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5.1 Introduction

Section 5 provides data for airspeed calibration, stall speeds, take-off performance and additional information, provided by the airplane type certificate owner.

CAUTION

THE PERFORMANCE STATED IN THIS SECTION IS VALID FOR ROTAX 912 ULS (100 HP) TOGETHER WITH WOODCOMP KLASSIC 170/3/R PROPELLER INSTALLED IN THE AIRPLANE.



5.2 Approved Performance Data

5.2.1 Airspeed Indicator System Calibration

NOTE

Assumed zero instrument error. Valid for airplane take-off weight 600 kg.

		RETRACTED 0°	TAKE-OFF 15°	LANDING I 30°	LANDING II 50°
	CIAS	KCAS	KCAS	KCAS	KCAS
V_{SO}	39				43
V_{S1} flaps 30°	40			45	44
V_{S1} flaps 15°	41		46	45	44
V_{S1} flaps 0°	42	48	47	46	45
	43	48	47	47	46
	46	51	50	49	49
	49	53	52	51	51
	51	55	54	54	53
	54	58	57	56	56
	57	60	59	59	58
	59	62	61	61	60
	62	65	64	63	63
	65	67	66	66	65
	67	69	68	68	67
V_{FE}	70	72	71	70	70
	76	77			
	81	81			
	86	86			
V_A	90	89			
	92	91			
	97	96			
	103	101			
	108	105			
	113	110			
V_C	115	112			
	119	115			
	124	120			
	130	125			
	135	130			
	140	135			
V_{NE}	146	140			



		RETRACTED 0°	TAKE-OFF 15°	LANDING I 30°	LANDING II 50°
IAS (km/h)		CAS (km/h)	CAS (km/h)	CAS (km/h)	CAS (km/h)
V_{S0}	73				79
V_{S1} flaps 30°	75			83	81
V_{S1} flaps 15°	76		85	83	82
V_{S1} flaps 0°	78	88	86	85	84
	80	90	88	87	85
	85	94	92	91	90
	90	98	96	95	94
	95	102	101	100	99
	100	107	105	104	103
	105	111	109	108	108
	110	115	114	113	112
	115	120	118	117	116
	120	124	122	121	121
	125	128	127	126	125
V_{FE}	130	133	131	130	129
	140	142			
	150	151			
	160	159			
V_A	167	165			
	170	168			
	180	177			
	190	186			
	200	195			
	210	204			
V_C	214	208			
	220	214			
	230	223			
	240	232			
	250	241			
	260	251			
V_{NE}	270	260			



5.2.2 Stall Speed

- Conditions:**
- wing level stall - engine at idle power
 - turning flight stall - engine at 75% max. continuous power
 - airplane weight - 600 kg
 - airplane centre of gravity 30% MAC

NOTE

The stated stall speeds are valid for all flight altitudes.
Altitude losses shown in the table present max. values determined on the basis of flight tests using average piloting technique.

	Flaps position	Stall speed		Altitude loss
		KIAS	KCAS	ft
Wing level flight	Retracted (0°)	42	48	200 ft
	Take-off(15°)	41	46	
	Landing I (30°)	40	44	
	Landing II (50°)	39	43	
Turn flight (coordinated turn 30° bank)	Retracted (0°)	46	51	200 ft
	Take-off(15°)	45	49	
	Landing I (30°)	44	48	
	Landing II (50°)	42	46	

	Flaps position	Stall speed		Altitude loss
		IAS (km/h)	CAS (km/h)	ft
Wing level flight	Retracted (0°)	78	88	200 ft
	Take-off(15°)	76	85	
	Landing I (30°)	75	82	
	Landing II (50°)	73	79	
Turn flight (coordinated turn 30° bank)	Retracted (0°)	86	95	200 ft
	Take-off(15°)	84	91	
	Landing I (30°)	82	89	
	Landing II (50°)	78	85	

**5.2.3 Take-off Distance**

- Conditions:**
- engine
 - flaps
 - carburetor preheater
 - airplane weight
 - take-off speed
 - airspeed in height of 50 ft
 - airplane centre of gravity
 - max. take-off power
 - Take-off position (15°)
 - OFF
 - 600 kg
 - 43 KIAS (79 km/h IAS)
 - 57 KIAS (106 km/h IAS)
 - 30% MAC

ISA conditions		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Take-off run	Distance over 50 ft obstacle	Take-off run	Distance over 50 ft obstacle
	°C	m	m	m	m
0 ft	15,0	128	365	200	450
2000 ft	11,0	144	411	225	506
4000 ft	7,1	162	463	254	571
6000 ft	3,1	183	522	286	644
8000 ft	-0,8	207	591	324	729
10000 ft	-4,8	235	669	367	825

ISA conditions + 10°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Take-off run	Distance over 50 ft obstacle	Take-off run	Distance over 50 ft obstacle
	°C	m	m	m	m
0 ft	25,0	137	391	214	482
2000 ft	21,0	154	440	241	543
4000 ft	17,1	174	496	272	612
6000 ft	13,1	197	561	307	692
8000 ft	9,2	223	635	348	783
10000 ft	5,2	253	720	395	888



