



Standard Test Method for Motor Life Evaluation of a Built-In (Central Vacuum) Vacuum Cleaner¹

This standard is issued under the fixed designation F 884; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method is limited to motor life evaluation of central vacuum cleaners.

1.2 This test method provides a test to determine operating life of the motor, before servicing is needed, by an accelerated laboratory procedure. The motor is tested while mounted and is operated in central vacuum cleaner.

1.3 The values as stated in inch-pound units are to be regarded as the standard. The values in parentheses are for information only.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

E 337 Test Method for Measuring Humidity with a Psychrometer (the Measurement of Wet- and Dry-Bulb Temperatures)²

F 431 Specification for Air Performance Measurement Plenum Chamber for Vacuum Cleaners³

F 608 Test Method for Evaluation of Carpet-Embedded Dirt Removal Effectiveness of Household Vacuum Cleaners³

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *failure*—motor stoppage.

3.1.2 *motor life*—limited by the failure of the motor. Any failure integral with motor, such as armature assembly, field assembly, housing(s), bearings, motor cooling fan and primary air moving fan, or both, brush assemblies, motormounted nonresetable thermal protection devices, or any other component judged to be integral with the motor, shall be judged as motor stoppage.

4. Significance and Use

4.1 The test results provide an indication of the motor life of an electric vacuum cleaner in operating life. The end of the motor life will be judged in accordance with Section 3.

5. Apparatus and Materials

5.1 *Voltage Regulator*—The regulator must be capable of maintaining 120 ± 2 V rms with a waveform that is essentially sinusoidal with 3 % maximum harmonic distortion for the duration of the test.

5.2 *Voltmeter*, to provide measurements accurate to within ± 1 %

5.3 *Timer and Switch*—The timer and switch will have the capacity to control off/on duty cycle of the cleaner during the life test.

5.4 *Sharp Edge Orifice Plate*—The orifice, 0.75 in. (19.05 mm) in diameter, shall be in accordance with the figure illustrating orifice plate detail in Specification F 431.

5.5 *Wattmeter*, to provide measurements accurate to within 1 %.

5.6 *Plenum Chamber*, in accordance with the plenum chamber described in Specification F 431.

5.7 *Water Manometer*, or equivalent instrument measuring in increments of 0.1 in. (2.54 mm).

5.8 *Barometer*, with an accuracy to ± 0.05 in. (1.27 mm) Hg, capable of measuring uncorrected barometric pressure (test station pressure) with scale division 0.02 in. (0.51 mm) or finer.

5.9 *Thermometer*, having a range from 18 to 80°F (−8 to 27°C) and graduated in 1°F (0.5°C) increments.

5.10 *Psychrometer*—The psychrometer shall meet the requirements of Test Method E 337 with thermometers graduated in increments of 1°F (0.5°C).

5.11 *Test Fixture*—Any suitable surface that will support the vacuum cleaner in the normal operating position.

6. Sampling

6.1 Test a minimum of three units (or a larger sample size if desired) of any model. Select all samples at random in accordance with good statistical practice. Results shall provide

¹ This test method is under the jurisdiction of ASTM Committee F-11 on Vacuum Cleaners and is the direct responsibility of Subcommittee F11.30 on Durability-Reliability.

Current edition approved March 10, 1996. Published May 1996. Originally published as F 884 – 90. Last previous edition F 884 – 90.

² *Annual Book of ASTM Standards*, Vol 11.03.

³ *Annual Book of ASTM Standards*, Vol 15.07.