

# National Weights & Measure laboratory Tested & Approved



## CERTIFICATE OF CALIBRATION



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Issued under Section 6 of the Weights and Measures Act 1985

**Client:** Advent Tools Limited  
Unit 5 Conroy Park,  
Starley Way,  
Bickenhill,  
Solehill,  
West Midlands  
B17 7HF

**Equipment:** A dual marked 1685 metre x 25 mm steel pocket tape.

**Department No:** 20603

**Description:** A coated flexible steel tape. The upper edge is graduated in feet and inches which are further subdivided and marked every 1/32". The subdivisions are further subdivided into 1/32" over the first 6 inches. The lower edge is graduated in metres and centimetres, which are further subdivided into millimetres and marked every half centimetres. It is numbered in metres and centimetres. The hook at the zero end of the tape forms part of the measure, the edge of the hook being the terminal plane.

**Markings:** On tape: 1685m ± 5m  
On case: Advent Master precision 5m/168 25mm Wide Blade class 1 accurate  
◀ 77mm ▶

**Calibration method:** The tape was supported throughout its length on a flat surface with the sliding hook in either its interior or exterior position. The calibrated intervals were measured interferometrically using a frequency stabilised helium-neon laser. Traceability has been provided by comparison of the optical frequency of this laser, with that of a reference laser, which was operated in accordance with the 1983 recommendations of the International Committee for Weights and Measures for the practical realisation of the metre.

Calibrated by: I.JAMES

Reference: C2201.0040/1

Date of calibration: 19 August 2008

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**Table of results:**

**Bottom edge of tape, Sliding hook in exterior position (inside edge of the hook is the reference edge).**

Interval in millimetres	Length at 20°C in millimetres	Error from nominal in millimetres	Class 1 MPE in millimetres	Uncertainty of measurement in millimetres
0 - 1000	999.98	-0.02	± 0.3	± 0.22
0 - 2000	2 000.08	0.08	± 0.4	± 0.26
0 - 3000	2 999.98	-0.02	± 0.5	± 0.30
0 - 4000	3 999.90	-0.10	± 0.6	± 0.34
0 - 5000	4 999.83	-0.17	± 0.7	± 0.38

**Bottom edge of tape, Sliding hook in interior position (outside edge of the hook is the reference edge).**

Interval in millimetres	Length at 20°C in millimetres	Error from nominal in millimetres	Class 1 MPE in millimetres	Uncertainty of measurement in millimetres
0 - 1000	1 000.04	0.04	± 0.3	± 0.22

Case dimension in millimetres	Length in millimetres	Error from nominal in millimetres	Class 1 MPE in millimetres
77 (Metric edge)	75.88	-1.12	± 0.3
77 (Imperial edge)	76.37	-0.63	± 0.3

The lengths quoted above refer to the intervals as measured from the reference edge to the centre of each graduation along the bottom edge of the tape.

Each observation was made at a recorded temperature within the range of 21.19°C to 21.50°C.

The lengths at 20°C were calculated using a coefficient of linear thermal expansion of  $10.7 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$ .

### FOR INFORMATION ONLY

The following Table details the Maximum Permissible Error (MPE) limits defined in DIRECTIVE 2004/22/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 31 March 2004 on measuring instruments ANNEX MI-008 MATERIAL MEASURES CHAPTER 1 — Material measures of length

The MPE, positive or negative in mm, between two non-consecutive scale marks is  $(a + bL)$ , where:

— L is the value of the length rounded up to the next whole metre; and

— a and b are given in Table below.

When a terminal interval is bounded by a surface, the MPE for any distance beginning at this point is increased by the value a given in Table below.

Accuracy Class	a (mm)	b	u (mm)
I	0.1	0.1	0.1
II	0.3	0.2	0.2
III	0.6	0.4	0.3

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