

AIEE
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American Standard
for
ROTATING ELECTRIC MACHINERY
FORMING A PART OF THE POWER EQUIPMENT
ON ELECTRICALLY-PROPELLED RAILWAY CARS,
RAILWAY LOCOMOTIVES, AND COACHES (TROLLEY AND PRIME MOVER)

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ROTATING ELECTRIC MACHINERY

Forming a Part of the Power Equipment on Electrically-Propelled Railway Cars, Railway Locomotives, and Coaches (Trolley and Prime Mover)

SECTION I SCOPE OF STANDARD

1.1 Scope

This Standard applies to rotating electric machinery forming a part of the power equipment of electrically-propelled railway cars, railway locomotives, and coaches, (trolley and prime mover).

1.2 Service Conditions

These Standards apply with the following exceptions:

- (a) **Altitude.** All temperature tests at the manufacturer's plant shall be made at the sea-level rating. No correction in rating is necessary when normal service altitude does not exceed 4000 feet or 1200 meters. One percent reduction in current rating shall be made for each 1000 feet or 300 meters additional elevation or fraction thereof.
- (b) **Temperature.** Whenever the temperature in the shade exceeds 40C special stipulations may be agreed upon by the manufacturer and the user.

SECTION II RATINGS AND RATING TESTS

2.1 Intent

The ratings as defined in these Standards are intended to enable an exact comparison to be made between machines for similar use.

2.2 Classes of Ratings

These Standards recognize three classes of ratings:

	Ventilated Machines	Totally Enclosed Machines
(a) Continuous Rating	Nominal	Optional
(b) One-Hour Rating	Not Specified*	Nominal
(c) Short-Time Overload Rating	Optional**	Optional

In establishing any of these ratings it is also necessary to satisfy all of the appropriate requirements in these Standards.

The continuous rating of a machine included in the scope of these Standards is the load it can carry on stand test for an unlimited period under the conditions specified in Section III without exceeding the limits of temperature rise given in Section III.

The one-hour rating of a machine included in the scope of these Standards is the load it can carry on stand test for a period of one hour starting cold under

* Only for traction motors. To be established after test only when required by purchaser.

** For traction motors and traction generators.

the conditions specified in Section III without exceeding the limits of temperature rise given in Section III.

The short-time overload rating of a machine included in the scope of these Standards is the overload it can carry on stand test for a specified time starting hot under the conditions specified in Section III without exceeding the limits of temperature rise given in Section III.

For comparison purposes, the five-minute short-time overload rating shall be used.

2.3 Type Tests

Type tests to establish ratings and characteristics shall be carried out on all new products. They comprise all the tests which are specified in these Standards except for those marked optional which must be agreed upon in order to be included. The number of type tests shall be one for every order for a new type, up to one hundred machines on the order, and one for every additional three hundred machines (or part thereof) for larger orders, unless otherwise agreed to between the manufacturer and the purchaser.

Machines of standardized design in regular production shall be given type tests at the rate of one per three hundred.

2.4 Routine Tests

Routine tests shall be carried out on all machines. They include only those tests specified in these Standards which are expressly designated as such. These shall be preceded by a heating-up run. In no case do routine tests require precise temperature measurements.

2.5 Heating-Up Run

A heating-up run is a period of operation with current and ventilation designed to bring the machine to approximately its temperature-rise limit.

2.6 Rated Voltage

The rated voltage of a machine is the voltage specified at the terminals of the machine.

The rated voltage of a motor is the same as the nominal supply voltage of the traction network in all cases where the motor is fed directly from the line. In the case of alternating-current motors fed through a transformer placed on a car or locomotive, it is equal to 90 percent of the maximum no-load secondary voltage of the transformer including the transition coils (if used) when the primary of the transformer is fed at the nominal supply voltage of the traction network.

For motors working permanently in series the rated voltage of the motor is designated by the ratio E/n ,