



Standard Consumer Safety Specification for Portable Bed Rails¹

This standard is issued under the fixed designation F2085; 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 portable bed rail incidents that were identified by the U.S. Consumer Product Safety Commission (CPSC).

In response to incident data supplied by the CPSC, this consumer safety specification attempts to minimize the following type of potential hazard through labeling and performance requirements: entrapment between the portable bed rail and mattress in the bed rail structure and entanglement on protrusions. Entrapment of a child by the head or neck can result in asphyxiation.

This consumer safety specification is written within the current state-of-the-art of portable bed rail technology. It is intended that this specification will be updated whenever substantive information becomes available that necessitates additional requirements or justifies the revision of existing requirements.

This consumer safety specification is not intended to address all the hazards of bed rails that are either blatantly misused or used in a careless manner that disregards the instructional literature and warning statements provided with each bed rail.

1. Scope

1.1 This consumer safety specification establishes requirements for the performance of portable bed rails. It also contains requirements for labeling and instructional literature. This consumer safety specification does not cover guardrails that fall under the scope of Consumer Safety Specification **F1821** or guardrails that are designed for a specific model of bed and which attaches at the headboard or footboard.

¹ This consumer safety specification is under the jurisdiction of ASTM Committee **F15** on Consumer Products and is the direct responsibility of Subcommittee **F15.11** on Bed Rails.

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1.2 This consumer safety specification is intended to minimize hazards to children resulting from normal use and reasonably foreseeable misuse of portable bed rails.

1.3 For the purpose of this consumer safety specification, a portable bed rail is a device intended to be installed on an adult bed to prevent children from falling out of bed. These bed rails are intended for children who can get in and out of an adult bed unassisted (typically from 2 to 5 years of age).

1.4 No bed rail as defined in **3.1.1** that is 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 the requirements contained herein.

1.5 This consumer safety specification includes the following sections:

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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 methods portion in Section 8 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 and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- D3359** Test Methods for Measuring Adhesion by Tape Test
- D3574** Test Methods for Flexible Cellular Materials—Slab, Bonded, and Molded Urethane Foams
- F1487** Consumer Safety Performance Specification for Playground Equipment for Public Use
- F1821** Consumer Safety Specification for Toddler Beds

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.

2.2 Federal Standards:³

- 16 CFR 1303** Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint
- 16 CFR Part 1500** Federal Hazardous Substances Act Regulations, including Sections:
 - 16 CFR 1500.48** Technical Requirements for Determining a Sharp Point in Toys and Other Articles Intended for Use by Children Under 8 Years of Age
 - 16 CFR 1500.49** Technical Requirements for Determining a Sharp Metal or Glass Edge in Toys and Other Articles Intended for Use by Children Under 8 Years of Age
 - 16 CFR 1501** Method for Identifying Toys and Other Articles Intended for Use by Children Under 3 Years of Age which Present Choking, Aspiration, or Ingestion Hazards Because of Small Parts

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *adjacent type bed rail, n*—portable bed rail in which the guard portion (portion that a child would contact when rolling toward the mattress edge) of the unit is essentially a vertical plane that is pushed against the side of the mattress. The guard remains immediately next to the mattress and does not extend over the mattress surface.

3.1.2 *arm, n*—for the purpose of this specification, a device(s) attached to a bed rail that extends between the mattress and mattress foundation and is intended to secure the bed rail to the bed.

3.1.3 *bed manufacturer specific type portable bed rail, n*—portable bed rail that is intended for use on a certain type or model(s) of bed as specified by the manufacturer of the bed or bed rail, or both.

3.1.4 *captive hardware, n*—fasteners that remain attached to their respective components before normal assembly and after normal disassembly (see Fig. 1).

3.1.5 *conspicuous, adj*—label that is visible, when the portable bed rail is in the manufacturer's recommended use position, to a person standing near the unit at any one position around the unit but not necessarily visible from all positions.

3.1.6 *consumer adjustment, n*—those activities defined by the instructions to be taken by the consumer in order to properly fit and secure the bedrail to the mattress.

3.1.6.1 *Discussion*—Examples include sliding telescoping poles for proper fit, or initial adjustment for use, tightening of anchoring straps and positioning or changing of attachment components or locking pins.

3.1.7 *consumer assembly, v*—the fitting together of components of the bedrail according to manufacturer instructions.

