

Live working — Telescopic sticks and telescopic measuring sticks

The European Standard EN 62193:2003 has the status of a
British Standard

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee PEL/78, Tools for live working, which has the responsibility to:

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Summary of pages

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**Live working -
Telescopic sticks and telescopic measuring sticks
(IEC 62193:2003)**

Travaux sous tension -
Perches télescopiques
et perches de mesure télescopiques
(CEI 62193:2003)

Arbeiten unter Spannung -
Teleskopische Stangen
und teleskopische Messstangen
(IEC 62193:2003)

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CENELEC

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Foreword

The text of document 78/513/FDIS, future edition 1 of IEC 62193, prepared by IEC TC 78, Live working, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62193 on 2003-09-23.

The following dates were fixed:

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- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2006-10-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes B, C, D, E and ZA are normative and annexes A and F are informative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62193:2003 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60743	NOTE	Harmonized as EN 60743:2001 (not modified).
IEC 61472	NOTE	Harmonized as EN 61472:1995 (modified).
IEC 61477 + A1	NOTE	Harmonized as EN 61477:2002 + A1:2002 (not modified).

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INTRODUCTION

This International Standard has been prepared according to the requirements of IEC 61477 where applicable.

The quality plan elements of this standard were prepared in accordance with the requirements of IEC 61318.

LIVE WORKING – TELESCOPIC STICKS AND TELESCOPIC MEASURING STICKS

1 Scope

This International Standard covers telescopic sticks and telescopic measuring sticks to be used for live working on a.c. or d.c. electrical installations at 1 000 V and above for a.c. and 1 500 V and above for d.c.

The telescopic sticks are designed to accept attachments that meet appropriate live working standards and, together with these attachments, may be used to perform mechanical work on live parts at a distance. Telescopic sticks are also designed to accept diagnostic devices that meet appropriate live working standards and are used to make the diagnostic devices reach parts of an installation to be tested. Telescopic measuring sticks, or telescopic sticks equipped with graduations, are used to measure distances to or between live parts.

NOTE Under certain circumstances, the telescopic sticks covered by this standard can be used for installing portable earthing or earthing and short-circuiting equipment if the mechanical stresses during use are lower than the rated values.

The tools (telescopic sticks and telescopic measuring sticks) covered by this standard are for use under dry conditions but could also be used under very humid conditions, using appropriate working procedures.

Telescopic hook sticks are not covered by this standard. Telescopic bonding sticks and any other speciality telescopic sticks designed at the request of users are not covered by this standard.

2 Normative references

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.

IEC 60060-1:1989, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-18:2000, *Environmental testing – Part 2-18: Tests – Test R and guidance: Water*

IEC 60417-DB:2002¹, *Graphical symbols for use on equipment*

IEC 60832:1988, *Insulating poles (insulating sticks) and universal tool attachments (fittings) for live working*

IEC 60855:1985, *Insulating foam-filled tubes and solid rods for live working*

¹ "DB" refers to the IEC on-line database.

IEC 61235:1993, *Live working – Insulating hollow tubes for electrical purposes*

IEC 61318, *Live working – Quality assurance plans applicable to tools, devices and equipment*²

3 Terms and definitions

For the purposes of this document, the following definitions apply.

3.1

telescopic stick

hand stick made of retractable insulating tubes including at least one filled or solid section which is fitted with a universal splined-head or other fitting and intended to be used under tension/compression and/or torque

NOTE 1 The telescopic stick may be used as a measuring stick when appropriately marked.

NOTE 2 For use in Sweden, the filled or solid section(s) may be replaced by section(s) of sealed hollow tubes.

[Definition 3.1.14 of IEC 60743, modified]

3.2

telescopic measuring stick

hand stick made of retractable insulating tubes including at least one filled or solid section. This tool is used to determine conductor-to-ground and conductor-to-conductor distances and other clearances and not intended to be used under tension/compression and/or torque

NOTE For use in Sweden, the filled or solid section(s) may be replaced by section(s) of sealed hollow tubes.

[Definition 3.1.15 of IEC 60743, modified]

3.3

bonding stick

hand stick used to apply bonding leads

3.4

tip section

working end of the tool, filled or solid, which provides the primary insulating characteristics when fully extended. It is the part of the tool which comes in contact or in close proximity with the live part

NOTE For use in Sweden, the filled or solid-tip section may be replaced by a section of sealed hollow tube.

3.5

hydrophobic

lacking affinity for water (water repellence). An hydrophobic material prevents water droplets spreading on its surface

3.6

lock assembly

device or mechanism that locks the telescopic sections in the working position

² To be published.

