IEC 61058-2-1

Edition 3.0 2018-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Switches for appliances –
Part 2-1: Particular requirements for cord switches

Interrupteurs pour appareils –
Partie 2-1: Exigences particulières pour les interrupteurs pour câbles souples

IEC 61058-2-1:2018-06(en-fr)

Documents
Document Sharing Hub
Full document details: IEC 61058-2-1 2018

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2018 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, 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 either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue
The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,…). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org
The world's leading online dictionary of electronic and electrical terms containing 21 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

A propos de l'IEC
La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC
Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue
Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - webstore.iec.ch/advsearchform

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,…). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient 21 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary
67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

Documents
Document Sharing Hub

Full document details: IEC 61058-2-1 2018

IEC 61058-2-1

Edition 3.0 2018-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Switches for appliances –
Part 2-1: Particular requirements for cord switches

Interrupteurs pour appareils –
Partie 2-1: Exigences particulières pour les interrupteurs pour câbles souples

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.120.40

ISBN 978-2-8322-5812-5

Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

® Registered trademark of the International Electrotechnical Commission
Marque déposée de la Commission Electrotechnique Internationale

Documents
Document Sharing Hub

Full document details: IEC 61058-2-1 2018

CONTENTS

FOREWORD 3
1 Scope 5
2 Normative references 5
3 Terms and definitions 6
4 General requirements 6
5 General information on tests 6
6 Rating 6
7 Classification 7
8 Marking and documentation 8
9 Protection against electric shock 8
10 Provision for earthing 9
11 Terminals and terminations 9
12 Construction 9
13 Mechanism 15
14 Protection against ingress of solid foreign objects, ingress of water and humid conditions 15
15 Insulation resistance and dielectric strength 15
16 Heating 15
17 Endurance 15
18 Mechanical strength 15
19 Screws, current-carrying parts and connections 16
20 Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies 17
21 Fire hazard 17
22 Resistance to rusting 17
23 Abnormal operation and fault conditions for switches 17
24 Components for electronic switches 17
25 EMC requirements 17
Annexes 23

Figure 101 – Pull apparatus for testing the cord anchorage 18
Figure 102 – Apparatus for flexing test 19
Figure 103 – Tumbling barrel 20
Figure 104 – Torque apparatus for testing the cord anchorage 21
Figure 105 – Example of insulation system for a single-pole cord switch 22

Table 3 – Switch information and loads placed in groups 8
Table 4 – Resistive current carried by the terminal and related cross-sectional areas of terminals for unprepared conductors 9
Table 101 – Rated currents for resistor loads and related type of cords 11
Table 102 – Size of conductor 14
Table 103 – Torque values for insulating material screws 17

Documents
Document Sharing Hub
Full document details: IEC 61058-2-1 2018

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SWITCHES FOR APPLIANCES –

Part 2-1: Particular requirements for cord switches

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61058-2-1 has been prepared by subcommittee 23J: Switches for appliances, of IEC technical committee 23: Electrical accessories.

This third edition cancels and replaces the second edition published in 2010 and constitutes a technical revision.

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

Overall format to support IEC 61058-1, IEC 61058-1-1, IEC 61058-1-2, and the heating tests.

Documents
Document Sharing Hub

Full document details: IEC 61058-2-1 2018

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

CDV	Report on voting
23J/432/CDV	23J/439/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This document is to be read in conjunction with IEC 61058-1:2016.

This document supplements or modifies the corresponding clauses in IEC 61058-1, so as to convert that publication into the IEC standard: *Particular requirements for cord switches*.

When a particular subclause of IEC 61058-1 is not mentioned in this document, that subclause applies as far as reasonable. Where this document states "addition", "modification" or "replacement", the relevant text of IEC 61058-1 is to be adapted accordingly.

In this standard:

1) the following print types are used:
   - requirements proper: in roman type;
   - *test specifications: in italic type*;
   - explanatory matter: in smaller roman type.
2) subclauses, notes, figures and tables which are additional to those in IEC 61058-1 are numbered starting from 101.

