

SECTION 5

PERFORMANCE

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5. PERFORMANCE

NOTE

Airspeeds described this Chapter 5 are IAS.

5.1. GENERAL

Chapter 5 is mentioned all information about airplane performance data required by the FAR Part 23 (approved by CAA of the Czech Republic) and complementary performance data considered of manufacture as important.

The performance information presented in this Chapter is based on measured flight tests data, corrected to the ISA conditions. Some of the performances were reduced for various airplane weights, flight altitudes, and temperatures of the ambient air.

The performance can be duplicated with the Z 143 LSi airplane in good technical condition, provided with noise silencer with standard equipment, comprising the TEXTRON LYCOMING IO-540-C4D5 engine and MTV-9-B/195-45a propeller, following standard piloting technique in the calm air with the fuel mixture setting in conformity with Subsect. 4.20.2.

Extrapolation of data contained in the Diagrams is not recommended.

Examples in the Diagrams are presented by dashed lines and by arrows, the sequence of finding out the final value is given by the encircled numbers.

CAUTION

THE TRUE PERFORMANCES OF THE AIRPLANE MAY DIFFERENT FROM THOSE GIVEN IN THIS SECTION. THE DIFFERENCES MAY RESULT FROM AIRPLANE TECHNICAL CONDITION, THE PILOT'S EXPERIENCE, THE EFFECTS OF THE WIND, FROM DIFFERENCES IN THE INCLINATION OR SURFACE CONDITION OF THE TAKE-OFF AND LANDING RUNWAY, THE GRADE OF THE USED FUEL, ETC.

Explanations:

U - Utility category (max. take-off weight - 1080 kg (2380 lb))

N - Normal category (max. take-off weight - 1350kg (2976 lb))

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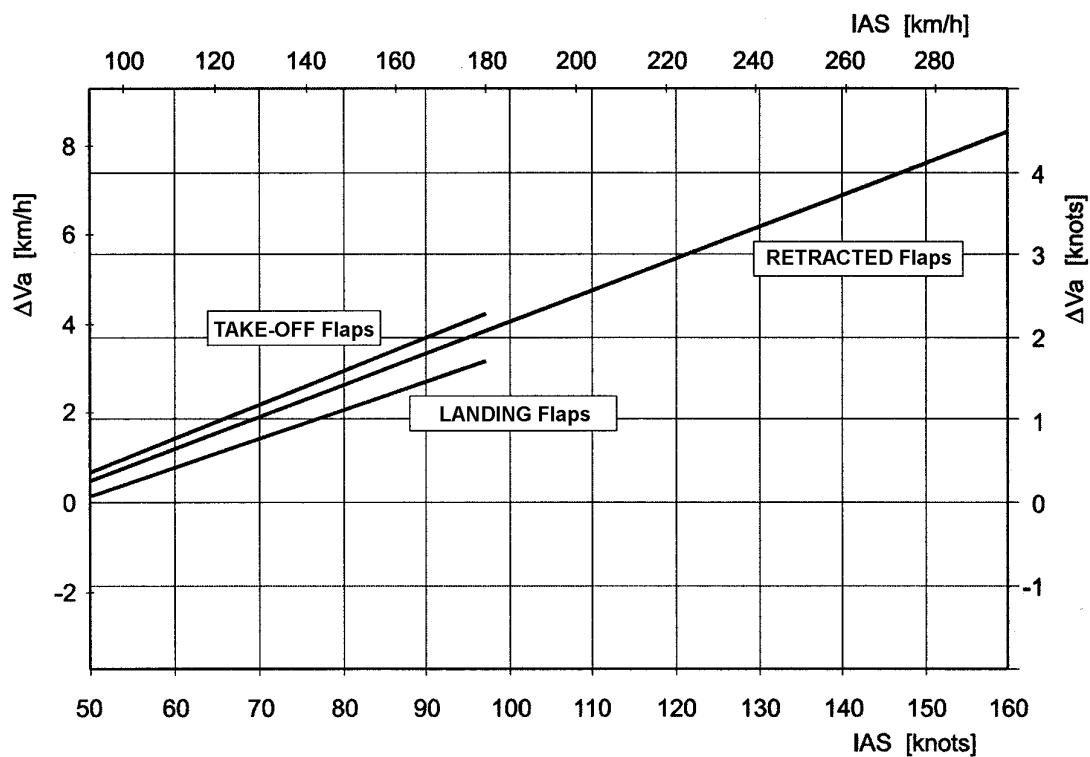
5.2. THE AERODYNAMIC CORRECTIONS GRAPH

