	2 *00*	81-47	9.7	3 *00*	87-05
			9.7	4 *00*	85-11
			9.7	5 *00*	85-11

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

9.1 - GUIDANCE FOR CARGO SLING OPERATIONS R

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).

R

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.

<u>Never fly away with an empty net or an unballasted sling</u>.

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 MANU-OFF-AUTO switch on the transmitter front panel, or by means of a "M-ARM" (MANU-AUTO) remote control switch.

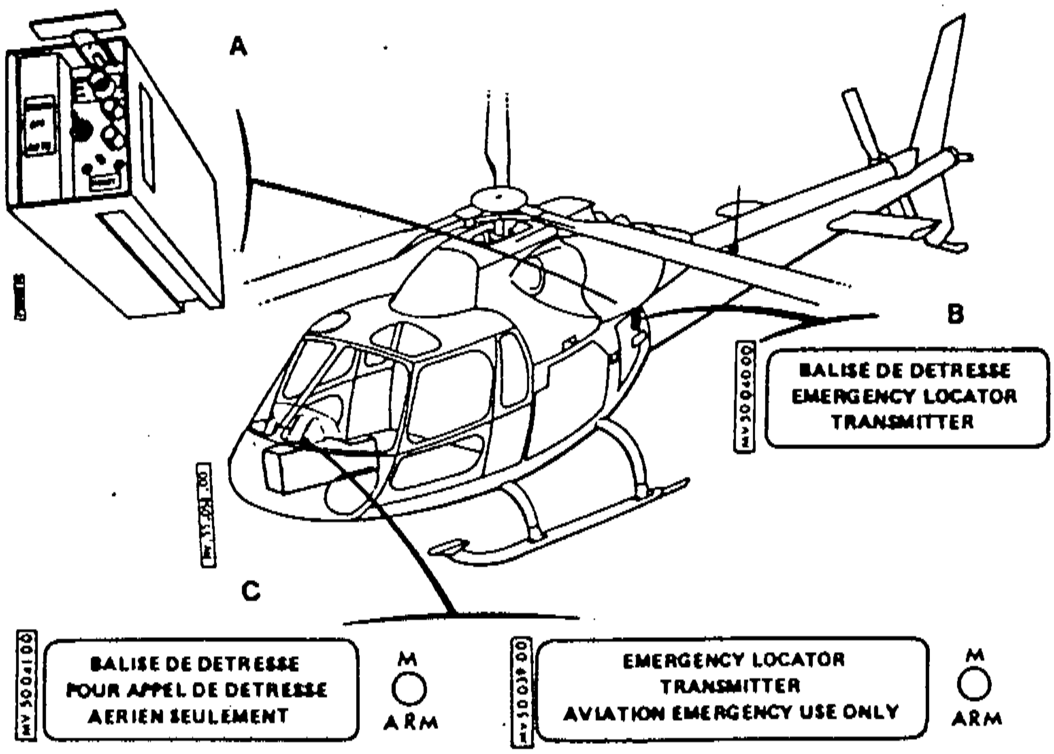
2 COMPONENTS - LOCATION

2.1 Composition

- A transmitter, located in the cargo compartment (Detail A)
- An external identification label (Detail B)
- A control switch, located in the R.H. side of the control pedestal (Detail C)
- An antenna, located on the tail boom

2.2 Location

The ELT is mounted in the rear baggage compartment, secured to structure and identified by an external plate.



3 CHECKS

CAUTION : TESTING IS AUTHORIZED ONLY DURING THE FIRST FIVE MINUTES OF EACH HOUR FOR NO MORE THAN THREE CONSECUTIVE AUDIO SIGNALS.

3.1 Pre-flight inspection

On the instrument panel :

- Check that remote control switch is set to "ARM" (AUTO)

ON transmitter, check that :

- MANU-OFF-AUTO is set to AUTO and
- RESET pushbutton is in.

3.2 Pre-flight checks

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

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 of at least 5 g, assuming the switch is set to "ARM" (AUTO).

NOTE : 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.

4.2 Manual operation

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

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 MANU-OFF-AUTO switch to MANU.

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

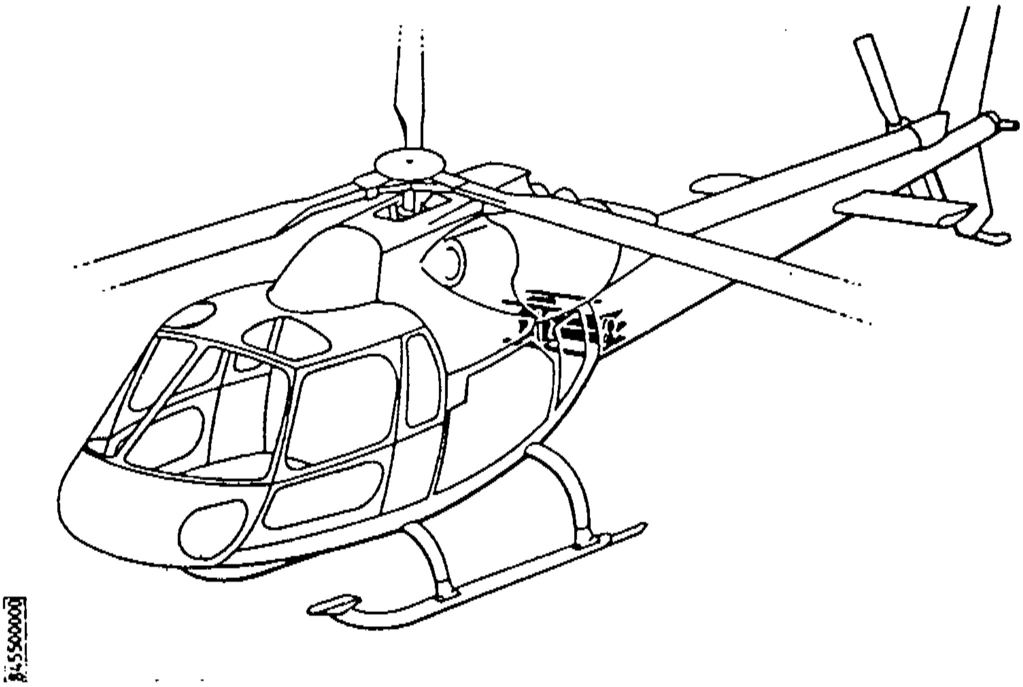


Figure 1 - Arrangement of flares installation

2 CONTROLS AVAILABLE TO THE PILOT

A FLARES ARM (ARM^T FUSEES) push-button on panel 5 ALPHA 2 made the electrical power available to the flares system.
The flares are fired from a push-button (item 1, figure 2) 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.

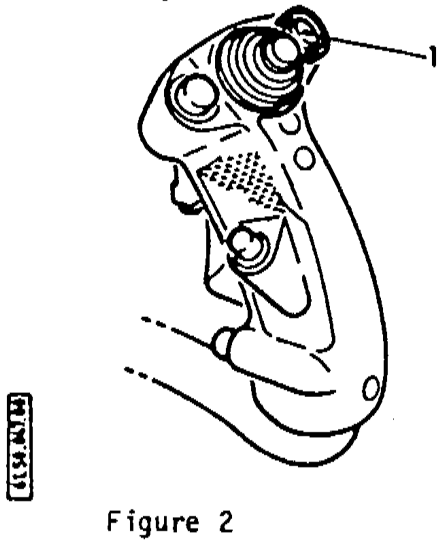


Figure 2

3 OPERATING INSTRUCTIONS

The maximum altitude for firingf 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

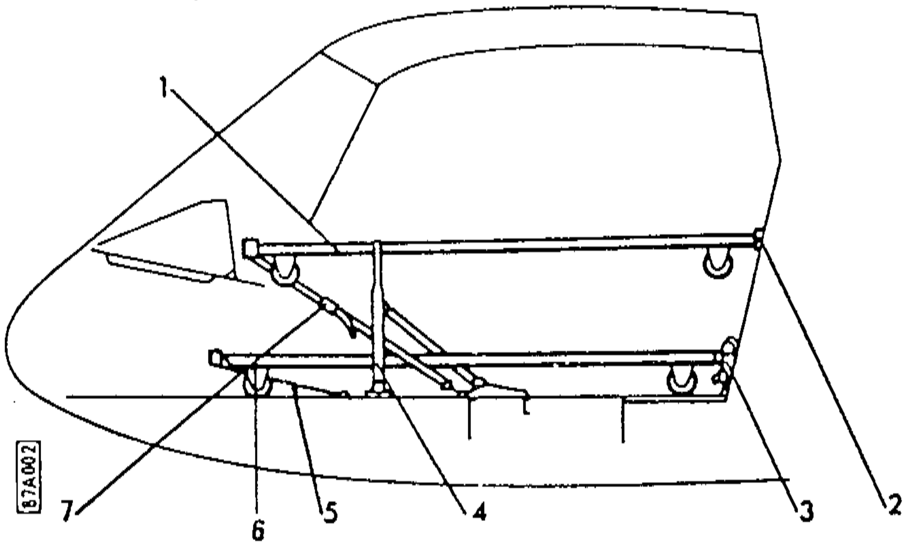
1 GENERAL

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) R

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.



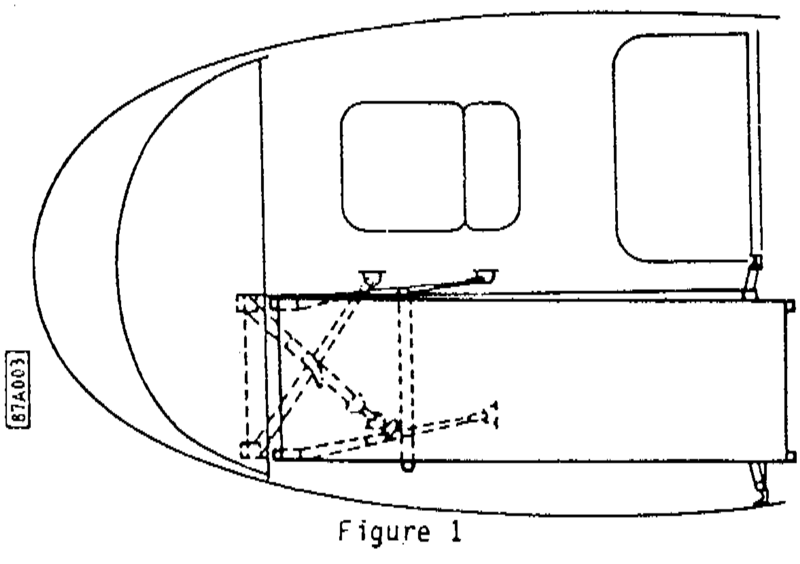


Figure 1

3 UTILIZATION (Figure 1) R

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 R

1 GENERAL (Figure 1) R

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 caption illuminates on the failure warning panel to indicate that the landing light(s) is (are) switched on.

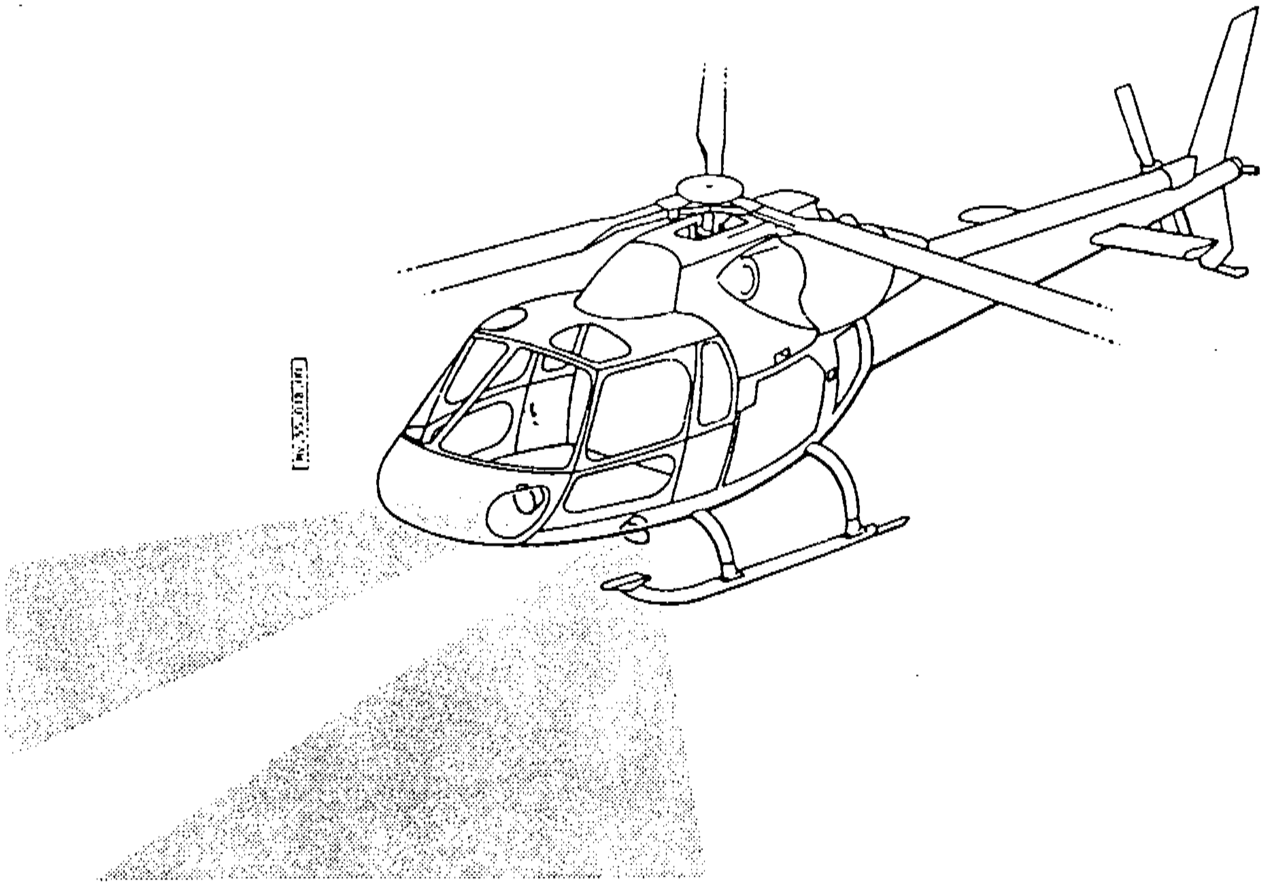


Figure 1 R

2 CONTROLS (Figure 2) R

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. Illumination is controlled through switch (1) and orientation through 4-way button (2).

When both landing lights are installed

- With "LTS TRANSF LH - RH" push button located on 5 ALPHA 2 panel depressed, the pilot controls the LH light and the copilot controls the RH light. R
- The automatic retraction of landing lights is controlled from switches (1) in spring loaded position.

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" push-button.

3 CIRCUIT PROTECTION (Figure 2) R

Circuits are protected as follows :

- RH landing light circuit
  - . 2 fuses on 8 ALPHA panel (3) R
  - . 2 fuses on 10 ALPHA panel (7) R
- LH landing light circuit
  - . 2 fuses on 7 ALPHA 1 panel (6). R

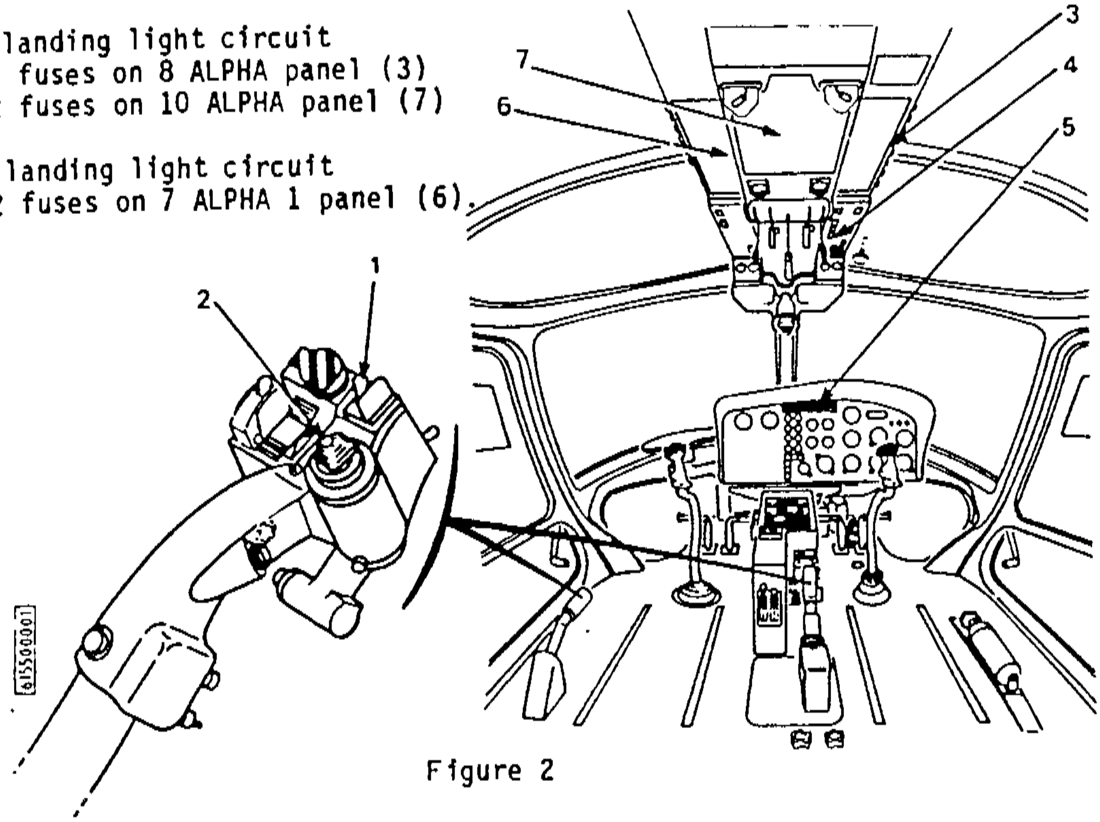


Figure 2 R

9.6 - LOCATOR SEARCHLIGHT R

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) R

This installation consists mainly 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 a support located between the two seats.
- An amber light near the control handgrip support, which illuminates to indicate that the searchlight is on.

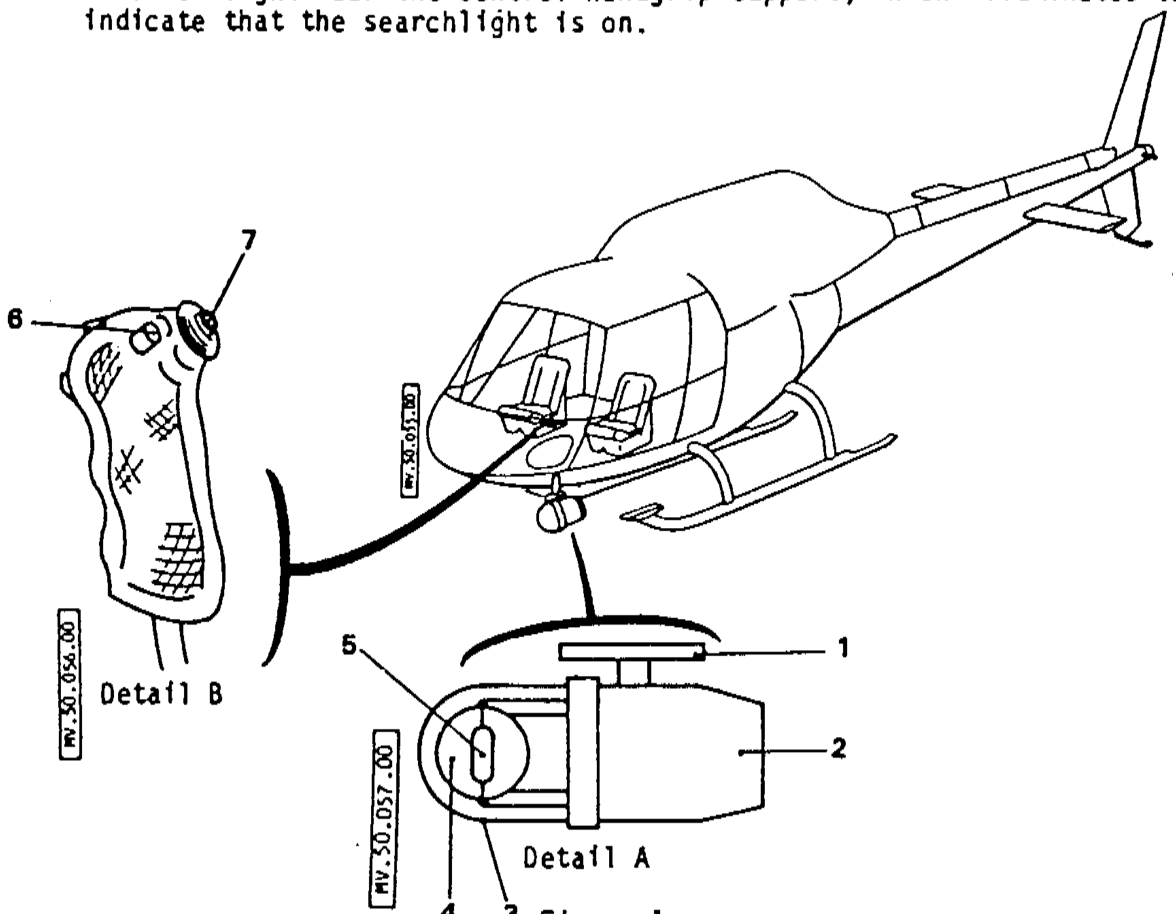


Figure 1 R

3 OPERATION (Figure 1) R

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 :

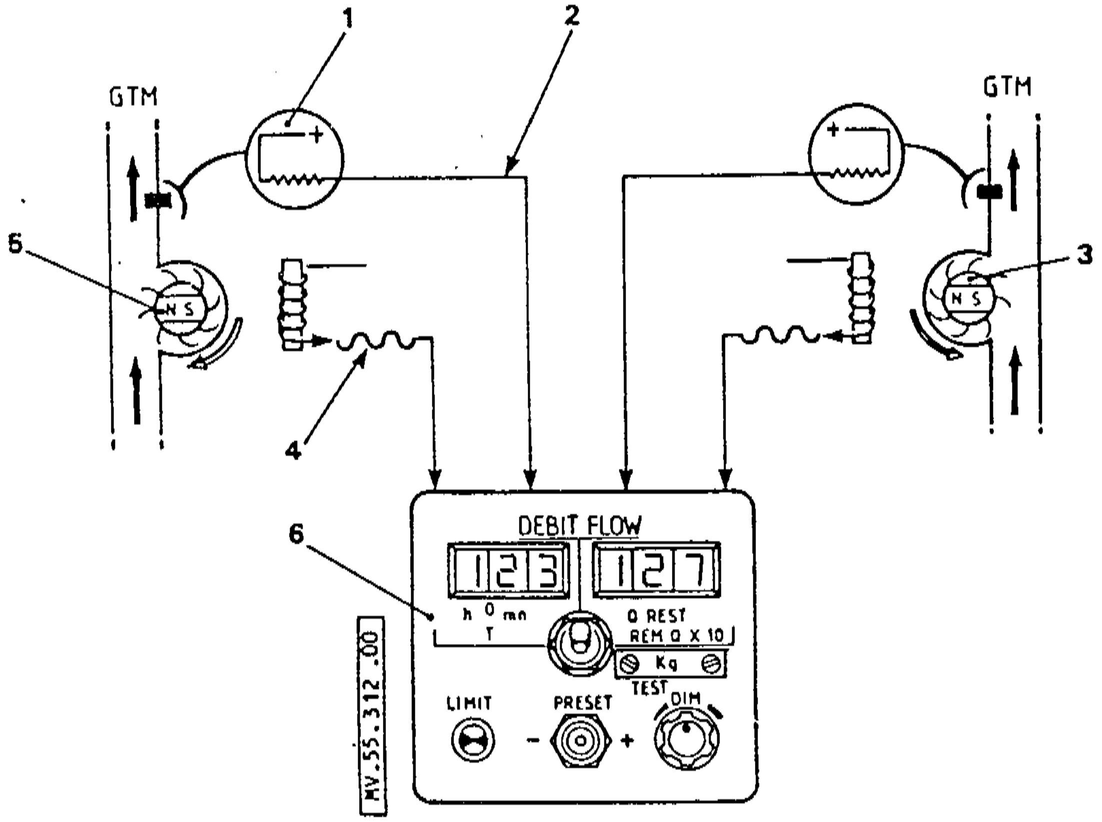
- after the searchlight has been switched on, to wait 15 seconds before switching it off,
- after the searchlight has been switched off, to wait 30 to 60 seconds before switching it on again.

9.7 - FAURE HERMAN FUEL FLOWMETER SYSTEM R

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

R

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 2400-LR03.
These batteries may be replaced by an equivalent model.
The battery service-life is approximately one year.

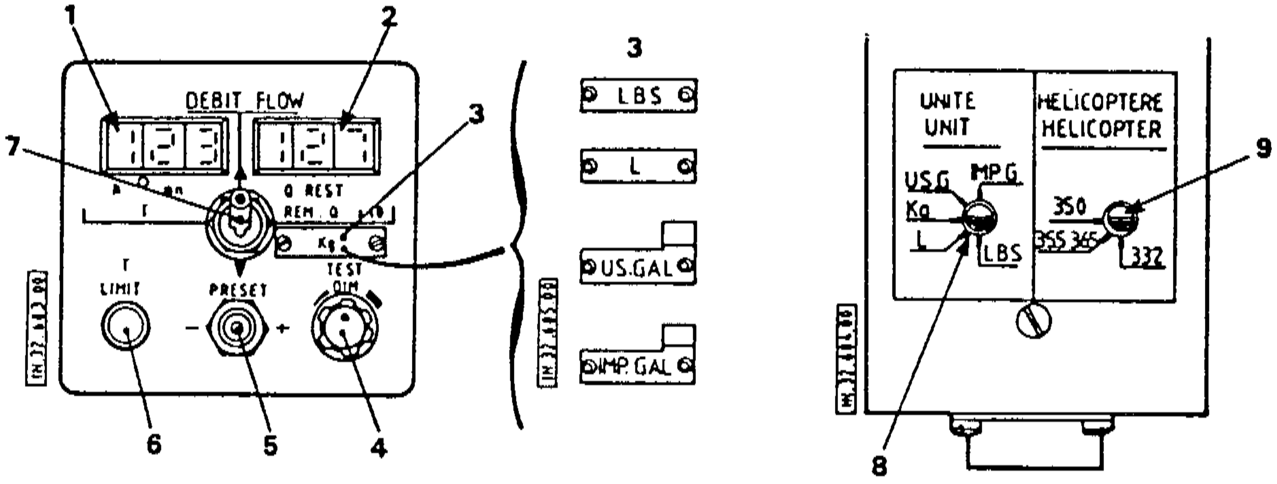
2.1 Power supply

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

Front face   Back face



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	Pushbutton	- When rotated, adjusts the brightness of the display lighting. - When pressed. Test the lighting of the displays by making the eights appear.
5	"PRESET" switch	- Displays the amount of fuel when switch (7) is in bottom released position. Reading in tens of units is displayed in (2) R - Switch position : . Centre : rest . I LH : amount displayed reduces slowly . II RH : amount displayed increases rapidly.

ITEM	Description	Function
6	"T.LIMIT" amber indicator light	- Comes on when only 40 minutes remain for flight on at the time of instantaneous consumption. - Flashes during test routine or when the indicator batteries are used.
7	Three-position function switch	- Top 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). - Bottom 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 type	Switch must be set to the corresponding type of aircraft.

4 OPERATION

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 PRESET (position protected by a locking system).

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

Actuating selector switch (5) :

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

After displaying the actual amount of fuel on board, return selector switch (6) to its initial position.

5 TESTING THE INDICATOR

When pushbutton (4) is pressed all 8's should appear on the displays, and indicator light (6) should come on.

If this light flashes the indicator battery must be changed (the amount of fuel remaining date retained in the memory is not valid).

PUBLICATION REVISION

PUBLICATION CONCERNED : FLIGHT MANUAL SUPPLEMENT

INSERT IN THE FLIGHT MANUAL(S) : AS 355 F1

UNDER APPROVAL : CAA CODE : E

THIS REVISION IS ISSUED TO ALL OUR CUSTOMERS.
UPDATE IS TO BE LIMITED TO THE SUPPLEMENT(S) INCLUED IN THE COMPOSITION OF YOUR MANUAL.

Hereafter the supplement list concerned :

- Withdraw old and insert new pages affected
- Check that the pages in each supplement are those specified in the list of effective pages given page 2.
- This list of pages may be filed (apart from the manual).

SUPPLT. N°	TITLE OF SUPPLEMENT	REVISION N°	CODE-DATE
10.12	3 AXIS AUTOMATIC PILOT SFIM 85 T31	1	87-12
11.1	INSTRUCTIONS FOR OPERATION IN COLD WEATHER	2	87-12
11.4	IMC FLIGHT	1	87-12

SECTION 10

SUPPLEMENTS FOR OPTIONAL EQUIPMENT ITEMS

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

LIST OF SUPPLEMENTS

	DATE	
10.1		
10.2 SLIDING OOORS	83-19	
10.3		
10.4 FUELTRON FUEL FLOWMETER	83-19	
10.5 EMERGENCY FLOTATION GEAR	85-12	
10.6 TRANSPORT OF EXTERNAL LOADS "CARGO SWING"	87-12	R
10.7 FUEL JETTISON SYSTEM	83-19	
10.8		
10.9		
10.10		
10.11		
10.12 3-AXIS AUTOMATIC PILOT SFIM 85 T31	87-12	
10.13		

SIMULTANEOUS INSTALLATIONAL COMPATIBILITY OF OPTIONAL EQUIPMENT ITEMS

This list is not comprehensive ; it covers only D.G.A.C.-approved equipment items liable to give rise to queries concerning compatibility of installation.

NOTE : Operational compatibility is mentioned in the P.R.E./M.R.S.

No.	TITLE	COMPATIBLE WITH	COMPATIBLE WITH RESERVE	INCIDENCE ON FLIGHT MANUAL (approved part)		
				None	Basic	Section No.
1	Arm-rests	7/10/11/13/16/19/23/24 25/36/40/41/49/54/65/ 69/70/74/75/79	76	X		
7	Emergency locator transmitter	1/10/11/13/16/19/23/24 25/36/40/41/49/54/64/ 65/67/69/70/74/75/76/ 79/		X		9.2
10	Heating-demisting	1/7/11/13/16/19/24/25/ 36/40/41/49/54/64/65/ 67/69/70/74/75/76/79	23		X	
11	Freon air conditioner	1/7/10/13/16/19/23/24/ 25/36/40/41/49/54/64/ 65/67/69/70/74/75/76/ 79/				10.11
13	Fuel flowmeter	All				10.4
16	Dual flying controls	1/7/10/11/13/19/23/24/ 25/36/40/41/49/54/64/ 65/69/70/74/75/76/79/			X	
19	External load carrying installation	1/7/10/11/13/16/23/24 25/36/41/49/54/65/70/ 74/79	67			10.6
23	Sand filter	1/7/11/13/16/19/24/25/ 36/40/41/49/54/64/65/ 67/69/70/74/75/76/79/	10			10.9
24	Emergency flotation gear	1/7/10/11/13/16/19/23 25/36/40/41/49/54/64/ 65/67/69/70/74/79/	76			10.5
25	Illuminating flares	1/7/10/11/13/16/19/23/ 24/36/40/41/49/54/64/ 65/67/69/70/74/75/76/ 79/		X		9.3

* The dual flying control is the one provided for IFR flying.

No.	TITLE	COMPATIBLE WITH	COMPATIBLE WITH RESERVE	INCIDENCE ON FLIGHT MANUAL (approved part)		
				None	Basic	Section No.
36	De-luxe cabin furnishings	1/7/10/11/13/16/19/23 24/25/40/41/49/54/65/ 67/69/70/74/75/79		X		
40	IFR flight	1/7/10/11/13/16*/23/24 25/36/41/54/64/65/67/ 69/70/74/79				11.4
41	Three-axis automatic pilot SFIM 85 T31	1/7/10/11/13/16/19/23/ 24/25/36/40/54/64/65/ 67/69/70/74/75/76/79/				10.12
49	Three-axis automatic pilot SFIM 85 T3	1/7/10/11/13/16/19/23/ 24/25/36/54/64/65/67/ 69/70/74/75/76/79				10.8
54	Sliding doors	1/7/10/11/13/16/19/23/ 24/25/36/40/41/49/65/ 67/69/70/74/75/76/79				10.2
64	Ferry tank installation	7/10/11/13/16/23/24/ 25/40/41/49/65/69/74/ 75/79				
65	Outboard mirror	1/7/10/11/13/16/19/23 24/25/36/40/41/49/54/ 64/67/69/70/74/76/79		X		
67	Ambulance role	7/10/11/13/23/24/25/36 40/41/49/54/65/69/70/ 74/75/79	19/76	X		9.4
69	Ski installation	1/7/10/11/13/16/23/24 25/36/40/41/49/54/64/ 65/67/70/74/76/79				10.1
70	Plush cabin furnishings	1/7/10/11/13/16/19/23 24/25/36/40/41/49/54/ 65/67/69/74/75/79		X		
74	High-type landing gear	1/7/10/11/13/16/19/23/ 24/25/36/40/41/49/54/ 64/65/67/69/70/76/79		X		
75	Float-type landing gear	1/7/10/11/13/16/23/25 36/41/49/54/64/67/70/ 76/				10.10

* The dual flying control is the one provided for IFR flying.

No.	TITLE	COMPATIBLE WITH	COMPATIBLE WITH RESERVE	INCIDENCE ON FLIGHT MANUAL (approved part)		
				None	Basic	Section No.
76	Electric hoist	7/10/11/13/16/23/25/ 41/49/54/65/69/74/75 79/	1/24/67		X	10.3
79	Fuel jettisoning system	1/7/10/11/13/16/19/23 24/25/36/40/41/49/54/ 64/65/67/69/70/74/76				10.7

FLIGHT MANUAL

AS 355 F1

SUPPLEMENT N° 10.2

SLIDING DOORS

LH door per drawings : 350A 82-2801.00
or- 350A 82-2080.00
350A 82-2080.02

RH door per drawings : 350A 82-2081.01
350A 82-2080.01

IMPORTANT NOTE

This supplement shall be included in the Flight Manual when the installation mentioned above is fitted to the aircraft. The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal revision : 0

LIST OF APPROVED PAGES

SUPPLEMENT	PAGE AND DATE CODE
10.2	1 * 83-19 2 * 83-19 3 81-46 4 82-29 5 82-29

* Coded pages

LIST OF THE LATEST APPROVED NORMAL REVISIONS	
No. DATE CODE	NORMAL REVISION No. 0 DGAC-APPROVED DATE : 09.05.83
0 83-19	L'INGENIEUR EN CHEF A. RICHARD

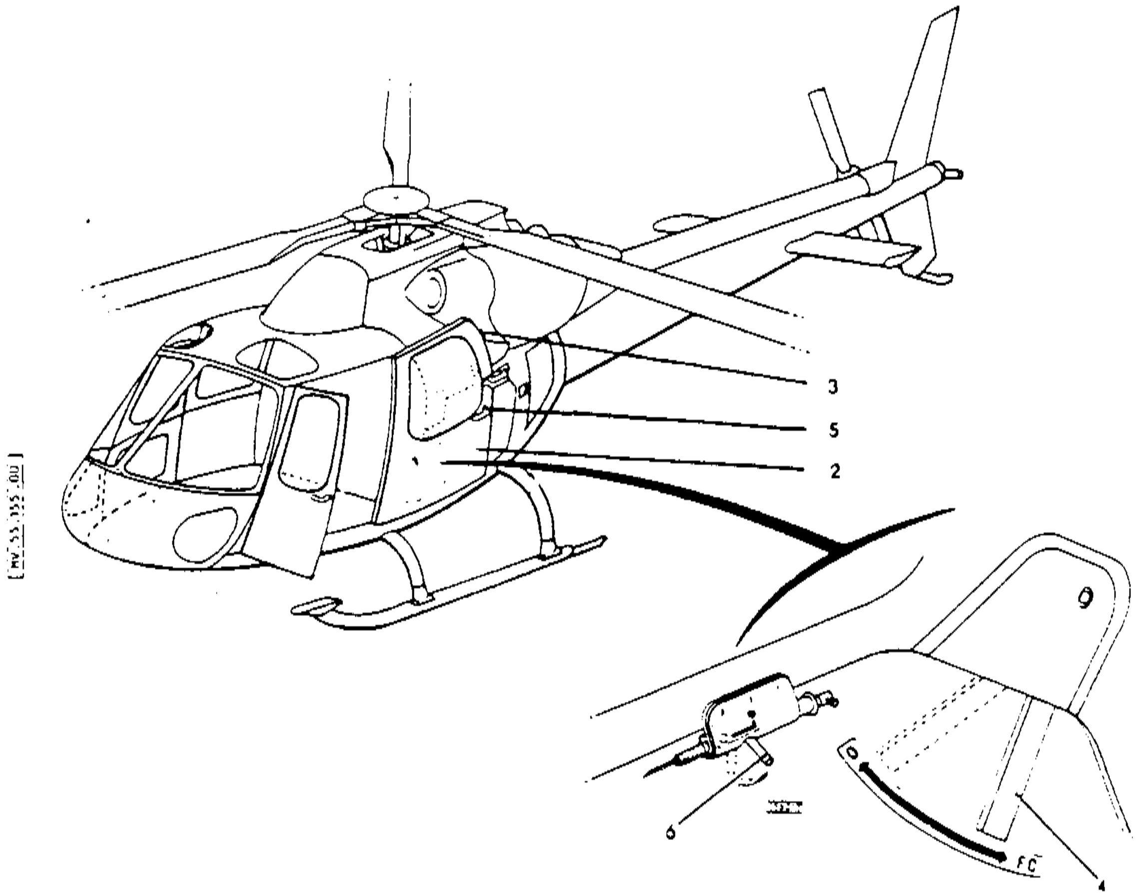
1 GENERAL

The aircraft can be fitted with one or two sliding door installations. These installations are of same design and symmetrical

Each installation mainly comprises :

- A small, jettisonable forward door (1), providing access to the pilot's or copilot's seat.
- A large, sliding, rear door (2), running on three guide rails. This door is fitted with :
  . an "open position" catch (3) (door held fully open)
  . an inner control lever (4) connected to the outer handle (5) for opening and closing the door
  . a closing system locking lever (6).

