

AWS D14.5/D14.5M:2009
An American National Standard



Specification for Welding of Presses and Press Components



American Welding Society



**AWS D14.5/D14.5M:2009
An American National Standard**

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Specification for Welding of Presses and Press Components

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Prepared by the
American Welding Society (AWS) D14 Committee on Machinery and Equipment

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

Requirements are presented for the design and fabrication of cyclically loaded press weldments, which includes the weld repair of new and existing components. Filler metals and weld procedure specifications are recommended for the applicable base metals that are limited to those consisting of carbon and low-alloy steels. Allowable unit stresses are provided for weld metal and base metal for various cyclically loaded joint designs. This specification does not address the fabrication or weld repair of pressure containing components such as hydraulic cylinders, air cylinders, or die cushions.



American Welding Society

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Foreword

This foreword is not part of AWS D14.5/D14.5M:2009, *Specification for Welding of Presses and Press Components*, but is included for informational purposes only.

The specification AWS D14.5/D14.5M addresses a recognized need in the press manufacturing and press repair industries to continue the advance of welding and to increase product reliability. The specification provides manufacturers, fabricators, and repair companies with the minimum acceptable requirements for fabrication, modification, and repair of cyclical press components. The requirements for procedure and welder qualification, workmanship, and prequalified weld joints are emphasized.

This third edition has been edited to include both U.S. Customary and SI Units. Other revisions include updated tables and figures. Contributors who prepared this document and worked to provide a high quality, reliable working document represent manufacturers, users, repair companies, and insurance underwriters.

Underlined text in the subclauses, tables, or figures indicates an editorial or technical change from the 1997 edition. A vertical line in the margin indicates a revision from the 1997 edition.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS D14 Committee on Machinery and Equipment, American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

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Specification for Welding of Presses and Press Components

1. General Provisions

1.1 Scope. The purpose of this specification is to establish minimum acceptable requirements for weld joint design and the fabrication by welding of presses and press components, and is not intended to apply to material feed mechanisms and tooling. It shall also apply to the modification or repair by welding of new or existing presses or press components. Its intent is to promote the following:

- (1) High-quality construction and repair of presses;
- (2) Adequate initial and sustained performance of equipment;
- (3) Personnel and equipment safety;
- (4) Clear, concise fabrication practices that will be readily understood by the manufacturer, fabricator, buyer, and user;
- (5) The Manufacturer, Fabricator, and Repair Organization shall have and maintain a welding quality program that will establish that all requirements of this specification will be met. A recommended welding quality program is outlined in Annex D.

This specification establishes the minimum acceptable practice at the time of its publication. It is not intended to restrict new developments or in any way to inhibit advances in the art of welding.

This specification makes use of both U.S. Customary Units and the International System of Units (SI). The measurements may not be exact equivalents; therefore each system shall be used independently of the other without combining in any way. The specification with the designation D14.5 uses U.S. Customary Units. The specification D14.5M uses SI Units. The latter are shown in appropriate columns in tables and figures or within brackets []. Detailed dimensions on figures are in inches. A separate tabular form that relates the U.S. Customary Units with SI Units may be used in tables and figures.

Safety and health issues and concerns are beyond the scope of this standard, and therefore are not fully addressed herein. Safety and health information is available from other sources, including, but not limited to, ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, and applicable federal and state regulations.

1.2 Normative References. The following standards contain provisions which, 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.

Informative references (found in nonmandatory language or elements) are shown in Annex G.

AWS Standards¹

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

AWS A2.4, *Standard Symbols for Welding, Brazing, and Nondestructive Examination*;

AWS A3.0, *Standard Welding Terms and Definitions*;

AWS A5.1/A5.1M, *Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding*;

AWS A5.5/A5.5M, *Specification for Low-Alloy Steel Electrodes for Shielded Metal Arc Welding*;

AWS A5.01, *Filler Metal Procurement Guidelines*;

AWS A5.17/A5.17M, *Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc Welding*;

AWS A5.18/A5.18M, *Specification for Carbon Steel Filler Metals for Gas Shielded Arc Welding*;

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