

Switches for household and similar fixed electrical installations —

Part 2-4: Particular requirements — Isolating switches

The European Standard EN 60669-2-4:2005 has the status of a
British Standard

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National foreword

This British Standard is the official English language version of EN 60669-2-4:2005. It was derived by CENELEC from IEC 60669-2-4:2005. The CENELEC common modifications have been implemented at the appropriate places in the text and are indicated by tags [C] <C>. The UK participation in its preparation was entrusted to Technical Committee PEL/23, Electrical accessories, which has the responsibility to:

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- monitor related international and European developments and promulgate them in the UK.

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Switches for household and similar fixed electrical installations
Part 2-4: Particular requirements -
Isolating switches
(IEC 60669-2-4:2004, modified)

Interrupteurs pour installations électriques
fixes domestiques et analogues
Partie 2-4: Prescriptions particulières -
Interrupteurs-sectionneurs
(CEI 60669-2-4:2004, modifiée)

Schalter für Haushalt und ähnliche
orts feste elektrische Installationen
Teil 2-4: Besondere Anforderungen -
Trennschalter
(IEC 60669-2-4:2004, modifiziert)

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of the International Standard IEC 60669-2-4:2004, prepared by SC 23B, Plugs, socket-outlets and switches, of IEC TC 23, Electrical accessories, together with the common modifications prepared by the Technical Committee CENELEC TC 23B, Switches for household and similar fixed electrical installations, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60669-2-4 on 2004-10-01.

This European Standard shall be used in conjunction with EN 60669-1:1999. It lists the changes necessary to convert that standard into a specific standard for isolating switches.

The following dates were fixed:

- | | | |
|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2005-10-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2007-10-01 |

Annexes ZA and ZB have been added by CENELEC.

CONTENTS

1	Scope.....	5
2	Normative references	5
3	Definitions	5
4	General requirements	6
5	General notes on tests	6
6	Ratings.....	6
7	Classification.....	7
8	Marking	7
9	Checking of dimensions.....	8
10	Protection against electric shock	8
11	Provision for earthing	8
12	Terminals	8
13	Constructional requirements	12
14	Mechanism	13
15	Resistance to ageing, protection provided by enclosures of switches and resistance to humidity.....	14
16	Insulation resistance and electric strength	14
17	Temperature rise	15
18	Making and breaking capacity	16
19	Normal operation	20
20	Mechanical strength	20
21	Resistance to heat.....	20
22	Screws, current-carrying parts and connections.....	21
23	Creepage distances, clearances and distances through sealing compound	21
24	Resistance of insulating material to abnormal heat, to fire and to tracking	21
25	Resistance to rusting.....	21
26	EMC requirements.....	21
	Annex A (normative) Survey of specimens needed for tests	29
	Annex B (normative) Additional requirements for switches having facilities for the outlet and retention of flexible cables	30
	Annex AA (informative) Determination of short-circuit power factor	31
	Annex BB (informative) SCPDs for short-circuit tests	33
	Annex ZA (normative) Normative references to international publications with their corresponding European publications	35
	Annex ZB (normative) Special national conditions	36

Figure 101 – Test circuit for verification of the short circuit withstand capability with a SCPD of one-pole isolating switch	23
Figure 102 – Test circuit for verification of the short circuit withstand capability with a SCPD of a two-pole isolating switch	24
Figure 103 – Test circuit for verification of the short circuit withstand capability with a SCPD of a three-pole isolating switch	25
Figure 104 – Test circuit for verification of the short circuit withstand capability with a SCPD of a four-pole isolating switch	26
Figure 105 – Test apparatus for verification of the minimum I^2t and I_p values to be withstood by the isolating switch	27
Table 2 – Relationship between rated currents and connectable cross-sectional areas of copper conductors for screw-type terminals	8
Table 3 – Tightening torque for verification of the mechanical strength of screw-type terminals	9
Table 4 – Test values for flexion and pull out for copper conductors	10
Table 5 – Test values for pulling out test	10
Table 6 – Composition of conductors	11
Table 7 – Relationship between rated currents and connectable cross-sectional areas of copper conductors for screwless terminals	11
Table 8 – Test current for the verification of electrical and thermal stresses in normal use of screwless terminals	11
Table 9 – Cross-sectional areas of rigid copper conductors for deflection test of screwless terminals	12
Table 10 – Deflection test forces	12
Table 12 – External cable diameter limits for surface type switches	13
Table 101 – Test voltage across the open contacts for verifying the suitability for isolation, referred to the rated voltage of the isolating switch and to the altitude where the test is carried out	15
Table 15 – Temperature-rise test currents and cross-sectional areas of copper conductors	15
Table 102 – Minimum values of I^2t and I_p	17
Table 103 – Power factors for short-circuit tests	18
Table 17 – Number of operations for normal operation test	20
Table BB.1 – Indication of silver wire diameters as a function of rated currents and short-circuit currents	33

1 Scope

This clause of Part 1 applies except as follows.

