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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Withdrawn

Arc welding equipment – Part 13: Welding clamp

Matériel de soudage à l'arc – Partie 13: Pince de retour de courant

IEC 60974-13:2011

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ARC WELDING EQUIPMENT –

Part 13: Welding clamp

FOREWORD

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International Standard IEC 60974-13 has been prepared by IEC technical committee 26: Electric welding

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

FDIS	Report on voting
26/442/FDIS	26/447/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.

A list of all parts of the IEC 60974 series can be found, under the general title *Arc welding equipment*, on the IEC website.

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- withdrawn,
- replaced by a revised edition, or
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ARC WELDING EQUIPMENT –

Part 13: Welding clamp

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1 Scope

This part of IEC 60974 is applicable to clamps for arc welding processes, designed to make an electrical connection to the workpiece without using tools.

This part of IEC 60974 is not applicable to clamps for underwater welding and plasma cutting.

This part of IEC 60974 specifies safety and performance requirements of welding clamps.

This part of IEC 60974 does not specify requirements for welding cables.

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 60050-151, *International Electrotechnical Vocabulary (IEV) – Part 151: Electrical and magnetic devices*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in the IEC 60050-151, the IEC 60974-1, as well as the following apply.

3.1
welding clamp
work clamp, US
return current clamp, UK
device connecting welding cable to workpiece

3.2
rated current
current assigned by the manufacturer that the welding clamp can accept at 60 % duty cycle without exceeding the permitted temperature rise

3.3
retaining means
mechanical arrangement that holds the welding clamp in position and prevents an unintentional withdrawal, when properly attached to the workpiece

4 Environmental conditions

The welding clamp shall be capable of operation when the following environmental conditions prevail:

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a) range of ambient air temperature :

during operation: –10 °C to +40 °C;

b) relative humidity of the air: up to 50 % at 40 °C;

up to 90 % at 20 °C.

The welding clamp shall withstand storage and transport at an ambient air temperature of – 20 °C to + 55 °C without any damage to function and performance.

5 Type tests

5.1 Test conditions

All type tests shall be carried out on the same new and completely assembled welding clamp.

All type tests shall be carried out at an ambient air temperature between 10 °C and 40 °C.

5.2 Measuring instruments

The accuracy of measuring instruments shall be:

a) electrical measuring instruments: class 1 (± 1 % of full-scale reading), except for the measurement of insulation resistance and dielectric strength where the accuracy of the instruments is not specified, but shall be taken into account for the measurement;

b) thermometer: ± 2 K.

5.3 Test sequence

The type tests given below shall be carried out in the following sequence:

a) general visual inspection;

b) temperature rise, see 8.1;

c) retaining means, see 9.1;

d) drop withstand, see 9.4;

e) voltage drop, see 7.1;

f) general visual inspection;

The other type tests in this part of IEC 60974 not mentioned above may be carried out in any convenient sequence.

6 Designation

The welding clamp shall be designated by the range of cross-section area of the welding cable intended to be connected. The test current is given in Table 1 based on maximum cross-section area. The welding clamp shall accept the minimum cross-sectional area as given in Table 1. Minimum cross-sectional area may be reduced to extend the welding clamp fitting range.

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