3.1.8 *installation component, n*—component of the bedrail that is specifically designed to attach the bedrail to the bed and typically located under the mattress when in the manufacturer's recommended use position.

3.1.9 *mattress-top bed rail, n*—portable bed rail in which the guard portion (portion that a child would contact when rolling toward the mattress edge) extends over the sleeping surface of the mattress.

³ Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.



Bolt is free floating, can retract but not completely removable

Pin is retractable but not removable without tools

FIG. 1 Captive Hardware

3.1.10 *misassembled bed rail, n*—a bed rail that has been assembled incorrectly but appears to function as a bedrail.

3.1.11 *nonpaper label, adj*—any label made of fabric or other material (such as plastic or metal) which either will not tear without the aid of tools, or tears leaving a sharply defined edge.

3.1.12 *non-rigid bed rail, n*—portable bed rail constructed of non-rigid materials, including but not limited to fabric or foam, or that requires air be inflated into the product to achieve structure.

3.1.13 *paper label, adj*—any label material (except fabric) which tears without the aid of tools and leaves a fibrous edge.

3.1.14 *permanent, adj*—marking or label shall be considered permanent if, during an attempt to manually remove it without the aid of tools or solvents, it cannot be removed, or it tears upon removal, or such action damages the surface to which it is attached.

3.1.15 *portable bed rail, n*—portable railing installed on the side of an adult bed and/or on the mattress surface which is intended to keep a child from falling out of bed.

3.1.15.1 *Discussion*—Portable bed rails include those made for a specific manufacturer's bed.

4. Calibration and Standardization

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

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

4.3 The product to be tested shall be in a room with an ambient temperature of $73 \pm 9^\circ\text{F}$ ($23 \pm 5^\circ\text{C}$) for at least 1 h prior to testing. Testing shall then be conducted within this temperature range.

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

5. General Requirements

5.1 There shall be no hazardous sharp points or edges as defined by 16 CFR 1500.48 and 16 CFR 1500.49.

5.2 There shall be no small parts as defined by 16 CFR 1501.

5.3 Any exposed wood parts shall be smooth and free from splinters.

5.4 The bed rail shall conform to 16 CFR 1303.

5.5 Non-rigid bed rails need only meet the general requirements of Section 5, the performance requirement of 6.3, and the warning requirements of 9.3.

5.6 Warning labels (whether paper or nonpaper) shall be permanent when tested per 10.1-10.3. Warning statements applied directly onto the surface of the product by hot stamping, heat transfer, printing, wood burning, etc. shall be permanent when tested per 10.4. Nonpaper labels shall not liberate small parts when tested in accordance with 10.5.

5.7 Installation components that are required to meet the performance requirements of 6.4, 6.5, and 6.6 shall be fully assembled, inseparable, and permanently attached to a component requiring consumer assembly (this excludes any consumer adjustment).

5.8 For products requiring consumer assembly, supplied hardware used for assembly of the bedrail such as screws, nuts or bolts shall be captive hardware to their respective components.

6. Performance Requirements

6.1 *Structural Integrity*—All tests of 8.1 shall be performed sequentially. After testing in accordance with 8.1, there shall be no hazardous condition created as defined in Section 5.

6.2 *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 recommended use positions.

6.3 *Enclosed Openings*—When tested in accordance with 8.2, there shall be no enclosed openings in the enclosed

