



Designation: F2167 – 22

Standard Consumer Safety Specification for Infant Bouncer Seats¹

This standard is issued under the fixed designation F2167; 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 is intended to minimize the risk of injury or death associated with a child's use of an infant bouncer seat. The specific hazards addressed by this specification are product disassembly/collapse, stability, and falls from elevated surfaces.

1. Scope

1.1 This consumer safety specification covers establishment of requirements, test methods, and marking requirements to promote safe use of an infant bouncer seat by an occupant and a caregiver.

1.2 For purposes of this consumer safety specification, an infant bouncer seat is a freestanding product intended to support an occupant in a reclined position to facilitate bouncing by the occupant, with the aid of a caregiver or by other means. Intended occupants are infants who have not developed the ability to sit up unassisted (approximately 0 to 6 months of age).

1.3 This consumer safety specification is intended to minimize the risk of injury to an occupant resulting from normal use and reasonably foreseeable misuse or abuse of an infant bouncer seat.

1.4 No infant bouncer seat produced after the approval date of this consumer safety specification shall, either by label or other means, indicate compliance with this specification unless it conforms to all requirements contained herein.

1.5 This consumer safety specification is not intended to address incidents and injuries resulting from the interaction of other persons with the occupant in an infant bouncer seat or the incidents resulting from abuse or misuse by other children.

1.6 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.

1.7 The following precautionary caveat pertains only to the test method portion, Section 7, of this consumer safety specification:

¹ This specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.21 on Infant Carriers, Bouncers and Baby Swings.

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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.

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
- F404 Consumer Safety Specification for High Chairs
- F963 Consumer Safety Specification for Toy Safety
- F2050 Consumer Safety Specification for Hand-Held Infant Carriers

2.2 Federal Regulations:³

- 16 CFR 1303 Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint
- 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
- 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-.51 Test Methods for Simulating Use and Abuse of Toys and Other Articles Intended for Use by Children

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 Code of Federal Regulations, available from U.S. Government Printing Office, 732 North Capitol St., NW, Mail Stop: SDE, Washington DC 20401.

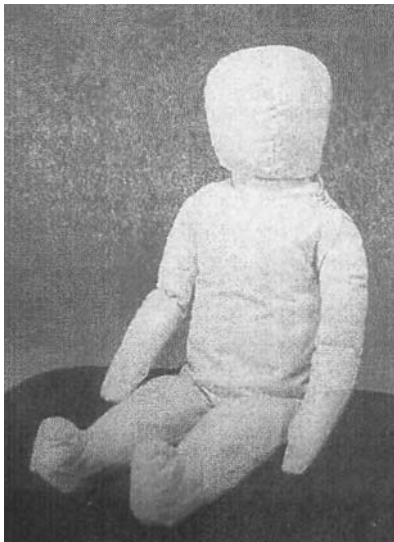


FIG. 1 CAMI Infant Dummy, Mark II (17.5 lb, 8.0 kg)



FIG. 2 CAMI Newborn Dummy (7.5 lb, 3.4 kg)

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

2.3 Other References:

CAMI Infant Dummy, Mark II (see Fig. 1)⁴

CAMI Newborn Dummy (see Fig. 2)⁴

2.4 ANSI Standards:⁵

ANSI Z535.4 American National Standard for Product Safety Signs and Labels

ANSI Z535.6 Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials

3. Terminology

3.1 Definitions:

3.1.1 *conspicuous, adj*—label that is visible, when the infant bouncer seat is in a manufacturer’s recommended use position, to a person sitting near the infant bouncer seat at any one position around the infant bouncer seat but is not necessarily visible from all positions.

3.1.2 *cord, n*—length of slender, flexible material including monofilaments, rope, woven and twisted cord, plastic and textile tapes, ribbon, and those fibrous materials commonly called string.

3.1.3 *dynamic load, n*—application of an impulsive force through free fall of a weight.

3.1.4 *fabric, n*—any woven, knit, coated, laminated, extruded, or calendered flexible material that is intended to be sewn, welded, heat sealed, or glued together as an assembly.

3.1.5 *grasping point on toy bar, n*—five-inch wide section of the toy bar centered at the mid-point of the toy bar if the toy bar is attached at two points on the bouncer frame.

