

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Live working – Saddles, stick clamps and their accessories

Travaux sous tension – Selles, manchons et leurs accessoires

[IEC 61236:2010](#)

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IEC 61236

Edition 2.0 2010-10

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX



ICS 13.260; 29.240.20; 29.260.99

ISBN 978-2-88912-240-0

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LIVE WORKING – SADDLES, STICK CLAMPS AND THEIR ACCESSORIES

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International Standard IEC 61236 has been prepared by IEC technical committee 78: Live working.

This second edition cancels and replaces the first edition published in 1993. It constitutes a technical revision.

It includes the following significant technical changes from the previous edition:

- clarification of the requirements and of the test provisions;
- addition of a test for the durability of marking;
- application of conformity assessment for products having completed the production phase, according to IEC 61318:2007 (Ed. 3).

The text of this standard is based on the following documents:

Enquiry draft	Report on voting
78/850/CDV	78/867/RVC

Full information on the voting for the approval of this 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.

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

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- withdrawn,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

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INTRODUCTION

The requirements provided in this standard are essential requirements. Each user of this standard may supplement it with their own requirements. These will cover, for example, required mechanical performance and conditions of interchangeability with equipment already in service. In such cases, caution should be taken to maintain or improve the performance of the products.

This International Standard has been prepared in accordance with the requirements of IEC 61477.

The products covered by this standard may have an impact on the environment during some or all stages of its life cycle. These impacts can range from slight to significant, be of short-term or long-term, and occur at the global, regional or local level.

Except for a disposal statement in the instructions for use, this standard does not include requirements and test provisions for the manufacturers of the product, or recommendations to the users of the product for environmental improvement. However, all parties involved in the product's design, manufacture, packaging, distribution, use, maintenance, repair, reuse, recovery and disposal are encouraged to take account of environmental considerations.

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LIVE WORKING – SADDLES, STICK CLAMPS AND THEIR ACCESSORIES

1 Scope

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

The products designed and manufactured according to this standard contribute to the safety of the users provided they are used by skilled persons, in accordance with safe methods of work and the instructions for use.

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 60417, *Graphical symbols for use on equipment*

IEC 61318:2007, *Live working – Conformity assessment applicable to tools, devices and equipment*

IEC 61477, *Live working – Minimum requirements for the utilization of tools, devices and equipment*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61318 and the following apply.

3.1.1

accessory

supplemental metal device used with saddles and stick clamps to carry out the live work

3.1.2

family of devices

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

3.1.3

rated value

value of a quantity used for specification purposes, established for a specified set of operating conditions of a component, device, equipment, or system

[IEC 60050-151:2001, 151-16-08]

3.1.4

saddle

metal device fixed to a pole, cross-arm or tower and used with a stick clamp to hold or guide support sticks and other equipment

[IEC 60743:2008, 10.3.1 and IEC 60050-651:1999, 651-09-06, modified]

3.1.5

stick clamp

metal device used with a stick or saddle to hold or guide a support stick

[IEC 60743:2008, 10.3.6, modified]

3.1.6

type of device

devices which have the same design and application and are of similar dimensions

3.2 Symbols

T_N rated torque given by the manufacturer for a device or a part of a device and for testing purposes

F_{TN} rated tensile force given by the manufacturer for a device or a part of a device and for testing purposes

F_{BN} rated bending force given by the manufacturer for a device or a part of a device and for testing purposes

F_{GN} rated slippage force given by the manufacturer for a device and for testing purposes

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4 Requirements

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4.1 General <https://standards.iteh.ai/catalog/standards/sist/7fcc0734-cab2-4ec4-9ac9-4dbf4b2ad0cf/iec-61236-2010>

The following requirements have been prepared in order that the saddles, stick clamps and their accessories covered by this standard are designed and manufactured to contribute to the safety of the users, provided they are used by persons skilled for live working, in accordance with safe methods of work and the instructions for use.

NOTE Appropriate measures should be taken to minimize the weight and size of the equipment to optimize handling.

4.2 Dimensional requirements

For each type of device, the manufacturer shall indicate the dimensions or operating ranges related to the specific functions of the device, in particular the dimensions of acceptable supports for the saddles, and the specified diameters of acceptable tubes and rods for stick clamps shall be indicated.

