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Aerial devices with insulating boom used for live working exceeding 1 kV a.c.

Equipements élévateurs à bras isolants utilisés pour les travaux sous tension au-dessus
de 1 kV en courant alternatif (standards.iteh.ai)

Ta slovenski standard je istoveten z: **EN 61057:1993**
<https://standards.iteh.ai/catalog/standards/sist/629eda71-e734-4e25-9e70-4b89fbd9a030/sist-en-61057-2001>

ICS:

13.260	Xæ•ç[Å!^åÅ ^\ dā} ā ~ åæ[{ ËÖ^ [Å[åÅ æ^q •dø	Protection against electric shock. Live working
53.020.99	Druga dvigalna oprema	Other lifting equipment

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en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61057

November 1993

UDC 621.3.002.54:620.1:614.8

Descriptors: Hot-line work, elevator, platform, personnel, electrical insulation, characteristic, dimension, safety device, test, marking

English version

**Aerial devices with insulating boom used for live working
exceeding 1 kV a.c.
(IEC 1057:1991, modified)**

Equipements élévateurs à bras isolant
utilisés pour les travaux sous tension
au-dessus de 1 kV en courant alternatif
(CEI 1057:1991, modifiée)

Hubarbeitsbühnen mit isolierender
Hubeinrichtung zum Arbeiten unter
Spannung über 1 kV a.c.
(IEC 1057:1991, modifiziert)

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This European Standard was approved by CENELEC on 1993-07-06. CENELEC members are bound to comply with the requirements of 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 and 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 1057:1991 could be accepted without textual changes, has shown that some common modifications were necessary for the acceptance as European Standard.

The reference document, together with the common modifications prepared by CENELEC Technical Committee TC 78, was submitted to the CENELEC members for formal vote.

The text of the draft was approved by CENELEC as EN 61057 on 1993-07-06.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-08-01
- latest date of withdrawal of conflicting national standards (dow) 1995-08-01

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given only for information. In this standard, annex ZA is normative and annex ZB is informative.

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Endorsement notice

The text of the International Standard IEC 1057:1991 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Title **Add** "exceeding 1 kV a.c.".

3 Special technical characteristics

3.2.1 *Stabilization of buckets*

Replace the text of the subclause by:

Subclause 7.4.1 of prEN 280 applies (see annex ZB).

3.2.2 *Personnel safety attachments*

Delete the subclause and **replace** by:

3.2.2 Void.

3.2.3 *Controls*

3.2.3.2 *Emergency stop*

Replace the text by:

Subclause 9.5 of prEN 280 applies (see annex ZB).

3.2.3.4 *Control of outriggers*

Replace the text by:

Subclauses 7.2.4.1, 7.2.4.2 and 7.2.5 of prEN 280 apply (see annex ZB).

3.2.4 *Auxiliary power system*

Replace the text by:

Subclause 10.12 of prEN 280 applies (see annex ZB).

In addition the auxiliary power source shall provide rotation of the turret as well as lifting and descent of the bucket.

3.2.5 *Rotation of the turntable*

Add "regarding continuous or limited angle systems" after "requirements".

3.2.6 *Communication*

Replace "a clear path shall satisfy this requirement." by "a clear signal shall be considered as satisfactory".

9 Mechanical tests

9.1.2 *Fatigue test on insulating hoses*

Delete the second sentence of the paragraph starting with "For the hydraulic cycle...".

Annex ZA (normative)**Other international publications quoted in this standard
with the references of the relevant European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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

<u>IEC Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
50 (121)	1978	International Electrotechnical Vocabulary (IEV) Chapter 121: Electromagnetism	-	-
50 (151)	1978	Chapter 151: Electrical and magnetic devices	-	-
60		High-voltage test techniques		
60-1	1989	Part 1: General definitions and test requirements	HD 588.1 S1	1991
156	1963	Method for the determination of the electric strength of insulating oils	-	-
212	1971	Standard conditions for use prior to and during the testing of solid electrical insulating materials	HD 437 S1	1984
247	1978	Measurement of relative permittivity, dielectric dissipation factor and d.c. resistivity of insulating liquids	-	-
270	1981	Partial discharge measurements	-	-
296	1982	Specification for unused mineral insulating oils	-	-
A1	1986	for transformers and switchgear		
475	1974	Method of sampling liquid dielectrics	-	-
707	1981	Methods of test for the determination of the flammability of solid electrical insulating materials when exposed to an igniting source	HD 441 S1	1983
855 (mod)	1985	Insulating foam-filled tubes and solid rods for live working	HD 496 S1	1988

Other publications:

ISO 1219	1976	Fluid power systems and components - Graphic symbols
ISO 4302	1991	Cranes - Wind load assessment
ISO 4305	1981	Mobile cranes - Determination of stability
ISO 6605	1986	Hydraulic fluid power - Hose assemblies - Method of test

Annex ZB (informative)**prEN 280****Mobile elevating work platforms - Design calculations - Stability criteria -
Construction - Safety - Examinations and tests****Subclauses quoted in EN 61057****7.2 Chassis**

7.2.4.1 MEWPs shall be fitted with a device which shall prevent the work platform leaving the transport position unless the outriggers are in the operating position, in accordance with the operating instructions.

The above requirement is not mandatory to MEWPs

- which are totally manually operated and
- with a maximum height of the floor of the work platform above ground level of 5 m,

but these MEWPs shall be provided with a warning notice at the operator's position to make the operator aware of the need to position the outriggers.

