
British Standard

General requirements for rotating electrical machines

Part 108. Specification for terminal markings and
direction of rotation

Règles générales pour les machines électriques tournantes
Partie 108. Marques d'extrémités et sens de rotation — Spécifications

Allgemeine Anforderungen an umlaufende elektrische Maschinen
Teil 108. Kennzeichnung von Anschlüssen und Drehrichtung

Foreword

This Part of BS 4999 has been prepared under the direction of the Power Electrical Engineering Standards Committee and supersedes BS 4999 : Part 3 : 1981, which is withdrawn.

This Part of BS 4999 implements CENELEC* Harmonization Document HD 53.8.S3, which includes a Common Modification and some Common Additions to the Reference Document, Publication 34 Part 8 (1972) of the International Electrotechnical Commission. The differences between this Part and BS 4999 : Part 3 : 1981 are as follows:

- (1) The CENELEC Common Modification has been added. This consists of the addition of four paragraphs to 5.1.
- (2) An appendix A has been added to give a tabular presentation of the requirements in 5.1.
- (3) The Part number has not been included in the point numbering system as in BS 4999 : Part 3.

The terminal markings specified in this Part of BS 4999 supersede those in BS 822 : Part 6 for all machines except small power motors and generators of sizes covered by BS 5000 : Part 11, for which either system of terminal marking may be used. It is intended ultimately that terminal markings of all small motors and generators will be brought into line with this Part of BS 4999, so that BS 822 : Part 6 can eventually be withdrawn.

Attention is drawn to an important change in British practice specified in 6.3, which is in accordance with general practice within Europe. Where there is technically a choice of connections between those terminals to be connected to the supply and those to be bridged to form a common point, the supply terminals should have the lower suffix (e.g. 1) and the bridged terminals the higher suffix (e.g. 2).

Compliance with a British Standard does not of itself confer immunity from legal obligations.



Amendment No. 1
published and effective from 30 November 1990
to BS 4999 : Part 108 : 1987

General requirements for rotating electrical machines
Part 108. Specification for terminal markings and
direction of rotation

NOTE. This amendment is being published to effect the implementation of Amendment 1 to CENELEC HD 53.8.S3.

Revised text

AMD 6528
November 1990

Front cover

Underneath the title insert the following: '(Implementation of CENELEC HD 53.8.S3 and Amendment 1)'.

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November 1990

Foreword

Delete paragraph 2 and substitute the following.

'This Part of BS 4999 implements CENELEC* Harmonization Document HD 53.8.S3 and Amendment 1, which includes a Common Modification and some Common Additions to the Reference Document, Publication 34 Part 8 (1972) of the International Electrotechnical Commission. The differences between this Part and BS 4999 : Part 3 : 1987 are as follows.

- (1) The CENELEC Common Modification has been added. This consists of additional paragraphs to 5.1.
- (2) The Part number has not been included in the point numbering system as in BS 4999 : Part 3.'

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November 1990

Contents

In the entry for appendix A delete '(Untitled)' and substitute '(Text deleted)'.
Delete the entry under the heading 'Table' and substitute 'A1 (Table deleted)'.

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Clause 5.1 A.C. poly-phase machines (without commutator)

Delete paragraph 4.
Delete the note.

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Appendix A

Delete appendix A and table A1, and substitute the following:
'Appendix A. Text deleted'.

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Specification

0 Introduction

This Part of BS 4999, as far as it deals with terminal markings, is based on the following marking principles:

- (a) Windings are distinguished by a (capital) letter (e.g. U, V, W).
- (b) End points and intermediate points of a winding are distinguished by a numerical suffix to the winding letter (e.g. U1, U2, U3).
- (c) Similar windings of a group having the same winding letters are distinguished by a numerical prefix to the winding letter (e.g. 1U, 2U).
- (d) Winding letters for d.c. windings are chosen from the first part of the alphabet and winding letters for a.c. windings from the second part of the alphabet.