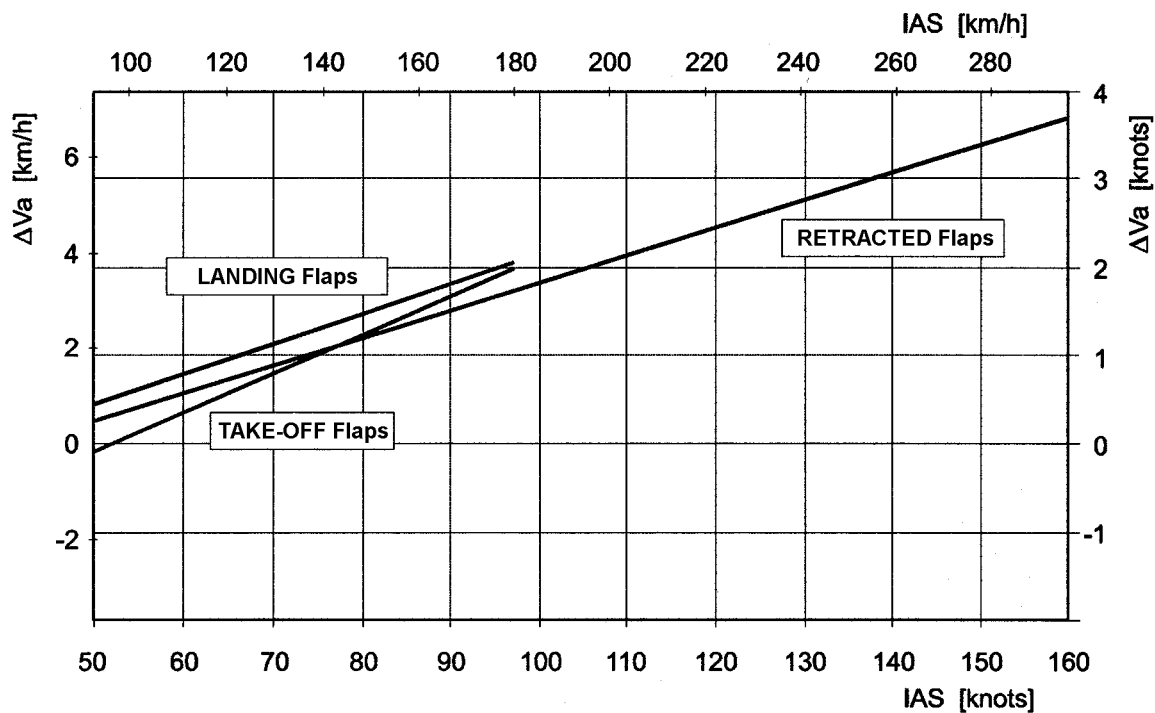
The aerodynamic correction is valid for:

- Normal flight
- Full range of operating altitudes
- Zero instrument error

$$CAS = IAS + \Delta V_a$$

5.2.1. Utility category - U



5.2.2. Normal category - N5.3. Altimeter Error at Switching Over to Alternate Static Pressure Source

When switching to over to alternate static pressure source, it is not necessary to perform any correction of values indicated by the altimeter.

