This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: F2106 – 18

An American National Standard

Standard Test Methods for Evaluating Design and Performance Characteristics of Motorized Treadmills[1]

This standard is issued under the fixed designation F2106; 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.

INTRODUCTION

The goal of these test methods is to provide reliable and repeatable methods for the evaluation of motorized treadmills. Users of the equipment must recognize that conformance to a standard will not necessarily prevent injuries. Like other physical activities, exercise involving a treadmill involves a risk of injury, particularly if the equipment is not maintained or used properly.

The equipment user must recognize, however, that a standard alone will not necessarily prevent injuries. Like other physical activities, exercise involving fitness equipment involves the risk of injury, particularly if the equipment is used improperly or not properly maintained. In addition, users with physical limitations should seek medical advice or instruction from the fitness facility, or both, prior to using this equipment. Certain physical conditions or limitations may preclude some persons from using this equipment as intended by the manufacturer, and using this equipment may increase the risk of injury.

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1. Scope

1.1 These test methods specify procedures and equipment used for testing and evaluating a motorized treadmill for compliance to Specification F2115. Both design and operational parameters will be evaluated. Where possible and applicable, accepted test methods from other recognized bodies will be used and referenced. In case of a conflict between this document and Specification F2115, Specification F2115 takes precedence.

1.2 This test method is to be used in conjunction with Specification F2276, Test Methods F2571, and Specification F2115.

1.3 This standard takes precedence over Specification F2276 and Test Methods F2571 in areas that are specific to motorized treadmills.

1.4 *Requirements*—A motorized treadmill is to be tested for all of the following parameters:

1.4.1 Stability,
1.4.2 Exterior design,
1.4.3 Endurance loading,
1.4.4 Static loading,
1.4.5 Adjustable incline system,
1.4.6 Controls,
1.4.7 Motorized drive system,
1.4.8 Folding treadmills,
1.4.9 Additional universal design requirements,
1.4.10 Documentation,
1.4.11 Marking, and
1.4.12 Warnings/Warning labels.

1.5 This test method[2] contains additional requirements to address the accessibility of the equipment for persons with disabilities.

1.6 The values stated in SI units are to be regarded as the standard. The values in parenthesis are for information only.

1.7 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.8 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

[1] These test methods are under the jurisdiction of ASTM Committee F08 on Sports Equipment, Playing Surfaces, and Facilities and are the direct responsibility of Subcommittee F08.30 on Fitness Products.

Current edition approved June 1, 2018. Published July 2018. Originally approved in 2001. Last previous edition approved in 2012 as F2106 – 12. DOI: 10.1520/F2106-18.

[2] This work was funded, in part, by the Rehabilitation Engineering Research Center on RecTech through the National Institute on Disability, Independent Living, and Rehabilitation Research grant #90RE5009-01-00.

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2. Referenced Documents

2.1 *ASTM Standards:*[3]

F1749 Specification for Fitness Equipment and Fitness Facility Safety Signage and Labels

F2115 Specification for Motorized Treadmills

F2276 Specification for Fitness Equipment

F2277 Test Methods for Evaluating Design and Performance Characteristics of Selectorized Strength Equipment

F2571 Test Methods for Evaluating Design and Performance Characteristics of Fitness Equipment

F3021 Specification for Universal Design of Fitness Equipment for Inclusive Use by Persons with Functional Limitations and Impairments

F3022 Test Method for Evaluating the Universal Design of Fitness Equipment for Inclusive Use by Persons with Functional Limitations and Impairments

2.2 *UL Standard:*[4]

UL 1647 Motor Operated Massage and Exercise Machines

3. Terminology

3.1 *Definitions*—For definitions applicable to this standard, see Specifications F2115 and F3021.

4. Significance and Use

4.1 The purpose of these test methods is to provide reliable and repeatable test methods for the evaluation of motorized treadmills assembled and maintained according to the manufacturer's specifications. Use of these test methods in conjunction with Specification F2115, Specification F2276, and Test Methods F2571 is intended to ensure appropriate performance and reliability of a motorized treadmill and reduce the risk of serious injury from design deficiencies.

