

AWS D16.3M/D16.3:2026
An American National Standard

Risk Assessment Guide for Robotic Arc Welding



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American National Standards Institute
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Risk Assessment Guide for Robotic Arc Welding

4th Edition

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Prepared by the
American Welding Society (AWS) D16 Committee on Robotic and Automatic Welding

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

AWS D16.3M/D16.3:2025, *Risk Assessment Guide for Robotic Arc Welding*, provides recommendations and guidelines for the safe implementation of robotic arc welding. Emphasis is placed on conformance of this process with prevailing industry standards for hazard analysis and proper safeguarding.



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Foreword

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

The AWS D16 Committee on Robotic and Automatic Welding was organized in 1985 to provide a centralized source for the exchange of technical information between manufacturers, installers, and operators of robotic and automated arc welding equipment.

AWS D16.3 was initially published in 2001. The fourth edition provides updated recommendations and guidelines for the safe implementation of robotic arc welding.

A vertical line in the margin or underlined text in clauses, tables, or figures indicates an editorial or technical change from the previous edition.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS D16 Committee on Robotic and Automatic Welding, American Welding Society, 8669 NW 36 St, # 130, Miami FL 33166.

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Risk Assessment Guide for Robotic Arc Welding

1. General Requirements

1.1 Scope. The purpose of D16.3M/D16.3:2026, *Risk Assessment Guide for Robotic Arc Welding*, is to identify hazards associated with robotic arc welding. This will help protect personnel. It is not intended to be a guideline for other industrial robotic applications. This guide is intended for persons performing risk assessment and applies to arc welding robots and robot arc welding systems performing the gas metal arc welding (GMAW) or flux cored arc welding (FCAW) process. Applicable ANSI B11 standards include B11.0, B11.19, B11.20, et al.

Exclusions:

This standard is not intended to be a guideline for other robotic applications, such as:

- (1) Automatic guided vehicle systems,
- (2) Undersea and space robots,
- (3) Automatic conveyor and shuttle systems,
- (4) Teleoperators,
- (5) Mobile robots, and
- (6) Multiple robots.

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 and health issues and concerns are beyond the scope of this standard; some safety and health information is provided, but such issues are not fully 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.