IEC 60136

Edition 3.0 2024-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Dimensions, marking and testing of carbon brushes and dimensions of brush-holders for electrical machinery

Dimensions, marquages et essais des balais et dimensions des porte-balais pour machines électriques

IEC 60136:2024-05(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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DIMENSIONS, MARKING AND TESTING OF CARBON BRUSHES AND DIMENSIONS OF BRUSH-HOLDERS FOR ELECTRICAL MACHINERY

FOREWORD

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IEC 60136 has been prepared by IEC technical committee TC 2: Rotating machinery. It is an International Standard.

This third edition cancels and replaces the second edition published in 1986 and Amendment 1:1995. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

Title: modified.

Clause or subclause	Previous clause	Change
1	I-1	Clarification and extension of the scope.
2	None	New clause introduced.
3	None	New clause introduced.
4	I-4 and II-7.5	Addition of units and extension of marking.
5.1	I-2	Addition of cylindrical and wedge-shape brushes.
5.2	I-3	Distinction of dimensions between t, a and r.
6.1	II-7.1	Revision of the chamfer dimension table and addition of non-reversing chamfer.
6.2	II-7.2	Revision of angles dimensions and addition of typical combination of angles.
6.4	II-7.4	Clarification of the definition of the depth of insertion and modification of maximum values.
6.5	None	New subclause introducing the concept of residual material width.
7.1.2	II-8.7	Change of definition of flexibles area and diameter.
7.1.4	None	Addition of flexible protection.
7.2	II-8.1 to II-8.5	Clarification. Addition of other types of terminals.
8	Annex C	Clarification of the method of measurement of electrical resistance and addition of graphical method.
9.2 and 9.3	Clause A.3	Brush holder: Separation of Dimensions and Control of brush box in two different subclauses.
Annex A	None	Compilation of tables with inches dimensions from the previous edition.
Annex B	None	Addition of recommended dimensions for metal-graphite grades.
Annex C	None	Explanation of stability of brushes (linked to 6.2).
Annex D	II-8.7	Addition of examples of configuration of flexibles.
Annex E	None	Addition of recommended standardization of flexibles' location
Annex F	Annex D and II-8.8	Link between the thickness of terminals and the screw diameter.
Annex G	Annex B	Simplification of the questionnaire, to include only elements defined in this document.

The text of this International Standard is based on the following documents:

Draft	Report on voting
2/2180/FDIS	2/2189/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
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DIMENSIONS, MARKING AND TESTING OF CARBON BRUSHES AND DIMENSIONS OF BRUSH-HOLDERS FOR ELECTRICAL MACHINERY

1 Scope

This document applies primarily to brushes and brush-holders for cylindrical commutators and slip rings for electrical rotating machines. Some clauses of this document may cover other configurations, such as flat commutators or plain disks.

It defines the dimensions of brushes and their components, together with their tolerances:

– dimensions of brush block (t, a, r),

– angles α and β,

– chamfer,

– flexibles (shunts),

– standard terminals.

It also covers the conventional designation of principal dimensions, the marking of brushes and the testing methods for the qualification of brushes after their manufacturing (except the brush grade material, covered by IEC 60413).

And finally, it specifies dimensions of the brush-holders that are linked to brushes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60276:2018, *Carbon brushes, brush holders, commutators and slip-rings – Definitions and nomenclature*

IEC 60560, *Definitions and terminology of brush-holders for electrical machines*

ISO 129-1, *Technical product documentation (TPD) – Presentation of dimensions and tolerances – Part 1: General principles*

ISO 197-1:1983, *Copper and copper alloys – Terms and definitions – Part 1: Materials*

ISO 286-2:2010, *Geometrical product specifications (GPS) – ISO code system for tolerances on linear sizes – Part 2: Tables of standard tolerance classes and limit deviations for holes and shafts*