This Part of BS 4999 deals with 'external' terminals, i.e. terminals at the disposal of the user for connection of the machine with the supply and with other apparatus and for other use. It can be applied to internal terminals also, the more so as the inherent logic of the system makes extension to almost any case possible.

If no confusion is possible, the prefix or the suffix or both may be omitted.

It is obvious that this Part of BS 4999 does not cover all cases in detail; it makes it possible, however, to deal with cases not specifically mentioned in the text.

1 Scope

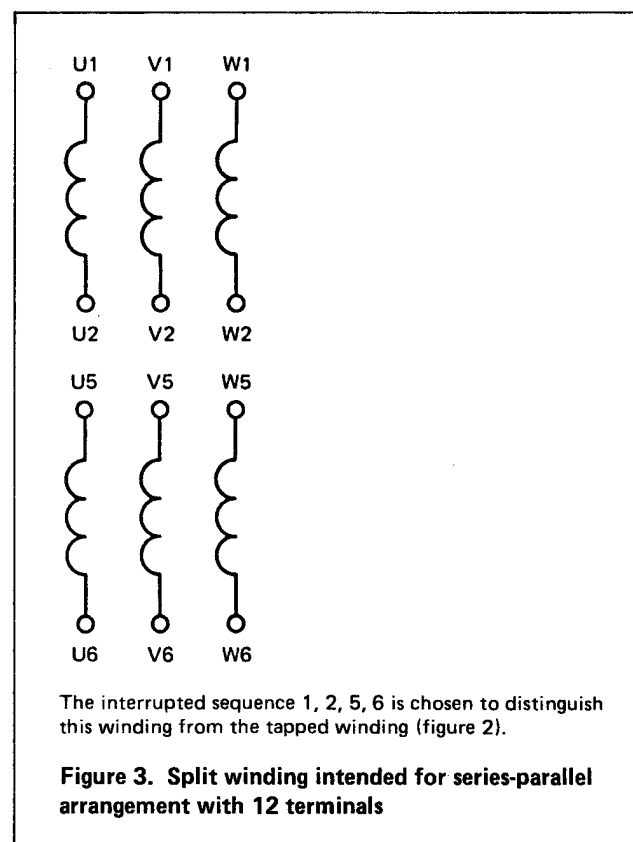
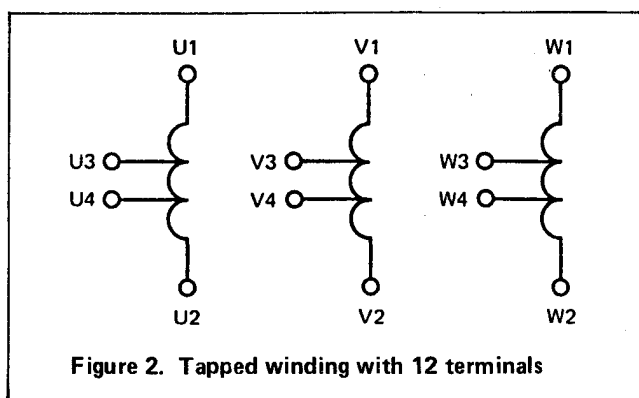
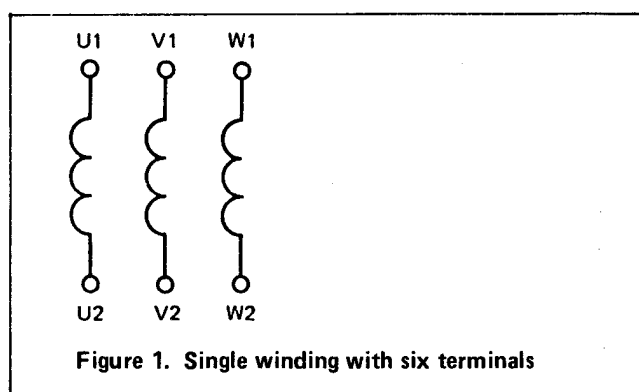
This Part of BS 4999 concerns a.c. machines without commutator and d.c. commutator machines and deals with:

- (a) terminal markings;
- (b) direction of rotation;
- (c) relation between terminal markings and direction of rotation.