3.1.5.1 *Discussion*—If the toy bar has a single attachment point, the 5-in. dimension is either centered at the mid-point of the product or as close to the mid-point as possible, should the toy bar not extend far enough beyond the mid-point to achieve this. The load should be evenly distributed over this 5-in. dimension.

3.1.6 *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 by the manufacturer in any descriptive or instructional literature.

3.1.6.1 *Discussion*—This specifically excludes positions that the manufacturer shows in a like manner in its literature to be unacceptable, unsafe, or not recommended.

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

3.1.8 *occupant, n*—that individual who is in a product that is set up in one of the manufacturer’s recommended use positions.

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

3.1.10 *seam, n*—means of joining fabric components, such as sewing, welding, heat sealing, or gluing.

3.1.11 *static load, n*—vertically downward force applied by a calibrated force gauge or by dead weights.

3.1.12 *toy bars, n*—any bar or mobile connected to the frame of the bouncer in any location with one or more attachment points typically used to suspend toys over the occupant.

3.1.12.1 *Discussion*—Canopies, fixed and rotating, are not considered a toy bar regardless of whether they allow for the attachment of toys.

4. Calibration and Standardization

4.1 All testing shall be conducted on a concrete floor, which may be covered with 1/8-in. (3-mm) thick vinyl flooring cover, unless the test instructs differently.

⁴ Department of Transportation, Federal Aviation Administration, Drawing No. SA-1001.

⁵ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

4.2 The product shall be completely assembled, unless otherwise noted, in accordance with the manufacturer's instructions.

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

4.4 The product to be tested shall be in a room with an ambient temperature of $73^{\circ} \pm 9^{\circ}\text{F}$ ($23^{\circ} \pm 5^{\circ}\text{C}$) for at least one hour 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 infant bouncer seat.

5. General Requirements

5.1 *Hazardous Sharp Points and Edges*—There shall be no hazardous points or edges as defined by 16 CFR 1500.48 and 16 CFR 1500.49 before and after testing to this consumer safety 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 *Lead*—There shall be no lead-containing paint as defined by 16 CFR 1303.

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

5.5 *Latching or Locking Mechanisms*—If the infant bouncer seat is designed with a latching or locking device that prevents unintentional folding, the infant bouncer seat shall remain in its manufacturer's recommended use position during and upon completion of the test, in accordance with 7.10. The latching or locking device shall remain engaged and operative after testing.

5.6 *Scissoring, Shearing, and Pinching*—A product, when in any manufacturer's recommended use position(s), shall be designed and constructed so as to prevent injury to the occupant from any scissoring, shearing, or pinching when members or components rotate about a common axis or fastening point, slide, pivot, fold, or otherwise move relative to one another. Scissoring, shearing, or pinching that may cause injury shall not be permissible when the edges of any rigid parts admit a probe greater than 0.210 in. (5.33 mm) and less than 0.375 in. (9.52 mm) in diameter at any accessible point throughout the range of motion of such parts.

5.7 *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. 3). The product shall be evaluated in all manufacturer's recommended use positions.

5.8 *Exposed Coil Springs*—Any exposed coil spring that is accessible to the occupant, having or capable of generating a space between coils of 0.210 in. (5.33 mm) or greater during

static load testing in accordance with 7.5.2 shall be covered or otherwise designed to prevent injury from entrapment.

5.9 *Protective Components*—If a child can grasp components between the thumb and forefinger or between teeth, (such as caps, sleeves, or plugs used for protection from sharp edges, points, or entrapment of fingers or toes), or if there is at least a 0.040-in. (1.00-mm) gap between the component and its adjacent parent component, such component shall not be removed when tested in accordance with 7.9.

5.10 Permanency of Labels and Warnings:

5.10.1 Warning labels (whether paper or non-paper) shall be permanent when tested in accordance with 7.8.1 – 7.8.3.

5.10.2 Warning statements applied directly onto the surface of the product by hot stamping, heat transfer, printing, wood burning, etc. shall be permanent when tested in accordance with 7.8.4.

5.10.3 Non-paper labels shall not liberate small parts when tested in accordance with 7.8.5.

5.11 *Toys*—Toy accessories attached to, removable from, or sold with an infant bouncer seat, as well as their means of attachment, must meet applicable requirements of Specification F963.

6. Performance Requirements

6.1 Restraint System:

6.1.1 A restraint system shall be provided to secure a child in any of the manufacturer's recommended use positions.

6.1.2 The restraint system shall include both a waist and crotch restraint, where the crotch restraint's use is mandatory when the waist restraint is in use.