5. Sample Preparation

5.1 Assemble and adjust the treadmill on a horizontal surface according to the manufacturer's instructions. Once fully assembled, verify according to the manufacturer's instructions that the moving surface has been adjusted to the proper tension and alignment. Unless otherwise stated, the treadmill must pass the following tests without adjustment from this initial condition. Apply power to the treadmill and verify that the unit functions properly. If the unit is equipped with an adjustable incline system, operate it through its full range.

5.2 The individual test methods will describe any variations or modifications that are required to the test sample.

6. Test Methods and Procedures

6.1 *Stability*—The treadmill shall be tested by a series of load applications in the orientation that is most obviously unstable.

6.1.1 *Apparatus and Set Up*—Place treadmill on a nonskid 10° surface in the orientation that is least stable. A method of applying a steady state force equal to 1.0 × maximum user weight in the vertical direction must be provided. Possible methods of providing force include, but are not limited to, pneumatic cylinder(s) or dead weights.

6.1.2 *Calibration*—Using an angle measuring instrument accurate to within 0.1°, verify the nonskid surface is 10 ± 0.5°. Calibrate the load measurement apparatus to confirm accuracy to within ±20 N (4.5 lb) over entire user weight range.

6.1.3 *Procedure*—Test the treadmill as follows:

6.1.3.1 Using the aforementioned load apparatus, apply a vertical load equal to 1.0 × maximum specified user weight ± 5 % in a non-impact manner at the point on the foot rail which creates the most instability. Verify that the treadmill does not tip over.

6.1.3.2 Repeat 6.1.3.1 with the treadmill oriented in any other directions of potential instability.

6.1.3.3 For folding treadmills, the treadmill shall, after completing 6.1.3.1 and 6.1.3.2, be folded to its storage position per manufacturer's instructions and placed on the 10° inclined surface in all orientations that could cause instability. No additional load is to be applied.

6.1.4 *Pass/Fail Criteria*—In none of the above test conditions shall the treadmill tip over.

6.1.5 *Precision and Bias*—No information is presented about either the precision or bias of this test for measuring stability since the test result is non-quantitative.

6.2 *Exterior Design:*

6.2.1 *Rotating Parts in the Accessible Area and Rear Roller Area*—The purpose of this test is to evaluate the risk of injury due to a moving mechanical part. Methodology entails insertion of an articulate probe that simulates an accepted case finger into all questionable areas.

6.2.1.1 *Apparatus and Set Up*—This test requires a probe as specified in Test Methods F2277, Fig. 3. Verify that all guards are properly positioned and secured and the moving surface is centered per instructions in the owner's manual. Apply power to the treadmill so that its incline can be elevated and the moving surface can be run.

6.2.1.2 *Calibration*—Verify the probe conforms to the dimensions of Test Methods F2277, Fig. 3.

6.2.1.3 *Procedure*—With no power applied, insert the probe at any pull-in nip points or areas accessible to any mechanical hazards on the treadmill. Points of insertion include, but shall not be limited to the rear roller guards, foot rail to moving surface interface, motor compartment/moving surface gap and any openings in the motor compartment or shroud. For all insertions, the probe is to be rotated and bent in all possible configurations and application force shall not exceed 4.4 N (1.0 lb). Elevate the treadmill to its maximum incline position. Under the assumption there shouldn't be any hazard, run the moving surface at minimum speed and verify the finger will not get trapped anywhere. If any other incline positions reveal a potential pull-in or nip points, the test shall be repeated at that incline position.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[4] Available from Underwriters Laboratories (UL), Corporate Progress, 333 Pfingsten Rd., Northbrook, IL 60062.

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6.2.1.4 *Pass/Fail Criteria*—The probe shall not become entrapped in any mechanical hazard. Entrapment is defined to have occurred if the force to pull out the probe is greater than 4.4 N (1.0 lb).

6.2.1.5 *Precision and Bias*—No information is presented about either the precision or bias of this test for evaluating hazards of rotating parts since the test result is non-quantitative.