Replacement of the first paragraph:

This part of IEC 60669 applies to manually operated general purpose isolating switches with a rated voltage not exceeding 440 V and a rated current not exceeding 125 A, intended for household and similar fixed electrical installations, either indoors or outdoors.

NOTE Isolating switches are designed for overvoltage category III and used in environment of pollution degree 2 according to IEC 60664-1.

2 Normative references

This clause of Part 1 applies except as follows.

Addition:

IEC 61180-1:1992, *High-voltage test techniques for low voltage equipment – Part 1: Definitions, test and procedure requirements*

NOTE Normative references to international publications with their corresponding European publications are listed in Annex ZA. 

3 Definitions

This clause of Part 1 applies except as follows.

Additional definitions:

3.101

isolating switch

switch designed to provide isolation of the installation or part of the installation and equipment from the supply and to carry and to make and break the current in all line current carrying poles

3.102

conditional short-circuit current

I_{nc}

value of the a.c. component of a prospective current, which a switch without integral short-circuit protection, but protected by a suitable short-circuit protective device (hereinafter referred to as SCPD) in series, can withstand under specified conditions of use and behaviour

3.103 **I^2t** integral of the square of the current over a given time interval (t_0 , t_1)

$$I^2t = \int_{t_0}^{t_1} i^2 dt$$

4 General requirements

This clause of Part 1 applies.

5 General notes on tests

This clause of Part 1 applies except as follows.

5.4 Addition:

For the test of 18.101 three additional specimens are used.

6 Ratings

This clause of Part 1 applies except as follows.

6.2 Modification:

In the first paragraph, delete the values "6 A" and "10 A" and add the values "80 A, 100 A and 125 A."

Additional note:

NOTE See Annex ZB for special national conditions.

Additional subclause:

6.101 Standard and preferred values of the conditional short-circuit current (I_{nc})

NOTE The associated power-factors are specified in Table 103.

6.101.1 Values up to and including 10 000 A

The standard values of the conditional short-circuit current (I_{nc}) are:

1 500 A, 3 000 A, 4 500 A, 6 000 A and 10 000 A.

6.101.2 Values above 10 000 A

The preferred values are:

15 000 A, 20 000 A and 25 000 A.

Values above 25 000 A are not considered by this standard.

7 Classification

This clause of Part 1 applies except as follows.

7.1.1 Addition:

Isolating switches shall be only of pattern numbers 1, 2, 3 or 03.

7.1.2 This subclause of Part 1 is not applicable.

7.1.6 Addition:

- rail type

7.2 Replacement in Table 1, first column, last line, of the values “16, 20, 25, 32, 40, and 63” by “equal and above 16”.

8 Marking

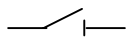
This clause of Part 1 applies except as follows.

8.1 Addition:

- symbols for open position (OFF) and closed position (ON),
- symbol for isolating function,
- rated conditional short-circuit current (I_{nc}).

The manufacturer shall provide reference(s) of one or more short circuit protection devices (SCPDs) in his catalogue and/or in the instructions which are provided with the isolating switch.

8.2 Addition:

- isolating function 
- rated conditional short-circuit current I_{nc}

8.3 Addition

Isolating switches shall be marked with the symbols for isolating function and for the closed and open position. These markings shall be visible from the front after installation, even after removal of the front cover of the enclosure when the isolating switch is mounted and wired as in normal use. The isolating symbol may be included in a wiring diagram even combined with symbols of other functions, provided that it is visible from the front under the conditions specified before.

The marking for the rated conditional short-circuit current (I_{nc}) shall be on the isolating switch or in the manufacturer's published literature.

8.6 Replacement of the first sentence of the first paragraph

Isolating switches shall be so marked that the actual contact position is clearly indicated.

Deletion of Note 1.

9 Checking of dimensions

This clause of Part 1 applies.

10 Protection against electric shock

This clause of Part 1 applies except as follows.

10.3 Replacement of the first two lines:

Accessible parts of isolating switches shall be made of insulating material, with the exception of the following:

11 Provision for earthing

This clause of Part 1 applies.

12 Terminals

This clause of Part 1 applies except as follows.

