

1. INTRODUCTION

This section provides all necessary data for an accurate and comprehensive planning of flight activity from takeoff to landing.

Data reported in graphs and/or in tables were determined using:

- ✓ “Flight Test Data” under conditions prescribed by EASA CS-VLA regulation
- ✓ aircraft and engine in good condition
- ✓ average piloting techniques

Each graph or table was determined according to ICAO Standard Atmosphere (ISA - s.l.); evaluations of the impact on performances were carried out by theoretical means for:

- ✓ Airspeed
- ✓ External temperature
- ✓ Altitude
- ✓ Weight
- ✓ Runway type and condition

2. USE OF PERFORMANCES CHARTS

Performances data are presented in tabular or graphical form to illustrate the effect of different variables such as altitude, temperature and weight. Given information is sufficient to plan the mission with required precision and safety.

Additional information is provided for each table or graph.

3. AIRSPEED INDICATOR SYSTEM CALIBRATION (*Approved Data*)

Graph shows calibrated airspeed V_{CAS} as a function of indicated airspeed V_{IAS} .

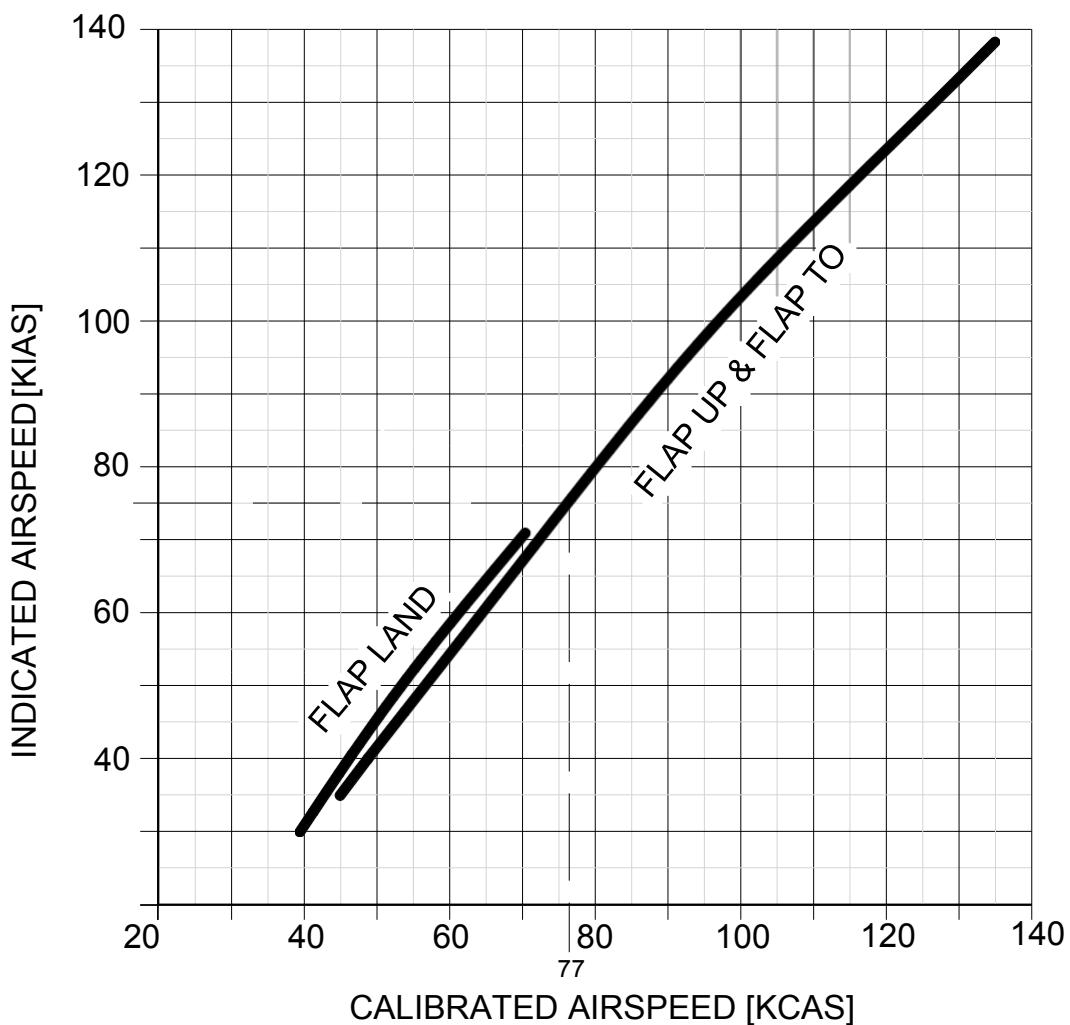


FIG. 5-1. CALIBRATED VS INDICATED AIRSPEED

Example:

Given

KIAS 75

Find

KCAS 74

NOTE

Indicated airspeed assumes 0 as an instrument error

4. ICAO STANDARD ATMOSPHERE

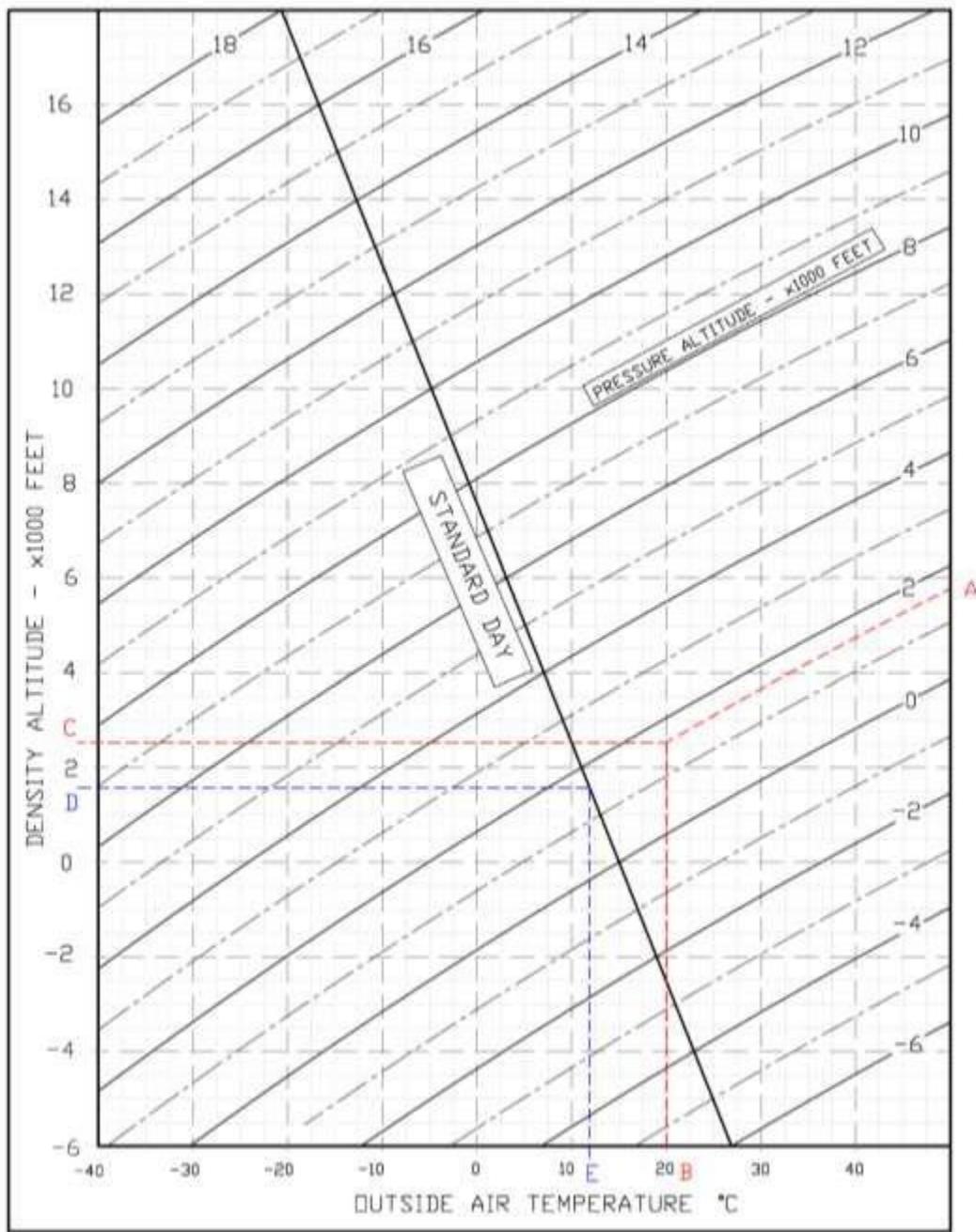


FIG. 5-2. ICAO CHART

Examples:

<u>Scope</u>	<u>Given</u>	<u>Find</u>
<u>Density Altitude:</u>	A: Pressure altitude = 1600ft B: Temperature = 20°C	→ C: Density Altitude = 2550ft
<u>ISA Temperature:</u>	D: Pressure altitude = 1600ft	→ E: ISA Air Temperature = 12°C

5. STALL SPEED (*Approved Data*)

Weight: 580 kg Throttle Levers: IDLE CG: Most Forward (26%) No ground effect							
WEIGHT	BANK	STALL SPEED					
		FLAPS 0°		FLAPS T/O		FLAPS FULL	
	[deg]	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
580 (FWD C.G.)	0	40	49	35	46	30	39
	15	41	50	36	47	31	40
	30	45	53	40	49	34	42
	45	53	58	47	54	41	47
	60	67	70	61	65	53	56

NOTE

Altitude loss during conventional stall recovery, as demonstrated during flight tests is approximately 150 ft with banking below 30°.

6. CROSSWIND

Maximum demonstrated crosswind is 22 Kts

⇒ Example:

Given

Wind direction (with respect to aircraft longitudinal axis) = 30° Headwind = 17.5 Kts