These sliding doors can be opened in flight by the crewmembers for rescue or hoisting operations, and on ground to facilitate freight loading.



2 LIMITATIONS

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

Both RH doors LH Sliding Door	CLOSED	REMOVED
CLOSED	VNE	PROHIBITED
OPEN OR REMOVED	135 kt (250 km/h 155 MPH) or VNE *	70 kt (130 km/h 81 MPH)

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

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

RH Sliding door Both LH doors	CLOSED	OPEN OR REMOVED
CLOSED	VNE	110kt (204 km/h 127 MPH) or VNE *
REMOVED	PROHIBITED	70 kt (130 km/h 81 MPH)

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

2.3 Aircraft fitted with two sliding doors

RH Sliding door LH Sliding door	CLOSED	OPEN OR REMOVED
CLOSED	VNE	110kt (204 km/h 127 MPH) or VNE *
OPEN OR REMOVED	60 kt (111 km/h 69 MPH)	110kt (204 km/h 127 MPH) or VNE *

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

* Whichever is the lowest.

ANY OTHER CONFIGURATION IS PROHIBITED

3 EMERGENCY PROCEDURES

If necessary, the forward door(s) can be jettisoned.

4 NORMAL PROCEDURES

The procedures prescribed in Section 4 of the Flight Manual apply equally to the helicopter fitted with the sliding door installation(s).

In flight with one or two sliding doors open, there is a risk of the rear seat squabs becoming detached at airspeed above 70 knots (130 km/h-81 MPH); consequently they are to be removed before flying in these conditions.

It is also recommended that the security of documents and other objects carried in the cabin be ensured.

5 PERFORMANCE

Performance data as given in Section 5.1 of the Flight Manual applies equally to the helicopter fitted with sliding door installation(s) in closed position.

FLIGHT MANUAL

AS 355 F1

SUPPLEMENT N°10.4

FUELTRON FUEL FLOWMETER

Per drawing : 350A 82-5052

IMPORTANT NOTE
This supplement shall be included in the Flight Manual when the installation mentioned above is fitted to the aircraft. The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal revision : 0

LIST OF APPROVED PAGES

SUPPLEMENT	PAGE AND DATE CODE
10.4	1 * 83-19 2 * 83-19 3 82-29 4 82-29 5 82-29 6 82-29 7 82-29

* Coded pages

LIST OF THE LATEST APPROVED NORMAL REVISIONS	NORMAL REVISION No. 0 DGAC APPROVED DATE : 09.05.83
No. DATE CODE 0 83-19	L'INGENIEUR EN CHEF DE L'A... A. RICHARD

1 GENERAL

The "FUELTRON" fuel computer is a device used to monitor the helicopter's fuel consumption.

From a given quantity of fuel stored in its memory the device can compute :

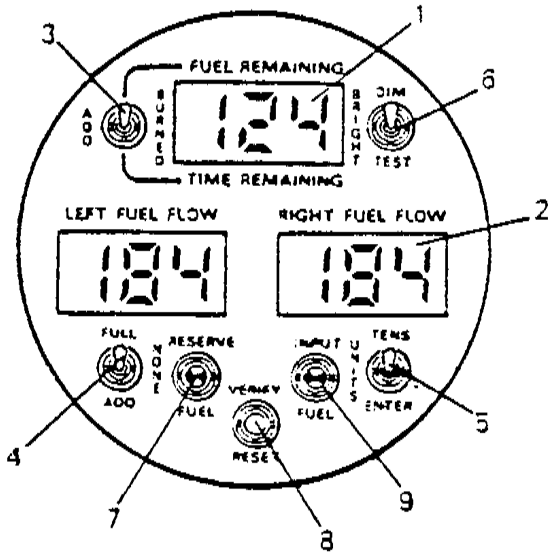
- The amount of the fuel burned
- The amount of fuel remaining
- The flying time remaining

These values are computed from the momentary consumption which depends on existing flight parameters.

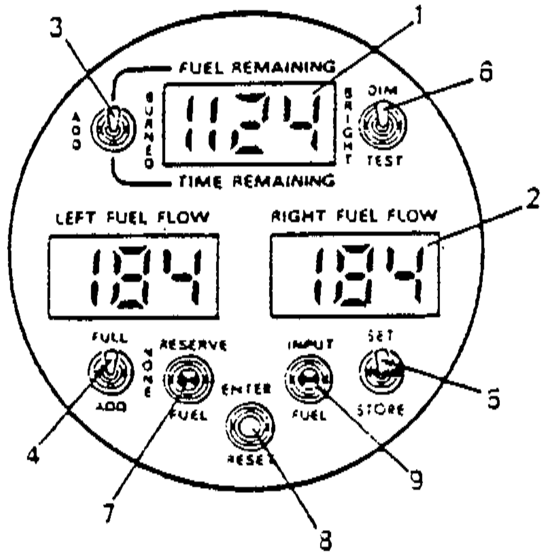
The computer is powered from the aircraft supply via the battery contact or the "RAZ-FUEL" pushbutton on the DEBITMETRE (FLOWMETER) overhead panel 5 ALPHA 1. The computer memory has its own supply from a dry cell.

The indicator on the instrument panel consists mainly of (Figure 1) :

- A digital read-out (1) which indicates either
  . the amount of fuel remaining or,
  . the amount of fuel burned or,
  . the flying time remaining (in hours and tenths of an hour).
- A digital read-out (2) which indicates the momentary consumption.
- A selector switch (3) allowing one of the functions of (1) to be chosen.
- A test selector (6) which
  . in "test" position, shows if 1 and 2 are functioning correctly.
  . in "DIM" position, reduces the brightness of items 1, 2 and 7.
- A selector switch (4) used to enter the initial fuel data :
  . full
  . quantity added
  . no addition
- A switch (5) used to enter the quantity of fuel. R
- An amber warning light (7) which comes on when the remaining flying time is less than 0.8 hour.
- A white light (9) indicating that the computer is on and the memory accessible.
- A pushbutton (8) used to enter data regarding the fuel quantity.



Before mod. AMS 1027



After mod. AMS 1027

Figures 1

2 LIMITATIONS

The limitations given in Section 2 apply except the maximum pressure-altitude which is limited as follows :

Fuel used	Limiting Hp
JET A - JET A1 or ALLISON EMS 64-JP5	16000 ft (4877 m)
JP4 - JET B - Spare fuels authorized	14000 ft (4267 m)

3 EMERGENCY PROCEDURES

The emergency procedures given in Section 3 apply.
Should a booster pump fail, make a descent to an altitude below that specified in the chart hereafter, within the following ten minutes.
If such a manoeuvre is impossible or dangerous, after the flight, the HP pump of the engine concerned shall be inspected in accordance with the Maintenance Manual.

Fuel used	Limiting Hp
JET A - JET A1 or ALLISON EMS 64-JP5	11000 ft (3609 m)
JP4 - JET B - Spare fuels authorized	8000 ft (2438 m)

4.3 Recalling parameters before switching off battery

4.3.1 On indicator before modification AMS 1027

- 3 in ADD position.
- 6 in BRIGHT or DIM position as required.
- 5 in ENTER position.
- 9 on.
- 7 on.
- 4 in NONE position.
- 8 held depressed until light 9 goes out and light 7 dims.
- 4 in FULL position.
- 3 in FUEL REMAINING position. Read fuel quantity stored in memory.

4.3.2 On indicator after modification AMS 1027

- 3 in ADD position.
- 6 in BRIGHT or DIM position as required.
- 9 on.
- 7 on.
- 4 in NONE position.
- 8 held depressed until light 9 goes out and light 7 dims.
- 3 in FUEL REMAINING position. Read fuel quantity stored in memory.

4.4 Adding fuel

4.4.1 On indicator before modification AMS 1027

- Switch off power supply to illuminate light 9 (DEBITMETRE-FLOW METER)
- 3 in ADD position.
- 6 in BRIGHT or DIM position.
- 5 in TENS or UNITS position as required.
- 9 on.
- 7 on.
- 4 in ADD position.
- 5 in ENTER position.
- 8 held depressed to let the digits in read-out 1 run until quantity desired appears.
- 4 in FULL position.
- 3 in FUEL REMAINING position. Read sum of fuel (remaining fuel plus added fuel).

4 NORMAL PROCEDURES

The "FUELTRON" measures the fuel flow rate but does not take into account the fuel contained in the helicopter's fuel tanks. It is therefore essential to program the amount of fuel on board at the beginning of the flight.

The memory is accessible only when the white light is on. Thus, in order to enter or add a fuel quantity or to enter a new value, the power must be cut off using the "DEBITMETRE" (FLOWMETER) push-button.

4.1 Test

Display should read all 8's.

4.2 Entering a fuel quantity

4.2.1 On indicator before modification AMS 1027

- 3 in ADD position.
- 6 in BRIGHT or DIM position as required.
- 5 in TENS or UNITS position as required.
- 9 on.
- 7 on.
- 4 in ADD position.
- 8 held depressed to let the digits in read-out 1 run until quantity desired appears.
- 5 in ENTER position.
- 6 held in TEST position and 8 held depressed simultaneously until light 9 goes out. Light 7 dims after 3 seconds.
- 4 in FULL position.
- 3 in FUEL REMAINING position. Read fuel quantity entered.

4.2.2 On indicator after modification AMS 1027

- 3 in ADD position.
- 6 in BRIGHT or DIM position as required.
- 4 in ADD position.
- 5 in STORE position :
  - . one pulse for units
  - . two pulses for tens
  - . three pulses for hundreds
  - . four pulses for thousands
- 5 in SET position to set digits.
- 9 on.
- 7 on.
- 6 in TEST position and 8 held depressed until light 9 goes out and light 7 dims.
- 3 in FUEL REMAINING position. Read fuel quantity entered.

4.4.2 On indicator after modification AMS 1027

- Switch off power supply to illuminate light 9 (DEBITMETRE-FLOW METER)
- 3 in ADD position.
- 6 in BRIGHT or DIM position.
- 4 in ADD position.
- 5 in STORE position : . one pulse for units
  - . two pulses for tens
  - . three pulses for hundreds
  - . four pulses for thousands
- 5 in SET position to set digits.
- 9 on.
- 7 on.
- 8 held depressed until light 9 goes out and light 7 dims.
- 3 in FUEL REMAINING position. Read sum of fuel (remaining fuel plus added fuel).

4.5 Entering a preset refueling quantity

This function is available when the unit has been programmed for the required fuel quantity in accordance with the procedure laid down in para. 4.2.

4.5.1 On indicator before modification AMS 1027

- 9 on.
- 4 in FULL position.
- 6 in BRIGHT or DIM position.
- 5 in ENTER position.
- 8 held depressed until light 9 goes out and light 7 dims.

4.5.2 On indicator after modification AMS 1027

- 9 on.
- 4 in FULL position.
- 6 in BRIGHT or DIM position.
- 5 in NEUTRAL position.
- 8 held depressed until light 9 goes out and light 7 dims.

4.6 In-flight use

- 3 in BURNED position- - - - - - -Displays quantity of fuel burned since memory entry.
- 3 in FUEL REMAINING position- - -Quantity entered less quantity burned
- 3 in TIME REMAINING position - - $\frac{\text{FUEL REMAINING}}{\text{FUEL FLOW}}$
- FUEL FLOW - - - - - - - - - - - - -Displayed by lower readout.

FLIGHT MANUAL

AS 355 F1

SUPPLEMENT

EMERGENCY FLOTATION GEAR

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

After AMS 07.1333

IMPORTANT NOTE

This supplement shall be included in the Flight Manual when the installation mentioned above is fitted to the aircraft. The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal revision : 2

LIST OF APPROVED PAGES

SUPPLEMENT	PAGE AND DATE CODE
10.5	1 * 85-12 2 * 85-12 3 81-24 4 81-24 5 85-12

* Coded pages

LIST OF THE LATEST APPROVED NORMAL REVISIONS		NORMAL REVISION No. 2 DGAC APPROVED DATE 11-04-85
No.	DATE CODE	
0	83-19	
1	84-02	
2	85-12	

MINISTÈRE DES TRANSPORTS
L'INGENIEUR EN CHEF DE L'ARMEMENT
A. RICHARD
DE L'AVIATION CIVILE

1 GENERAL

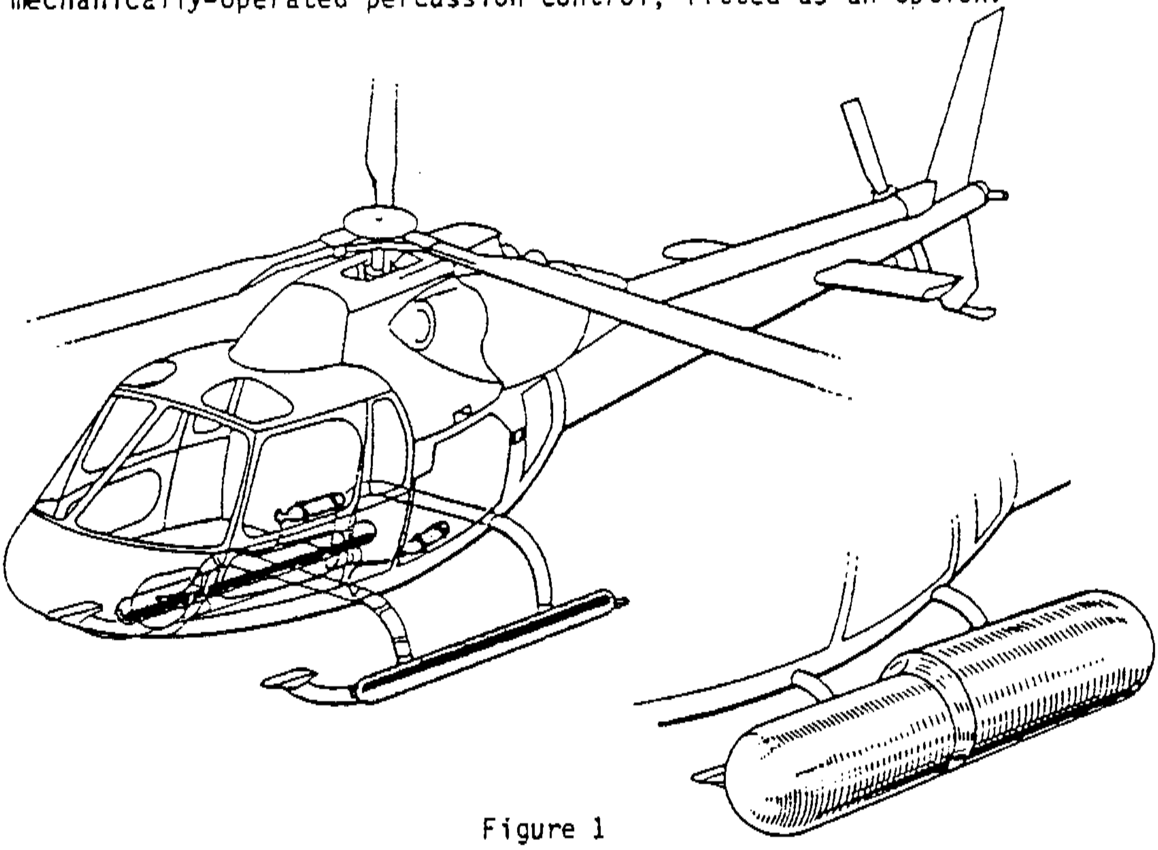
The emergency flotation gear allows the helicopter to alight on water in emergency.

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

With the float bags inflated, the flying qualities are not adversely affected.
Furthermore, this system allows the helicopter to land on airstrip or prepared hard ground with the floats inflated.

The emergency flotation gear consists of :

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



0355 00100

Figure 1

2 LIMITATIONS

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

- Floats stowed with System not armed
  . no special limitations

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

3 EMERGENCY PROCEDURES

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

- Press push-button (item 1, figure 2) to arm the emergency flotation gear
- Press push-button (item 1, figure 3) on collective pitch lever to fire the system. Recommended firing speed not to exceed 80 kt - 148 km/h - 92 MPH
- Alight broadside-on to the sea and avoid ramming of the nose of the floats on touch-down.

NOTE : When optional mechanically-operated percussion system is fitted, readily pulling (6 to 8 kg load approx.) the handle (item 2, figure 2) causes immediate inflation of the emergency flotation gear even if the EMERG FLOAT ARMING (ARM FLOT S) push-button has not previously been pressed in.

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

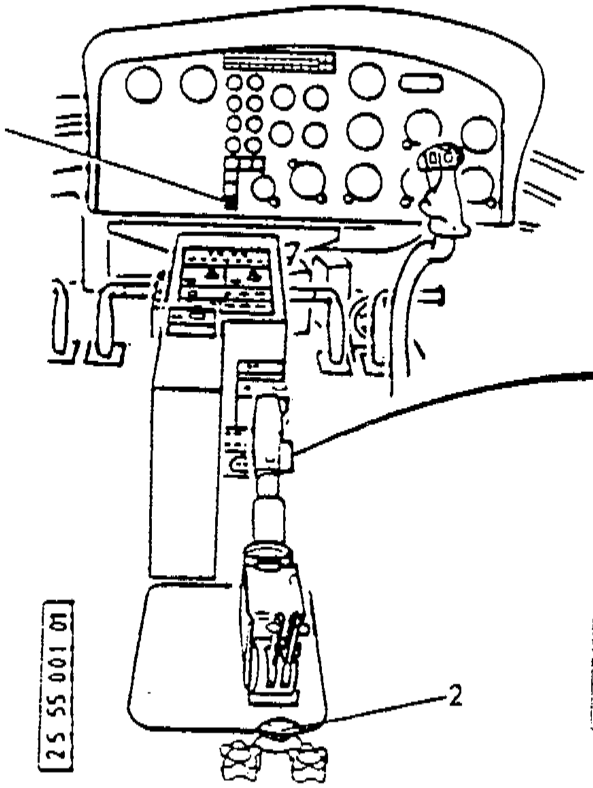


Figure 2

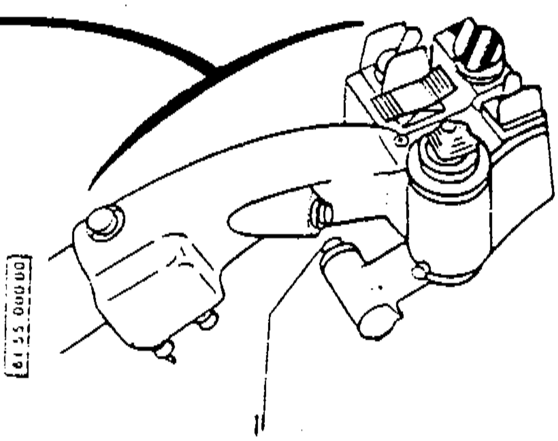


Figure 3

4 NORMAL PROCEDURES

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

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

Before mod. AMS 1485 R

OAT (°C)		-40	-30	-20	-10	0	10	20	30	40	50
PRESSURE (BARS)	MAX.	255	265	275	285	298	307	319	330	342	353
	MIN.	238	248	258	268	279	290	302	313	325	336

Apres mod. AMS 1485 R

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

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

  . Float elements locked down

- Pre-start checks :
  . engage the EMERG FLOAT ARMING (ARM FLOT S) push-button (item 1, figure 2)
  . with the aircraft battery on, ensure that both LH and RH push-button lamps illuminate

  NOTE 1 : With the aircraft battery off, before modification AMS 1123, and if power supply is ensured by :
  - a ground power unit, only the RH lamp illuminates,
  - the battery directly, only the LH lamp illuminates.

  NOTE 2 : Two circuit-breakers mounted beneath the aft baggage hold floor or, after mod AMS 1470, near the external power recestacle are generally engaged to protect the system. R

- Prior to take-off and landing :
  It is recommended to arm the emergency flotation gear prior to take-off and landing when flying over the sea is contemplated.

5 PERFORMANCE

With the emergency flotation gear in stowage position, the performance data given in Section 5.1 apply except the climbing performance figures which are reduced as follows :
- Two engines in operation : 50 ft/mn - 15 m/mn
- One engine in operation : 30 ft/mn - 9 m/mn.

PUBLICATION REVISION

PUBLICATION CONCERNED : FLIGHT MANUAL SUPPLEMENT

INSERT IN THE FLIGHT MANUAL(S) : AS 355 F1

UNDER APPROVAL : CAA CODE : E

THIS REVISION IS ISSUED TO ALL OUR CUSTOMERS.
UPDATE IS TO BE LIMITED TO THE SUPPLEMENT(S) INCLUED IN THE COMPOSITION OF YOUR MANUAL.

Hereafter the supplement list concerned :

- Withdraw old and insert new pages affected
- Check that the pages in each supplement are those specified in the list of effective pages given page 2.
- This list of pages may be filed (apart from the manual).

SUPPLT. N°	TITLE OF SUPPLEMENT	REVISION N°	CODE-DATE
10.6	TRANSPORT OF EXTERNAL LOADS "CARGO SWING"	1	87-12

FLIGHT MANUAL

AS 355 F1

SUPPLEMENT

TRANSPORT OF EXTERNAL LOADS
"CARGO SWING"

PER DRAWINGS : 355A 82-2160
355A 82-2161
WITH HIGH SKID LANDING GEAR ONLY

IMPORTANT NOTE
This supplement shall be included in the Flight Manual when the installation mentioned above is fitted to the aircraft. The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal revision : 1

Société Nationale Industrielle aerospatiale
Division Hélicoptères - 13723 MARIGNANE Cedex (FRANCE)

AS 355 F1 AIRCRAFT

LIST OF APPROVED PAGES

This supplement at the revision mentioned on first page contains the pages below identified by the following date-codes :

SECTION	PAGE	DATE		SECTION	PAGE	DATE
10.6	1 *01*	87-12	*			
	2 *01*	87-12	*			
	3 *00*	87-12				
	4 *01*	87-12				
	5 *00*	87-12				
	6 *01*	83-19				
	7 *00*	81-23				
	8 *01*	83-19				
	9 *01*	83-19				

* Coded pages

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No.	Date	No.	Date
0	83-19		
1	87-12		

NORMAL REVISION : 1
DGAC APPROVED
DATE : 03.06.1987

L'INGENIEUR EN CHEF DE L'ARMEMENT
A. RICHARD

2.5 Instruction plate

An instruction plate in the cockpit indicates :

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

3 EMERGENCY PROCEDURES

ENGINE FAILURE WITH EXTERNAL LOAD

Should an engine fail, it could be necessary to release the load according to the circumstances.
The pilot shall take decision according to the conditions of weight and terrain configuration.

4 NORMAL PROCEDURES

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

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

4.1 Check of the installation

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

- Set function selector switch (5) to SLING HOOK (ELING)
- Check that the hook opens correctly both in normal (6) and jettison (7) control modes.
- If necessary set the load indicator (3) pointer (4) to zero.

Note : After opening of the hook in jettison control mode the mechanical control must be reset by means of the lever under the cabin.

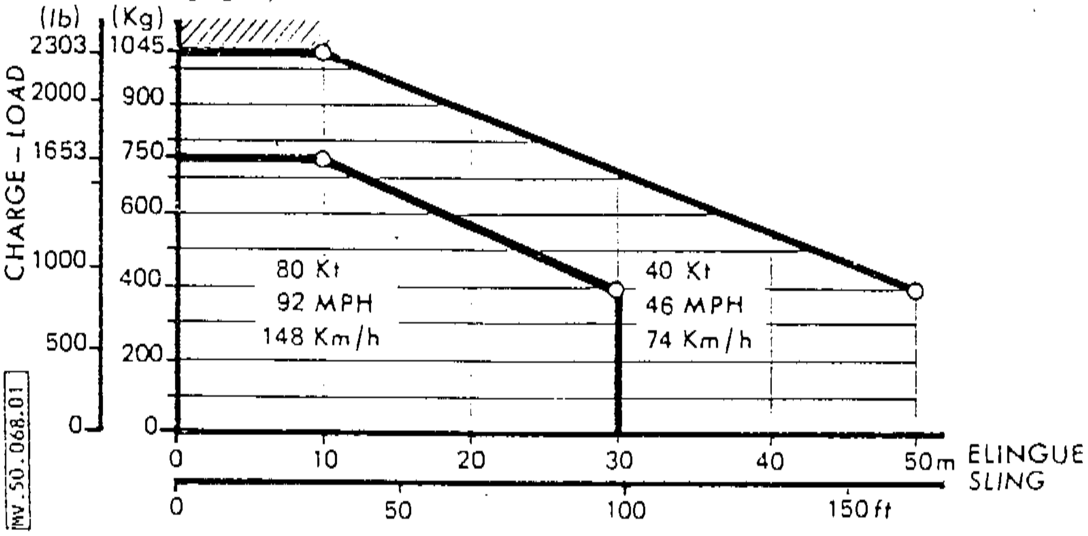
4.2 Take-off

- When the load is secured, apply collective pitch very smoothly, while maintaining the aircraft directly above the load. When the cables are taut, dwell briefly before raising the load.

- Lift the load off the ground vertically, keeping a watch on the load indicator, then move off in a forward climb. R

4.3 Manoeuvres

All control movements should be made very gently, with very gradual acceleration and deceleration, and only slightly banked turns.
With concentrated loads, the range covered by tests is given by the following graph :



4.4 Landing

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

4.5 Load release

To release the load, operate the control provided on the pilot's cyclic stick (6) while the sling is held slightly tight.

Check with ground personnel (by signs) that the load is effectively released.
After actuating the release unit control, climb out slowly, making doubly sure that the load is away before moving forwards.

If the load is not off, actuate the jettison handle (7) to clear it. The mechanical control must then be reset by means of lever underneath cabin.

5 PERFORMANCE

The regulatory performance data are not affected.

5.1 Determining the vertical speeds

For determining the corrected weight beyond 2400 kg actual weight, use figure 1.

5.2 Performance in hover O.G.E.

The performance figures in hover O.G.E. are specified in figures 2 and 3.

PUBLICATION REVISION

PUBLICATION CONCERNED : FLIGHT MANUAL SUPPLEMENT

INSERT IN THE FLIGHT MANUAL(S) : AS 355 F1

UNDER APPROVAL : CAA CODE : E

THIS REVISION IS ISSUED TO ALL OUR CUSTOMERS.
UPDATE IS TO BE LIMITED TO THE SUPPLEMENT(S) INCLUED IN THE COMPOSITION OF YOUR MANUAL.

Hereafter the supplement list concerned :

- Withdraw old and insert new pages affected
- Check that the pages in each supplement are those specified in the list of effective pages given page 2.
- This list of pages may be filed (apart from the manual).

SUPPLT. N°	TITLE OF SUPPLEMENT	REVISION N°	CODE-DATE
10.6	TRANSPORT OF EXTERNAL LOADS "CARGO SWING"	1	87-12

FLIGHT MANUAL

AS 355 F1

SUPPLEMENT

TRANSPORT OF EXTERNAL LOADS
"CARGO SWING"

PER DRAWINGS : 355A 82-2160
355A 82-2161
WITH HIGH SKID LANDING GEAR ONLY

IMPORTANT NOTE

This supplement shall be included in the Flight Manual when the installation mentioned above is fitted to the aircraft. The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal revision : 1

Société Nationale Industrielle aerospatiale
Division Hélicopteres - 13723 MARIGNANE Cedex (FRANCE)

AS 355 F1 AIRCRAFT

LIST OF APPROVED PAGES

This supplement at the revision mentioned on first page contains the pages below identified by the following date-codes :

SECTION	PAGE	DATE		SECTION	PAGE	DATE
10.6	1 *01*	87-12	*			
	2 *01*	87-12	*			
	3 *00*	87-12				
	4 *01*	87-12				
	5 *00*	87-12				
	6 *01*	83-19				
	7 *00*	81-23				
	8 *01*	83-19				
	9 *01*	83-19				

* Coded pages

LIST OF THE LATEST NORMAL APPROVED REVISIONS

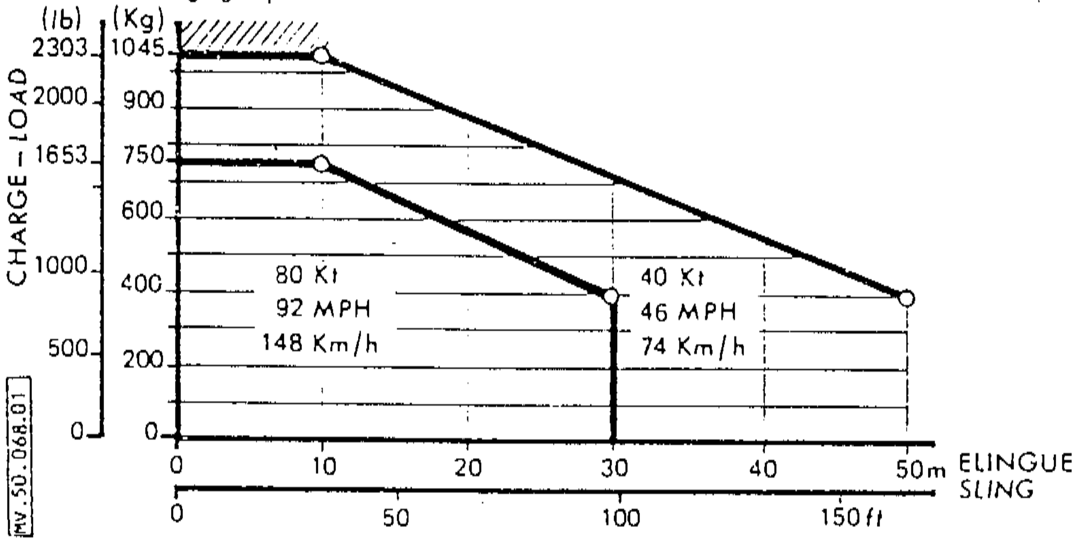
No.	Date	No.	Date
0	83-19		
1	87-12		

NORMAL REVISION : 1
DGAC APPROVED
DATE : 03.06.1987

L'INGENIEUR EN CHEF DE L'ARMEMENT
A. RICHARD

4.3 Manoeuvres

All control movements should be made very gently, with very gradual acceleration and deceleration, and only slightly banked turns.
With concentrated loads, the range covered by tests is given by the following graph :



4.4 Landing

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

4.5 Load release

To release the load, operate the control provided on the pilot's cyclic stick (6) while the sling is held slightly tight.

Check with ground personnel (by signs) that the load is effectively released.
After actuating the release unit control, climb out slowly, making doubly sure that the load is away before moving forwards.

If the load is not off, actuate the jettison handle (7) to clear it. The mechanical control must then be reset by means of lever underneath cabin.

5 PERFORMANCE

The regulatory performance data are not affected.

5.1 Determining the vertical speeds

For determining the corrected weight beyond 2400 kg actual weight, use figure 1.

5.2 Performance in hover O.G.E.

The performance figures in hover O.G.E. are specified in figures 2 and 3.

2.5 Instruction plate

An instruction plate in the cockpit indicates :

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

3 EMERGENCY PROCEDURES

ENGINE FAILURE WITH EXTERNAL LOAD

Should an engine fail, it could be necessary to release the load according to the circumstances.
The pilot shall take decision according to the conditions of weight and terrain configuration.

4 NORMAL PROCEDURES

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

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

4.1 Check of the installation

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

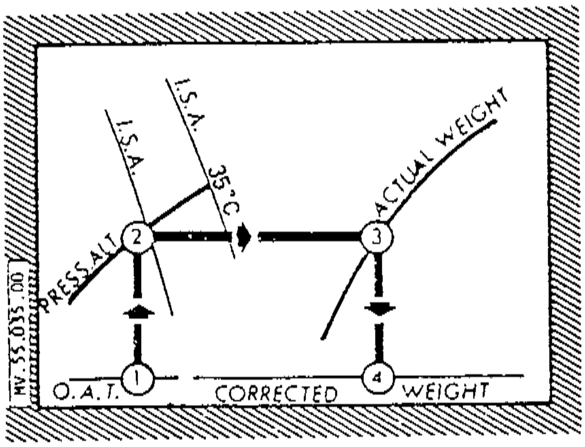
- Set function selector switch (5) to SLING HOOK (ELING)
- Check that the hook opens correctly both in normal (6) and jettison (7) control modes.
- If necessary set the load indicator (3) pointer (4) to zero.

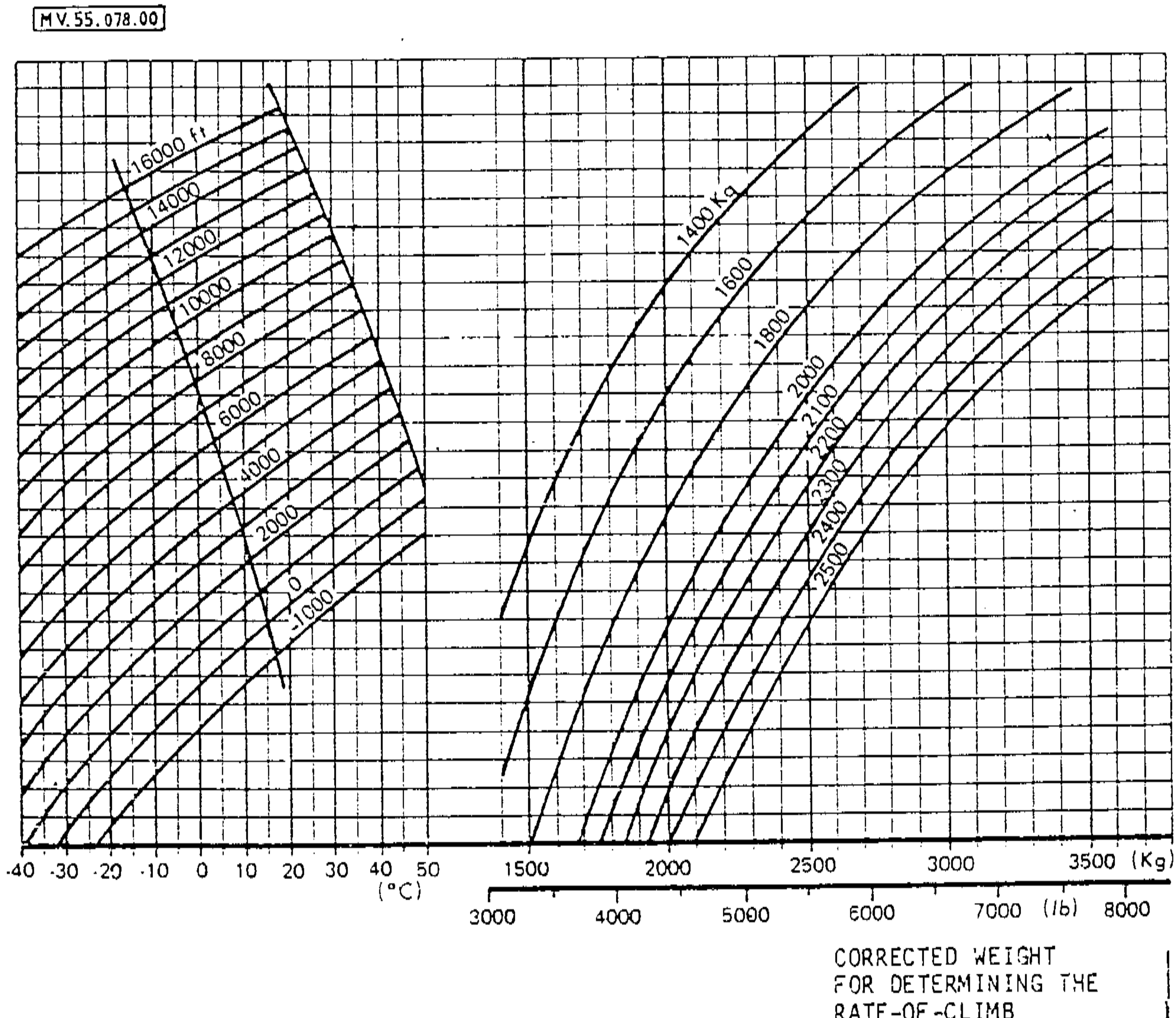
Note : After opening of the hook in jettison control mode the mechanical control must be reset by means of the lever under the cabin.

4.2 Take-off

- When the load is secured, apply collective pitch very smoothly, while maintaining the aircraft directly above the load. When the cables are taut, dwell briefly before raising the load.