7.2.4.2 MEWPs with powered outriggers shall be fitted with a device to prevent movements of the outriggers unless the work platform is in the transport position.

7.2.5 Devices shall be fitted to prevent unintentional movement of the outriggers and suspension locks.

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7.4 Work platform

7.4.1 The level of the work platform shall not vary by more than $\pm 5^\circ$ during movements of the extending structure, or due to loads and forces during operation.

The levelling system shall incorporate a safety device which in case of breakage of a load carrying part keeps the platform level within $\pm 5^\circ$. This requirement is fulfilled if in the case of a single system of rods or levers the parts are designed to take twice the maximum levelling force.

In the case of ropes or chains used as levelling elements a second rope/chain system designed according to 7.5.2.1.2 and 7.5.2.1.3 / 7.5.3.1.2 and 7.5.3.1.3 will fulfil the requirement.

Hydraulic levelling systems shall be fitted with safety valves and with lock valves to provide protection in case of hose or piping failure. Safety valves are considered to be safety devices.

7.5.2 Wire rope systems**7.5.2.1 Wire ropes**

7.5.2.1.2 The minimum breaking force of the ropes shall be shown on a certificate. The safety factor of one rope system (one or more parallel ropes) used to raise or level the work platform shall be at least 10. In case of more than one rope system the safety factor of each system shall be at least 7. The safety factor is the ratio between the minimum breaking force of the rope and the force which can occur in the rope under static conditions with the work platform fully loaded.

7.5.2.1.3 Rope systems shall have a safety device actuated by an overspeed governor. This safety device shall gradually bring the work platform plus the rated load to a stop and hold it in the event of the lifting mechanism failing. The average deceleration shall not exceed $1,0 g_n$.

In the case of telescopic booms or masts the safety device may be realized by a second rope system, provided

- it is designed according to 7.5.2.1.2 and
- it is proven that under the condition of breakage in the first rope system the second will take the loads and
- the failure of the first system is self-revealing.

7.5.3 Chain systems

7.5.3.1 Chains

7.5.3.1.2 The minimum breaking force of the chain shall be shown on a certificate. The safety factor for one chain system (one or more parallel chains) used to raise or level the work platform shall be at least 8. In case of more than one chain system the safety factor of each system shall be at least 6. The safety factor is the ratio between the minimum breaking force of the chain and the force which can occur in the chain under static conditions with the work platform fully loaded.

7.5.3.1.3 Chain systems shall have a safety device actuated by an overspeed governor. This safety device shall gradually bring the work platform plus the rated load to a stop and hold it in the event of the lifting mechanism failing. The average deceleration shall not exceed $1,0 g_n$.

In the case of telescopic booms or masts the safety device may be realized by a second chain system, provided

- it is designed according to 7.5.3.1.2 and
- it is proven that under the condition of breakage in the first chain systems the second will take the loads and
- the failure of the first system is self-revealing.

9 Controls

9.5 MEWPs shall be provided with emergency stop controls of the lock-off type at each control position. They shall be marked according to EN 60204-1. Emergency stops shall cut the power to the actuators and be operated by a separate control system.

Emergency stop controls are not required on MEWPs with full flow control valves with control handles directly connected mechanically to the control valve spools.

10.12 MEWPs shall be fitted with an over-riding emergency device to ensure that, if the power supply fails, the work platform can be operated from an easily accessible position to return it to a position in which it is possible to leave the work platform without danger.

This shall not apply if safely leaving or reaching any position of the work platform is possible in any other way.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

AERIAL DEVICES WITH INSULATING BOOM
USED FOR LIVE WORKING

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.
- 4) The IEC has not laid down any procedure concerning marking as an indication of approval and has no responsibility when an item of equipment is declared to comply with one of its recommendations.

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PREFACE

This standard has been prepared by IEC Technical Committee No. 78: Tools for live working.

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

Six Months' Rule	Report on Voting	Two Months' Procedure	Report on Voting
78(CO)25	78(CO)29	78(CO)35	78(CO)43

Full information on the voting for the approval of this standard can be found in the Voting Reports indicated in the above table.

The following IEC publications are quoted in this standard:

Publications Nos.	50(121) (1978):	International Electrotechnical Vocabulary (IEV), Chapter 121: Electromagnetism.
	50(151) (1978):	Chapter 151: Electrical and magnetic devices.
	60:	High-voltage test techniques.
	60-1 (1989):	Part 1: General definitions and test requirements.
	156 (1963):	Method for the determination of the electric strength of insulating oils.
	212 (1971):	Standard conditions for use prior to and during the testing of solid electrical insulating materials.

- 247 (1978): Measurement of relative permittivity, dielectric dissipation factor and d.c. resistivity of insulating liquids.
- 270 (1981): Partial discharge measurements.
- 296 (1982): Specification for unused mineral insulating oils for transformers and switchgear. Amendment No. 1 (1986).
- 475 (1974): Method of sampling liquid dielectrics.
- 707 (1981): Methods of test for the determination of the flammability of solid electrical insulating materials when exposed to an igniting source.
- 855 (1985): Insulating foam-filled tubes and solid rods for live working.

Other publications quoted:

- ISO 1219 (1976): Fluid power systems and components - Graphic symbols.
- ISO 4302 (1981): Cranes - Wind load assessment.
- ISO 4305 (1981): Mobile cranes - Determination of stability.
- ISO 6605 (1986): Hydraulic fluid power - Hose assemblies - Method of test.

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