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NEMA MG 1-2011 Condensed

Information Guide for General Purpose Industrial AC Small and Medium Squirrel-Cage Induction Motor Standards

National Electrical Manufacturers Association

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and
Medium Squirrel-Cage Induction Motor Standards

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Foreword

In the preparation of this publication, input of users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the concerned NEMA product Subdivision by contacting the:

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This publication was developed by the Motors and Generators Section. Section approval of the document does not necessarily imply that all section members voted for its approval or participated in its development. At the time it was approved, the section was composed of the following members:

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1 PURPOSE

This is a condensation of the standards on motors included in NEMA *Motors and Generators*, MG 1-2011. Some standards are reprinted in their entirety while others have been combined or abbreviated. The numbers placed at the end of many of the paragraphs in this condensation (e.g. MG 1 Part 6) refer to the complete standard in MG 1.

2 SCOPE

The standards in this guide cover alternating-current squirrel-cage motors up to and including the ratings built in frames corresponding to the continuous open-type ratings given in Table 1.

3 DEFINITIONS

ambient temperature: The temperature of the surrounding air which comes into contact with the heated parts of the apparatus. [MG 1-1.56]

capacitor motor: A single-phase induction motor with main winding arranged for direct connection to power source and auxiliary winding connected in series with a capacitor. There are three types of capacitor motors: capacitor start, in which capacitor phase is in circuit only during starting; permanent-split capacitor which has the same capacitance for both starting and running; two-value capacitor motor in which there are different values of effective capacitance for starting and running. [MG 1-1.20.3.3]

current:

locked-rotor current: The steady-state current taken from the line, with the rotor locked and with rated voltage and rated frequency applied to the motor. [MG 1-1.53]

no-load current: The current flowing through a line terminal of a winding when rated voltage is applied at a rated frequency with no connected load. [MG 1-1.54]

design letters: Identifies specific performance requirements for starting and operating characteristics. See Table 8. [MG 1-1.19.1]

dimensions: Dimension are indicated by the NEMA letters given in Table 19. [MG 1-4.1]

dripproof motor: An open motor in which the ventilating openings are so constructed that successful operation is not interfered with when drops of liquid or solid particles strike or enter the enclosure at any angle from 0 to 15 degrees downward from the vertical. [MG 1-1.25.1]

dripproof guarded motor: A dripproof motor whose ventilating openings are guarded. [MG 1-1.25.5]

energy efficient polyphase squirrel-cage induction motor: An induction motor having an efficiency in accordance with 9.21.3. [MG 1-1.42.2]

frame number: The frame number for small motors is the "D" dimension in inches multiplied by 16. The frame number for medium motors consists of three or four digits. The first two digits are equal to four times the "D" dimension in inches. When this product is not a whole number, the first two digits of the frame number are the next higher whole number. The third and, when required, fourth digit of the frame number is obtained from the value of the "2F" dimension in inches as shown in the columns headed 1 to 15, inclusive, in the Table 13. [MG 1-4.2]

general-purpose motor: A squirrel-cage induction motor, rated 500 horsepower and less, open or enclosed construction. It is designed in standard ratings with standard operating characteristics and mechanical construction for use under usual service conditions without restriction to a particular application or type of application. [MG 1-1.6]

guarded motor: An open motor in which all openings giving direct access to live metal or rotating parts (except smooth rotating surfaces) are limited in size by the structural parts or by screens, baffles, grilles, expanded metal, or other means to prevent accidental contact with hazardous parts. Openings giving direct access to such live or rotating parts shall not permit the passage of a cylindrical rod 0.75 inch in diameter.

The openings in the motor enclosure shall be such that (1) a probe such as that illustrated in Figure 1, when inserted through the openings, will not touch an uninsulated live metal part or a hazardous rotating part and