6.2.2 *Guarding from Electrical Hazards*—The purpose of this test is to verify that all electrical elements are adequately guarded to prevent electric shock from un-insulated live parts and film-coated wire. Methodology entails insertion of an articulate probe that simulates a worst case finger into all questionable areas.

6.2.2.1 *Apparatus and Set Up*—This test requires an articulating probe as specified in UL 1647. Verify that all guards are properly positioned and secured and the moving surface is centered per instructions in the owner's manual. Treadmill to be tested in all incline positions and all normal usage positions that may present a hazard.

6.2.2.2 *Calibration*—Verify articulate probes conform to the dimensions of UL 1647.

6.2.2.3 *Procedure*—With no power applied, insert probe at any points where contact with electrical elements is possible. Points of insertion include, but shall not be limited to, the motor compartment/moving surface gap and any openings in the motor compartment or shroud. For all insertions, the probe is to be rotated and bent in all possible configurations and application force shall not exceed 4.4 N (1.0 lb). Elevate the treadmill to all other incline positions that may present a hazard and repeat the insertion test. The components not involved in the insertion area may now be removed to clearly see whether the probe can contact any electrical hazard.

6.2.2.4 *Pass/Fail Criteria*—The probe shall not contact any electrical hazard.

6.2.2.5 *Precision and Bias*—No information is presented about either the precision or bias of this test for evaluating accessibility of electrical components since the test result is non-quantitative.

6.2.3 *Foot Rails*—The purpose of this test is to verify the dimensional compliance of the foot rails.

6.2.3.1 *Apparatus and Set Up*—No set up required, dimensional inspection only.

6.2.3.2 *Calibration*—Verify that the distance measuring equipment is calibrated and accurate to within ±1 mm (0.04 in.).

6.2.3.3 *Procedure*—Verify that the foot rails extend from either the base of the masts or treadmill uprights or the end of the motor cover to the rear end caps of the treadmill. Measure the width of the moving surface. Measure the width of the foot rail surface.

6.2.3.4 *Pass/Fail Criteria*—The dimensions of the foot rails shall conform to dimensional requirements of Specification F2115.

6.2.3.5 *Precision and Bias*—No information is presented about either the precision or bias of this test since the test result is non-quantitative.

(1) Precision—The precision of this test method has not been determined.

(2) Bias—The bias of this test method includes quantitative estimates of the uncertainties of the measuring devices, the calibrations of testing equipment, and the skill of the operators. At this time, the statements on bias should be limited to documented performance of particular laboratories.

6.2.4 *Moving Surface*—The purpose of this test is to verify the dimensional and marking compliance of the moving surface.

6.2.4.1 *Apparatus and Set Up*—No set up required, dimensional inspection only.

6.2.4.2 *Calibration*—Verify that the distance measuring equipment is calibrated and accurate to within ±1 mm (0.040 in.).

6.2.4.3 *Procedure*—Consult the moving surface table Specification F2115. Refer to Fig. 3 in Specification F2115 and measure the length and width of the moving surface. Verify the presence of movement indicators on the moving surface. Verify that they meet the minimum dimensions specified in Specification F2115. Operate the treadmill and verify that a portion of the movement indicator is visible at all times as the moving surface rotates.

6.2.4.4 *Pass/Fail Criteria*—The dimensions of the moving surface shall conform to dimensional requirements of Table 1 of Specification F2115.

6.2.4.5 *Precision and Bias*—No information is presented about either the precision or bias of this test since the test result is non-quantitative.

(1) Precision—The precision of this test method has not been determined.

(2) Bias—The bias of this test method includes quantitative estimates of the uncertainties of the measuring devices, the calibrations of testing equipment, and the skill of the operators. At this time, the statements on bias should be limited to documented performance of particular laboratories.

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6.2.5 *Moving Surface Slip Resistance*—The purpose of this test is to evaluate the slip resistance of the moving surface of the treadmill.

6.2.5.1 *Apparatus and Set Up*—The treadmill shall be set up in accordance with Test Methods F2571. The moving surface shall be restrained from moving.

6.2.5.2 *Calibration*—Per Test Methods F2571, no calibration is required.

6.2.5.3 *Procedure*—Secure the moving surface so that it cannot move. Conduct the test in accordance with Test Methods F2571.

