Designation: F2388 – 21

Standard Consumer Safety Specification for Baby Changing Products for Domestic Use[1]

This standard is issued under the fixed designation F2388; 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

This consumer safety specification addresses incidents associated with baby changing products identified by the U.S. Consumer Product Safety Commission (CPSC). Incidents involved collapse, falls from the table, and entrapment in structural members.

In response to incident data collected by CPSC, this consumer safety specification attempts to minimize the risk of injury and death due to: *(1)* falls from changing tables, *(2)* failure of structural or mechanical components, *(3)* instability and entrapment in openings in the table structure, and (*4*) suffocation. This specification also contains requirements for warnings and instructional materials directed to parents or caregivers.

1. Scope

1.1 This consumer safety specification covers performance requirements, test methods, and labeling requirements to promote the safe use of baby changing products including changing tables, changing table accessories, contoured changing pads, and add-on changing units.

1.2 This specification covers products sold for domestic use for children up to a weight of 30 lb (13.6 kg).

1.3 Changing products shall meet all applicable performance and labeling requirements.

1.4 No changing product produced after the approval date of this specification shall, either by label or other means, indicate compliance with this specification unless it conforms to all applicable requirements contained herein, before, and after all testing.

1.5 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.6 The following precautionary caveat pertains only to the test method portion in Section 7 of this specification. *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 requirements prior to use.*

1.7 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D3359 Test Methods for Rating Adhesion by Tape Test

F406 Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards

F963 Consumer Safety Specification for Toy Safety

F1169 Consumer Safety Specification for Full-Size Baby Cribs

F2057 Safety Specification for Clothing Storage Units

2.2 *Federal Regulations:*[3]

16 CFR 1303 Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint

16 CFR 1500 Hazardous Substances Act Regulations including sections:

16 CFR 1500.48 Technical Requirements for Determining a Sharp Point in Toys or Other Articles Intended for Use by Children Under Eight Years of Age

[1] This consumer safety specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.18 on Cribs, Toddler Beds, Play Yards, Bassinets, Cradles and Baby Changing Products.

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[2] 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.

[3] Available from U.S. Consumer Product Safety Commission (CPSC), Washington, D.C. 20207, website: www.cpsc.gov.

16 CFR 1500.49 Technical Requirements for Determining a Sharp Metal or Glass Edge in Toys or Other Articles Intended for Use by Children Under Eight Years of Age
16 CFR 1500.50-.52 Test Methods for Simulating Use and Abuse of Toys and Other Articles Intended for Use by Children
16 CFR 1501 Method for Identifying Toys and Other Articles Intended for Use by Children Under Three Years of Age Which Present Choking, Aspiration or Ingestion Hazards Because of Small Parts
Consumer Product Safety Improvement Act

2.3 *ANSI Standards:*[4]
ANSI Z535.4 American National Standard for Product Safety Signs and Labels
ANSI Z535.6 American National Standard: Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *add-on changing unit, n*—a rigid addition to or separate product used in conjunction with an item of furniture that provides barriers to prevent the infant from rolling off the product when a diaper is being changed.

3.1.2 *barrier, n*—any component of the changing product intended to prevent a child from rolling or falling off the changing surface.

3.1.3 *changing pad, n*—a flat or contoured pad specifically designed for the purpose of changing the diaper of a child with a body weight of up to 30 lb (13.6 kg) on an elevated surface. The child is placed on the pad during the process of changing.

3.1.4 *changing product*—one of the following: changing table, changing table accessory, add-on changing unit, contoured changing pad.

3.1.5 *changing surface, n*—the surface that is in direct contact with the child when the changing product is in the manufacturer's recommended use position.

3.1.6 *changing table, n*—an elevated, freestanding structure generally designed to support and retain a child with a body weight of up to 30 lb (13.6 kg) in a horizontal position for the purpose of allowing a caregiver to change the child's diaper. Changing tables may convert from or to other items of furniture, such as, but not limited to, a dresser, desk, hutch, bookshelf, or play yard, may have pull-out or drop-down changing surfaces, and may provide storage for diapers and diaper products.

3.1.7 *changing table accessory*—an accessory that attaches to a crib or play yard designed to convert the product into a changing table typically having a rigid frame with soft fabric or mesh sides or bottom surface, or both.