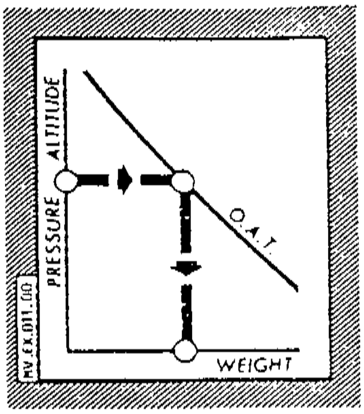
- Lift the load off the ground vertically, keeping a watch on the load indicator, then move off in a forward climb. R

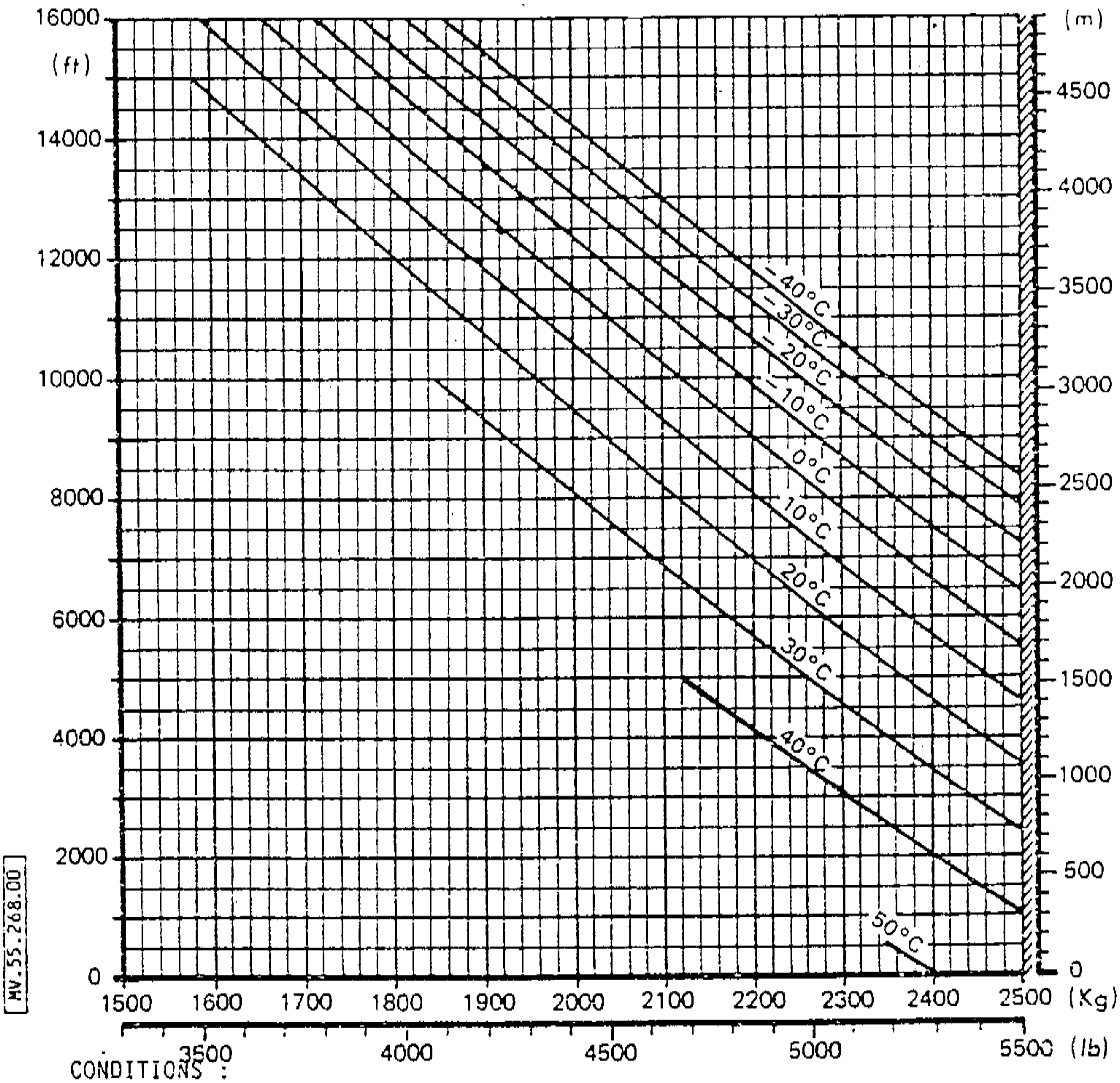




CORRECTED WEIGHT
FOR DETERMINING THE
RATE-OF-CLIMB

Figure 1



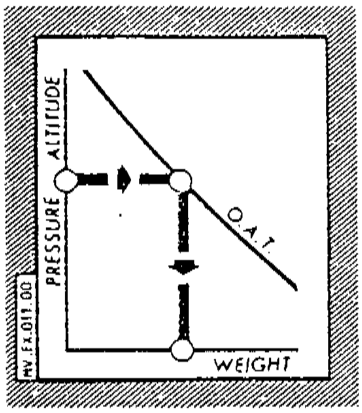


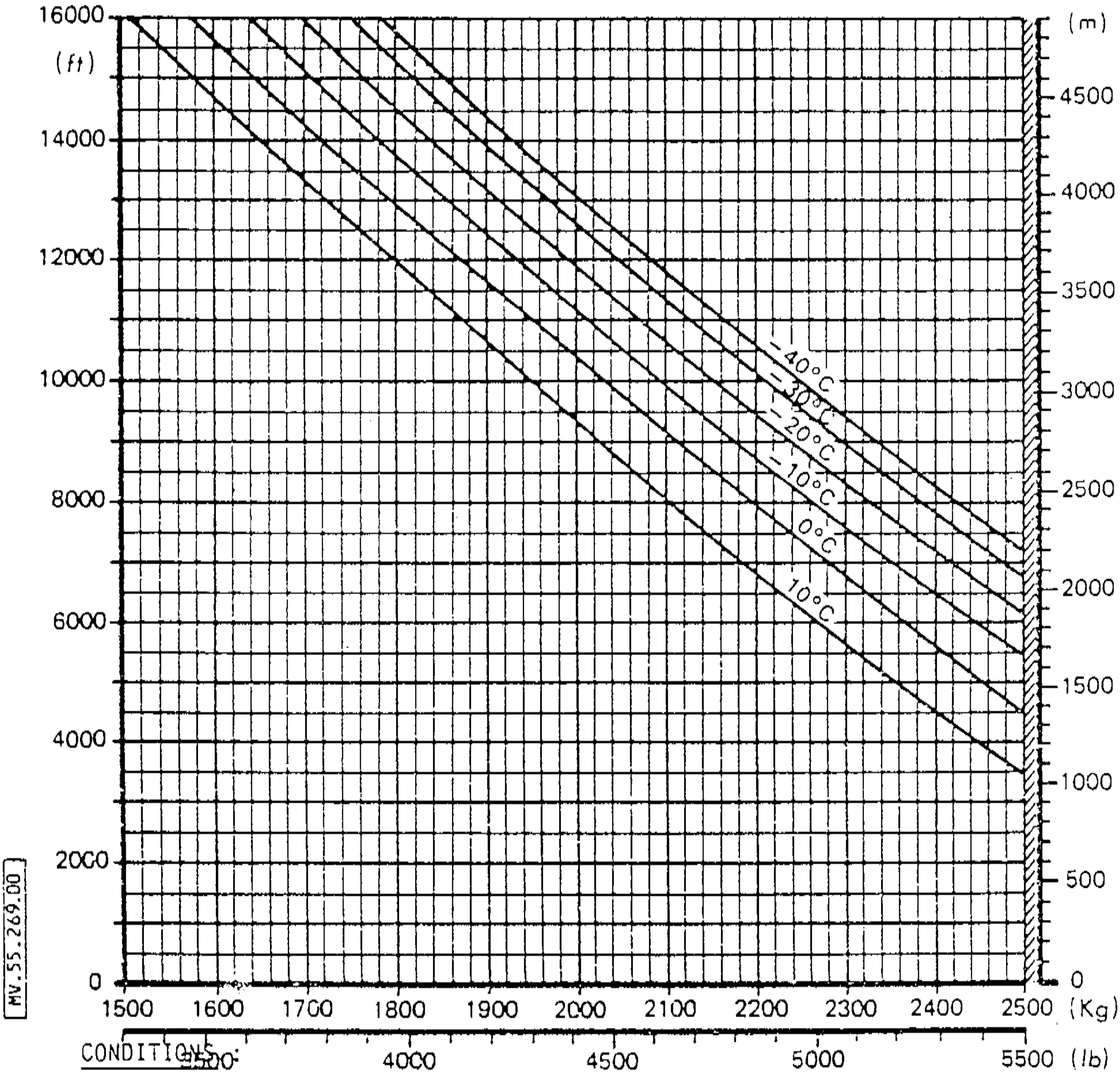
CONDITIONS :

- Zero wind
- P2 air bleed off (heater or air conditioner off).
- Engine air intake anti-ice off.
- t4 temperature limited to 810°C

PERFORMANCE IN HOVER O.G.E
ON TWO ENGINES

Figure 2





CONDITIONS :

- Zero wind
- P2 air bleed off (heater or air conditioner off).
- Engine air intake anti-ice on
- t4 temperature limited to 810°C

PERFORMANCE IN HOVER O.G.E
ON TWO ENGINES

Figure 3

FLIGHT MANUAL

AS 355 F1

SUPPLEMENT N° 10.7

FUEL JETTISONING SYSTEM

PER DRAWING : 355A 82-5051

IMPORTANT NOTE
This supplement shall be included in the Flight Manual when the installation mentioned above is fitted to the aircraft. The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal revision : 0

LIST OF APPROVED PAGES

SUPPLEMENT	PAGE AND DATE CODE
10.7	* 1 83-19 * 2 83-19 3 82-12 4 82-12 5 82-12

* Coded pages

LIST OF THE LATEST APPROVED NORMAL REVISIONS		NORMAL REVISION No. : 0 DGAC APPROVED DATE : 09.05.83
No.	DATE CODE	
0	83-19	

L'INGENIEUR EN CHEF

A.

1 GENERAL

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

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

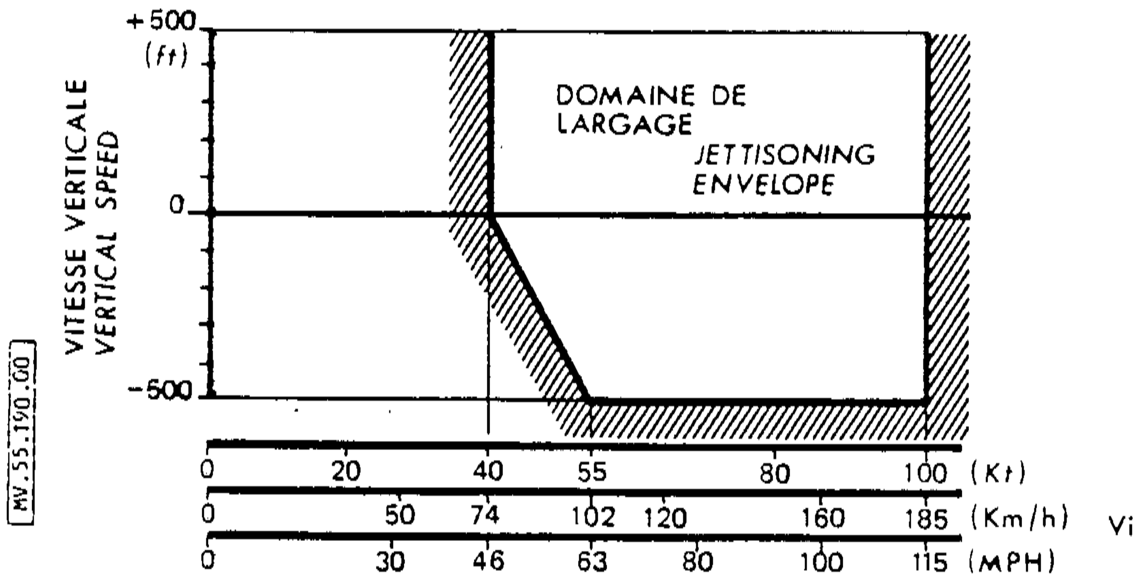
The non-jettisonable amount of fuel is :

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

2 LIMITATIONS

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

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



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

3 EMERGENCY PROCEDURES

All the procedures given in Section 3 apply.

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

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

Procedure :

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

NOTE :

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

4 NORMAL PROCEDURES

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

4.1 Pre-flight checks

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

4.2 Post-flight steps

If fuel has been jettisoned, replace the frangible disk.

5 PERFORMANCE

The performance data are not affected by this system.

R.R. N° 2 D

Les limitations objet de la présente révision rapide ne s'appliquent pas aux appareils équipés de cet optionnel à l'exception de la consigne de mise en marche de l'antigivrage des GTM en dessous de + 5°C avec toutes conditions de précipitation et d'humidité visible.

SUPPLEMENT 10.9 NON APPROUVE CAA

Cette page n'est pas à incorporer dans les manuels soumis à cette certification

---

Apart from the instruction for use of the engine anti-icing system below + 5°C in any precipitation and visible humidity conditions, the limitations laid down in this Rush Revision do not apply to aircraft incorporating that equipment.

SUPPLEMENT 10.9 NOT APPROVED BY THE CAA

This page is not to be incorporated in the manuals which are subjected to this certification.

FLIGHT MANUAL

AS 355 F1

SUPPLEMENT

3 - AXIS AUTOMATIC PILOT
SFIM 85 T31

350 82-7022
350 83-6614

Complete with optional coupler
350 82-6614

Complete with optional failure monitoring unit
350 82-7024

IMPORTANT NOTE

This supplement shall be included in the Flight Manual when the installation mentioned above is fitted to the aircraft. The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal revision : 1

Société Nationale Industrielle aerospatiale
Division Hélicoptères - 13723 MARIGNANE Cedex (FRANCE)

AS 355 F1 AIRCRAFT

LIST OF APPROVED PAGES

This supplement at the revision mentioned on first page contains the pages below identified by the following date-codes :

SECTION	PAGE	DATE		SECTION	PAGE	DATE
10.12	1 *04*	87-12	*			
	2 *04*	87-12	*			
	3 *00*	82-41				
	4 *00*	82-41				
	5 *00*	82-41				
	6 *00*	82-41				
	7 *00*	87-12				
	8 *01*	87-12	*			
	9 *00*	87-12				
	10 *00*	87-12				
	11 *00*	87-12				
	12 *00*	87-12				
	13 *00*	87-12				
	14 *00*	87-12	*			
	15 *00*	87-12				
	16 *00*	87-12				
	17 *01*	87-12	*			
	18 *00*	87-12				
	19 *00*	87-12				

* Coded pages

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No.	Date	No.	Date
0	83-19		
1	87-12		

NORMAL REVISION : 1
DGAC APPROVED
DATE : 10-12-87

DIRECTION GÉNÉRALE DE L'AVIATION CIVILE

L'INGENIEUR EN CHEF DE L'ARMEMENT
A. RICHARD

1 GENERAL

1.1 Basic autopilot

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

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

The A.P. unit mainly consists of :

- A control panel on the console.
- A computer underneath the cabin floor on copilot's side that receives data from the following detectors :
  . vertical gyro,
  . horizontal situation indicator (H.S.I.),
  . gyro-compass,
  . air data sensor,
  . control pedal displacement detector,
  . lateral accelerometer.
- An artificial load release system.
- A control for adjustment of the rudder pedals friction.
- Three control actuators (one per axis).
- Two trim actuators (on pitch and roll axes).
- Three galvanometers (pitch, roll, yaw).
- Three "disengaged channel" indicating lights (P, R and Y).
- An AP coupler monitoring panel.

1.2 Coupler - Flight Director

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

This module includes :

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

The Coupler ensures the following functions :

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

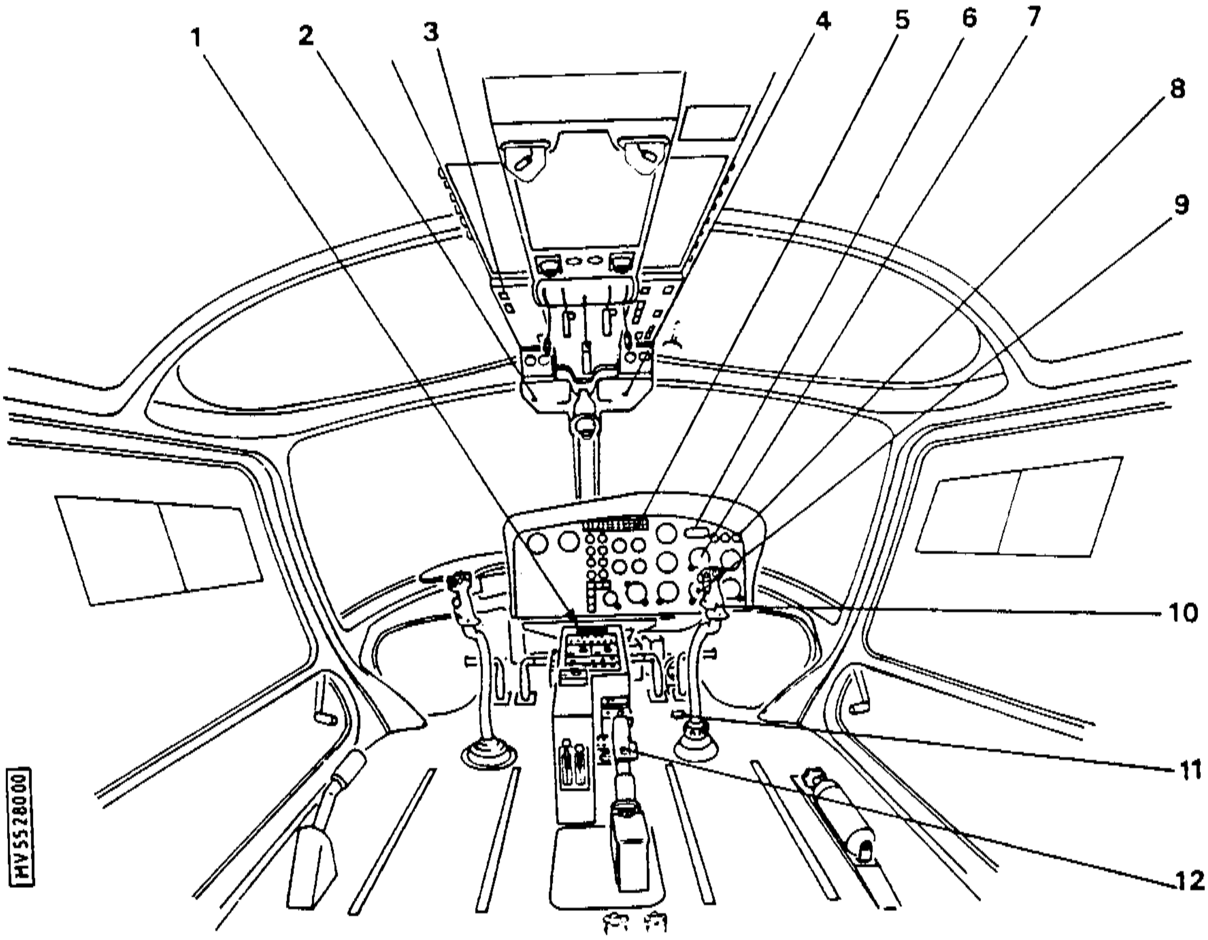
1.3 Failure monitoring unit

This optional equipment is a module, designated failure monitoring unit, which monitors the operation of pitch and roll channels at various levels :

- Attitude sensors.
- Command inputs generating system.
- Control actuators.
  In case of abnormal operation, this unit warns the pilot and cuts out the defective channel. It is controlled by a "MONIT" push-button located on the autopilot control panel.

Controls and monitoring instruments available to the pilot

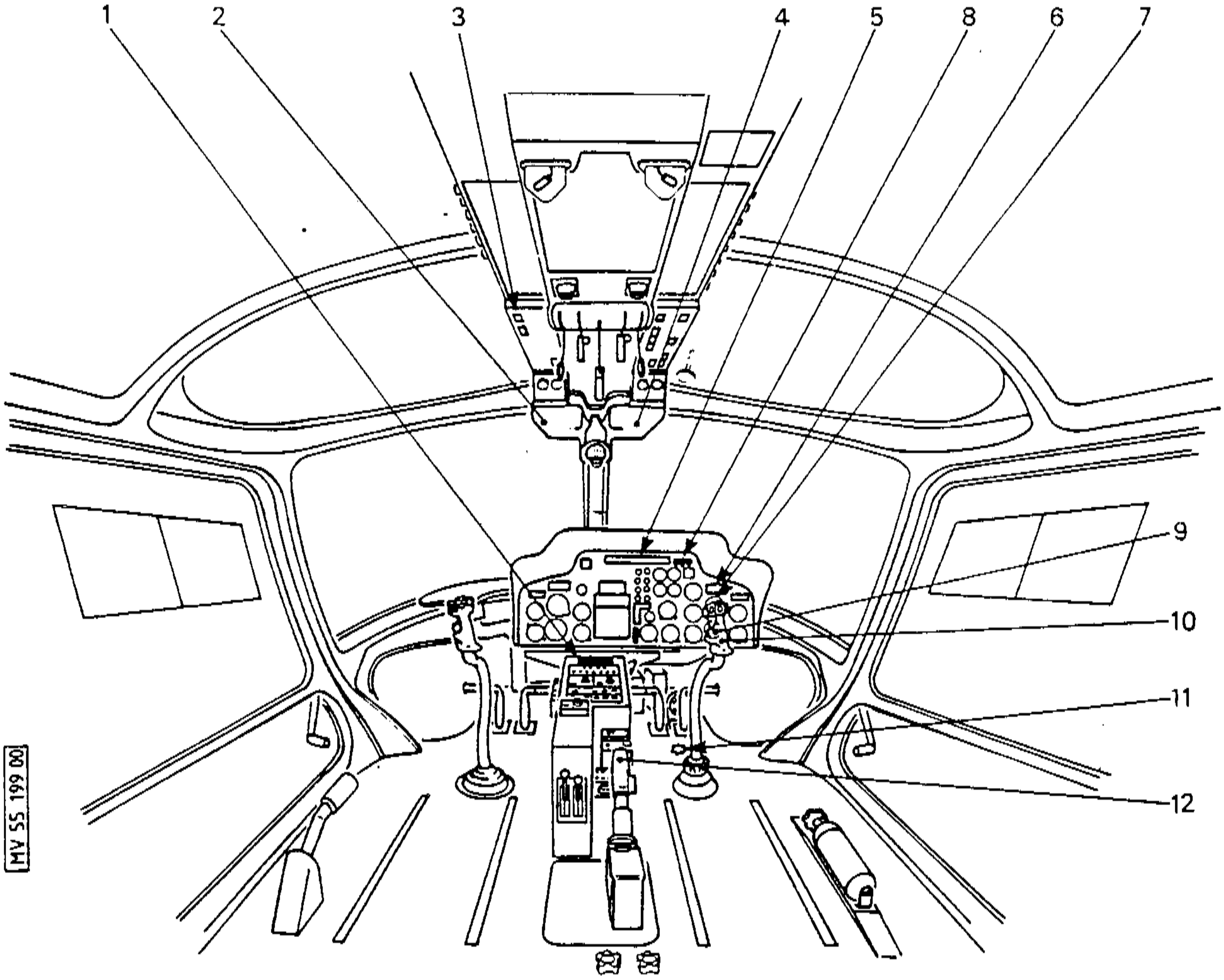
Instrument panel (1st version) (VFR)



ITEM No.	DESCRIPTION	ITEM No.	DESCRIPTION
1	Control panel	6	Monitoring panel
2	Pannel 15 ALPHA (push-buttons for L.H. inverter : twin generation)	7	ADI (if fitted)
3	Panel 5 ALPHA1 (push-buttons for artificial loads, pitch trim and roll trim)	8	Galvanometers with associated lights
4	Panel 14 ALPHA (push-buttons for R.H. inverter)	9	Gyro-compass - HSI
5	Failure warning panel	10	Pilot's cyclic stick grip
		11	Pedal unit friction control
		12	Pilot's collective lever grip

Controls and monitoring instruments available to the pilot

Instrument panel (2nd version) (IFR)



ITEM No.	DESCRIPTION	ITEM No.	DESCRIPTION
1	Control panel	6	Annunciator panel
2	Pannel 15 ALPHA (push-buttons for L.H. inverter)	7	ADI
3	Panel 5 ALPHA1 (push-buttons for artificial loads, pitch trim and roll trim)	8	Galvanometers with associated lights
		9	Gyro-compass - HSI
		10	Pilot's cyclic stick grip
		11	Pedal unit friction control
4	Panel 14 ALPHA (push-buttons for R.H. inverter)	12	Pilot's collective lever grip
5	Failure warning panel		

1.1 Autopilot control panel (Figure 1)

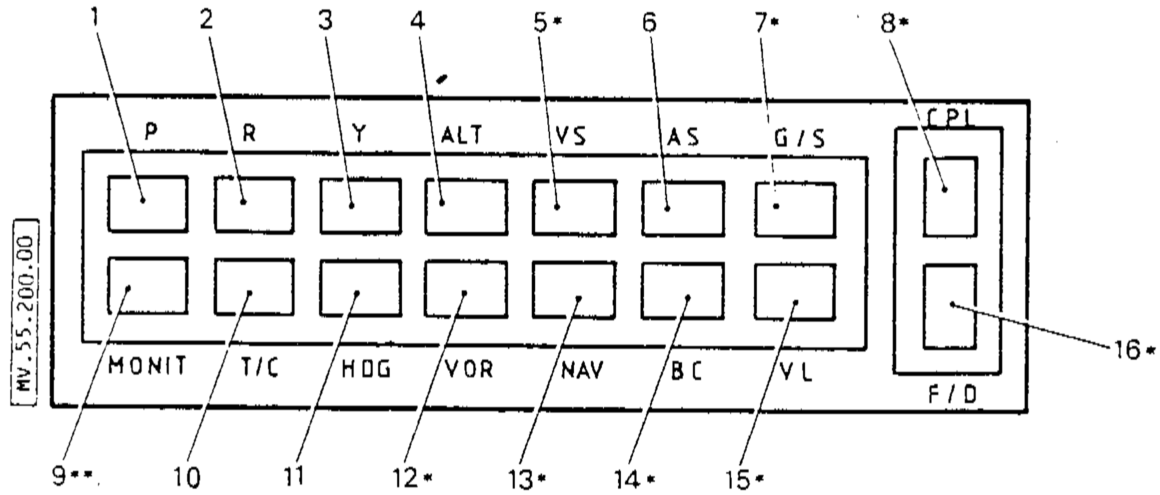


Figure 1 R

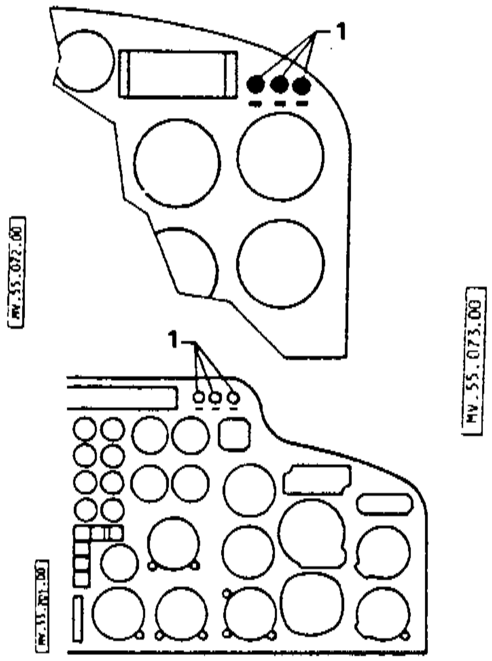
ITEM No.	Description - Function	ITEM No.	Description - Function
1	Pitch channel	9**	Failure monitoring
2	Roll channel	10	Coordinated turn
3	Yaw channel	11	Selected heading mode
4	Altitude mode	12*	VOR (long distance) mode
5*	Vertical speed mode	13*	NAV course track
6	Airspeed mode	14*	LOC back course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

* Functions achieved by the optional Coupler.
** Functions achieved by the Failure Monitoring Unit.

- Push-buttons 1 - 2 - 3 - 4 - 5* - 6 - 8 - 9** - 10 - 11 - 16* illuminate when depressed, their function is armed or effective and "ON" marking appears on buttons 1 - 2 - 3 - 4 - 5* - 6 - 9** - 10 and 11. "CPL" appears on button 8* and "F/D" on button 16*.

- On push-buttons 7* - 12* - 13* - 14* - 15*, amber "ARM" marking appears on L.H. section of button when function is armed and green "CAP" marking appears on RH section after capture.

1.2 Instrument panel galvanometers (Figure 2)



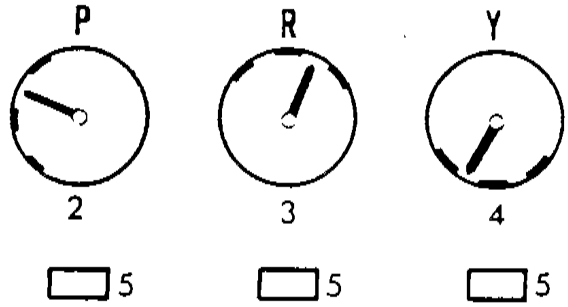


Figure 2 R

Item No.	Description - Function	Item No.	Description - Function
1	Location of galvanometers P (pitch), R (roll) and Y (yaw) Deflection of galvanometer pointers according to orders from A.P.	5	Amber lights. Illuminate when corresponding channel is not engaged.
2	on P : pitch order to nose up		
3	on R : roll order to the right		
4	on Y : yaw order to the left		

NOTE : The yaw galvanometer (4) pointer is recentered by moving the rudder pedals in the direction shown by the pointer.

1.3 Cyclic stick grip controls R

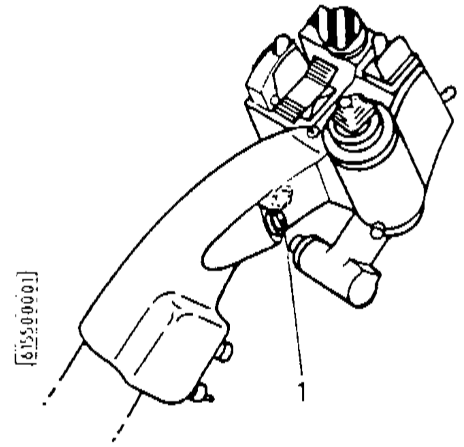
- Four-way beep-trim button. Allows the pilot to operate the stick and R
  change the aircraft attitudes. R

- Trim release push-button.Momentarily releases pitch and roll channel R
  artificial feel loads. R

- Push-button switch. Disengages A.P. system . R

- Push-button switch. Disengages coupler (if fitted). R

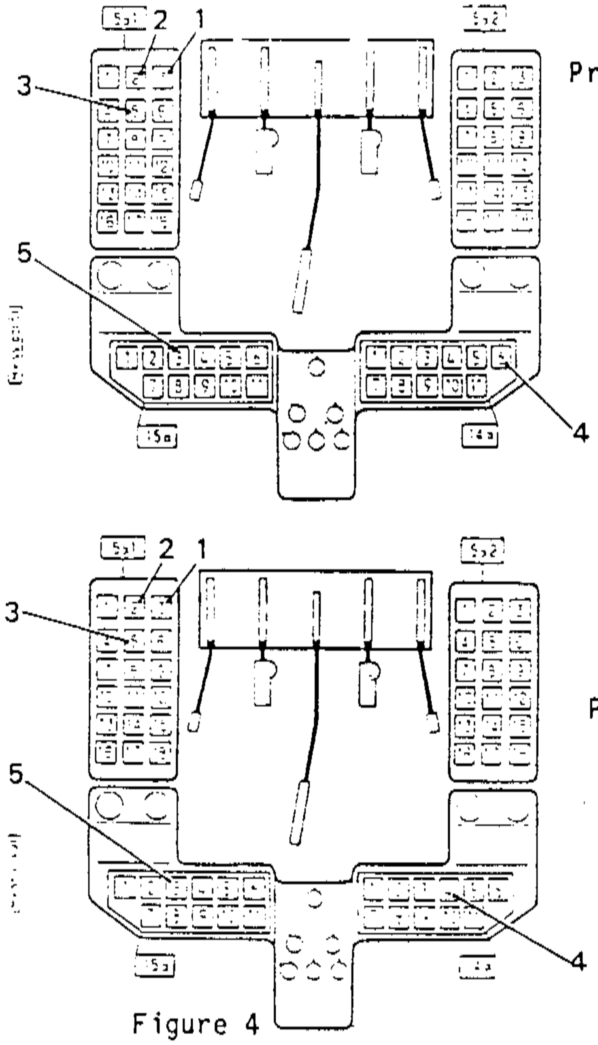
1.4 Collective lever grip control (Figure 3) R



Item No.	Description - Function
1*	Engagement - disengagement of GO-AROUND mode (if coupler fitted)

Figure 3 R

1.5 A.P. control pushbuttons (Figure 4) R



Pre-mod. AMS 1123

Item No.	Description - Function
1	Permanent release of artificial loads in Pitch and Roll
2	Pitch trim actuator release
3	Roll trim actuator release
4	RH inverter push-button
5	LH inverter push-button (if fitted)

Post-mod. AMS 1123

Figure 4 R

1.6 AP/CPL monitoring panel (Figure 5) R

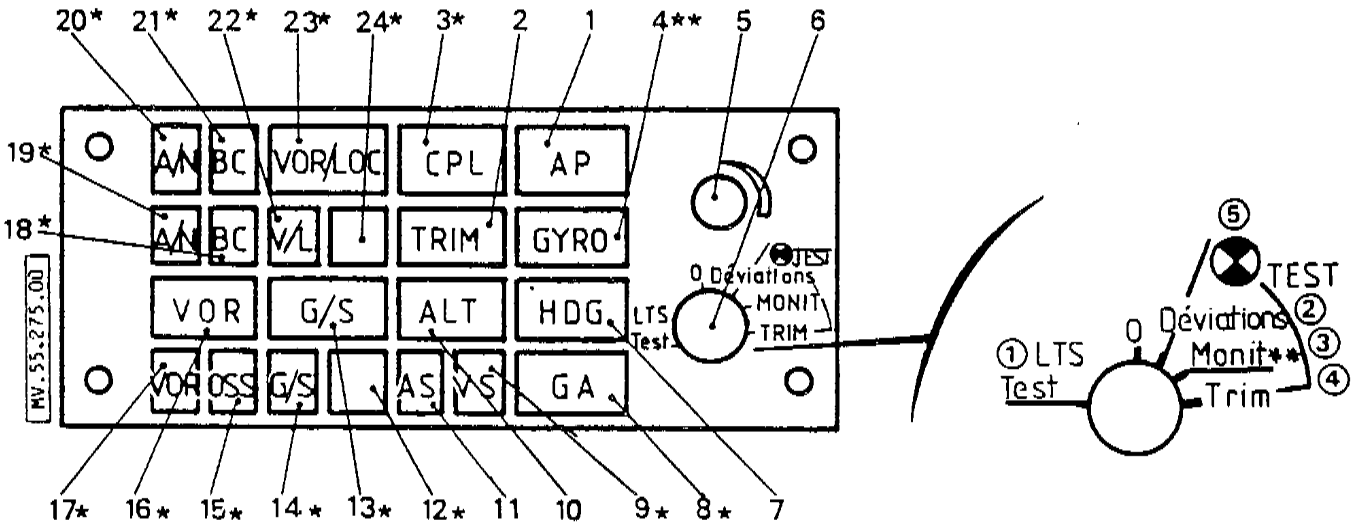


Figure 5 R

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

* functions provided by the coupler (optional item)
** functions provided by the Failure Monitoring Unit (optional item)

2 LIMITATIONS

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

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

3 EMERGENCY PROCEDURES

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

3.1 General

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

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

3.2 Failure of hydraulic system

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

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

3.3 Failure of the vertical gyro

INDICATION	SYMPTOM	PILOT'S ACTION	
.AP caption flashes for 10 s (Fig. 5) .GYRO caption illuminates (Fig. 5) .P, R push-button lights on AP control pannel go out (Fig. 1) .P and R indicating lights (below galvanometers) illuminate (Fig.2, Detail 5)	-Automatic disengagement of pitch and roll channels	- Manual control by the pilot. Check that pilot's gyro horizon readings agree with standby gyro horizon readings. The yaw channel remains operative. The other modes are inoperative. Flight Director,if installed,remains operative. - Continue flight or land as soon as practicable according to the circumstances.	R R

3.4 Failure of the gyro-compass

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

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

3.5 Sudden failure of the auto-pilot

INDICATION	SYMPTOM	PILOT'S ACTION	
. AP caption flashes for 10 seconds (Fig. 5)	- Hardover to the defective axis. - The associated channel disengages (if failure monitoring unit active).	- Manual control by the pilot (power reduction may be required to comply with the limitations). - Disengage the faulty channel (if failure monitoring unit inoperative or not fitted) - Continue flight.	R

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

3.6 Malfunctioning of trim

INDICATION	SYMPTOM	PILOT'S ACTION
. TRIM caption illuminates for 10 sec. (Fig. 5) and defective trim disengages automatically	- Before operation of the safety system (automatic disengagement), the stick tends to move in the direction of the failure. The pilot can no longer operate trim.	- Manual control by the pilot. - Momentarily disengage the artificial loads to trim stick. - Disengage the faulty trim function (push-button on panel 5 ALPHA 1) - Continue flight. The auto-pilot continues to operate without the faulty axis being trimmed. - Continue flight while bringing galvanometer pointer back to the centre using the stick trim release button.

3.7 Blockage of artificial load system

INDICATION	SYMPTOM	PILOT'S ACTION
	- Blockage of cyclic stick	- Break mechanical shear pin of load compensator shaft by applying a 10-kg load approx. on cyclic stick.

3.8 A.C. power supply failure

3.8.1 Single a.c. system (VFR only)

INDICATION	SYMPTOM	PILOT'S ACTION
.AP caption flashes for 10sec.(Fig.5) .'INV' caption on failure warning panel and 'TRIM' caption illuminate (Fig.5)	- AP disengages automatically.	- Check that 'INV' push-button (panel 14 ALPHA) is engaged. - Check a.c. voltages. - Attempt to reset the inverter. - If not possible, continue flight with AP disengaged.

3.8.2 Dual a.c. system

INDICATION	SYMPTOM	PILOT'S ACTION
.INVERT RH or INVERT LH caption on failure warning panel illuminates	- None (A.P. is automatically supplied from the other inverter.).	- Check that the associated pushbutton is engaged. - Check a.c. voltages. - Attempt to reset the tripped inverter.