6.2.5.4 *Pass/Fail Criteria*—Moving surfaces that do not resist foot slippage shall fail the test.

6.2.5.5 *Precision and Bias*—No information is presented about either the precision or bias of this test for evaluating moving surface slip resistance since the test result is non-quantitative.

6.2.6 *Hand Grips and Grippable Surfaces*—The purpose of this test is to verify the presence and dimensional compliance of the handrails.

6.2.6.1 *Apparatus and Set Up*—No set up required, dimensional inspection only.

6.2.6.2 *Calibration*—Verify that the distance measuring equipment is calibrated and accurate to within ±1 mm (0.040 in.).

6.2.6.3 *Procedure*—Verify how many front/side handrails are present. Measure the length of all segments of the handrail. Measure the distance from Line A on the moving surface to the top of the grip surface. Evaluate through the full range of inclination. If so equipped, measure the horizontal distance between the side handrails.

6.2.6.4 *Pass/Fail Criteria*—The dimensions of the handrails shall conform to dimensional requirements of Specification F2115.

6.2.6.5 *Precision and Bias*—No information is presented about either the precision or bias of this test since the test result is non-quantitative.

(1) Precision—The precision of this test method has not been determined.

(2) Bias—The bias of this test method includes quantitative estimates of the uncertainties of the measuring devices, the calibrations of testing equipment, and the skill of the operators. At this time, the statements on bias should be limited to documented performance of particular laboratories.

6.3 *Endurance Loading*—These tests are intended to confirm the endurance of the main components of the treadmill.

6.3.1 *Mechanical Frame Endurance*—The stationary moving surface, frame, and structural components of the treadmill are subjected to a repeated load equal to 1.5 times the maximum user weight as specified by the manufacturer.

6.3.1.1 *Apparatus and Set Up*—A pneumatic cylinder or other appropriate load application device shall be fixtured to apply load to the moving surface at the centerline of the treadmill 33 % of the length of the usable moving surface rearward from the front of the usable moving surface. A 30 by 30 cm (11.8 by 11.8 in.) load application area shall be used for the test. Timing controls must be supplied to regulate the load application frequency. Provide appropriate instrumentation to assure that the load is consistent throughout the test duration.

6.3.1.2 *Calibration*—Verify that the load and frequency measuring equipment is properly calibrated and that the load accuracy is within ±5 % of the applied load and that the frequency measurement is accurate to within ±0.2 Hz.

6.3.1.3 *Procedure*—Elevate the treadmill to the incline that will provide the most stress to the frame and incline system components and position the treadmill under the load application device. No power shall be connected to the treadmill. Block the treadmill into position so that the vibrations created by the test do not cause it to move on the floor. Apply power to the load application system. Adjust the applied load to 1.5 times maximum user weight ±5 % at a frequency of 0.5 to 2 Hz. Assure that the moving surface rebounds completely prior to the next cycle. Verify that the counter is recording the number of cycles. Inspect the treadmill and test apparatus approximately every 250 000 cycles or as needed to ensure that the test is functioning properly. If the design of the treadmill is such that keeping the moving surface stationary for the duration of the test would abnormally stress the moving surface (that is, a treadmill that employs moving slats rather than a conventional belt and deck), the moving surface may be repositioned periodically during the test.

6.3.1.4 *Pass/Fail Criteria*—Upon completion of the test, remove the test unit from the fixture and confirm normal operation of all functions. The treadmill must meet life requirements per classification of use per subsection 4.3 of Specification F2115. The unit must not show structural cracks or other indications of impending failure.

6.3.1.5 *Precision and Bias*—No information is presented about either the precision or bias of this test for evaluating frame endurance since the test result is non-quantitative.

6.3.2 *Treadmill Switch and Switch Actuation Mechanism Endurance*—Stop, Pause or End functions (see Note 1).

NOTE 1—If several means of stopping exist—for example, Stop switch and Pause switch—each means must be separately tested only if the actuator types are different.