3.1.8 *conspicuous, adj*—visible when the changing product is in any manufacturer's recommended use position, to a person in a position normally associated with the task of changing a child's diaper.

3.1.9 *contoured changing pad, n*—a changing pad designed for use on an elevated surface which incorporates barriers to prevent a child from rolling off the changing surface.

3.1.10 *double action release system, n*—a mechanism requiring either two consecutive actions, the first of which must be maintained while the second is carried out, or two separate and independent simultaneous actions to fully release.

3.1.11 *key structural elements, n*—side assemblies, end assemblies, base assemblies, leg assemblies, primary changing surface supports, or other components designed to support the weight of the occupant, or a combination thereof (see Fig. 1).

3.1.12 *manufacturer's recommended use position(s), n*—any position that is presented as a normal, allowable, or acceptable configuration for the use of the product as a diaper changer by the manufacturer in any descriptive or instructional literature. This specifically excludes positions that the manufacturer

[4] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

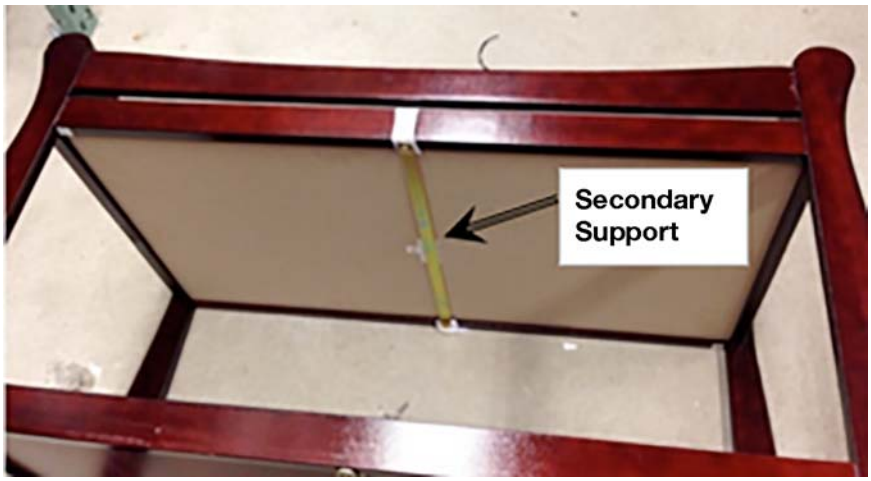

FIG. 1 Example of Secondary Support Component

shows in a like manner in its literature to be unacceptable, unsafe, or not recommended.

3.1.13 *non-paper label, n*—any label (material such as plastic or metal) which either will not tear without the aid of tools, or tears leaving a sharp defined edge.

3.1.14 *paper label, n*—any label material that tears without the aid of tools and leaves a fibrous edge.

3.1.15 *protective component, n*—any component used for protection from sharp edges, points, or entrapment of fingers or toes.

3.1.15.1 *Discussion*—Examples of protective components include caps, sleeves, and plugs.

3.1.16 *secondary support component, n*—a strap, bar, rod, or other component that is consumer installed and provides added support, to the changing surface of the changing table.

3.1.17 *self-folding steps, n*—steps which must be held open by an adult caregiver that, when released, fold away and latch automatically into their normally closed position.

3.1.18 *support surface, n*—a surface to which a changing pad, changing table accessory, or add-on changing unit may be mounted according to manufacturer's instructions.

3.1.19 *threaded fastener, n*—a discrete piece of hardware that has internal or external screw threads which is used for the assembly of multiple parts and facilitates disassembly.

4. Calibration and Standardization

4.1 All testing shall be conducted on a concrete floor, which may be covered with ⅛-in. (3-mm) thick vinyl flooring cover, unless test instructs differently.

4.2 Unless otherwise noted, the product shall be completely assembled in accordance with the manufacturer's instructions, including any pad supplied by the manufacturer or pad the manufacturer requires, for product to be used as a changing table.

4.3 No testing shall be conducted within 48 h of manufacturing.

4.4 The product to be tested shall be placed in a room with ambient temperature of 73 ± 9°F (23 ± 5°C) for at least 1 h prior to testing. Testing shall then be conducted within this temperature range.

4.5 All testing required by this specification shall be conducted on the same unit.

5. General Requirements

5.1 *Sharp Points and Edges*—There shall be no hazardous sharp points or sharp edges as defined by 16 CFR 1500.48 and 16 CFR 1500.49 before and after testing to this specification.