A list of all parts in the IEC 61058 series, published under the general title *Switches for appliances*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

Documents
Document Sharing Hub

Full document details: IEC 61058-2-1 2018

SWITCHES FOR APPLIANCES –

Part 2-1: Particular requirements for cord switches

1 Scope

Clause 1 of IEC 61058-1:2016 is applicable except as follows:

Addition:

This document applies to cord switches (mechanical or electronic) for appliances actuated by hand, by foot or by other human activity, to operate or control electrical appliances and other equipment for household or similar purposes with a rated voltage not exceeding 250 V and a rated current not exceeding 16 A.

Throughout this document, the word "appliance" means "appliance or equipment".

These switches are intended to be operated by a person, via an actuating member or by actuating a sensing unit. The actuating member or sensing unit can be integral or arranged separately from the switch. The transmission of a signal between the actuating member or sensing unit and the switch can be made either physically or electrically (for example, electrical, optical, acoustic or thermal).

Switches which incorporate additional control functions governed by the switch function are within the scope of this document.

This document also covers the indirect actuation of the switch when the operation of the actuating member or sensing unit is provided by a remote control or a part of an appliance such as a door.

NOTE 1 Electronic switches can be combined with mechanical switches giving full disconnection or micro-disconnection.

NOTE 2 Electronic switches without a mechanical switch in the supply circuit provide only electronic disconnection. Therefore, the circuit on the load side is always considered to be live.

NOTE 3 For switches used in tropical climates, additional requirements can apply.

NOTE 4 Attention is drawn to the fact that the standards for appliances can contain additional or alternative requirements for switches.

2 Normative references

Clause 2 of IEC 61058-1:2016 is applicable except as follows:

Addition:

IEC 60227 (all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V*

IEC 60227-5, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 5: Flexible cables (cords)*

IEC 60245 (all parts), *Rubber insulated cables – Rated voltages up to and including 450/750 V*

AVA Documents
Document Sharing Hub
Full document details: IEC 61058-2-1 2018

IEC 60335-2-17, *Household and similar electrical appliances – Safety – Part 2-17: Particular requirements for blankets, pads, clothing and similar flexible heating appliances*

IEC 61032, *Protection of persons and equipment by enclosures – Probes for verification*

IEC 61058-1:2016, *Switches for appliances – Part 1: General requirements*

IEC 61058-1-2:2016, *Switches for appliances – Part 1-2: Requirements for electronic switches*

3 Terms and definitions

Clause 2 of IEC 61058-1:2016 is applicable except as follows:

3.3 Terms and definitions relating to the different types of switches

Addition:

3.3.101
cord switch
separately enclosed switch intended to be connected to a supply and/or to an appliance by means of a flexible cable(s)

Note 1 to entry: The flexible cable(s) may enter the switch enclosure in any direction and may be in line with the enclosure.

3.5 Terms and definitions relating to connections to the switch

Addition:

3.5.101
rewirable switch
switch in which the opening of the enclosure provides access to the terminals of the switch and external conductors can be replaced

3.5.102
non-rewirable switch
switch being so constructed that it forms a constructional unit with the flexible cable after connection and assembly, and such that the external conductors cannot be replaced without making the switch permanently inoperable

4 General requirements

Clause 4 of IEC 61058-1:2016 is applicable.

5 General information on tests

Clause 5 of IEC 61058-1:2016 is applicable.

6 Rating

Clause 6 of IEC 61058-1:2016 is applicable except as follows:

6.1 *Replacement:*

Documents
Document Sharing Hub

Full document details: IEC 61058-2-1 2018

The maximum rated voltage is 250 V.

Preferred values are 50 V, 130 V and 250 V. Rated voltages differing from the preferred values are allowed.

6.2 *Replacement:*

The maximum rated current is 16 A.

NOTE Preferred values are 1 A; 2 A; 2,5 A; 4 A; 6 A; 10 A; 16 A.