6.3.2.1 *Apparatus and Set Up*—Provide a mechanism to repeatedly activate the switch of interest at a rate not to exceed 2 Hz. and to accumulate a count of actuations. Activation force for testing shall be 1.5× ± 10 % the minimum actuating force for the particular switch. For push switches, the activating mechanism can be a simulated finger mounted to an appropriate pneumatic cylinder operating parallel to the line of action of the switch, a test system designed specifically for switch testing (having an air cylinder plunger with a rounded simulated finger 0.675 diameter, 45 durometer rubber, SF-45), or other appropriate actuating means. For non-returning switches, a mechanism must be provided to pull out the switch between actuations, with a force equal to 1.5× ± 10 % the minimum activating force. For lanyard-type, pull-off mechanisms, the switch can be tested as outlined above without the lanyard attached. If this method is employed, a separate lanyard strength test must be conducted by applying a load equal to 5 times the maximum activation force of the switch on the lanyard. A means of automatically sensing activation (for example, sensing a "beep" from the control panel internal electronics) will allow monitoring each activation response.

6.3.2.2 *Calibration*—Verify that the load application system applies 1.5 times ± 10 % of the minimum activation force for the switch to be tested. Using appropriate instrumentation, set the timing of the activator to 0.1 to 0.2 s "on" time and the repeat rate as desired but not over 2 Hz. Verify activation counter operation for at least 100 cycles. If a lanyard pull is required, the pull force must guarantee activation.

6.3.2.3 *Procedure*—Actuate the switch being tested with the load application system and confirm that the force applied causes the switch to function. The function of the switch shall be confirmed on every actuation of the switch via a circuit that actuates a counter. A manual check must be made of switch function before and after the full test sequence, and during the automated sequence, some activation-confirming feedback must be observable for each activation. As an alternate to this procedure, if the switch is installed according to the switch manufacturer's recommendations, the switch manufacturer's testing may be used.

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6.3.2.4 *Pass/Fail Criteria*—The switch(s) tested must be functional as described in procedure at the end of the life test requirements for the classification for use as follows: Consumer Treadmills—1560 actuations without damage or non-functionality. Institutional Treadmills—46 800 actuations without damage or non-functionality.

6.3.2.5 *Precision and Bias*—No information is presented about either the precision or bias of this test for evaluating actuator endurance since the test result is non-quantitative.

6.4 *Static Loading of Structures*—The purpose of this test is to evaluate the static structural integrity of the deck, foot rails, any frame structure and user supports (that is, handlebars and side handrails) as applicable to user safety.

6.4.1 *Moving Surface and Foot Rails:*

6.4.1.1 *Apparatus and Set Up*—Supply a means of providing a steady state load (pneumatic cylinder, weights, etc.) on the deck and foot rails, capable of adjustment to apply vertical load to the test member at minimum, mid-range and maximum incline for the moving surface. Load is to be applied on a 300 by 300 mm (11.8 by 11.8 in.) square area located on the centerline of the moving surface 33 % of the usable surface length back from the front of the usable moving surface. For the foot rails, the vertical load is to be applied at the longitudinal centerline of the foot rail.

6.4.1.2 *Calibration*—Verify load application system is calibrated and is accurate to within ±5 % of the applied load.

6.4.1.3 *Procedure*—With the treadmill fixed to prevent movement and moving surface held stationary, apply a force of 3× the maximum user weight for consumer treadmills or 4× maximum user weight for commercial treadmills to the moving surface as described in 6.3.1.1. The treadmill is to be supported only at points specifically intended for support during use. Apply the load for 5 to 15 s. Remove the load. Then apply vertical force of 2× the maximum user weight for consumer treadmills or 3× maximum user weight for commercial treadmills to the longitudinal center of one of the foot rails over an area of 180 mm (7.1 in.) in length by 180 mm (7.1 in.) in width, or the width of the foot rails, whichever is less. Maintain load for 5 to 15 s, then remove load.

6.4.1.4 *Pass/Fail Criteria*—Examine all frame members, welds, joints and the deck for cracks, separations or failure. No visible evidence of cracks, separations, or other structural damage is allowable. Cosmetic damage is not considered a failure.

6.4.1.5 *Precision and Bias*—No information is presented about either the precision or bias of this test since the test result is non-quantitative.

