

National Standards Commission



Certificate of Approval

No 13/1/1

Issued under Regulation 9
of the
National Measurement (Patterns of Measuring Instruments) Regulations

This is to certify that an approval for use for trade has been granted in respect of the

Cubi-Cal Model PM-1/15 Dimensional Measuring Instrument

submitted by CubiCal Holdings Pty Limited
(formerly CubiCal Pty Limited)
100 Bay Road
Waverton NSW 2060.

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

CONDITIONS OF APPROVAL

This approval is subject to review on or after 1 September 1999.
This approval expires in respect of new instruments on 1 September 2000.

Instruments purporting to comply with this approval shall be marked NSC No 13/1/1 and only by persons authorised by the submittor.

The Commission reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

It is the submittor's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the Commission and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with the Commission's Document 106.

Special Conditions of Approval:

Instruments are only approved for use for the determination of volume and/or 'dimensional weight' for charging for postage or freight of a rectangular box as described in the Technical Schedule listed in the Filing Advice below.

The approval of variant 1 is restricted to 2000 instruments for use by Australia Post only. The submittor shall provide to the Commission a list of serial numbers prior to any instrument being presented for verification/certification.

DESCRIPTIVE ADVICE

Pattern: approved 30 August 1994

- A Cubi-Cal model PM-1/15 dimensional measuring instrument.

Variant: approved 12 June 1995

1. With a modified display operation.

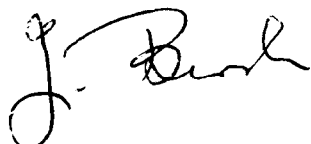
Technical Schedule No 13/1/1 describes the pattern and variant 1.

FILING ADVICE

The documentation for this approval comprises:

- Certificate of Approval No 13/1/1 dated 30 June 1995
- Technical Schedule No 13/1/1 dated 30 June 1995 (incl. Test Procedure)
- Figure 1 dated 30 June 1995

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.





National Standards Commission

TECHNICAL SCHEDULE No 13/1/1

Pattern: Cubi-Cal Model PM-1/15 Dimensional Measuring Instrument.

Submitter: CubiCal Holdings Pty Limited
100 Bay Road
Waverton NSW 2060.

1. Description of Pattern

A Cubi-Cal model PM-1/15 dimensional measuring instrument (Figure 1) which is approved for use in measuring the linear dimensions of a rectangular box (parallelepiped - #) from which the volume is calculated; from this volume, a 'dimensional weight' is determined by means of a conversion factor.

(#) A rectangular box (parallelepiped) is a polyhedron having six faces that are parallel in pairs; each face is a parallelogram and adjacent edges are perpendicular.

The pattern is approved for use to measure lengths from 12 cm to 250 cm with a scale interval of 0.1 cm.

NOTE: Instruments shall only be used as specified in the **Special Conditions of Approval** given in Certificate of Approval No 13/1/1.

1.1 Design

The pattern is a battery-operated hand-held device in a plastic case with a single alphanumeric liquid-crystal display (Figure 1). The operator is guided through the correct sequence of steps by audible and visual prompts.

As the instrument is drawn over each of three sides of the box in turn, the length of that side in centimetres (cm) and then the computed volume of the box in cubic metres (m^3) are displayed. By pressing the button marked 'C', the instrument then multiplies the volume by the preprogrammed conversion factor to calculate and display the 'dimensional weight' number (Dim Wt).

A display check is initiated whenever the RESET/ON/OFF button is pressed.

1.2 Verification/Certification and Sealing Provision

Provision is made for a verification/certification mark to be applied.

Provision is made for instruments to be sealed by placing a destructible adhesive label over one end of the measuring wheel axle.

1.3 Markings

Instruments are marked with the following data, together in one location:

Manufacturer's identification	
Model identification	
Serial number	
NSC approval number	NSC No 13/1/1
Maximum length	Max 250 cm
Minimum length	Min 12 cm
Scale interval	d = 0.1 cm

In addition, instruments are marked with a notice stating 'For calculation of 'dimensional weight' number, or volume (m^3) of rectangular boxes only', or similar wording.

2. Description of Variant 1

With a modified display operation in which only the 'dimensional weight' number (Dim Wt) is displayed during normal operation. The values of each of the three measurements of length (without units) can be displayed for test purposes.

NOTE: This variant is restricted to a limited number of instruments for use by Australia Post. (refer to the Special Conditions of Approval.)

TEST PROCEDURE

Maximum Permissible Error at Verification/Certification

The maximum permissible error at verification/certification from the minimum length to any value up to and including the maximum length capacity of the instrument is ± 1 cm.

Instruments shall be tested as follows:

- At least 5 test objects shall be used of known lengths between and including the minimum and maximum lengths specified on the instrument nameplate. Each test object shall be rigid and with well-defined edges to simulate the edges of a rectangular box. The lengths shall be known to within ± 1 mm using a verified length standard.

- Using the instrument in the manner described in the user's manual supplied with the instrument, carry out at least three test runs for each length. Each measurement shall be within the maximum permissible error.

