

**CAD 508**

**SPECIMEN PERFORMANCE DATA**

**FOR AEROPLANES CERTIFICATED IN  
PERFORMANCE GROUP E**

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## **FOREWORD**

These Specimen Performance Tables are primarily intended to assist candidates studying for the performance section of the pilots' licensing examination. They will be used at the time of examination to assess the ability of candidates to use the Performance Section of a Flight Manual or Owners Manual in conjunction with the requirements contained in the Air Navigation (General) Regulations of the Air Navigation (Hong Kong) Order relating to the Weight and Performance of Public Transport Aeroplanes certificated in Performance Group E.

Candidates will be provided with a copy of this document in the examination.

It must be clearly understood that these Specimen Tables are not applicable to any particular aircraft and it is the responsibility of the pilot in command of an aircraft to be familiar with the contents of the particular Flight Manual, or Owners Manual, including all amendments, relating to the aircraft, prior to the commencement of a flight.

The tables contain the information necessary to establish compliance with the Air Navigation Regulations. In actual Manuals the data is expanded to include all the airworthiness limitations and information associated with the certification of a particular aeroplane, such as loading, air speed and power plant limitations and specific handling techniques.

## DESCRIPTION

### 1 AEROPLANE PARTICULARS

Class	-	Land Plane, Low Wing Monoplane
Power Units:		
Number	-	Two
Type	-	Unsupercharged piston engines
Wing Span	-	11.6 metres
Flap Positions	-	0°(Retracted), 15°, 30° (LAND)

### 2 PERFORMANCE GROUP CLASSIFICATION

This aeroplane is classified in Performance Group E and certificated in the General Purpose Category.

## LIMITATIONS

**WEIGHT** The maximum permissible take-off and landing weight is 2450 kg.

**CLIMATIC CONDITIONS** The aeroplane is suitable for operation in temperatures up to ISA + 30 °C, which is 45 °C at sea-level.

**ICING CONDITIONS** Flights in heavy icing conditions, or extended flights in moderate icing conditions are prohibited.

**MAXIMUM CROSS-WIND COMPONENT** The maximum permissible cross-wind component for take-off and landing is 20 knots.

**MAXIMUM TAKE-OFF POWER** The engines may be operated continuously at maximum take-off power (2400 rev/min).

**MAXIMUM CONTINUOUS POWER** See Maximum Take-off Power (above).

## PERFORMANCE INFORMATION

1 The performance information given in these specimen tables is MEASURED data (see Definitions, page 2.) The factors to be applied to the data are given in the relevant Air Navigation Regulations.

2 **VALIDITY OF PERFORMANCE INFORMATION** The performance information is not valid if:

- (a) the aeroplane is flown when the air temperature exceeds the appropriate maximum temperature for which operational suitability has been established (see CLIMATIC CONDITIONS, above)
- (b) readings from the tables are obtained by extrapolation (ie using values of parameters outside the range given on the tables), except as and where specifically permitted (at temperatures below the range scheduled the performance shall be assumed to be not better than that appropriate to the lowest temperature scheduled).

## DEFINITIONS

**AIR TEMPERATURE** The temperature of the free air near to, but uninfluenced by, the aeroplane. This temperature may be a reported, a forecast, or, when permitted by the Air Navigation Regulations, a declared temperature derived in accordance with an approved system.

**ALTITUDE** The altitude shown on the charts is pressure altitude which is the expression of atmospheric pressure in terms of altitude above mean sea level according to the interrelation of these factors in the International Standard Atmosphere. This may be obtained by setting the sub-scale of an accurate pressure type altimeter at 1013 millibars (29.92 inches or 760 millimetres of mercury).

**HEIGHT** The vertical distance between the lowest part of the aeroplane and the relevant datum.

**WEIGHT** The total weight of the aeroplane, including fuel, oil, equipment, crew and payload.

**ASIR** The uncorrected Air Speed Indicator Reading.

**IAS** Indicated Air Speed, which is the ASIR corrected only for the instrument error.

**EAS** Equivalent Air Speed, which is the IAS corrected for position and compressibility errors.

**TAS** True Air Speed of the aeroplane relevant to the undisturbed air, which is the EAS corrected for altitude and temperature.

