

Specification for

Dimensions of metric long arbors and their accessories for milling machines

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- Gauge and Tool Makers' Association
- Milling Cutter & Reamer Association
- Society of British Aerospace Companies Limited

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Foreword

This British Standard has been prepared under the direction of the Mechanical Engineering Standards Committee and is based on selections from ISO 839-I and ISO 839-II. Dimensions of keyways are based on ISO 240.

No attempt has been made to specify materials because of the different methods of manufacture.

This standard supersedes BS 3616:1963 which is in imperial units. BS 3616 is now regarded as obsolescent and will be withdrawn eventually.

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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 British Standard specifies metric dimensions for milling machine long arbors with quick release tapers and their accessories, i.e. bearing collars, spacing collars, nuts and spacing shims.

Two types of long arbors are specified:

style A, with pilot ends, in a restricted range of sizes with nos. 30, 40 and 50 quick release tapers;

style B, without pilot ends, with nos. 30, 40 and 50 quick release tapers.

2 References

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

3 Arbors

3.1 Tapered shank ($7/_{24}$). The dimensions of the $7/_{24}$ tapered shank of the arbor shall comply with the requirements of BS 1660.

3.2 Length of arbor. For the purposes of this standard the length of the arbor is defined as the distance from the flanged locating face Z to the end of the plain parallel portion (see Figure 1 and Figure 2 and Table 1 and Table 2).

3.3 Dimensions and tolerances

3.3.1 The general dimensions and tolerances of style A arbors shall be in accordance with Table 1.

3.3.2 The general dimensions and tolerances of style B arbors shall be in accordance with Table 2.

3.4 General features

3.4.1 Arbors shall have a radius at the junction between the parallel portion and the flanged locating face Z (see Figure 1 and Figure 2). The radius will normally be as specified in Table 1 and Table 2 but where larger radii are employed, a special end collar, provided with suitable identification marking, shall be supplied.

3.4.2 The minimum distance from the gauge plane of the taper to the flanged locating face Z (see Figure 1 and Figure 2) shall be such as to preclude any interference between the spindle driving key and the leading face of the first collar (see BS 1660).

3.4.3 Keyway dimensions are given in Table 3 and the ends may be open or closed.

NOTE Dimensions of suitable keys will be found in BS 122-3.

3.5 Screw threads. The screw threads shall comply with the requirements of BS 3643-3:1967 and shall be made to class 6g tolerances as specified in that standard.

Unless otherwise specified, arbors will normally be supplied with right hand threads.

3.6 Accuracy

3.6.1 The parallel portion, or portions, of the arbor shall be concentric with the tapered shank to within 0.012 mm FIM (full indicator movement).

Arbors shall be checked for concentricity, firstly at a distance of 25 mm from the flanged locating face and secondly at not more than 25 mm from the other extremity of the plain parallel position.

The following is a recommended method of test for concentricity. With the tapered end of the arbor mounted and held in a standard spindle nose and the other end supported by a mating centre, it is then rotated to obtain indicator readings at the positions specified above.

NOTE Concentricity has been toleranced to promote accurate performance of the arbor, but attention is drawn to the need for care in the handling and storage of the arbor if its original accuracy is to be maintained.

3.6.2 The flanged locating face Z of the arbor shall be flat to concave.

3.6.3 The flanged locating face Z shall be square to the axis of the arbor to within 0.005 mm.

4 Bearing collars

4.1 Dimensions and tolerances. The general dimensions and tolerances of bearing collars shall be in accordance with Table 4.

4.2 General features

4.2.1 The collar may be provided with a chambered bore (see Figure 4).

4.2.2 The bore of the collar shall be finished with a chamfer, or a radius or a recess as shown in Figure 4. However, it is recommended that both a chamfer and a recess be provided. The recess shall have a diameter not exceeding that obtained by the application of a 45° chamfer as specified in column 11 of Table 4.

4.2.3 The outside diameter of the collar shall be chamfered at both ends (see Figure 4).

4.2.4 The end faces of the bearing collar shall be flat, and parallel to each other to within the tolerances stated in Figure 4. Any departure from flatness shall be concave and not convex.