AWS A2.4:2020
An American National Standard

# Standard Symbols for Welding, Brazing, and Nondestructive Examination


American Welding Society®

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**Approved by the**
**American National Standards Institute**
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# Standard Symbols for Welding, Brazing, and Nondestructive Examination

**8th Edition**

**Supersedes AWS A2.4:2012**

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, including the examination method, frequency, and extent. Detailed information and examples are provided for the construction and interpretation of these symbols.

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# Foreword

This foreword is not part of this standard 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 from the designer to fabrication and inspection personnel. Statements such as "to be welded throughout" or "to be completely welded," on a drawing have the effect of transferring the design responsibility from the designer to production personnel, who cannot be expected to know design requirements. In the interest of safety, using a general statement is dangerous as the welder is not expected to know the requirements of the weld.

This standard does not dictate welding tolerances, dimensions or design requirements. Information presented herein is to show how to convey this information.

The symbols presented in this standard were developed to provide the means for placing welding, brazing, and nondestructive examination information on two-dimensional 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. Applicability to three dimensional digital models is being researched and will be covered more extensively in future editions.

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*; |
| AWS A2.4:2007 | *Standard Symbols for Welding, Brazing, and Nondestructive Examination*; |
| AWS A2.4:2012 | *Standard Symbols for Welding, Brazing, and Nondestructive Examination*; |
| AWS A2.4:2020 | *Standard Symbols for Welding, Brazing, and Nondestructive Examination*. |

This eighth edition of AWS A2.4 includes the following revised content:

- Detailed usage for flare groove welds.
- Diameter symbol, Ø, is now no longer a part of the plug weld symbol as it was in the previous edition. However, it is still needed when designating the plug dimension on the welding symbol.
- The use of the contour symbol without a designated mechanical postweld finishing method previously meant that the contour of the weld had to be obtained by welding only. This requirement no longer applies and now allows the contour of the weld to be achieved by any method (e.g., welding or mechanical) as seen fit at the work site. The flat contour symbol is now limited to fillet welds, while the flush symbol is used for other welds, such as groove, plug, and slot.

- Combination groove weld symbol designating two different edge shapes. This is a major change in which one groove weld symbol may be drawn backward (e.g., flare bevel and bevel) to demonstrate actual configuration of the weld joint.
- The use of multiple subreference lines to designate a groove weld extending around a joint where there is no clear point where the joint transitions from one joint type to another.
- Spot and seam welds—the ability to designate size or strength by placing a value to the left of the weld symbol has been modified. The dimension to the left of the weld symbol will only designate the size of the weld. If strength is needed, this information will be required to be specified as a note in the tail of the welding symbol.
- Flash and upset welding symbols are no longer supported; therefore, the welding symbol if needed is recommended to be a reference line and arrow with either "FW" or "UW" designated in the tail of the welding symbol.
- Figures now have new number designations to reflect the clause in which they are referenced.
- The clause for the symbol for nondestructive examination has been rewritten and expanded.

Revisions to the 2020 edition are identified by underlines as well as vertical lines in the margin next to the figures.

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, 8669 NW 36 St, # 130, Miami, FL 33166.

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# 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. Requirements not detailed on the symbol used for welding, brazing, or nondestructive examination shall be provided or referenced elsewhere on the drawing.

Both figures and illustrations are used to depict the use of symbols. Figures are referenced by number within this document to show the correct format and application of symbols used to convey welding, brazing, and nondestructive examination information. An illustration is an un-numbered graphical representation of an example application described within the associated text without providing additional technical requirements. Figures and illustrations are not intended to represent recommended welding, brazing, nondestructive examination, or design practices.

The clause addressing brazing uses the same symbols and conventions as for welding, with the addition of the scarf symbol. The clause addressing symbols for nondestructive examination represents nondestructive examination methods as discussed in the latest edition of AWS B1.10M/B1.10, *Guide for the Nondestructive Examination of Welds*.

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) 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.