3.8.3 Total power supply failure

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

3.9 Failure of pilot's ADI (A.P. complete with failure monitoring unit)

INDICATION	SYMPTOM	PILOT'S ACTION
. AP caption flashes for 10sec.(fig. 5) . MONIT button extinguishes (Fig. 5) . Flag appears on pilot's ADI	- None	- Continue flight with no failure monitoring. The Flight Director (if installed)is inoperative. R R - Use standby ADI (if fitted)

4 NORMAL PROCEDURES

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

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

4.1 Pre-takeoff checks

- Push-buttons :	
.TRIM RELEASE - - - - - - - - - - .PITCH TRIM ACTUATOR - - - - - .ROLL TRIM ACTUATOR - - - - - -	-- Released
- Cyclic stick - - - - - - - - - -	- Friction untightened
- Rudder pedals - - - - - - - - - -	- Friction tightened or as required
- a.c. inverters- - - - - - - - - -	- Pushbuttons pressed in and captions off (according to version)
- Horizontal Situation Indicator -	- HDG flag not visible

1) Autopilot test - Test selector switch set to LTS position 1. (Detail on Figure 5)	- Captions on control panel (Fig. 1) Illuminate. - Captions on AP/CPL monitoring panel (Fig. 5) illuminate (2.5-second time delay) - Test function caption (5) (Detail on Fig. 5) illuminates.
- Test selector switch set to 0	- Test function caption (5) (Detail on Fig. 5) extinguishes.
- Pitch, roll and yaw channels engaged.	- P, R, Y push-button lights illuminate (Fig. 1). Captions below galvanometers extinguish (Detail 5, Fig. 2).
- Four-way beep trim button : successively actuate in each direction.	- Check cyclic stick and relevant galvanometer pointer move in the right direction.
- Switch off autopilot through A.P. release pushbutton on pilot's cyclic stick. Then repeat this stop through same pushbutton on copilot's cyclic stick if fitted, after re-engaging the three autopilot channels.	- Captions below galvanometer illuminate. - AP caption (Fig. 5) flashes for 10 seconds. - Captions on control panel (Fig. 1) extinguish.
<u>Pitch trim test</u>	
- Pitch channel engaged	- Relevant ON push-button light (Fig. 1) illuminates
- Test selector switch set to TRIM, position 4 (Detail on Fig. 5).	- With Failure Monitoring unit installed: . flashing of the TRIM caption light (Fig.5). . alternate displacement of the cyclic stick. - Without Failure Monitoring Unit installed: Same as above, with a delay of 8 sec. approx.
- Test selector switch set to 0 - Disengage pitch channel	- P push-button light (Fig. 1) extinguishes
<u>Roll trim test</u>	
- Roll chanel engaged - Test selector switch set to TRIM (position 4). - Test selector switch set to 0 - Disengage roll channel	- Same as pitch trim test above with alternate displacement of cyclic stick to the left.

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

2) Failure monitoring unit test (MONIT)

- Pilot's gyro horizon (ADI)	- Flag not visible.
- Pitch channel engaged	- Pitch push-button light illuminates (Fig. 1) - MONIT push-button light illuminates (Fig. 1).
- Actuate four-way button to offset cyclic stick in pitch direction	- Cyclic stick moves in the chosen direction
- Test selector switch set to MONIT, position 3 (Detail on Fig. 5)	- Cyclic stick stops moving. - Galvanometer re-centers - AP warning light flashes (Fig. 5) R - GYRO warning light illuminates (Fig. 5) R - MONIT push-button light flashes (Fig. 1) - Pitch push-button light extinguishes (Fig. 1)
- Test selector switch set to 0	
- Roll channel engaged.	- Roll push-button light illuminates (Fig. 1) - MONIT push-button light illuminate (Fig. 1).

Same procedure as the pitch channel.

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

4.2 Autopilot engagement before take-off

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

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

4.3 Operating the autopilot in flight

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

4.3.1.1 Pitch and roll

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

CAUTION: WITH THE FAILURE MONITORING UNIT INOPERATIVE OR NOT FITTED, THERE IS NO AUTOMATIC DISENGAGEMENT OF THE DEFECTIVE CHANNEL IN THE EVENT OF A HARDOVER.IT IS ADVISABLE TO KEEP HANDS ON THE CONTROLS IN CLIMBING,FLIGHT AT MCP AND FAST CRUISE.

4.3.1.2 Yaw

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

4.3.1.3 Coordinated turns (T/C)

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

4.3.2 Additional modes (coupler not fitted)

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

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

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

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

4.3.2.3 Airspeed (AS)
This mode may be operated when the airspeed is above 50 knots (92 km/h - 57 MPH).
When this mode is engaged, the autopilot holds the engagement airspeed through the pitch channel.

4.3.3 Additional modes and couplings (coupler fitted)

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

4.3.3.1 Selected heading (HDG)
Refer to para. 4.3.2.1 above.

4.3.3.2 Altitude (ALT)
Refer to para. 4.3.2.1 above.

4.3.3.3 Airspeed (AS)
Refer to para. 4.3.2.3 above.

4.3.3.4 Vertical speed (VS)
When this mode is engaged, the autopilot acquires and retains vertical speed selected on the VSI.

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

NOTE : Testing tne radio-altimeter disengages the mode. R

4.3.3.6 VOR mode
When this mode is engaged, the autopilot acquires and retains the VOR radial selected on the HSI.

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

4.3.3.7 NAV mode
Optional not used in the basic version.

4.3.3.8 BC mode
When this mode is used, the autopilot acquires and retains the back course beam of the LOC navigation transmitter

4.3.3.9 VL mode

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

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

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

4.3.4 Flight Director (F/D) mode

This mode provides two functions :

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

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

4.4 After landing

Disengage the auto-pilot through the pushbutton on cyclic stick. R

5 PERFORMANCE

The approved performance data are not affected.

FLIGHT MANUAL
AS 355 F1
SPECIAL SUPPLEMENT N°10.50

FERRY TANK INSTALLATION

PER DRAWINGS : 350A 82-2004.02
350A 82-2005.02

IMPORTANT NOTE

This supplement shall be included in the Flight Manual when the installation mentioned above is fitted to the aircraft. The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal revision : 0

LIST OF APPROVED PAGES

SUPPLEMENT	PAGE AND DATE CODE
10.50	1 * 83-19 2 * 83-19 3 81-46 4 81-46 5 81-46

* Coded pages

LIST OF THE LATEST APPROVED NORMAL REVISIONS		NORMAL REVISION No. 0 DGAC APPROVED DATED : 09.05.83
No.	DATE CODE	
0	83-19	

FLIGHT MANUAL

AS 355 F1

SPECIAL SUPPLEMENT N°10.50

FERRY TANK INSTALLATION

PER DRAWINGS : 350A 82-2004.02
350A 82-2005.02

IMPORTANT NOTE

This supplement shall be included in the Flight Manual when the installation mentioned above is fitted to the aircraft. The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal revision : 0

LIST OF APPROVED PAGES

SUPPLEMENT	PAGE AND DATE CODE
10.50	1 * 83-19 2 * 83-19 3 81-46 4 81-46 5 81-46

* Coded pages

LIST OF THE LATEST APPROVED NORMAL REVISIONS	
No. DATE CODE	NORMAL REVISION No. 0 DGAC APPROVED DATED : 09.05.83
0 83-19	

1 GENERAL

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

The range of the helicopter can be increased by installing a special ferry flight tank transversally in the rear cabin area.

This installation consists essentially of :

- A removable tank with a capacity of 475 litres (125 US Gal) of which 6 litres (1.6 US Gal) are not usable.
- A vent line.
- A fuel transfer line, with an isolating valve, for connection of ferry tank to forward tank (LH fuel contents gauge).

2 LIMITATIONS

The limitations laid down in the basic Flight Manual remain applicable. In addition :

- Only personnel indispensable to the accomplishment of the role are authorized to fly in the aircraft.
- Smoking is prohibited, due to the presence of fuel in the tank in the cabin.
- Fuel transfer is prohibited as long as the forward tank gauge reading exceeds the value as determined by means of Chart 1.

NOTE : Check that weight and CG values are within authorized limits (see Section 2).

3 EMERGENCY PROCEDURES

In case of fuel leaks in the cabin :

- Land as soon as possible.

4 NORMAL PROCEDURES

CHECKS BEFORE FILLING THE TANK

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

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

USE OF FERRY TANK IN FLIGHT

The following procedure makes it possible to maintain C.G. location within limits and to know the quantity of fuel available.

- Take-off and beginning of flight are to be carried out with transfer valve closed.
- Open the transfer valve when the forward tank gauge reading does not exceed the value as determined by means of Chart 1.
- Check that the fuel transfer is effective (reading increasing on forward tank gauge).
- Wait until balance is obtained between ferry tank and forward tank, to determine the quantity of fuel.

ATTENTION : - DURING FUEL TRANSFER, DO NOT TAKE ACCOUNT OF FORWARD TANK GAUGE READINGS.
- WHEN FUEL TRANSFER IS ACHIEVED, FORWARD TANK GAUGE READS 2 % MORE THAN AT BEGINNING OF TRANSFER.* THIS OPERATION MAY LAST 20 MINUTES.

* This reading may exceed 2 % when the ferry tank contains more than 240 litres (63.4 US Gal).

- The total quantity of fuel available is the sum of :
  . the quantity as determined by means of Chart 1 from the reading on forward tank gauge.
  . and the reading on rear tank gauge.

EXAMPLE OF USE OF CHART 1

DETERMINING THE TRANSFER LIMIT VALUE

- Starting from the quantity of fuel 1 contained in the ferry tank follow the vertical line up to line 2 (limit of authorized transfer).
- Then follow the horizontal line up to line 3 . This point shows the fuel contents gauge reading at which it is authorized to start transferring.

DETERMINING THE QUANTITY OF FUEL AVAILABLE AFTER TRANSFER (Forward tank and ferry tank)

- When reading is steady (point 4) read on line 5 the quantity of fuel available in both tanks (forward and ferry tanks).

Example : With 150 litres in the ferry tank
- Transfer authorized from 26 % reading on forward tank gauge.
- When reading is steady :
  . the gauge reads 28 %
  . the total fuel quantity is 370 litres.

NOTE : From 0 to 130 litres (0 to 34.3 US Gal) the fuel is contained in the forward tank only. Beyond this value, the fuel is distributed in the forward tank and the ferry tank ; this is why the scale is different.

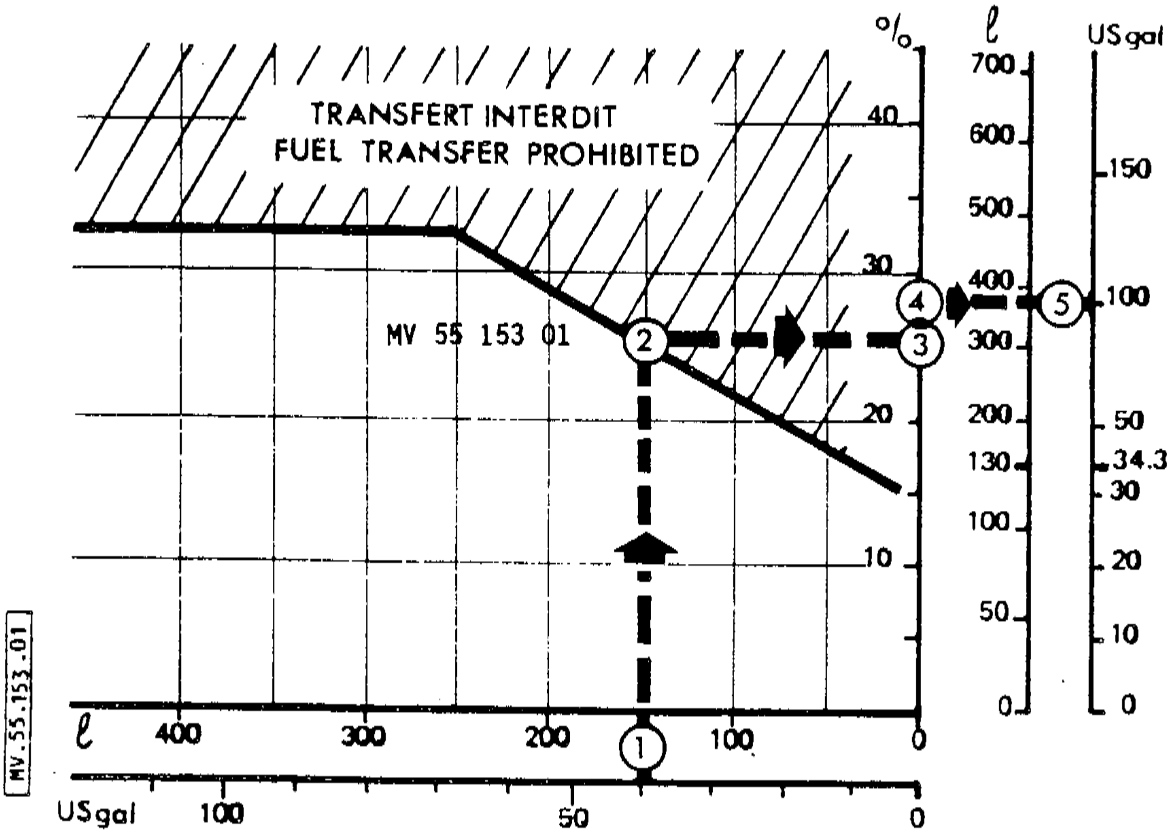


Chart 1

SECTION 11

SUPPLEMENTS FOR OPERATIONAL UTILIZATION

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

LIST OF SUPPLEMENTS

FLIGHT MANUAL

AS 355 F1

SUPPLEMENT

INSTRUCTIONS FOR OPERATION IN COLD WEATHER

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal Revision : 2

Société Nationale Industrielle aerospatiale
Division Hélicoptères - 13723 MARIGNANE Cedex (FRANCE)

AS 355 F1 AIRCRAFT

LIST OF APPROVED PAGES

This supplement at the revision mentioned on first page contains the pages below identified by the following date-codes :

SECTION	PAGE	DATE		SECTION	PAGE	DATE
11.1	1 *01*	87-12	*			
	2 *01*	87-12	*			
	3 *00*	87-12				
	4 *00*	81-16				
	5 *01*	83-19				

* Coded pages

LIST OF THE LATEST NORMAL APPROVED REVISIONS				NORMAL REVISION : 2 DGAC APPROVED DATE : 03-06-87
No.	Date	No.	Date	
0	81-16			
1	85-02			
2	87-12			L'INGENIEUR EN CHEF DE L'ARMEMENT A. RICHARD

1 GENERAL

When the aircraft has been subjected to very low temperatures for several hours it is recommended that preheating of the engines, transmission assemblies and cabin be effected.

If the aircraft is not to remain inoperative for too long a period it is recommended that regular ground runs be carried out : every two hours for temperatures of about - 20°C and every hour for lower temperatures.

Tests carried out at very low temperatures have enabled the behaviour of the various helicopter components to be checked and engine start-up and rotor spinning to be carried out without initial preheating at temperatures below -40°C (the lower limit of the approved flight envelope remains R
unchanged). R

2 LUBRICANTS TO BE USED

2.1 Transmission assemblies

Below - 25°C, "NATO 0155" oil is not to be used for transmission assemblies without initial preheating.

The other oils authorized in section 2 of the basic flight manual may be used down to - 40°C without preheating.

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

2.2 Engines

- The oils to be used are indicated in section 2 of the basic Flight Manual.

  For reference : NATO 0156 and NATO 0160 oils are not to be used at O.A.T. below - 25°C. R

- The fuels to be used are indicated in Section 2 of the basic Flight Manual. Although JET A1 fuel has been used to start engines at OAT below -40°C, it is advisable to use JP4 - JET B fuels to ensure correct engine starting at OAT below +4°C.

3 USE OF BATTERIES FOR START-UP

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

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

The start-up envelope is related to the temperature and is indicated in the following chart.

O.A.T. (°C)	-40	-35	-30	-25	-20	-15
Start-up on 1 cold, charged battery and oil 0.156 or 0.148 in the engines						XXXX
Start-up on 1 warm (20°C), charged battery and oil 0.156 in the engines				XXXXXXXXXXXXXXXXXXX		
Start-up on 1 warm (20°C), charged battery and oil 0.148 in the engines		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX				
Start-up on 2 cold, charged batteries and oil 0.156 or 0.148 in the engines				XXXXXXXXXXXXXXXXXXX		
Start-up on 2 warm (20°C), charged batteries and oil 0.148 in the engines.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX					

4 PRECAUTIONS TO BE TAKEN AFTER THE LAST FLIGHT OF THE DAY

When the rotor has stopped, centralize the cyclic pitch stick and lock the collective pitch lever in the full low pitch position.

- Check the magnetic plugs after the flight within half an hour of stopping the rotor
- Ensure that all doors are closed
- Fit air intake and exhaust pipe covers.

5 PRE-FLIGHT PREPARATION

The following operations or checks are to be carried out independently of the pre-flight checks :

Main rotor blades
Sweep away any snow and de-ice the blades if necessary using hot air (temperature below 80°C). Turn the rotor at least once by hand before starting up.

Main rotor head
Remove ice or frost from the swashplate hinge points, the spherical thrust bearings and the blade attach flanges.

Engines

- Remove the air intake and exhaust pipe covers
- Remove ice or snow from the air intake grids
- Check that drains and scuppers are not blocked and that the engine controls are free.

Tail rotor

Remove any ice or frost from the blades or pitch-change rods.

CAUTION : IF DE-ICING PRODUCTS ARE USED, SPECIAL PRECAUTIONS ARE TO BE TAKEN SINCE THESE PRODUCTS ATTACK CERTAIN COMPONENTS, THE BLADES IN PARTICULAR. USE ONLY THE PRODUCTS AUTHORIZED IN THE MAINTENANCE PUBLICATIONS.

6 START-UP

The normal procedures given in the flight manual still apply.
However, when O.A.T. is below freezing-point, the Ng should be between 12 and 15 % before the fuel flow control lever is pushed forwards to the starting gate.

When the engines have been started, switch on the cabin demister and heater, and also the air intake de-ice if necessary.

7 AFTER START-UP

- Ensure that the fuel flow control levers are in the "flight" gate
- Check :
  . Rotor speed
  . Lights out
  . Pressures correct

FLIGHT MANUAL

AS 355 F1

SUPPLEMENT

"GROUP A" OPERATION

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

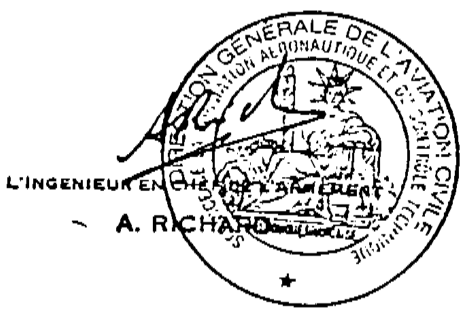
Société Nationale Industrielle aerospatiale
Division Hélicoptères - 13 725 MARIGNANE Cedex (France)

LIST OF APPROVED PAGES

SUPPLEMENT	PAGE AND DATE CODE			
11.3	1 *	85-14 *01*	18 *	85-14 *01*
	2 *	85-14 *01*	19 *	85-14
	3 *	82-03	20 *	85-14 *01*
	4 *	85-14	21 *	85-14
	5 *	83-02	22 *	85-14 *01*
	6 *	83-02	23 *	85-14
	7 *	83-02	24 *	85-14 *01*
	8 *	83-02	25 *	85-14
	9 *	83-02	26 *	85-14
	10 *	83-02	27 *	85-14 *01*
	11 *	85-14 *01*	28 *	85-14 *01*
	12 *	85-14 *01*	29 *	85-14 *01*
	13 *	85-14 *01*	30 *	85-14 *01*
	14 *	85-14	31 *	85-14
	15 *	85-14	32 *	85-14
	16 *	85-14	33 *	85-14
	17 *	85-14		

* Coded pages

LIST OF THE LAST NORMAL REVISIONS APPROVED		NORMAL REVISION No 1 DGAC APPROVED On : 08.10.1986
No	DATE CODE	
0	84-07	
1	85-14	



1 GENERAL

The information specified herein applies to "Group A" operation. The information contained in the basic manual remains applicable with the exception of the limitations, procedures and performance data specific to "Group A" operation, mentioned in this supplement.

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

V1	Critical decision speed
h1	Critical decision height
V_{TOSS} 40 knots 74 km/h 46 MPH.	Take-off safety speed. This is the speed at which the helicopter gradient of climb is 3 % min., under the following conditions : - 1 engine inoperative. - 1 engine at single-engine maximum continuous rating
Vy 55 knots 102 km/h 63 MPH	Climbing speed defined in Section 4.1 of the basic manual.
C.D.P.	Take-off Critical Decision Point. This C.D.P. is the point at which : - If an engine fails BEFORE or at this point , it is possible to land normally on the heliport . - If an engine fails AFTER this point has been reached, it is possible to continue the flight at maximum permissible take-off weight and prescribed rate of climb. THE C.D.P. IS THE ONLY POINT WHERE THE COMBINATION OF HEIGHT AND AIRSPEED PERMITS EITHER ABANDONING TAKE-OFF OR ACCELERATING UP TO V_{TOSS} AND CONTINUING CLIMBING ON ONE ENGINE IF THE OTHER HAS FAILED.
L.D.P.	The Landing Critical Decision Point is the point at which : - If one engine fails BEFORE or at this point , it is possible . either to reach V_{TOSS} at an altitude of at least 50 ft (15 m) above the landing area by increasing engine power immediately, . or to land normally. - If one engine fails AFTER this point has been reached, it is possible to land normally on the heliport.

2 LIMITATIONS

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

2 1 Type of operation approved

Operating the AS 355 is approved in "GROUP A" on clear area and on helipad providing that the limitations, procedures and performance laid down in this supplement are complied with.

2 2 Approved flight envelope

The approved flight envelope remains applicable as defined in the basic manual.
The pressure-altitude on take-off and landing is 7400 ft (2255 m).

2.3 Maximum permissible take-off and landing weight

The maximum permissible take-off and landing weight according to the ambient conditions is specified :

- on chart 1 or 2, for operation on clear area. R
- on chart 3 or 4, for operation on helipad and unobstructed elevated sites. R

2.4 Heating and demisting

These two installations are to be selected off for take-off and landing.

.2 After C.D.P. has been reached

Continue take-off
- In VFR flight : R
  . Set take-off safety speed (V TOSS.)
  . Decrease cllective pitch without exceeding the limitations on the remaining engine while maintaining 375 rpm NR, approx.
  . Climb up to 550 ft.
  . At 550 ft, increase level speed up to Vy.
  . Continue climbing at Vy.
- In IFR flight : R
  . Select Vy R
  . Decrease collective pitch without exceeding the limitations on the remaining engine while maintaining 375 rpm NR approx. R R R
  . Continue climbing at Vy. R

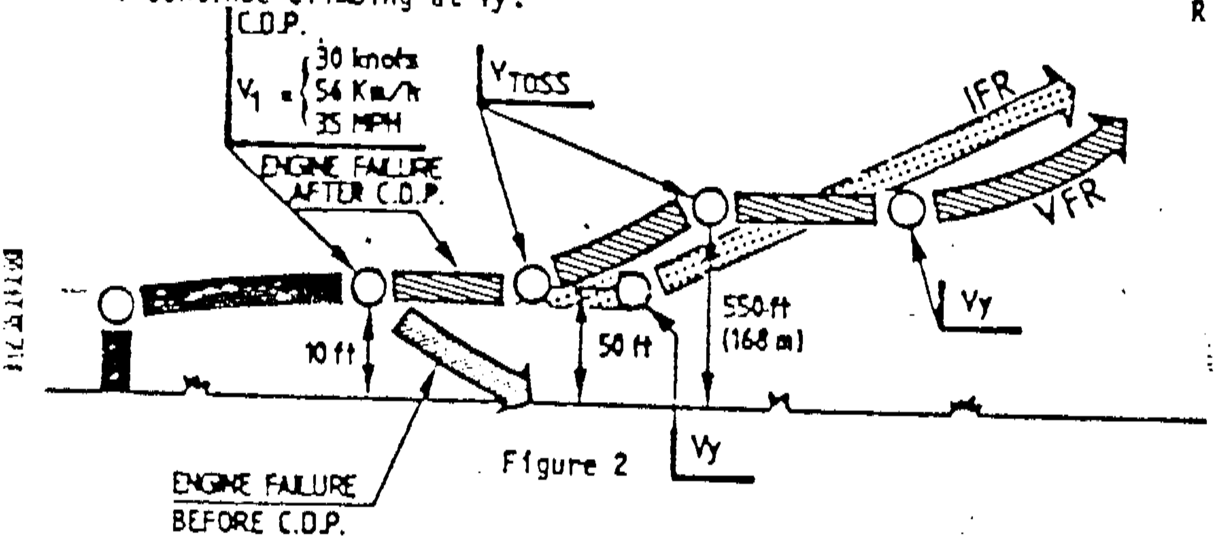


Figure 2

Landing on a clear area

Normal landing procedure (figure 3)

- Continue descent until L.D.P. is reached at V_1 = 40 knots (74 km/h - 46 MPH) while the R/C indicator reads - 500 ft/mn approximately. R
- From L.D.P., slow down by decreasing the sinking rate by means of the collective pitch lever.
- Near the ground, bring the aircraft back to a level attitude and increase collective pitch to cushion landing.

NOTE : Heater, demister - - - - - - - - - - off
Engine anti-ice - - - - - - - - - - as required

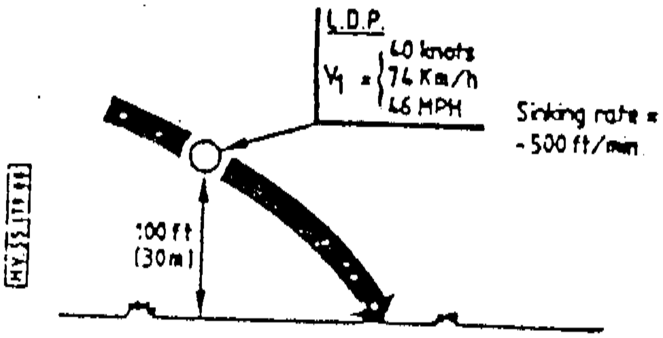


Figure 3

3 PROCEDURES ON A CLEAR AREA

3.1 Take-off from a clear area

3.1.1 Normal take-off procedure (figure 1)

- Set altimeter to zero with MP OG
- From hover I.G.E., set take-off power and increase up to V_1 while maintaining a nearly constant height.
- Start climbing at V1, increasing speed to Vy.
- Set maximum continuous power.
- Maintain Vy until the desired altitude is reached.

In IFR flight Vy, which corresponds to the minimum IFR flying speed, R
will be obtained at a height of 50 ft. R

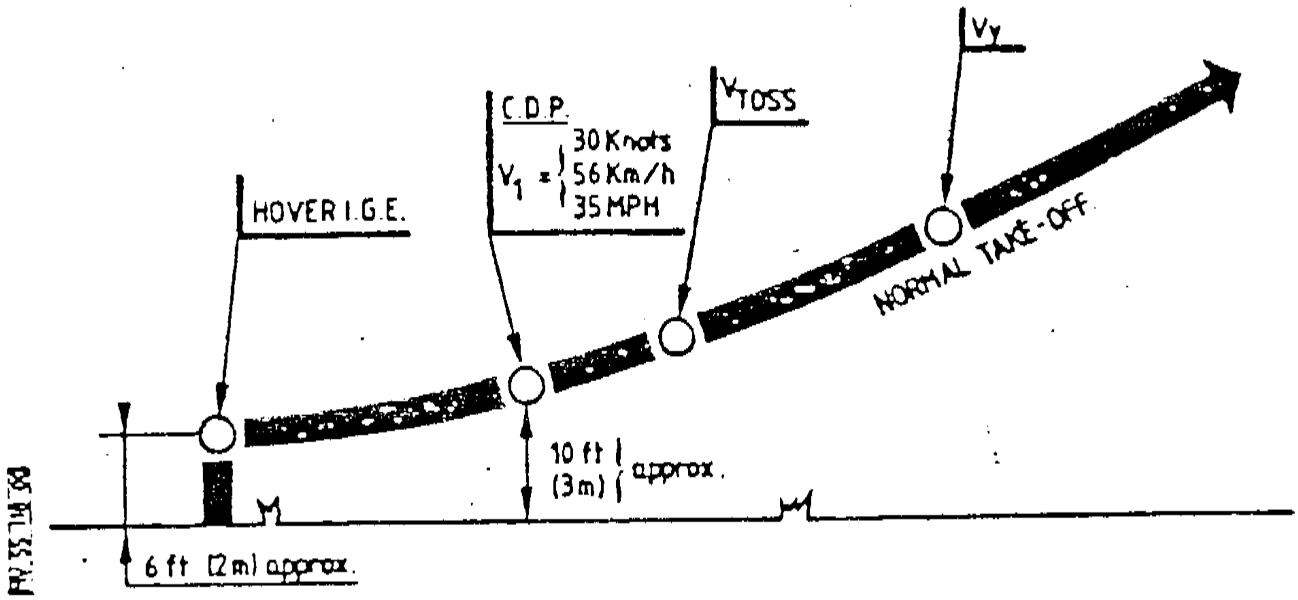


Figure 1

3.1.2 Emergency procedure in the event of an engine failure on take-off (Figure 2)

3.1.2.1 Before C.D.P. is reached :

Abort take-off. To do so :

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

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

4.1.2 Emergency procedures in the event of an engine failure on take-off (Figure 6)

4.1.2.1 Before C.D.P. is reached

Abort take-off. To do so :

- Decrease collective pitch to fly the aircraft above the platform (NR close to 375 rpm)
- Near the ground, increase collective pitch to cushion landing.

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

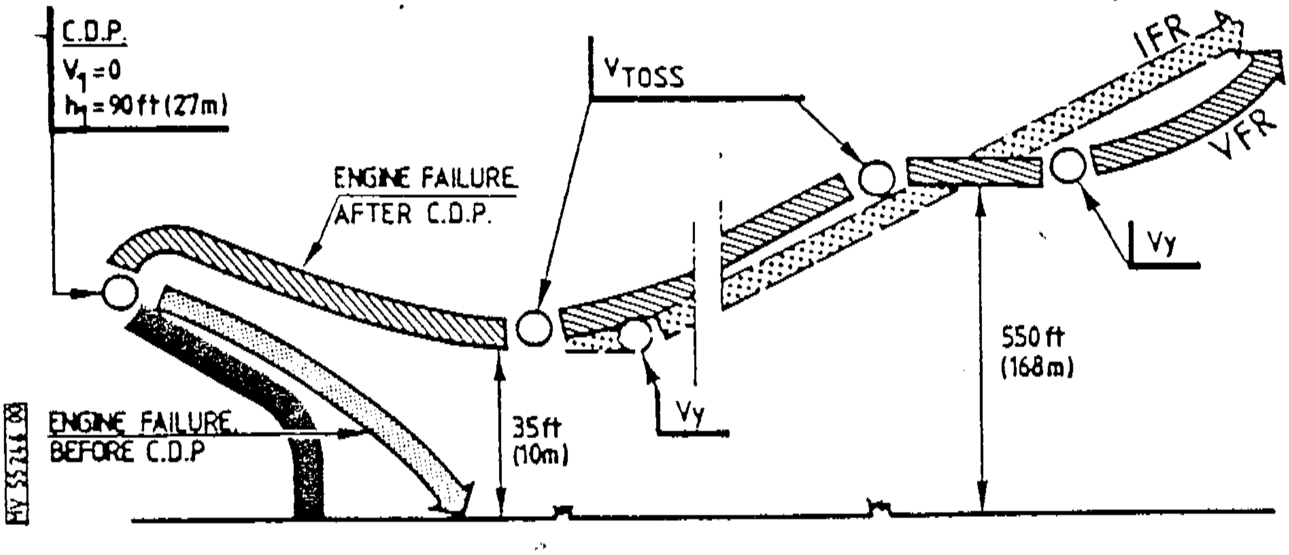


Figure 6

4.1.2.2 After C.D.P. has been reached

Continue take-off. To do so :
- Set a 15° nose-down attitude approximately.
- Decrease collective pitch to maintain 375 r.p.m. NR approximately.
- As soon as speed reaches 30 kt (56 km/h - 35 MPH) reduce nose-down attitude.
- In VFR flight :
  . Allow VTOSS to be attained.
  . Maintain ^{V} TOSS by selecting the single-engine maximum take-off power up to 550 ft.
  At 550 ft, increase speed up to Vy and continue climbing.
- In IFR flight :
  . Allow Vy to be reached by selecting single-engine maximum take-off power.
  . Maintain Vy up to desired height.

R

Landing

.1 Normal landing procedure (figure 7)

- Initiate the approach to reach C.D.P. at IAS = 30 kt with R/C indicator reading - 500 ft/mn.
- Continue approach, slowly decreasing ground speed so as to hover the aircraft at 10 ft height above landing area.
- Initiate a slow vertical descent.

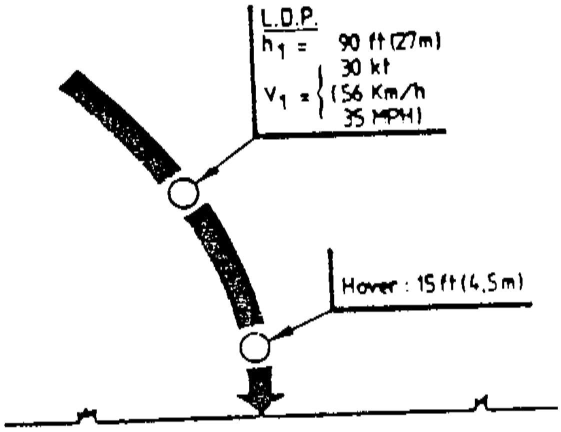


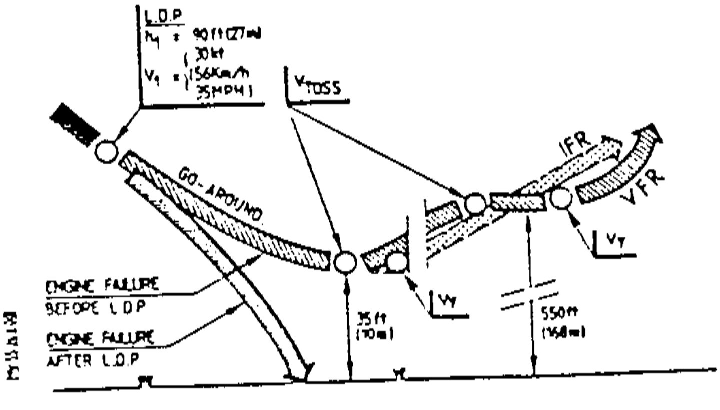
Figure 7

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

.2.2.1 Before L.D.P. is reached

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

- Increase collective pitch to set 375 r.p.m. NR approximately. R
- Set a 5° nose-down attitude to reach V_{TOSS} in VFR flight or Vy in IFR flight. R
- Continue climbing at V_{TOSS} and apply the procedure recommended in the event of engine failure on take-off.



R
R
R
R
R
R

Figure 8

4.2.2.2 After L.D.P. has been reached

Continue landing. To do so :

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

5 PERFORMANCE

5.1 Landing site dimension

The minimum dimension recommended for a helipad or unobstructed elevated sites is 2 1/2 times the rotor diameter (27 metres approx.)

5.2 Maximum permissible take-off and landing weight

Maximum permissible take-off and landing weights are given in Charts 1 , 2 , 3 and 4 . R

5.3 Climb performance

The all engines operating gross climb performance charts are shown in Section 5.1. The net climb performance figures are specified in charts 5 to 9. R
The rate of climb in a turn is reduced by 100 ft/min. for 10° of bank.

