AWS A2.4:2012
An American National Standard

Standard Symbols for Welding, Brazing, and Nondestructive Examination

American Welding Society®

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An American National Standard

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Standard Symbols for Welding, Brazing, and Nondestructive Examination

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Prepared by the
American Welding Society (AWS) A2 Committee on Definitions and Symbols

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This standard establishes a method for specifying certain welding, brazing, and nondestructive examination information by means of symbols. Detailed information and examples are provided for the construction and interpretation of these symbols. This system provides a means of specifying welding or brazing operations as well as nondestructive examination, including the examination method, frequency, and extent.

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Foreword

This foreword is not part of AWS A2.4:2012, *Standard Symbols for Welding, Brazing, and Nondestructive Examination*, but is included for informational purposes only.

Joining processes and examination methods cannot take their proper place as fabricating tools unless means are provided for conveying information from the designer to joining and inspection personnel. The symbols in this publication are intended to be used to facilitate communication among the design, fabrication, and inspection personnel. Statements such as "to be welded throughout" or "to be completely welded," in effect, transfer the design responsibility from the designer to production personnel, who cannot be expected to know design requirements.

The symbols presented in this standard provide the means for placing welding, brazing, and nondestructive examination information on drawings. In practice, many users will need only a few of the symbols, and, if they desire, can select only the parts of the system that fit their needs.

The publication AWS A2.4 came into existence in 1976 as a result of combining and superseding two earlier documents, A2.0, *Standard Welding Symbols*, and A2.2, *Nondestructive Testing Symbols*. Both of these early documents had their origins in work done jointly by the American Welding Society and the American Standards Association (ASA) Sectional Committee Y32. AWS A2.0 was first published in 1947 and was revised in 1958 and 1968. AWS A2.2 first appeared in 1958 and was revised in 1969.

The evolution of AWS A2.4, *Standard Symbols for Welding, Brazing, and Nondestructive Testing*, is shown below:

ANSI/AWS A2.4-76 *Symbols for Welding and Nondestructive Testing*;
ANSI/AWS A2.4-79 *Symbols for Welding and Nondestructive Testing, Including Brazing*;
ANSI/AWS A2.4-86 *Standard Symbols for Welding, Brazing, and Nondestructive Examination*;
ANSI/AWS A2.4-93 *Standard Symbols for Welding, Brazing, and Nondestructive Examination*;
ANSI/AWS A2.4-98 *Standard Symbols for Welding, Brazing, and Nondestructive Examination*; and
AWS A2.4:2007 S*tandard Symbols for Welding, Brazing, and Nondestructive Examination*.

This seventh edition of AWS A2.4 has undergone extensive formatting modifications locating the figures closer to their referencing clauses. Numerous figures and clauses were revised and new figures added for clarification purposes. Several illustrations were added with the intent of making the standard more user-friendly. For example, Figures 47 and 48 have been added to illustrate the application of intermittent edge welds, which had previously lacked illustration. In addition, a new Informative Annex F, *ISO 2553 Welding Symbols*, was added to introduce users to ISO welding symbols. This introduction is educational and not intended to replace the official ISO document. Many of the modifications made were the result of comments and suggestions from the users of this standard.

This new edition also contains some revised technical content. For user clarity, the depth of groove placeholder "S" has been replaced by "D", and the groove weld size "(E)" has been replaced by "(S)" throughout the standard for groove welds. The history behind the "(E)" was to designate effective throat dimension for the groove weld size. These letter modifications will not alter the meaning of the groove welding symbol. Letters only reflect a placeholder for a numerical value and thus will not change the meaning of any existing or future use of the groove welding symbol. In addition, this letter modification will line up with the AWS A3.0M/A3.0, *Standard Welding Terms and Definitions*, methodology. Another change introduced is the standardization of the term "Depth of Groove" throughout the standard. In past revisions, "Depth of Bevel" was used randomly in place of "Depth of Groove." This change was made since a bevel weld symbol is only one symbol of the groove weld symbol family.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS A2 Committee on Definitions and Symbols, American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

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Table of Contents

Page No.

Page No.

Page No.

Page No.

List of Tables

List of Figures

Figure **Page No.**

Standard Symbols for Welding, Brazing, and Nondestructive Examination

1. General Requirements

1.1 Scope. This standard presents a system for indicating welding, brazing, and nondestructive examination requirements. The system includes provisions for the graphical representation of welds, brazes, and nondestructive examination methods with conventions for specifying, at a minimum, the location and extent of their application. Optional elements and supplementary symbols provide a means for specifying additional requirements.

The figures included with the text are intended to show how the correct format and applications of symbols may be used to convey welding, brazing, and nondestructive examination information. They are not intended to represent recommended welding, brazing, nondestructive examination, or design practice.

The clause addressing brazing uses the same symbols that are used for welding. The clause on nondestructive examination symbols establishes the symbols to be used on drawings to specify nondestructive examination for determining the suitability of components. The nondestructive examination symbols included in this standard represent nondestructive examination methods as discussed in the latest edition of AWS B1.10M/B1.10, *Guide for the Nondestructive Examination of Welds*. Definitions and the details for the use of the various nondestructive examination methods are found in AWS B1.10M/B1.10.

The limitations included in specifications and codes are also beyond the scope of this standard.

1.2 Units of Measurement. This standard does not require units of measure. Therefore, no equivalents or conversions are contained except when they are cited in examples.

1.3 Safety. Safety and health issues and concerns are beyond the scope of this standard and therefore are not addressed herein.

Safety and health information is available from the following sources:

American Welding Society:

(1) ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*

(2) AWS Safety and Health Fact Sheets

(3) Other safety and health information on the AWS website

Material or Equipment Manufacturers:

(1) Material Safety Data Sheets supplied by materials manufacturers

(2) Operating Manuals supplied by equipment manufacturers

Applicable Regulatory Agencies

Work performed in accordance with this standard may involve the use of materials that have been deemed hazardous, and may involve operations or equipment that may cause injury or death. This standard does not purport to address all safety and health risks that may be encountered. The user of this standard should establish an appropriate safety program to address such risks as well as to meet applicable regulatory requirements. ANSI Z49.1 should be considered when developing the safety program.

2. Normative References

The standards listed below contain provisions that, through reference in this text, constitute mandatory provisions of this AWS standard. For undated references, the latest edition of the referenced standard shall apply. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply.