Approved as an American National Standard
ANSI Approval Date: September 22, 2009
Adoption of IEC 60974-12, Ed. 2 (2005)

ANSI/IEC 60974-12-2009

Arc Welding Equipment—
Part 12: Coupling Devices for Welding Cables

Published by

National Electrical Manufacturers Association
1300 North 17th Street, Suite 1752
Rosslyn, Virginia 22209

www.nema.org

© Copyright 2009 by the National Electrical Manufacturers Association. All rights including translation into other languages, reserved under the Universal Copyright Convention, the Berne Convention for the Protection of Literary and Artistic Works, and the International and Pan American Copyright Conventions. These materials are subject to copyright claims of IEC, ANSI, and NEMA. Not for resale. No part of this publication may be reproduced in any form, including an electronic retrieval system, without the prior written permission of NEMA. All requests pertaining to the ANSI/NEMA Standard should be submitted to NEMA.
NOTICE AND DISCLAIMER

The information in this publication was considered technically sound by the consensus of persons engaged in the development and approval of the document at the time it was developed. Consensus does not necessarily mean that there is unanimous agreement among every person participating in the development of this document.

The National Electrical Manufacturers Association (NEMA) standards and guideline publications, of which the document contained herein is one, are developed through a voluntary consensus standards development process. This process brings together volunteers and/or seeks out the views of persons who have an interest in the topic covered by this publication. NEMA does not write the document and it does not independently test, evaluate, or verify the accuracy or completeness of any information or the soundness of any judgments contained in its standards and guideline publications.

NEMA disclaims liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, application, or reliance on this document. NEMA disclaims and makes no guaranty or warranty, expressed or implied, as to the accuracy or completeness of any information published herein, and disclaims and makes no warranty that the information in this document will fulfill any of your particular purposes or needs. NEMA does not undertake to guarantee the performance of any individual manufacturer or seller’s products or services by virtue of this standard or guide.

In publishing and making this document available, NEMA is not undertaking to render professional or other services for or on behalf of any person or entity, nor is NEMA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances. Information and other standards on the topic covered by this publication may be available from other sources, which the user may wish to consult for additional views or information not covered by this publication.

NEMA has no power, nor does it undertake to police or enforce compliance with the contents of this document. NEMA does not certify, test, or inspect products, designs, or installations for safety or health purposes. Any certification or other statement of compliance with any health or safety-related information in this document shall not be attributable to NEMA and is solely the responsibility of the certifier or maker of the statement.
Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

Caution Notice: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.
FOREWORD FOR U.S. ADOPTION

This American National Standard is an adoption of IEC 60974-12, edition 2, *Arc welding equipment – Part 12: Coupling devices for welding cables*, and was developed and approved in accordance with procedures set forth by the American National Standards Institute. Any reference in this standard to an IEC 60974 part is understood to mean a reference to the equivalent ANSI/IEC 60974 part, where it exists.

This standard contains all the original text from IEC 60974-12, edition 2, in addition to a number of U.S. Differences to the IEC standard that were identified by Accredited Standards Committee W1, *Requirements for Apparatus Designed for Use in Arc Welding, Plasma Arc Cutting, and Allied Processes*. Each U.S. Difference is found both in a compilation of U.S. Differences following this foreword, and inserted in the appropriate place(s) in the standard relating to the difference. Each insertion is in red text and is marked by three lines on its left (two thin, one thick). Each difference is identified with the following format:

[Clause/Subclause Number]DV[Number of Difference for the Given Clause/Subclause]

Following this format, the example 17.1DV.3 signifies that it is the third U.S. Difference to subclause 17.1.