6.1.3 The anchorages for the restraint system shall not separate from their attachment points when tested in accordance with 7.2.

6.2 Stability:

6.2.1 *Forward Stability*—The infant bouncer seat shall not tip over when tested in accordance with 7.3.2. If the stability test fixture touches the test surface and prevents the product from tipping over, retest the product near the edge of an elevated test surface to allow the product to tip.

6.2.2 *Sideward and Rearward Stability*—The infant bouncer seat shall not tip over when tested in accordance with 7.3.3 – 7.3.6.

6.3 Slip Resistance:

6.3.1 *Dynamic Slip Resistance*—The infant bouncer seat shall not slip more than ½ in. (13 mm) when tested in accordance with 7.4.4.

NOTE 1—As this is a dynamic impact test, the ½ in. allows for a small amount of settling prior to the feet gripping.

6.3.2 *Static Slip Resistance*—The infant bouncer seat shall not slip more than ⅛ in. (3 mm) when tested in accordance with 7.4.5 – 7.4.9.

6.4 *Structural Integrity*—At test conclusion, there shall be no failure of seams, breakage of materials, or changes of adjustments that could cause the product not to fully support the child or create a hazardous condition as defined in Section 5.

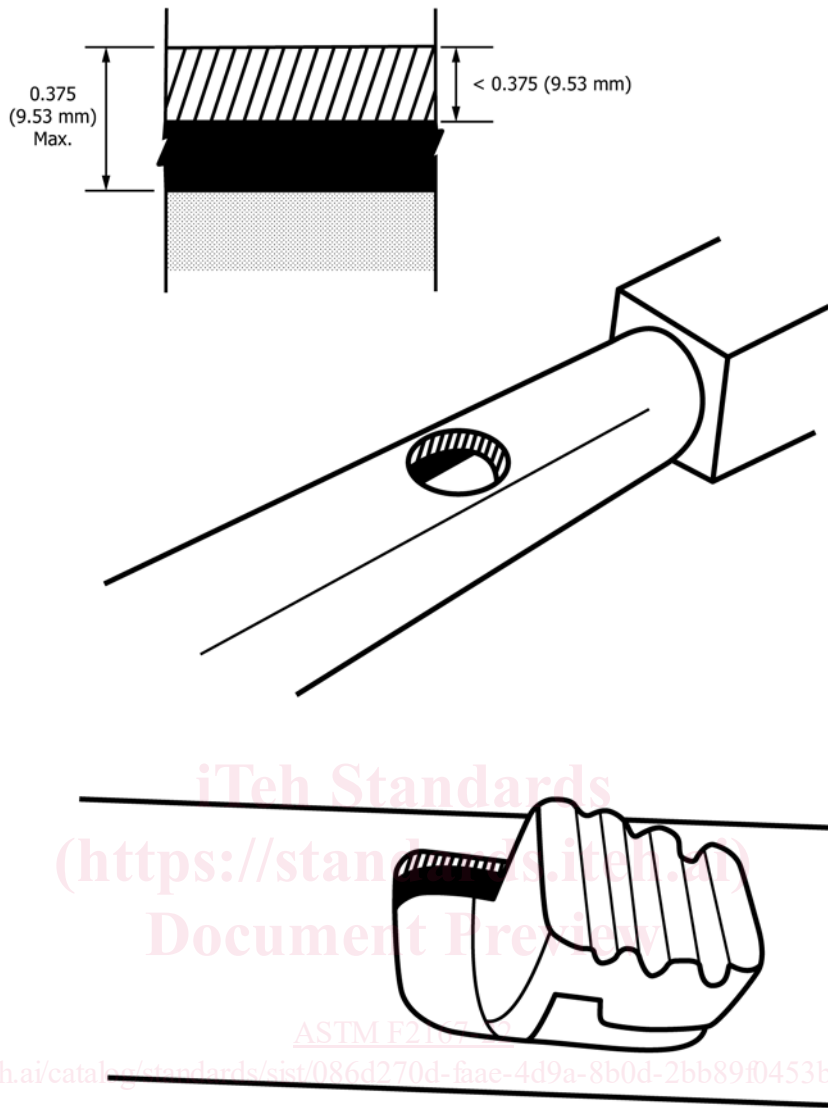


FIG. 3 Opening Example

6.4.1 *Dynamic Load*—The infant bouncer seat shall not create a hazardous condition as defined in Section 5 when tested in accordance with 7.5.1.

