

Standard Test Method for Straight Line Movement of Vacuum Cleaners While Cleaning Carpets¹

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1. Scope

1.1 This test method covers the measurement of the relative work required to move the carpet cleaning mechanism of an upright, canister, stick, or combination vacuum cleaner in a straight line with forward and backward stroking on a selection of typical carpeted surfaces.

1.2 This test method can be used in the testing of household and commercial vacuum cleaners.

1.3 This test method measures the relative work needed to move the vacuum cleaner with its motor or motors in operation.

1.4 This test method applies to the vacuum cleaning of carpets only.

1.5 *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.*

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

2. Referenced Documents

2.1 ASTM Standards:

F 395 Terminology Relating to Vacuum Cleaners²

F 608 Laboratory Test Method for Evaluation of Carpet-Embedded Dirt Removal Effectiveness of Household Vacuum Cleaners²

F 655 Specification for Test Carpets and Pads for Vacuum Cleaner Testing²

F 884 Test Method for Motor Life Evaluation of a Built-in (Central Vacuum) Vacuum Cleaner²

F 922 Test Method for Motor Life Evaluation of a Household Electric Motorized Nozzle²

F 1038 Test Method for Motor Life Evaluation of a Household Canister Vacuum Cleaner²

F 1334 Test Method for Determining Sound Power Level of Vacuum Cleaners²

3. Summary of Test Method

3.1 The carpet cleaning mechanism of the vacuum cleaner is moved back and forth on the test carpet in a prescribed manner during the test. A handle clamp assembly with a strain gage is attached to the vacuum cleaner at the location where the user's working hand usually grips the carpet cleaning mechanism. This gage measures the force involved in moving only the carpet cleaning mechanism.

3.2 Simultaneously, by means of a rod pivotally mounted to the test fixture, the distance that the vacuum cleaner moves is monitored. The force and distance signals are then introduced into an X-Y recorder that produces a plot from which relative work is determined. Alternate data acquisition and computing methods are acceptable.

4. Significance and Use

4.1 This test method measures the relative work required by the user during the cleaning operation for the movement of a vacuum cleaner in the home or other cleaning location. Relative work is defined as the work measured by the equipment described in this test method.

4.2 This measurement is relative to the work performed by the user of vacuum cleaners and may be used for comparison between vacuum cleaners.

4.3 The relation between actual vacuum cleaner usage and the method of operation is valid only if the vacuum cleaner user operates the vacuum cleaner properly and in accordance with the manufacturer's instructions.

5. Apparatus

5.1 Mobility Fixture.³

5.2 Test Platform (see 5.1 and Fig. 1).

¹ This test method is under the jurisdiction of ASTM Committee F11 on Vacuum Cleaners and is the direct responsibility of Subcommittee F11.20 on Performance (Test Methods).

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² *Annual Book of ASTM Standards*, Vol 15.08.

³ A complete set of drawings, photos, vendor information, assembly, calibration and testing instructions for the mobility fixture and associated equipment may be obtained from ASTM Headquarters. Request Adjunct No. 12-614090-47.