**HARD RUNWAY** A surface such as concrete or tarmac.

**MEASURED PERFORMANCE** The average performance of an aeroplane or group of aeroplanes being tested by an acceptable method in the specified conditions.

## INTERNATIONAL STANDARD ATMOSPHERE

The variation of temperature with altitude in the lower levels of the International Standard Atmosphere is given in the following table:

<i>Altitude (ft)</i>	<i>ISA Temperature (°C)</i>
Sea-level	15
2000	11
4000	7
6000	3
8000	-1
10,000	-5
12,000	-9
14,000	-13
16,000	-17
18,000	-21

**MEASURED TAKE-OFF DISTANCE TO 50 ft – IN METRES**

Associated Conditions: Wing flaps retracted  
 Both engines at Maximum Take-off Power  
 Speed at 50 ft: 95 knots IAS  
 Zero Wind  
 Hard, dry, level concrete runway  
 Maximum Weight: 2450 kg

Altitude (1000 ft)	Ambient Air Temperature			
	ISA	ISA + 10°C	ISA + 20°C	ISA + 30°C
Sea-level	685	752	824	902
2	800	875	958	1052
4	942	1026	1120	1232
6	1135	1229	1335	1467
8	1422	1527	1646	1800
Measured Take-off Distance - metres				

- NOTES: (1) The effect of weight is to reduce the distances by 5% for every 100 kg below 2450 kg.  
 (2) The effect of head-wind is to reduce the distances by 1% for every 1 knot of head-wind.  
 (3) On short dry grass, on firm soil, the distances are increased by 10%.

**EN-ROUTE CLIMB  
 RATE OF CLIMB (FEET PER MINUTE)  
 TWO ENGINES OPERATING**

Associated Conditions: Both engines at Maximum Continuous Power  
 Wing flaps retracted  
 Landing gear retracted  
 Maximum Weight: 2450 kg  
 Speed: 104 knots IAS

Altitude (1000 ft)	Ambient Air Temperature			
	ISA	ISA + 10°C	ISA + 20°C	ISA + 30°C
Sea-level	1475	1365	1260	1160
2	1295	1195	1095	1000
4	1115	1025	930	840
6	935	855	760	675
8	755	680	595	515
10	570	510	430	355
12	395	330	265	195
14	215	160	100	35
16	30	-10	-60	-120
Rate of climb – ft per minute				

NOTE: For the effect of weight, increase the rate of climb by 90 ft/minute for every 100 kg below 2450 kg.



**EN-ROUTE CLIMB  
RATE OF CLIMB (FEET PER MINUTE)  
ONE ENGINE INOPERATIVE**

Associated Conditions: Critical engine inoperative and propeller feathered  
Operative engine at Maximum Continuous Power  
Wing flaps retracted  
Landing gear retracted  
Maximum Weight: 2450 kg  
Speed: 101 knots IAS

Altitude (1000 ft)	Ambient Air Temperature			
	ISA	ISA + 10°C	ISA + 20°C	ISA + 30°C
Sea-level	385	337	299	266
2	294	250	213	181
4	204	161	126	97
6	112	73	40	12
8	21	-16	-46	-72
10	-71	-104	-133	-157
12	-165	-196	-218	-242
14	-257	-285	-303	-325
16	-350	-373	-390	-410
Rate of climb – ft per minute				

NOTE: For the effect of weight, increase the rate of climb by 60 ft/minute for every 100 kg below 2450 kg.

## MEASURED LANDING DISTANCE FROM 50 ft – IN METRES

Associated Conditions: Zero Wind  
ISA temperature  
Engines idling, propeller in fine pitch  
Wing flaps at LAND (30°)  
Undercarriage extended  
Approach Speed: 94 knots IAS  
Maximum Landing Weight: 2450 kg  
Hard, dry level concrete runway

<i>Altitude (1000 ft)</i>	<i>Measured Landing Distance (metres)</i>
Sea-level	620
2	650
4	683
6	725
8	787

- NOTES: (1) The effect of weight is to reduce the distances by 15 metres for every 100 kg below 2450 kg.  
(2) On short dry grass, on firm soil, the distances are increased by 10%.

This increment may be inadequate if the grass is very wet and the subsoil is firm. In these circumstances it is recommended that the Landing Distance Available should not be less than the Landing Distance Required + 30%.