Wind speed = 20 Kts

Find

Crosswind = 10 Kts

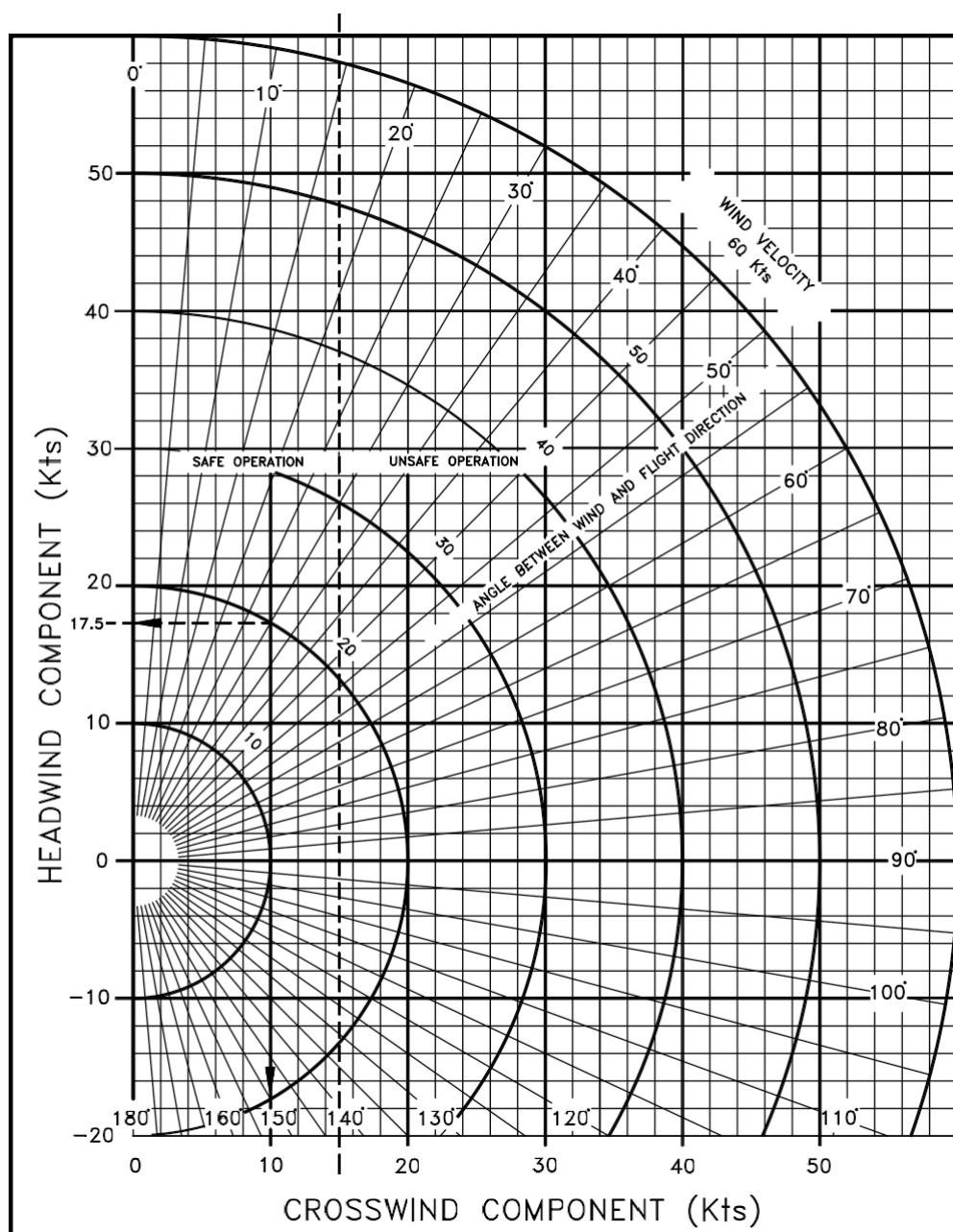


FIG. 5-3. CROSSWIND CHART

7. TAKE-OFF PERFORMANCES (*Approved Data*)

<u>Weight = 580 kg</u>		Corrections				
Flaps: T/O		Headwind: - 2.5m for each kt (8 ft/kt)				
Speed at Lift-Off = 42 KIAS		Tailwind: + 10m for each kt (33ft/kt)				
Speed Over 50ft Obstacle = 52 KIAS		Paved Runway: - 6% to Ground Roll				
Throttle Levers: Full Forward		Runway slope: + 5% to Ground Roll for each +1%				
Runway: Grass		Runway slope: + 5% to Ground Roll for each +1%				
Pressure Altitude [ft]		Distance [m]				
		Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	130	171	220	279	199
	At 50 ft AGL	212	281	365	465	330
1000	Ground Roll	142	187	242	306	214
	At 50 ft AGL	233	309	402	513	355
2000	Ground Roll	156	206	266	337	231
	At 50 ft AGL	257	340	443	565	383
3000	Ground Roll	172	226	292	371	249
	At 50 ft AGL	282	375	488	624	414
4000	Ground Roll	189	249	322	409	269
	At 50 ft AGL	311	414	539	690	447
5000	Ground Roll	208	275	355	452	290
	At 50 ft AGL	343	457	595	763	483
6000	Ground Roll	229	303	392	499	313
	At 50 ft AGL	379	505	659	845	522
7000	Ground Roll	252	334	433	552	338
	At 50 ft AGL	419	558	729	937	565
8000	Ground Roll	279	369	479	612	366
	At 50 ft AGL	463	618	809	1040	612
9000	Ground Roll	308	408	531	678	396
	At 50 ft AGL	513	685	898	1155	664
10000	Ground Roll	341	452	588	753	429
	At 50 ft AGL	568	761	998	1286	720

