

Arc welding equipment — Installation and use

ICS 25.160.30

National foreword

This Draft for Development is the English language version of CLC/TS 62081:2002. It supersedes BS 638-7:1984 which is withdrawn.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature because it is identical to IEC/TS 62081:1999. It should be applied on this provisional basis, so that information and experience of its practical application may be obtained.

Comments arising from the use if this Draft for Development are requested so that UK experience can be reported to the European organization responsible for its conversion into a European Standard. A review of this publication will be initiated 2 years after its publication by the European organization so that a decision can be taken on its status at the end of its three-year life. The commencement of the review period will be notified by an announcement in *Update Standards*

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into a European Standard, to extend the life of the prestandard or to withdraw it. Comments should be sent in writing to the Secretary of BSI Technical Committee WEE/6, Arc welding equipment, at 389 Chiswick High Road, London W4 4AL, giving the document reference and clause number and proposing, where possible, an appropriate revision of the text.

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

Cross-references

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

Summary of pages

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English version

**Arc welding equipment —
Installation and use
(IEC 62081:1999)**

Matériel de soudage à l'arc —
Installation et utilisation
(CEI 62081:1999)

Lichtbogenschweißeinrichtungen —
Errichtung und Betrieb
(IEC 62081:1999)

This Technical Specification was approved by CENELEC on 2002-07-02.

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CENELEC

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

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Foreword

The text of the Technical Specification IEC 62081:1999, prepared by IEC TC 26, Electric welding, was submitted to the questionnaire and vote procedure and was approved by CENELEC as CLC/TS 62081 on 2002-07-02 without any modification.

This Technical Specification supersedes HD 407 S1:1980 and HD 427 S1:1981.

The following date was fixed:

- latest date by which the existence of the CLC/TS
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Endorsement notice

The text of the Technical Specification IEC 62091:1999 was approved by CENELEC as a Technical Specification without any modification.

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ARC WELDING EQUIPMENT – Installation and use

1 Scope

This technical specification is applicable to the installation and industrial and professional use of welding power sources, equipment and accessories for arc welding and allied processes.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this technical specification. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical specification are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050-195:1998, *International Electrotechnical Vocabulary – Part 195: Earthing and protection against electric shock*

IEC 60204-1:1997, *Electrical equipment of industrial machines – Part 1: General requirements*

IEC 60364-4-41:1992, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 41: Protection against electric shock*

IEC 60947-2:1995, *Low-voltage switchgear and controlgear – Part 2: Circuit breakers*

IEC 60974-1:1998, *Arc welding equipment – Part 1: Welding power sources*

IEC 60974-11:1992, *Arc welding equipment – Part 11: Electrode holders*

IEC 60974-12:1992, *Arc welding equipment – Part 12: Coupling devices for welding cables*

IEC 61008 (all parts), *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCB's)*

IEC 61009 (all parts), *Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBO's)*

IEC 61140:1997, *Protection against electric shock – Common aspects for installation and equipment*

3 Definitions

For the purpose of this technical specification, the following definitions apply:

3.1

welding circuit

a circuit that includes all conductive material through which the welding current is intended to flow

NOTE 1 – In arc welding, the arc is a part of the welding circuit.

NOTE 2 – In certain arc welding processes, the arc may be established between two electrodes. In such a case, the work piece is not necessarily a part of the welding circuit. [IEC 60974-1, 3.11]

3.2

extraneous conductive part

conductive part not forming part of the electrical installation and liable to introduce an electric potential, generally the electric potential of a local earth [IEV 195-06-11]

NOTE – Electrical installation includes the welding circuit.

3.3

work piece

metal piece or pieces on which welding or allied processes are performed

3.4

protective clothing and accessories

protective clothing and accessories (e.g. gloves, hand shields, head masks and filter lenses) used in order to diminish electric shock risks and the effects of fume and spatter and to protect the skin and eyes against arc radiation

3.5

environments with increased hazard of electric shock

environments where the hazard of electric shock by arc welding is increased in relation to normal arc welding conditions

NOTE 1 – Such environments are found for example

- a) in locations in which freedom of movement is restricted, so that the operator is forced to perform the welding in a cramped position (kneeling, sitting, lying) with physical contact with conductive parts;
- b) in locations which are fully or partially limited by conductive elements and in which there is a high risk of unavoidable or accidental contact by the operator;
- c) in wet, damp or hot locations where humidity or perspiration considerably reduces the skin resistance of the human body and the insulating properties of accessories.

NOTE 2 – Environments with increased hazard of electric shock are not meant to include places where electrically conductive parts in the near vicinity of the operator which can cause increased hazard have been insulated. [IEC 60974-1, 3.46]

3.6

industrial and professional use

use intended only for experts or instructed persons [IEC 60974-1, 3.2]

3.7

expert (competent person, skilled person)

a person who can judge the work assigned and recognize possible hazards on the basis of professional training, knowledge, experience and knowledge of the relevant equipment

NOTE – Several years of practice in the relevant technical field may be taken into consideration in assessment of professional training [IEC 60974-1, 3.3]

3.8**wire feeder**

equipment that delivers filler wire to the arc or weld zone. It includes the wire feed control and means to apply motion to the filler wire. It may also include the filler wire supply [IEC 60974-5, 3.1]

3.9**auxiliary power output**

circuit of a welding power source designed to provide electrical power to auxiliary equipment

4 Installation**4.1 General**

Welding power sources, equipment, cables and accessories used in arc welding installations should be intended for the purpose and built according to the relevant standards, e.g. IEC 60974-1.

Electromagnetic compatibility (EMC) requirements should be taken into consideration during installation.

Full use should be made of the technical data relevant to the welding equipment e.g. manufacturers' instructions.

Specific advice may be obtained from the manufacturer of the welding equipment as necessary.

4.1.1 Selection of supply cable and protection against overload

Supply cables for welding power sources and their overload protection should be selected according to the information given by the manufacturer of the welding equipment.

Supply cables should be placed or armoured, so that they cannot be damaged in use. If that cannot be achieved, a sensitive residual current circuit breaker, capable of operating at a leakage current not exceeding 30 mA according to IEC 61008, IEC 61009 or IEC 60947-2 (annex B) should be used to reduce the risk of electric shock.

For equipment other than that covered by clause 4, IEC 60204-1 may be applicable.

4.1.2 Supply disconnecting device

If the welding equipment is not fitted with a supply disconnecting device, the installer should ensure that such a device is fitted at the point of supply.

4.1.3 Emergency stopping device

Emergency stopping device should conform to IEC 60204-1.

NOTE – For welding in an environment with increased hazard of electric shock (see additionally 5.1).