- Note the conversion factor displayed on the instrument and using three consecutive length measurements, display the calculated volume and the 'dimensional weight' number. These shall agree with values calculated from the displayed lengths and the conversion factor, and rounded by truncation.

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Notification of Change Certificate of Approval No 13/1/1 Change No 1

The following change is made to the approval documentation for the

Cubi-Cal Model PM-1/15 Dimensional Measuring Instrument

submitted by CubiCal Holdings Pty Limited
100 Bay Road
WAVERTON NSW 2060.

In Technical Schedule No 13/1/1 dated 30 June 1995, the Test Procedure should be amended by replacing the first 'bullet' point with the following:

- Test objects shall be used of known lengths *such that each axis (i.e. length x width x height) is tested for at least five dimensions* between and including the minimum and maximum lengths specified on the instrument nameplate. Each test object shall be rigid and with well-defined edges to simulate the edges of a rectangular box. The lengths shall be known to *an uncertainty equal to or better than ± 3 mm*.

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.

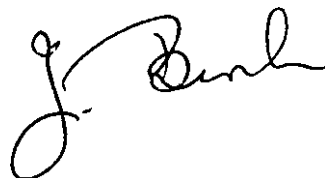
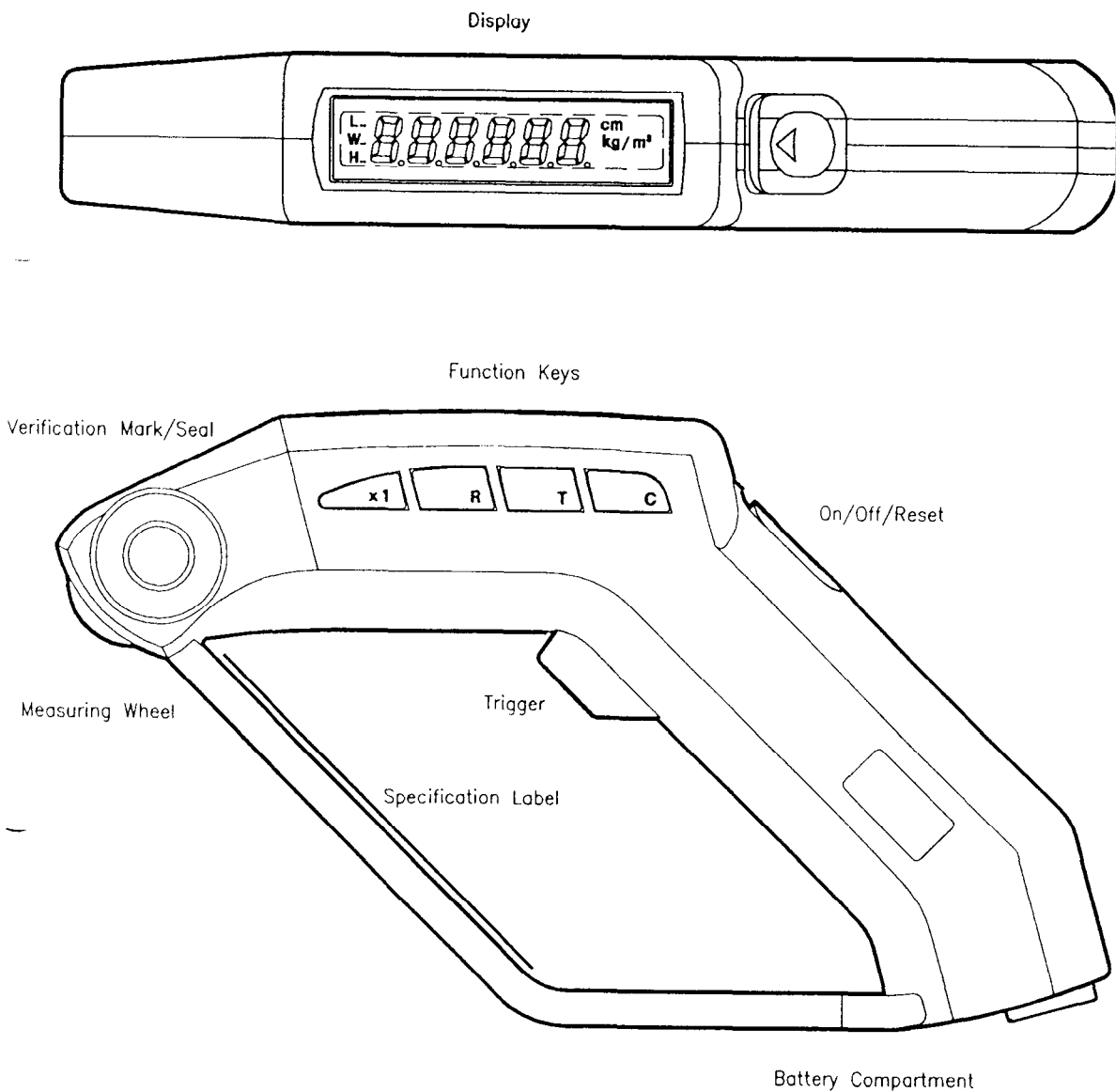


FIGURE 13/1/1 - 1



Cubi-Cal Model PM-1/15 Dimensional Measuring Instrument