6.4.2 *Static Load*—The infant bouncer seat shall not create a hazardous condition as defined in Section 5 when tested in accordance with 7.5.2.

6.5 *Disassembly/Collapse*—The infant bouncer seat shall not disassemble or collapse when tested in accordance with 7.6.

6.6 *Drop Test*—The infant bouncer seat shall not create a hazardous condition as defined in Section 5 when tested in accordance with 7.7.

6.7 *Toy Bar Attachment Integrity:*

6.7.1 *Toy Bar Attachment Release*—Toy bars must meet the requirements in 6.7.1.1 or 6.7.1.2 or 6.7.1.3:

6.7.1.1 The toy bar must not completely release from the bouncer seat when tested to 7.12.1.1 and 7.12.2.

6.7.1.2 The toy bar must completely release before the entire bouncer lifts off the test surface when tested to 7.12.1.2.

6.7.1.3 For toy bars that contain a single attachment point, the toy bar must move more than 2 in. (5.1 cm) from its original resting position when measured at the furthest point at the free end of the toy bar while attempting to lift the bouncer off the test surface when tested to 7.12.1.2.

6.8 *Battery Compartments (remote control devices are exempt from these requirements):*

6.8.1 Each battery compartment or area immediately adjacent to the battery compartment shall be marked permanently and legibly to show the correct battery polarity, size, and voltage.

6.8.2 Each battery compartment shall provide a means to contain the electrolytic material in the event of a battery leakage. This containment means shall not be accessible to the occupant.

6.8.3 Positive protection from the possibility of charging any primary (non-rechargeable) battery shall be achieved either through physical design of the battery compartment or through the use of appropriate electrical circuit design. This applies to

situations in which a battery may be installed incorrectly (reversed), and in which a battery charger may be applied to a product containing primary batteries. This section does not apply to a circuit having one or two batteries as the only source of power.

6.8.4 The surfaces of any accessible electrical component, including batteries, shall not achieve temperatures exceeding 160°F (71°C) when tested in accordance with 7.1. At the conclusion of the test, there shall be no battery leakage or explosion or a fire to any electrical component. This test shall be performed prior to conducting any other testing within the performance requirements section.

7. Test Methods

7.1 The battery compartment shall be tested using fresh alkaline batteries or an a/c power source. If the function powered by the compartment can be operated using both, then both batteries and a/c power must be tested separately. If another battery chemistry is specifically recommended for use in the bouncer by the manufacturer, repeat the test using the batteries specified by the manufacturer. If the bouncer will not operate using alkaline batteries, then test with the type of battery recommended by the manufacturer at the specified voltage. The test is to be carried out in a draft-free location, at an ambient temperature of $68 \pm 9^\circ\text{F}$ ($20 \pm 5^\circ\text{C}$).

7.1.1 Operate the function powered by the battery compartment at the maximum speed or highest intensity. Do not disable any mechanical or electrical protective device, such as clutches or fuses. Operate the function powered by the battery compartment continuously, and record peak temperature. The test shall be discontinued 60 min after the peak temperature is recorded. If the function shuts off automatically or must be kept “on” by hand or foot, monitor temperatures for 30 s, resetting the function as many times as necessary to complete the 30 s of operation. If the function shuts off automatically after an operating time of greater than 30 s, continue the test until the function shuts off.

NOTE 2—The tests described in 7.2 through 7.7 are to be performed in the order specified without refurbishing or repositioning of adjustments, if any.

7.2 Restraint System:

7.2.1 Secure the infant bouncer seat so that it can not move vertically or horizontally.

7.2.2 Apply a force of 45 lbf (200 N) to a single attachment point of the restraint system in the normal use direction(s) that stress would be applied to the attachment. Gradually apply the force within a period of 5 s and maintain for an additional 10 s.

NOTE 3—This is in accordance with Specification F404.

7.2.3 Repeat 7.2.2 for each attachment point of the restraint system and fastening device.

7.3 Stability Test:

Forward Stability

7.3.1 Stability Test Fixture:

7.3.1.1 The stability test fixture is to be constructed of $\frac{3}{4}$ -in. (19-mm) plywood or the equivalent of such product.