5.4. STALL SPEEDS

5.4.1. Stall Speeds at Wings Level and Turning Flight Stalls

Conditions: - Engine: Idling

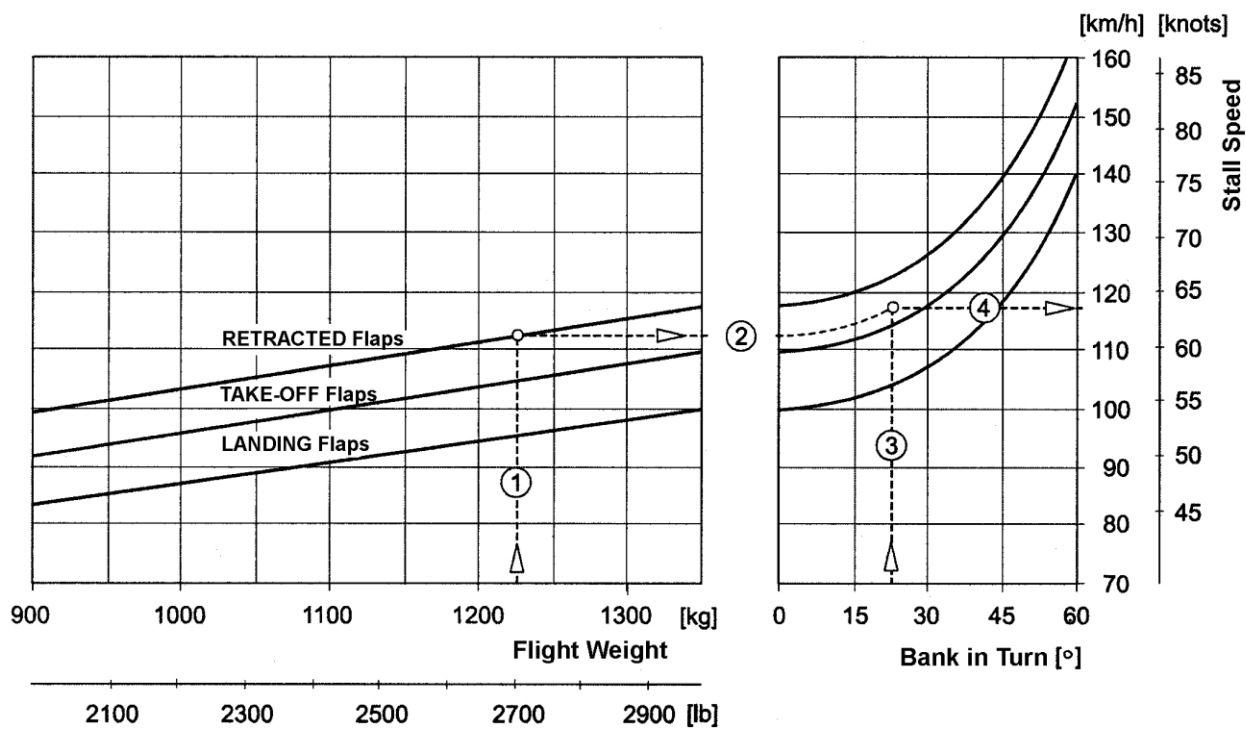
NOTE

The specified stall speeds apply for the whole range of operating altitudes.

Category	Flaps	Unit	Stall speeds				
			0° Bank		30°	45°	60°
			CAS	IAS	IAS	IAS	IAS
U	RETRACTED	knots (km/h)	59 (108)	58 (107)	62 (115)	69 (127)	81 (150)
	TAKE-OFF	knots (km/h)	54 (100)	53 (99)	57 (106)	63 (117)	75 (138)
	LANDING	knots (km/h)	49 (91)	49 (91)	53 (97)	58 (108)	69 (127)
N	RETRACTED	knots (km/h)	64 (118)	64 (117)	68 (126)	75 (139)	89 (165)
	TAKE-OFF	knots (km/h)	60 (110)	60 (110)	63 (118)	70 (130)	83 (153)
	LANDING	knots (km/h)	55 (101)	54 (100)	58 (108)	64 (119)	76 (141)