ISA conditions + 20°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Take-off run	Distance over 50 ft obstacle	Take-off run	Distance over 50 ft obstacle
	°C	m	m	m	m
0 ft	35,0	146	417	229	515
2000 ft	31,0	165	471	258	580
4000 ft	27,1	186	531	291	655
6000 ft	23,1	211	601	329	741
8000 ft	19,2	239	681	373	840
10000 ft	15,2	271	773	424	953

ISA conditions – 10°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Take-off run	Distance over 50 ft obstacle	Take-off run	Distance over 50 ft obstacle
	°C	m	m	m	m
0 ft	5,0	119	340	186	419
2000 ft	1,0	134	382	209	471
4000 ft	-2,9	151	430	236	531
6000 ft	-6,9	170	485	266	598
8000 ft	-10,8	192	548	300	676
10000 ft	-14,8	218	620	340	765

ISA conditions – 20°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Take-off run	Distance over 50 ft obstacle	Take-off run	Distance over 50 ft obstacle
	°C	m	m	m	m
0 ft	-5,0	111	316	173	390
2000 ft	-11,0	124	355	194	438
4000 ft	-12,9	140	399	219	492
6000 ft	-16,9	158	450	246	554
8000 ft	-20,8	178	507	278	625
10000 ft	-24,8	201	573	314	707

- Corrections:**
- Influence of wind: Add 4% on every 1 kt (0.5 m/s) of tail wind
 - RWY inclination: Add 8% of the take-off run distance on 1% of runway inclination up the slope



5.2.4 Landing Distance

- Conditions:**
- engine – idle
 - flaps – LANDING I position (30°)
 - carburetor preheating - OFF
 - airplane weight – 600 kg
 - touch down speed – 44 KIAS (82 km/h IAS)
 - airplane speed at height of 50 ft – 57 KIAS (105 km/h IAS)
 - airplane centre of gravity - 30% MAC

ISA conditions		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Landing run	Distance over 50 ft obstacle.	Landing run	Distance over 50 ft obstacle.
	°C	m	m	m	m
0 ft	15,0	169	428	218	477
2000 ft	11,0	179	454	231	506
4000 ft	7,1	190	482	245	537
6000 ft	3,1	202	512	261	571
8000 ft	-0,8	215	545	277	607
10000 ft	-4,8	229	580	295	646

ISA conditions + 10°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Landing run	Distance over 50 ft obstacle.	Landing run	Distance over 50 ft obstacle.
	°C	m	m	m	m
0 ft	25,0	175	443	226	494
2000 ft	21,0	186	470	239	524
4000 ft	17,1	197	499	254	556
6000 ft	13,1	210	531	270	591
8000 ft	9,2	223	565	288	629
10000 ft	5,2	237	601	306	670



ISA conditions + 20°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Landing run	Distance over 50 ft obstacle.	Landing run	Distance over 50 ft obstacle.
	°C	m	m	m	m
0 ft	35,0	181	458	233	510
2000 ft	31,0	192	486	248	542
4000 ft	27,1	204	516	263	575
6000 ft	23,1	217	549	280	612
8000 ft	19,2	231	585	298	652
10000 ft	15,2	246	623	317	694

ISA conditions – 10°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Landing run	Distance over 50 ft obstacle.	Landing run	Distance over 50 ft obstacle.
	°C	m	m	m	m
0 ft	5,0	163	413	210	460
2000 ft	1,0	173	438	223	488
4000 ft	-2,9	184	465	237	518
6000 ft	-6,9	195	494	251	550
8000 ft	-10,8	207	525	267	585
10000 ft	-14,8	220	558	284	622

ISA conditions – 20°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Landing run	Distance over 50 ft obstacle.	Landing run	Distance over 50 ft obstacle.
	°C	m	m	m	m
0 ft	-5,0	157	398	203	444
2000 ft	-11,0	167	422	215	470
4000 ft	-12,9	177	448	228	499
6000 ft	-16,9	188	475	242	529
8000 ft	-20,8	199	505	257	562
10000 ft	-24,8	212	536	273	598

- Corrections:**
- Add 4.5 % on every 1 kt (0.5 m/s) of tail wind
 - RWY inclination: Add 8% of the landing run distance on 1% of runway inclination down the slope



- Conditions:**
- engine
 - flaps
 - carburetor preheating
 - airplane weight
 - touch down speed
 - airplane speed at height of 50 ft
 - airplane centre of gravity
 - idle
 - LANDING II position (50°)
 - OFF
 - 600 kg
 - 42 KIAS (78 km/h IAS)
 - 53 KIAS (99 km/h IAS)
 - 30% MAC

ISA conditions		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Landing run	Distance over 50 ft obstacle.	Landing run	Distance over 50 ft obstacle.
	°C	m	m	m	m
0 ft	15,0	143	361	185	407
2000 ft	11,0	152	383	196	432
4000 ft	7,1	161	407	208	458
6000 ft	3,1	171	432	221	487
8000 ft	-0,8	182	459	235	518
10000 ft	-4,8	194	489	251	551