5.4 Distances related to take-off and landing

The flight paths are specified in Charts 10 to 16. R

5.5 Simplified procedure for clearing a distant obstacle

Chart 17 allows the maximum weight to be quickly determined according to the obstacle gradient and outside conditions (Hp-OAT). The maximum permissible take-off weight will be limited to the smaller of the following two weights : R

. Maximum take-off weight
. Take-off weight as a function of path

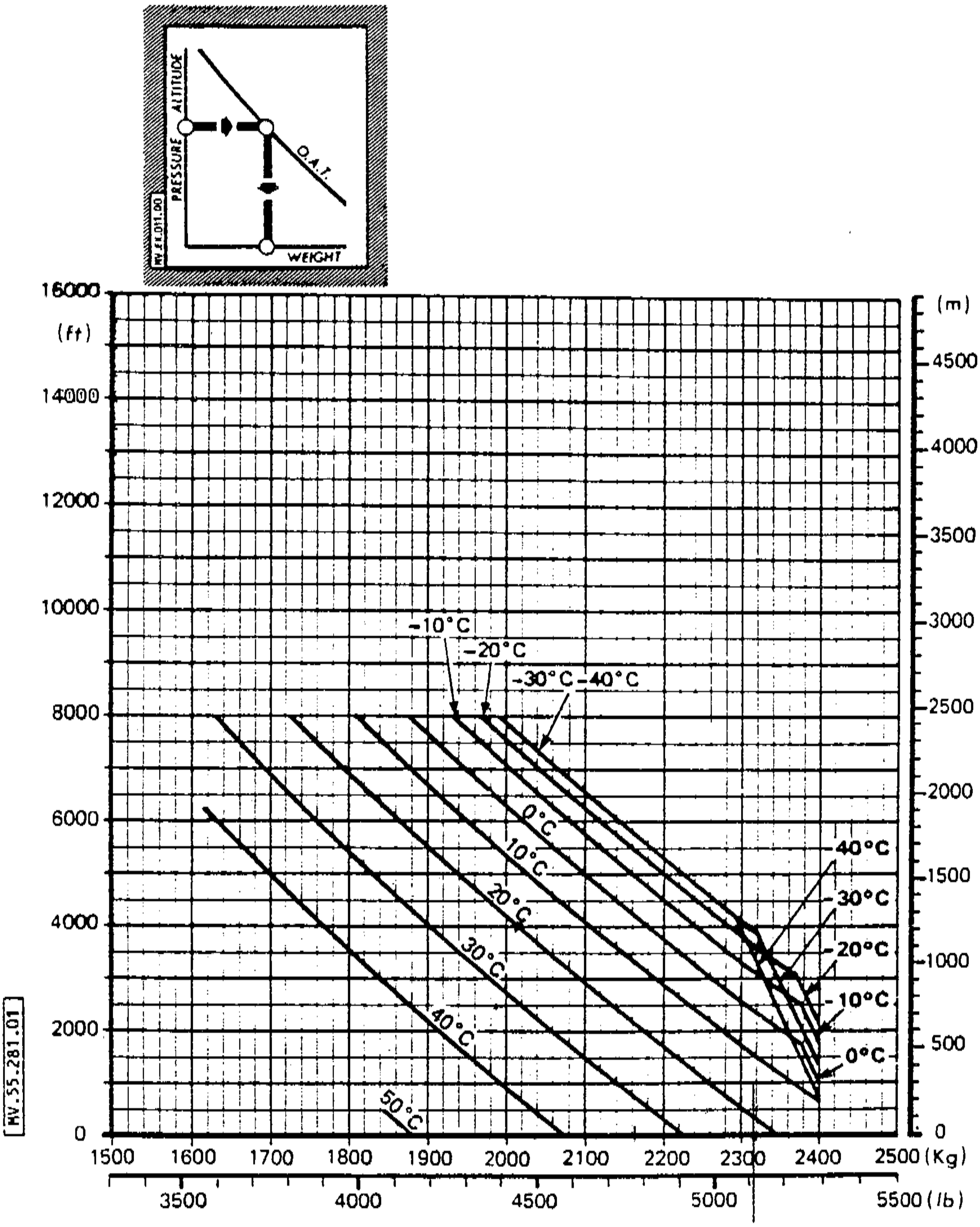
This simplified procedure is achieved at IAS = V_{TOSS} = 40 knots (74 km/h - 46 MPH).

5.6 Autorotation distances

The best autorotative glide speed is 80 kt (148 km/h - 92 MPH) with a rotor speed of 365 r.p.m.

At high weights, 1000 metre horizontal distance can be travelled for an appropriate height loss of 1000 feet altitude.

The minimum rate of descent in autorotation for all weights is obtained at 65 knots (120 km/h - 75 MPH).



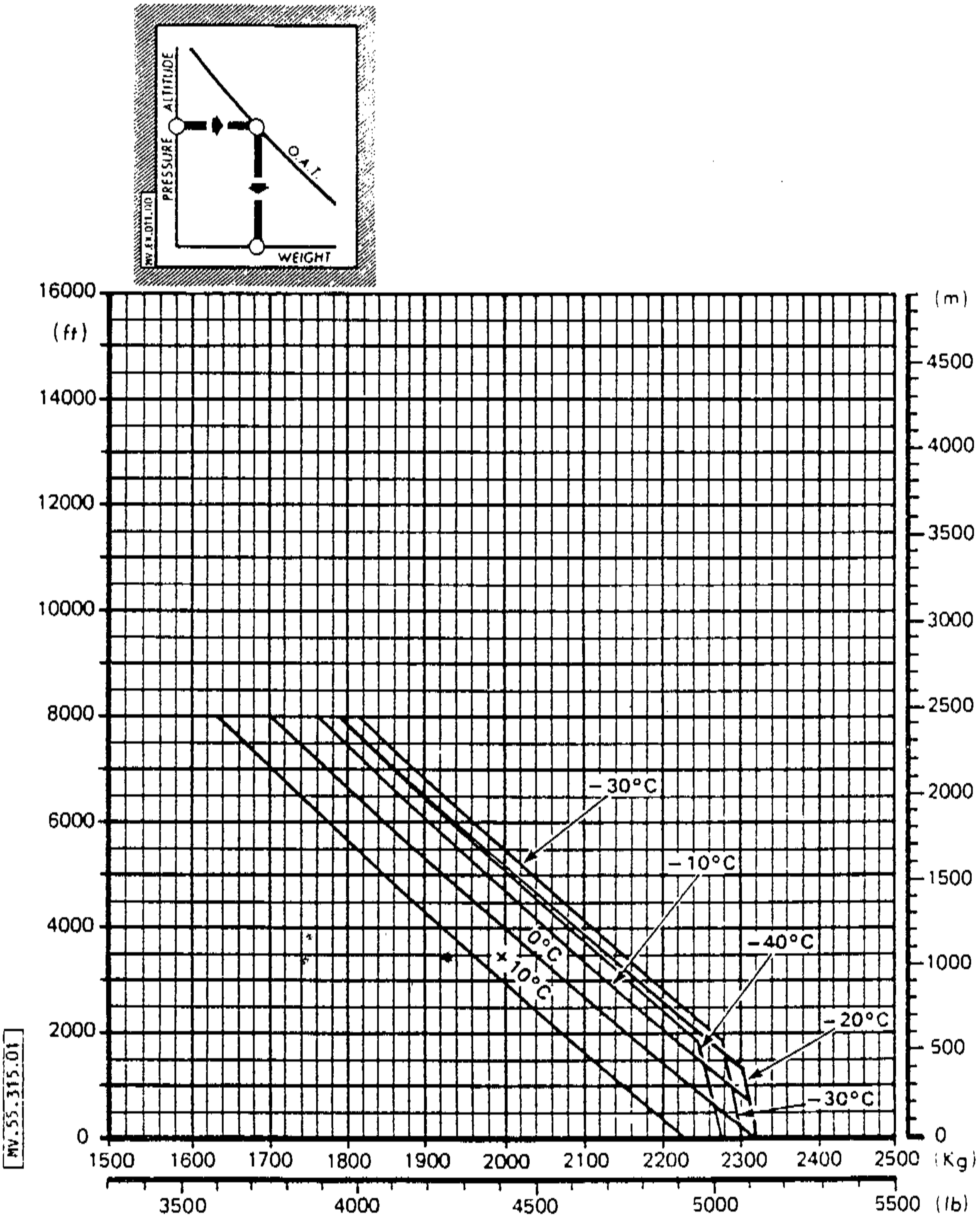
CONDITIONS

- Heater and demister off
- Engine air intake anti-ice off

MAXIMUM PERMISSIBLE TAKE-OFF AND LANDING WEIGHTS FOR OPERATION ON CLEAR AREA

Chart 1

R



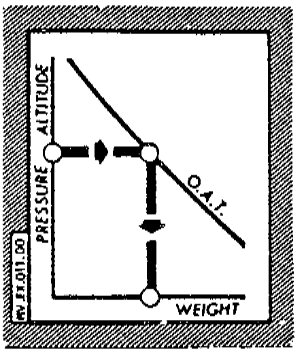
CONDITIONS

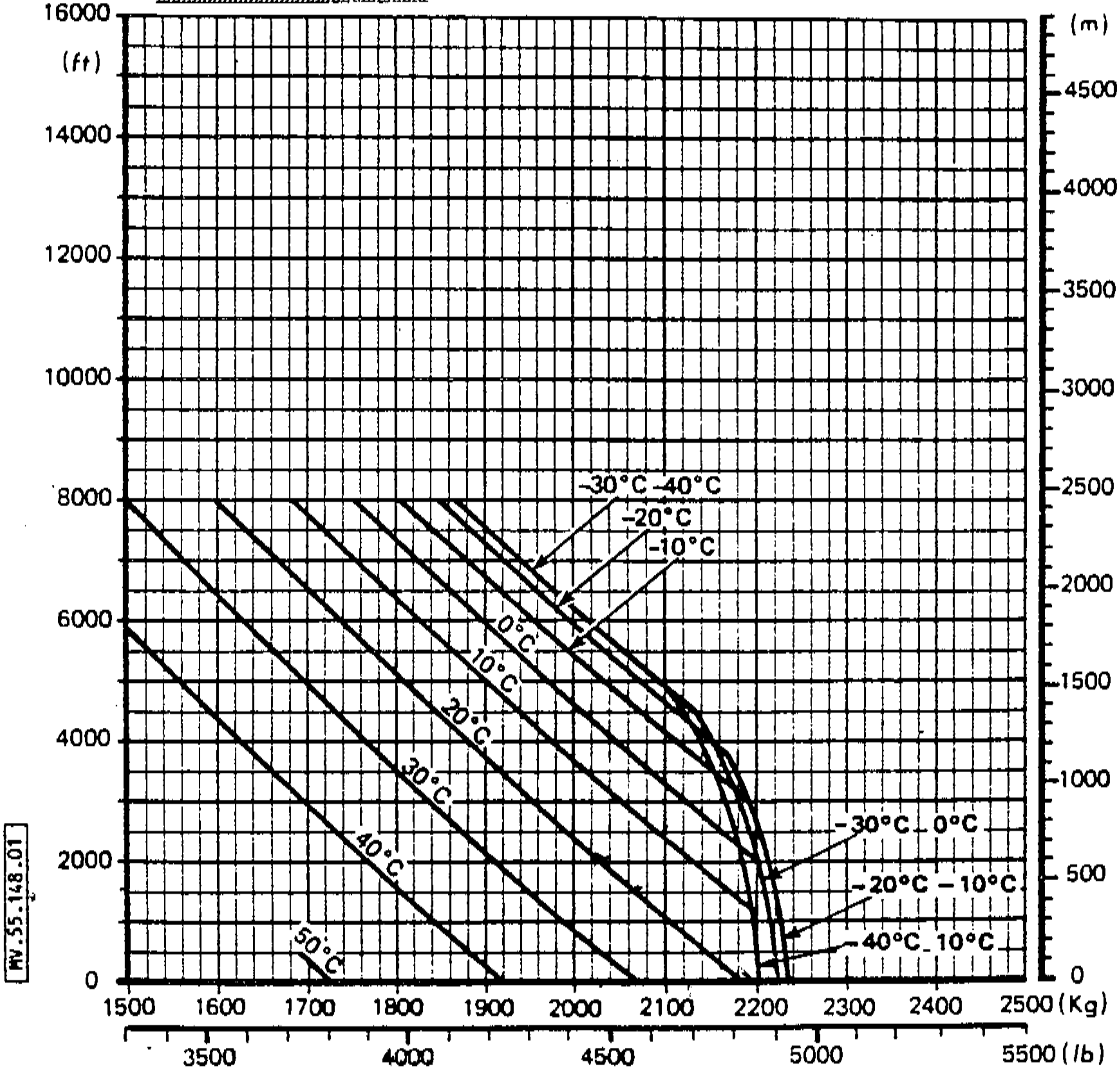
- Heater and demister off
- Engine air intake anti-ice on

MAXIMUM PERMISSIBLE TAKE-OFF AND LANDING WEIGHTS FOR OPERATION ON A CLEAR AREA

Chart 2

R





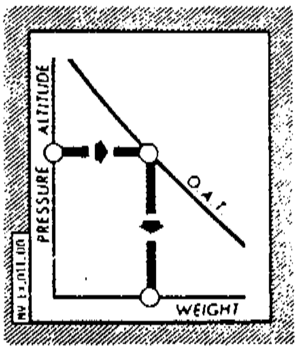
CONDITIONS

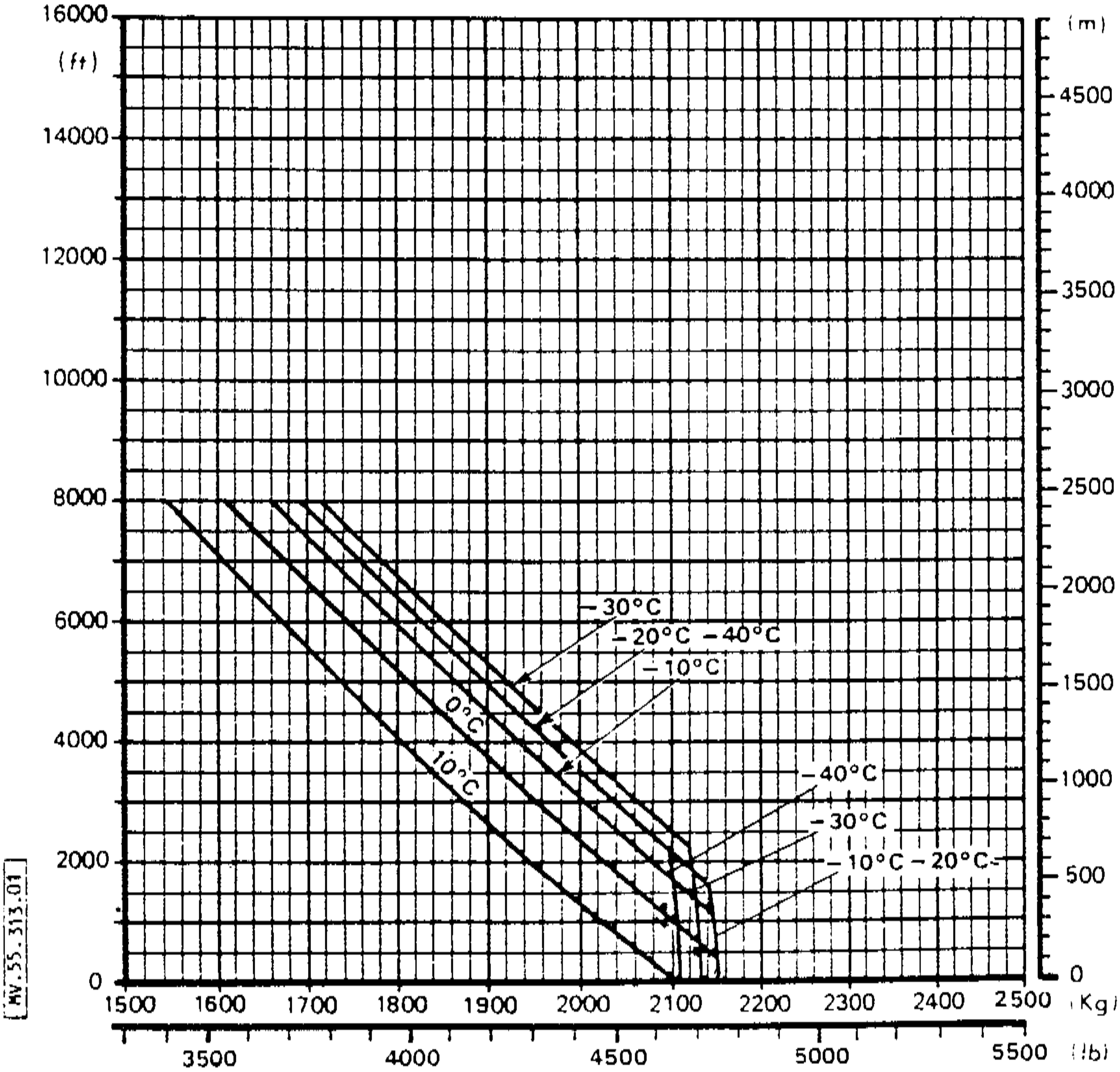
- Heater and demister off
- Engine air intake anti-ice off

MAXIMUM PERMISSIBLE TAKE-OFF AND LANDING WEIGHTS FOR OPERATION ON A HELIPAD

Chart 3

R





CONDITIONS

- Heater and demister off
- Engine air intake anti-ice on

MAXIMUM PERMISSIBLE TAKE-OFF AND LANDING WEIGHTS FOR OPERATION ON A HELIPAD

Chart 4

R

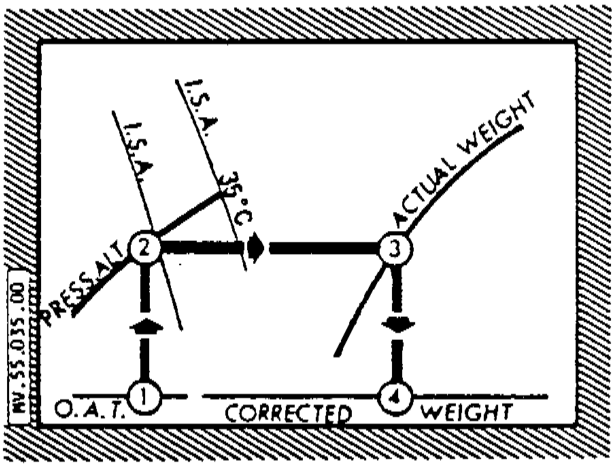
HOW TO USE THE FIGURES RELATED TO THE RATES OF CLIMB

The rates of climb are given in the figures below with respect to the hot bleed air.

The corrected weight is first to be determined from the figure on the facing page when calculating the rates of climb.

Determining the corrected weight

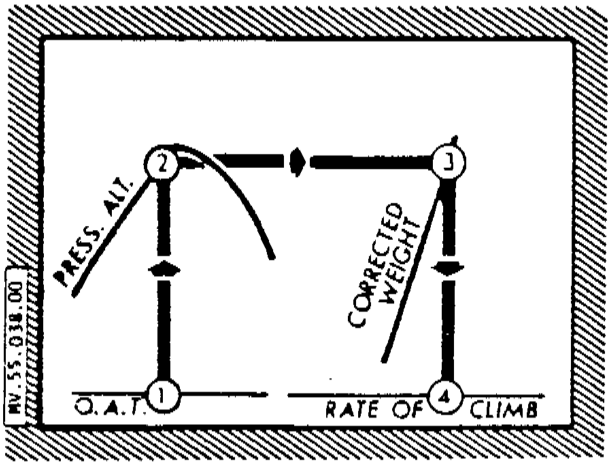
- Read vertically upwards from O.A.T. (1) up to pressure altitude curve (2) .
- Read across to actual weight (3)
- Read corrected weight (4) which is to be used in determining the rate of climb.



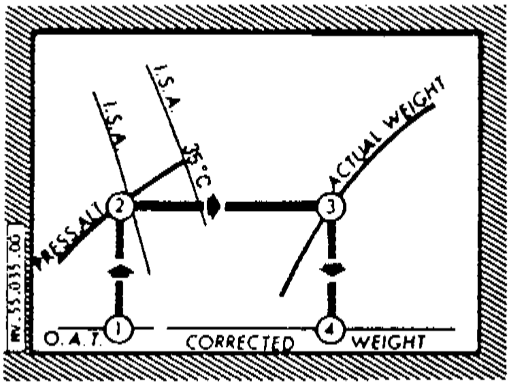
R

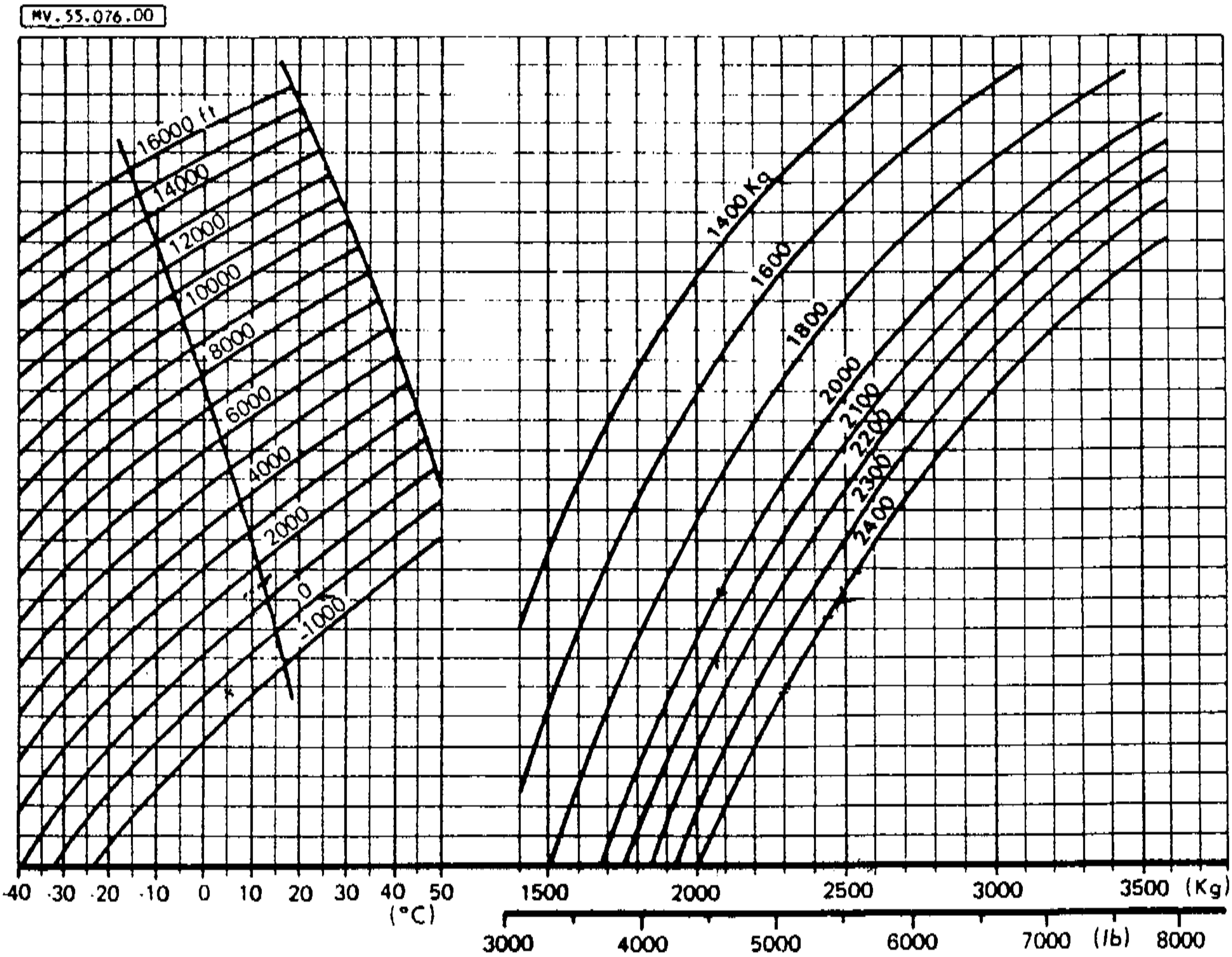
Determining the rate of climb

- Read vertically upwards from O.A.T. (1) up to pressure altitude curve (2).
- Read across to corrected weight (3) already determined from the facing page
- Follow vertically down and read off rate of climb (4).



R

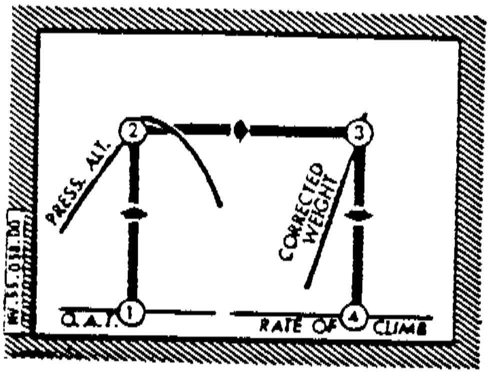


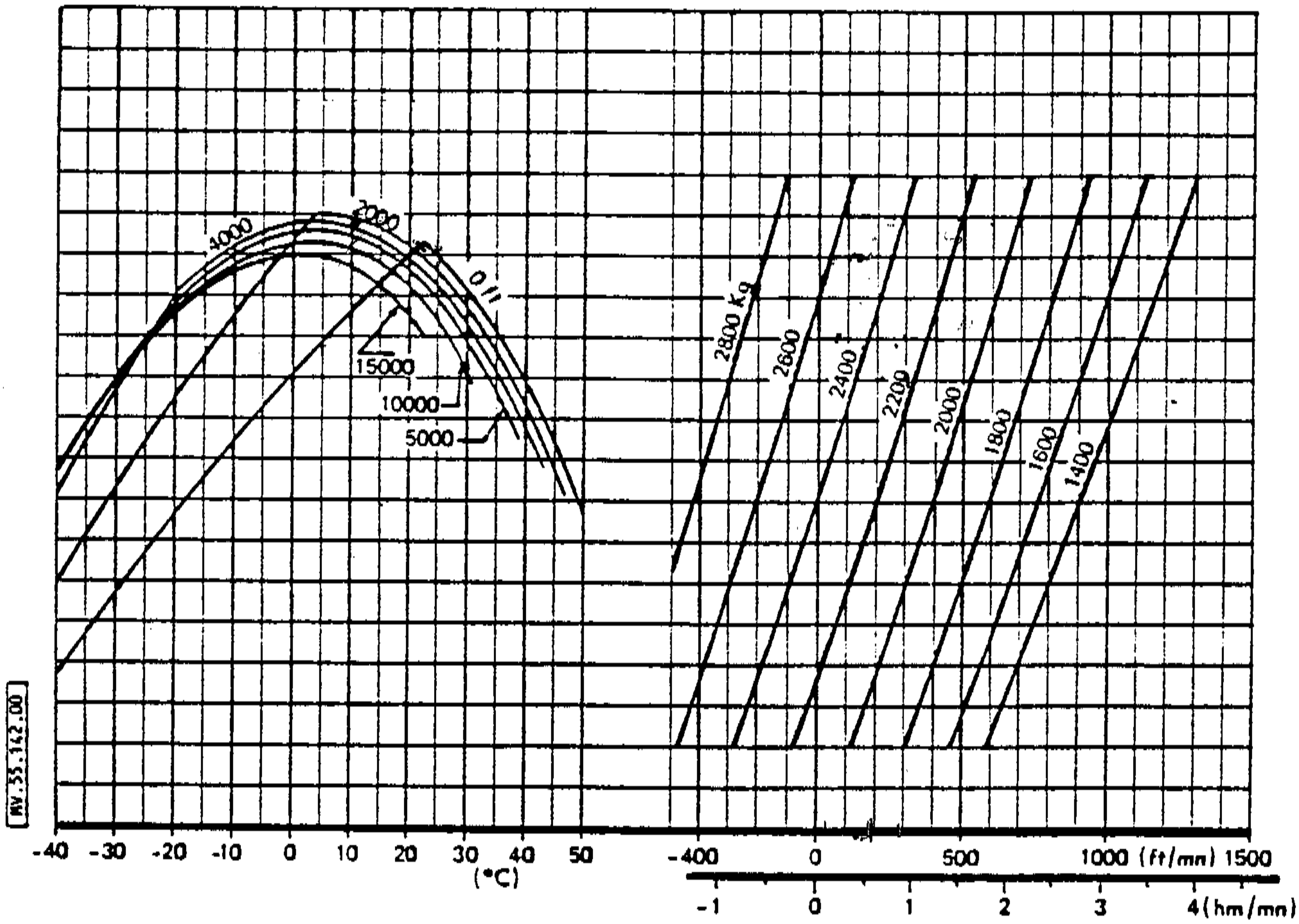


CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

Chart 5

R





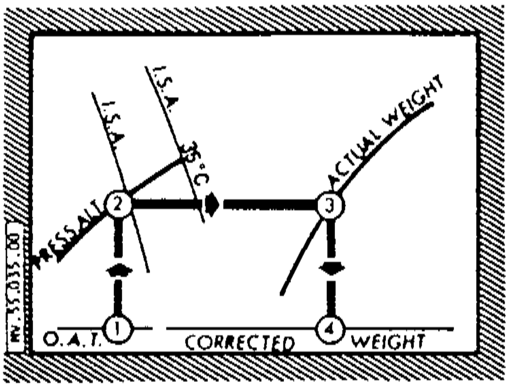
CONDITIONS

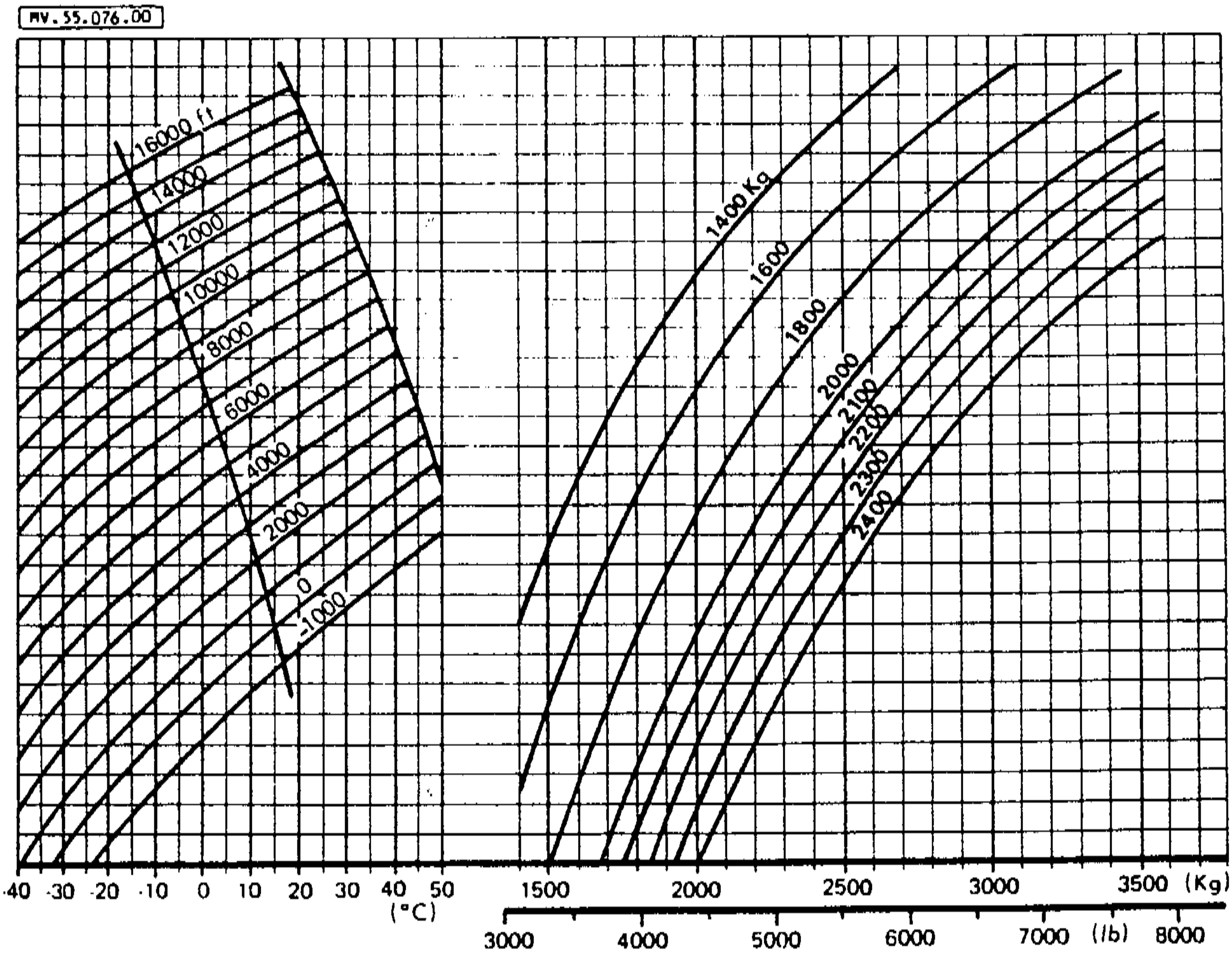
- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister off
- Engine air intake anti-ice off

NET RATE OF CLIMB
ON 1 ENGINE
"GROUP A"

Chart 6

R

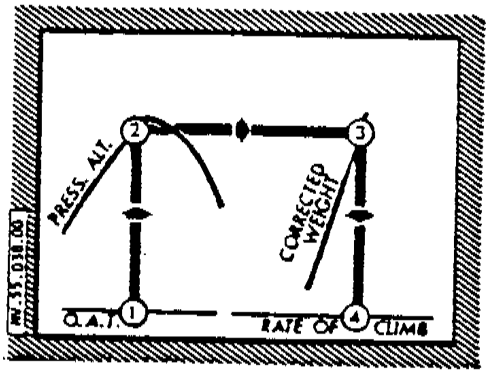


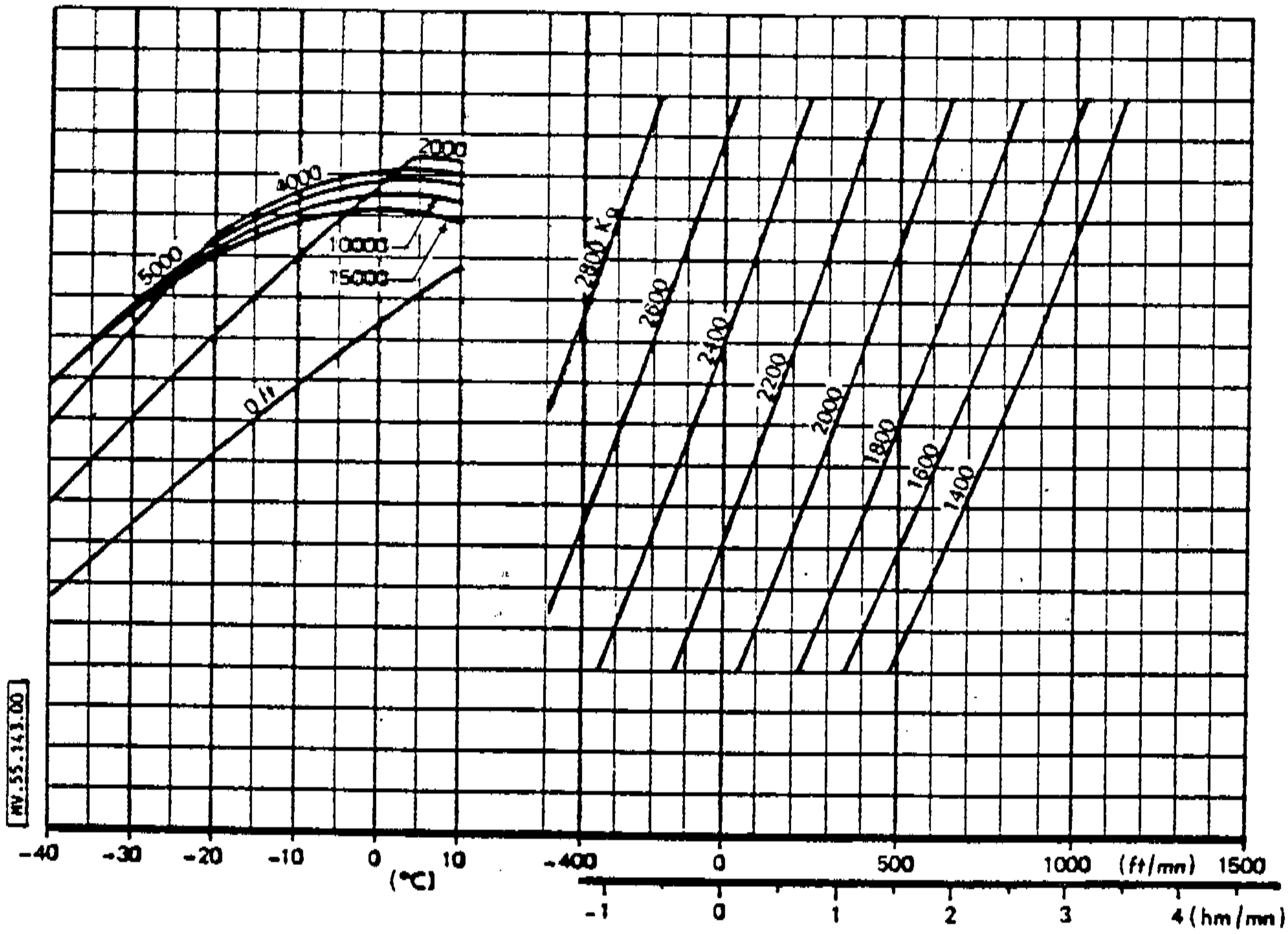


CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

Chart 5

R





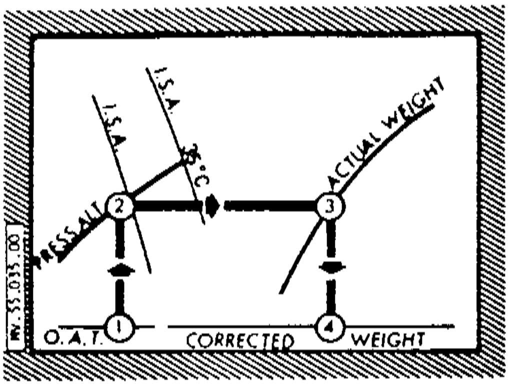
CONDITIONS

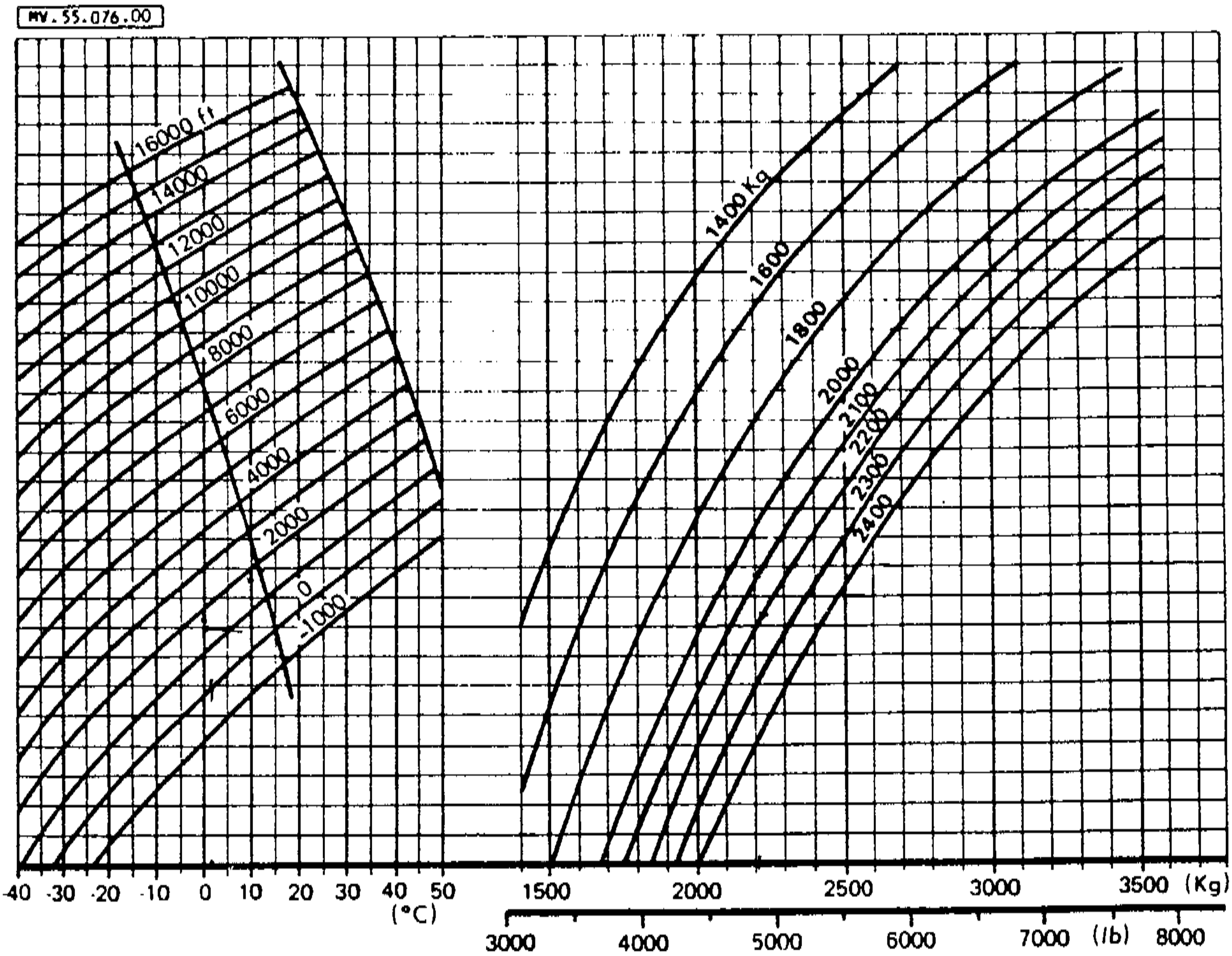
- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister on
- Engine air intake anti-ice off