3.7

reinforced tube

tube which is especially designed to resist mechanical strain

[Definition 3.3.1 of IEC 61235, modified]

3.8

standard tube

tube which may be submitted occasionally to mechanical loading and should be able to self-restore by the nature of the material itself

[Definition 3.3.2 of IEC 61235]

3.9

light tube

tube which has not been designed and manufactured to resist mechanical stresses except its own weight

[Definition 3.3.3 of IEC 61235]

3.10

type test

test performed on one or more items representative of the production, made to show that the product meets certain specifications

[Definition 3.10 of IEC 61318 and IEC 151-16-16, modified]

3.11

routine test

test performed on each item during or after manufacture to ascertain whether it complies with certain criteria

[Definition 3.11 of IEC 61318 and IEC 151-16-17, modified]

3.12

sampling test

test on a sample

[Definition 3.12 of IEC 61318 and IEC 151-16-20]

3.13

acceptance test

contractual test to prove to the customer that the item(s) meet(s) certain conditions of its specification

[Definition 3.13 of IEC 61318 and IEC 151-16-23, modified]

3.14

minor defect

defect that is not likely to materially reduce the usability of the item or product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the item

[Definition 3.5 of IEC 61318]

3.15

major defect

defect, other than critical, that is likely to result in failure, or to materially reduce the usability of the item or product for its intended purpose

[Definition 3.4 of IEC 61318]

3.16

critical defect

defect that judgement and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product. A defect that judgment and experience indicate is likely to prevent performance of the function of a major end item or product used in live working, such as tools or equipment

[Definition 3.3 of IEC 61318]

4 Classification

There is no electrical classification for the tools covered by this standard.

The tools (telescopic sticks and telescopic measuring sticks) covered by this standard are classified in two categories according to their mechanical characteristics. These categories are:

- Category 1 – tools manufactured from light and/or standard tubes and not intended to be used under tension/compression and/or torque;
- Category 2 – tools manufactured from reinforced tubes and intended to be used under tension/compression and/or torque.

Normally telescopic measuring sticks are of Category 1. Telescopic sticks are of Category 2.

5 Requirements

5.1 Safety

Tools which conform with this standard shall be designed and manufactured to be safe, provided they are used by skilled (trained) personnel, in accordance with safe methods of work and the instructions for use.

5.2 General

Shape(s) of all sections of the tool shall allow telescoping but need not be the same nor cylindrical.

Any attachments or end fittings shall not degrade the electrical and mechanical properties of the tool and shall comply with IEC 60832.

Except for the diameters, the raw material used for manufacturing of the tip section with circular cross-section shall comply with the requirements of IEC 60855.

NOTE The raw material for manufacturing of the tip section with non-circular cross-section should meet the requirements of tip section with equivalent circular cross-section and equivalent wall thickness.

Except for the diameters, the raw material used for manufacturing the lower sections with circular cross-section, either of Category 1 or Category 2, shall comply with the requirements of IEC 61235 for light, standard or reinforced tube respectively.

NOTE The raw material for manufacturing of the lower sections with non-circular cross-section should meet the requirements of lower sections with equivalent circular cross-section and equivalent wall thickness.

5.3 Requirements for the lock assembly and end caps

The lock assembly and end caps shall not reduce the electrical insulation of the tool below the requirements included in this standard.

The lock assembly shall be such that it provides a positive means of securing the sections of the tool in the extended position during use. It shall also permit manual retraction of the sections.

The lock assembly, or any other part of the tool, shall have no protruding parts capable of causing damage to the exterior or interior surface of the tool.

For tools of Category 2, the lock assemblies shall support all mechanical working stresses without deformation or failure.

5.4 Surface finish

The external surface of the tool shall exhibit hydrophobic properties.

NOTE The internal surface should also exhibit the same hydrophobic properties, but at this time there is no practical test to verify this property.

The external and internal surfaces shall be free of any abrasions, surface defects such as scratches, bruises, delamination, exposed fibres and blemishes that may capture an impurity and impair the dielectric integrity of the product.

Where a finish coating is applied, physical, electrical, and mechanical requirements shall be maintained.

5.5 Dimensional requirements

All external and internal dimensions of the different sections of a tool shall be sized to allow the sections to telescope easily in and out with minimum amount of play between sections.

Dimensions shall be supplied by the manufacturer, either in the instructions for use or in the documentary literature.

NOTE The minimum length of the tip section should be selected according to Annex A.

5.6 Marking

Each tool shall be marked with at least the following:

- name or trade mark of the manufacturer;
- category reference;
- date of manufacture (year and, if possible, month) and/or lot number;
- exposed length of the tip section when extended;