

Saddles, pole clamps (stick clamps) and accessories for live working

This European Standard EN 61236:1995 has the status of a
British Standard

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Power Electrical Engineering Standards Policy Committee (PEL/-) to Technical Committee PEL/88, upon which the following bodies were represented:

- Association of Manufacturers Allied to the Electrical and Electronic Industry (BEAMA Ltd.)
- BECCAMA (BEAMA Electrical Cable Connector and Accessories Manufacturers' Association)
- British Railways Board
- Department of Trade and Industry
- Department of Trade and Industry (Consumer Safety Unit, CA Division)
- Electricity Association
- Federation of British Hand Tool Manufacturers
- GAMBICA (BEAMA Ltd.)
- Health and Safety Executive
- Industrial Safety (Protective Equipment Manufacturers' Association)
- International Powered Access Federation
- Ministry of Defence
- National Association of Glove Manufacturers
- Coopted members

This British Standard, having been prepared under the direction of the Power Electrical Engineering Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 March 1994

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National foreword

This British Standard has been prepared under the direction of the Power Electrical Engineering Standards Policy Committee (PEL/-). The text is identical with IEC 61236:1993 *Saddles, pole clamps (stick clamps) and accessories for live working*, including Corrigendum May 2000, published by the International Electrotechnical Commission (IEC) and prepared by IEC Technical Committee No. 78 Tools for live working. It covers general matters.

In 1995 the European Committee for Electrotechnical Standardization (CENELEC) accepted IEC 61236:1993, together with common modifications, as European Standard EN 61236:1995. As a consequence of implementing the European Standard this British Standard is numbered as BS EN 61236:1995 and any reference to BS 7743 should be read as reference to BS EN 61236.

This standard should not be considered complete in itself and it leaves to each customer the task of adding his own complementary requirements. These will cover, for example, required mechanical performance and conditions of interchangeability with equipment already in service.

The graphics signs, symbols and letters used in this standard may be found in the following British Standards:

BS 3939, *Graphical symbols for electrical power, telecommunications and electronics diagrams*.

— *Part 1:1986 General information, general index;*

— *Part 2:1985 Symbol elements, qualifying symbols and other symbols having general application.*

From 1 January 1997, all IEC publications have the number 60000 added to the old number. For instance, IEC 27-1 has been renumbered as IEC 60027-1. For a period of time during the change over from one numbering system to the other, publications may contain identifiers from both systems.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

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English version

Saddles, pole clamps (stick clamps) and accessories for live working

(IEC 61236:1993, modified)

Selles, manchons et accessoires pour travaux
sous tension
(CEI 61236:1993, modifiée)

Mastsättel, Stangenschellen und Zubehör zum
Arbeiten unter Spannung
(IEC 61236:1993, modifiziert)

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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 1236:1993, prepared by IEC TC 78, Tools for live working, together with common modifications prepared by the Technical Committee CENELEC TC 78, was submitted to the formal vote and was approved by CENELEC as EN 61236 on 1995-03-06.

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) 1996-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1996-03-01

For products which have complied with the relevant national standard before 1996-03-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2001-03-01.

Annexes designated “normative” are part of the body of the standard. In this standard, Annex A, Annex B, Annex C and Annex ZA are normative. Annex ZA has been added by CENELEC.

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Section 1. General

1.1 Scope

This International Standard is applicable to saddles and pole clamps (stick clamps) used for live working, and to their accessories.

It specifies:

- the dimensional and mechanical characteristics to be given by the manufacturer for each tool;
- the corresponding mechanical tests;
- the other points to be checked (visual, functional, marking, etc.).

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050(151):1978, *International Electrotechnical Vocabulary — Chapter 151: Electrical and magnetic devices*.

IEC 61318:1994, *Live working — Guidelines for quality assurance plans*.

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

ISO 2859-1:1999, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*.

1.3 Definitions

For the purposes of this International Standard, the following definitions apply:

1.3.1 Terms defined in accordance with IEC 60050(151) and IEC 61318

1.3.1.1

type test

a test on one or more devices made to a certain design to show that the design meets certain specifications [IEV 151-04-15]

1.3.1.2

routine test

a test to which each individual device is subjected during or after manufacture to ascertain whether it complies with certain criteria [IEV 151-04-16]

1.3.1.3

sampling test

a test on a number of devices taken at random from a batch [IEV 151-04-17]

1.3.1.4

acceptance test

a contractual test to prove to the customer that the device meets certain conditions of its specification [IEV 151-04-20]

1.3.1.5

rated value

a quantity value assigned, generally by a manufacturer, for a specified operating condition of a component, device or equipment [IEV 151-04-03]

1.3.1.6**minor defect**

a minor defect is a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit (see **2.6**, IEC 61318)

1.3.1.7**major defect**

a major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose (see **2.5**, IEC 61318)

1.3.1.8**critical defect**

a critical defect is a defect that judgement and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product; or a defect that judgement and experience indicate is likely to prevent performance of the function of a major end item (see **2.4**, IEC 61318)

1.3.2 Definition of special terms**1.3.2.1****type of tool**

tools which have the same design and equal dimensions

1.3.2.2**family of tools**

tools which have the same function (utilization, use, etc.)

