AWS D16.1M/D16.1:2004 (R2016)
An American National Standard

Specification for Robotic Arc Welding Safety

American Welding Society®

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Specification for Robotic Arc Welding Safety

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 (see List of AWS Documents on Robotic and Automatic Welding).

This first edition of AWS D16.1M/D16.1:2004, *Specification for Robotic Arc Welding Safety*, provides guidelines for the safe use of arc welding robots. Although safe practices for arc welding are covered in many standards, this standard focuses on safety aspects unique to robotic arc welding applications.

This document was reaffirmed in 2016 and the following minor, editorial changes were made:

(1) All occurrences of "Section" were changed to "Clause."

(2) Annex A, previously labeled as "Nonmandatory" was changed to "Informative."

(3) The address for AWS was updated.

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. Scope

1.1 Scope and Objectives. The requirements of this standard apply to industrial robots that are used to perform the gas metal arc welding (GMAW) 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.

A robotic arc welding system consists of a manipulator, power source, arc welding torch and accessories; electrode feed system, dereeling system, welding circuit, shielding and communication control, and grounding system. There may be other accessories that are outside the scope of this document. A typical system is illustrated in Figure 1.

This specification makes use of both U.S. Customary Units and the International System of Units (SI). These measurements may not be exact equivalents; therefore each system must be used independently of the other without combining in any way. The specification D16.1M uses SI Units. The specification with the designation D16.1 uses U.S. Customary Units. The latter are shown in appropriate columns in tables or within parentheses ( ) when used in the text.

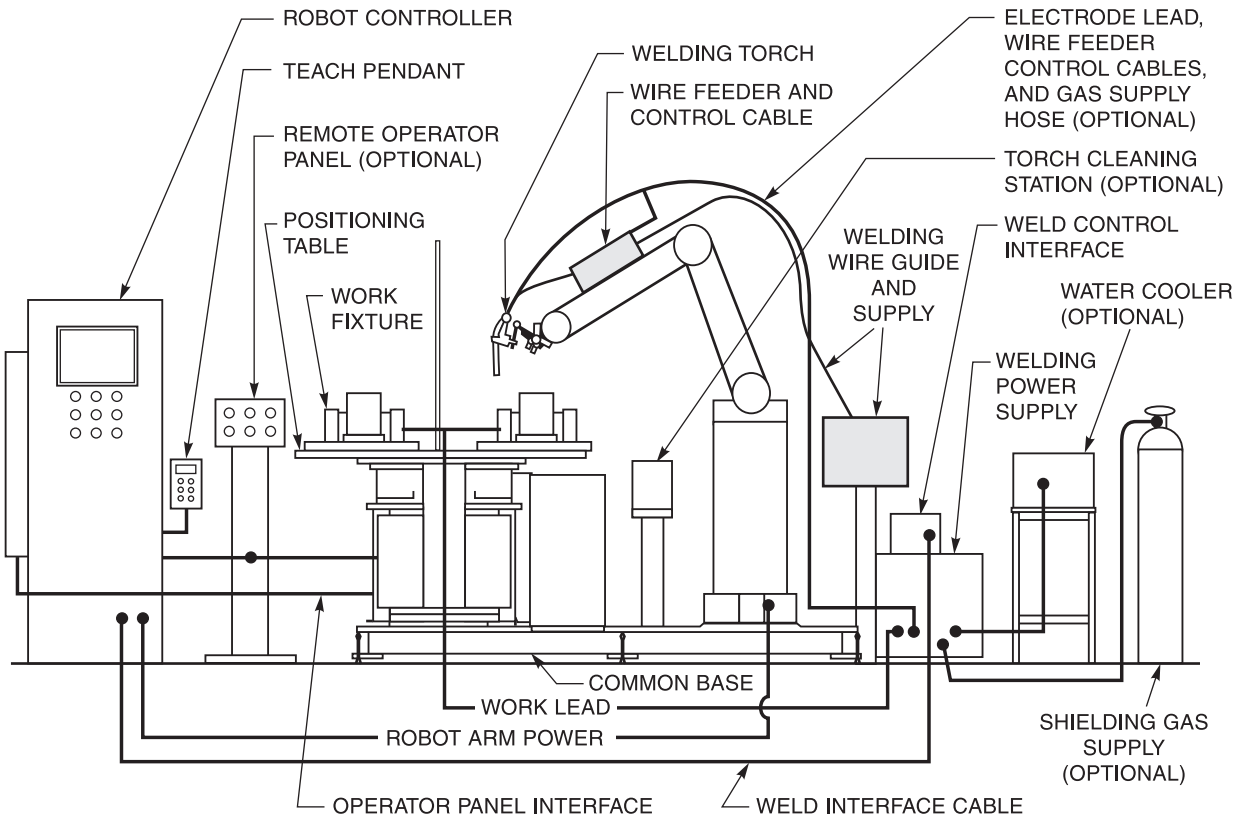

Figure 1—Example of a Typical Robotic Arc Welding Cell