ISA conditions + 10°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Landing run	Distance over 50 ft obstacle.	Landing run	Distance over 50 ft obstacle.
	°C	m	m	m	m
0 ft	25,0	148	374	191	421
2000 ft	21,0	157	396	203	447
4000 ft	17,1	167	421	216	475
6000 ft	13,1	177	448	229	505
8000 ft	9,2	189	476	244	537
10000 ft	5,2	201	507	260	572



ISA conditions + 20°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Landing run	Distance over 50 ft obstacle.	Landing run	Distance over 50 ft obstacle.
	°C	m	m	m	m
0 ft	35,0	153	386	198	435
2000 ft	31,0	162	410	210	462
4000 ft	27,1	173	436	223	491
6000 ft	23,1	183	463	237	522
8000 ft	19,2	195	493	253	556
10000 ft	15,2	208	525	269	592

ISA conditions – 10°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Landing run	Distance over 50 ft obstacle.	Landing run	Distance over 50 ft obstacle.
	°C	m	m	m	m
0 ft	5,0	138	348	179	393
2000 ft	1,0	146	369	189	417
4000 ft	-2,9	155	392	201	442
6000 ft	-6,9	165	416	213	469
8000 ft	-10,8	175	442	227	499
10000 ft	-14,8	186	471	241	531

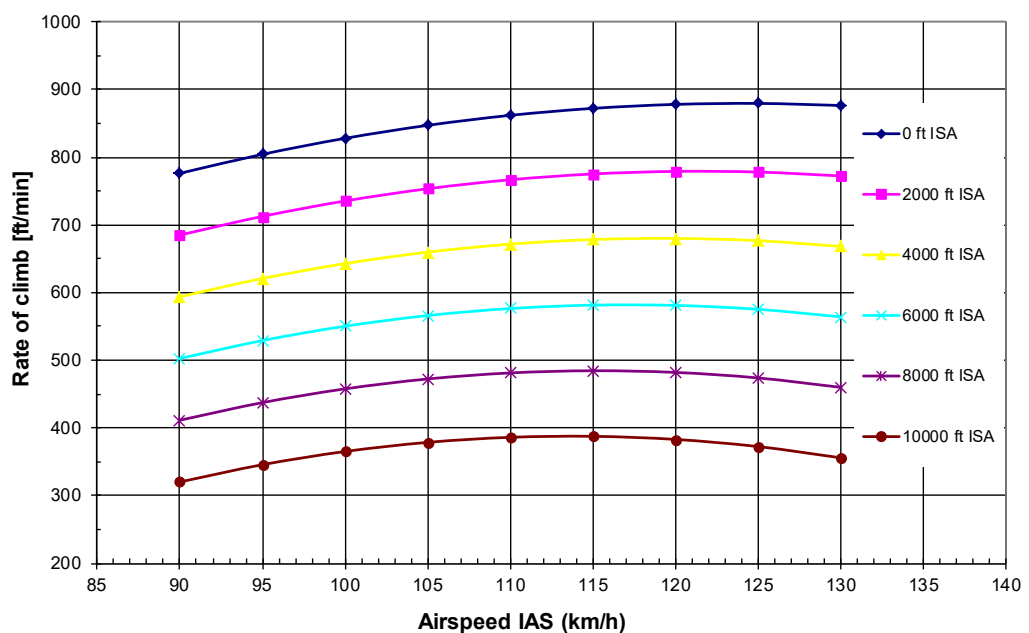
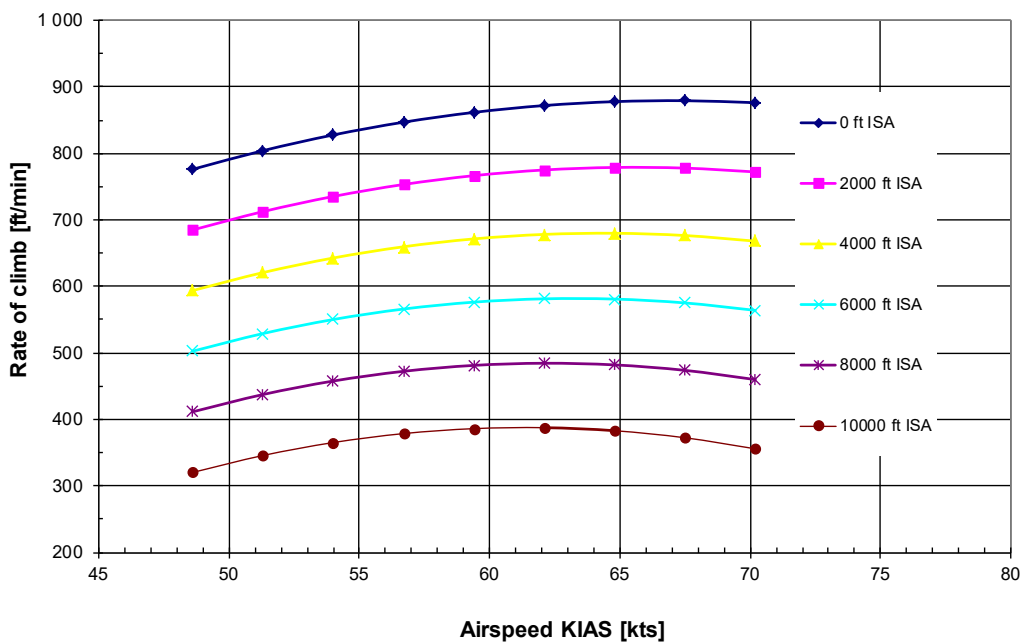
ISA conditions – 20°C		Concrete RWY		Grass RWY	
Airport altitude	Temperature	Landing run	Distance over 50 ft obstacle.	Landing run	Distance over 50 ft obstacle.
	°C	m	m	m	m
0 ft	-5,0	133	336	172	379
2000 ft	-11,0	141	356	182	401
4000 ft	-12,9	150	377	193	426
6000 ft	-16,9	159	401	205	452
8000 ft	-20,8	169	426	218	480
10000 ft	-24,8	179	452	232	510