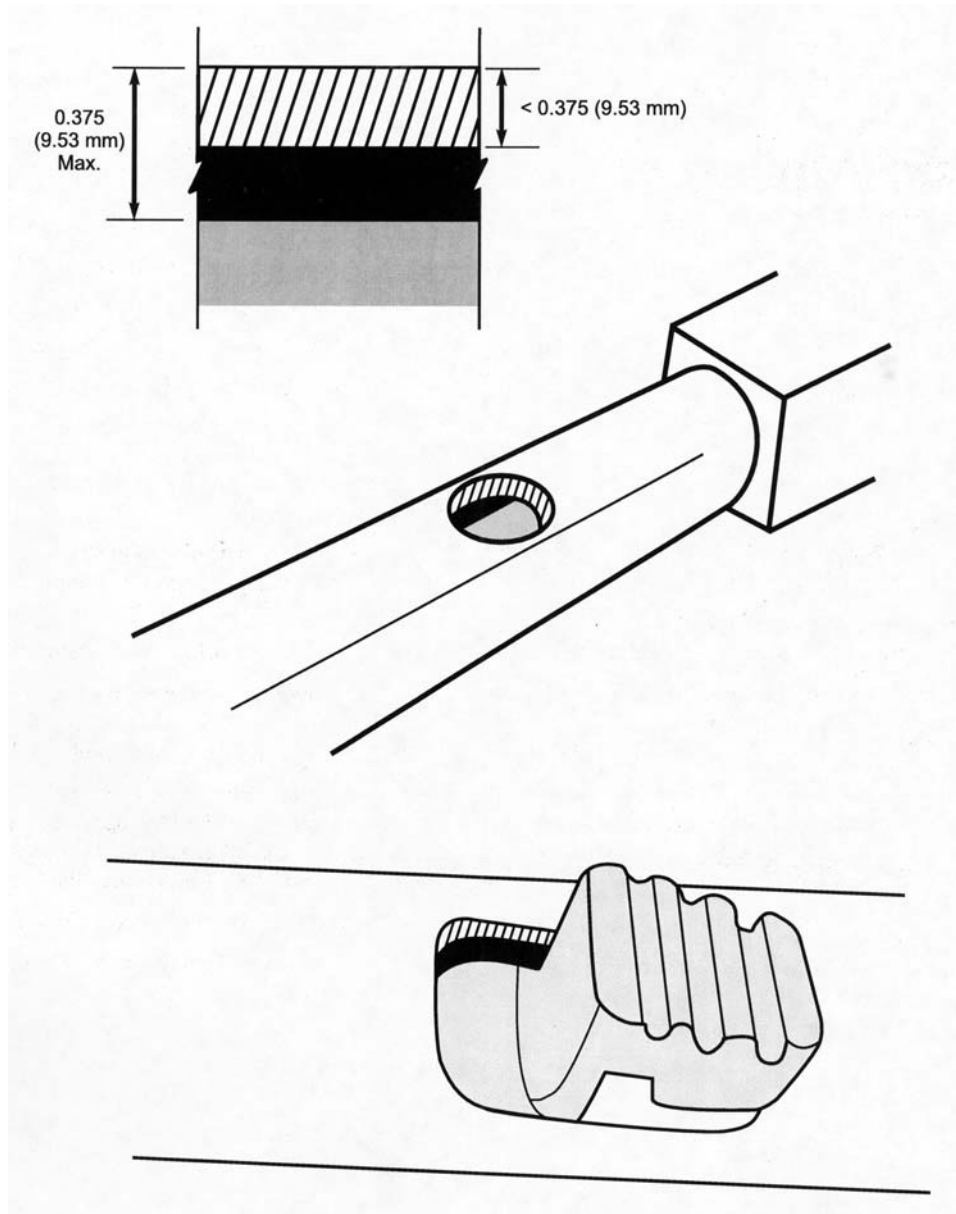


FIG. 2 Opening Example

structure of the portable bed rail that will permit passage of the Torso Probe shown in Fig. 3.

6.4 Openings Created by Bed Rail Displacement of Adjacent Style Portable Bed Rails—When tested in accordance with the procedure in 8.3, there shall be no opening between the mattress and the bed rail that will permit passage of the Torso Probe shown in Fig. 3. Passage is defined as the entire Torso Probe passing the horizontal plane that extends from the top surface of the mattress toward the guard portion of the bed rail.

6.4.1 Bed rails that are marketed as being usable on a bed that has a mattress support that is solid rather than a box spring shall be tested on Platform 3, as defined in 7.1.3, in accordance with 8.3.

6.5 Openings Created by Displacement of Mattress-Top Portable Bed Rails—When tested in accordance with the

procedure in 8.4, the Wedge Probe (Fig. 4) shall not penetrate to a depth greater than 4.5 in. (114 mm) and the bed rail shall not displace horizontally such that the inner edge of the bed rail moves off the top mattress surface. The inner edge of the bed rail is the edge where the Wedge Probe is inserted.

6.5.1 Bed rails that are marketed as being usable on a bed that has a mattress support that is solid rather than a box spring shall be tested on Platform 3, as defined in 7.1.3, in accordance with 8.3.