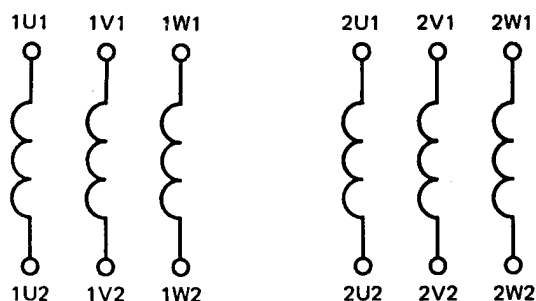
NOTE. The titles of the publications referred to in this standard are listed on page 17.

2 Terminal markings of a.c. machines (excluding a.c. commutator machines)

2.1 The terminals of three-phase stator* windings of synchronous and asynchronous machines shall be marked as illustrated in figures 1 to 9.



* It is supposed that the primary winding is on the stator. If the primary winding is on the rotor, the letters U, V, W, are applied to the rotor winding, the letters K, L, M, Q to the stator winding.



When used in change-pole motors with two separate windings for two speeds, the lower (higher) numerical prefix shall indicate the lower (higher) speed.

Figure 4. Pair of separate windings not intended for series-parallel arrangement, each with six terminals

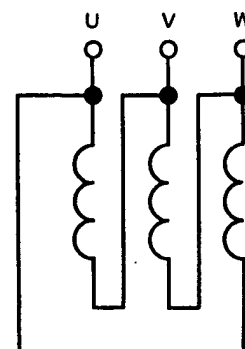


Figure 5. Delta connection with three terminals

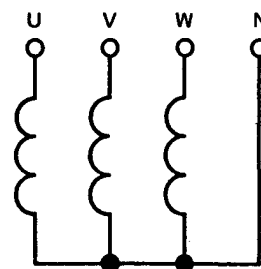
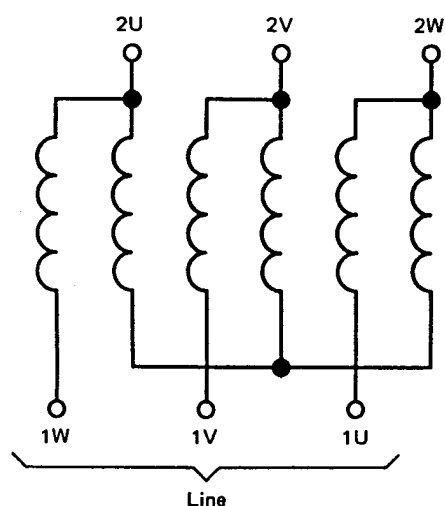
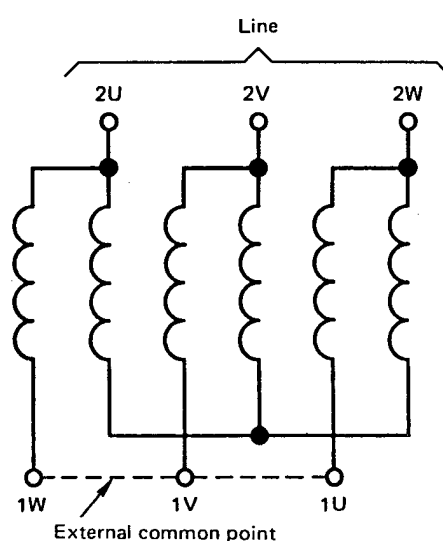


Figure 6. Star connection with four terminals



Low speed:
1W, 1V, 1U connected with supply.
Winding connection: series star.



High speed:
2U, 2V, 2W connected with supply,
1W connected to 1V and 1U.
Winding connection: parallel star.

The lower (higher) numerical prefix shall indicate the supply terminals for the lower (higher) speed.
The relation between direction of rotation and alphabetical sequence of the terminal letters given in 5.1 is valid for both speeds.

Figure 7. Two-speed winding with six terminals