
Formula and data book

Aerospace Systems 2025

Formulas

$$\text{drag} = C_D \frac{1}{2} \rho V^2 A$$

$$\text{lift} = C_L \frac{1}{2} \rho V^2 A$$

$$I \text{ (motor current)} = \frac{P \text{ (motor power)}}{V \text{ (battery voltage)}}$$

$$T \text{ (time in hours)} = \frac{C \text{ (battery capacity in amp hours)}}{I \text{ (current)}}$$

$$\text{wing loading} = \frac{\text{weight of aircraft (kg)}}{\text{wing area (m}^2\text{)}}$$

$$\text{power loading} = \frac{\text{power (watts)}}{\text{weight (kg)}}$$

$$\text{pressure altitude} = \text{airfield elevation} + (\text{ISA pressure} - \text{QNH}) \times 30$$

$$\text{density altitude} = \text{pressure altitude} + [120 \times (\text{OAT} - \text{ISA Temp})]$$

$$\text{ISA temperature lapse rate} = -1.98 \text{ }^\circ\text{C per 1000 ft}$$

$$\text{ISA pressure lapse rate} = 1 \text{ hPa per 30 ft}$$

Conversions

$$1 \text{ metre (m)} = 3.28 \text{ feet (ft)}$$

$$1 \text{ knot} = 1 \text{ NM per hour}$$

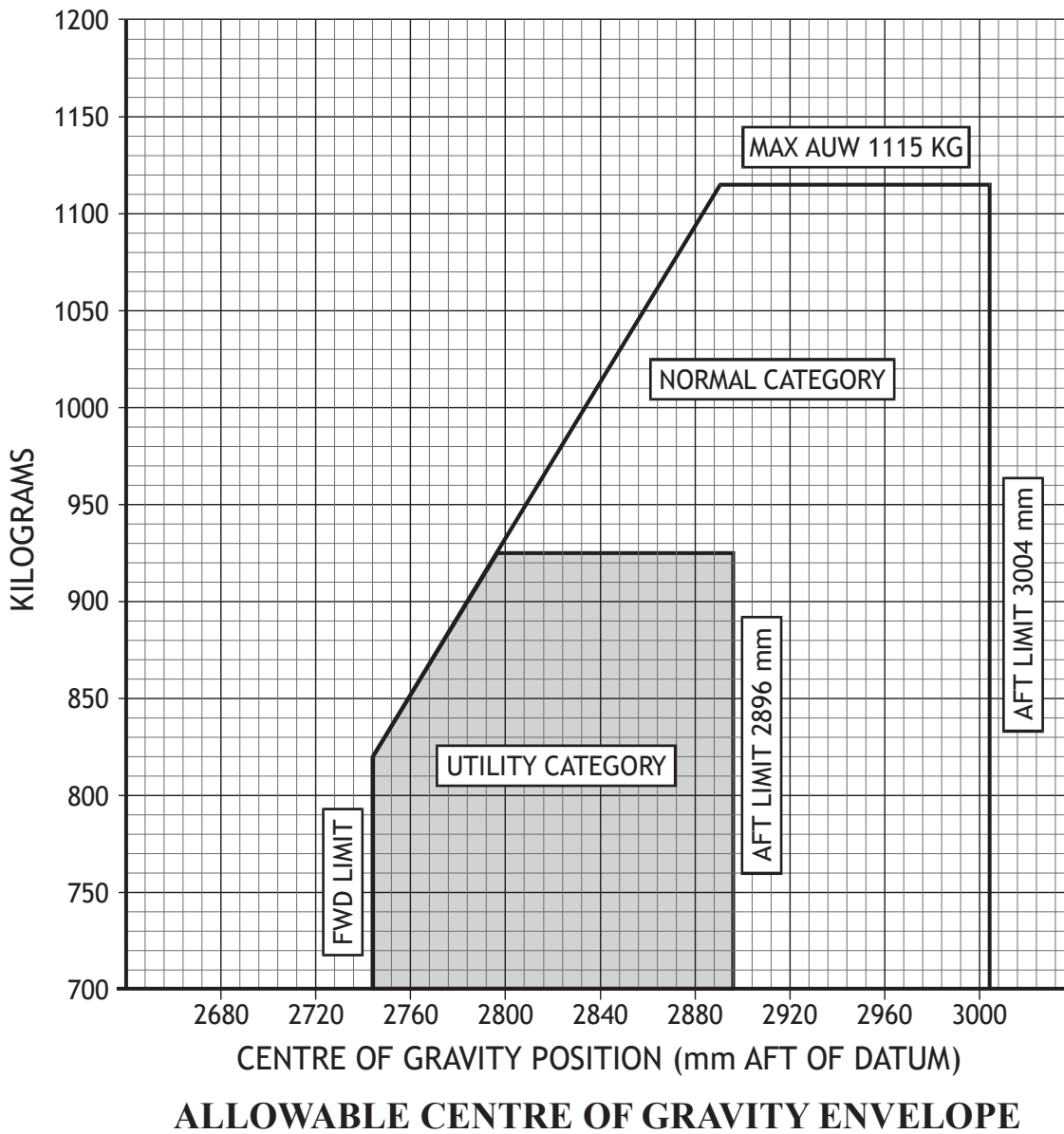
$$1 \text{ nautical mile (NM)} = 1852 \text{ metres (m)}$$