6.6 Openings Created by Displacement of Portable Bed Rails Intended for Use on Specific Manufacturers' Beds—When tested in accordance with the procedure in 8.5 there shall be no opening between the mattress and bed rail that will permit passage of the Torso Probe (Fig. 3). Passage is defined as the entire Torso Probe passing the horizontal plane toward the guard position of the bed rail.

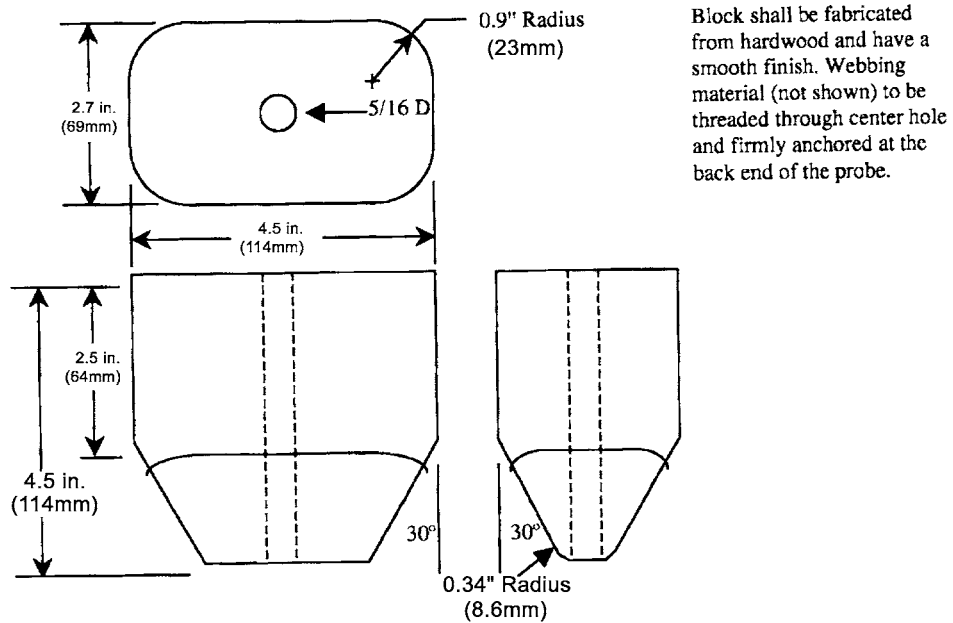


FIG. 3 Torso Probe

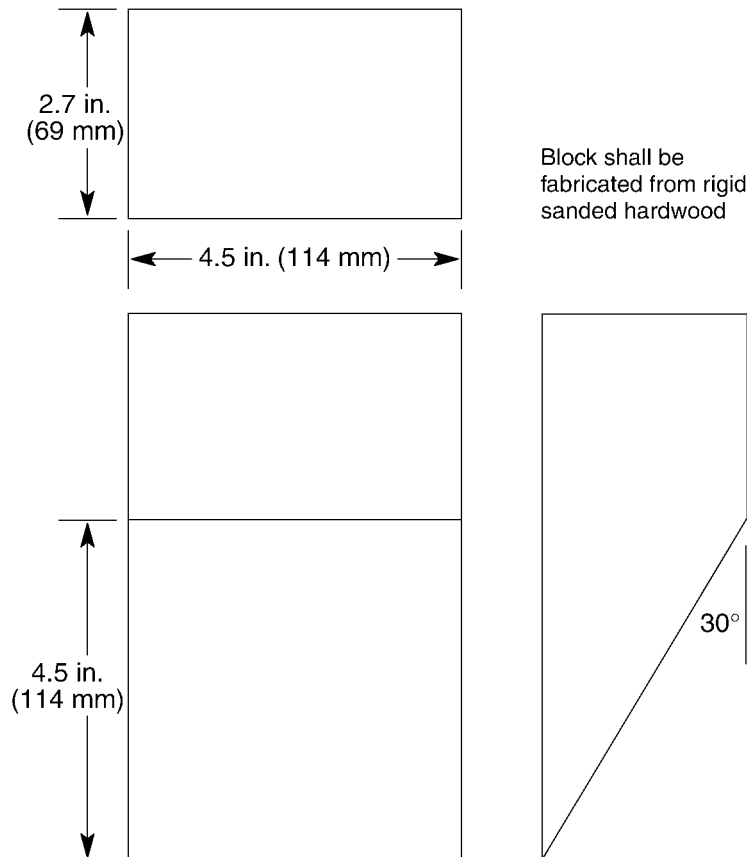


FIG. 4 Wedge Probe



Center horizontal structural component is omitted consequently the fabric does not engage the center structural component.