(1) Precision—The precision of this test method has not been determined.

(2) Bias—The bias of this test method includes quantitative estimates of the uncertainties of the measuring devices, the calibrations of testing equipment, and the skill of the operators. At this time, the statements on bias should be limited to documented performance of particular laboratories.

6.5 *Adjustable Incline System Function*—Note that treadmills that use a mechanical incline position system such as a ratchet, pin, or other means to provide limited fixed positions, and that do not actually provide the energy to adjust the incline, are excluded from this test.

6.5.1 *Apparatus and Set Up*—A combination of vertical displacement and time measuring instruments which yields a combined accuracy of 2.5 mm/s (0.1 in./s) will be necessary for the velocity measurements. The velocity will be determined by dividing the displacement by the time required for movement. As an alternate, an instrument that directly measures vertical velocity having the accuracy stated above may be used. The instrumentation is to be fixtured to measure the relative velocity of any pinch or shear points that occur during actuation of the incline system. A method of applying maximum specified user weight that is independent of angle of inclination must be provided.

6.5.2 *Calibration*—Verify that the instrumentation is properly calibrated and yields an accuracy within 2.5 mm/s (0.1 in./s) of actual.

6.5.3 *Procedure*—With the treadmill in its minimum incline position and no load applied, begin recording data. Operate the incline control to elevate the treadmill to maximum elevation as quickly as possible. Once the treadmill has reached full inclination, operate the incline control to return the treadmill to its minimum inclination as quickly as possible.

6.5.3.1 Apply maximum user weight to a point 33 % of the length of the usable moving surface rearward from the front of the usable moving surface. Repeat the procedure described in 6.5.3.

6.5.4 *Pass/Fail Criteria*—The maximum measured speed shall not exceed 25 mm/s (l.0 in./s).

6.5.5 *Precision and Bias*—No information is presented about either the precision or bias of this test since the test result is non-quantitative.

(1) Precision—The precision of this test method has not been determined.

(2) Bias—The bias of this test method includes quantitative estimates of the uncertainties of the measuring devices, the calibrations of testing equipment, and the skill of the operators. At this time, the statements on bias should be limited to documented performance of particular laboratories.

6.6 *Controls*—This section is to verify that the proper stop controls exist and that the accuracy of the speed readout is adequate.

6.6.1 *Verification of Emergency Stop*—This test is a visual inspection of the unit to verify the presence of an emergency stop.

6.6.1.1 *Apparatus and Set Up*—The sample shall be set up as described in Section 5.

6.6.1.2 *Calibration*—No calibration required. Visual inspection only.

6.6.1.3 *Procedure*—Verify that stop mechanisms per Specification F2115 exist.

6.6.1.4 *Pass/Fail Criteria*—Emergency stop mechanisms shall conform to the requirements of Specification F2115.

6.6.1.5 *Precision and Bias*—No information is presented about either the precision or bias of this test for evaluating emergency stop actuation mechanisms since the test result is non-quantitative.

6.6.2 *Verification of Stop Mechanism Function*—This test is a visual and functional inspection of the unit to ensure that stop mechanisms function and are user accessible.

6.6.2.1 *Apparatus and Set Up*—Place the treadmill on a level surface. Supply power to the treadmill.

6.6.2.2 *Calibration*—No calibration required. Visual and functional inspection only.

6.6.2.3 *Procedure*—Verify that stop mechanisms per Specification F2115 exist. Operate all stop mechanisms to verify accessibility. Verify the accessibility with a 5th percentile female running at 8 km/h (5 mph). Perform function tests at minimum and maximum incline at 8 km/h (5.0 mph) or maximum speed, whichever is less, with a 100 kg (220.5 lb) user.

6.6.2.4 *Pass/Fail Criteria*—Stop devices must be readily accessible and cause the moving surface to decelerate to rest and stop the motion of the incline system.

6.6.2.5 *Precision and Bias*—No information is presented about either the precision or bias of this test for evaluating accessibility and function of stop mechanisms since the test result is non-quantitative.

6.6.3 *Emergency Stop Appearance*—This test is a visual inspection of the sample to ensure the compliance of the emergency stop color, size and shape.