7 Classification

Clause 7 of IEC 61058-1:2016 is applicable except as follows:

Addition:

7.101 According to the connection to the switch

7.101.1 rewirable switch;

7.101.2 non-rewirable switch.

7.102 According to the means of suspension

7.102.1 with means of suspension;

7.102.2 without means of suspension.

7.103 According to the type of cord for which the switch is suitable

7.103.1 switches suitable for the connection of round cords;

7.103.2 switches suitable for the connection of flat cords only;

7.103.3 switches suitable for the connection of both round and flat cords.

7.22 According to the type of forced cooling

Subclause 7.22.2 of IEC 61058-1:2016 does not apply.

Documents
Document Sharing Hub

Full document details: IEC 61058-2-1 2018

8 Marking and documentation

Clause 8 of IEC 61058-1:2016 is applicable except as follows:

Table 3 – Switch information and loads placed in groups

Addition:

No	Characteristic	Subclause	Means of information	
			Common type reference CT	Unique type reference UT
5	**TERMINALS/CONDUCTORS**			
5.101	If a cord switch is non-rewirable, this shall be documented.	7.101.2	Documentation	Documentation
5.102	If a cord switch is suitable for use with flat cords only, this shall be documented.	7.103.2	Documentation	Documentation
101	**CATEGORY OR TYPE OF APPLIANCE WITH WHICH THE SWITCH MAY BE USED**			
101.1	Cord switch intended exclusively for controlling luminaries.		Documentation	Documentation
101.2	Category or type of appliance according to IEC 60335-2-17 with which the switch may be used.		Documentation	Documentation

Addition:

8.101 For cord switches intended exclusively for controlling luminaires, no "OFF" marking is required.

9 Protection against electric shock

Clause 9 of IEC 61058-1:2016 is applicable except as follows:

9.1 *Addition at the end of the subclause:*

For cord switches, the test is made when the switch is fitted with cords either of the smallest or of the largest nominal cross-sectional area specified in Table 4, whichever is more unfavourable.

9.1.2 *Replacement:*

9.1.2 If a cover or cover plate or a fuse can be removed without the use of a tool, the protection against contact with live parts shall be assured even after removal of the cover or cover plate.

If there is a marking on the outside of the switch showing that a fuse is inside and the cover or cover plate has to be removed with a tool, the protection against contact with live parts shall be assured even after removal of the cover or cover plate.

If there is no marking on the outside of the switch but the instruction sheet shows that a fuse is inside and the cover or cover plate has to be removed with a tool, either the protection against contact with live parts shall be assured even after removal of the cover or cover plate, or the instruction sheet shall state that the disconnection from the supply before opening shall be performed.

AVA Documents Document Sharing Hub

Full document details: IEC 61058-2-1 2018

Compliance is checked with the standard test finger, test probe B according to IEC 61032.

Addition:

9.101 Non-rewirable switches are tested with the cords as fitted by the manufacturer.

10 Provision for earthing

Clause 10 of IEC 61058-1:2016 is applicable except as follows:

10.1 *Addition:*

Terminals provided for earthing continuity are permitted if they are separated from live parts by basic insulation and from accessible parts by supplementary insulation. An example of the insulation system for earthing continuity is given in Figure 105.

10.3 Subclause 10.3 of IEC 61058-1:2016 does not apply.

Additional subclause:

10.101 The printed conductors of printed circuit boards may be used to provide earthing continuity under the following conditions:

– at least two tracks are used with independent soldering points and the switch complies with 10.4 for each track;
– the material of the printed circuit board consists of epoxide woven glass fabric copper-clad laminated sheet;
– the printed conductors withstand the short circuit test according to Clause 23 of IEC 61058-1-2:2016.

