



BSI Standards Publication

Live working — Insulating sticks and attachable devices

Part 2: Attachable devices

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

raising standards worldwide[™]

This is a preview. [Click here to purchase the full publication.](#)

National foreword

This British Standard is the UK implementation of EN 60832-2:2010. It is identical to IEC 60832-2:2010. Together with BS EN 60832-1:2010, it supersedes BS EN 60832:1997, which will be withdrawn on 1 March 2013.

The UK participation in its preparation was entrusted to Technical Committee PEL/78, Tools for live working.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© BSI 2011

ISBN 978 0 580 53511 6

ICS 13.260; 29.240.20; 29.260.99

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2011.

Amendments issued since publication

Amd. No.	Date	Text affected
----------	------	---------------

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60832-2

March 2010

ICS 13.260; 29.240.20.

Supersedes EN 60832:1996 (partially)

English version

**Live working -
Insulating sticks and attachable devices -
Part 2: Attachable devices
(IEC 60832-2:2010)**

Travaux sous tension -
Perches isolantes et outils adaptables -
Partie 2: Outils adaptables
(CEI 60832-2:2010)

Arbeiten unter Spannung -
Isolierende Stangen und auswechselbare
Adapter/Arbeitsköpfe -
Teil 2: Auswechselbare
Adapter/Arbeitsköpfe
(IEC 60832-2:2010)

This European Standard was approved by CENELEC on 2010-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 78/839/FDIS, future edition 1 of IEC 60832-2, prepared by IEC TC 78, Live working, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60832-2 on 2010-03-01.

This EN 60832-2, together with EN 60832-1, supersedes EN 60832:1996. The two parts have been created to clearly separate the requirements and testing of insulating sticks from those of attachable universal devices.

Compared to EN 60832, the major changes included in EN 60832-2 are:

- updating of the list of devices;
- clarifying the applicability of the document to other attachment system than splined end-fitting;
- application of conformity assessment for products having completed the production phase, according to IEC 61318:2007 (Edition 3), focusing on the classification of defects and the introduction of alternative testing in case of production follow-up.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

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) | 2010-12-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2013-03-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60832-2:2010 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60060-1	-	High-voltage test techniques - Part 1: General definitions and test requirements	HD 588.1 S1	-
IEC 60212	1971	Standard conditions for use prior to and during the testing of solid electrical insulating materials	HD 437 S1	1984
IEC 60417	-	Graphical symbols for use on equipment	-	-
IEC 61318	2007	Live working - Conformity assessment applicable to tools, devices and equipment	EN 61318	2008
IEC 61477	-	Live working - Minimum requirements for the utilization of tools, devices and equipment	EN 61477	-

CONTENTS

INTRODUCTION.....	7
1 Scope.....	8
2 Normative references	8
3 Terms, definitions and symbols	8
3.1 Terms and definitions	8
3.2 Symbols	9
4 Requirements	9
4.1 General	9
4.2 Dimensional and mechanical requirements.....	9
4.2.1 Dimensional requirements	9
4.2.2 Mechanical requirements.....	10
4.3 Mechanical protection	12
4.4 Protection against corrosion	12
4.5 Marking	12
4.6 Instructions for use.....	12
5 Tests	13
5.1 General	13
5.2 Visual inspection	13
5.3 Dimensional check	13
5.4 Compatibility check	13
5.5 Durability of marking	13
5.6 Mechanical tests and specific tests.....	14
5.6.1 Universal adaptor and hook stick adaptor	14
5.6.2 Formed-wire ring – Tension of the spigot.....	15
5.6.3 Locating drift – Bending test	16
5.6.4 Conductor cleaning brush – Semi-tubular type.....	17
5.6.5 Conductor cleaning brush – V-shaped type – Fatigue test	19
5.6.6 Oilcan – Functioning of the operating lever.....	19
5.6.7 Ratchet spanner (ratchet wrench) – Friction	19
5.6.8 Spanner (wrench) – Torsion test.....	20
5.6.9 Retaining pin remover	20
5.6.10 Holding fork – Bending test.....	24
5.6.11 Retaining device installer/remover – Bending test.....	24
5.6.12 Binding wire cutter blade (tie wire cutter) – Bending test.....	25
5.6.13 Rotary blade – Tension test.....	27
5.6.14 Rotary prong – Tension test.....	27
5.6.15 Adjustable pliers	28
5.6.16 Vice-grip pliers	29
5.6.17 Adjustable insulator fork	31
5.6.18 All-angle pliers	33
5.6.19 Pin holder.....	34
5.6.20 Flexible spanner head (flexible wrench head) – Torsion test.....	36
5.6.21 Ammeter holder	36
5.6.22 Anti-interference braid applicator	39
5.6.23 Hack saw – Bending test	40

5.6.24	Mirror	41
5.6.25	Conductor gauge	42
5.6.26	Gap gauge.....	44
5.6.27	Clevis and tongue stick devices – Tension test.....	45
5.7	Instructions for use.....	46
5.7.1	Type test	46
5.7.2	Alternative test in case of attachable devices having completed the production phase	46
6	Conformity assessment of devices having completed the production phase.....	46
7	Modifications	46
Annex A (informative)	Attachment system of sticks – Examples	47
Annex B (normative)	Suitable for live working ; double triangle (IEC 60417–5216 (2002-10)).....	49
Annex C (normative)	Chronology of type tests	50
Annex D (normative)	Classification of defects and tests to be allocated	55
Annex E (informative)	In-service recommendations.....	60
Bibliography		61
Figure 1	– Test set-up for a hook stick adaptor – Torsion and tension of the adaptor	14
Figure 2	– Universal adaptor and hook stick adaptor – Torsion of the wing screw	15
Figure 3	– Formed-wire ring – Tension of the spigot	16
Figure 4	– Locating drift – Bending test.....	17
Figure 5	– Conductor cleaning brush – Fatigue test on semi-tubular type.....	17
Figure 6	– Conductor cleaning brush – Semi-tubular type – Crushing test.....	18
Figure 7	– Conductor cleaning brush – V-shaped type – Fatigue test.....	19
Figure 8	– Spanner (wrench) – Torsion test	20
Figure 9	– Spiral type retaining pin remover – Torsion test	21
Figure 10	– Fine-point type retaining pin remover – Torsion test.....	22
Figure 11	– Cam type (pry type) retaining pin remover – Bending test	23
Figure 12	– Holding fork – Bending test	24
Figure 13	– Retaining device installer/remover – Bending test	25
Figure 14	– Binding wire cutter blade (tie wire cutter) – Bending test	26
Figure 15	– Rotary blade – Tension test	27
Figure 16	– Rotary prong – Tension test	28
Figure 17	– Adjustable pliers – Tightening capability.....	28
Figure 18	– Adjustable pliers – Bending test	29
Figure 19	– Vice-grip pliers – Tightening capability – Blocking and unblocking of the handle	30
Figure 20	– Adjustable insulator fork – Torsion of the attachment system	31
Figure 21	– Adjustable insulator fork – Bending test	32
Figure 22	– Adjustable insulator fork – Articulation test.....	32
Figure 23	– All-angle pliers – Tightening capability	33
Figure 24	– All-angle pliers – Bending test.....	34
Figure 25	– Pin holder – Resistance of the spring	35
Figure 26	– Pin holder – Bending test	35