NET RATE OF CLIMB
ON 1 ENGINE
"GROUP A"

Chart 7

R

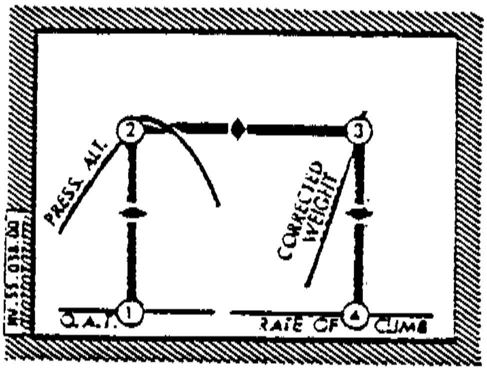


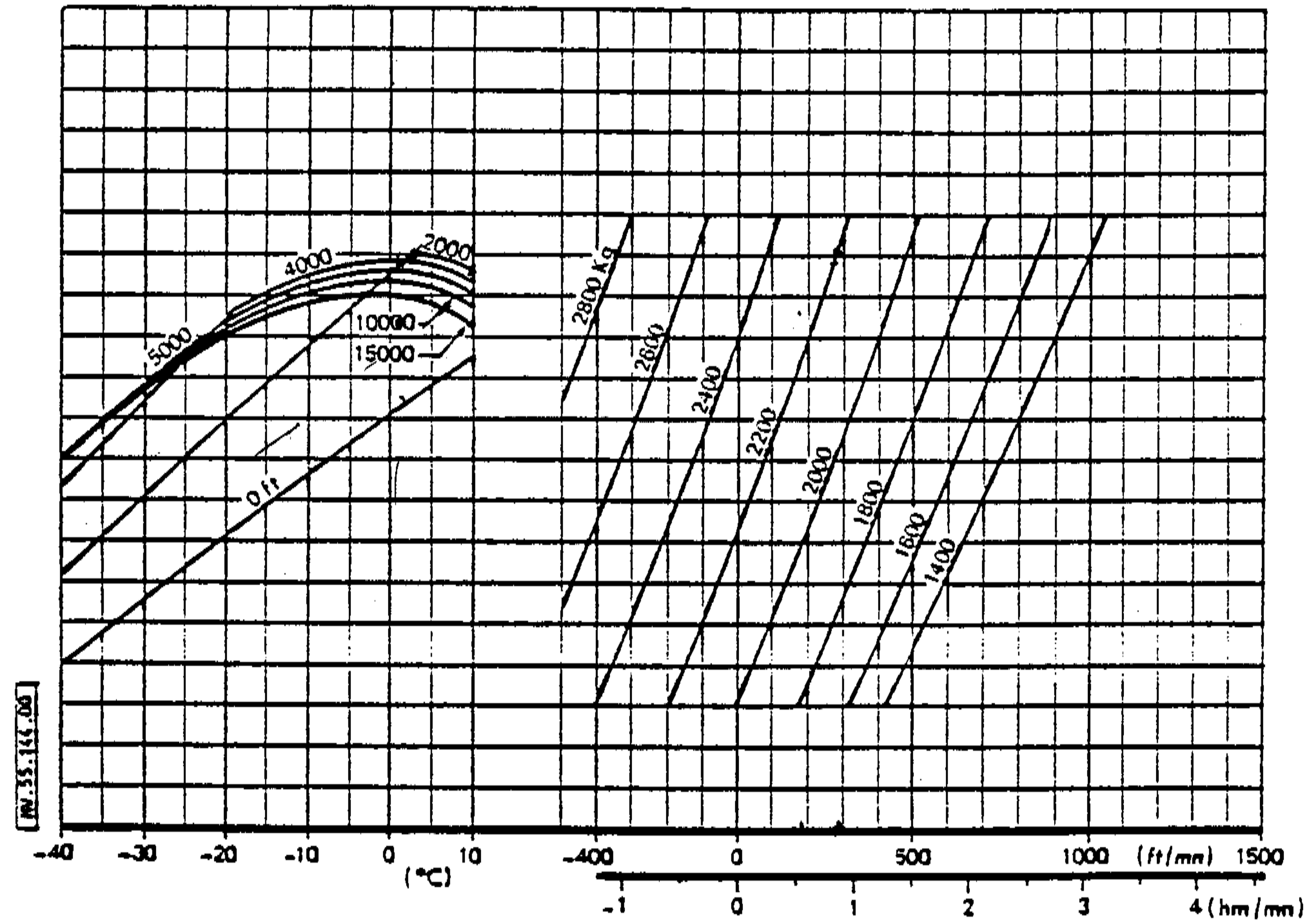


CORRECTED WEIGHT FOR DETERMINING THE R/C FROM THE FIGURE OPPOSITE

Chart 5

R





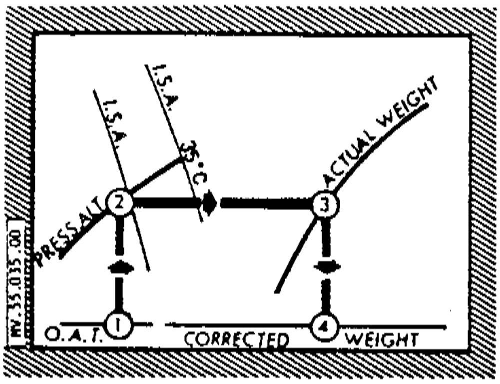
CONDITIONS

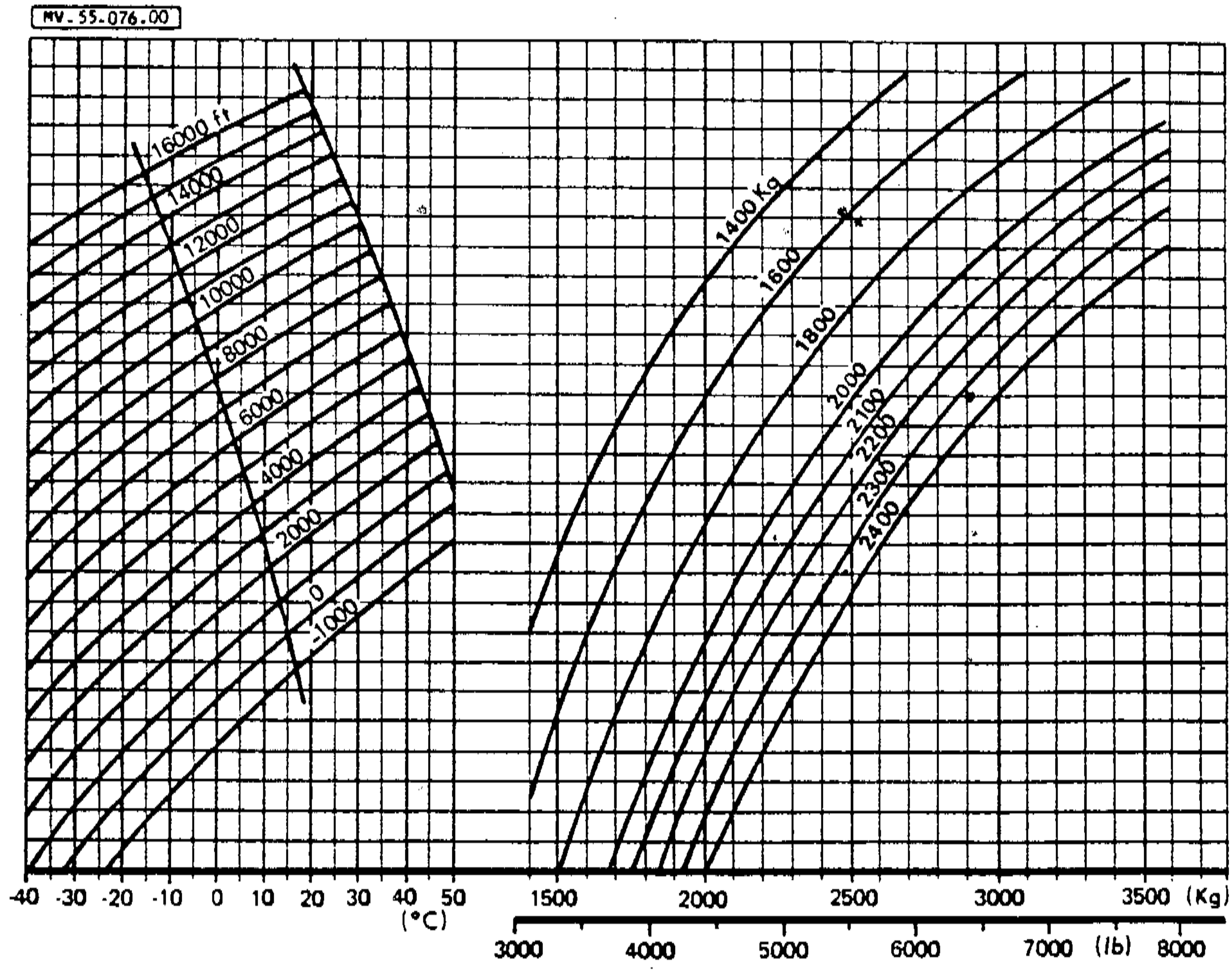
- Max. Continuous Power
- IAS 55 kt (102 km/h - 63 MPH)
- Heater and demister off
- Engine air intake anti-ice on

NET RATE OF CLIMB
ON 1 ENGINE
"GROUP A"

Chart 8

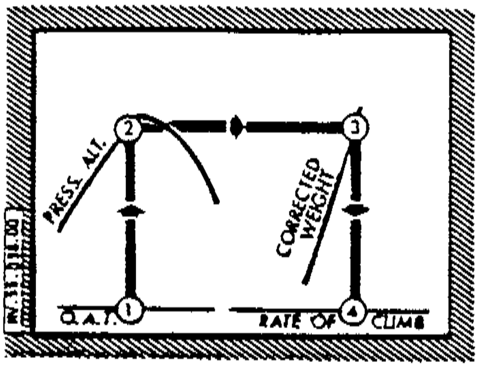
R

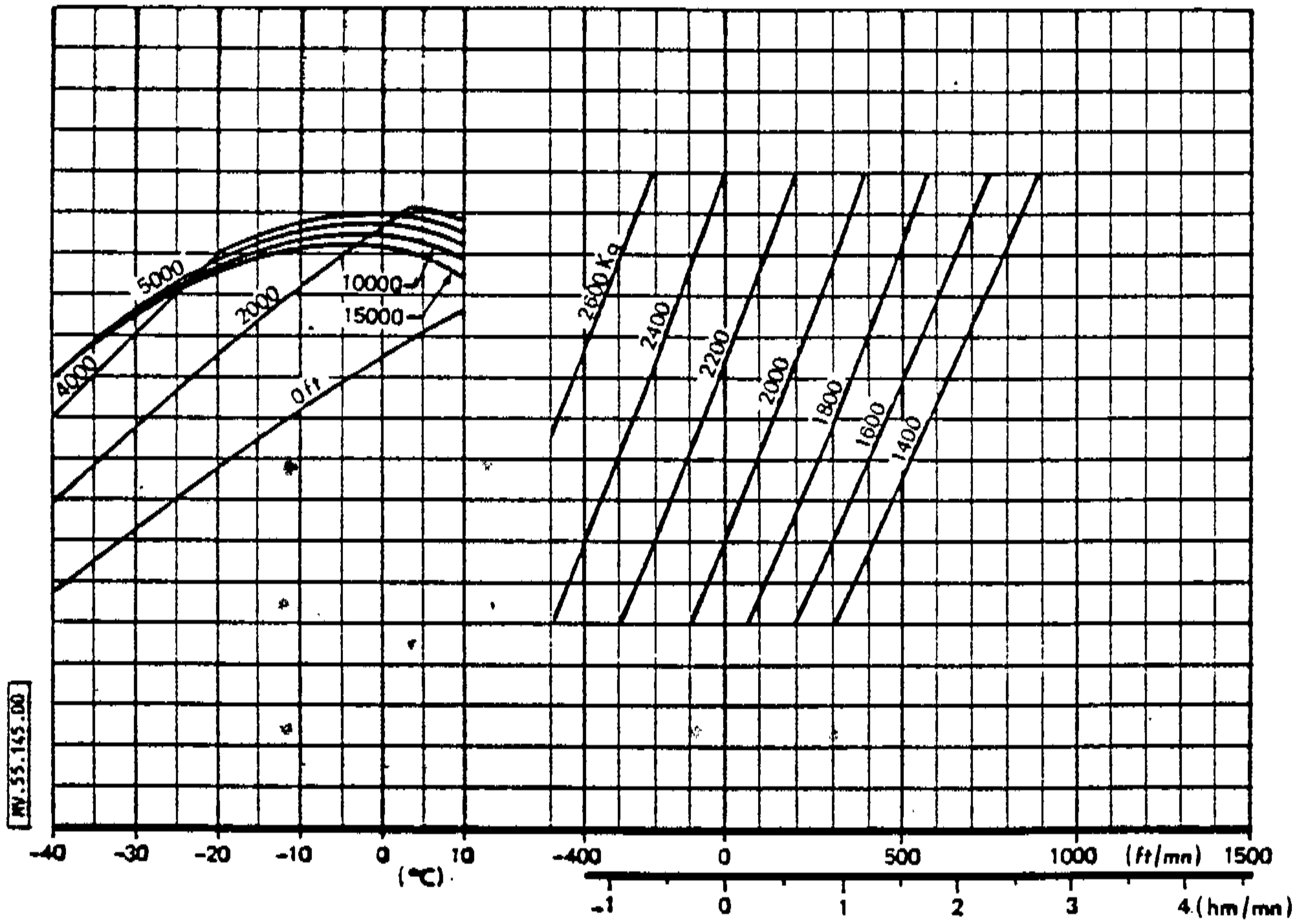




CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
THE FIGURE OPPOSITE

Chart 5





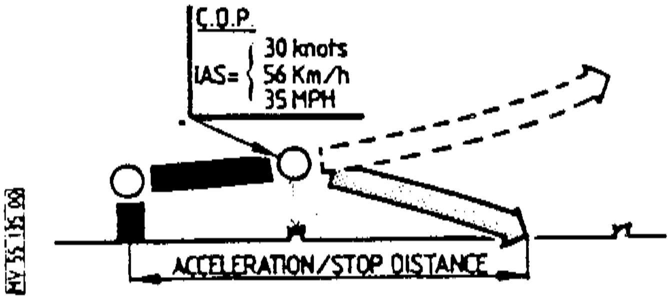
CONDITIONS

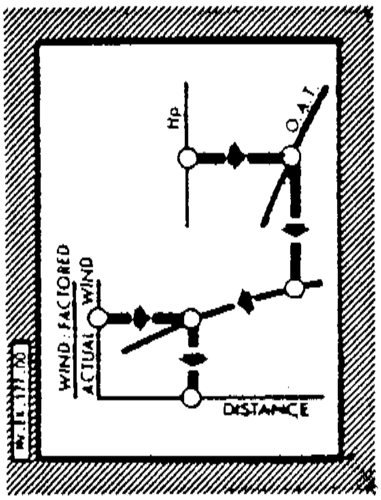
- Max. Continuous Power
- IAS 55 kts (102 km/h - 63 MPH)
- Heater and demister on
- Engine air intake anti-ice on

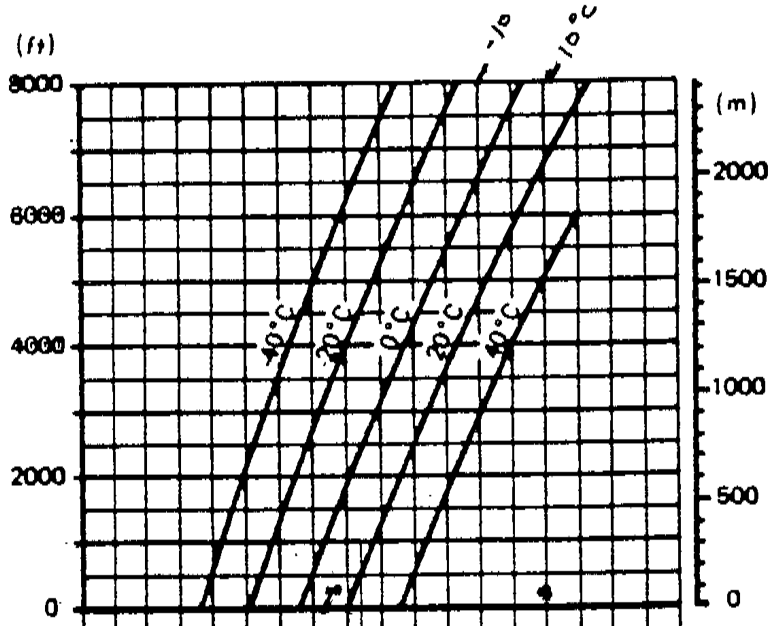
NET RATE OF CLIMB
ON 1 ENGINE
"GROUP A"

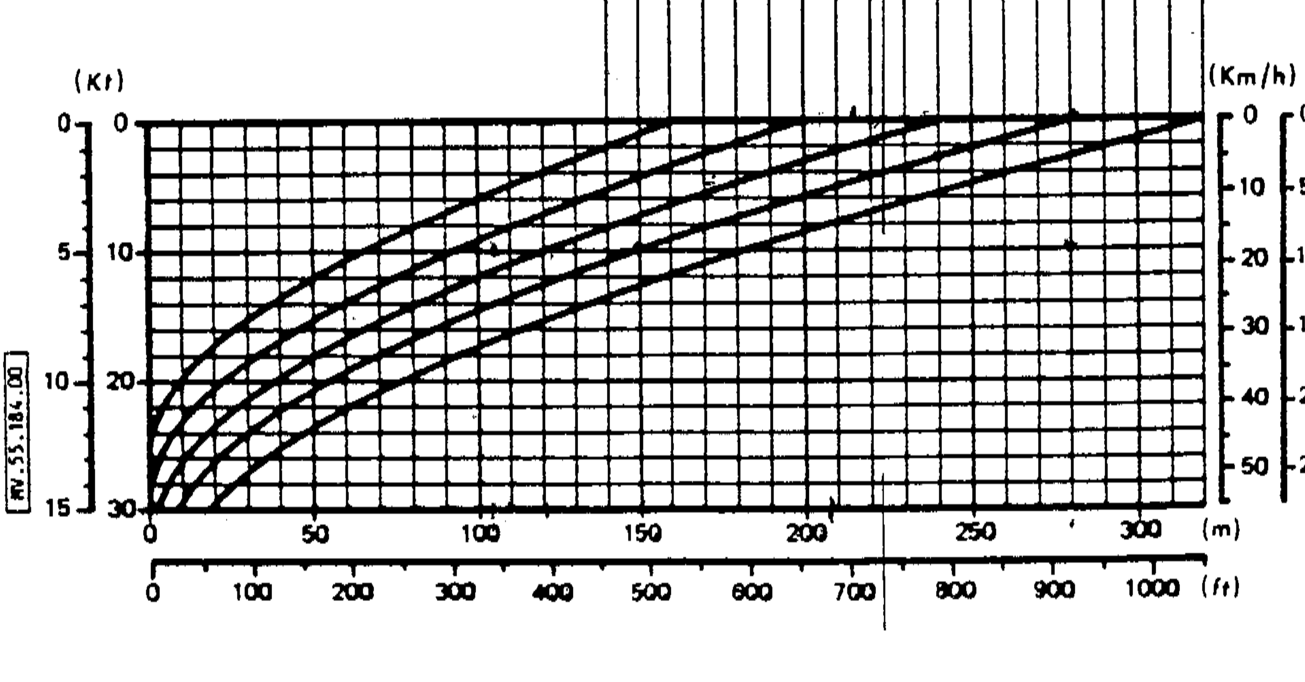
Chart 9

R









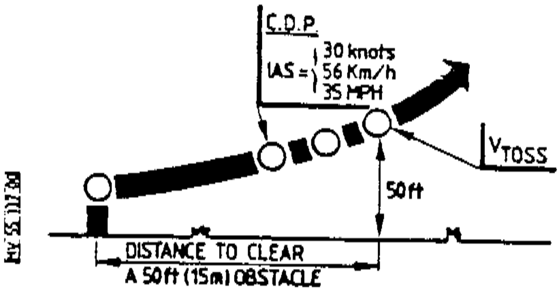
CONDITIONS

- One engine failed before CDP
- Applies to all weight conditions

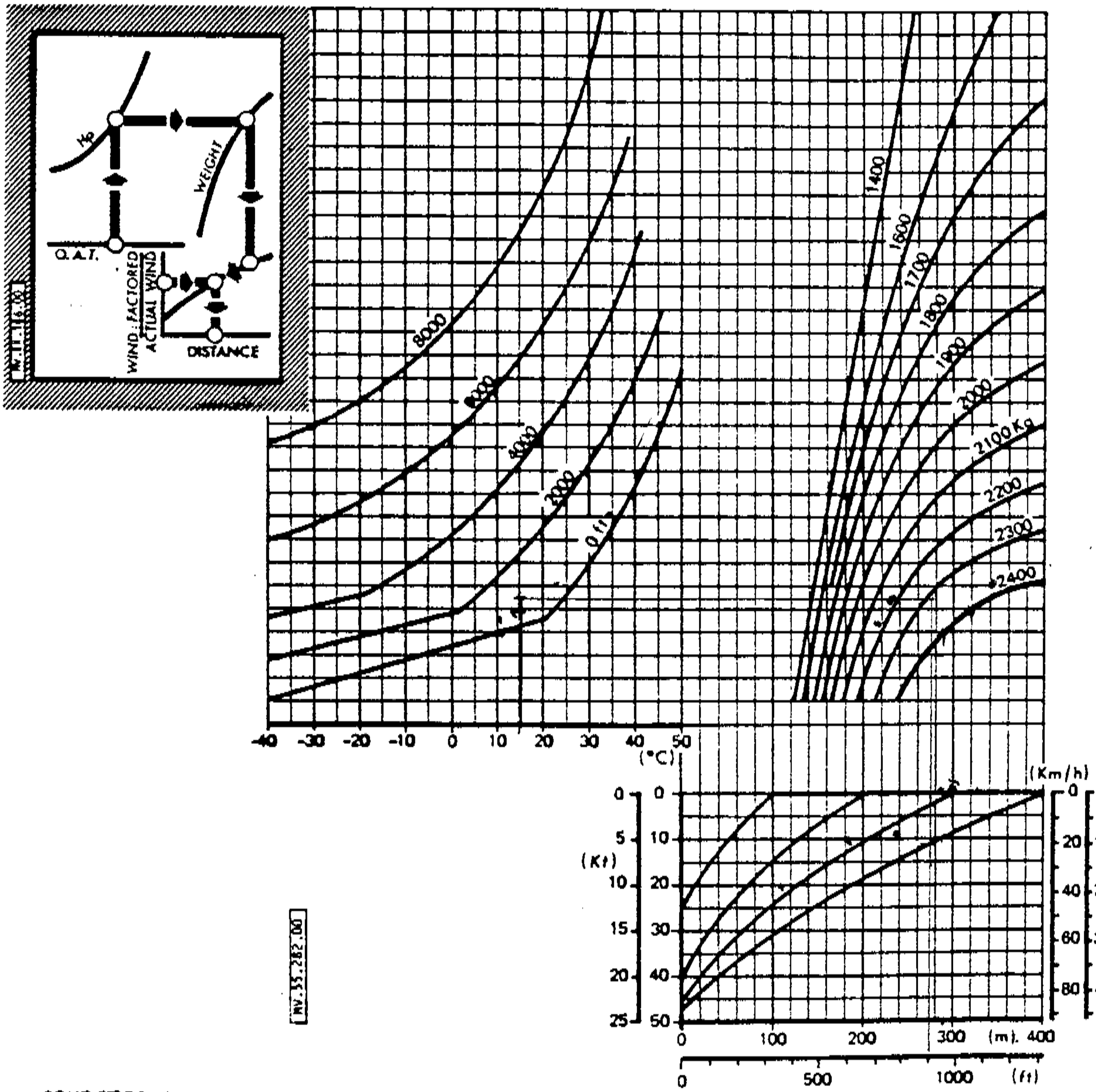
ACCELERATION/STOP DISTANCE

Chart 10

R



NOTE : Distance from take off point to the 50 ft clearing point with one engine failed at C.D.P.



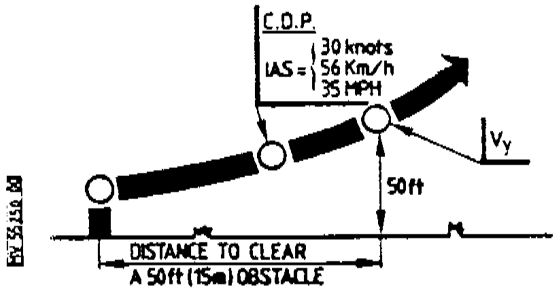
DISTANCE TO CLEAR A 50 ft (15 m) OBSTACLE ON TAKE-OFF IN VFR FLIGHT

CONDITIONS

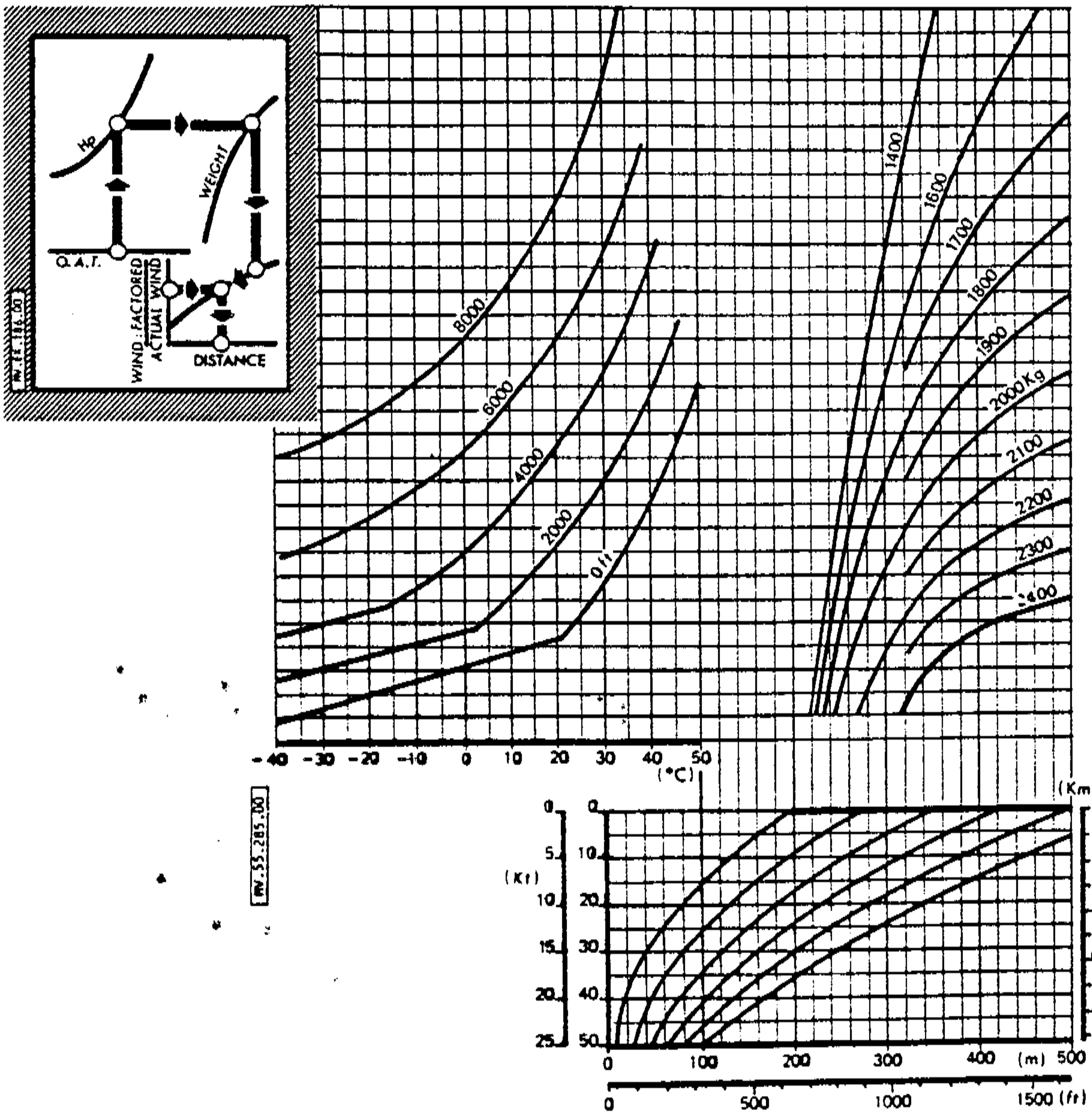
- One engine failed after CDP

Chart 11

R



NOTE : Distance from take-off point to the 50 ft clearing point with one engine failed at C.D.P.



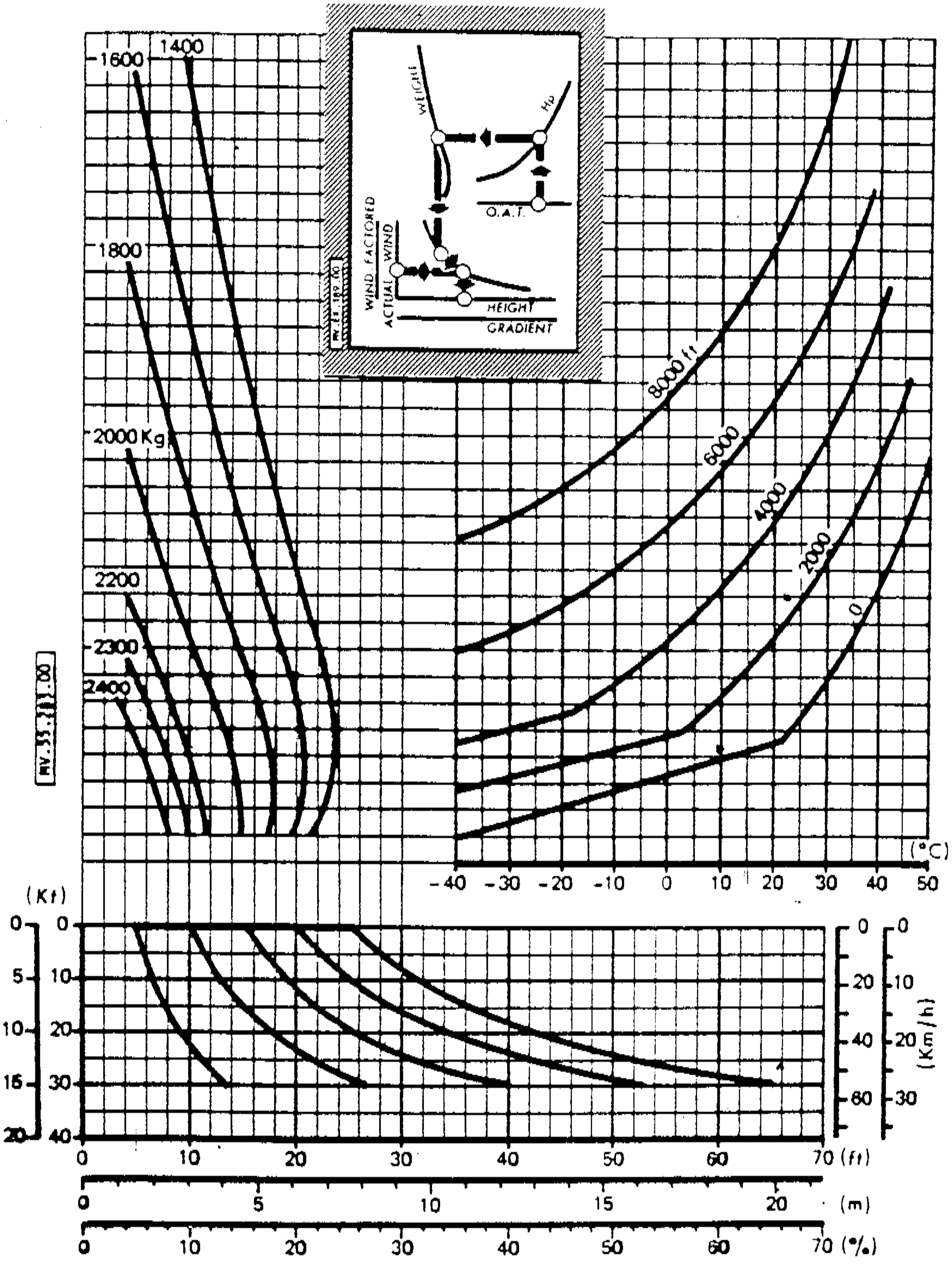
CONDITIONS :

- One engine failed after CDP

DISTANCE TO CLEAR A 50 ft (15 m) OBSTACLE ON TAKE-OFF IN IFR FLIGHT)

Chart 12

R



CONDITIONS :

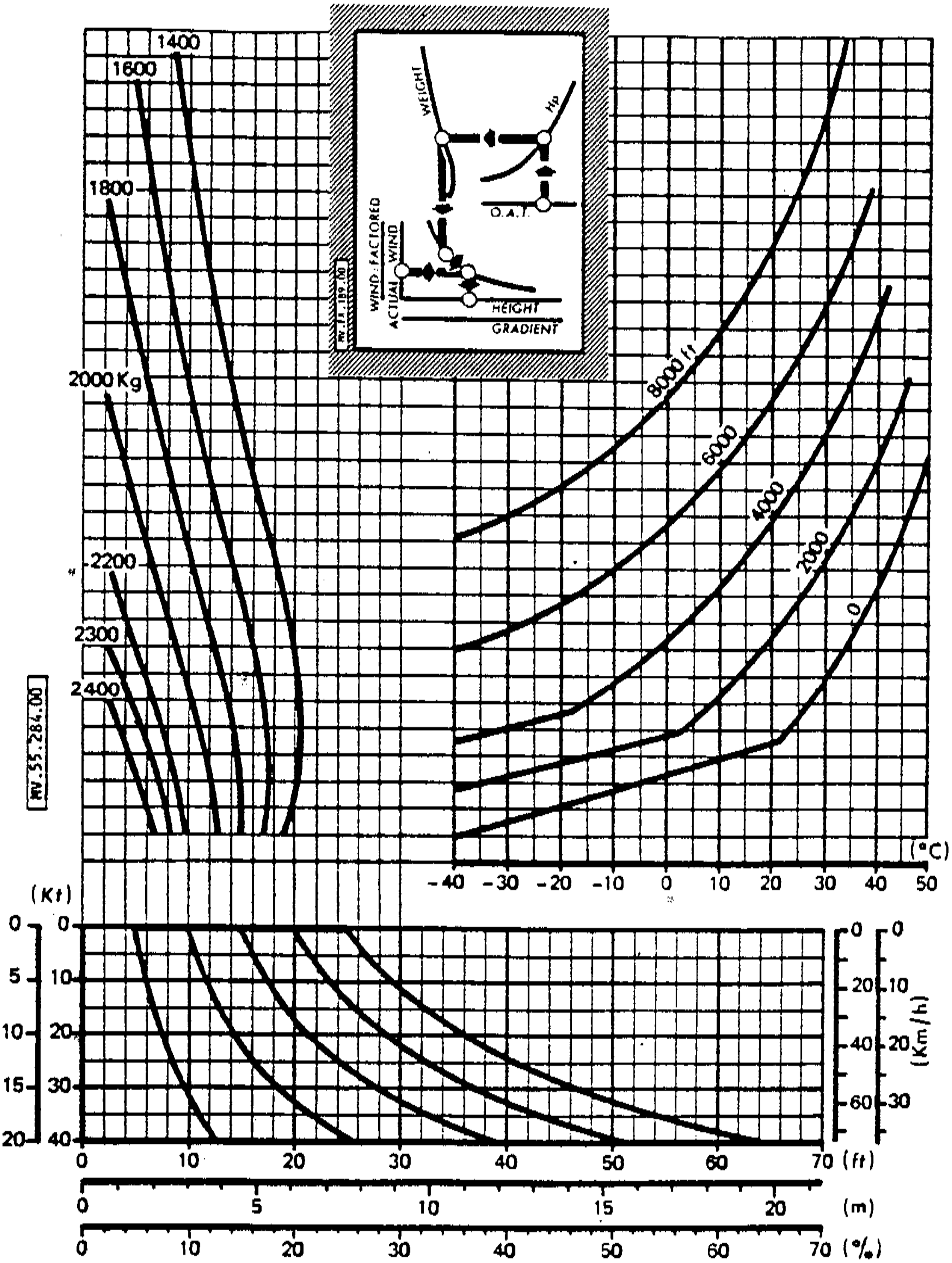
I.A.S. = 40 kt

One engine failed after CDP

NET HEIGHT GAIN FOR A 100 ft DISTANCE (climb from 50 ft up to 550 ft) IN VFR FLIGHT