7.3.1.2 The fixture should be constructed according to Fig. 4.

7.3.2 Test Procedure:

7.3.2.1 Establish the restraint system adjustment by placing the CAMI Infant Dummy, Mark II (see Fig. 1) in the infant bouncer seat, fastening the restraint system in accordance with the manufacturer’s instructions, and removing the dummy.

7.3.2.2 Insert the stability test fixture into the bouncer and pull forward to remove any slack in the crotch restraint.

7.3.2.3 Use a force gauge to apply a static load of 21 lbf (93 N) or the maximum manufacturer’s recommended weight, whichever is greater, vertically downward on the stability test fixture in the location designated on the drawing (6 in. (152.4 mm) in front of the crotch post; see Fig. 4) within a period of 5 s and maintain for an additional 60 s (see Fig. 5).

7.3.2.4 The test surface shall be an impregnated high-pressure laminate of unspecified color with a smooth matte finish.

Sideward and Rearward Stability

7.3.3 Place a CAMI Infant Dummy, Mark II (see Fig. 1) in the infant bouncer seat with the restraint system fastened in accordance with the manufacturer’s instructions.

7.3.4 Position the infant bouncer seat in the most unfavorable sideward or rearward position on a test surface inclined at 20°. The most unfavorable position could be a position in between the true sideward and rearward positions. If necessary, prevent the product from sliding but do not prevent it from tipping.

7.3.5 The test surface shall be an impregnated high-pressure laminate of unspecified color with a smooth matte finish.

7.3.6 Maintain for 1 min.

7.4 Slip Resistance:

Test Preparation

7.4.1 Test Surface:

7.4.1.1 The test surface shall be an impregnated high-pressure laminate of unspecified color with a smooth matte finish.

7.4.1.2 The laminate should be mounted on a flat surface, with a thickness no less than $\frac{3}{4}$ in. (19 mm), in accordance with the laminate manufacturer’s instructions.

7.4.1.3 Clean the test surface with a damp cloth. Any products that will interfere with the performance of the laminate are unacceptable, for example, solvents or cleaners that leave residue or alter the surface finish.

7.4.1.4 Precautions should be taken to prevent the contamination of the testing surface. Graduation or pencil marks are unacceptable unless located in a position that never interferes with the performance of the test product (that is, along the edge of the surface).

7.4.2 Test Procedure:

7.4.2.1 Incline the prepared laminate surface to 10°.

NOTE 4—The 10° incline is in accordance with Specification F2050.

7.4.2.2 Clean slip-resistant pads, feet, or any other objects on the infant bouncer seat that come in contact with the inclined surface with a damp cloth.

