

General requirements for rotating electrical machines —

Part 103: Specification for symbols

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- Association of Electrical Machinery Trades
- Association of Manufacturers Allied to the Electrical and Electronic Industry (BEAMA Ltd.)
- Association of Supervisory and Executive Engineers
- British Coal
- Bureau of Engineer Surveyors
- ERA Technology Ltd.
- Electricity Supply Industry in England and Wales
- Engineer Surveyors Section of the ASTMS
- Engineering Equipment and Materials Users' Association
- Health and Safety Executive
- Ministry of Defence
- Power Generation Association (BEAMA Ltd.)
- Rotating Electrical Machines Association (BEAMA Ltd.)
- South of Scotland Electricity Board

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Foreword

This Part of BS 4999 has been prepared under the direction of the Power Electrical Engineering Standards Committee and supersedes BS 4999-2:1976, which is withdrawn.

This Part has been issued to implement the decision to renumber all the Parts of BS 4999 to bring the Part numbers more into line with those of IEC Publication 34.

In addition to the renumbering of the Part, the inclusion of the Part number in the point numbering system, adopted in Part 2, has been abandoned.

No technical changes have been made to the text of BS 4999-2:1976.

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.

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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.

1 Scope

This Part of this British Standard specifies the symbols for the identification of frame sizes for machines within the range of dimensional standardization. Symbols are defined for the principal dimensions of machines and the use of the symbols is illustrated by typical sketches.

2 References

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

3 General

The allocation of symbols is somewhat arbitrary, being derived from past practice in relation to the smaller sizes of a.c. industrial motors.

It is recommended that the use of the symbols should be extended to all cases that they can cover adequately.

4 System of frame nomenclature

For frame sizes up to and including 400 which are primarily intended for low voltage induction type motors, the nomenclature is set out in 4.1 to 4.4 below. For other machines where there is no international agreement, it is recommended that 4.5 should be used.

4.1 Firstly a letter indicating enclosure:

C for enclosed ventilated^a

D for totally enclosed^a (other than flameproof)

^a These terms are defined in BS 4727-2:Group 03.

4.2 Secondly a number of two or three digits, which is the height in millimetres of the shaft centre above the feet (dimension *H*) on the foot-mounted frame.

4.3 Thirdly a letter S, M or L, which characterizes the longitudinal dimensions (short, medium or long) where more than one length is used.

4.4 Fourthly, for other than foot-mounted frames, a letter that indicates the type of mounting:

D for flange mounting

V for skirt mounting

C for face-flange mounting

P for pad mounting

NOTE This construction can also be used for rod mounting.

R for rod mounting

NOTE For example, a totally enclosed fan-ventilated motor of frame size 160M, suitable for flange mounting, is designated D160MD.

4.5 For machines with high shaft centres, a combination of two numbers *H/B*.

For machines with low shaft centres, a combination of three numbers *H/H'/B*.

Values should be selected from the appropriate tables in BS 4999-141.

5 Symbols for dimensions

Symbols for dimensions shall be as specified in Table 1.

Table 1 — Symbols for dimensions

Letter symbol	Dimension description
<i>A</i>	Distance between centre lines of fixing holes (end view)
<i>B</i>	Distance between centre lines of fixing holes (side view)
<i>C</i>	Distance from centre line of fixing holes at driving end to shaft shoulder
<i>D</i>	Diameter of shaft extension
<i>E</i>	Length of shaft extension from shoulder
<i>F</i>	Width of keyway
<i>G</i>	Distance from bottom of keyway to opposite side of shaft
<i>H</i>	Distance from centre line of shaft to bottom of feet
<i>H'</i>	Distance from the centre line of shaft to mounting surface, e.g. bottom of feet for machines with low shaft centres
<i>J</i>	Radius of circle to which mounting pads (or faces for rods) are tangent
<i>K</i>	Diameter of holes in the feet or mounting pads (or faces)
<i>L</i>	Overall length
<i>M</i>	Pitch circle diameter of fixing holes
<i>N</i>	Diameter of spigot
<i>P</i>	Outside diameter of flange
<i>R</i>	Distance from surface of mounting flange to shaft shoulder
<i>S</i>	Diameter of fixing holes in flange
<i>T</i>	Depth of spigot