4.3 Mechanical requirements

For each type of device, the manufacturer shall give the rated values as outlined in Table 1.

Table 1 – Mechanical ratings for each type of device

Type of device	Rated values			
	Bending F_{BN}	Tensile F_{TN}	Torque T_N	Slippage F_{GN}
Chain (strap) binder		- Whole device - Locking device	Tightening device	
Ring saddle with rigid bracket	- Whole device - Locking device	Chain (strap) and locking device		
Ring saddle with chain bracket	Locking device	- Whole device - Chain (strap) and locking device	Tightening device	
Lift-type saddle	- Whole device - Locking device	- Chain (strap) and locking device - Shackle		
Pole-type saddle	- Whole device ^a - Locking device	Chain (strap) and locking device		
Saddle extension	Whole device			
Tower-type saddle	Whole device ^a		Mounting bolts	
Crossarm-type saddle	Whole device ^a		Mounting bolts	
Block saddle	Whole device			
Tower-arm yoke	Whole device		Mounting bolts	
Platform pivot attachment	Whole device			
Saddles and accessories for hydraulic tension puller	- Saddle for triangular yoke - Saddle for rectangular yoke - Insulating rope gin	- Assembly - Tenon extension - Block anchoring point		
Stick clamp	Whole device	Assembly ^b	Mounting bolts	Whole device
Rigid support-stick stirrup	Whole device			Whole device
Swivel support-stick stirrup		Whole device		Whole device
Offset eye	Whole device			

^a The manufacturer shall give the values F_{BN} for these devices with and without saddle extension.

^b Applicable to stick clamps designed to be coupled.

4.4 Protection against corrosion

Metallic parts shall be protected against corrosion, either by their composition or by a suitable surface treatment.

For each type of device, the manufacturer shall demonstrate that the metallic parts are corrosion resistant.

4.5 Marking

Each device shall be marked with the following permanent items of marking:

- manufacturer's name or trade mark;
- type reference;
- year and, if possible, month of manufacture;
- rating (or capacity if requested by the customer);

- symbol IEC 60417-5216:2002-10 – Suitable for live working; double triangle (Annex A);

NOTE The exact ratio of the height of the figure to the base of the triangle is 1,43. For the purpose of convenience, this ratio can be between the values of 1,4 and 1,5.

- number of the relevant IEC standard immediately adjacent to the symbol (IEC 61236).

Information or characteristics not required at the work site, such as year of publication of the standard, shall be provided by other means (bar codes, microchips, etc.) or shall be provided on the packaging.

4.6 Instructions for use

Each device shall come with the manufacturer's instructions for use and care. These instructions shall be prepared in accordance with the general provisions given in IEC 61477.

These instructions shall include at least

- maximum mechanical rating;
- recommended application(s);
- recommendations for cleaning, storage, transportation, periodic testing, refinishing and disposal.

5 Tests

5.1 General

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This standard provides testing provisions to demonstrate compliance of the product with the requirements of Clause 4. These testing provisions are primarily intended to be used as type tests for validation of the design input. Where relevant, alternative means (calculation, examination, tests, etc.), are specified within the test subclauses for the purpose of saddles, stick clamps and their accessories having completed the production phase.

To show compliance with this standard, the manufacturer shall prove that the type tests have been carried out successfully on at least three devices for each type.

However, when the differences between several types of device are limited in number, tests that are unaffected by the differing characteristics of the devices can be carried out on a single type of device, and the results can be used for the other device types.

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

The tests in Tables B.1, B.2, B.3 and B.4 of Annex B shall be performed, following the specified order.

NOTE In Tables B.1, B.2, B.3 and B.4 the numbers within parentheses provide reference to the Subclause where the relevant test is explained. For some families of devices, columns are divided in sub-columns equal to the number of mechanical tests to be applied to these devices (these may be destructive). These sub-columns also show the sequence of tests to be applied (for an example see Table B.5).

Any device failing to pass any one of the tests mentioned in Tables B.1, B.2, B.3 and B.4 of Annex B shall result in the design being rejected.

5.2 Visual and functional inspection

Each device shall be visually inspected to detect manufacturing defaults and to check proper functioning.

The test shall be considered as passed if each device shows compliance with the requirements included in 4.3, 4.4, 4.5 and 4.6 where applicable.