5.2 *Small Parts*—There shall be no small parts as defined by 16 CFR 1501 before testing or liberated as a result of testing to this specification.

5.3 *Surface Coatings*—The paint or surface coating on the product shall comply with 16 CFR 1303.

5.4 *Wood Parts*—Prior to testing, any exposed wood parts shall be smooth and free from splinters.

5.5 *Openings*—Holes or slots that extend entirely through a wall section of any rigid material less than 0.375-in. (9.53-mm) thick and admit a 0.210-in. (5.33-mm) diameter rod shall also admit a 0.375-in. (9.53-mm) diameter rod. Holes or slots that are between 0.210 in. (5.33 mm) and 0.375 in. (9.53 mm) and have a wall thickness less than 0.375 in. (9.53 mm) but are limited in depth to 0.375-in. (9.53-mm) maximum by another rigid surface shall be permissible (see Fig. 2). The product shall be evaluated in all manufacturer's use positions.

5.6 A changing table accessory, when attached in the manufacturer's recommended use position to a full-size crib or non-full-size crib/play yard, shall conform to the requirements of this specification and the applicable requirements of Consumer Safety Specification F1169 or F406, respectively.

5.7 *Toys*—Toy accessories attached to, removable from, or sold with a changing product, as well as their means of attachment, must meet applicable requirements of Consumer Safety Specification F963.

5.8 *Threaded Fasteners:*

5.8.1 *Wood Screws and Sheet Metal Screws:*

5.8.1.1 No changing table shall require consumer assembly of key structural elements using wood screws or sheet metal fasteners directly into wood components. This shall not apply to non-key structural elements such as drawers, secondary support components, other storage components, accessory items and the fasteners used for attaching contoured pads and add-on changing units to other supporting furniture. This shall also not apply to the fasteners used for changing tables which are also clothing storage units which fall under the scope of Safety Specification F2057.

5.8.2 Metal inserts, with external wood screw threads for screwing into a wood component and providing internal machine threads to accommodate a machine screw, that are used to secure key structural elements shall be glued or include other means to impede loosening or detaching.

5.8.3 Metal threaded fasteners, such as sheet metal screws and machine screws, secured into metal components and used to attach key structural elements shall have lock washers, self-locking nuts, or other means to impede loosening as defined in 6.1 or detachment during the testing required by this specification.

5.9 *Protective Components*—If the child can grasp protective components between the thumb and forefinger, or teeth, or if there is at least a 0.04-in. (1.0-mm) gap between the protective component and its adjacent parent component, such component shall not be removed when tested in accordance with 7.1. All protective components that are accessible to a child in/on the product or accessible to a child from any position around the product shall be evaluated.

5.10 Product must comply with the applicable requirements of the Consumer Product Safety Improvement Act.

5.11 *Scissoring, Shearing, and Pinching*—The product, when in the manufacturer's recommended use position(s), shall be designed and constructed to prevent injury to the occupant from any scissoring, shearing, or pinching when members or components rotate about a common axis or fastening point,

