AWS J1.2M/J1.2:2026
An American National Standard

Guide to Installation and Maintenance of Resistance Welding Machines



American Welding Society®



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Guide to Installation and Maintenance of Resistance Welding Machines

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Prepared by the
American Welding Society (AWS) J1 Committee on Resistance Welding Equipment

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This guide provides general information pertaining to the installation and maintenance of common types of resistance welding equipment. The user may determine some of this information is an appropriate and useful supplement to equipment or process-specific instructions. Generic preventive maintenance schedules, equipment troubleshooting checklists, and an overview of common weld parameter development techniques are provided.

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This standard is subject to revision at any time by the AWS J1 Committee on Resistance Welding Equipment. It must be reviewed every five years, and if not revised, it must be either reaffirmed or withdrawn. Comments (recommendations, additions, or deletions) and any pertinent data that may be of use in improving this standard are requested and should be addressed to AWS Headquarters. Such comments will receive careful consideration by the AWS J1 Committee on Resistance Welding Equipment and the author of the comments will be informed of the Committee's response to the comments. Guests are invited to attend all meetings of the AWS J1 Committee on Resistance Welding Equipment to express their comments verbally. Procedures for appeal of an adverse decision concerning all such comments are provided in the Rules of Operation of the Technical Activities Committee. A copy of these Rules can be obtained from the American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

Dedication

This revision of AWS J1.2M/J1.2, *Guide to Installation and Maintenance of Resistance Welding Machines*, is respectfully dedicated to the memory of Bill Qualls, who served on the AWS J1 Committee on Resistance Welding Equipment and the J1B Task Group responsible for preparing this guide since 2007.

The Committee sadly misses his leadership, wisdom, and friendship. His commitment and significant contributions to the advancement of resistance welding will live on through this new revision.

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Foreword

This foreword is not a part of this standard but is included for informational purposes only.

The J1 Committee on Resistance Welding Equipment was formed by the American Welding Society in 2005 to establish standards related to the design, construction, calibration, safe operation, and maintenance of resistance welding equipment.

This standard is intended to address the need for basic machine setup and maintenance instructions to enable users to get the most from their resistance welding equipment.

The Resistance Welder Manufacturers Association (RWMA) Bulletin 14:1995 – *Maintenance Manual for Resistance Welding Machines* was the predecessor to the first edition of this AWS publication, J1.2M/J1.2:2016, *Guide to Installation and Maintenance of Resistance Welding Machines*. This second edition has been reformatted to present checklists as forms for easier use and to incorporate updates in technology and experience.

A vertical line in the margin or underlined text in clauses indicates an editorial or technical change from the 2016 edition. All errata to this standard shall be published in the *Welding Journal* and posted on the AWS website.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS J1 Committee, American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

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Guide to Installation and Maintenance of Resistance Welding Machines

1. General Requirements

1.1 Scope. While resistance welding machines vary considerably in size and complexity, there are basic principles applicable to the installation, operation, maintenance, and troubleshooting. This standard is intended to provide basic information to the users of the resistance welding equipment to supplement the instructions and recommendations of the equipment manufacturer. Where there is conflict, the equipment manufacturers' documents shall take precedence.

It is the responsibility of the resistance welding equipment user to ensure the equipment conforms to relevant electrical, mechanical, and operating safety standards.

Further assistance relating to interpretation or applicability of any of the suggestions outlined in this guide shall be obtained from the original machine manufacturer, rebuilder, integrator, other organization or individual qualified to make such a determination.

Although this guide is not written with mandatory requirements, mandatory language, such as the use of "shall", will be found in those portions of the document where failure to follow the instructions or procedures could produce inferior, misleading, or unsafe results.

1.2 Units of Measurement. This standard makes use of both the International System of Units (SI) and U.S. Customary units. The latter are shown within brackets [ ] or in appropriate columns in tables and figures. The measurements may not be exact equivalents; therefore, each system must be used independently.

1.3 Safety. Safety issues and concerns are addressed in this standard, although health issues and concerns are beyond the scope of this standard.

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 and meet applicable regulatory requirements. ANSI Z49.1 should be considered when developing the safety program.

1.4 Terminology. As used in this specification, the word *shall (or must)* denotes a requirement, the word *should* denotes a guideline, and the word *may* denotes a choice.

2. Normative References

The documents listed below are referenced within this publication and are mandatory to the extent specified herein. For undated references, the latest edition of the referenced standard shall apply. For dated references, subsequent amendments or revisions of the publications may not apply since the relevant requirements may have changed.

American Welding Society (AWS) standards:

AWS A3.0M/A3.0, *Standard Welding Terms and Definitions, Including Terms for Additive Manufacturing, Adhesive Bonding, Brazing, Soldering, Thermal Cutting, Thermal Spraying, and Nondestructive Examination*

AWS J1.1M/J1.1, *Specification for Resistance Welding Controls*

AWS J1.3M/J1.3, *Specification for Materials Used in Resistance Welding Electrodes and Tooling*

National Fire Protection Association (NFPA) standards:

NFPA 70, National Electrical Code

NFPA 79, Electrical Standard for Industrial Machinery

3. Terms and Definitions

AWS A3.0M/A3.0, *Standard Welding Terms and Definitions*, provides the basis for terms and definitions used herein. However, the following terms and definitions are included below to accommodate usage specific to this document.

resistance welding machine. An apparatus incorporating a means for delivering a controlled force and current to perform a resistance welding process.

user. The individual or company responsible for instructing and directing the personnel who will operate and maintain the resistance welding machine.

welding current switching devices (WCSDs). Switching device used in resistance welding processes, capable of carrying and interrupting welding currents for a specified time. Examples include mechanical contactors, ignitron tubes, SCRs, transistors, and IGBTs.

welding machine. Nonstandard term for resistance welding machine.

4. Welding Machine Installation

4.1 Moving. There is a wide range of sizes and configurations of resistance welding machines, so a detailed discussion of each is not possible. However, here are some general considerations for moving the welding machine to the location of installation:

(1) Before moving the welding machine, ensure the method of conveyance, whether by hand, tool, or machine, has a suitable capability for safely making the move. Considerations include lifting capacity; transit surface type, grade, and roughness; the ability to observe and control the load during transit; and expertise to properly use the method of conveyance.

(2) Ensure sufficient clearance along the entire route for safe transit. Bumping, dropping, or sliding may cause severe damage to the alignment and components of the welding machine.

(3) Some welding machines may be top-heavy, making it essential that extra care is taken when moving them.

(4) Observe all warning signs on the packaging or welding machine.

(5) Lift the welding machine only at designated lifting points.

(6) Install or apply any device necessary or required to secure the welding machine to the method of conveyance or to provide control over its alignment, orientation, or position.