Constants

$$\text{ISA pressure} = 1013 \text{ hPa @ sea level}$$

$$\text{ISA temperature} = 15 \text{ }^\circ\text{C @ sea level}$$

Loading chart



Source: Civil Aviation Safety Authority

Loading system index units (four-seat aircraft)

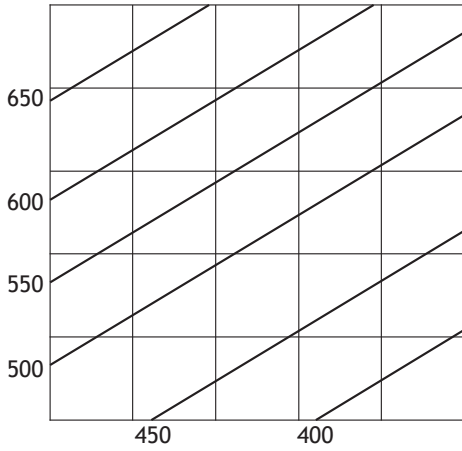
Fuel — Arm: 2950 mm			Baggage — Arm: 4210 mm	
Litres	Kilograms	Index units	Kilograms	Index units
20	14	413	10	421
40	28	826	20	842
60	43	1268	30	1263
80	57	1682	40	1684
100	71	2095	50	2105
120	85	2507	60	2526
140	99	2920	70	2947
160	114	3363	80	3368
180	129	3806	90	3789
200	142	4189	100	4210
216	153	4513	110	4631
			122	5136

Source: Civil Aviation Safety Authority

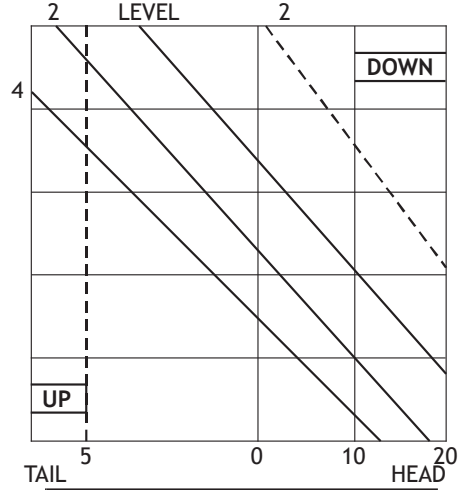
Occupants			Oil — Arm: 1230 mm		
Kilograms	Row 1 Arm: 2750 mm	Row 2 Arm: 3600 mm	Litres	Kilograms	Index units
40	1100	1440	5.7	5.0	62
45	1237	1620	6.6	6.0	74
50	1375	1800	7.6	7.0	86
55	1512	1980			
60	1650	2160			
65	1786	2340			
70	1925	2520			
75	2062	2700			
80	2200	2880			
85	2338	3060			
90	2475	3240			
Aircraft empty weight	687 kg	19 522 index units			
Maximum take-off weight	1115 kg				
Maximum baggage	122 kg				