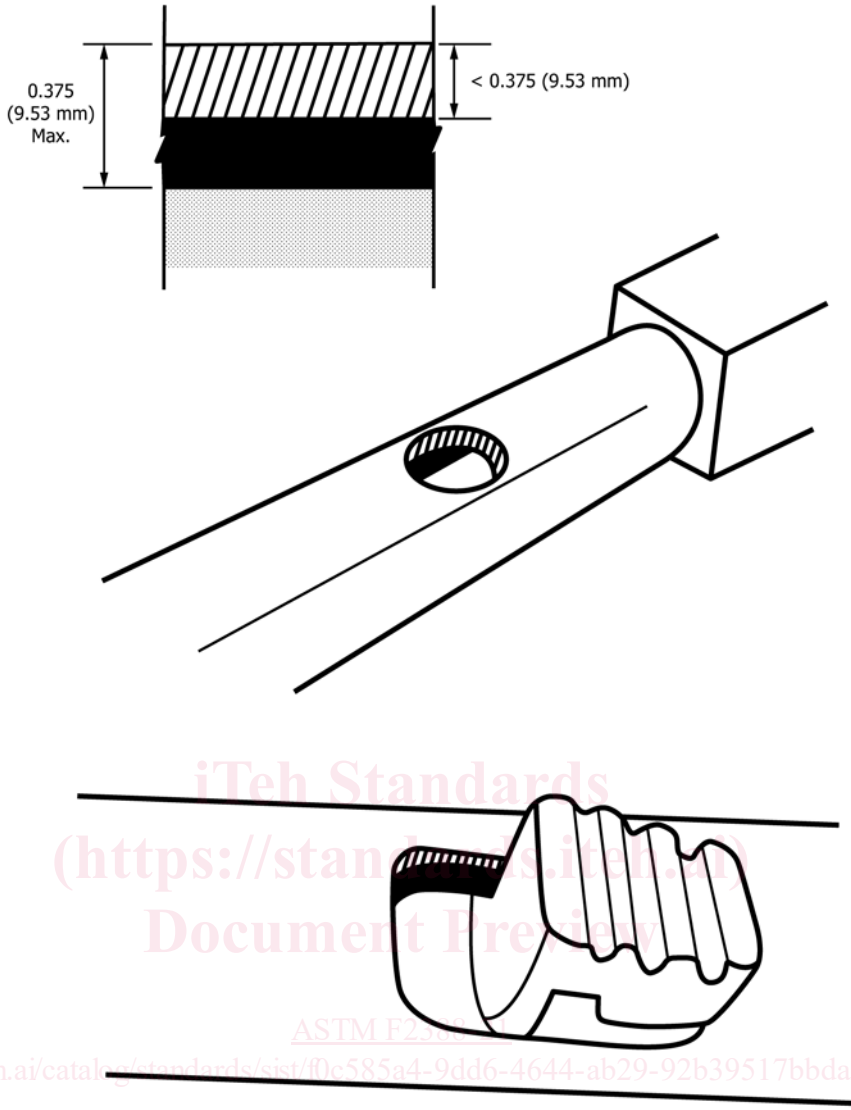

FIG. 2 Opening Examples

slide, pivot, fold, or otherwise move relative to one another. Scissoring, shearing, or pinching that may cause injury exists when the edges of the rigid parts admit a probe greater than 0.210 in. (5.33 mm) and less than 0.375 in. (9.53 mm) in diameter at any accessible point throughout the range of motion of such parts.

5.12 If the changing product can be converted into another product for which a consumer safety specification exists, the product shall comply with the applicable requirements of that standard when in that use mode.

6. Performance Requirements

6.1 *Structural Integrity*—When tested in accordance with 7.2, there shall be no breakage of the unit, nor shall it fail to conform with any other requirements in this specification before and after all testing. Threaded fasteners used for key structural elements shall not have separated by more than 0.04 in. (1 mm) upon completion of testing.

NOTE 1—Contoured changing pads and add-on changing units that are sold separately are exempt from this requirement.

6.2 *Stability*—When tested in accordance with 7.3, the unit shall not tip over.

NOTE 2—Contoured changing pads and add-on changing units that are sold separately are exempt from this requirement.

6.3 *Barriers:*

6.3.1 Each changing product shall include barriers as an integral part of the product.

6.3.2 For changing products with a flat changing surface, barriers shall be provided around all sides of the changing surface.

6.3.3 Contoured changing pads shall have barriers on the two opposing long sides.

6.3.4 When tested in accordance with 7.4, barriers shall prevent the test cylinder from falling from the changing surface and shall not break or fail to conform with the requirements of Section 5.