- Corrections:**
- Add 4.5 % on every 1 kt (0.5 m/s) of tail wind
 - RWY inclination: Add 8% of the landing run distance on 1% of runway inclination down the slope



5.2.5 Climb Performance

- Conditions:**
- engine – maximum take-off power
 - flaps – retracted (0°)
 - carburetor preheating - OFF
 - airplane weight –600 kg
 - ambient air temperature - ISA
 - airplane centre of gravity - 30% MAC





Best rate of climb for various altitudes is mentioned in the following table:

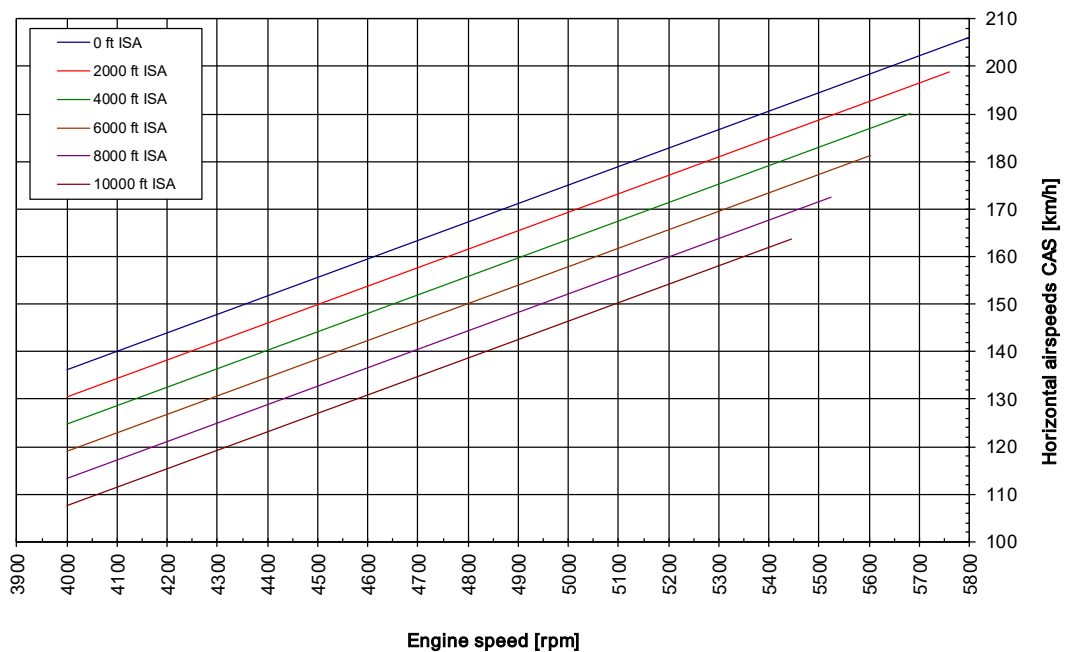
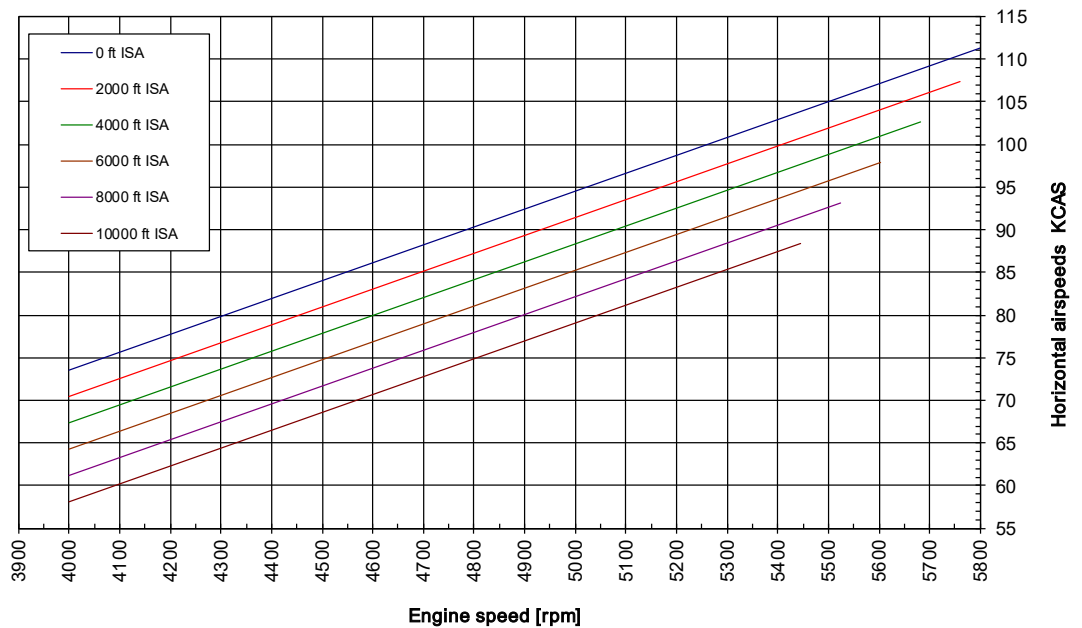
Altitude	Best rate of climb speed		Max. rate of climb	
	KIAS	km/h IAS	fpm	m/s
0	67	123	876	4.5
1000	66	122	827	4.2
2000	65	121	779	4.0
3000	65	120	730	3.7
4000	64	119	681	3.5
5000	64	118	632	3.2
6000	63	117	583	3.0
7000	63	116	534	2.7
8000	62	115	486	2.5
9000	62	114	437	2.2
10000	61	113	388	2.0