11 Terminals and terminations

Clause 11 of IEC 61058-1:2016 is applicable except as follows:

Replacement:

Table 4 – Resistive current carried by the terminal and related cross-sectional areas of terminals for unprepared conductors

Resistive current carried by the terminal A	Flexible conductors			
	Cross-sectional areas mm^2			Terminal size
	Minimum	Medium	Maximum	
Over 0 up to and including 3	–	0,5	0,75	–
Over 3 up to and including 6	0,5	0,75	1,0	0
Over 6 up to and including 16	0,75	1,0	1,5	1

12 Construction

Clause 12 of IEC 61058-1:2016 is applicable except as follows:

Documents
Document Sharing Hub
Full document details: IEC 61058-2-1 2018

12.1 Constructional requirements relating to protection against electric shock

12.1.2 *Addition:*

– *short rigid wires are not regarded as liable to come away from a terminal if they remain in position when the terminal screw is loosened.*

Additional subclause:

12.1.101 If solder terminals are classified according to 7.20.15, additional provisions for securing the conductors shall be provided.

12.3 Constructional requirements relating to the mounting of switches and to the attachment of cords

Additional subclauses:

12.3.101 Cord switches shall have cord anchorages such that the conductors are relieved from strain, including twisting, where they are connected to the terminals, and such that the sheath of the cord is protected from abrasion and kept in position.

12.3.102 It shall be clear how the relief from strain and the prevention of twisting is intended to be effected.

12.3.103 Makeshift methods such as tying the cord into a knot, or tying the ends with string shall not be used.

12.3.104 Cord anchorages of cord switches shall be of insulating material, or, if of metal, shall be insulated from accessible metal parts or accessible insulating surfaces by insulation complying with the requirements for supplementary insulation.

12.3.105 For rewirable cord switches, the cord anchorages shall be so designed that their parts do not fall out when the cover of the switch is removed even if the switches are not fitted with their cords.

12.3.106 Cord anchorages shall be so designed that:

– for any attachment method, the cord is not fixed by penetration of its insulation in such a way that the insulation of the cord is cut or otherwise significantly damaged;
– a soft deformation of the insulation in such a way that the insulation of the cord is not cut or otherwise significantly damaged is allowed;
– the cord cannot touch clamping screws of the cord anchorage if these screws are accessible or electrically connected to accessible metal parts;
– the cord is not clamped by a screw which bears directly on the cord, except where the screw is made of insulating material;
– for rewirable switches, at least one part is securely fixed to the switch;
– for rewirable switches, replacement of the cord does not require the use of a special purpose tool;
– for rewirable switches, they are suitable for the different types of cords which may be connected.

12.3.107 Cord anchorages for rewirable switches shall be so designed and located that replacement of the cord is easy.

Documents
Document Sharing Hub
Full document details: IEC 61058-2-1 2018

Compliance with the requirements of 12.3.101 to 12.3.107 is checked by inspection and by a pull test in an apparatus similar to that shown in Figure 101, followed by a torque test in an apparatus similar to that shown in Figure 104:

- *non-rewirable switches are tested with the cord as delivered and three new test specimens shall be used for each of the tests (pull and torque);*
- *three new rewirable switches are tested with PVC sheathed cords having the smallest and largest cross-sectional area as shown in Table 101. Before the test, the free length of the cord shall be cut to 150 mm ± 5 mm;*
- *rewirable switches provided with entries specially designed for the connection of PVC insulated flat cords – IEC 60227(all parts) – are tested with flat cords only.*

Table 101 – Rated currents for resistor loads and related type of cords

Rated current for resistor load A	Number of cores	Nominal cross-section mm^2	Types of cord according to IEC 60227 (all parts) fl = flat
Over 0,2 up to and including 3	2	0,5	52 52 (fl)
		0,75	52 52 (fl)
	3	0,5	52
		0,75	52
Over 3 up to and including 6	2	0,75	52 52 (fl) 53 53 (fl)
	2	1	53 53 (fl)
	3	0,75	52 53
	4	0,75	53
		1,0	53
Over 6 up to and including 16	2	0,75	52 52 (fl) 53 53 (fl)
		1,0	53
		1,5	53
	3	0,75	52 53
		1,0	53
		1,5	53
	4	1,0	53
		1,5	53

Conductors of the cord are introduced into the terminals of rewirable switches, and the terminal metal screws are tightened just sufficiently to prevent the conductors from easily changing their position.

