



Designation: F851 – 87 (Reapproved 2013)

Standard Test Method for Self-Rising Seat Mechanisms¹

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1. Scope

1.1 This test method evaluates the performance of self-rising or automatic-lifting seat mechanisms of chairs in places of assembly.

1.2 This test method addresses only the raising of the seat. It does not address the load that may be placed on that seat. Committee F15 is considering a standard addressing this load.

1.3 The values as stated in inch-pound units are to be regarded as the standard. The values in parentheses are provided 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. Summary of Test Method

2.1 The principle of the test method is to test the reliability of the seat-lifting mechanism.

2.2 This test method consists of using hard rubber rollers attached dually to the end of an actuating bar to lower the seat. The seat is then released and allowed to lift automatically to the “at-rest” or “raised” position. The test method requires the seat to be cycled at a specified rate, and allows for the number of cycles completed, without failure, to be measured.

2.3 The “at-rest” position for an auditorium chair is the “raised” position. The seat is lowered to allow the occupant to be seated. When released, the seat is automatically returned to the “raised” position by use of a spring return mechanism or counter-weight for gravity lift (see Figs. 1 and 2).

3. Significance and Use

3.1 This test method provides the criteria for a practical, reproducible test for assuring the proper life-cycle of self-rising or automatic-lifting seat mechanisms of chairs.

¹ This test method is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.23 on Auditorium Seating.

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3.2 This test method should be considered suitable for the testing required for design purposes, manufacturing control, service evaluation, specification acceptance, and regulatory statutes.

4. Apparatus

4.1 A representative apparatus capable of performing this test is shown in Figs. 1 and 2. This unit consists of a motor-powered rotating arm with adjustable length and two 3½-in. (88.9 mm) roller wheels fastened to the end of the arm.

4.2 Other suitable apparatus may be used.

5. Sampling

5.1 *Test Specimen*—Each test specimen shall consist of a self-rising seat mechanism contained in a single chair.

5.2 *Sample Size*—The sample size shall consist of three test specimens selected at random from a standard production run (see Appendix X1.1). All components of the test specimens must be manufactured using that manufacturer’s standard materials, methods, and design.

6. Specimen Preparation

6.1 Assemble and mount the test specimen to simulate installation conditions, following manufacturer’s assembly instructions. Record dimensional position of seat in “raised” position relative to the back of the chair (see Fig. 3).

7. Procedure

7.1 Design the apparatus to lower the seat to its complete “down” position.

7.2 The apparatus then releases the seat. This allows the seat-lifting mechanism to function, returning the seat to the “at-rest” or “raised” position, completing one cycle.

7.3 Continue for 100 000 cycles to be completed within a period not to exceed 14 calendar days (see Appendix X1.2).

7.4 The seat-lifting mechanism passes the test if the three specimens meet the following conditions:

7.4.1 Completion of 100 000 cycles without failure. To return to raised position see Appendix X1.3.

7.4.2 Dimensional deviation of front of seat shall not exceed 1½ in. (38.1 mm).