5.3 Additional information

5.3.1 Cruise

- Conditions:**
- flaps – retracted (0°)
 - carburetor preheating - OFF
 - airplane weight – 600 kg
 - ambient air temperature - ISA
 - airplane centre of gravity - 30% MAC





5.3.2 Horizontal Speeds

In the following table states Indicated airspeeds (IAS), corresponding calibrated air speeds (CAS) and true air speeds (TAS) versus altitude, all for various engine speeds.

		55% MCP	65% MCP	75% MCP	MCP	MTP
		RPM				
ft ISA	kt	4300	4800	5000	5500	5800
0	IAS	80	91	96	107	114
	CAS	80	90	95	105	111
	TAS	80	91	95	105	111
2000	IAS	76	87	92	104	
	CAS	77	87	91	102	
	TAS	79	90	94	105	
4000	IAS	73	84	89	101	
	CAS	74	84	88	99	
	TAS	78	89	94	105	
6000	IAS	69	81	85	97	
	CAS	71	81	85	96	
	TAS	77	89	93	105	
8000	IAS	65	77	82	94	
	CAS	67	78	82	93	
	TAS	76	88	93	104	
10 000	IAS	61	74	78		
	CAS	64	75	79		
	TAS	75	87	92		



		55% MCP	65% MCP	75% MCP	MCP	MTP
		RPM				
ft ISA	km/h	4300	4800	5000	5500	5800
0	IAS	147	169	177	198	212
	CAS	148	167	175	194	206
	TAS	148	168	175	195	206
2000	IAS	140	163	171	193	
	CAS	142	162	169	189	
	TAS	146	166	174	194	
4000	IAS	134	156	165	186	
	CAS	136	156	164	183	
	TAS	145	165	173	194	
6000	IAS	128	149	158	180	
	CAS	131	150	158	177	
	TAS	143	164	173	194	
8000	IAS	121	143	152	174	
	CAS	125	144	152	172	
	TAS	141	163	172	193	
10 000	IAS	114	137	145		
	CAS	119	139	146		
	TAS	139	162	171		



