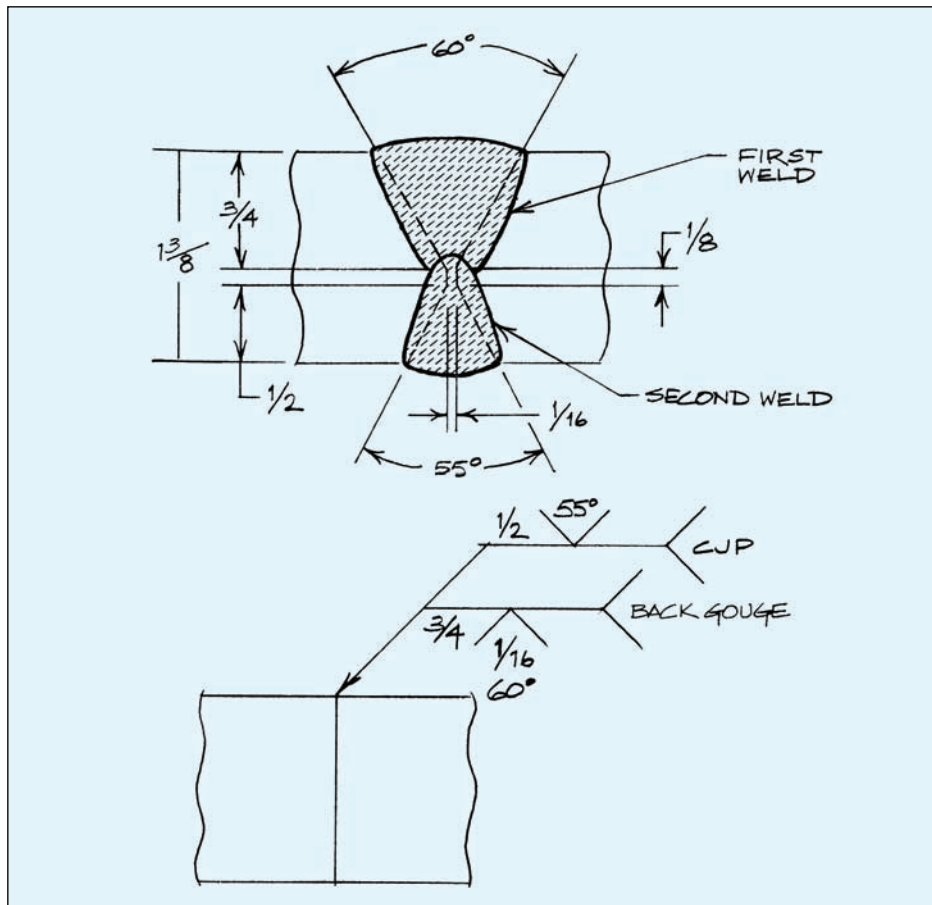


# SYMBOLS FOR JOINING AND INSPECTION



**Prepared by the  
Welding Handbook  
Chapter Committee  
on Symbols for  
Joining and  
Inspection:**

A. J. Kathrens, Chair  
*Canadian Welding Bureau*

W. L. Green, Chair  
(deceased)  
*The Ohio State University*

C. K. Ford  
*Hobart Institute of Welding  
Technology*

R. D. McGuire  
*National Board of Boiler  
& Pressure Vessel  
Inspectors*

---

**Welding Handbook  
Committee Member:**

L. C. Heckendorn  
*Intech R&D, USA*

---

## Contents

Introduction	360
Fundamentals	361
Welding Symbols	361
Welding Symbols for Specific Weld Types	373
Brazing Symbols	381
Soldering Symbols	382
Inspection Symbols	385
Conclusion	393
Bibliography	393
Supplementary Reading List	393

---

## CHAPTER 8

---

# SYMBOLS FOR JOINING AND INSPECTION

---

## INTRODUCTION

---

Standard symbols are used universally to indicate precise welding, brazing, and soldering information on engineering drawings. Welding symbols communicate a wealth of information. They specify in a concise manner the design of a weld or welds to be applied to a given joint. In addition, they prescribe the welding process to be used, the size and length of weld, the groove design, the face and root contours, and the sequence of operations, among other information. Symbols are also used to designate the nondestructive examination (NDE) requirements for welded or brazed joints. The examination methods to be implemented are indicated in these symbols.<sup>1</sup> In many cases, not all required information can be conveyed by means of symbols. Thus, supplementary notes or dimensional details, or both, are often included on drawings to provide the fabricator complete requirements.

This chapter discusses the fundamentals and applications of the symbols used in the welding industry. Welding and nondestructive examination symbols trace their origins back to American Welding Society (AWS) committee work done in the 1940s. The latest information on the complete system of joining and nondestructive examination symbols is presented in *Standard Symbols for Welding, Brazing, and Nondestructive Examination*,

---

1. Nondestructive examination methods, procedures, and the type of discontinuities that each method reveal are discussed in American Welding Society (AWS) Committee on Methods of Inspection, *Guide for the Nondestructive Examination of Welds*, AWS B1.10, Miami: American Welding Society. The selection of examination methods depends upon the quality requirements specified for the production.

ANSI/AWS A2.4.<sup>2,3</sup> This publication is the definitive reference for the appropriate symbols and conventions used to convey information regarding welding, brazing, and inspection requirements and should be consulted for updates made since the publication of this chapter.

The reader should note that some of the figures presented to illustrate the concepts discussed in this chapter include dimensions. For purposes of graphical simplicity, these dimensions are presented in U.S. customary units only unless otherwise indicated.

Many of the welding terms included in this chapter are defined in *Standard Welding Terms and Definitions*, AWS A3.0:2001.<sup>4</sup> The reader is advised to become familiar with the terms and definitions applicable to symbols.

---

2. American Welding Society (AWS) Committee on Definitions and Symbols, *Standard Symbols for Welding, Brazing, and Nondestructive Examination*, ANSI/AWS A2.4, Miami: American Welding Society.

3. At the time of the preparation of this chapter, the referenced codes and other standards were valid. If a code or other standard is cited without a date of publication, it is understood that the latest edition of the document referred to applies. If a code or other standard is cited with the date of publication, the citation refers to that edition only, and it is understood that any future revisions or amendments to the code or standard are not included; however, as codes and standards undergo frequent revision, the reader is encouraged to consult the most recent edition.

4. American Welding Society (AWS) Committee on Definitions, 2001, *Standard Welding Terms and Definitions*, AWS A3.0:2001, Miami: American Welding Society.