BS EN 62135-1:2015
Incorporating corrigendum February 2016

BSI Standards Publication

Resistance welding equipment

Part 1: Safety requirements for design, manufacture and installation

This British Standard is the UK implementation of EN 62135-1:2015. It is identical to IEC 62135-1:2015, incorporating corrigendum February 2016. It supersedes BS EN 62135-1:2008 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee WEE/6, Electric arc welding equipment.

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

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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 31 July 2015.

Amendments/corrigenda issued since publication

Date	Text affected
31 March 2016	Implementation of IEC corrigendum February 2016: Subclause 6.4.2.7 modified

EUROPÄISCHE NORM

July 2015

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Supersedes EN 62135-1:2008

English Version

Resistance welding equipment - Part 1: Safety requirements for design, manufacture and installation (IEC 62135-1:2015)

Matériels de soudage par résistance - Partie 1: Exigences de sécurité pour la conception, la fabrication et l'installation (IEC 62135-1:2015)

Widerstandsschweißeinrichtungen - Teil 1: Sicherheitsanforderungen für die Konstruktion, Herstellung und Errichtung (IEC 62135-1:2015)

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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 CEN-CENELEC Management Centre 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 62135-1:2015 E

European foreword

The text of document 26/558/FDIS, future edition 2 of IEC 62135-1, prepared by IEC/TC 26 "Electric welding" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62135-1:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-03-11
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-06-11

This document supersedes EN 62135-1:2008.

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

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 62135-1:2015 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 60085	NOTE	Harmonized as EN 60085.
IEC 60112	NOTE	Harmonized as EN 60112.
IEC 60364	NOTE	Harmonized in HD 384 / HD 60364 series (partly modified).
IEC 60990	NOTE	Harmonized as EN 60990.
IEC 62135-2	NOTE	Harmonized as EN 62135-2.
ISO 5826	NOTE	Harmonized as EN ISO 5826.
ISO 5828	NOTE	Harmonized as EN ISO 5828.
ISO 8205-1	NOTE	Harmonized as EN ISO 8205-1.
ISO 8205-2	NOTE	Harmonized as EN ISO 8205-2.

ISO 13732-1	NOTE	Harmonized as EN ISO 13732-1.
IEC 13732	NOTE	Harmonized in EN 13732 series (not modified).
ISO 14121-1 [1)]	NOTE	Harmonized as EN ISO 14121-1 [1)].

1) Withdrawn.

(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60204-1 (mod)	2005	Safety of machinery - Electrical equipment of machines - Part 1: General requirements	EN 60204-1	2006
-	-		+ corrigendum Feb.	2010
IEC 60364-4-41 (mod)	2005	Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock	HD 60364-4-41	2007
-	-		+ corrigendum Jul.	2007
IEC 60364-6	-	Low voltage electrical installations - Part 6: Verification	HD 60364-6	-
IEC 60417-DB	-	Graphical symbols for use on equipment	-	-
IEC 60445	-	Basic and safety principles for man-machine interface, marking and identification - Identification of equipment terminals, conductor terminations and conductors	EN 60445	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	-
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 60664-3	-	Insulation coordination for equipment within low-voltage systems - Part 3: Use of coating, potting or moulding for protection against pollution	EN 60664-3	-
IEC 61140	-	Protection against electric shock - Common aspects for installation and equipment	EN 61140	-

ISO 669	-	Resistance welding - Resistance welding equipment - Mechanical and electrical requirements	-	-
ISO 13849-1	-	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design	EN ISO 13849-1	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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RESISTANCE WELDING EQUIPMENT –

Part 1: Safety requirements for design, manufacture and installation

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62135-1 has been prepared by IEC technical committee 26: Electric welding.

This second edition cancels and replaces the first edition published in 2008. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

– creepage distances for pollution degree 4 are no longer valid (see Table 2);
– insulation requirements for Class II equipment are defined (see Table 3);
– dielectric test voltage interpolation restriction lower limit is changed to 220 V and interpolation for control and welding circuit is clarified (see Table 4);
– maximum temperature for insulation systems are reviewed in accordance with current edition of IEC 60085 (see Table 7);

– marking of terminals is defined (see 10.3);
– table for nominal voltages of supply networks is changed adopting Table B.2 of IEC 60664-1:2007 in place of the Table B.1 values referenced in the previous edition to provide for equipment to be connected to both earthed and unearthed systems. The change impacts the creepage and clearance distance requirements for some supply voltage ratings (see Annex A);
– touch current in fault condition are measurement procedures are clarified (see 6.4.4 and Annex C).
– welding circuit touch current is defined (see 6.2.6);
– touch current in normal condition are clarified and moved in protection against electric shock in normal service (see 6.3.7);
– heating test conditions are clarified (see 7.1.1);
– external surface temperature rise limitation is changed (see 7.3.2).

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

FDIS	Report on voting
26/558/FDIS	26/570/RVD

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 list of all the parts of the IEC 62135 series, under the general title *Resistance welding equipment,* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

RESISTANCE WELDING EQUIPMENT –

Part 1: Safety requirements for design, manufacture and installation

1 Scope

This part of IEC 62135 applies to equipment for resistance welding and allied processes and includes single and multiple welding stations which may be manually or automatically loaded and/or started.

This part of IEC 62135 covers stationary and portable equipment.

This part of IEC 62135 specifies electrical safety requirements for design, manufacture and installation. It does not cover all non-electrical safety requirements (e.g. noise, vibration).

This part of IEC 62135 does not include electromagnetic compatibility (EMC) requirements, which are included in IEC 62135-2.

To comply with this standard, all safety risks involved in loading, feeding, operating and unloading the equipment, where applicable, should be assessed and the requirements of related standards should be observed.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60204-1:2005, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements*

IEC 60364-4-41:2005, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*

IEC 60364-6, *Low-voltage electrical installations – Part 6: Verification*

IEC 60417-DB:2011[1], *Graphical symbols for use on equipment*

IEC 60445, *Basic and safety principles for man-machine interface, marking and identification – Identification of equipment terminals, conductor terminations and conductors*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

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1 “DB” refers to the IEC on-line database.