

NEMA MG 10012-2023

*Safety Standard and Guide for Selection, Installation, and Use of
Electric Motors and Generators*

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Foreword

The use of electric machines, like that of all other utilization of concentrated power, is potentially hazardous. The degree of hazard can be greatly reduced by proper design, selection, installation, and use, but hazards cannot be completely eliminated. The reduction of hazard is the joint responsibility of the user, the manufacturer of the driven or driving equipment, and the manufacturer of the machine. The words “driven or driving equipment” as used in this publication mean equipment driven by a motor or equipment driving a generator.

This publication is intended to assist the user and the manufacturer of the driven or driving equipment in the selection of machines that have been designed and built to have features that contribute to safety.

The machine manufacturer has little, if any, control over the selection, installation, and use of these machines. Since the reduction of hazards depends greatly on how machines are selected, installed, and used, this publication has been prepared as a guide to assist the user and the manufacturer of the driven or driving equipment in the proper selection, installation, and use of machines. It points out possible hazards and suggests ways and means to reduce them. If the guidelines are followed, the possible hazards and risks of using machines will be reduced.

MG 10012-2023 revises and supersedes NEMA MG 2-2014.

This publication is periodically reviewed by the Motor and Generator Section of NEMA for any revisions necessary to keep it up to date with advancing technology. Proposed recommended revisions should be submitted to:

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Section 1 Scope

This publication provides recommendations for the selection, installation, and use of rotating electric machines in such a manner as to provide for the practical safeguarding of persons and property. Included are induction, synchronous, and direct-current machines 1/2 horsepower and above.

Excluded from the scope of this publication are the following:

- a. Welding generators.
- b. Booster, dynamic braking, and absorption type machines.
- c. Isolated electric farm lighting plants.
- d. Variable speed generator equipment for railway passenger cars.
- e. Main propulsion motors, generators, and motor generator sets mounted on railroad and transit locomotives and cars.
- f. Automotive motors, generators, and motor generator sets.
- g. Industrial vehicle motors (e.g., floor cleaning equipment, forklifts, golf carts).
- h. Motors, generators, exciters, and motor generator or exciter sets mounted on airborne craft.
- i. Toy motors and small synchronous motors of the type generally used in household clocks and timing devices.
- j. Additional specific features required in machines for use in hazardous (classified) locations. Such locations might be in mines or in areas defined in the *National Electrical Code*[®] (NEC) (ANSI/NFPA 70), Articles 500 through 506.
- k. Machines built to military specifications having requirements that conflict with or override the provisions of this publication.
- l. Machine parts intended for installation in a hermetically sealed enclosure.
- m. Non-salient-pole generators and their exciters.
- n. Generators larger than 10,000 kVA, and their exciters, for hydraulic turbine drive, including reversible motor generator units.
- o. Synchronous condensers, frequency changers, and phase converters.
- p. Electronic adjustable speed drives (converters, variable frequency drives, etc.)

Since any machine can be installed or operated in such a manner that hazards can occur, compliance with this publication does not by itself ensure a safe installation of the machine. However, proper selection of a machine with respect to the driven load and environment, and installed in accordance with the applicable provisions of national codes and sound local practices, will reduce hazards to persons and property.