

CONFIRMED
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Specification for

Dimensions of fractional horse-power motors —

**Part 1: Dimensions of motors for
general use**

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British Refrigeration Association	Machine Tool Trades Association
Engineer Surveyors' Association	
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Foreword

This standard make reference to the following British Standards:

BS 46, *Keys and keyways and taper pins — Part 1: Keys and keyways.*

BS 170, *Electrical performance of fractional horse-power electric motors and generators with class A insulation.*

BS 1083, *Precision hexagon bolts, screws and nuts.*

BS 1802, *Steel spring washers for general engineering and automobile purposes.*

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

This part of BS 2048, prepared under the authority of the Electrical Industry Standards Committee, revises and supersedes the 1953 edition, and includes a wider range of frame sizes.

The dimensions specified are those necessary to ensure that motors of different makes and of the same frame size complying with this specification, will be mechanically interchangeable, so far as shaft and mounting dimensions are concerned.

For all practical purposes and for common frames, the shaft and mounting dimensions are interchangeable with those laid down in that part of the (American) NEMA Standard MG1 — January 1959, dealing with general-purpose fractional horse-power motors. The exceptions are in the mounting dimensions for Frame 42 and in the dimensions for all flange-mounted motors.

NOTE Where metric equivalents are stated the figures in British units are to be regarded as the standard. The metric conversions are approximate. More accurate conversions should be based on the tables in BS 350, “*Conversion factors and tables*”.

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 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 specification applies to dimensions of fractional horse-power motors for general use with foot, flange or resilient-base mounting (with or without belt-tensioning devices), with sleeve or ball bearings.

The specification is applicable to the dimensions of single and polyphase a.c. motors and d.c. motors having enclosures in accordance with BS 170.¹⁾

NOTE Motors for particular applications will be specified in Part 2 of BS 2048 (in course of preparation).

2 Frame designation

All frames shall be designated by the letter "B" followed by a number to indicate the centre height in $\frac{1}{16}$ in (1.6 mm) units.

For motors other than plain foot-mounted motors, the designation shall have an additional suffix letter in accordance with Table 1 (e.g. B56C).

Rating plates of motors shall be marked with the appropriate frame designation.

Table 1 — Suffix letters

Description	Suffix letter
Foot-mounted motor	—
Motor with resilient mounting	A
Motor with resilient-base mounting and belt-tensioning device	B
Flange-mounted motor without feet, provided with tapped holes in the flange	C
Flange-mounted motor without feet, provided with clearance holes in the flange	D
Foot-mounted motor provided with a mounting flange having tapped holes	E
Foot-mounted motor provided with a mounting flange having clearance holes	F
NOTE The relationship between frame size and output is not standardized because of the variety of types of supply (single and three-phase a.c., d.c., etc.) ratings and types of enclosures.	

3 Letter symbols

Letter symbols to indicate various dimensions are given in Table 2.

Symbols relating to standardized dimensions are given in Column 1 of Table 2 and these dimensions are shown ringed in Figure 1 and Figure 2.

Symbols relating to dimensions that are not standardized are given in Column 2 of Table 2. These dimensions are shown unringed in Figure 1 and Figure 2 and are included to facilitate and standardize the preparation and presentation of dimensional drawings.

4 Dimensions, tolerances and limits

Dimensions shall be as laid down in Table 3A or Table 4A as appropriate. The dimensions are nominal except as indicated below and in the tables.

a) *Shaft centre height*: dimension *D*:

tolerance for foot-mounted motors	plus 0 minus $\frac{1}{16}$ in (1.6 mm)
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tolerance for resilient-base mounted motors, other than those fitted with belt-tensioning devices	plus 0 minus $\frac{1}{16}$ in (1.6 mm)
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For resilient-base mounted motors fitted with belt-tensioning devices, dimension *D* is not standardized.

b) *Useful available length of shaft*: for resilient-base mounted motors fitted with belt-tensioning devices, the value of dimension *V* may be reduced by a maximum of $\frac{1}{8}$ in (3.2 mm).

c) *Flange spigot diameter*: dimension *AK*:
tolerance: plus 0.000 in to
minus 0.003 in (0.08 mm).

d) *Flange spigot eccentricity*: eccentricity with respect to the shaft not to exceed 0.004 in (0.10 mm) total indicator reading.

e) *Permissible run-out*: axial run-out of flange face with respect to shaft axis not to exceed 0.004 in (0.10 mm) total indicator reading.

¹⁾ BS 170, "Electrical performance of fractional horse-power electric motors and generators with Class A insulation".