Suggestions for the improvement of this standard are welcome and should be submitted to the Secretariat of Accredited Standards Committee W1 as follows:

Greg Winchester, ASC W1 Secretary  
c/o National Electrical Manufacturers Association  
1300 North 17th Street, Suite 1752  
Rosslyn, VA 22209  
Fax 703-841-3399  
Email gre_winchester@nema.org

This standard was processed and approved by the Accredited Standards Committee W1. Committee approval does not necessarily imply that all Committee members voted for its approval. At the time this standard was approved, Accredited Standards Committee W1 consisted of the following members:

<table>
<thead>
<tr>
<th>Organization Represented</th>
<th>Name of Representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Welding Society</td>
<td>Andrew Davis – principal, Dick Holgren – alternate</td>
</tr>
<tr>
<td>CSA International</td>
<td>Andrew Krumins</td>
</tr>
<tr>
<td>CenterLine (Windsor) Ltd.</td>
<td>David Beneteau</td>
</tr>
<tr>
<td>ESAB Welding and Cutting</td>
<td>Charles Aimar</td>
</tr>
<tr>
<td>Hypertherm Inc.</td>
<td>Tony Zeller – principal, Bill Lynn – alternate</td>
</tr>
<tr>
<td>Lincoln Electric Company</td>
<td>Frank Stupczy – principal, Gary Mikitin – alternate</td>
</tr>
<tr>
<td>Miller Electric Manufacturing Company</td>
<td>David Werba – principal, Terry Christianson-Plato – alternate</td>
</tr>
<tr>
<td>Northeast Product Safety Society</td>
<td>Mike Madsen – alternate</td>
</tr>
<tr>
<td>Wayne Hoffman – Consultant / U.S. Technical Advisor, IEC TC 26</td>
<td>John Freudenberg</td>
</tr>
</tbody>
</table>

Wayne Hoffman, Vice Chairman  
Greg Winchester, Secretary  
John Freudenberg, Consultant / U.S. Technical Advisor, IEC TC 26  
Wayne Hoffman
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 cooperation 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.

2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.

3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

5) IEC provides no marking procedure to indicate its approval and cannot be held responsible for any equipment declared to be in conformity with an IEC Publication.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

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 60974-12 has been prepared by IEC technical committee 26: Electric welding.

This second edition cancels and replaces the first edition published in 1992. This edition constitutes a technical revision.

Major changes with respect to the first edition are the following:

- An operation capability requirement has been added to item b) of Clause 4).
- Tables 1 and 6 have slightly changed values and consider only a 60 % duty cycle.
- Subclause 7.1 “Voltage rating” has been newly introduced.
- Under 7.3 “Dielectric strength”, the paragraphs 2 and 5 are newly introduced to consider arc striking and stabilizing devices.
- Examples and design recommendations have been removed from the normative part of the document and introduced in Annex A.
The text of this standard is based on the following documents:

<table>
<thead>
<tr>
<th>FDIS</th>
<th>Report on voting</th>
</tr>
</thead>
<tbody>
<tr>
<td>26/303/FDIS</td>
<td>26/309/RVD</td>
</tr>
</tbody>
</table>

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.

IEC 60974 consists of the following parts, under the general title *Arc welding equipment*:

- Part 1:  Welding power sources
- Part 2:  Liquid cooling systems
- Part 3:  Arc striking and stabilizing devices
- Part 4:  Safety, maintenance and inspection of arc welding equipment in use
- Part 5:  Wire feeders
- Part 6:  Limited duty manual metal arc welding power sources
- Part 7:  Torches
- Part 8:  Gas consoles for welding and plasma cutting systems
- Part 10: Electromagnetic compatibility (EMC) requirements
- Part 11: Electrode holders
- Part 12: Coupling devices for welding cables

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

**Foreword**

DV.1 Modify the foreword by adding the following:

The numbering system in this standard uses a space instead of a comma to indicate thousands and uses a comma instead of a period to indicate a decimal point. For example, 1 000 means 1,000 and 1,01 means 1.01.

---

1. Under consideration.
1 Scope

This part of IEC 60974 is applicable to coupling devices for cables for welding and allied processes designed for connection and disconnection without using tools.

This part of IEC 60974 specifies safety and performance requirements of coupling devices.

This part of IEC 60974 is not applicable to coupling devices for underwater welding.