5.3 Dimensional check

Each device shall be measured to ensure that its dimensions match the manufacturer's rated dimensions.

5.4 Durability of marking

The durability of the marking shall be verified by thoroughly cleaning the marking for at least 1 min with a piece of lint-free cloth dampened with water and then rubbing it vigorously for a further minimum of 1 min with a piece of lint-free cloth dampened with isopropanol ($\text{CH}_3\text{-CH(OH)-CH}_3$).

NOTE 1 It is the employer's duty to ensure that any relevant legislation and any specific safety instructions regarding the use of isopropanol are fully observed.

The test shall be considered as passed if the marking remains legible and the letters do not smear.

The surface of the device may change. No signs of loosening shall be present for labels.

NOTE 2 Marking made by moulding or engraving need not be subjected to this test.

5.5 Mechanical tests

5.5.1 General test provisions and pass criteria

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

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

The test shall be considered as passed if no visible signs of damage are observed on the device and no slippage occurs.

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

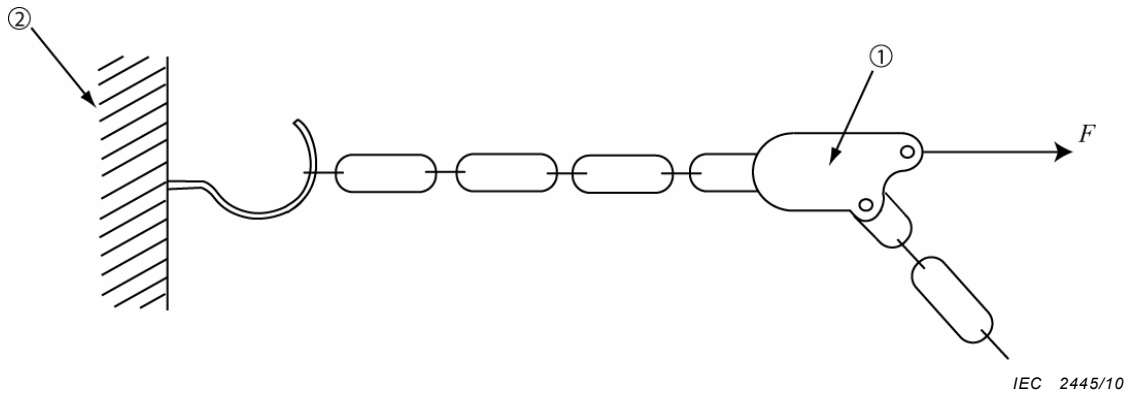
The test shall be considered as passed if no permanent deformation or breakage is observed on the device and no slippage occurs.

5.5.2 Specific test provisions

5.5.2.1 Locking device with chain or strap

5.5.2.1.1 Tensile test

The locking device with chain or strap shall be attached to a fixed support (see Figure 1). Refer to 5.5.1 for the tensile test provisions and pass criteria.



