



JAPANESE  
INDUSTRIAL  
STANDARD

Translated and Published by  
Japanese Standards Association

---

---

JIS C 2802 : 2003  
(JCA/JSA)

**Dimensions of brushes for electric  
machines**

---

ICS 29.160.10

Reference number : JIS C 2802 : 2003 (E)

## Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Carbon Association (JCA) / Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS C 2802:1984** is replaced with this Standard.

This revision has been made based on **IEC 60136:1986**, *Dimensions of brushes and brush-holders for electrical machinery* and Amendment:1995 for the proposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to purpose a draft of an International Standard which is based on Japanese Industrial Standard. Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

Date of Establishment: 1952-11-25

Date of Revision: 2003-12-20

Date of Public Notice in Official Gazette: 2003-12-22

Investigated by: Japanese Industrial Standards Committee  
Standards Board

Divisional Council on Electricity  
Technology

---

JIS C 2802 :2003, First English edition published in 2004-07

Translated and published by: Japanese Standards Association  
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

---

In the event of any doubts arising as to the contents,  
the original JIS is to be the final authority.

© JSA 2004

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan (HB)

## Contents

	Page
Introduction .....	1
1 Scope .....	1
2 Normative references .....	1
3 Definitions .....	1
4 Dimensions .....	3
4.1 Thickness, width and length .....	3
4.2 Limits and tolerances on thickness, width and length .....	6
4.3 Chamfer dimensions .....	7
4.4 Angles for contact and top bevels .....	7
4.5 Pressure area .....	8
4.6 Depth of insertion $q$ of the flexible (shunt) in the brush .....	9
4.7 Safe length of a worn brush .....	11
5 Flexible .....	11
5.1 Length of flexibles .....	11
5.2 Tolerances on lengths .....	12
5.3 Constitution .....	12
5.4 Connections .....	12
6 Terminals .....	13
6.1 Shapes and designation .....	13
6.2 Dimensions and tolerances .....	15
Annex 1 (informative) Connection of flexibles and shape of brushes .....	16
Annex 2 (informative) Comparison Table between JIS and corresponding International Standard .....	20

## Dimensions of brushes for electric machines

**Introduction** This Japanese Industrial Standard has been prepared based on the second edition of **ISO 60136**, *Dimensions of brushes and brush-holders for electrical machinery* and Amendment:1995 originally published in 1986 but with modifications to some technical contents.

Portions given sidelines or dotted underlines with dots are the matters modified from the original International Standard. The list of modification with its explanation is given in annex 2 (informative).

**1 Scope** This Standard specifies dimensions of brushes for electrical machinery (hereafter referred to as “brushes”), to be used for cylindrical commutators or slip rings and internal dimensions of brush-holders.

Remarks : The International Standard corresponding to this Standard is as follows:

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

**IEC 60136:1986**, *Dimensions of brushes and brush-holders for electrical machinery* and Amendment 1:1995 (MOD)

**2 Normative references** The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS C 3102 *Annealed copper wires for electrical purposes*

JIS C 3103 *Annealed copper wires for winding wires*

JIS C 3664 *Conductors of insulated cables*

Remarks : **IEC 60228:1978** *Conductors of insulated cables* is identical with the said standard.

JIS H 3100 *Copper and copper alloy sheets, plates and strips*

**3 Definitions** For the main terms used in this Standard, the following definitions apply :

- a) **name of part** For the purpose of brushes, the thickness, width, length, top face, contact face, side face, split interface, contact bevel, top bevel, R in contact face, pressure area, neck and edge refer to those illustrated in figures 1 to 6.

In which, figures 1 to 3 represent brushes for commutator and figure 4, a brush for slip ring. The contact and top bevels are shown in figures 8.1 and 8.2 and figures 9 to 10 respectively. Figures 11 and 12 describe the pressure area.

The dimensions of brushes, where these are to be indicated, shall be stated in the sequence of “thickness × width × length”, and for a split brush, the effect shall be appended.