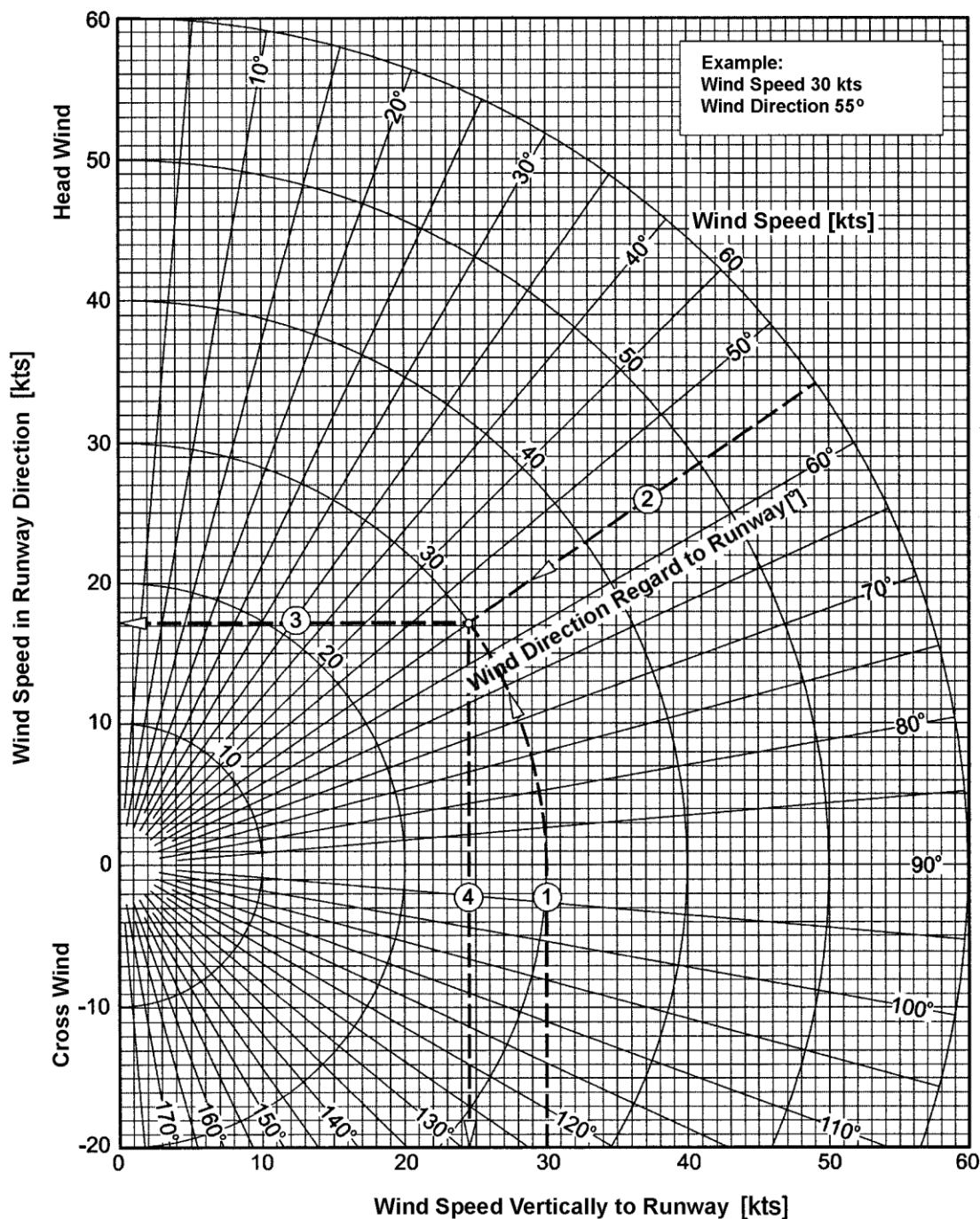
NOTE

The altitude loss in the course of stall ranges from 100 to 230 ft.

5.4.2. Diagram of Stall Speeds

5.5. WIND VELOCITIES

Maximum demonstrated wind component is 23,3 knots.



5.6. TAKE-OFF DISTANCE**5.6.1. Take-off Run**

	Units	Category	
		U	N
Distance	m	170	295
	ft	558	968

Conditions:

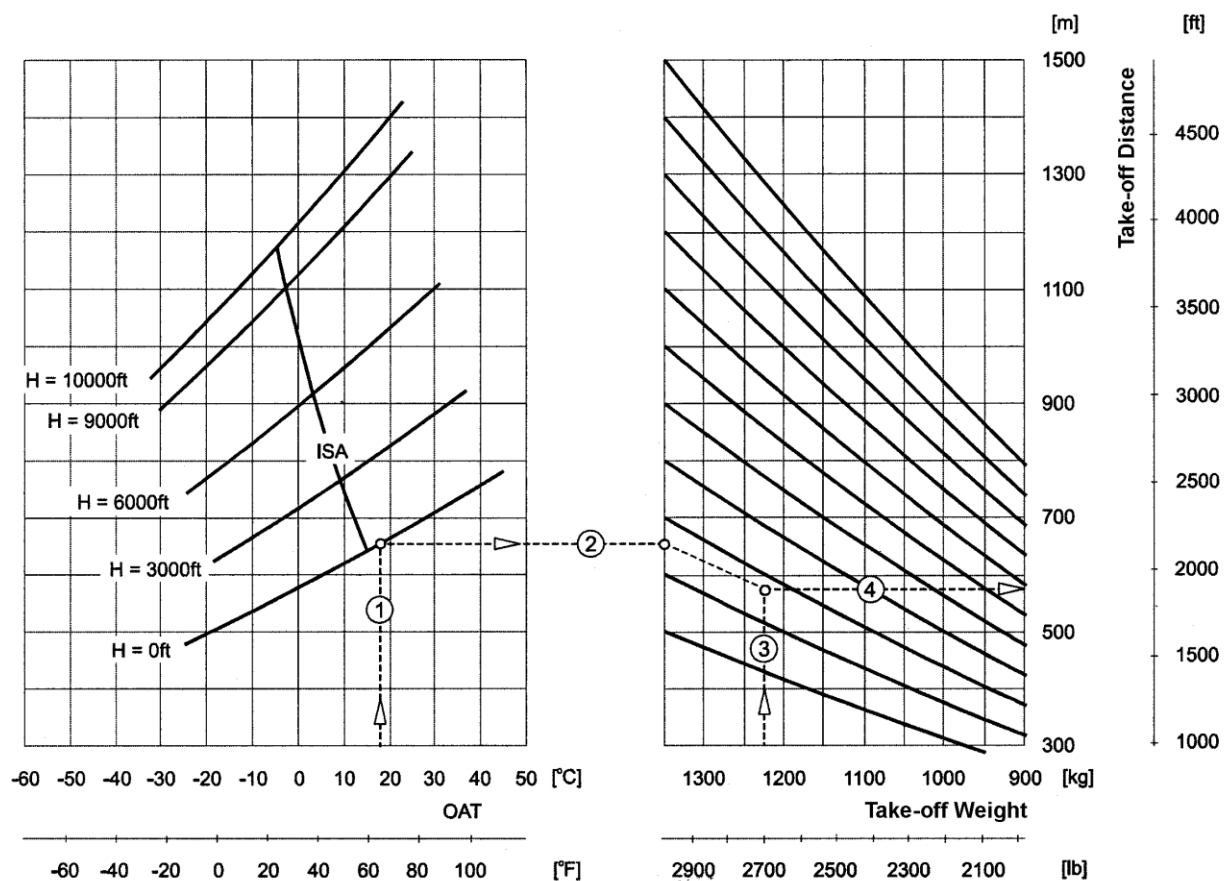
- Altitude 0 ft ISA
- Maximum continuous power (MC)
- Wing flaps **TAKE-OFF**
- Dry, paved, level runway
- Calm air
- Full power before brakes release