Weight = 550 kg
Flaps: T/O
Speed at Lift-Off = 42 KIAS
Speed Over 50ft Obstacle = 52 KIAS
Throttle Levers: Full Forward
Runway: Grass
Corrections
Headwind: - 2.5m for each kt (8 ft/kt)
Tailwind: + 10m for each kt (33ft/kt)
Paved Runway: - 6% to Ground Roll
Runway slope: + 5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				ISA
		-25	0	25	50	
S.L.	Ground Roll	113	149	192	243	174
	At 50 ft AGL	185	245	318	405	287
1000	Ground Roll	124	163	211	267	187
	At 50 ft AGL	203	269	350	446	309
2000	Ground Roll	136	179	231	294	201
	At 50 ft AGL	223	297	385	492	334
3000	Ground Roll	150	197	255	323	217
	At 50 ft AGL	246	327	425	544	360
4000	Ground Roll	164	217	281	357	234
	At 50 ft AGL	271	360	469	601	389
5000	Ground Roll	181	239	309	394	252
	At 50 ft AGL	299	398	519	664	421
6000	Ground Roll	199	264	342	435	273
	At 50 ft AGL	330	440	574	736	455
7000	Ground Roll	220	291	377	481	295
	At 50 ft AGL	365	486	635	816	492
8000	Ground Roll	243	322	417	533	319
	At 50 ft AGL	403	538	704	905	533
9000	Ground Roll	268	356	462	591	345
	At 50 ft AGL	446	597	782	1006	578
10000	Ground Roll	297	394	513	655	374
	At 50 ft AGL	495	662	869	1120	627

Weight = 500 kg
Flaps: T/O
Speed at Lift-Off = 42 KIAS
Speed Over 50ft Obstacle = 52 KIAS
Throttle Levers: Full Forward
Runway: Grass
Corrections
Headwind: - 2.5m for each kt (8 ft/kt)
Tailwind: + 10m for each kt (33ft/kt)
Paved Runway: - 6% to Ground Roll
Runway slope: + 5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				ISA
		-25	0	25	50	
S.L.	Ground Roll	88	116	150	189	135
	At 50 ft AGL	144	191	248	316	224
1000	Ground Roll	97	127	164	208	146
	At 50 ft AGL	159	210	273	348	242
2000	Ground Roll	106	140	181	229	157
	At 50 ft AGL	174	231	301	384	261
3000	Ground Roll	117	154	199	252	169
	At 50 ft AGL	192	255	332	424	281
4000	Ground Roll	128	169	219	278	183
	At 50 ft AGL	212	281	366	469	304
5000	Ground Roll	141	187	242	307	197
	At 50 ft AGL	233	310	405	519	328
6000	Ground Roll	156	206	267	339	213
	At 50 ft AGL	257	343	448	574	355
7000	Ground Roll	172	227	295	375	230
	At 50 ft AGL	285	379	496	637	384
8000	Ground Roll	189	251	326	416	249
	At 50 ft AGL	315	420	550	707	416
9000	Ground Roll	209	278	361	461	269
	At 50 ft AGL	348	466	610	785	451
10000	Ground Roll	231	307	400	512	292
	At 50 ft AGL	386	517	678	874	490

8. TAKE-OFF RATE OF CLIMB

Power Setting: Maximum Continuous Power Flaps: Take-Off (15°) Vx=56 KIAS							
Weight	Pressure Altitude	Climb Speed V_y	Rate of Climb [ft/min]				
			Temperature [°C]				ISA
[kg]	[ft]	[KIAS]	-25	0	25	50	
580	S.L.	66	1238	987	764	562	850
	2000	66	1047	801	581	383	701
	4000	66	858	615	399	204	552
	6000	66	668	430	218	27	403
	8000	65	480	246	37	-151	254
	10000	65	292	62	-143	-327	105
	12000	65	104	-121	-322	-503	-44
	14000	65	-82	-303	-501	-679	-193
550	S.L.	66	1339	1077	842	631	933
	2000	66	1140	882	651	443	777
	4000	66	941	687	460	256	621
	6000	65	742	493	271	70	464
	8000	65	545	300	81	-116	308
	10000	65	348	107	-107	-301	152
	12000	65	151	-85	-296	-486	-4
	14000	64	-44	-276	-483	-669	-161
500	S.L.	66	1532	1246	991	760	1089
	2000	66	1315	1033	782	556	919
	4000	65	1098	821	575	352	749
	6000	65	882	610	368	149	579
	8000	65	667	400	162	-53	409
	10000	64	452	190	-44	-255	239
	12000	64	238	-19	-249	-456	68
	14000	64	25	-227	-453	-656	-102