AVA Documents
Document Sharing Hub

Full document details: IEC 61058-2-1 2018

The cord anchorage is used in the normal way, clamping screws being tightened with two-thirds of the torque specified in 19.2 and insulating material screws with two-thirds of the torque specified in Table 103. After reassembly of the switch, its component parts shall fit snugly and it shall not be possible to push the cord into the switch to any appreciable extent.

The switch is first fixed in the test apparatus according to Figure 101 so that the axis of the cord is vertical where it enters the specimen. The cord is then subjected 100 times to a pull of 60 N. The pulls are applied without jerks, each time for 1 s.

Immediately after this test, the cord is subjected for 1 min to a torque with an apparatus similar to that shown in Figure 104 of:

- *0,15 Nm for cords having a nominal cross-sectional area of up to and including 0,75 mm^2;*
- *0,25 Nm for cords having a nominal cross-sectional area of 1 mm^2 and 1,5 mm^2.*

The torque is applied as near as possible to the switch.

For switches for blankets, pads and similar flexible heating appliances according to IEC 60335-2-17, the pull and torque tests are performed with a pull force of 100 N and a torque of 0,15 Nm.

During the tests, the cord shall not be damaged. After the tests, the cord shall not have been displaced longitudinally by more than 2 mm, and there shall be no appreciable strain at the connection. Creepage distances and clearances shall not have been reduced below the value specified in Clause 20. For non-rewirable switches, there shall be no break in the electrical connections.

For the measurement of the longitudinal displacement, a mark is made on the cord while it is subjected to the first pull. After the tests, the displacement of the mark on the cord in relation to the specimen is measured while the cord is subjected to an additional pull.

12.3.108 Non-rewirable switches shall be provided with a cord complying with either IEC 60227-5 or IEC 60245 (all parts).

Compliance is checked by inspection.

12.3.109 Screws, if any, which have to be operated when replacing the cord, shall not serve to fix any other component unless either the switch is rendered inoperable or manifestly incomplete if such screws are omitted or incorrectly replaced, or if the component intended to be fixed cannot be removed without the aid of a tool when replacing the cord.

NOTE This does not exclude that the cover can serve as a cord anchorage or as a part of a cord anchorage.

Compliance is checked by inspection.

12.3.110 Cord switches shall be designed so that the cords are capable of withstanding the bending likely to occur in normal use. The inlet or bushing shall have no sharp edges.

If a cord guard is provided to meet this requirement, it shall not be integral to the cord except for switches with terminals classified according to 7.20.2 where special cords with, for example, moulded-on cord guards can be fixed, but where it is not possible to fit a standard cord without a cord guard during servicing.

Compliance is checked by subjecting the switch, fitted with the cord or range of cords for which it is designed, to the following tests.

The switch is mounted in the flexing apparatus shown in Figure 102. For the purpose of the test, the following conditions apply:

AVA Documents
Document Sharing Hub

Full document details: IEC 61058-2-1 2018

a) the test is performed only once with a cord of the maximum dimension attached;

b) for switches having a rated current over 3 A, a cord of type IEC 60227-5 shall be used;

c) if the switch is classified according to 7.103.3, the test shall be done with both types of cords;

d) if the switch is classified according to 7.103.2, then the flat type shall be used;

e) for non-rewirable switches, further test specimens shall be used.

The axis of oscillation is so chosen that the weight attached to the cord, and the cord itself, make the minimum lateral movement during the test. Specimens with flat cords are mounted so that the major axis of the cross-section is parallel to the axis of oscillation.

Each cord passing through the inlet opening is loaded with a weight having a mass of 1 kg. A current equal to the rated current passing through that particular core when the switch is operated at rated voltage is passed through each core, the voltage between the cores being maximum rated voltage. The oscillating member is moved backwards and forwards through an angle of 22,5° (on either side of the vertical), the number of flexings (that is 1 movement through 45°) being 5 000, and the rate of the flexing being 60 flexings per minute.

