

**AWS D16.1M/D16.1:2026**  
**An American National Standard**

# **Specification for Robotic Arc Welding Safety**



**AWS D16.1M/D16.1:2026**  
**An American National Standard**

**Approved by the**  
**American National Standards Institute**  
**March 24, 2026**

# **Specification for**

# **Robotic Arc Welding Safety**

**3rd 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**

This standard establishes safety requirements with respect to the design, manufacture, maintenance, and operation of arc welding robot systems and ancillary equipment. It also helps to identify and minimize hazards involved in maintaining, operating, integrating, and setting up of arc welding robot systems.



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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, integrators, and operators of robotic and automated equipment. It has developed a number of standards related to robotic arc welding systems and their applications, as shown in the List of AWS Documents on Robotic and Automatic Welding.

The first edition of AWS D16.1M/D16.1:2004, *Specification for Robotic Arc Welding Safety*, was initially published in 2004. The third edition provides updated guidelines for the safe use of arc welding robots. It includes requirements for collaborative applications and safety features. Although safe practices for arc welding are covered in many standards, this standard focuses on safety aspects unique to robotic arc welding applications.

A vertical line in the margin or underlined text in clauses 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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# Specification for Robotic Arc Welding Safety

## 1. General Requirements

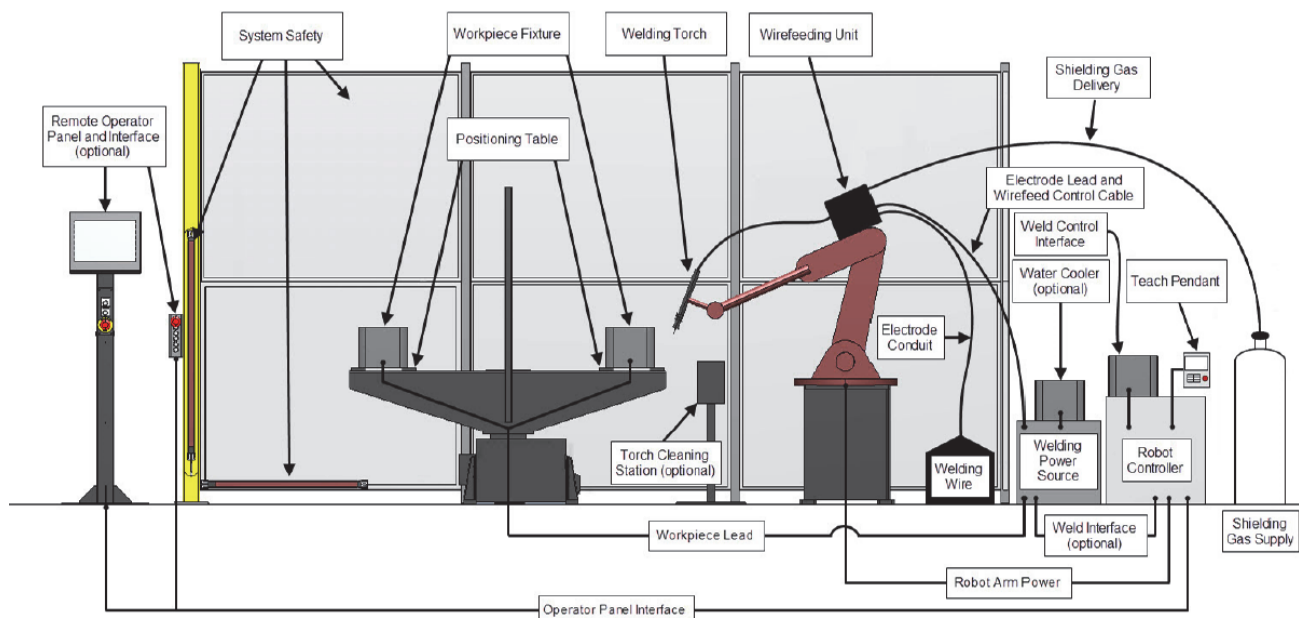
**1.1 Scope.** The requirements of this standard apply to industrial robot systems that are used to perform the gas metal arc welding (GMAW) with solid or metal cored wires, and flux cored arc welding (FCAW) processes. The purpose of this standard is to establish minimum safety requirements with respect to the design, manufacture, maintenance, and operation of arc welding robot systems and ancillary equipment. It is also designed to help identify and minimize hazards involved in maintaining, operating, and setting up of arc welding robot systems. This standard includes principles that may be applied to robotic systems with other arc welding processes.

A typical industrial arc welding robot system is illustrated in Figure 1. There may be other accessories that are outside the scope of this document.

### 1.1.1 Applications

**1.1.1.1 New or Remanufactured Installations.** The requirements of this standard pertaining to design and manufacture shall apply to all new or remanufactured arc welding robot systems, fixtures, and ancillary equipment manufactured for installation or installed after the compliance date subsequent to the ANSI approval date of this standard. Compliance to the standard shall be 12 months after the ANSI approval date.

**1.1.1.2 Existing or Rebuilt Installations.** Existing installations or the repair or rebuilding thereof shall be compliant with the standards in effect at the time of their original installation. Modifications to fixtures, end-of-arm devices, or ancillary equipment shall be reviewed for the creation of new hazards. Such new hazards shall be safeguarded in accordance with the applicable clauses of this standard.



**Figure 1—Example of a Typical Robotic Arc Welding Cell**