9. EN-ROUTE RATE OF CLIMB

Power Setting: Maximum Continuous Power							
Flaps: UP							
Vx=56 KIAS							
Weight [kg]	Pressure Altitude [ft]	Climb Speed V _Y [KIAS]	Rate of Climb [ft/min]				
			Temperature [°C]				ISA
580	S.L.	66	1362	1111	888	686	974
	2000	66	1171	925	705	507	825
	4000	66	982	739	523	328	676
	6000	66	792	554	342	151	527
	8000	65	604	370	161	-27	378
	10000	65	416	186	-19	-203	229
	12000	65	228	3	-198	-379	80
	14000	65	42	-179	-377	-555	-69
550	S.L.	66	1463	1201	966	755	1057
	2000	66	1264	1006	775	567	901
	4000	66	1065	811	584	380	745
	6000	65	866	617	395	194	588
	8000	65	669	424	205	8	432
	10000	65	472	231	17	-177	276
	12000	65	275	39	-172	-362	120
	14000	64	80	-152	-359	-545	-37
500	S.L.	66	1656	1370	1115	884	1213
	2000	66	1439	1157	906	680	1043
	4000	65	1222	945	699	476	873
	6000	65	1006	734	492	273	703
	8000	65	791	524	286	71	533
	10000	64	576	314	80	-131	363
	12000	64	362	105	-125	-332	192
	14000	64	149	-103	-329	-532	22

10. CRUISE PERFORMANCES

Weight: 580 kg

Pressure Altitude: 0 ft

RPM*	ISA – 30°C			ISA			ISA + 30°C		
	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]
2361	120%	110	32.2	100%	106	26.8	84%	103	22.6
2318	113%	108	30.5	94%	104	25.3	79%	100	21.2
2272	107%	106	28.8	88%	101	23.8	74%	97	19.8
2221	100%	103	26.9	82%	99	22.1	68%	94	18.3
2165	93%	100	25	76%	95	20.4	62%	90	16.8
2103	85%	97	22.9	69%	92	18.6	56%	86	15.1
2033	77%	93	20.8	62%	88	16.7	50%	81	13.4

* Propeller RPM

** Fuel Consumption

Weight: 580 kg

Pressure Altitude: 2000 ft

RPM*	ISA – 30°C			ISA			ISA + 30°C		
	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]
2355	112%	109	30.2	93%	106	25.1	78%	101	21
2312	106%	107	28.6	88%	103	23.6	73%	99	19.7
2265	100%	105	27	82%	100	22.2	68%	96	18.4
2214	94%	102	25.2	76%	98	20.6	63%	92	17
2157	87%	99	23.4	70%	94	19	58%	88	15.5
2094	80%	96	21.4	64%	90	17.3	52%	84	13.9
2023	72%	92	19.4	57%	86	15.5	46%	77	12.3

* Propeller RPM

** Fuel Consumption

Weight: 580 kg

Pressure Altitude: 4000 ft

RPM*	ISA – 30°C			ISA			ISA + 30°C		
	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]
2348	105%	109	28.3	87%	105	23.4	72%	100	19.5
2305	100%	107	26.8	82%	102	22	68%	97	18.3
2257	94%	104	25.2	77%	99	20.6	63%	94	17
2206	88%	101	23.6	71%	96	19.2	58%	90	15.7
2148	81%	98	21.9	65%	93	17.6	53%	86	14.3
2084	74%	95	20	59%	89	16	47%	80	12.8