Replacement of Table 2:

Table 2 – Relationship between rated currents and connectable cross-sectional areas of copper conductors for screw-type terminals

Ranges of rated currents A	Rigid conductors (solid or stranded) ^a	
	Nominal cross-sectional areas mm ²	Diameter of largest conductor mm
16 ^b	From 1,5 up to 4 inclusive	2,72
Above 16 up to and including 25	From 2,5 up to 6 inclusive	3,34
Above 25 up to and including 32	From 4 up to 10 inclusive	4,34
Above 32 up to and including 50	From 6 up to 16 inclusive	5,46
Above 50 up to and including 80	From 10 up to 25 inclusive	6,85
Above 80 up to and including 100	From 16 up to 35 inclusive	7,90
Above 100 up to and including 125	From 25 up to 50 inclusive	9,10
^a The use of flexible conductors is permitted. ^b Each supply terminal of isolating switches, other than those of pattern numbers 3 and 03, shall allow the connection of two 2,5 mm ² conductors. For isolating switches having a rated voltage not exceeding 250 V a round hole is sufficient for the connection of two 2,5 mm ² conductors.		

NOTE See Annex ZB for special national conditions.

12.2.5 Replacement of Table 3:

Table 3 – Tightening torque for verification of the mechanical strength of screw-type terminals

Nominal diameter of thread mm	Torque Nm				
	1	2	3	4	5
Up to and including 1,6	0,05	–	0,1	0,1	–
Above 1,6 up to and including 2,0	0,1	–	0,2	0,2	–
Above 2,0 up to and including 2,8	0,2	–	0,4	0,4	–
Above 2,8 up to and including 3,0	0,25	–	0,5	0,5	–
Above 3,0 up to and including 3,2	0,3	–	0,6	0,6	–
Above 3,2 up to and including 3,6	0,4	–	0,8	0,8	–
Above 3,6 up to and including 4,1	0,7	1,2	1,2	1,2	1,2
Above 4,1 up to and including 4,7	0,8	1,2	1,8	1,8	1,8
Above 4,7 up to and including 5,3	0,8	1,4	2,0	2,0	2,0
Above 5,3 up to and including 6,0	1,2	1,8	2,5	3,0	3,0
Above 6,0 up to and including 8,0	2,5	2,5	3,5	6,0	4,0
Above 8,0 up to and including 10,0	–	3,5	4,0	10,0	6,0
Above 10,0 up to and including 12,0	–	4,0	–	–	8,0
Above 12,0 up to and including 15,0	–	5,0	–	–	10,0

NOTE 1 Column 1 applies to screws without heads if the screw when tightened does not protrude from the hole, and to other screws which cannot be tightened by means of a screwdriver with a blade wider than the diameter of the screw.

Column 2 applies to nuts of mantle terminals which are tightened by means of a screwdriver.

Column 3 applies to other screws which are tightened by means of a screwdriver.

Column 4 applies to nuts of mantle terminals in which the nut is tightened by means other than a screwdriver.

Column 5 applies to screws or nuts, other than nuts of mantle terminals, which are tightened by means other than a screwdriver.

Where a screw has a hexagonal head with a slot for tightening with a screwdriver and the values of columns 3 and 5 are different, the test is made twice, first applying to the hexagonal head the torque specified in column 5 and then applying the torque specified in column 3 by means of a screwdriver. If the values of columns 3 and 5 are the same, only the test with the screwdriver is made.

NOTE 2 For mantle terminals the specified nominal diameter is that of the slotted stud.

NOTE 3 The shape of the blade of the test screwdriver should suit the head of the screw to be tested.

NOTE 4 The screws and nuts should not be tightened in jerks.

Replacement of Table 4:

Table 4 – Test values for flexion and pull-out for copper conductors

Conductor cross-sectional area ^a mm ²	Diameter of bushing hole ^b mm	Height <i>H</i> ^c mm	Mass for conductor kg
1,5	6,5	260	0,4
2,5	9,5	280	0,7
4,0	9,5	280	0,9
6,0	9,5	280	1,4
10,0	9,5	280	2,0
16,0	13,0	300	2,9
25,0	13,0	300	4,5
35	14,5	320	6,8
50	16	340	9,5
^a AWG sizes corresponding to mm ² can be found in IEC 60999. ^b If the bushing hole diameter is not large enough to accommodate the conductor without binding, a bushing having the next larger hole size may be used. ^c Tolerance for height <i>H</i> = ±15 mm.			

NOTE See Annex ZB for special national conditions.

12.2.6 Replacement of Table 5:

Table 5 – Test values for pulling out test

Cross-sectional area of conductors accepted by the terminal mm ²	From 1,5 up to 2,5 inclusive	From 2,5 up to 4 inclusive	From 4 up to 6 inclusive	From 6 up to 10 inclusive	From 10 up to 16 inclusive	From 16 up to 25 inclusive	From 25 up to 35 inclusive	From 35 up to 50 inclusive
Pull N	50	50	60	80	90	100	190	235

NOTE See Annex ZB for special national conditions.