

INTERNATIONAL
RECOMMENDATION

OIML R 24

Edition 1975 (E)

Standard one metre bar for verification officers

Mètre étalon rigide pour agents de vérification

OIML R 24 Edition 1975 (E)



ORGANISATION INTERNATIONALE
DE MÉTROLOGIE LÉGALE

INTERNATIONAL ORGANIZATION
OF LEGAL METROLOGY

Foreword

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This publication – reference OIML R 24 (E), edition 1975 – which is under the responsibility of OIML TC 7/SC 1 *Measuring instruments for length*, was sanctioned by the International Conference of Legal Metrology in 1972.

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STANDARD ONE METRE BAR FOR VERIFICATION OFFICERS *

1 General

1.1. This Recommendation applies to the “metre standard” used by Verification Officers for verifying: line, or end length, rigid measures,

for which the maximum permissible error exceeds 300 micrometres per metre (ie 0.03 % in relative value).

2 Definitions

2.1. Maximum permissible error :

Maximum error, positive or negative, allowed on Verification Officers’ metre standard on initial or subsequent verification when compared at the reference temperature of 20 °C with the corresponding standard of length of higher accuracy (in the statutory hierarchy of standards), assuming that this standard of higher accuracy has a negligible error for the purpose of this comparison.

3 Materials

3.1. The metre standard must be manufactured from a suitable material.

3.2. Some of the materials considered suitable are :

- a) 58 % nickel-steel,
- b) austenitic stainless steel,
- c) 13 % chrome stainless steel.

4 Shape and dimensions

4.1. The metre standard must have a cross-section which may be either :

- a) a rectangle and of dimensions not less than 20 mm × 10 mm, — the scale being marked on the upper face ; or
- b) a rectangular trapezium, about 11 mm high and 50 mm wide.
the bevelled face being inclined to the horizontal at approximately 35° — the scale being marked on this bevelled face.

4.2. The overall length of the standard must be approximately 1030 mm.

Notes : a - This Recommendation will apply to new metre standards acquired either to replace those currently in use or as additional standards.

b - Metre standards for the verification of measurements with an error of less than 300 micrometres per metre (such as those used in engineering workshops) will be the subject of another Recommendation.

c - There will be other Recommendations to cover metre standards of types different from those dealt with in this Recommendation.

Translator's Note

In the United Kingdom the function of the Verification Officers is carried out by the Weights and Measures Inspectors.

5 Graduation

5.1. The standard must be graduated in millimetres from 0 mm to 1000 mm.

A length of 10 mm before the zero scale mark and a length of 10 mm after the 1000 mm mark may also be graduated in millimetres.

5.2. The scale must be regular. In addition, the scale marks must all be of the same thickness, ie between 30 and 80 micrometres.

5.3. Lines representing centimetres must be longer than those representing demi-centimetres.

Lines representing demi-centimetres must be longer than those representing millimetres.

5.3.1. The length of the lines must be at least :

- 3 mm for those representing millimetres,
- 5 mm “ ” “ ” demi-centimetres,
- 8 mm “ ” “ ” centimetres.

5.4. Centimetre lines only are to be numbered and in increasing numerical order.

5.5. The height of the numerals and the letters (symbols) must be approximately 3 mm.

6 Cursor

6.1. The errors of the measures being verified may be measured by means of a scale marked on a transparent plate which is moved along the entire length of the standard by means of a cursor.

This plate must be of suitable, and constant, dimensions and thickness.

6.1.1. The graduation of the scale may be in the form of either :

a) a length of 9 mm divided into ten parts to serve as a vernier to read off the errors to the nearest 0.1 mm ;

or

b) one millimetre divided into 10 parts for reading the errors directly to the nearest 0.1 mm.

6.1.2. The thickness of the graduation lines of the scale must be less than that of the graduation lines on the standard (see paragraph 5.2) ;

they must be marked on the surface facing the graduation lines on the standard.

6.1.3 Readings are made with the aid of a magnifying glass of not less than :

3 × magnification if the scale is of vernier form (6.1.1.a) and

5 × magnification if the scale is graduated in 0.1 mm (6.1.1. b).

6.2. It must be possible to move the cursor smoothly and evenly in a straight line from one end of the measure to the other.

6.3. A device must be provided for raising, lowering and laterally displacing the measure to be verified, in order to level its graduated surface properly and to align its zero scale mark with that of the metre standard.

6.4. To facilitate verification of end measures, two vertical stops marked with reference lines must be provided :

6.4.1. The first stop must be such that its reference line can be aligned with the zero line of the metre standard ;

6.4.2. It must be possible to move the second stop along the whole length of the metre standard and, when it rests against the end of the measure to be verified, it must be possible to verify this measure by means of the reference line on the stop.

7 Maximum permissible errors

7.1. The error over any length bounded by any two scale marks on the metre standard must not exceed, at 20 °C, a value calculated according to the following formula :

$$e = (50 + L/20) \text{ micrometres}$$

where L denotes the length in millimetres of that part of the metre standard bounded by two scale marks, the error on which is being determined by comparison with the standard of length of higher accuracy.

8 Inscriptions

8.1. The metre standard must carry its identification number and in addition the following markings :

- a) identity of the standard, eg : “Verification Officers’ Metre Standard”,
- b) national identification mark,
- c) name of the manufacturer,
- d) inscription : ‘standard at 20° C’,
- e) year of manufacture.

9 Protective carrying case

9.1. The metre standard may be housed in a case made from suitable material and provided with a handle, lined with velvet, plastic or any other suitable material to prevent any damage to the metre standard, in particular by impact or by corrosion.

9.2. The case must have affixed on it a plate bearing the marking “Verification Officers’ Standard One Metre Bar”, as well as any other inscriptions considered necessary.

10 Periodic verification

10.1. Verification Officers' metre standards must be verified at such intervals of time as may be prescribed in the metrological laws of the country.

Note: It is recommended that this verification be carried out every year.

11 Certificate of verification

11.1. Whenever the metre standard is verified, a verification certificate giving the date of verification and the identification number of the standard may be issued.

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