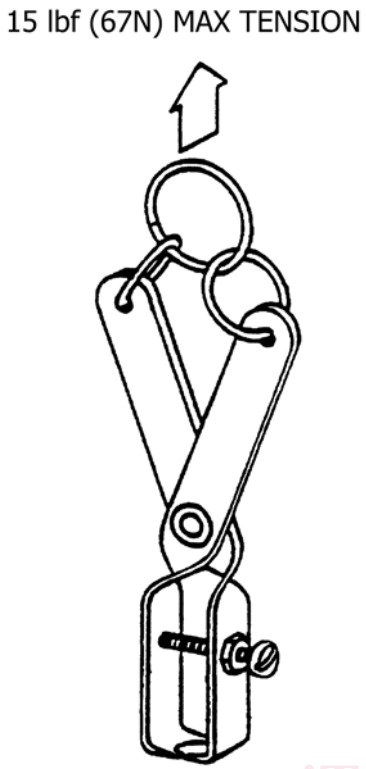

FIG. 3 Tension Test Clamp

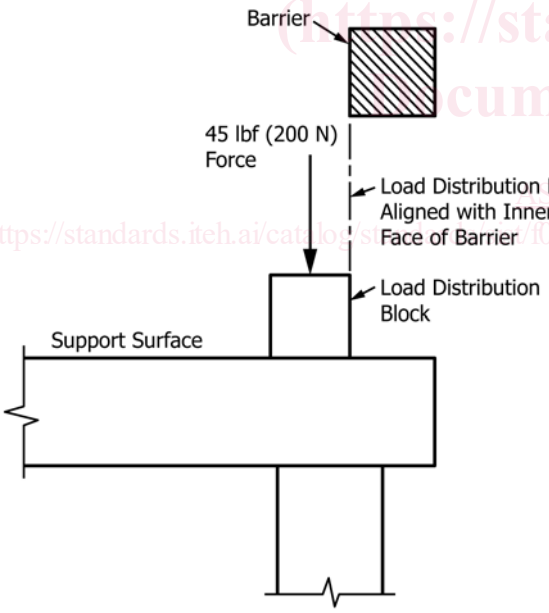

FIG. 4 Stability Test

6.3.4.1 Changing tables, add-on changing units sold with items of furniture and changing table accessories shall be set-up for testing per 7.4.2.1.

6.3.4.2 Add-on changing units sold separately and contoured changing pads sold separately shall be set-up for testing per 7.4.2.2.

6.3.4.3 Changing products with a flat changing surface shall be tested per 7.4.3.

6.3.4.4 Changing products using contoured changing pads shall be tested per 7.4.4.

6.4 *Retention of Contoured Changing Pads and Add-on Changing Units:*

6.4.1 When tested in accordance with 7.4, the contoured changing pad or add-on changing unit shall not shift or slide more than 1 in. (25 mm) in any direction from its original position.

6.4.1.1 If tabs or straps are provided to secure the contoured changing pad, when tested in accordance with 7.4, the pad shall not shift or slide more than 1 in. (25 mm) in a direction opposite from the edge containing attachment tabs or straps.

NOTE 3—Changing table accessory installed on non-full-size cribs/play yards are exempt from this requirement, as they must comply with the retention and opening/entrapment requirements specified in Consumer Safety Specification F406, "Entrapment in Attachments" Section.

6.5 *Entrapment in Enclosed Openings*—When tested in accordance with 7.5, there shall be no completely bounded openings (openings surrounded by a boundary on all sides) anywhere in the structure of a changing table that are accessible to the occupant or a child around the base of the product and that permit the free passage of the torso probe shown in Fig. 6 unless they also permit the free passage of the 9.0-in. (229-mm) diameter probe shown in Fig. 7. Exempt from this requirement are self-folding steps when in their open position.

6.6 *Entrapment by Shelves*—When tested in accordance with the procedure in 7.6, any shelf above 4.3 in. (109 mm) from the floor that, because its movement may expose an opening that could entrap a child's head, shall not permit the entire passage of the small head probe shown in Fig. 8 through the exposed opening. Excluded from this requirement are pullout drawers and shelves enclosed within a cabinet equipped with a door(s).

6.7 *Self-folding Steps*—Self-folding steps shall be secured in their closed position by one of the following latching or locking mechanisms:

6.7.1 The latching or locking mechanism must be a double action release system, or

6.7.2 The latching or locking mechanism shall require a minimum force of 10 lbf (45 N) to activate the single action release mechanism when tested in accordance with 7.7.

6.8 *Restraint System:*

NOTE 4—A restraint system may be provided to restrict upward or lateral movement of the occupant's torso. Inclusion of a restraint system is not mandatory.

6.8.1 If a restraint system is installed on the product or available as an option, it shall meet the following:

6.8.1.1 A restraint system and its closing means (for example, buckle) shall not break or separate when tested in accordance with 7.8.

6.8.1.2 The anchorages shall not separate from the product when tested in accordance with 7.8.

6.8.1.3 Restraints shall be capable of adjustment with a positive, self-locking mechanism that is capable, when locked, of withstanding the forces of tests in 7.8 without allowing restraint movement or slippage of more than 1 in. (25.4 mm).