5.6.2. Take-off Distance to 50 ft

	Units	Category	
		U	N
Distance	m	450	640
	ft	1476	2100
Lift nose wheel speed	knots (km/h)	59 (110)	67 (125)
Safe airspeed	knots (km/h)	73 (135)	78 (145)

Conditions:

- Altitude 0 ft ISA
- Maximum continuous power (MC)
- Wing flaps **TAKE-OFF**
- Dry, paved, level runway
- Calm air
- Full power before brakes release

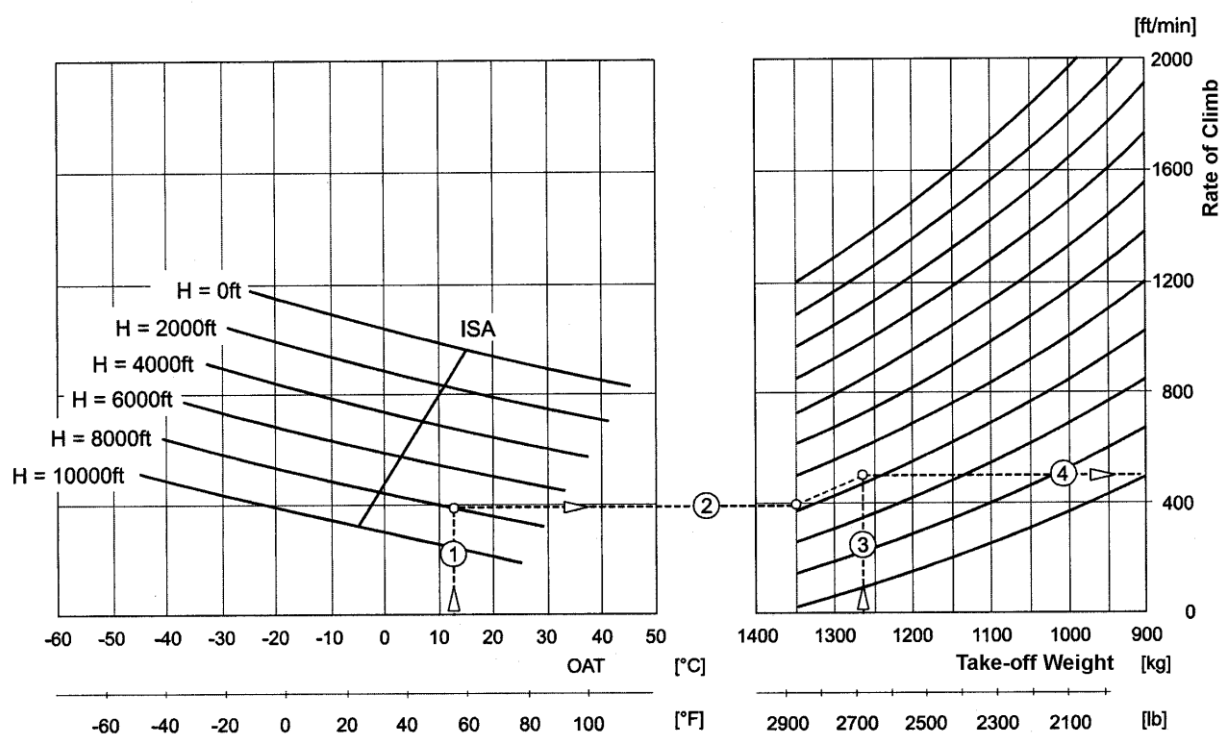
5.6.3. Diagram of Take-off Distance

5.7. CLIMB**5.7.1. Maximum Rate of Climb**

	Units	Category	
		U	N
Rate of Climb	ft/min	1457	965
Airspeed	knots (km/h)	74 (137)	79 (147)

Conditions:

