

CONFIRMED
DECEMBER 2007

Specification for

Machine tool components —

Part 2: Collars

Co-operating organizations

The Mechanical Engineering Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

Associated Offices' Technical Committee	Institution of Gas Engineers
Association of Consulting Engineers	Institution of Heating and Ventilating Engineers
Association of Mining Electrical and Mechanical Engineers	Institution of Mechanical Engineers*
Board of Trade	Institution of Mechanical Engineers (Automobile Division)
British Chemical Plant Manufacturers' Association	Institution of Production Engineers*
British Compressed Air Society	Locomotive and Allied Manufacturers' Association of Great Britain
British Electrical and Allied Manufacturers' Association	London Transport Board
British Gear Manufacturers' Association	Machine Tool Trades Association*
British Internal Combustion Engine Manufacturers' Association	Ministry of Defence
British Iron and Steel Federation	Ministry of Labour (H.M. Factory Inspectorate)
British Mechanical Engineering Federation	Ministry of Power
British Pump Manufacturers Association	Ministry of Public Building and Works*
Crown Agents for Oversea Governments and Administrations	Ministry of Technology — National Engineering Laboratory*
Electricity Council, the Central Electricity Generating Board and the Area Boards in England and Wales	Ministry of Transport
Engineering Equipment Users' Association	National Coal Board
Gas Council	National Physical Laboratory (Ministry of Technology)
Institute of Marine Engineers	Radio Industry Council
Institution of Civil Engineers	Royal Institute of British Architects

The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Association of Supervisory Staffs, Executives and Technicians	National Federation of Engineers' Tool Manufacturers
Ministry of Defence, Air Force Department	Production Engineering Research Association
Ministry of Defence, Army Department	Society of Motor Manufacturers and Traders Limited
Ministry of Defence, Navy Department	Trades Union Congress

This British Standard, having been approved by the Mechanical Engineering Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 31 July 1967

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The following BSI references relate to the work on this standard:
Committee reference MEE/6
Draft for comment D65/8569

ISBN 0 580 34082 1

Amendments issued since publication

Amd. No.	Date of issue	Comments
1564	September 1974	Indicated by a sideline in the margin

Contents

	Page
Co-operating organizations	Inside front cover
Foreword	ii
1 Scope	1
2 Material	1
3 Constructional requirements	1
4 Finish	1
5 Designation	1
6 Marking	1
Figure 1 — Collar	2
Table 1 — Millimetre dimensions of collars	3
Table 2 — Inch dimensions of collars	5

Foreword

This standard makes reference to the following British Standards:

BS 46, *Keys and keyways and taper pins. Part 3: Solid and split taper pins.*

BS 308, *Engineering drawing practice.*

BS 970, *Wrought steels in the form of blooms, billets, bars and forgings. Part 1: Carbon and carbon manganese steels including free cutting steels.*

BS 1134, *Centre-line-average height method for the assessment of surface texture.*

BS 1580, *Unified screw threads.*

BS 1916, *Limits and fits for engineering. Part 1: Limits and tolerances.*

BS 2470, *Hexagon socket screws and wrench keys.*

BS 3643, *ISO metric screw threads.*

This standard is based on a proposal made by the Machine Tool Trades Association and is one of a series dealing with components of machine tools.

Others in this series are:

- *Part 1: Locknuts ("C" Type, socket set screw locking);*
 - *Part 3: Rolling bearing end caps and retaining plates;*
 - *Part 4: Shaft spacers;*
 - *Part: Locknuts for use with tab washers.*
- } in course of preparation

The specification provides for the collar to be locked by a hexagon socket set screw and for a pilot hole to be drilled with a view to it being additionally locked, at the discretion of the user, by a parallel pin, a taper pin or a second hexagon socket set screw. The size of an appropriate taper pin is given for guidance only.

A marking requirement has been included in the standard so that a standard collar may be distinguished from a special and its size readily identified.

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 standard relates to separate millimetre and inch series of collars for use in machine tools and their auxiliary equipment.

The millimetre series is suitable for shafts 6–100 mm diameter and the inch series for shafts $\frac{1}{4}$ –4 in diameter.

NOTE All the millimetre dimensions in this specification relate to the millimetre series and all the inch dimensions to the inch series.

2 Material

Collars shall be manufactured of steel 220 M07 conforming to BS 970-1¹⁾ or from a similar material having equivalent mechanical properties.

3 Constructional requirements

3.1 Dimensions. Collars of the millimetre series shall conform to the dimensions in Figure 1 and Table 1 and those of the inch series to those in Figure 1 and Table 2.

When plating is specified, the collar shall conform, after plating, to the dimensions given in this standard.

3.2 Collar body. The tolerance on the squareness²⁾ of the abutment face of the collar (Face X, Figure 1) with respect to the bore A shall be as follows:

1) Millimetre series		
Up to 50 mm nominal bore		0.02 mm
Over 50 mm up to and including 80 mm		0.04 mm
Over 80 mm		0.05 mm
2) Inch series		
Up to 2 in nominal bore		0.001 in
Over 2 in up to and including $3\frac{1}{4}$ in		0.0015 in
Over $3\frac{1}{4}$ in		0.002 in

The out-of-roundness of the outer cylindrical surface of the locknut and its error of concentricity with respect to the bore A shall be contained within a full indicator movement of 0.1 mm or 0.005 in.

The thread of the hole for the locking screw shall conform to BS 3643³⁾ and shall be Class 6H (millimetre series) or to BS 1580⁴⁾ and be Class 2B (inch series).

3.3 Locking screw. The locking screw shall be a hexagon socket set screw with cup point. For the millimetre series, it shall have a thread conforming to BS 3643³⁾, Class 6G; for the inch series it shall conform to BS 2470⁵⁾ (unified fine thread).

The locking screw shall be designed to be self-locking and to be unaffected by vibration.

4 Finish

The abutment face of the collar (Face X, Figure 1) and the bore A shall have a surface texture⁶⁾ of 0.8 μm CLA (millimetre series) or 32 CLA (inch series). The remainder of the collar shall have a surface texture of 3.2 μm CLA (millimetre series) or 125 CLA (inch series).

The collar shall be sound and free from burrs, sharp edges and other defects.

5 Designation

Collars conforming to this standard shall be designated by the bore diameter and the number of this standard, e.g. collars of nominal bore diameter 40 mm and $1\frac{1}{2}$ in shall be designated:

Collar 40 BS 4185-2

Collar $1\frac{1}{2}$ BS 4185-2

This designation shall mean the collar complete with hexagon socket set screw and with pilot hole drilled for taper pin, but not including the taper pin.

6 Marking

Collars conforming to this standard shall be marked by the manufacturer with the bore diameter and the number of this standard, e.g. collars of nominal diameter 40 mm and $1\frac{1}{2}$ in shall be marked:

40 BS 4185-2

$1\frac{1}{2}$ BS 4185-2

NOTE See note on the inside back cover about the BSI Certification Mark Scheme.

¹⁾ BS 970, "Wrought steels in the form of blooms, billets, bars and forgings. Part 1: Carbon and carbon manganese steels including free cutting steels."

²⁾ See BS 308, "Engineering drawing practice".

³⁾ BS 3643, "ISO metric screw threads".

⁴⁾ BS 1580, "Unified screw threads".

⁵⁾ BS 2470, "Hexagon socket screws and wrench keys".

⁶⁾ See BS 1134, "Centre-line-average height method for the assessment of surface texture".