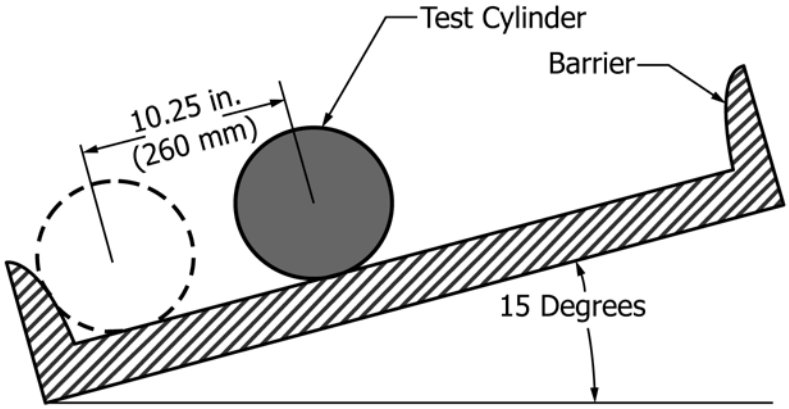

FIG. 5 Barrier Retention Test

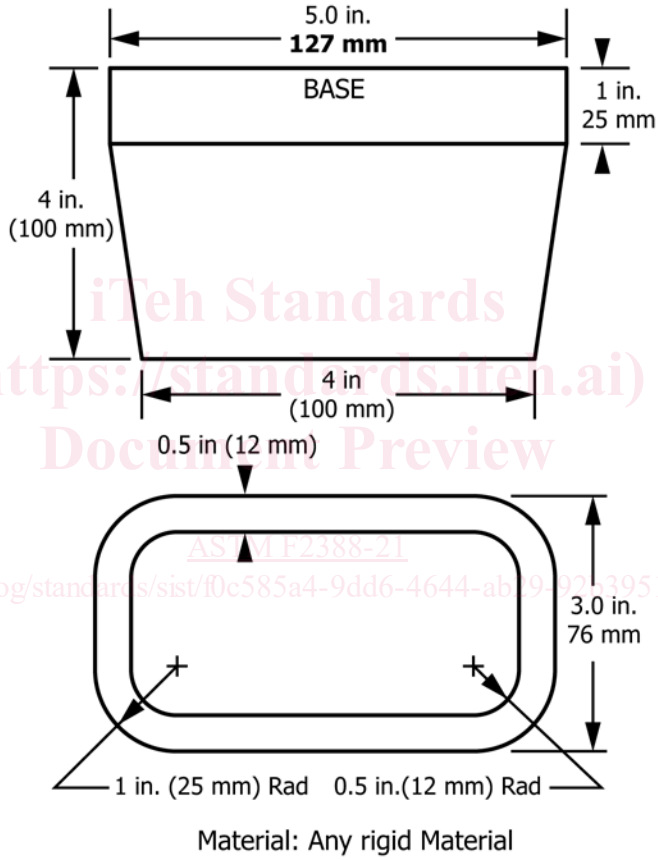

FIG. 6 Torso Probe

7. Test Methods

7.1 *Removal of Protective Components*—Protective components shall be tested in accordance with each of the following methods in the sequence listed.

7.1.1 Any protective component shall be tested in accordance with each of the following methods in the sequence listed.

7.1.2 Secure the product so that the product cannot move during the performance of the following tests:

7.1.3 *Torque Test*—Gradually apply a torque of 3 lbf-in. (0.3 N-m) over a period of 5 s in a clockwise direction until a rotation of 180° from the original position has been attained or 3 lbf-in. (0.3 N-m) has been exceeded. The torque or maximum rotation shall be maintained for an additional 10 s. The torque shall then be removed and the test components permitted to return to a relaxed condition. This procedure shall then be repeated in the counterclockwise direction.

7.1.4 *Tension Test:*

7.1.4.1 Attach a force gage to the protective component by means of any suitable device. For components that cannot reasonably be expected to be grasped between thumb and forefinger, or teeth, on their outer diameter but have a gap of