FIG. 5 Example of Fail Condition

6.7 *Protrusions*—Neither string on the weight gauge shall stay attached to a protrusion when tested in accordance with the procedure in 8.6.

6.8 *Openings Between Bedposts (Headboard, Footboards, Etc.) and Ends of Portable Bed Rail*—When installed in accordance with the manufacturer's instructions on Test Platforms 1 and 2 there shall be a minimum of 9 in. (230 mm) between the left and right ends of the portable bed rail and the corresponding left and right ends of the test mattress.

6.8.1 *Adjacent Style and Mattress Top Portable Bed Rails*—When installed in accordance with the manufacturer's instructions on Test Platforms 1 and 2 there shall be a minimum of 9 in. (230 mm) between the left and right ends of the portable bed rail and the corresponding left and right ends of the test mattress.

6.8.2 *Bed Manufacturer Specific Type Portable Bed Rails*—When installed on the bed manufacturer's bed with the mattress from platforms 1 and 2, there shall be a minimum of 9 in. (230 mm) between the left and right ends of the portable bed rail and the corresponding left and right ends of the test mattress.

6.9 Bedrail components requiring consumer assembly shall not be able to be misassembled when evaluated to 6.9.1.

6.9.1 *Determining Misassembled Bed Rail*—A bedrail shall be considered a misassembled bed rail if it appears to be a functional bedrail under any one of the conditions listed in 6.9.1.1, 6.9.1.2, or 6.9.1.3 and it does not meet the requirements of 6.4, 6.5, or 6.6.

6.9.1.1 The bedrail's fabric cover or mesh can be placed over the rigid frame structure without engaging all structural components of the frame as intended in final assembly (Fig. 5 and Fig. 6). When the bedrail is evaluated, zippers and other means of attachment should be fully fastened. If possible to fasten the means of attachments without engaging said structural components, evaluation for misassembly should account for that (see Fig. 6).

NOTE 1—Any means of attachment, including, but not limited to, zippers, hooks and loops, and snaps, should be fully fastened. Fig. 7 represents a passing condition.

6.9.1.2 The bedrail can be consumer assembled with any horizontal structural components improperly positioned such as being inverted or interchanged, without permanent deformation or breakage of the component or bedrail. This excludes consumer adjustment or universal components that are designed to be interchangeable (Fig. 8). For example:

(1) Horizontal structural components shall be interchanged (Components 1, 2, 3).

(2) Horizontal structural components shall be inverted (AB:BA); (CD:DC); (EF:FE).

(3) Horizontal structural components shall be interchanged and inverted. (Example: combination of structural component 3 in the top position and inverted (EF:FE).)

6.9.1.3 Bedrails where the positions of the arms are intended to be unidirectional are able to be assembled when the arms are rotated 180° about the vertical axis (Fig. 9).

7. Test Equipment

7.1 Test Beds:

7.1.1 Test Platform 1:

7.1.1.1 *Mattress Construction*—The mattress shall be of standard twin size, 38 by 74.5 in. $\pm$ 0.5 in. (0.97 by 1.89 m $\pm$ 13 mm). The mattress shall be made from open cell polyurethane foam padding and be 4 to 5 in. (102 to 127 mm) thick with a density of 1 lb/ft³ +0.2, -0 (16 kg/m³ +3.2, -0). The mattress shall weigh between 6.0 and 9.5 lb (2.7 to 4.3 kg). There shall be no surface texture features (for example, quilting) on the test mattress. The mattress shall be covered with a standard twin sized fitted sheet. The sheet shall be white, 50/50 cotton/polyester blend. It shall have 100 to 300 threads per square inch.

7.1.1.2 *Mattress Performance*—The foam shall have an Indentation Load Deflection (ILD)⁴ of between 28 and 33 when tested in accordance with Test Methods D3574, Method B1.

7.1.1.3 *Mattress Support*—The support shall be a common twin sized foundation⁵ measuring approximately 6 in. thick by 38 in. by 74.5 $\pm$ 0.5 in. (152 mm by 0.97 m by 1.89 m $\pm$ 13 mm). The foundation shall be of typical frame construction that is topped with a rigid board that has a layer of approximately ¼ in. (6 mm) to ¾ in. (10 mm) of open cell foam and covered with a fabric similar to that of the test mattress. The foundation shall be placed in a common metal bed frame.