5.3.3 Endurance

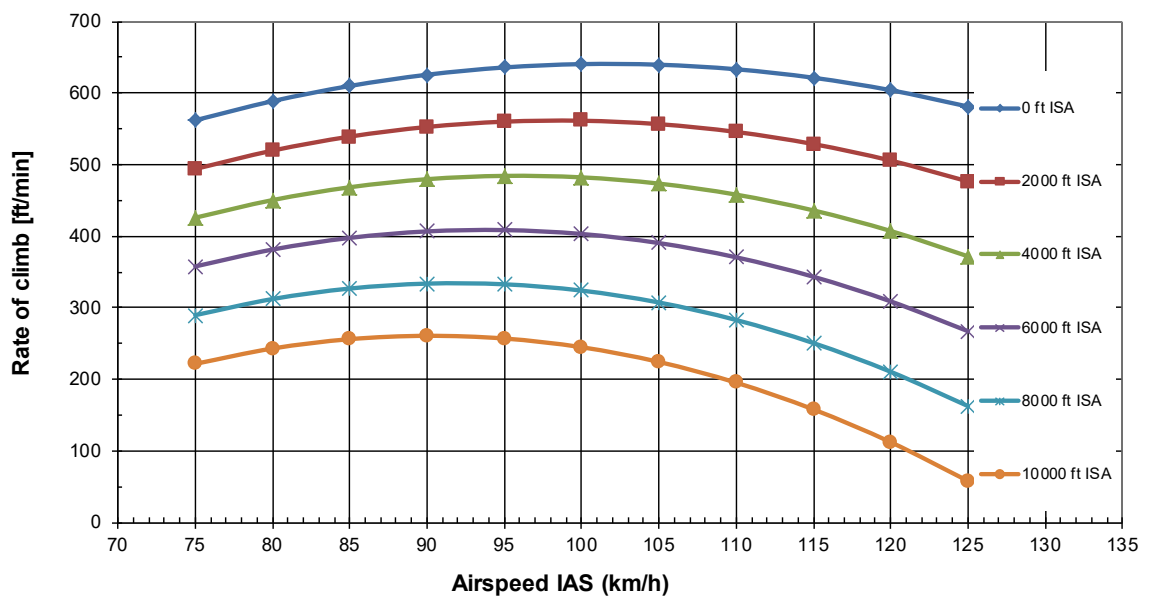
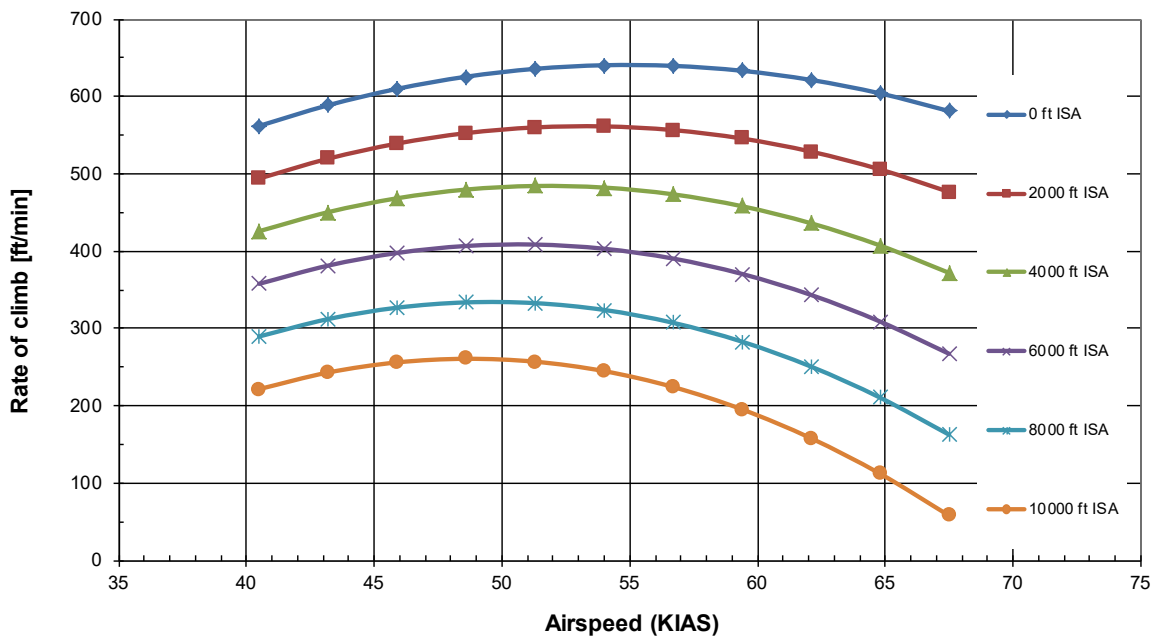
- Conditions:**
- flaps – retracted (0°)
 - carburetor preheating - OFF
 - airplane weight – 1323 lb / 600 kg
 - ambient air temperature - ISA
 - airplane centre of gravity - 30% MAC

Endurance and range altitude 2000 ft ISA		55% MCP	65% MCP	75% MCP	MCP
Engine speed	RPM	4300	4800	5000	5500
Fuel consumption	l/h	12,4	15,8	17,4	22,4
IAS	kt	76	87	92	104
	km/h	140	163	171	193
CAS	kt	77	87	91	102
	km/h	142	162	169	189
TAS	kt	79	90	94	105
	km/h	146	166	174	194
Endurance at 118 l of fuel	h:m	9:30	7:30	6:48	5:18
	km	1393	1245	1180	1025
Endurance at 100 l of fuel	h:m	8:06	6:18	5:42	4:30
	km	1180	1055	1000	869
Endurance at 80 l of fuel	h:m	6:24	5:06	4:36	3:36
	km	944	844	800	695
Endurance at 60 l of fuel	h:m	4:48	3:48	3:24	2:42
	km	708	633	600	521
Endurance at 40 l of fuel	h:m	3:12	2:30	2:18	1:48
	km	472	422	400	348