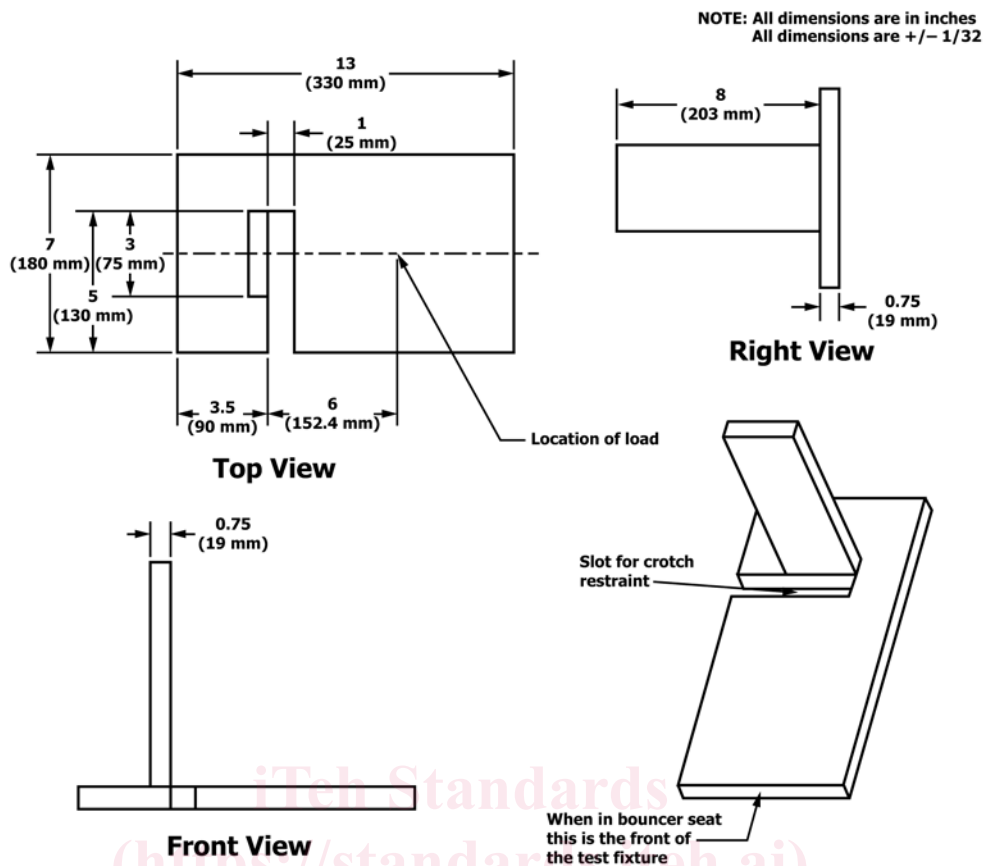


FIG. 4 Forward Stability Test Fixture



FIG. 5 Forward Stability Test

Dynamic Slip Resistance

7.4.3 Dynamic Slip Resistance Test Fixture:

7.4.3.1 The dynamic slip resistance test fixture is to be constructed of 3/4-in. (19-mm) plywood or the equivalent of such product.

7.4.3.2 The fixture should be constructed in accordance with Fig. 6.

7.4.4 Test Procedure:

7.4.4.1 Prepare the test surface, clean the slip resistant pads by wiping with a damp cloth, and incline the test surface in accordance with 7.4.1 and 7.4.2.

7.4.4.2 Center and affix a static load of 7.5 lb (3.40 kg) to the slip resistance test fixture in the location designated on the drawing (6 in. (150 mm) from the front edge of the test fixture). The 7.5-lb (3.40-kg) static load is to be constructed of a 5-by-10-in. (125-by-250-mm) bag filled with sand.

7.4.4.3 Establish the restraint system adjustment by placing the CAMI Infant Dummy, Mark II (see Fig. 1) in the infant bouncer seat, fastening the restraint system in accordance with the manufacturer's instructions, and removing the dummy. Insert the slip resistance test fixture into the bouncer and pull forward to remove any slack in the crotch restraint.

7.4.4.4 Place weighted infant bouncer seat onto inclined surface with the front of the infant bouncer seat facing directly down the incline. If the bouncer has a vibration unit, turn the unit to the speed setting most likely to cause the infant bouncer seat to slide.

7.4.4.5 Drop a test weight of 2.5 lb (1.13 kg) onto the designated drop area from a distance of 6 in. (150 mm) ten times. The cycle time is to be 5 s/cycle, ±1 s. The 2.5-lb (1.13-kg) test weight shall be constructed of 3-in. (75-mm) diameter steel and be approximately 1.25 in. (31.8 mm) thick (see Fig. 7).