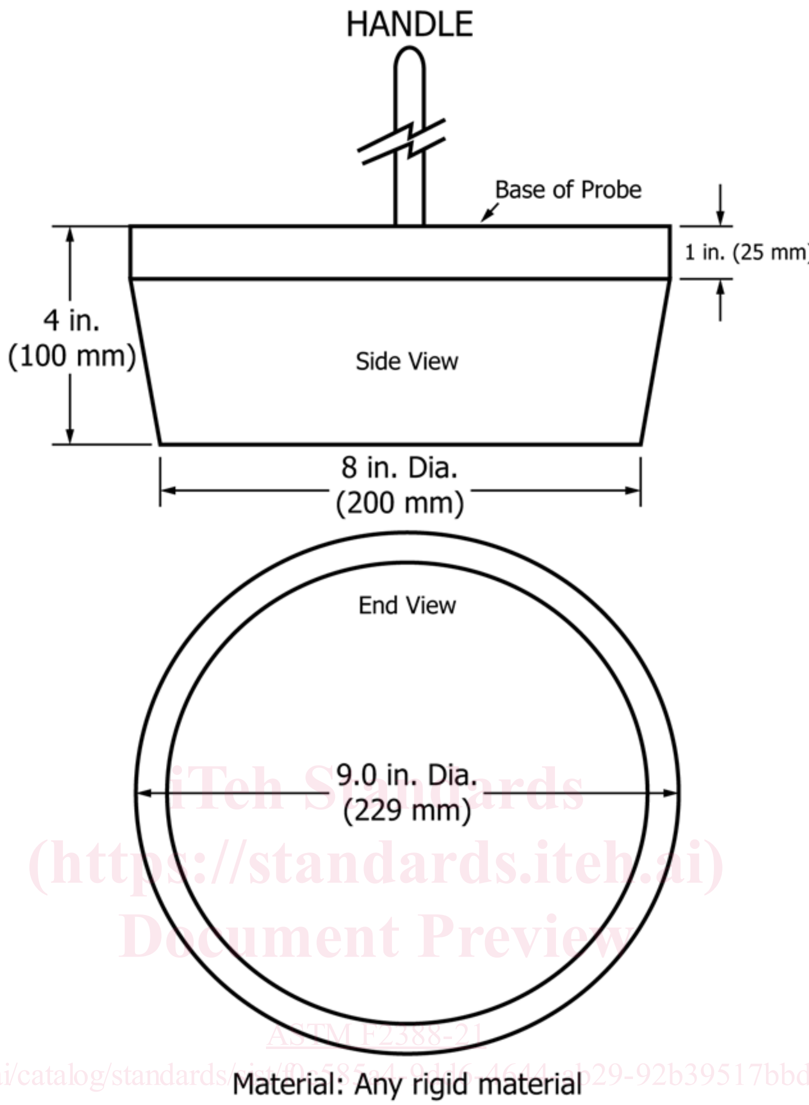

FIG. 7 Large Head Probe

0.04 in. (1.0 mm) or more between the rear surface of the component and the structural member of the product to which they are attached, a clamp such as the one shown in Fig. 3 may be a suitable device.

7.1.4.2 Be sure that the attachment device does not compress or expand the component hindering any possible removal.

7.1.4.3 Gradually apply a 15-lbf (67-N) over a period of 5 s in the direction that would normally be associated with the removal of the protective component. Hold for an additional 10 s.

7.2 *Structural Integrity*—Assemble the product in accordance with the manufacturer's assembly instructions. If the product design employs secondary support components beneath the changing surface that are not factory preassembled in their intended use position, this test is to be conducted without the secondary support components installed. Place the product on the test floor, center a 6 by 6 in. (150 by 150 mm) wood block on the changing surface and gradually apply a 100 lb (45.4 kg) weight onto the wood block within a period of 5 s. Maintain the weight for an additional period of 60 s.

7.3 *Stability*—Remove the changing pad if it is detachable. Gradually apply a 45-lbf (200-N) vertically downward force to the edge of the support surface that is deemed most likely to cause tipping. The force shall be applied to the center of a load distribution block (see Fig. 4) fabricated from a rigid material ¾-in. (19-mm) wide by ¾-in. (19-mm) thick by 3-in. (80-mm) long. The force shall be applied with the 3-in. (80-mm) dimension of the block aligned with the edge of the support surface (see Fig. 4). The force shall be applied gradually within a period of 5 s and maintained for an additional 10 s.

7.4 *Barrier Structural Integrity and Retention Tests:*

7.4.1 *Test Equipment:*

7.4.1.1 Rigid cylinder with a diameter of 8 in. (200 mm), a length of 12 in. (300 mm), and a mass of 33 lb (15 kg).

7.4.1.2 Timing device capable of displaying seconds.