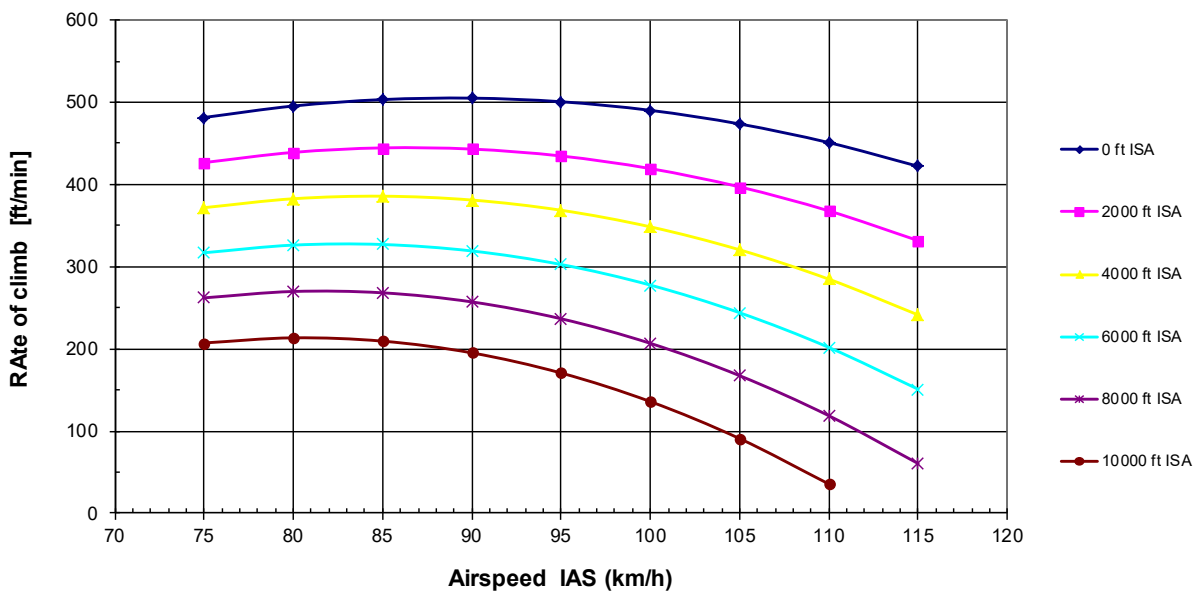
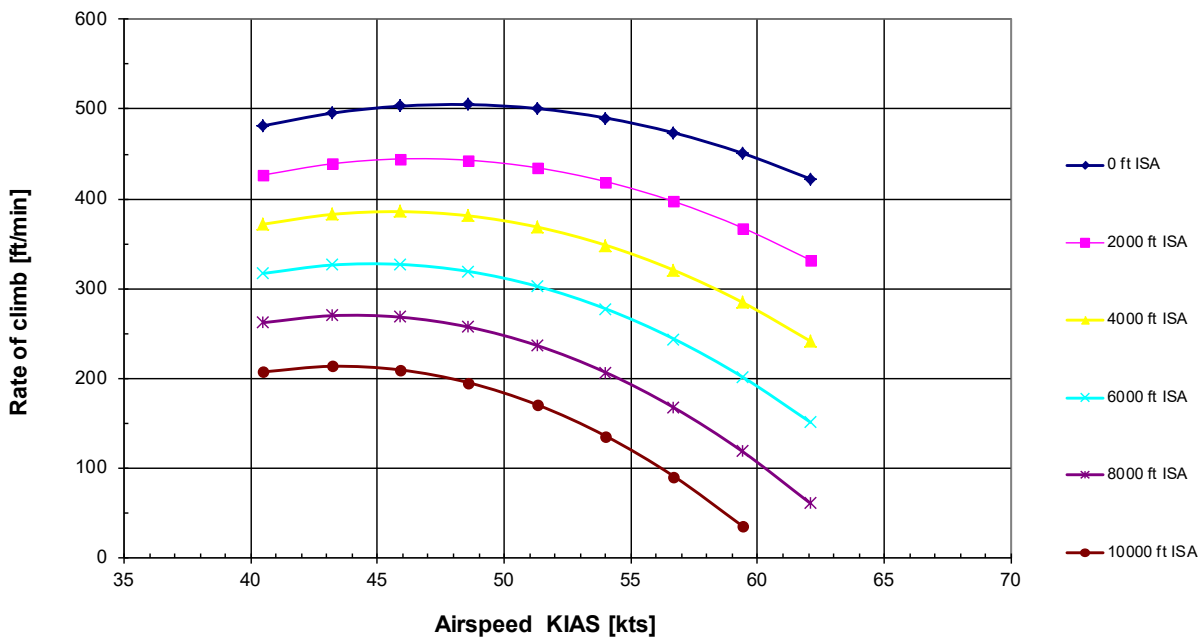
5.3.4 Balked Landing Climb

- Conditions:**
- engine – maximum take-off power
 - flaps – LANDING I position (30°)
 - carburetor preheating - OFF
 - airplane weight – 600 kg
 - ambient air temperature - ISA
 - airplane centre of gravity - 30% MAC