1.3.2.3**MICDT (minor defect control test)**

application of a specified force or torque (specified in the standard) to a tool to verify whether any minor defect has occurred

1.3.2.4**MADCT (major defect control test)**

application of a specified force or torque (specified in the standard) to a tool to verify whether any major or critical defect has occurred

1.3.2.5 T_N

rated torque given by the manufacturer for a tool or a part of a tool for testing purposes

1.3.2.6 F_{TN}

rated tensile force given by the manufacturer for a tool or a part of a tool for testing purposes

1.3.2.7 F_{BN}

rated bending force given by the manufacturer for a tool or a part of a tool for testing purposes

1.3.2.8 F_{GN}

rated slippage force given by the manufacturer for a tool for testing purposes

Section 2. Technical characteristics

2.1 General

Care shall be taken to ensure that appropriate measures are taken to minimize the weight and size of equipment to optimize their handling.

2.2 Dimensional and mechanical characteristics

2.2.1 Dimensional characteristics

For each type of tool, the manufacturer shall indicate the dimensions or operating ranges related to the specific functions of the tool, in particular the dimensions of acceptable supports for the saddles, and the specified diameters of acceptable pole tubes and rods for pole clamps shall be indicated (see IEC 60855).

2.2.2 Mechanical characteristics

For each type of tool, the manufacturer shall give the rated values corresponding to the characteristics specified in Table 1.

2.3 Corrosion protection

Metallic parts shall be non-corrodible, either by their inherent composition or by a suitable treatment. Specific requirements are under consideration.

Table 1 — Mechanical characteristics for each type of tool

Rated value Tool	F_{BN} Bending	F_{TN} Tensile	T_N Torque	F_{GN} Slippage
Chain binder		Chain and locking device	Tightening device	
Ring saddle with rigid bracket	— Whole tool — Locking device	Chain and locking device		
Ring saddle with chain bracket	— Locking device	Whole tool Chain and locking device	Tightening device	
Lift-type saddle	— Whole tool — Locking device	Chain and locking device Shackle		
Pole-type saddle	— Whole tool ¹⁾ — Locking device	Chain and locking device		
Saddle extension	— Whole tool			
Tower-type saddle	— Whole tool ¹⁾		Mounting screws	
Crossarm-type saddle	— Whole tool ¹⁾		Mounting screws	
Tower-arm yoke	— Whole tool		Mounting screws	
Block saddle	— Whole tool			
Platform pivot attachment	— Whole tool			
Saddles and accessories for hydraulic tension puller	— Saddle for triangular yoke — Saddle for rectangular yoke — Insulating rope gin	Assembly Tenon extension Block anchoring point		
Pole clamp	— Whole tool	Assembling ²⁾	Mounting screw	Whole tool
Rigid support pole stirrup	— Whole tool			Whole tool
Swivel support pole stirrup		Whole tool		Whole tool
Offset eye	— Whole tool			

¹⁾ The manufacturer shall give the values of F_{BN} for these tools with and without saddle extension.

²⁾ Applicable to pole clamps designed to be coupled.

Section 3. Type tests

3.1 General

In order to show compliance of the material with this standard, the manufacturer shall provide evidence that the following tests have been carried out successfully on a minimum of three specimens for each type of assembly.

However, when the differences between several types of tools are limited to a few characteristics, the tests which are not influenced by these characteristics may be performed on only one type, and the results applied to the other types.

The different tests, and the order in which these tests are performed are given in Annex B.

The tests in Table B.2, Table B.3 and Table B.4 shall be performed, following the specified order.

NOTE In Table B.2, Table B.3 and Table B.4 the “type test” column includes a reference to the subclause where the test is explained. Some columns, related to certain types of tools, are divided into sub-columns equal to the number of mechanical destructive tests to be applied to these tools. These sub-columns also show the sequence of tests to be applied (for an example see B.1).

3.2 Visual and functional inspection

Each tool shall pass the visual and functional inspection to check for manufacturing defects and its correct function.

Any defect shall be considered as a failure and the tool shall be rejected.