Landing chart

LANDING DISTANCE REQUIRED - METRES

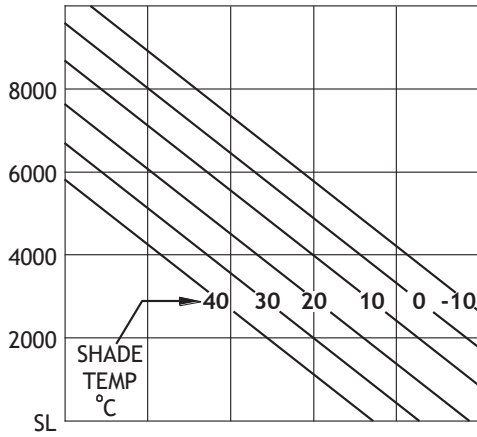


SLOPE PERCENT

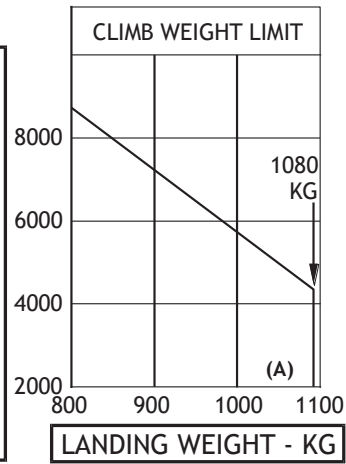


AMBIENT WIND COMPONENT - KNOTS

AIRFIELD PRESSURE HEIGHT - FT



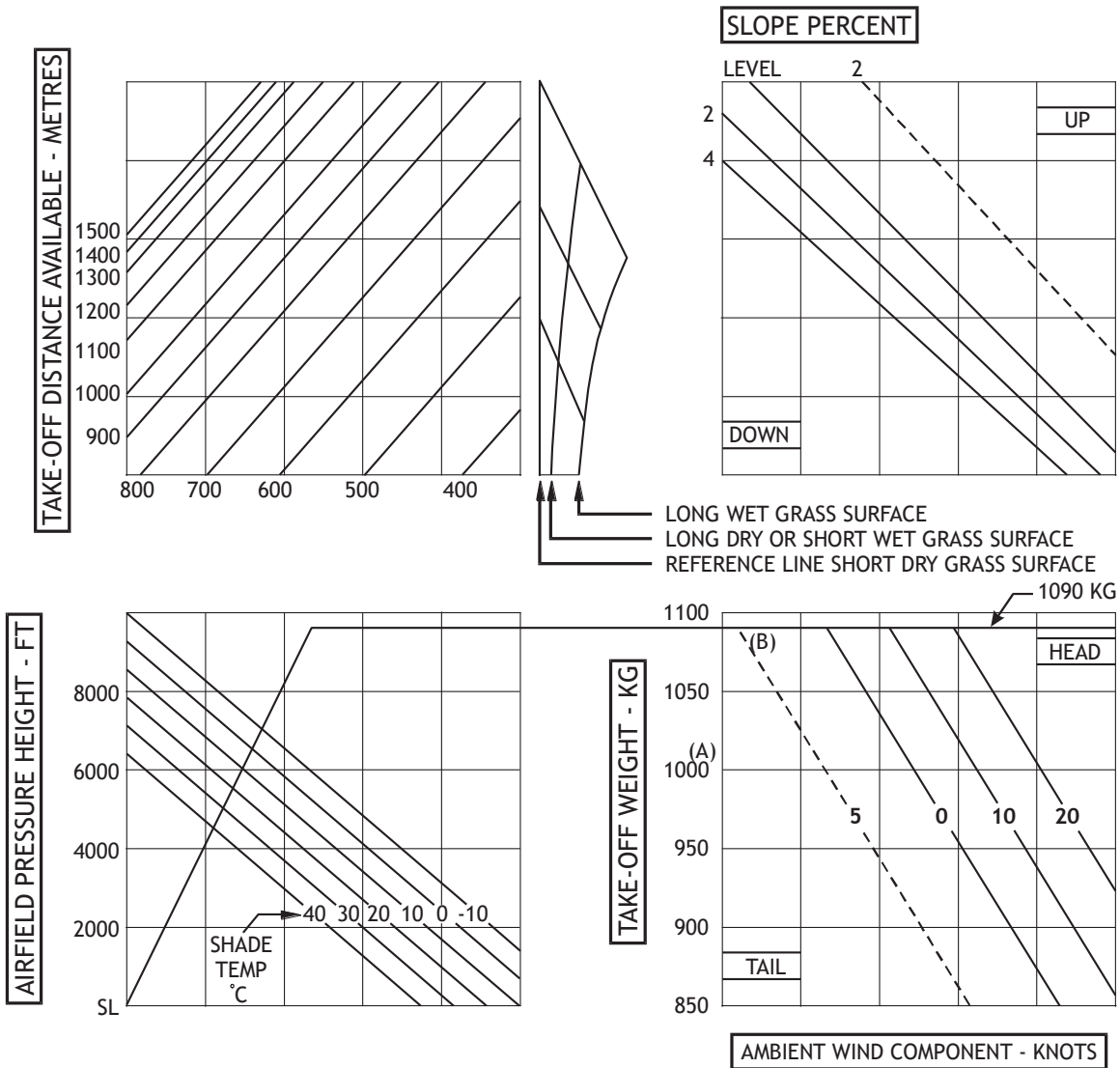
AIRFIELD PRESSURE HEIGHT - FT



LANDING WEIGHT - KG

Source: Civil Aviation Safety Authority

Take-off weight chart



Source: Civil Aviation Safety Authority