- Altitude 0 ft ISA
- Maximum continuous power (MC)
- Wing flaps **RETRACTED**

5.7.2. Diagram of Rate of Climb

5.8. FUEL CONSUMPTION AND TIMES OF CLIMBING TO PRESSURE ALTITUDE

Pressure altitude	Consumption		Time
ft	l	US gal	min
0	6,0 *	1,6 *	0
2000	9,4	2,4	2,23
4000	12,9	3,4	4,82
6000	16,6	4,3	7,95
8000	20,7	5,4	11,86
10000	25,7	6,7	17,10

* fuel consumption for taxiing and take-off

Conditions:

- Maximum continuous power (MC)
- Wing flaps **RETRACTED**
- Weight 1090 kg

5.9. CRUISING SPEEDS, FLIGHT RANGES, ENDURANCESConditions:

- ISA
- IAS speeds do not take airspeed indicator error into consideration.
- Wing flaps **RETRACTED**
- Calm air
- Navigation fuel reserve on 45 min. of economy cruising (EC) flight
- 15 litres of fuel is assigned for taxiing, take-off, circle and landing.
- Flight ranges and endurances are calculated on the basis of speeds measured in Z 143L; Z 143 LSi and measured fuel consumptions data.
- Flight range and endurance also include the climbing to flight level (MT).
- MT and MC modes work with enriched mixture ensuring maximum performance.
- EC mode work with leaned mixture ensuring maximum operating economy.
- Flight ranges are rounded to tens of km; endurances are rounded to five minute periods.

5.9.1. Utility category (U)

Engine setting	Pressure altitude	Engine speed	Manifold pressure	Fuel consumption	V _{IAS}		V _{CAS}		V _{TAS}		Flight range		Endurance
					km/h	knots	km/h	knots	km/h	knots	km	NM	
MT	0	2400	max	96,0	259	140	266	144	266	144	190	103	0:40
MT	2000	2400	max	85,0	249	135	256	138	264	142	210	113	0:45
MT	4000	2400	max	74,5	240	130	246	133	261	141	230	124	0:55
MT	6000	2400	max	64,0	230	124	236	127	258	139	270	146	1:5
MT	8000	2400	max	53,0	221	119	226	122	255	138	330	178	1:20
MT	10000	2400	max	42,5	211	114	216	117	251	136	410	221	1:40
MC	0	2200	25,0	55,5	229	124	235	127	235	127	290	157	1:15
MC	2000	2200	25,0	56,3	229	124	235	127	242	131	290	157	1:10
MC	4000	2200	25,0	57,0	229	124	235	127	249	135	290	157	1:10
MC	6000	2200	max	51,0	223	120	228	123	249	135	330	178	1:20
MC	8000	2200	max	45,0	214	116	220	119	248	134	370	200	1:30
MC	10000	2200	max	39,0	206	111	211	114	246	133	430	232	1:50
EC	0	2000	24,5	43,0	211	114	216	117	216	117	350	189	1:35
EC	2000	2000	24,5	43,3	211	114	217	117	223	120	350	189	1:30
EC	4000	2000	24,5	43,5	212	114	217	117	230	124	350	189	1:30
EC	6000	2000	max	40,5	205	111	210	113	230	124	380	205	1:40
EC	8000	2000	max	37,0	196	106	201	109	227	122	410	221	1:50
EC	10000	2000	max	33,5	188	101	192	104	223	121	460	248	2:5

5.9.2. Normal category (N)

Engine setting	Pressure altitude	Engine speed	Manifold pressure	Fuel consumption	V _{IAS}		V _{CAS}		V _{TAS}		Flight range		Endurance
	ft	1/min	inHg	l/h	km/h	knots	km/h	knots	km/h	knots	km	NM	h:m
MT	0	2400	max	96,0	254	137	260	140	260	140	480	259	1:50
MT	2000	2400	max	85,0	245	132	250	135	257	139	530	286	2:5
MT	4000	2400	max	74,5	235	127	240	129	254	137	590	319	2:20
MT	6000	2400	max	64,0	225	121	230	124	251	1369	680	367	2:45
MT	8000	2400	max	53,0	215	116	219	118	247	133	810	437	3:20
MT	10000	2400	max	42,5	205	111	209	113	243	131	980	529	4:10
MC	0	2200	25,0	55,5	227	123	232	125	232	125	740	400	3:10
MC	2000	2200	25,0	56,3	227	123	232	125	239	129	740	400	3:5
MC	4000	2200	25,0	57,0	227	123	232	125	246	133	740	400	3:0
MC	6000	2200	max	51,0	218	118	222	120	243	131	820	443	3:25
MC	8000	2200	max	45,0	208	112	212	114	239	129	920	497	3:55
MC	10000	2200	max	39,0	198	107	202	109	235	127	1040	562	4:30
EC	0	2000	24,5	43,0	205	111	209	113	209	113	860	464	4:5
EC	2000	2000	24,5	43,3	205	111	210	113	216	117	870	470	4:0
EC	4000	2000	24,5	43,5	206	111	210	113	223	120	880	475	4:0
EC	6000	2000	max	40,5	200	108	204	110	223	120	950	513	4:15
EC	8000	2000	max	37,0	191	103	195	105	220	119	1020	551	4:40
EC	10000	2000	max	33,5	183	99	186	100	216	117	1110	599	5:10