* Propeller RPM

** Fuel Consumption

Weight: 580 kg
Pressure Altitude: 6000 ft

RPM*	ISA - 30°C			ISA			ISA + 30°C		
	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]
2340	98%	108	26.5	81%	103	21.8	67%	98	18
2296	93%	106	25.1	76%	101	20.5	63%	95	16.9
2249	88%	103	23.6	71%	98	19.2	58%	92	15.7
2196	82%	100	22	66%	95	17.8	54%	87	14.4

** Propeller RPM*
*** Fuel Consumption*
Weight: 580 kg
Pressure Altitude: 8000 ft

RPM*	ISA - 30°C			ISA			ISA + 30°C		
	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]
2331	92%	107	24.8	75%	102	20.2	62%	96	16.7
2287	87%	105	23.4	71%	99	19	58%	93	15.6
2239	82%	102	22	66%	96	17.8	53%	89	14.4
2185	76%	99	20.5	61%	93	16.4	49%	84	13.2

** Propeller RPM*
*** Fuel Consumption*
Weight: 580 kg
Pressure Altitude: 10000 ft

RPM*	ISA - 30°C			ISA			ISA + 30°C		
	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]	PWR	KTAS	F.C.** [lt/hr]
2321	86%	106	23.1	69%	100	18.7	57%	93	15.3
2277	81%	104	21.8	65%	97	17.6	53%	89	14.3
2227	76%	101	20.5	61%	94	16.4	49%	84	13.1

** Propeller RPM*
*** Fuel Consumption*

11. LANDING PERFORMANCES (*Approved Data*)

<u>Weight = 580 kg</u>		Corrections				
Flaps: <i>LAND</i>		Headwind: - 5m for each kt (16 ft/kt)				
Short Final Approach Speed = 51 KIAS		Tailwind: + 11m for each kt (36ft/kt)				
Throttle Levers: <i>Idle</i>		Paved Runway: - 2% to Ground Roll				
Runway: <i>Grass</i>		Runway slope: - 2.5% to Ground Roll for each +1%				
Pressure	Altitude	Distance [m]				
	[ft]	Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	124	136	149	161	144
	At 50 ft AGL	243	267	292	316	282
1000	Ground Roll	128	141	154	167	148
	At 50 ft AGL	252	277	302	328	290
2000	Ground Roll	133	146	160	173	152
	At 50 ft AGL	261	287	314	340	299
3000	Ground Roll	138	152	166	180	157
	At 50 ft AGL	271	298	325	353	308
4000	Ground Roll	143	158	172	186	162
	At 50 ft AGL	281	309	338	366	317
5000	Ground Roll	149	164	178	193	167
	At 50 ft AGL	292	321	350	380	327
6000	Ground Roll	154	170	185	201	172
	At 50 ft AGL	303	333	364	394	337
7000	Ground Roll	160	176	192	209	177
	At 50 ft AGL	314	346	378	410	348
8000	Ground Roll	166	183	200	217	183
	At 50 ft AGL	327	360	393	425	359
9000	Ground Roll	173	190	208	225	188
	At 50 ft AGL	339	374	408	442	370
10000	Ground Roll	180	198	216	234	194
	At 50 ft AGL	353	388	424	460	382