6.6.3.1 *Apparatus and Set Up*—The sample shall be set up as described in Section 5.

6.6.3.2 *Calibration*—No calibration required. Visual test only.

6.6.3.3 *Procedure*—Verify that the emergency stop color, shape, and size differ from other available controls.

6.6.3.4 *Pass/Fail Criteria*—Emergency stop color, shape, and size shall conform to the requirements of Specification F2115.

6.6.3.5 *Precision and Bias*—No information is presented about either the precision or bias of this test for evaluating the emergency stop color, shape and size since the test result is non-quantitative.

6.6.4 *Emergency Stop Location*—This test is a visual and dimensional inspection of the sample to ensure the emergency stop location.

6.6.4.1 *Apparatus and Set Up*—The sample shall be set up as described in Section 5.

6.6.4.2 *Calibration*—Verify that the distance measuring equipment is calibrated and accurate to within 1 mm (0.040 in.).

6.6.4.3 *Procedure*—Inspect the treadmill to verify that there is an emergency stop centrally located on the unit or that there is an emergency stop on each side of the console. For centrally located emergency stops, measure the distance of the centerline of the emergency stop to the centerline longitudinal centerline of the unit.

6.6.4.4 *Pass/Fail Criteria*—Emergency stop location shall conform to the requirements of Specification F2115.

6.6.4.5 *Precision and Bias*—No information is presented about either the precision or bias of this test since the test result is non-quantitative.

(1) Precision—The precision of this test method has not been determined.

(2) Bias—The bias of this test method includes quantitative estimates of the uncertainties of the measuring devices, the calibrations of testing equipment, and the skill of the operators. At this time, the statements on bias should be limited to documented performance of particular laboratories.

6.6.5 *Push Button Stop Switch Size*—This test is a dimensional inspection of the sample to ensure Emergency stop push button size.

6.6.5.1 *Apparatus and Set Up*—The sample shall be set up as described in Section 5.

6.6.5.2 *Calibration*—Verify that the distance measuring equipment is calibrated and accurate to within 1 mm (0.040 in.).

6.6.5.3 *Procedure*—Measure the surface area of the push button stop switch.

6.6.5.4 *Pass/Fail Criteria*—Push button stop switch size shall conform to the requirements of Specification F2115.

6.6.5.5 *Precision and Bias*—No information is presented about either the precision or bias of this test since the test result is non-quantitative.

(1) Precision—The precision of this test method has not been determined.

(2) Bias—The bias of this test method includes quantitative estimates of the uncertainties of the measuring devices, the calibrations of testing equipment, and the skill of the operators. At this time, the statements on bias should be limited to documented performance of particular laboratories.

6.6.6 *Push Button Stop Switch Color*—This test is a visual inspection of the sample to ensure the compliance of the push button stop switch color.

6.6.6.1 *Apparatus and Set Up*—The sample shall be set up as described in Section 5.

6.6.6.2 *Calibration*—No calibration required. Visual test only.

6.6.6.3 *Procedure*—Verify that the push button stop switch color is red.

6.6.6.4 *Pass/Fail Criteria*—ush button stop switch shall conform to the requirements of Specification F2115.

6.6.6.5 *Precision and Bias*—No information is presented about either the precision or bias of this test for evaluating the push button stop switch color since the test result is non-quantitative.

6.6.7 *Pull-Cord Emergency Stop Location*—This test is a dimensional inspection of the sample to ensure the pull-cord emergency stop location.

6.6.7.1 *Apparatus and Set Up*—The sample shall be set up as described in Section 5.

6.6.7.2 *Calibration*—Verify that the distance measuring equipment is calibrated and accurate to within 1 mm (0.040 in.).

6.6.7.3 *Procedure*—Measure the distance of the pull-cord emergency stop centerline to the centerline longitudinal centerline of the unit.

6.6.7.4 *Pass/Fail Criteria*—Emergency stop location shall conform to the requirements of Specification F2115.

6.6.7.5 *Precision and Bias*—No information is presented about either the precision or bias of this test since the test result is non-quantitative.

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