General Purpose Form-wound Squirrel Cage Induction Motors—185 kW (250 hp) through 2240 kW (3000 hp)

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Suggested revisions are invited and should be submitted to the Standards Department, API, 1220 L Street, NW, Washington, DC 20005, standards@api.org.

Contents

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1 Scope

1.1 General

1.1.1 This standard covers the requirements for form-wound induction motors for use in general purpose petroleum, chemical and other industrial severe duty applications and with the following characteristics:

a) rated 185 kW [250 horsepower (hp)] through 2240 kW (3000 hp) for four-, six-, and eight-pole speeds;

b) rated less than 600 kW (800 hp) for two-pole (3000 or 3600 RPM) motors of totally enclosed construction;

c) rated less than 930 kW (1250 hp) for two-pole motors of WP-II type enclosures;

d) rated less than 375 kW (500 hp) for vertical motors;

e) drive centrifugal loads;

f) drive loads having inertia values not exceeding those listed in NEMA MG 1 Part 20; and

g) operated as motors, not induction generators.

NOTE Motors larger than that covered above and motors in other applications should be specified in accordance with API 541.

1.1.2 Application of the API Monogram—If the product is manufactured at a facility licensed by API and it is intended to be supplied bearing the API Monogram, the requirements of Annex A apply.

1.1.3 A datasheet is provided in Annex B. The purchaser is not required to complete and provide the datasheet for pre-configured or catalog based motors manufactured with standard features. However, the purchaser shall provide the completed datasheet to specify motor requirements for a specific application and/or with options and features beyond the above description. A datasheet guide, which provides detailed information to assist with completion of the datasheet, is provided in Annex C.

1.2 Usual Service Conditions

Unless otherwise specified, motors conforming to this standard shall be suitable for operation within their rating under the following service conditions:

a) exposure to an ambient temperature in the range of –18 °C to 40 °C (0 °F to 104 °F);

b) exposure to a maximum altitude of 1000 m (3300 ft) above sea level;

c) indoor or outdoor severe duty applications, such as humid, chemical (corrosive), or salty atmospheres;

d) horizontal foot mounted;

e) installation in a Class I, Zone 2 or Division 2 hazardous (classified) location;

f) constant frequency sinusoidal input power;

g) not subject to frequent transient overvoltages (e.g. switching surges, lightning surges); and

h) direct coupled without a gear, fluid coupling, or other speed modification device.

1.3 Unusual Service Conditions

Unusual service conditions shall be brought to the attention of those responsible for the design, manufacture, application, and operation of the motor. Among such unusual conditions are:

a) exposure to:

1) combustible, explosive, abrasive, or conductive dust;

2) dirty operating conditions where the accumulation of dirt will interfere with normal ventilation;

3) nuclear radiation;

4) abnormal shock, vibrations, or mechanical loading from external sources;

5) abnormal axial or side thrust imposed on the motor shaft;

6) altitude or ambient temperature outside the range covered in 1.2;

7) reciprocating or positive displacement loads; and

8) offshore applications;

b) conditions under which the variation from rated voltage or frequency, or both, exceeds the limits given in NEMA MG 1 (or IEC 60034-1);

c) conditions under which the AC supply voltage is unbalanced by more than the limits given in NEMA MG 1 (or IEC 60034-1);

d) operation at speeds other than rated speed;

e) operation on an adjustable speed drive;

f) load inertia greater than and/or starting conditions more severe than given in NEMA MG 1;

g) orientation of a foot-mounted motor in any position other than horizontal;

h) vertical flange-mounted motors;

i) coupled through a belt, gear, fluid coupling or other speed modification device; and

j) requirements for enclosure purging or pre-start ventilation.

NOTE A bullet (●) at the beginning of a paragraph indicates that either a decision is required or further information is to be provided by the purchaser. This information should be indicated on the datasheets (see Annex B); otherwise it should be stated in the quotation request or in the order.

1.4 Dimensions and Standards

● **1.4.1** Both the SI and U.S. customary system of units and dimensions are used in this standard. Data, drawings, and hardware (including fasteners) related to equipment supplied to this standard shall use the system of units specified by the purchaser. An alternate system of units for hardware (including fasteners and flanges) may be substituted if mutually agreed upon by the purchaser and the vendor.