<u>Weight = 550 kg</u>		Corrections				
Flaps: LAND		Headwind: - 5m for each kt (16 ft/kt)				
Short Final Approach Speed = 51 KIAS		Tailwind: + 11m for each kt (36ft/kt)				
Throttle Levers: Idle		Paved Runway: - 2% to Ground Roll				
Runway: Grass		Runway slope: - 2.5% to Ground Roll for each +1%				
Pressure	Altitude	Distance [m]				
		Temperature [°C]				
		-25	0	25	50	ISA
S.L.	Ground Roll	111	122	134	145	129
	At 50 ft AGL	218	240	262	284	253
1000	Ground Roll	115	127	138	150	133
	At 50 ft AGL	226	249	272	295	261
2000	Ground Roll	120	132	144	156	137
	At 50 ft AGL	235	258	282	306	269
3000	Ground Roll	124	137	149	161	141
	At 50 ft AGL	243	268	293	317	277
4000	Ground Roll	129	142	155	168	145
	At 50 ft AGL	253	278	304	329	285
5000	Ground Roll	134	147	160	174	150
	At 50 ft AGL	262	289	315	342	294
6000	Ground Roll	139	153	167	181	154
	At 50 ft AGL	272	300	327	355	303
7000	Ground Roll	144	159	173	188	159
	At 50 ft AGL	283	311	340	368	313
8000	Ground Roll	150	165	180	195	164
	At 50 ft AGL	294	323	353	383	322
9000	Ground Roll	155	171	187	202	169
	At 50 ft AGL	305	336	367	398	333
10000	Ground Roll	162	178	194	210	175
	At 50 ft AGL	317	349	381	413	343

<u>Weight = 500 kg</u>		Corrections				
Flaps: LAND		Headwind: - 5m for each kt (16 ft/kt)				
Short Final Approach Speed = 51 KIAS		Tailwind: + 11m for each kt (36ft/kt)				
Throttle Levers: Idle		Paved Runway: - 2% to Ground Roll				
Runway: Grass		Runway slope: - 2.5% to Ground Roll for each +1%				
Pressure	Altitude	Distance [m]				
		Temperature [°C]				
		-25	0	25	50	ISA
S.L.	Ground Roll	92	101	110	120	107
	At 50 ft AGL	180	199	217	235	209
1000	Ground Roll	95	105	114	124	110
	At 50 ft AGL	187	206	225	244	216
2000	Ground Roll	99	109	119	129	113
	At 50 ft AGL	194	214	233	253	222
3000	Ground Roll	102	113	123	133	117
	At 50 ft AGL	201	221	242	262	229
4000	Ground Roll	106	117	128	138	120
	At 50 ft AGL	209	230	251	272	236
5000	Ground Roll	110	122	133	144	124
	At 50 ft AGL	217	239	260	282	243
6000	Ground Roll	115	126	138	149	128
	At 50 ft AGL	225	248	270	293	251
7000	Ground Roll	119	131	143	155	132
	At 50 ft AGL	234	257	281	304	258
8000	Ground Roll	124	136	149	161	136
	At 50 ft AGL	243	267	292	316	266
9000	Ground Roll	128	141	154	167	140
	At 50 ft AGL	252	278	303	329	275
10000	Ground Roll	134	147	160	174	144
	At 50 ft AGL	262	289	315	341	284

12. BALKED LANDING CLIMB

Power Setting: Maximum Take-Off Power Flaps: Land (40°) V_{OBS}: 51 KIAS						
Weight [kg]	Pressure Altitude [ft]	Rate of Climb [ft/min]				
		Temperature [°C]				ISA
	-25 0 25 50					
580	S.L.	703	569	449	340	495
	1000	652	519	400	292	455
	2000	601	469	351	244	415
	3000	550	419	302	196	375
	4000	499	369	253	148	335
	5000	448	319	204	101	295
	6000	397	270	156	53	255
	7000	347	220	107	5	215
550	S.L.	777	635	508	394	557
	1000	723	582	457	344	515
	2000	669	530	405	293	473
	3000	615	477	354	242	431
	4000	562	425	302	192	389
	5000	508	372	251	142	347
	6000	454	320	200	91	304
	7000	401	268	149	41	262
500	S.L.	915	759	620	494	674
	1000	856	701	563	438	627
	2000	796	643	506	383	581
	3000	737	585	449	327	534
	4000	678	527	393	272	488
	5000	619	470	336	216	442
	6000	560	412	280	161	395
	7000	502	355	224	106	349

NOTE

During balked landing manoeuvre, flaps should be retracted immediately after applying full power.

13. NOISE DATA

Noise level, determined in accordance with ICAO/Annex 16 4th Ed., July 2005, Vol. I°, Chapter 10, is **62.36 dB(A)**.

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