5.10. MAXIMUM GLIDING RATIO

Wing flaps	Speed [knots (km/h)]		Gliding
	U	N	
RETRACTED	76 (140)	81 (150)	10,0

5.11. MINIMUM DESCENT SPEED

Wing flaps	Speed [knots (km/h)]		V_{ymin} [ft/min]	
	U	N	U	N
RETRACTED	62 (115)	70 (130)	709	787

5.12. LANDING DISTANCE**5.12.1. Landing Distance from 50 ft - Normal Braking**

	Units	Category	
		U	N
Distance	m	590	765
	ft	1936	2510
Approach airspeed	knots (km/h)	73 (135)	78 (145)

Conditions:

- Altitude 0 ft ISA
- Engine idling
- Wing flaps **LANDING**
- Dry, paved, level runway
- Calm air

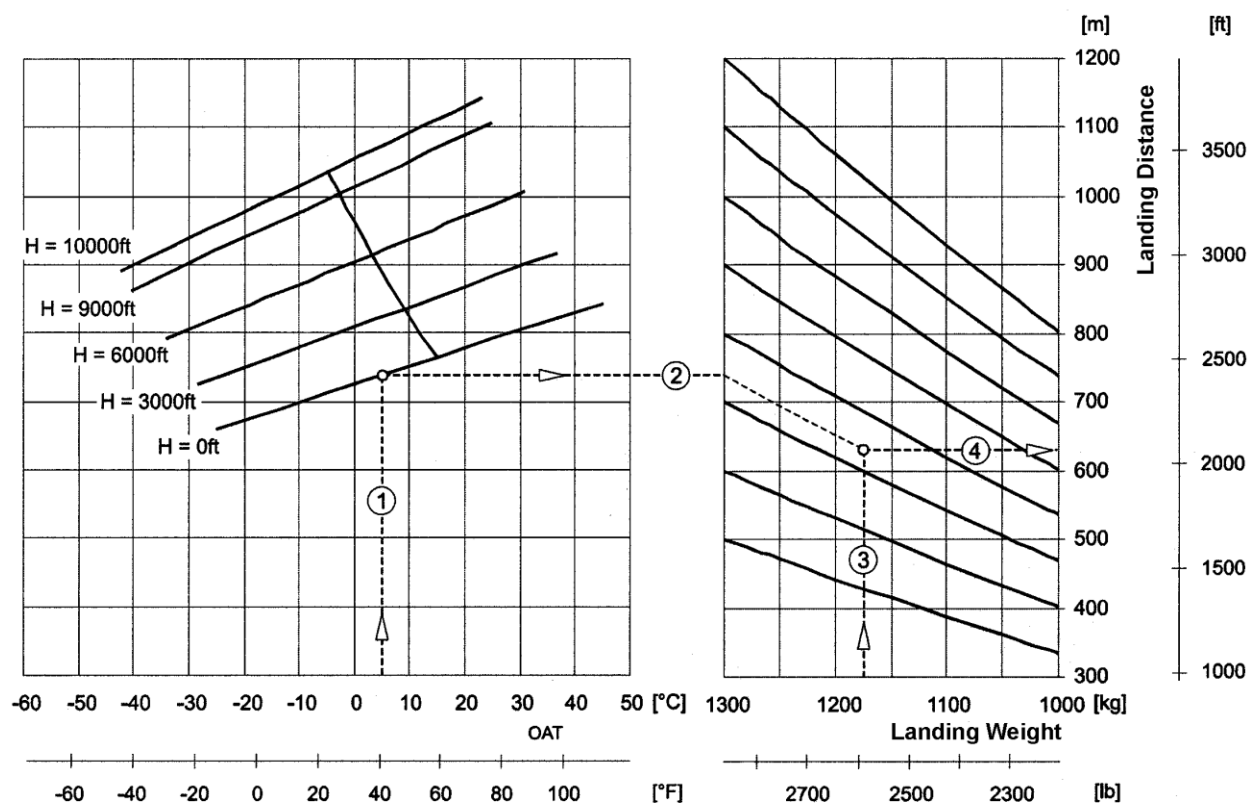
5.12.2. Landing Distance from 50 ft - Intensive Braking

