

Specification for

Gauge blocks and accessories —

Part 2: Accessories

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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. It is a revision of BS 4311-2:1977 which is superseded and withdrawn.

This revision of BS 4311-2:1977 specifies requirements for accessories for use with gauge blocks in both metric and inch units. BS 4311-1:1993 supersedes most of BS 888:1950 except for those clauses dealing with accessories for gauge blocks in imperial units. Parts 1 and 2 of BS 4311 together supersede BS 888:1950 which is withdrawn.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, 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.

Introduction

The use of gauge blocks for measuring and for calibrating measuring instruments may be extended by accessories of the types specified in this standard. For instance pairs of type A and type B jaws are listed which when combined with gauge blocks form an external or an internal calliper. Other accessories are a robust base for converting a gauge block combination into a height gauge; and a centre point and an edged tool for scribing arcs of precise radius. The various items are provided with wringing surfaces for combining with gauge blocks, and holders are available for supporting the combinations in use.

The accuracy of measurements obtainable when using the accessories is influenced by the manner of their use, e.g. reduction of flexure in calliper jaws, flatness of the datum surface on which the base is located, and avoidance of local wear, particularly on the scribing tool and the type A jaws.

1 Scope

This standard specifies requirements for accessories intended for use with metric and inch gauge blocks conforming to BS 4311-1:1993 and BS 4311-3:1993 and includes two types of measuring jaw (type A and type B), scriber points and centre points, bases and holders. Requirements for general dimensions and the form, material, surface finish and accuracy of various features are specified.

Examples of typical assemblies of accessories are shown in Figure 1 and notes on their use are given in annex A.

Annex B gives details of other items which may be used with gauge blocks and accessories.

NOTE Type B jaws, scriber points, centre points and holders specified for metric gauge blocks are fully compatible with gauge blocks in inch units.

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.

3 Definitions

For the purposes of this Part of BS 4311, the definitions given in BS 4311-1:1993 and BS 4311-3:1993 apply.

4 Material

Accessories other than the guide plates of holders shall be of high grade steel or other wear resistant material equivalent to that of steel having a hardness of not less than 750 HV. When steel is used the accessories other than the guide plates of holders shall be hardened to not less than 750 HV when tested in conformity with BS 427:1990.

The accessories other than the guide plates of holders shall be heat treated to stabilize the material.

NOTE 1 The guide plates of holders may be of steel or other wear resistant material equivalent to that of steel having a hardness of not less than 250 HV.

NOTE 2 Approximate equivalent hardness values for other hardness scales are given in BS 860.

5 Type A measuring jaws

5.1 General

The form and dimensions shall be as given in Figure 2 and Table 1.

NOTE These jaws are usually supplied in pairs for internal or external measurements.

5.2 Finish and accuracy

The wringing faces and cylindrical faces shall be finished by high grade lapping within the tolerances specified as follows. Each wringing face shall be flat to within 0.0003 mm within any 35 mm length.

For each jaw, dimension A (Table 1) shall be nominal length $^{+0.001}_0$ mm. Angle β shall be $90^\circ_{-10'}$.

Additionally, when the pair of jaws is wrung over an interposed gauge block having a nominal length approximately equal to A and aligned along one side, the maximum error in the overall length shall be not greater than + 0.001 mm.

NOTE 1 In manufacture this tolerance may be achieved by positioning the centre for the radius R midway between the side faces to within 0.025 mm.

NOTE 2 These jaws should not be used for the accurate measurement of internal diameters less than 3A.