Chart 13

R



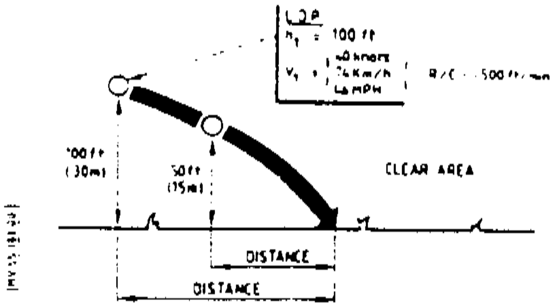
CONDITIONS :

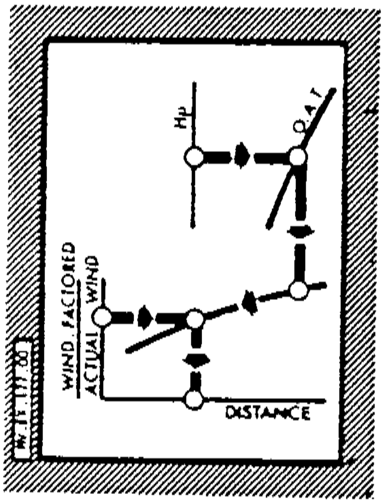
I.A.S. = 55 kt

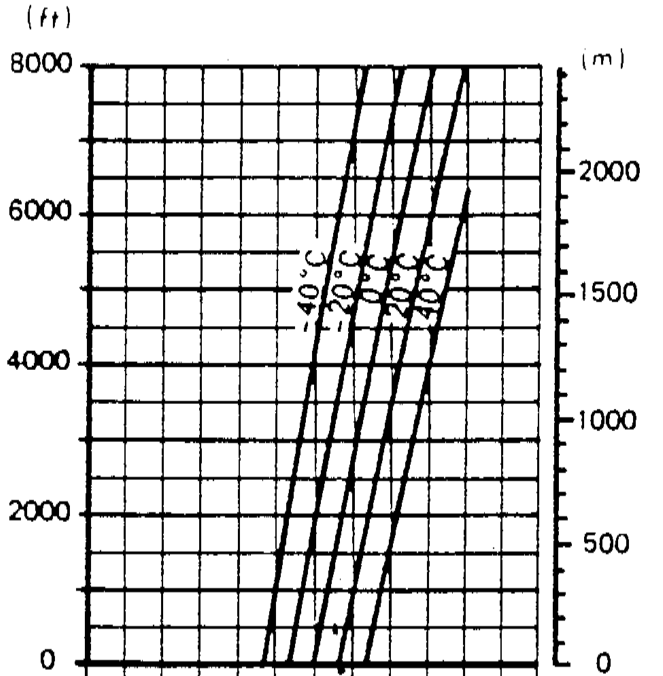
NET WEIGHT GAIN FOR A 100 ft DISTANCE
Climb from :
- 550 to 1000 ft in VFR flight
- 50 to 1000 ft in IFR flight

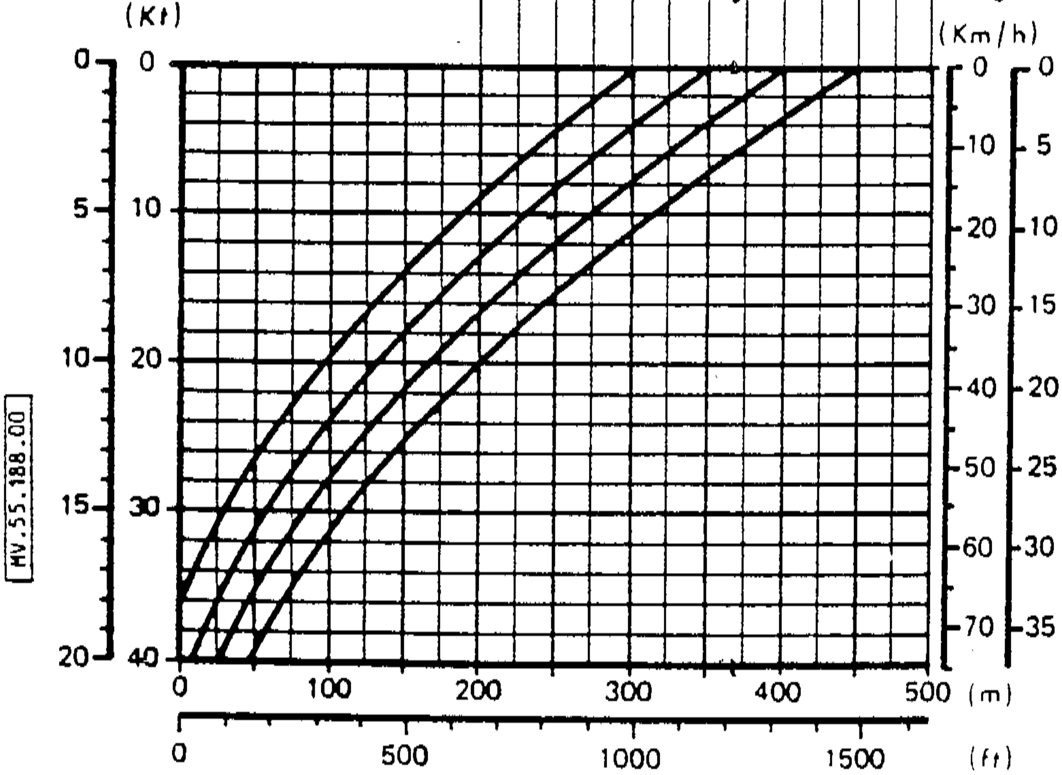
Chart 14

R









CONDITIONS

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

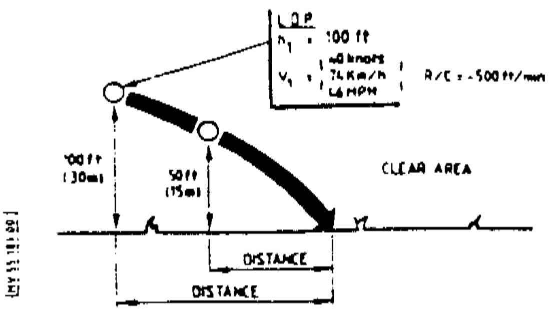
LANDING DISTANCE FROM 100 ft-
(30 m) HEIGHT TO STOP

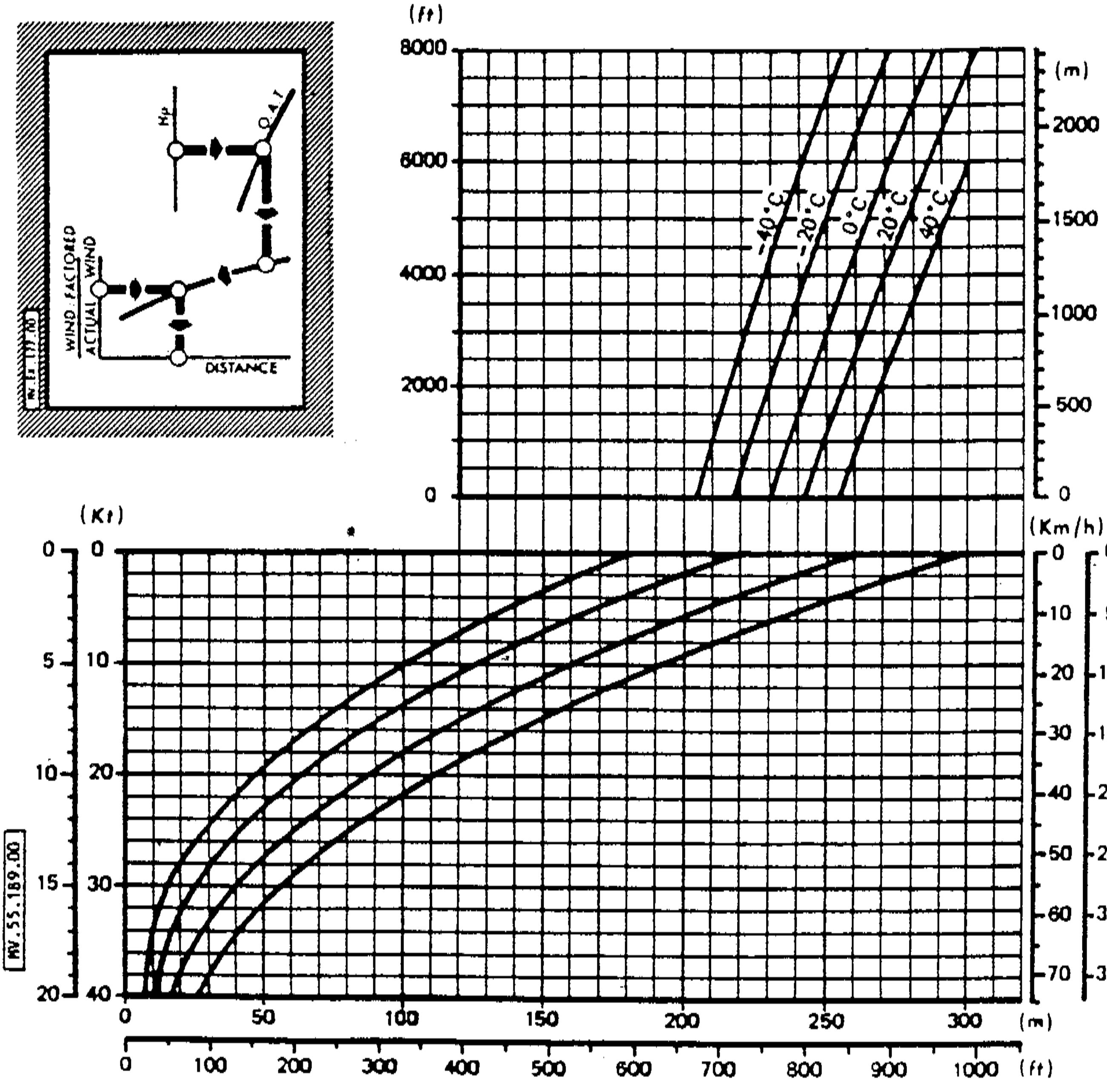
Chart 15

R

DGAC Approved:

11.3





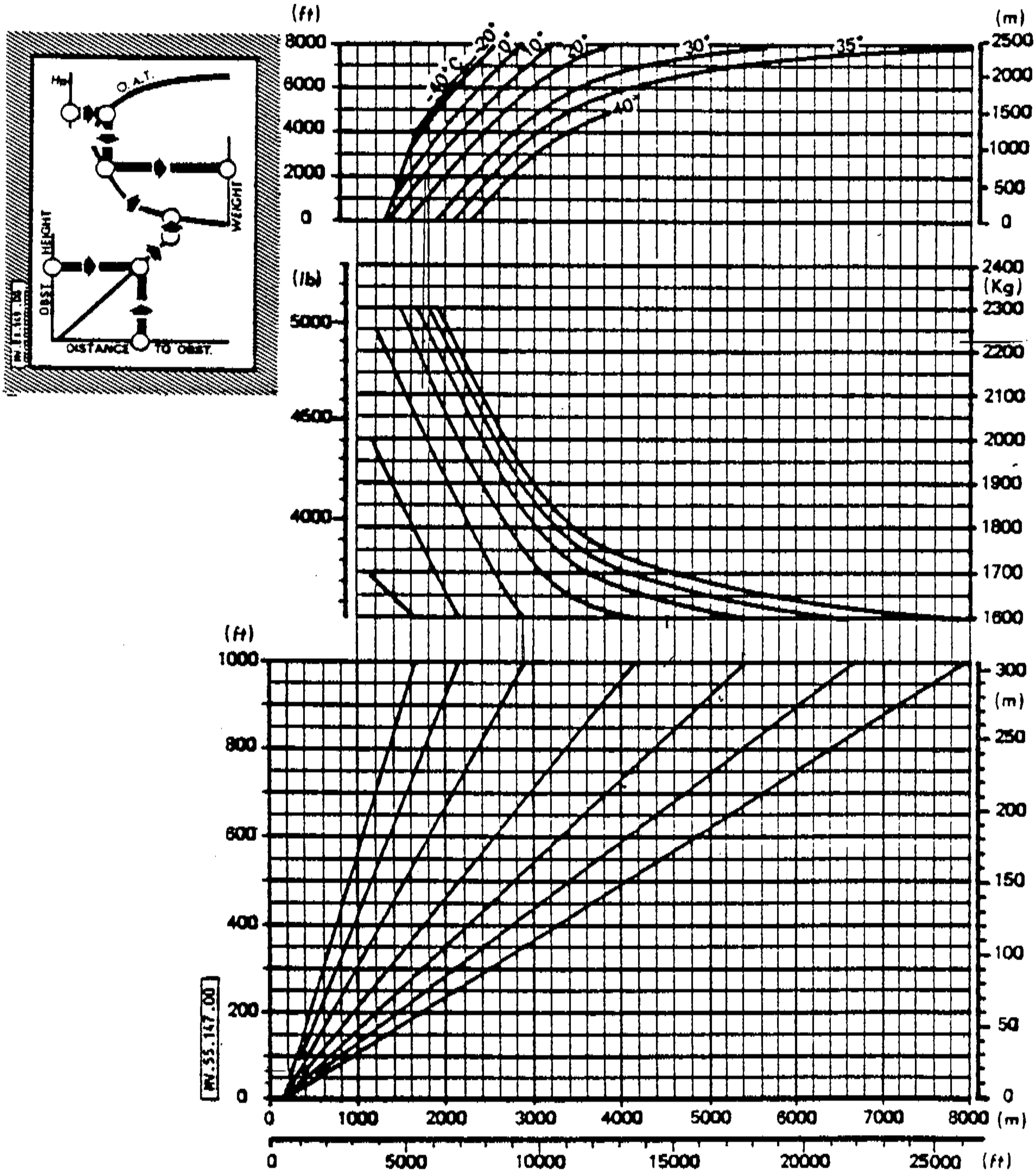
CONDITIONS

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

LANDING DISTANCE FROM 50 ft-(15 m) HEIGHT TO STOP

Chart 16

R



CONDITIONS

- One engine failed after C.D.P.

TAKE-OFF WEIGHT AS A FUNCTION OF PATH

Chart 17

R

FLIGHT MANUAL

AS 355 F1

SUPPLEMENT

IMC FLIGHT

P/N : 82 9707.00 - Single-pilot configuration
82 9707.01 - Single-pilot configuration
82 9707.02 - Two-pilot configuration

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal revision : 1

Société Nationale Industrielle aerospatiale
Division Hélicoptères - 13723 MARIGNANE Cedex (FRANCE)

AS 355 F1 AIRCRAFT

LIST OF APPROVED PAGES

This supplement at the revision mentioned on first page contains the pages below identified by the following date-codes :

SECTION	PAGE	DATE		SECTION	PAGE	DATE
11.4	1 *06*	87-12	*			
	2 *06*	87-12	*			
	3 *04*	84-07	*			
	4 *06*	87-12	*			
	5 *03*	84-07	*			
	6 *04*	84-07	*			
	7 *01*	84-07	*			
	8 *01*	83-19				
	9 *00*	82-41				
	10 *00*	82-41				
	11 *00*	82-41				
	12 *00*	83-07				
	13 *00*	82-41				
	14 *00*	82-41				
	15 *00*	82-41				
	16 *00*	83-07				

* Coded pages

LIST OF THE LATEST NORMAL APPROVED REVISIONS

No.	Date	No.	Date
0	83-19		
1	87-12		

NORMAL REVISION : 1
DGAC APPROVED
DATE :

L'INGENIEUR EN CHEF DE L'ARMEMENT
A. RICHARD

1 GENERAL

The equipment items and installations required for IMC flight are defined in the LIMITATIONS section. R
It has been verified that the following optional equipment items can be installed :

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

2 LIMITATIONS

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

2.1 Minimum equipment required for IMC flight R

The helicopter must be suitably equipped for IMC flight in accordance with the UK certification build standard and as required by the operational regulations in force. R

NOTE : In two-pilot configuration, should the monitor unit fail, take-off to return to base for repair is authorized with the basic autopilot in operation and one of the two pilots keeping his hands on the controls.

2.2 Types of operation approved

IMC flights except in icing conditions.

Before embodiment of Mod. 1823 (engine automatic relighting), IMC flights are prohibited at indicated OAT below + 5°C. R R

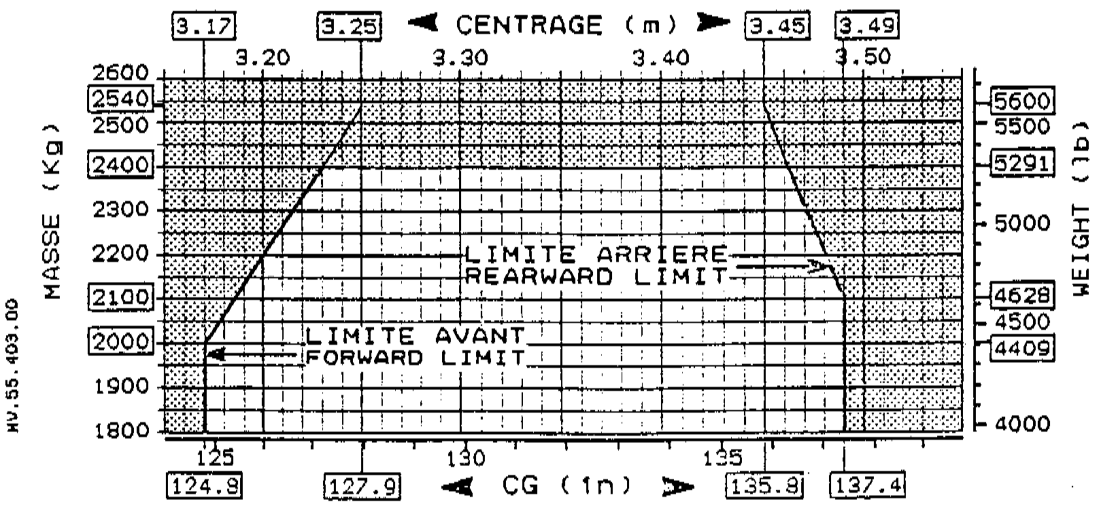
REMINDER : The basic flight manual limitations remain applicable for VMC flying. R R

2.3 Approved IMC operating envelope

- Maximum pressure altitude : 12000 ft (3658 m)
- Airspeed : . minimum IMC speed = 55 kts (102 Km/h - 63 MPH)
  . recommended climbing speed = 65 kts (120 Km/h - 75 MPH)
  . maximum vertical speed = $\pm$ 1200 ft/min.

2.4 C.G limits

- Forward C.G : 3.17 m (124.8 in.) if weight does not exceed 2000 kg (4409 lbs). R R
  Refer to graph below if weight exceeds 2000 kg R
- Aft C.G : 3.49 m (137.4 in.) if weight does not exceed 2100 kg (4625 lbs)
  Refer to graph below if weight exceeds 2100 kg.



3 EMERGENCY PROCEDURES

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

3.1 Engine failure on approach

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

3.2 Electrical power system failure

3.2.1 Loss of a generator or of a static inverter

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

3.2.2 Loss of both generators

The loss of both generators causes the ALARM light(s) to flash.

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

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

NOTES : 1) If possible look for VMC flight conditions or plan for a diversion field.
2) If the loss of the 2nd generator results from an engine failure do not attempt to restart the failed engine.
3) Shutting off the booster pumps implies operating restrictions. Refer to the emergency procedures of the basic Flight Manual and the restrictions due to the FUELTRON optional equipment (if fitted).

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

In complete IMC flight conditions : R
. approximately 45 minutes with one 16-A/H battery
. approximately 90 minutes with two 16-A/H batteries.

3.3 AFCS failure

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

4 NORMAL PROCEDURES

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

4.1 External checks

Position 2
Check in LH hold are to be completed as follows :

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

4.2 Checks before starting the engines

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

4.3 Checks after starting

- d.c. supply
  Check output voltage and current from each generator are correct.

- a.c. supply
  Using the selector switch check 26 V and 115 V voltages from each one of the following three cases of distribution :

  . RH static inverter set to ON
    LH static inverter set to OFF
  . LH static inverter set to ON
    RH static inverter set to OFF
  . RH and LH static inverter set to ON.

4.4 Cruising flight

- At OAT below +5°C and depending on weather conditions, operate the engine air intake anti-icing system.
- Avoid flight in thick vertically-building clouds and in lightning hazard areas.
- Avoid abrupt maneuvers at speeds below 65 knots (120 km/h - 75 MPH) as well as turns with a bank angle greater than 30°.

4.5 Approach

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

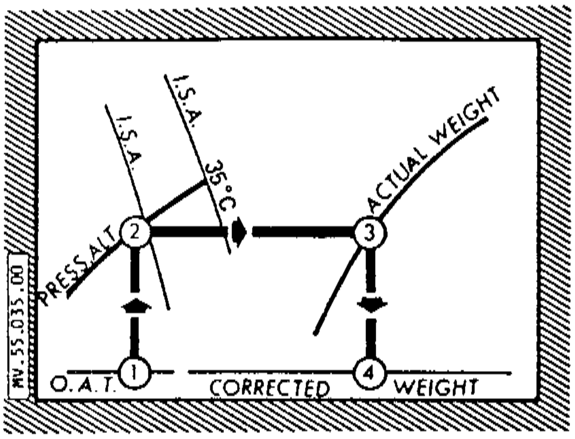
Recommended airspeed with coupler in operation is between 80 and 120 kts (148 and 222 km/h - 92 and 138 MPH).

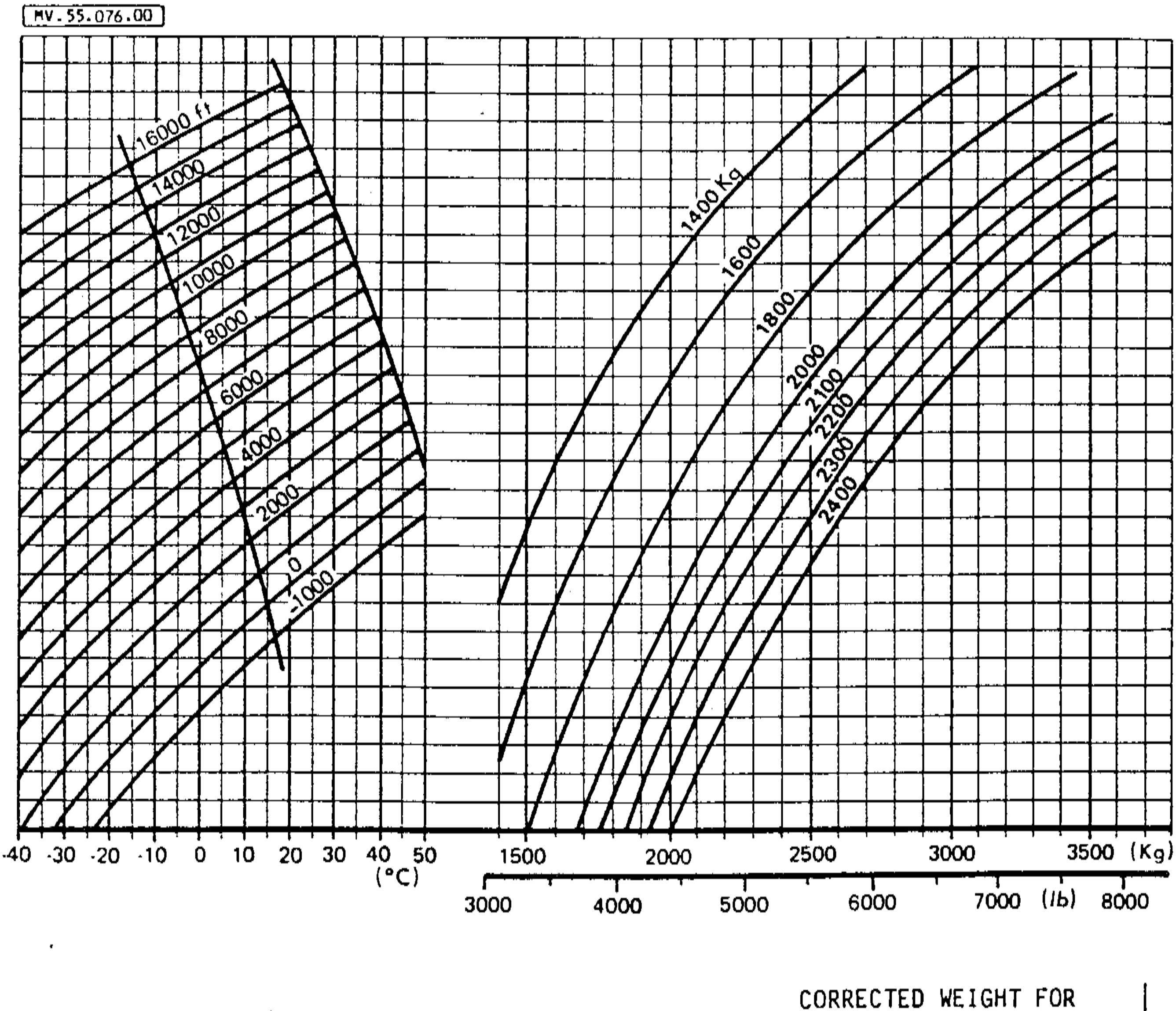
NOTE : Avoid ILS approach with coupler engaged at speeds below 80 knots.

Max. approach slope angle = 4.5°.

5 PERFORMANCE

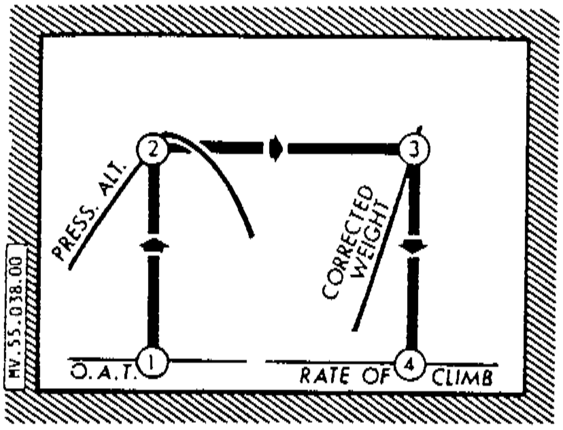
Performance data is identical to that approved for the basic aircraft. Only IMC climbing performance data at 65 kts (120 km/h - 75 MPH) on one or both R engines is affected. To obtain the data refer to the following charts. Reduce the performance data by 8 % when the sliding door(s) is (are) in the open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

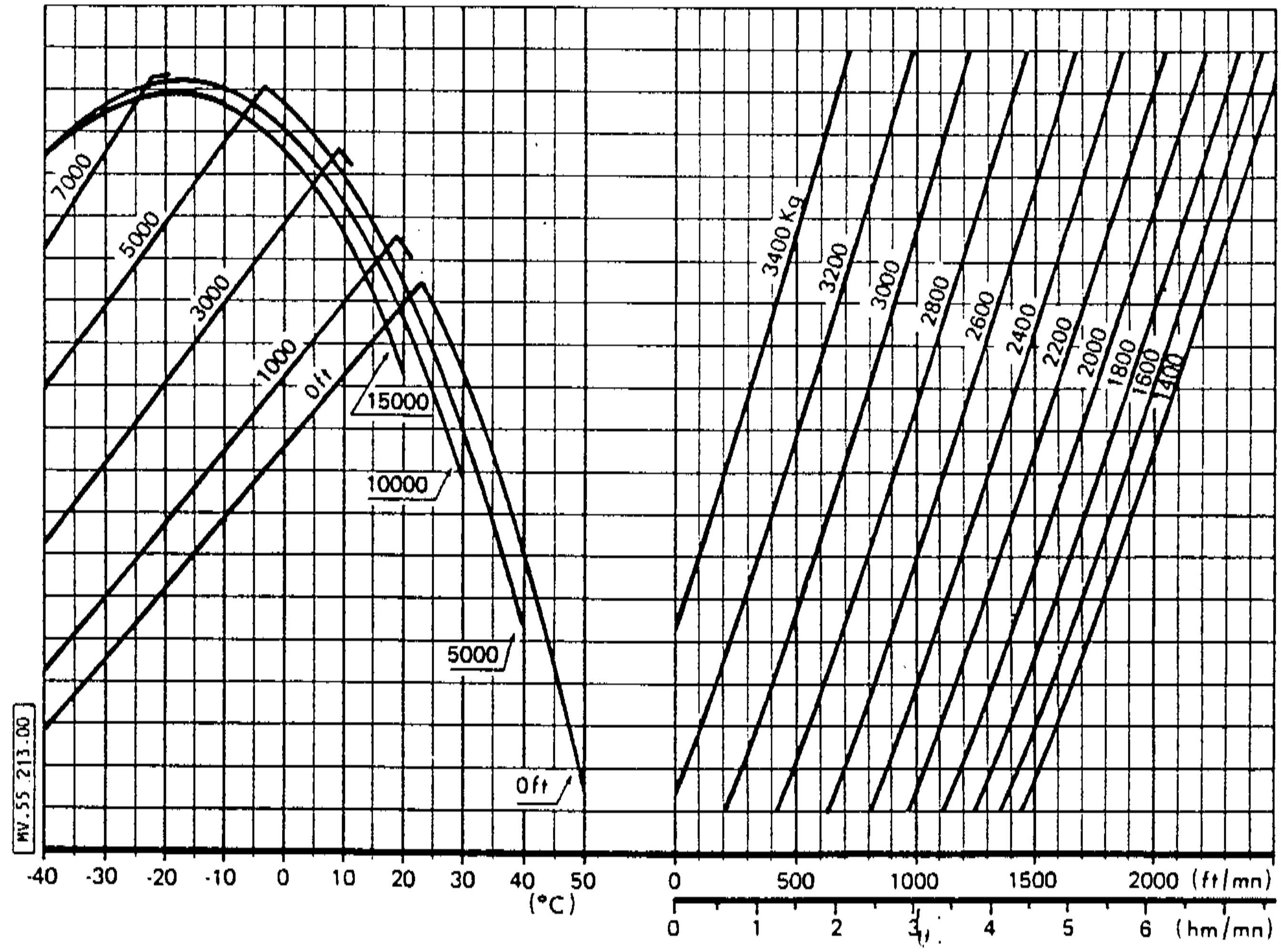




CORRECTED WEIGHT FOR
DETERMINING THE R/C FROM
FOLLOWING FIGURES

Figure 1



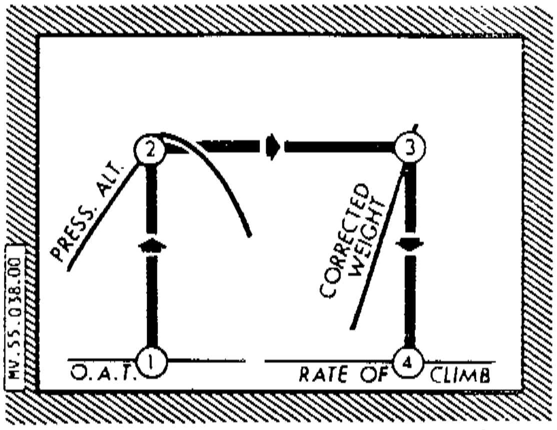


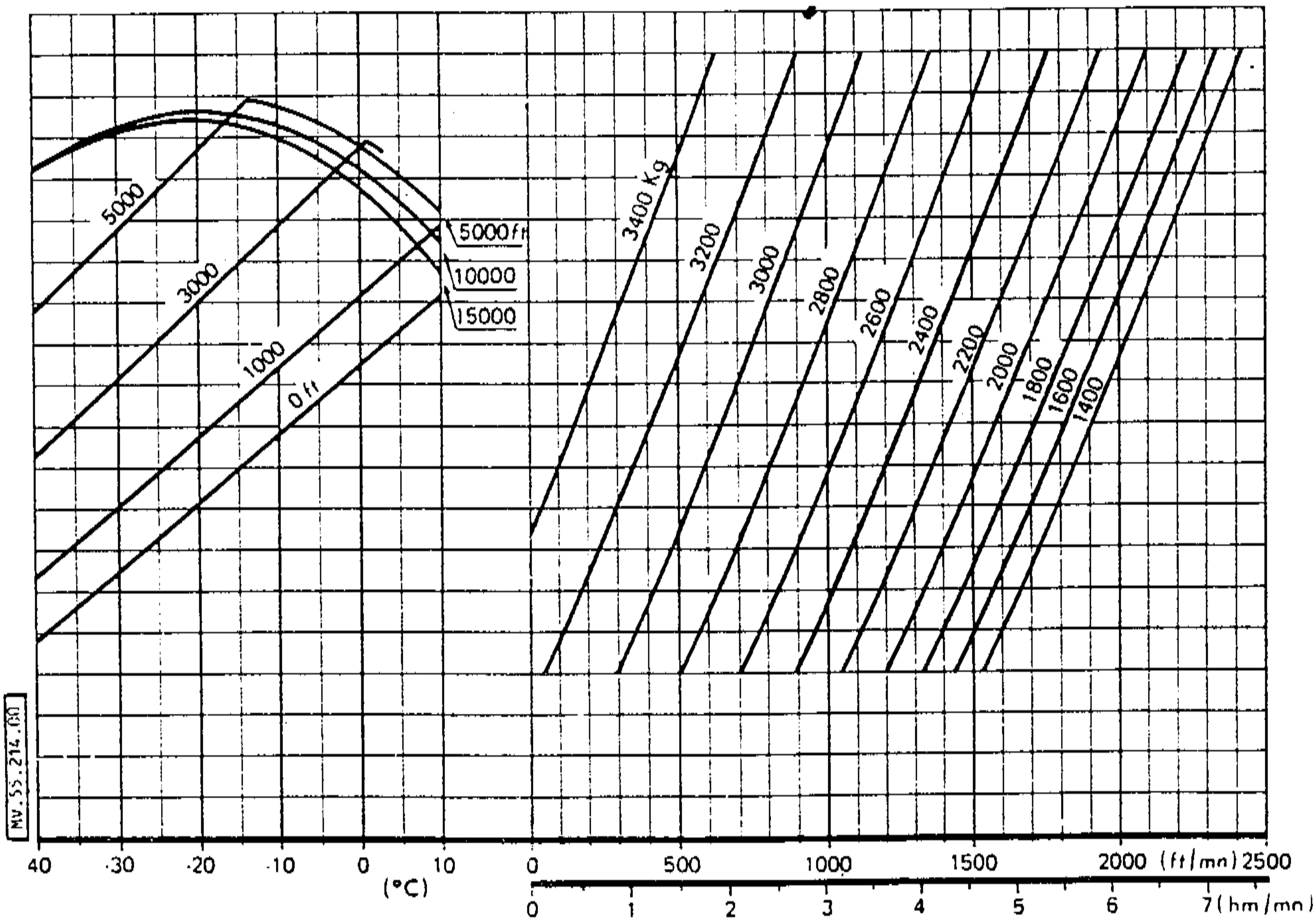
CONDITIONS :

- Max. Continuous Power
- IAS 65 kts (120 km/h - 75 MPH)
- Heater and demister off
- Engine air intake anti-ice off