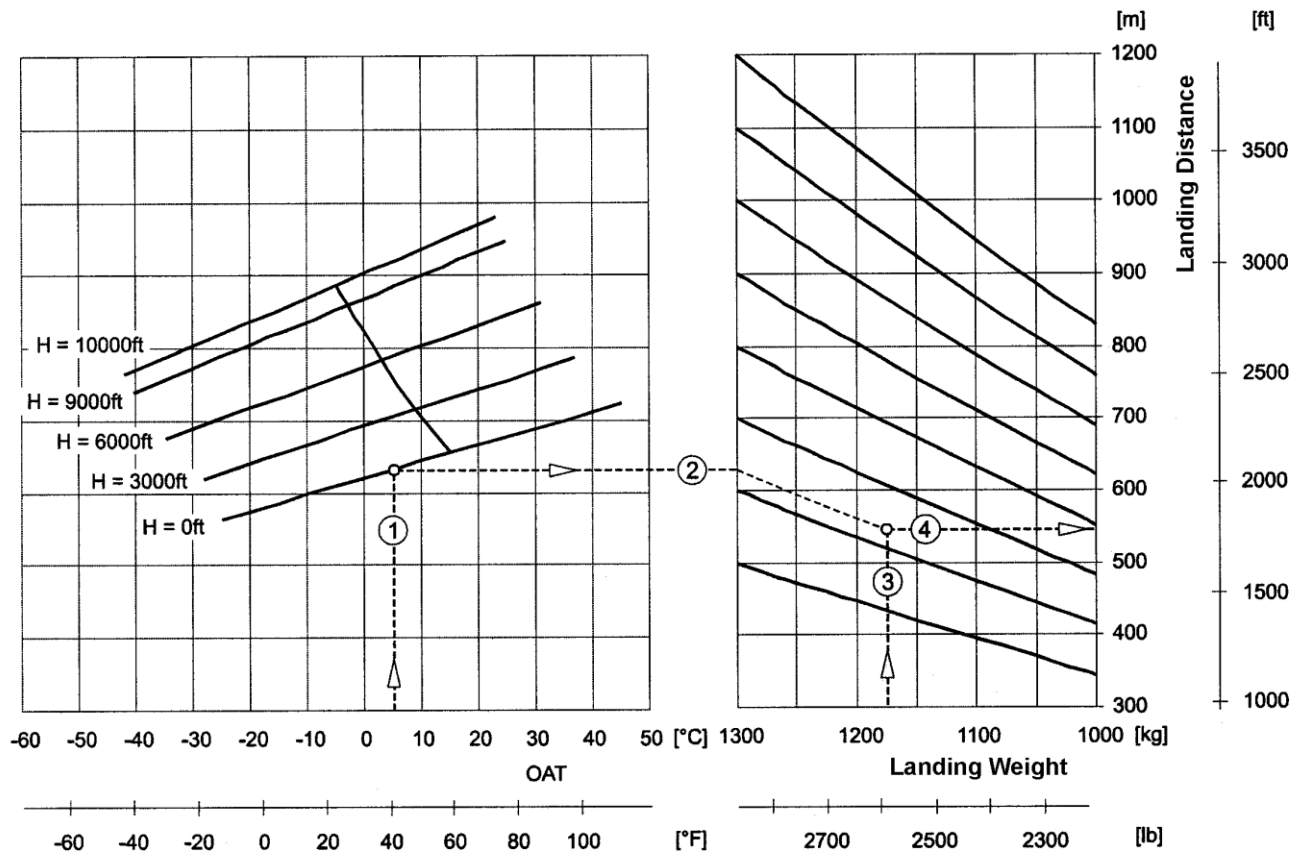
	Units	Category	
		U	N
Distance	m	515	655
	ft	1690	2149
Approach airspeed	knots (km/h)	73 (135)	78 (145)

Conditions:

- Altitude 0 ft ISA
- Engine idling
- Wing flaps **LANDING**
- Dry, paved, level runway
- Calm air

5.12.3. Diagram of Landing Distance from 50 ft - Normal Braking



5.12.4. Diagram of Landing Distance from 50 ft - Intensive Braking

5.12.5. Run Distance - Normal Braking

	Units	Category	
		U	N
Distance	m	305	380
	ft	1001	1247

Conditions:

- Altitude 0 ft ISA
- Engine idling
- Wing flaps **LANDING**
- Dry, paved, level runway
- Calm air

5.12.6. Run Distance - Intensive Braking

	Units	Category	
		U	N
Distance	m	230	270
	ft	755	886

Conditions:

- Altitude 0 ft ISA
- Engine idling
- Wing flaps **LANDING**
- Dry, paved, level runway
- Calm air

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