3.3 Dimensional check

Each tool shall be checked by measurement to ensure that it complies with the dimensions and tolerances as agreed to between customer and manufacturer.

3.4 Mechanical tests — General test conditions and results

The tensile, bending, and slippage force, and the torque values given in Table 2 shall be progressively applied in increments at a rate of $(0,1 \pm 0,025) F_{TN}/s$, F_{BN}/s , F_{GN}/s and T_N/s until the values of $1,25 F_{TN}$, $1,25 F_{BN}$, $1,25 F_{GN}$ and $1,25 T_N$ are reached.

Each value shall then be maintained for 1 min before the results are noted.

These force and torque values shall then be increased again at the same rate as above until the values of $2,5 F_{TN}$, $2,5 F_{BN}$, $1,5 F_{GN}$ and $2,5 T_N$ are reached. Each value shall be maintained for 1 min before the results are noted again.

Table 2 — General test information

Test	MICDT			MADCT		
	Force or torque		Results (see note)	Force or torque		Results (see note)
Tensile	1,25	F_{TN}	<i>a</i>	2,5	F_{TN}	<i>b</i>
Bending	1,25	F_{BN}	<i>a</i>	2,5	F_{BN}	<i>b</i>
Torsion	1,25	T_N	<i>a</i>	2,5	T_N	<i>b</i>
Slippage	1,25	F_{GN}	<i>a</i> and <i>c</i>	1,5	F_{GN}	<i>c</i>
NOTES						
<i>a</i> no permanent deformation, or minor, major or critical defect shall occur;						
<i>b</i> no major or critical defect shall occur;						
<i>c</i> no slippage of the tool shall occur on its support.						

All these test conditions and results shall apply to 3.5, except for 3.5.2.3 and 3.5.4.4.

3.5 Mechanical tests — Particular requirements

NOTE The limit value of the torque in 3.5.3.1, 3.5.4.1, 3.5.5.1, 3.5.6.1, 3.5.8.1, 3.5.9.1, 3.5.10.1, 3.5.12, 3.5.14.1 and 3.5.15.1 should be replaced by $T_n \pm 10\%$, this is under consideration.

3.5.1 Locking device with chain or strap

3.5.1.1 Tensile test

The locking device with chain or strap is attached to a fixed support and load applied (see Figure 1a). The results are then noted.

3.5.1.2 Bending test

The locking device with chain or strap is fixed on a support at an angle of 45° to the direction of the force F_{BN} . A load F_{BN} equal to $0,9 F_{TN}$ is applied (see Figure 1b) and the results noted.

3.5.2 Chain binder

3.5.2.1 Tensile test

The hand wheel shall be in a full tightening position. The end of the chain shall be locked in the locking device to obtain a loop (see Figure 2a). The tensile force shall be applied by means of two 30 mm diameter rods until it reaches $2,5 F_{TN}$ which shall be maintained for 1 min. No minor, major or critical defect shall occur. Then the force shall be increased again until it reaches $5 F_{TN}$.

No major or critical defect shall occur.

The 1,25 and 2,5 coefficients are applicable to each leg of the loop. Therefore, the total force applied shall be doubled.

3.5.2.2 Bending test on the locking device

The previous test shall be resumed after having fixed the locking device on a support (a rod with a flat part) at an angle of 45° to the direction of the force F_{BN} (see Figure 2b).

A force F_{BN} equal to $0,9 F_{TN}$ is applied. The force is increased until it reaches $2,5 F_{BN}$ which shall be maintained for 1 min. No minor, major or critical defect shall occur. Then the force shall be increased until it reaches $5 F_{BN}$.

No major or critical defect shall occur.

3.5.2.3 Test on the retractable spring

The hand wheel is fully retracted and the body of the tightening device is maintained in a vertical position (see Figure 2c).

A vertical tensile force is applied on the tightening device rod.

The test is successful if the value of the force to achieve full compression of the spring is greater than 120 N, but less than 180 N.

3.5.2.4 Tightening test

The chain binder is set on a 160 mm diameter metallic cylinder (see Figure 2d). The chain binder is maintained in position by the retractable spring of the tightening device. Then the tightening torque is applied and the results noted.

3.5.3 Ring saddle with rigid bracket

3.5.3.1 Bending test on the whole saddle

The saddle is set on the least suitable support agreed to by the manufacturer and the customer (wood, concrete or metal) with a chain binder. The hand wheel is then tightened with a torque of (30 ± 3) Nm. Then the bending force is applied and the results noted (see Figure 3).

3.5.3.2 Tensile test on the locking device

(See 3.5.1.1.)

3.5.3.3 Bending test on the locking device

(See 3.5.1.2.)