

Specification for

Metric length bars and their accessories

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Department of Industry — National Physical Laboratory	Gauge and Toolmakers' Association
Department of Prices and Consumer Protection — British Calibration Service	

This British Standard, having been prepared under the direction of the Mechanical Engineering Industry Standards Committee, was published under the authority of the Executive Board on 30 April 1976

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Amendments issued since publication

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Foreword

This British Standard, prepared under the authority of the Mechanical Engineering Industry Standards Committee, deals with metric length bars which have until now been included with inch bars in BS 1790. The latter was first published in 1952 and revised in 1961; among the features of the revision were the introduction of a calibration grade of bar and of a refined screw connection that had been developed by the National Physical Laboratory and enabled bars to be built into combinations without any appreciable loss of overall inherent accuracy. Although it was permissible to use the original type of connection with what were designated “workshop” grade bars, the “refined” type has been so generally adopted that it is the only one for which provision is made in the present standard.

Although four grades of length bars have been retained, it is considered that the descriptive terms “inspection” and “workshop” are misleading and they have been replaced by the designations “grade 1” and “grade 2”.

Requirements for metric length bars and accessories have now been deleted from BS 1790 and that standard should now be regarded as obsolescent.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This British Standard relates to length bars (end standards) of the cylindrical type having flat, parallel end faces finished by lapping in metric sizes up to 1 200 mm.

NOTE If longer bars are required they should be uniform in diameter and straight overall to the limits laid down in 8.1 and 8.2; tolerances for flatness and parallelism of faces should be proportionate to those specified in the appropriate Table 1 to Table 4 and their lengths should comply with the requirements of 8.4.2.

Provision is made for two designs of length bar, one with complete plane faces and the other with annular faces surrounding an internally threaded hole at one end or both ends of the bar.

Section 2 provides for length bars in four grades of accuracy, namely reference, calibration, grade 1 and grade 2. It gives general dimensions, tolerances on length and requirements for flatness, parallelism and squareness of faces for all grades of bars.

Manufacturers supply single length bars or sets of selected sizes.

Section 3 relates to the essential features of design and accuracy of accessories for use with grade 1 or grade 2 bars.

Appendix A deals with interchangeability between these bars and bars made in accordance with BS 1790.

2 References

The titles of the British Standards referred to in this standard are listed on the inside back cover.

3 Definitions

For the purposes of this British Standard the following definitions apply.

3.1

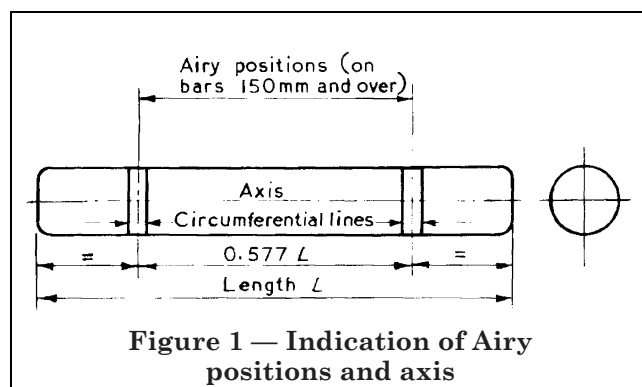
airy positions

those points at which a bar of uniform cross section has to be supported when used with its axis horizontal (See Figure 1.)

3.2

axis of the bar

the line passing through the centres of the cross sections at the Airy positions (See Figure 1.)



3.3 length

this is defined, with the bar mounted horizontally and referred to the standard reference temperature of 20 °C, as the distance from the centre of one of its faces to a flat surface in wringing contact with the opposite face, measured normal to the surface

NOTE 1 To realize this definition for the grade 1 and 2 types of bar it will be necessary to wring plane parallel end pieces of known thickness to one or both annular faces.

NOTE 2 It follows that when length measurements are made by comparison with a bar whose known length, as defined above, is traceable to the primary standard of length, the length so determined always refers to the horizontal position of support regardless of whether the comparison is made with the bars supported vertically or horizontally.

3.4

deviation from flatness

the minimum distance between two parallel planes which just envelop the measuring face

3.5

flatness tolerance

the maximum permissible deviation from flatness (See Figure 2.)