RATE OF CLIMB ON
2 ENGINES

Figure 2



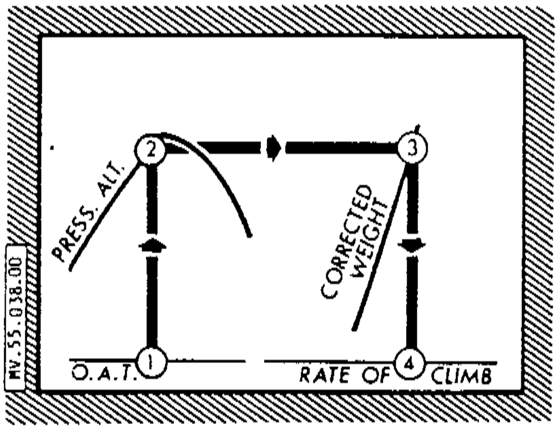


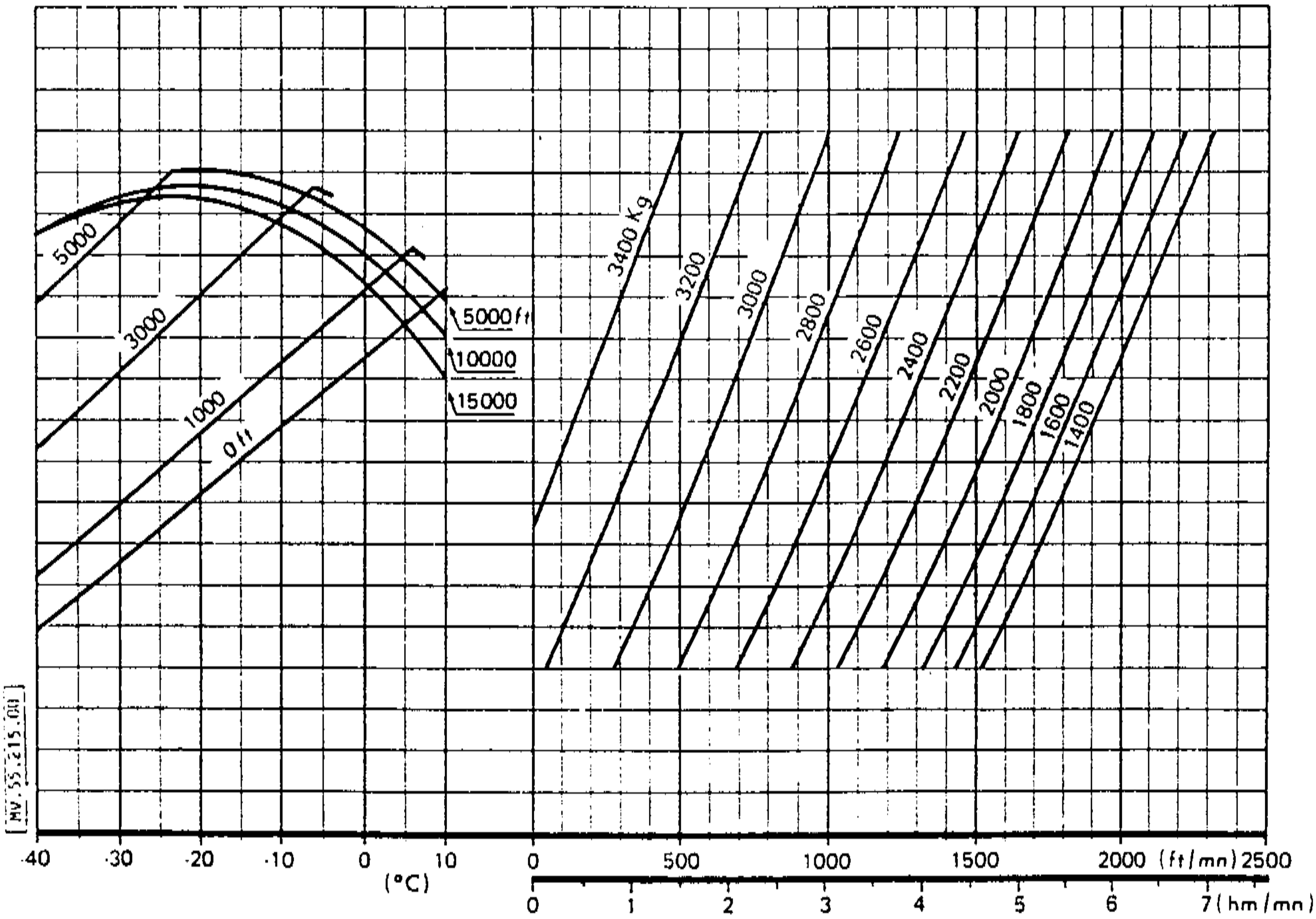
CONDITIONS :

- Max. Continuous Power
- IAS 65 kts (120 km/h - 75 MPH)
- Heater and demister on
- Engine air intake anti-ice off

RATE OF CLIMB ON
2 ENGINES

Figure 3



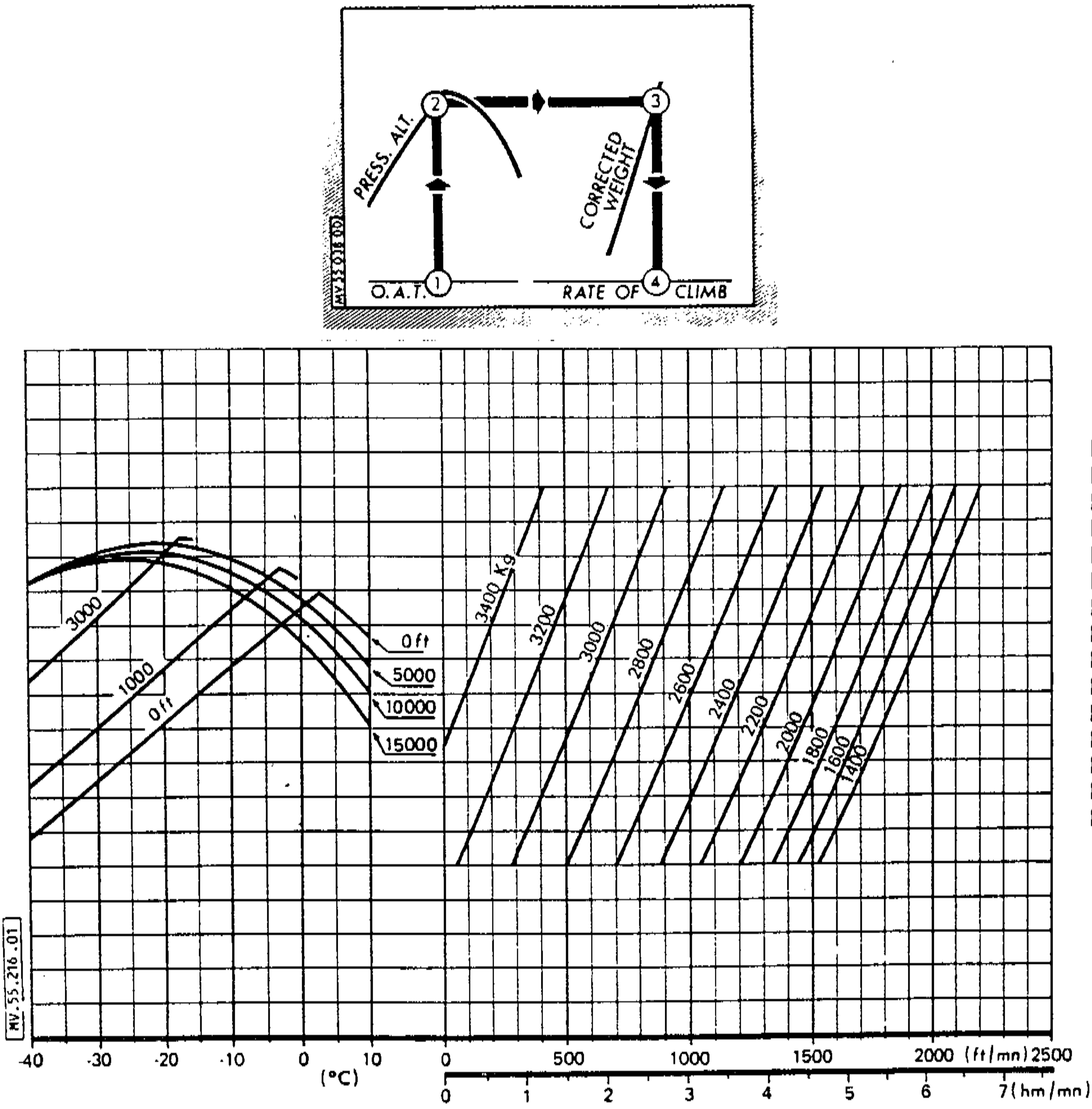


CONDITIONS :

- Max. Continuous Power
- IAS 65 kts (120 km/h - 75 MPH)
- Heater and demister off
- Engine air intake anti-ice on

RATE OF CLIMB
ON 2 ENGINES

Figure 4



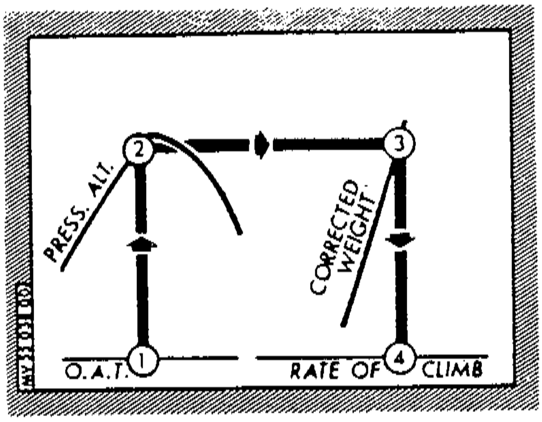
R
R
R
R
R
R
R
R
R
R
R
R
R
R
R

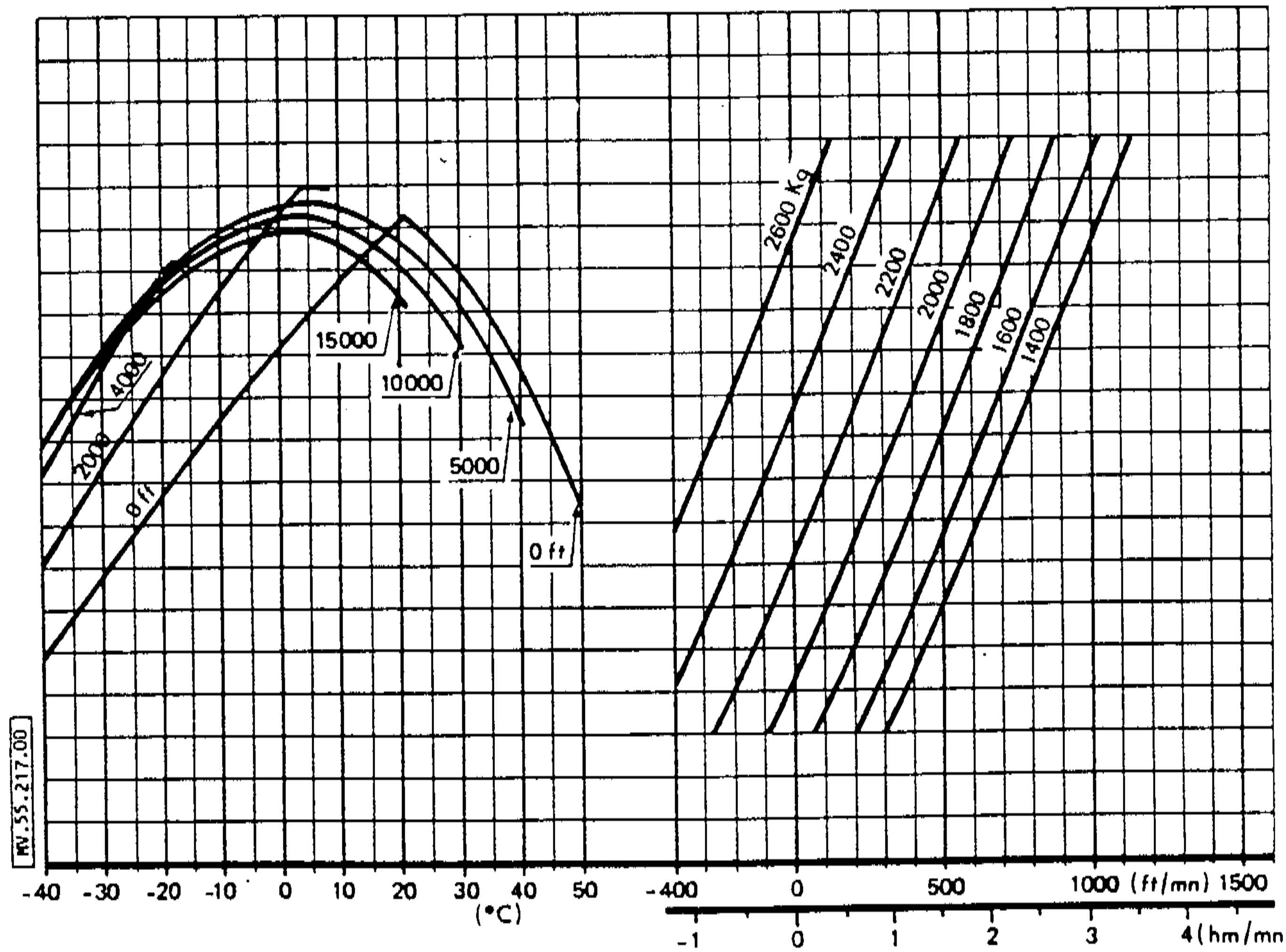
<u>CONDITIONS</u> :

- Max. Continuous Power
- IAS 65 kts (120 km/h - 75 MPH)
- Heater and demister on
- Engine air intake anti-ice on

RATE OF CLIMB
ON 2 ENGINES

Figure 5



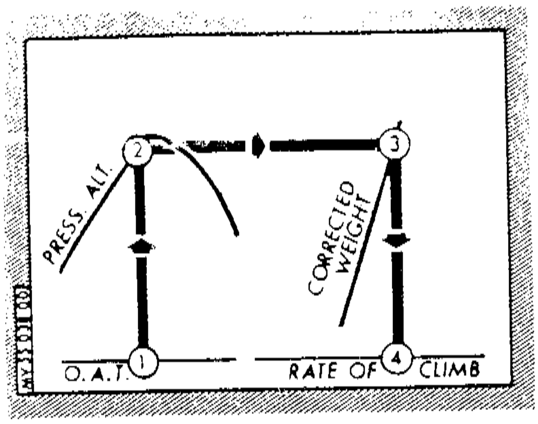


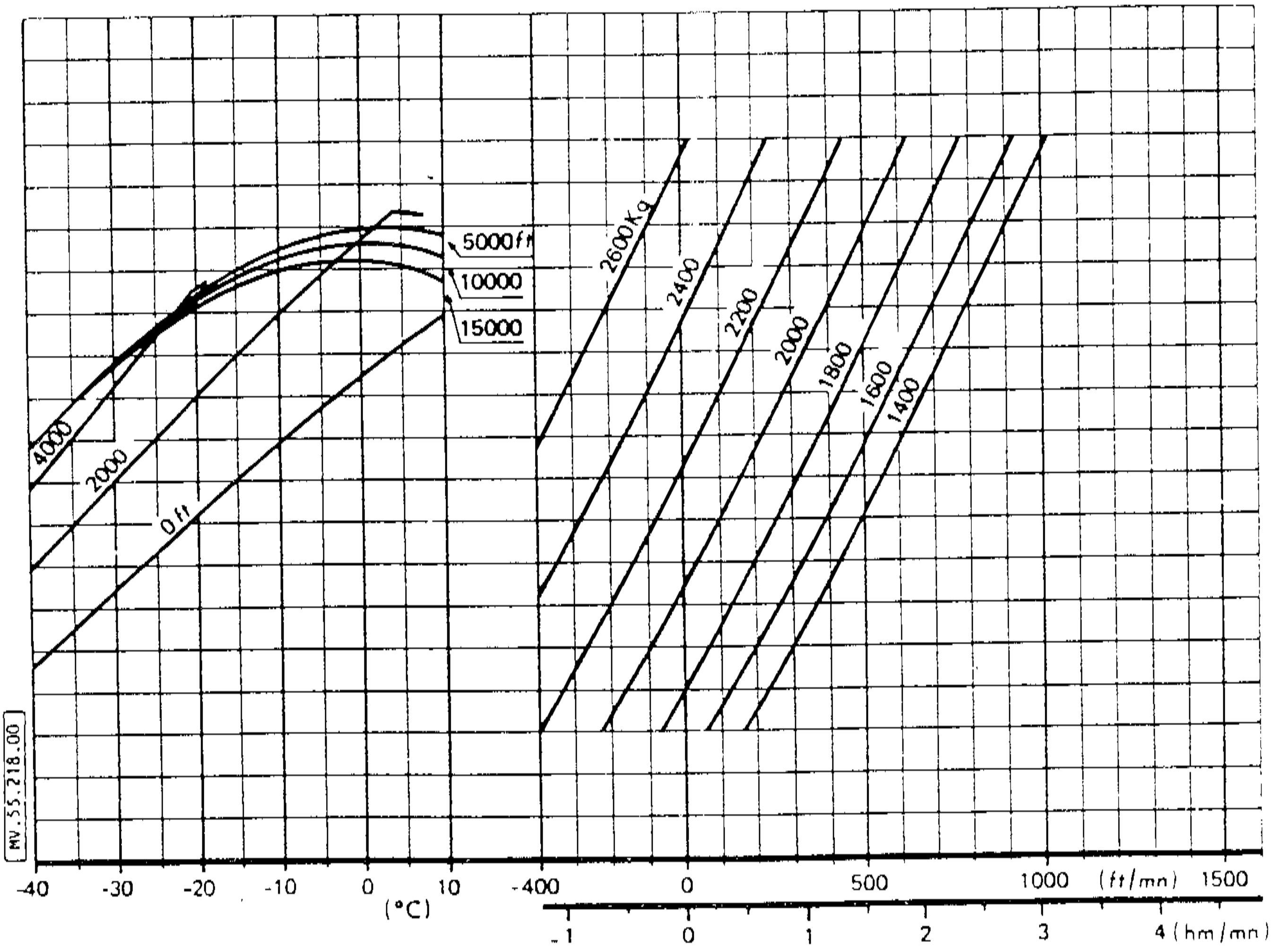
CONDITIONS :

- Max. Continuous Power
- IAS 65 kts (120 km/h - 75 MPH)
- Heater and demister off
- Engine air intake anti-ice off

RATE OF CLIMB
ON 1 ENGINE

Figure 6



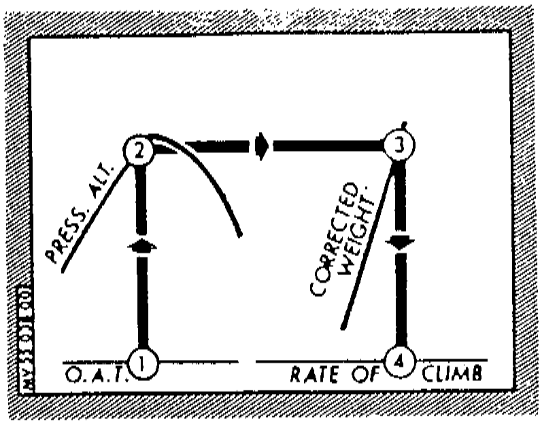


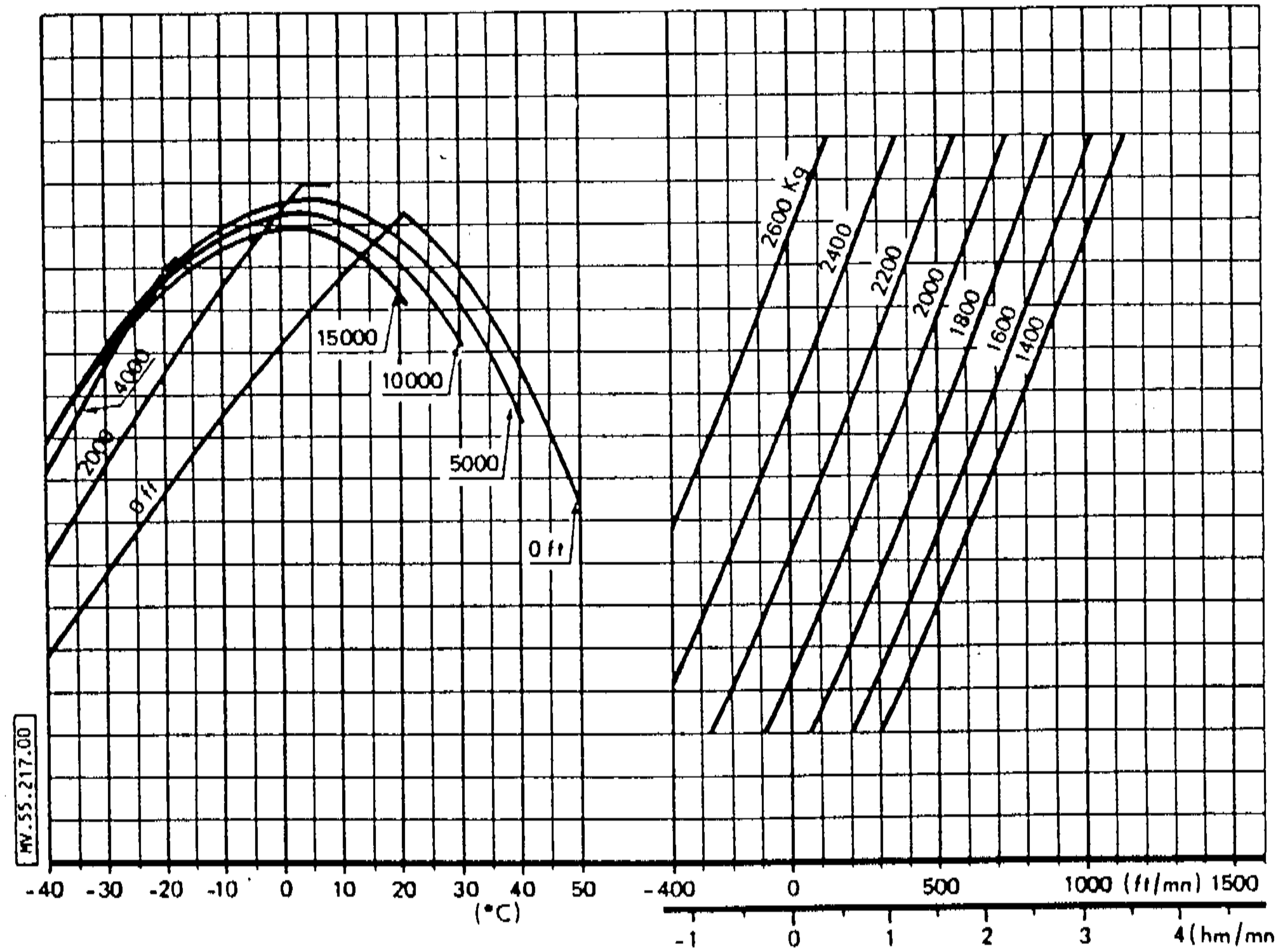
CONDITIONS :

- Max. Continuous Power
- IAS 65 kts (120 km/h - 75 MPH)
- Heater and demister on
- Engine air intake anti-ice off

RATE OF CLIMB
ON 1 ENGINE

Figure 7



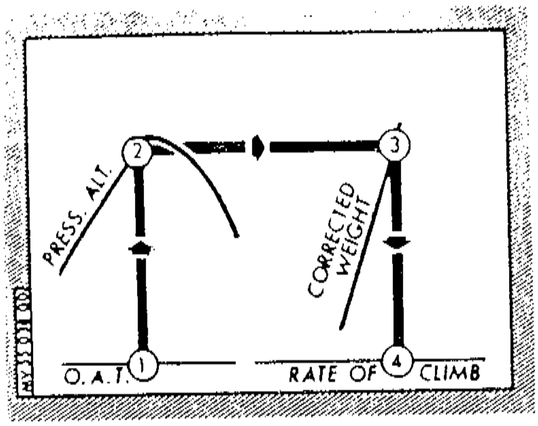


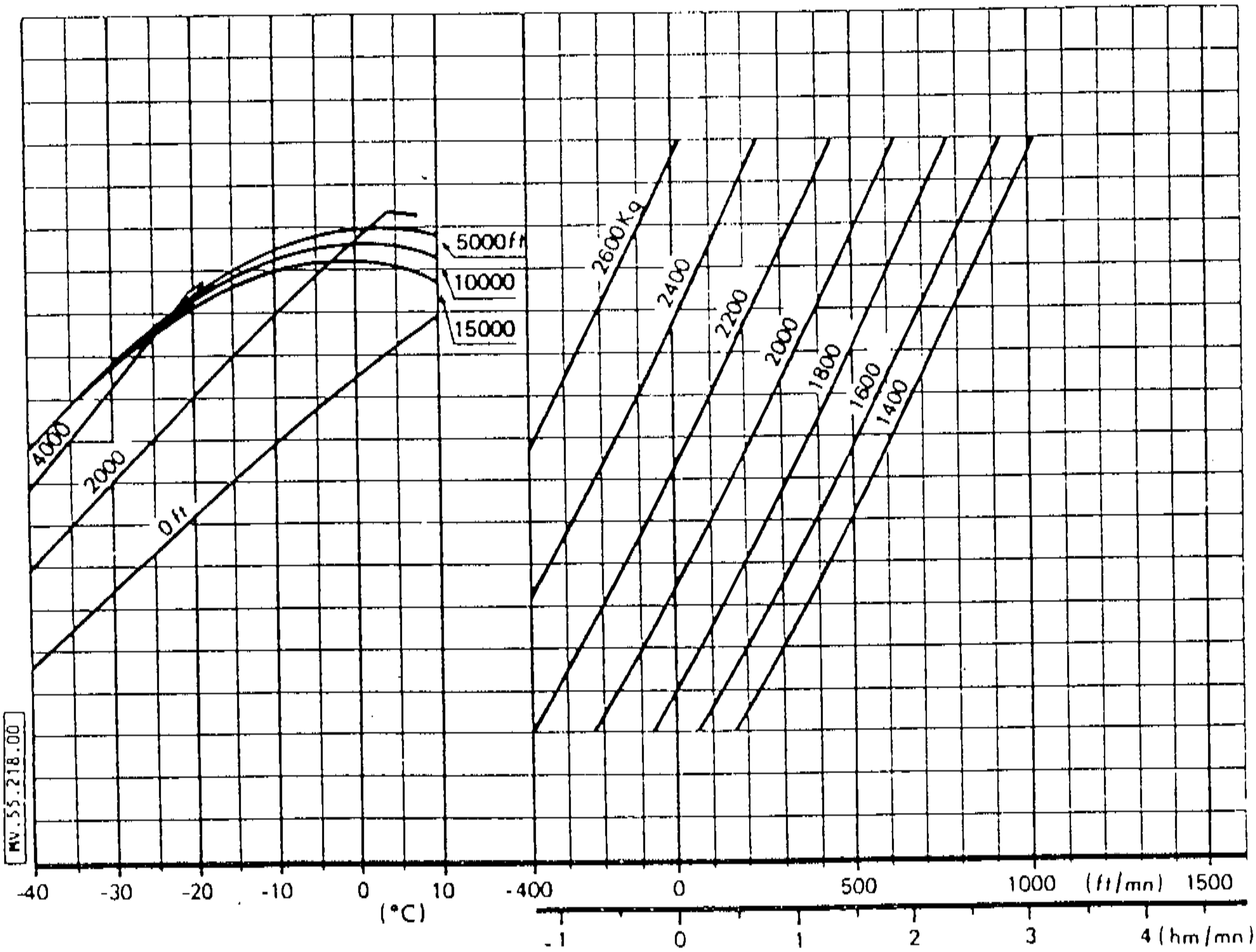
CONDITIONS :

- Max. Continuous Power
- IAS 65 kts (120 km/h - 75 MPH)
- Heater and demister off
- Engine air intake anti-ice off

RATE OF CLIMB
ON 1 ENGINE

Figure 6



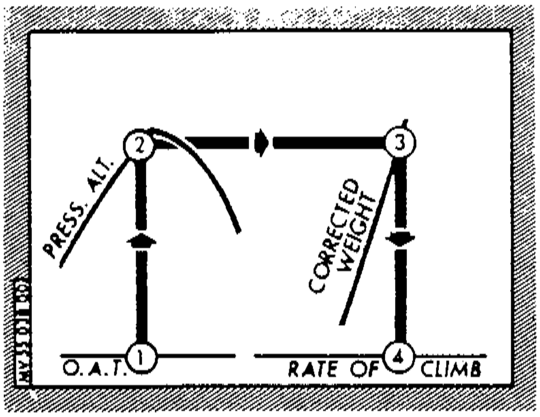


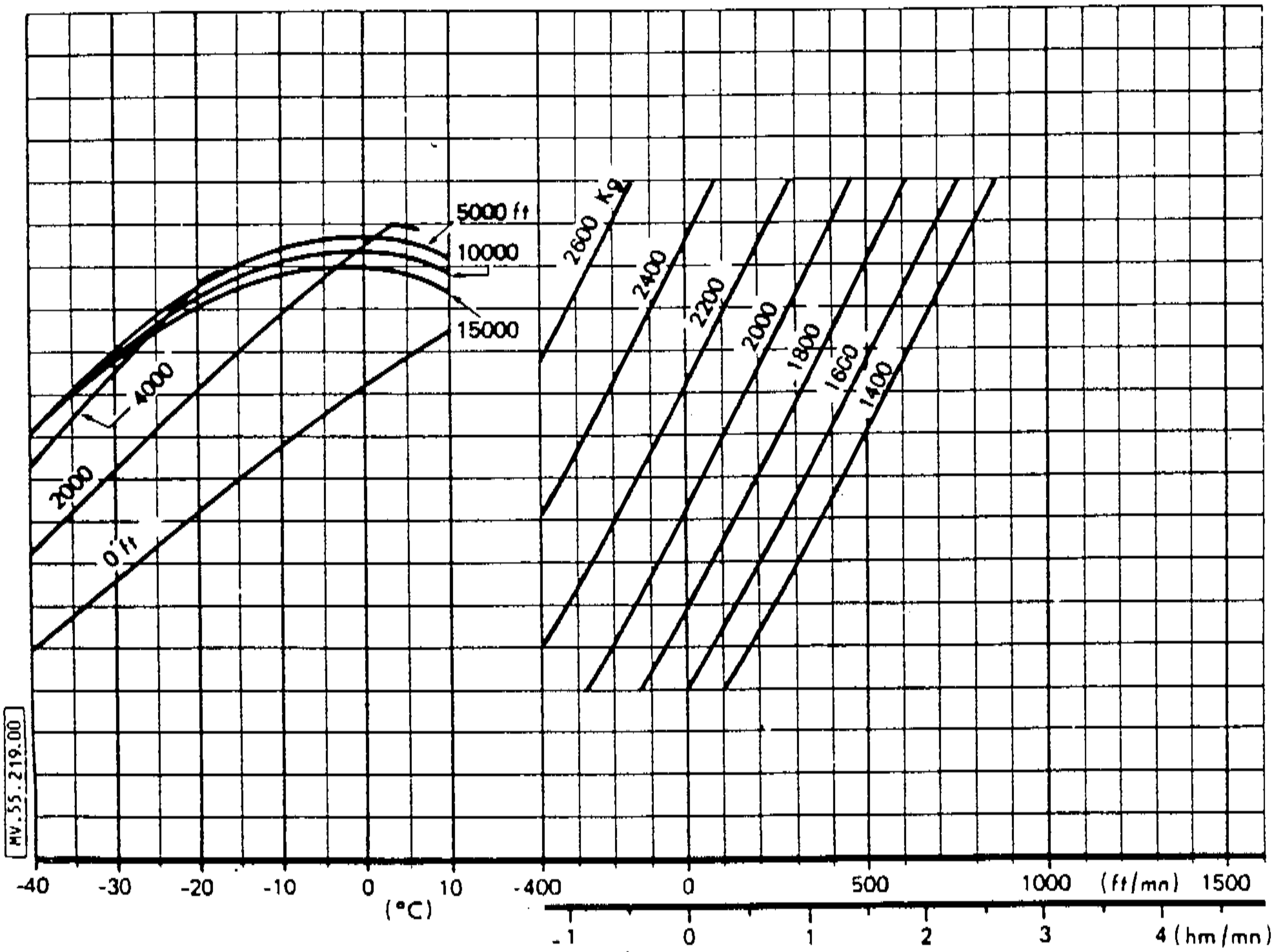
CONDITIONS :

- Max. Continuous Power
- IAS 65 kts (120 km/h - 75 MPH)
- Heater and demister on
- Engine air intake anti-ice off

RATE OF CLIMB
ON 1 ENGINE

Figure 7



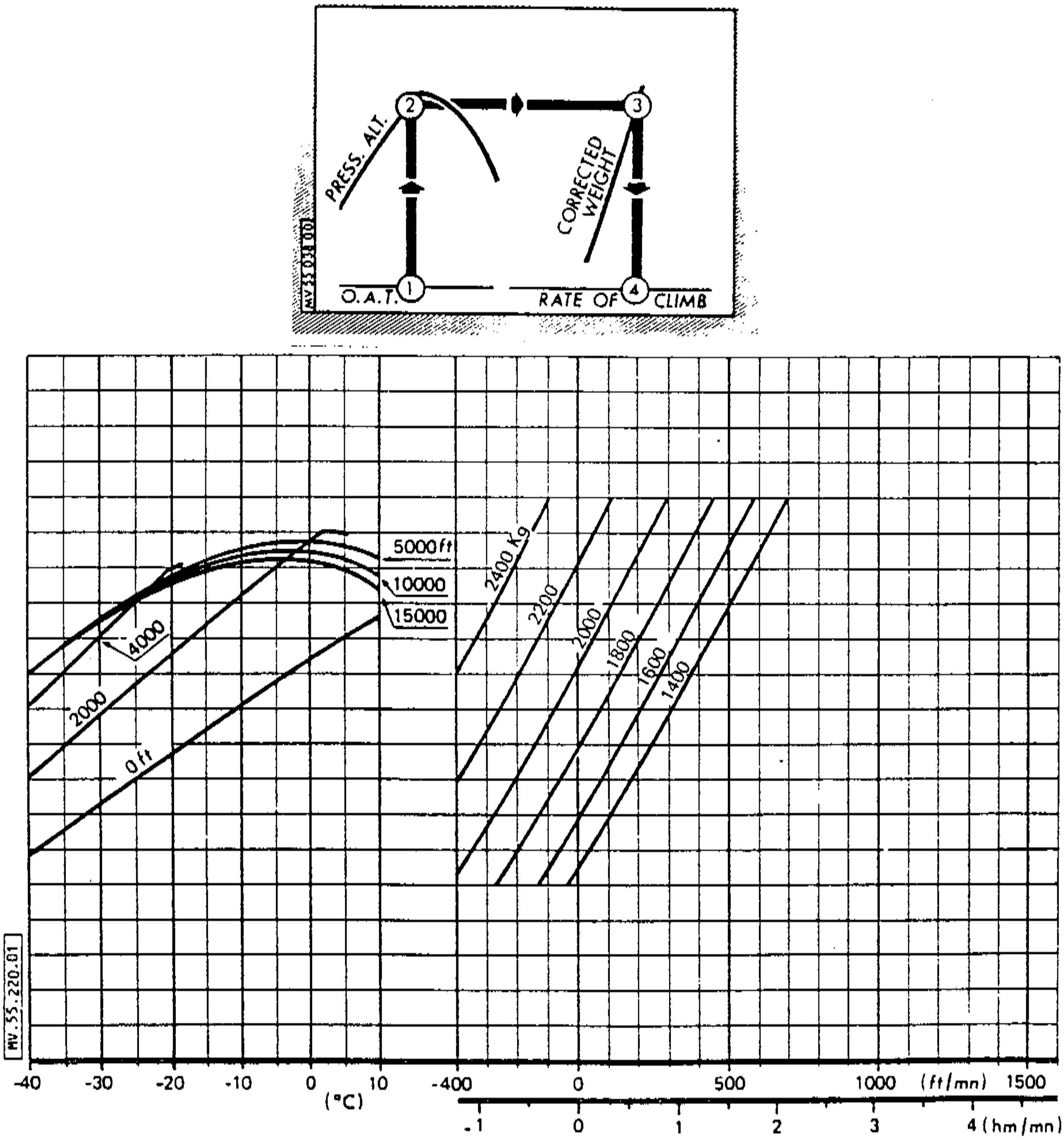


CONDITIONS :

- Max. Continuous Power
- IAS 65 kts (120 km/h - 75 MPH)
- Heater and demister off
- Engine air intake anti-ice on

RATE OF CLIMB
ON 1 ENGINE

Figure 8



R
R
R
R
R
R
R
R
R
R
R
R
R
R
R

<u>CONDITIONS</u> :

- Max. Continuous Power
- IAS 65 kts (120 km/h - 75 MPH)
- Heater and demister on
- Engine air intake anti-ice on

RATE OF CLIMB
ON 1 ENGINE

Figure 9

FLIGHT MANUAL

AS 355 F1

SPECIAL SUPPLEMENT

FLIGHT IN COLD DAMP ATMOSPHERE

IMPORTANT NOTE
The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or applicable Flight Manual supplements.

Normal Revision : 0

Société Nationale Industrielle aerospatiale
Division Hélicoptères 13 725 MARIGNANE Cedex (France)

AS 355 F1 AIRCRAFT

LIST OF APPROVED PAGES

This supplement at the revision mentioned on first page contains the pages below identified by the following date-codes :

SECTION	PAGE	DATE	SECTION	PAGE	DATE
11.50	1 *05*	86-38 *			
	2 *05*	86-38 *			
	3 *01*	86-38 *			

* Coded pages

LISTE OF THE LATEST NORMAL APPROVED REVISIONS		NORMAL REVISION : 0 DGAC APPROVED Date : 0 2 OCT. 1986
N°	CODE DATE	
0	86-38	

DIRECTION GENERALE DE L'AVIATION CIVILE
A. RENAULT

The engines are equipped with an anti-icing system that shall be operated when indicated OAT is below + 5°C in any precipitation and visible humidity conditions.

Reminder of temporary limitations

VFR flights in heavy precipitation are prohibited at indicated OAT below + 5°C. This restriction does not apply to flights in snow at indicated OAT below - 5°C nor in light drizzle (see Section 2.1, para. 1).

IMC flights are prohibited at indicated OAT below + 5°C (see Supplement 11.4, para. 2.2).

Flight with a crewmember in addition to the pilot

When the pilot is assisted by a crewmember in the position of the copilot and fully conversant with the below-mentioned engine relight procedure these temporary limitations can exceptionally be removed outside icing conditions provided CAA Operations Division agreement has been obtained :

- In the event of an engine stopping suddenly due to weather conditions the pilot at the controls shall maintain rotor speed and monitor aircraft attitude,

- The second crewmember shall relight the stopped engine by applying the following procedure before generator speed drops below 30 % :

  Press the starter pushbutton, leaving the fuel flow control in the flight gate. The engine should accelerate and return to its governed power rating.

- Immediately leave the flying conditions that caused engine flameout.