Key

- 1 locking device
- 2 fixed support

Figure 1 – Locking device with chain or strap – tensile test

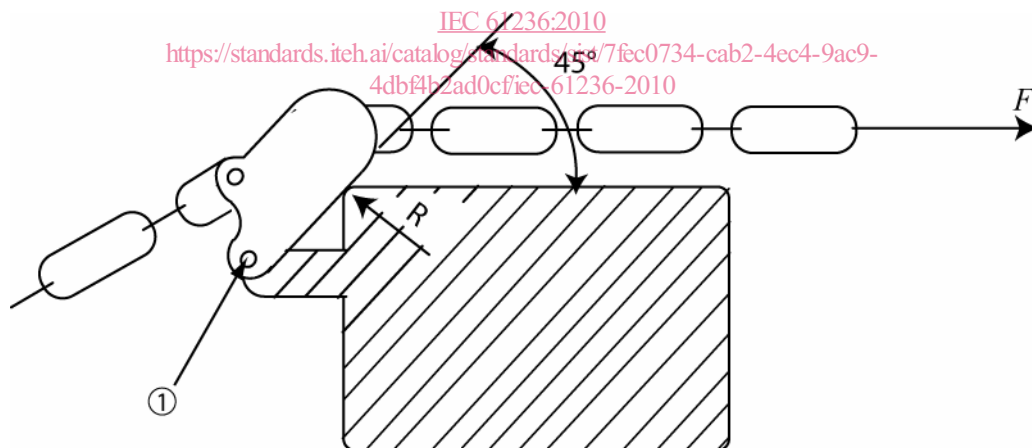
5.5.2.1.2 Bending test

The locking device with chain or strap shall be fixed on a support at an angle of 45° to the direction of the force F (see Figure 2). A load equal to $0,9 F_{TN}$ shall be progressively applied in increments at a rate of $(0,1 \pm 0,025) F_{TN}/s$ and shall then be maintained for 1 min before the results are noted.

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The test shall be considered as passed if no visible signs of damage is observed on the device.



Key

- 1 fixing-pin point
- R radius of curvature = 5 mm

Figure 2 – Locking device with chain or strap – bending test

5.5.2.2 Chain (strap) binder

5.5.2.2.1 Tensile test

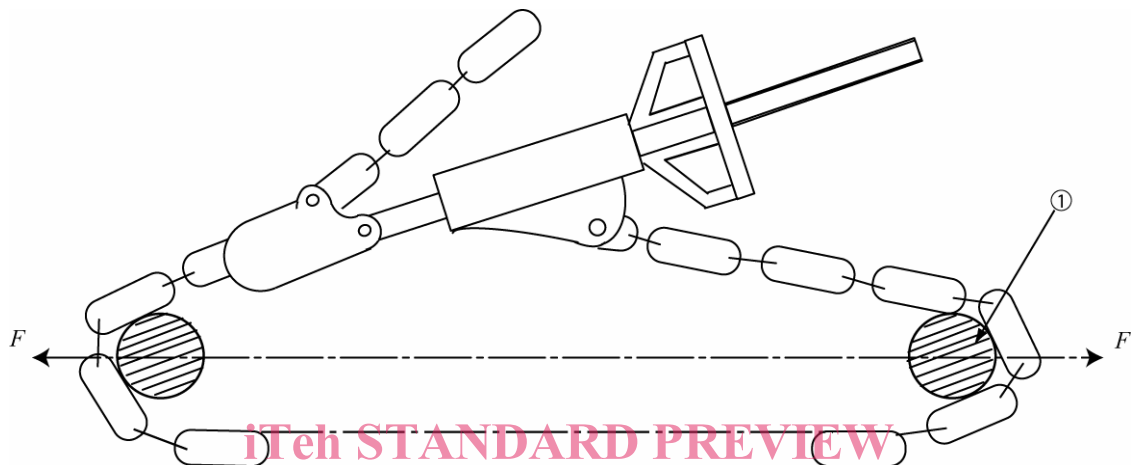
The binder shall be in a full tightened position. The end of the chain (strap) shall be locked in the locking device to obtain a loop (see Figure 3). The tensile force shall be applied by means of two 30 mm diameter rods. It shall be applied progressively in increments at a rate of $(0,1 \pm 0,025) F_{TN}/s$ until it reaches $1,25 F_{TN}$ and shall then be maintained for 1 min before the results are noted.

The test shall be considered as passed if no visible signs of damage are observed on the device.

The force shall then be increased again until it reaches $2,5 F_{TN}$.

The test shall be considered as passed if no permanent deformation or breakage is observed on the device.

NOTE The 1,25 and 2,5 coefficients are applicable to each leg of the loop. Therefore, the total force applied is doubled ($2,5 F_{TN}$ and $5 F_{TN}$).



Key

- 1 30 mm diameter rod

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<https://standards.iteh.ai/catalog/standards/sr/0734/0734-14/049ac9-4dbf4b2ad0cf/iec-61236-2010>
Figure 3 – Chain (strap) binder – tensile test

IEC 2447/10

5.5.2.2.2 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 (see Figure 4).

A force F equal to $0,9 F_{TN}$ is applied. The force shall be increased progressively in increments at a rate of $(0,1 \pm 0,025) F_{TN}/s$ until it reaches $2,5 F$ and shall then be maintained for 1 min before the results are noted.

The test shall be considered as passed if no visible signs of damage is observed on the device.

The force shall then be repeated until it reaches $5 F$.

The test shall be considered as passed if no permanent deformation or breakage is observed on the device.