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ANSI/ASHRAE Standard 37-2024
Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment

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NOTE

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FOREWORD

Standard 37-2024 is a major revision of Standard 37-2009 (RA 2019). Applicable sections of ANSI/ASHRAE Standard 116 have been added to provide an inclusive testing and rating method. This standard was prepared under the auspices of ASHRAE. It may be used, in whole or in part, by an association or government agency with due credit to ASHRAE. Adherence is strictly on a voluntary basis and merely in the interests of obtaining uniform standards throughout the industry.

1. PURPOSE

1.1 This standard provides test methods and calculations for steady-state, cyclic, and part-load performance and methods for establishing seasonal performance for unitary air-conditioning and heat pump equipment, including single capacity, multiple capacity, variable capacity, unloading, or multiple compressors for ducted and ductless systems.

2. SCOPE

2.1 This standard applies to electrically driven mechanical-compression unitary air conditioners and heat pumps consisting of one or more assemblies that include an indoor air coil(s), a compressor(s), and an outdoor coil(s). Where such equipment is provided in more than one assembly, the separated assemblies are designed to be used together.

2.2 This standard does not include methods of testing the following:

a. Cooling coils for separate use
b. Condensing units for separate use
c. Room air conditioners
d. Heat-operated unitary equipment
e. Liquid chilling packages
f. Multiple indoor air coils operating simultaneously in heating and cooling modes
g. Cyclic testing of air-cooled unitary air conditioners and heat pumps with rated cooling capacity greater than 19.05 kW (65,000 Btu/h) or, in the case of heating-only heat pumps, rated heating capacity greater than 19.05 kW (65,000 Btu/h)

3. DEFINITIONS

air conditioner: assembly of equipment for air treatment to simultaneously control its temperature, humidity, cleanliness, and distribution to meet the requirements of a conditioned space.

air sampling device: combination of air sampling tree(s), conduit, fan, dry-bulb, and water-vapor content measurement device used to determine dry-bulb temperature and water-vapor content of an air sample.

air sampling tree: an assembly consisting of a manifold with branch tubes, which contain multiple sampling holes that draw an air sample from a critical location from the unit under test (including, but not limited to, the indoor air inlet, indoor air outlet, and outdoor air inlet).

air, standard: air weighing 1.20 kg/m^3 (0.075 lb/ft^3), which approximates dry air at a temperature of 21.11°C (70°F) and a barometric pressure of 101.33 kPa (29.921 in. of mercury).

apparatus: as used in this standard, this term refers exclusively to test room facilities and instrumentation.

aspirating psychrometer: a piece of equipment with a monitored airflow section that draws uniform airflow through the measurement section and has probes for measurement of air temperature and water-vapor content.

capacity

heating: the rate, expressed in W (Btu/h), of increase in the dry-bulb temperature (adds sensible heat) of the air passing through the equipment under specified conditions of operation.

latent cooling: the rate, expressed in W (Btu/h), of removal of latent heat (reduces the moisture content) from the air passing through the equipment under specified conditions of operation.

sensible cooling: the rate, expressed in W (Btu/h), of decrease in the dry-bulb temperature (removes sensible heat) of the air passing through the equipment under specified conditions of operation.