For switches for blankets, pads and similar flexible heating appliances according to IEC 60335-2-17, the movement of the oscillating member is through an angle of 45 ° (on either side of the vertical) and the load on the cord is 0,5 kg.

Rewirable switches are subjected to 10 000 flexings and non-rewirable switches to 20 000 flexings.

During the test there shall be no interruption of the test current and no short circuit between conductors.

After the test, the specimens shall show no damage within the meaning of this document.

12.3.111 For rewirable cord switches, the space for the external conductors inside the switch shall be adequate to allow the conductors to be easily introduced and connected, and the cover, if any, to be fitted without risk of damage to the conductors or their insulation.

It shall be possible to check that the conductors are correctly connected and positioned before the cover is fitted.

Compliance is checked by inspection and by connecting cords of the maximum cross-sectional area according to Table 4.

12.3.112 Rewirable single-pole cord switches shall be provided with an additional terminal or terminals which will allow the connection of the non switched conductor or conductors.

This terminal or terminals shall allow the connection of both the incoming and the outgoing ends of the non-switched conductor or conductors.

12.3.113 Non-rewirable cord switches shall be provided with soldered, welded, crimped or equally effective permanent connections.

The construction of the switch is such that:

– the cord cannot be separated from the switch,

– the switch cannot be opened by hand or by using a tool,

without making the switch permanently inoperative.

Documents
Document Sharing Hub

Full document details: IEC 61058-2-1 2018

The switch is considered as being permanently inoperative if, for the reassembly of the switch it is necessary to use parts or materials other than the original ones.

NOTE Original parts are considered to be parts from the original switch and not as being spare parts.

Compliance is checked by inspection and by manual test. For screwless terminals, the thermal endurance test of 11.5 has to be applied.

12.3.114 For prewired cord switch assemblies, the current rating of the cord shall be compatible with the current rating of the switch and shall be in accordance with the values given in Table 102.

Table 102 – Size of conductor

Rated resistive current of a switch A	Cross-sectional area of the conductor mm^2
Over 0 up to and including 3	0,5 to 0.75
Over 3 up to and including 6	0,75 to 1,0
Over 6 up to and including 10	0,75 to 1,0
Over 10 up to and including 16	0,75 to 1,0 to 1,5

12.3.115 Rewirable cord switches with terminals provided for earthing continuity shall be designed with ample space for slack of the protective earth conductor in such a way that if the strain relief should fail, the connection of the protective earth conductor is subjected to strain after the connections of the current-carrying conductors, and that, in case of excessive stresses, the protective earth conductor will break after the current-carrying conductors.

Compliance is checked by the following test.

The cord is connected to the cord switch in such a way that the current-carrying conductors are led from the strain relief to the corresponding terminals along the shortest possible path.

After they are correctly connected, the core of the protective earth conductor is led to its terminal and cut off at a distance 8 mm longer than necessary for its correct connection.

The protective earth conductor is then connected to its terminal. It shall then be possible to house the loop, which is formed by the protective earth conductor owing to its surplus length, freely in the wiring space without squeezing or pressing the core when the cover of the cord switch is remounted and fixed correctly.

12.3.116 Switches with means for suspension shall have adequate mechanical strength to withstand the stress imposed during use.

Compliance is checked by the following tests.

Barriers, between the space intended for the suspension means fixed to the wall and the live parts likely to be subjected to mechanical strain when the switch is suspended on a wall, are tested as follows.

A cylindrical steel rod, having a diameter of 3 mm and a hemispherical end with a radius of 1,5 mm, is pushed perpendicularly to the supporting wall surface, in the most unfavourable position, for 10 s against the barrier, with a force of 75 N. The rod shall not pierce the barrier.

Documents
Document Sharing Hub
Full document details: IEC 61058-2-1 2018