

Specification for

Gauge blocks and accessories —

Part 1: New gauge blocks

Committees responsible for this British Standard

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- City of Birmingham Polytechnic
- Department of Trade and Industry (National Engineering Laboratory)
- Department of Trade and Industry (National Physical Laboratory)
- Gauge and Toolmakers' Association
- Ministry of Defence

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Foreword

This Part of BS 4311 has been prepared under the direction of the Machine, Engineers and Hand Tools Standards Policy Committee and is a revision of BS 4311-1:1968 which is withdrawn.

This revision also supersedes sections 1 and 2 of BS 888:1950. BS 888:1950 will eventually be withdrawn upon publication of a revision of BS 4311-2 which is presently in preparation and which will supersede section 3 of BS 888:1950.

Initially, BS 888:1940 and BS 888:1950 *Specification for slip (or block) gauges and their accessories* specified various grades of gauge blocks in inch and metric units. More recently, BS 4311-1:1968 *Gauge blocks* specified solely metric gauge blocks while BS 888:1950 has continued to apply only for inch gauge blocks.

In the meantime ISO 3650 and OIML R30 for metric gauge blocks have been published by the International Organization for Standardization (ISO) and by the Organisation Internationale de Métrologie Légale (OIML). Throughout this revised standard, account has been taken of ISO 3650 and OIML R30.

This revision of BS 4311-1:1968 was required to bring the specifications of metric and inch gauge blocks into line with current UK practice in the manufacture, calibration and use of gauge blocks.

A clear distinction is now made between grade K gauge blocks which are used primarily as standards and grades 0, 1 and 2 which are used for general measuring purposes.

For the first time the effects of uncertainty of measurement are identified and quantified and unambiguously defined.

The method of measurement is clearly stated for each grade and the line of traceability to internationally recognized, universal standards of length is established, using only grade K as the reference standard which minimizes errors of uncertainty of measurement.

The permitted length tolerances are based on a methodical 2 to 1 ratio between the grades without applying any rounding principles to distort these values.

This standard specifies the requirements for the manufacture and supply of new gauge blocks only. It has been recognized that during use gauge blocks wear and consequently fall outside their original specification when new. To preserve the required standards of accuracy during use, gauge blocks have to be carefully maintained and regularly calibrated and subjected to a controlled programme of downgrading. All these requirements are specified, for the first time, in a new standard BS 4311-3:1993 *Gauge blocks in use*.

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.

1 Scope

This Part of BS 4311 specifies requirements for new unused gauge blocks of rectangular cross section, and of nominal lengths less than or equal to 100 mm for a grade K for standards purposes and for each of three other grades for measuring purposes.

The three grades for measuring purposes, designated 0, 1 and 2, are related to grade K by measurement by comparison which is described briefly.

NOTE 1 The general requirements for gauge blocks are given in clauses 4 to 7. Clause 8 specifies the accuracy of inch gauge blocks only.

NOTE 2 For the measurement of lengths exceeding 150 mm, circular section length bars are specified in BS 5317:1976, and rectangular section blocks are specified in ISO 3650:1978.

2 References

2.1 Normative references

This Part of BS 4311 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this Part of BS 4311 only when incorporated in it by updating or revision.

2.2 Informative references

This Part of BS 4311 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