- Conditions:**
- engine
 - flaps
 - carburetor preheating
 - airplane weight
 - ambient air temperature
 - airplane centre of gravity
 - maximum take-off power
 - LANDING II position (50°)
 - OFF
 - 600 kg
 - ISA
 - 30% MAC



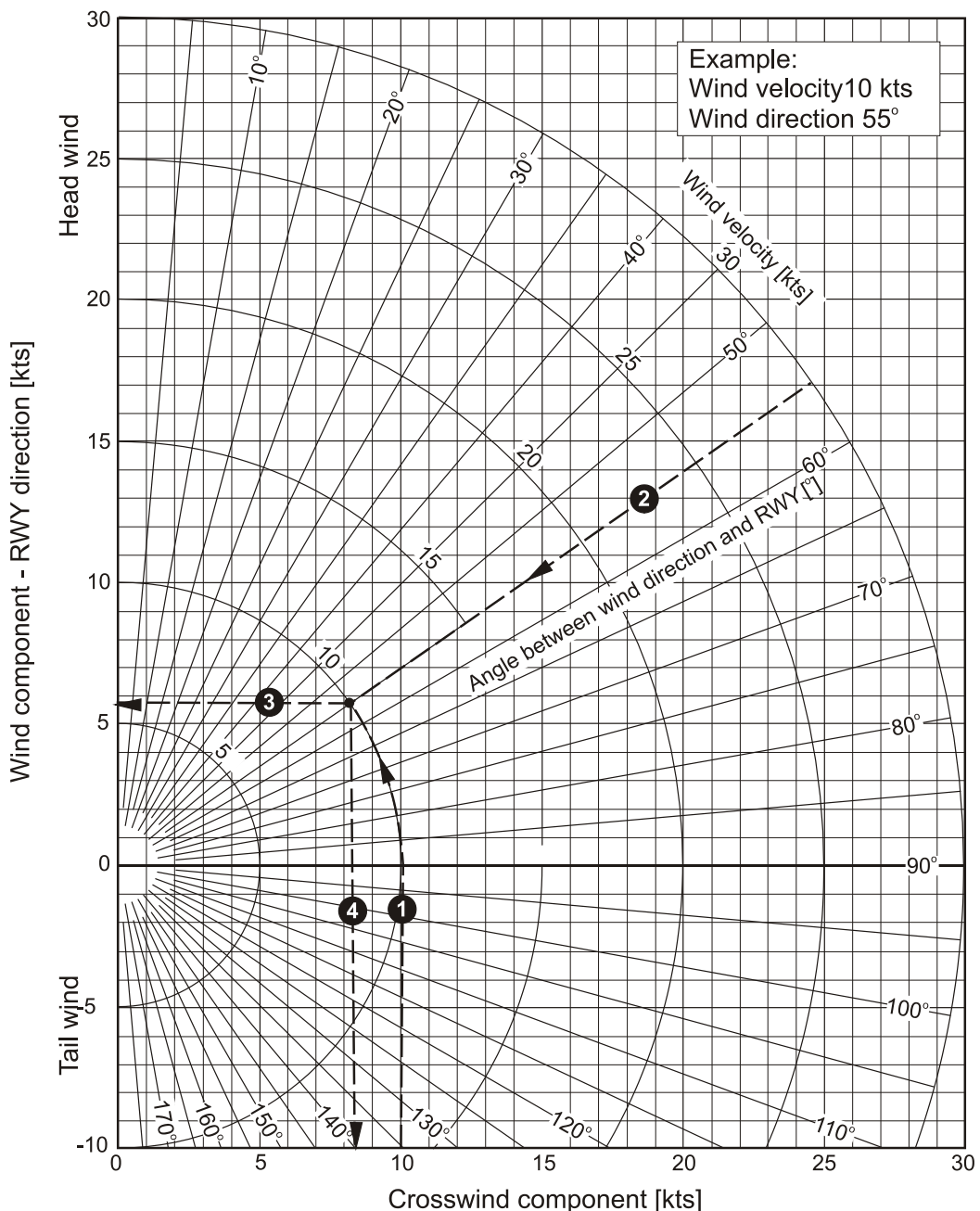


5.3.5 Effect on Flight Performance and Characteristics

Flight performances and characteristics are not considerably affected by rain or insect stuck on the airplane surface.

5.3.6 Demonstrated Crosswind Performance

Maximum demonstrated speed of cross wind 18 kt (9 m/s)
Maximum demonstrated speed of tail wind 6 kt (3 m/s)





5.3.7 Ceiling

- Conditions:**
- engine – ROTAX 912 ULS
 - propeller – Woodcomp Klassic 170/3/R
 - flaps – retracted (0°)
 - airplane weight – 600 kg
 - airplane centre of gravity - 30% MAC

Service ceiling 15 820 ft

5.3.8 Noise data

Measured average values of SportStar RTC outside noise according to ICAO – Annex 16:

(L_{Amax}) REF = 66.5 ± 1.3 dB(A)