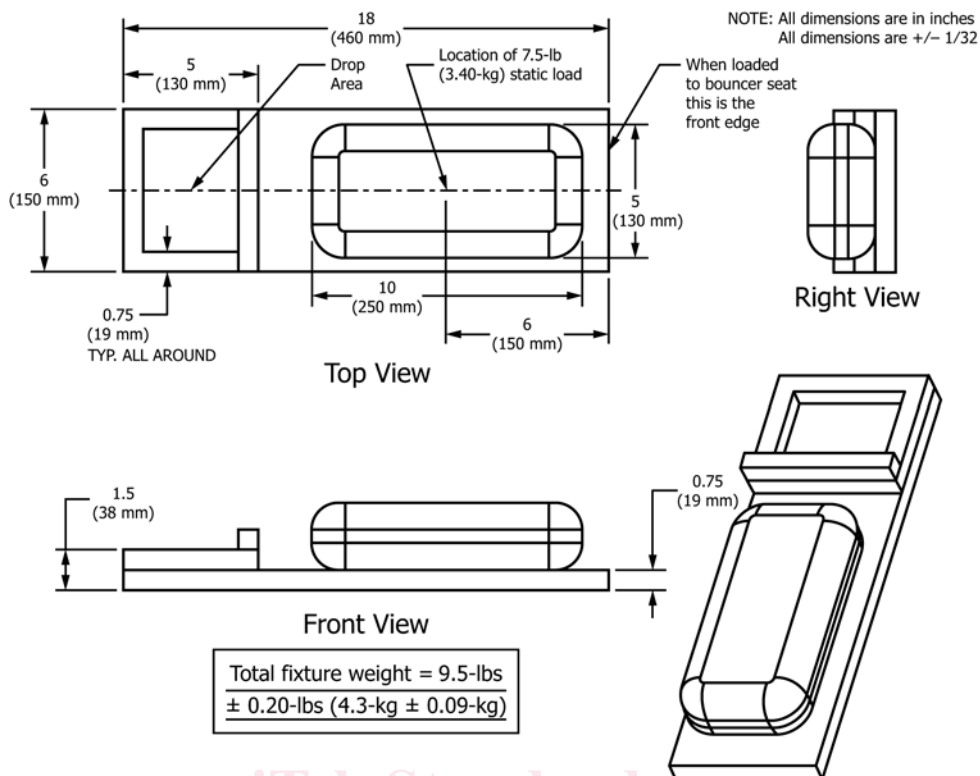


FIG. 6 Dynamic Slip Resistance Test Fixture

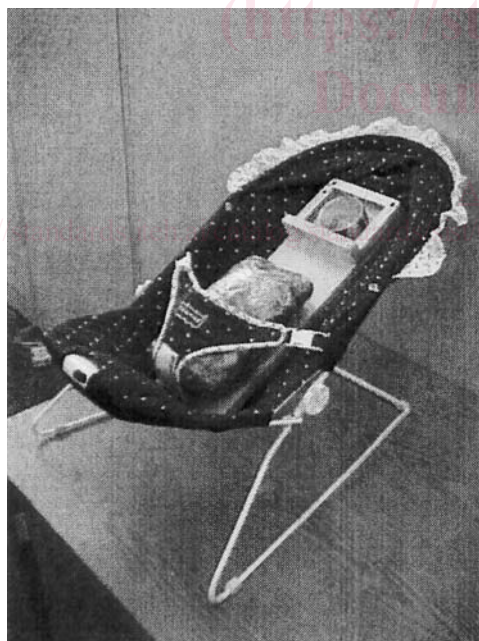


FIG. 7 Dynamic Slip Resistance Test

for this dynamic slip test.

Static Slip Resistance

7.4.5 Prepare the test surface, clean the slip resistant pads, and incline the test surface in accordance with 7.4.1.

7.4.6 Place a 7.5-lb (3.40-kg) newborn dummy in the seat.

7.4.7 Place weighted infant bouncer seat onto an inclined surface with the front of the infant bouncer seat facing directly down the incline.

7.4.8 The infant bouncer seat should not move more than 1/8 in. (3 mm) in 1 min.

7.4.9 Repeat 7.4.7 and 7.4.8 for the left side, right side, and rearward directions.

7.5 Structural Integrity:

7.5.1 Dynamic Load:

7.5.1.1 Position the infant bouncer seat in the manufacturer's recommended use position(s).

7.5.1.2 Position a standard 6-in. (150-mm) weld cap (see Fig. 8) with the convex surface down. Affix a weight to the top of the weld cap to achieve a total weight of 33 lb (15.0 kg).

7.5.1.3 Drop the 33-lb (15.0-kg) test weight onto the seat from a distance of 1 in. (25 mm) one hundred times.

NOTE 6—This test is in accordance with the walker standard. The weight is higher than that of a 6-month-old in the 95th percentile to justify limiting the test to only 100 cycles, as well as eliminating the need for an additional seam strength test.

7.5.2 Static Load:

7.5.2.1 Position the infant bouncer seat in the manufacturer's recommended use position(s).

7.4.4.6 The infant bouncer seat should not move more than 1/2 in. (13 mm).

7.4.4.7 Repeat 7.4.4.4 – 7.4.4.6 for the left side, right side, and rearward directions.

NOTE 5—The 10-lb (7.5 lb + 2.5 lb) load represents a 5th percentile 3 to 5-month-old. The 7.5 lb load is intended to simulate the torso. The 2.5 lb load is intended to simulate upper body bouncing in the infant bouncer seat. It is believed that the 5th percentile weight is a worst case scenario