7.1.2 Test Platform 2:

7.1.2.1 *Mattress Construction*—The mattress⁶ shall be of standard twin size, 38 in. by 74.5 in. $\pm$ 0.5 in. (0.97 m by 1.89 m $\pm$ 13 mm). The mattress shall be of an innerspring design and be between 10.0 in. (0.25 m) and 11.0 in. (0.28 m) thick.⁷ The mattress shall weigh 50 $\pm$ 10 lb (22.7 $\pm$ 4.5 kg). The mattress shall be covered with a standard twin sized cotton fitted sheet. The sheet shall be white, 50/50 cotton/polyester blend. It shall have 100 to 300 threads per square inch.

7.1.2.2 *Mattress Support*—The support shall be a common twin sized foundation⁵ measuring approximately 6 in. thick by 38 in. by 74.5 $\pm$ 0.5 in. (152 mm by 0.97 m by 1.89 m $\pm$ 13 mm). The foundation shall be of typical frame construction that

⁴ Indentation Load (ILD) is defined as the weight in pounds necessary to deflect a 15 in. square by 4 in. thick piece of foam 1 in.

⁵ Suggested foundation to use for this test is Chancellor II Twin Foundation model #1256332.

⁶ Suggested mattress to use for this test is Tocarre Firm Twin Mattress model #1640331.

⁷ Thickness is measured when the mattress is located on a box spring. Measurement is from the top surface of the box spring to the center of the top-ticking seam.



Bedrail fabric with bottom zipper misassembled, fabric cover can be zipped up without engaging the bottom horizontal bar.



Bottom bar can be omitted from insertion into fabric sleeve or channel located at the base of the fabric component.

FIG. 6 Examples of Fail Conditions



Bedrail fabric with a zipper that is not fully engaged. The zipper cannot be fully engaged due to interference with the middle bar.

FIG. 7 Example of Condition Not To Be Tested

is topped with a rigid board that has a layer of approximately $\frac{1}{4}$ in. (6.4 mm) to $\frac{3}{8}$ in. (9.5 mm) of open cell foam and covered with a fabric similar to that of the test mattress.

7.1.3 Test Platform 3:

7.1.3.1 *Mattress Construction*—The mattress shall be that specified in 7.1.1.1.

7.1.3.2 *Mattress Support*—The support shall be particle board with a nominal thickness of $\frac{5}{8}$ by 38 by 74.5 in.

7.2 *Torso Probe*—Block shall be fabricated from sanded hardwood and have a smooth finish. This probe is to be used for the test methods in 8.2 and 8.3 (see Fig. 3).

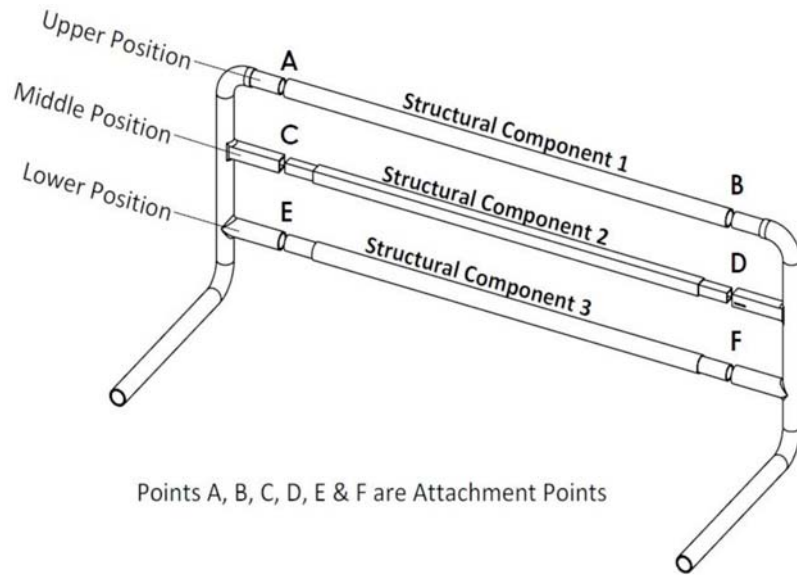


FIG. 8 Example of Tube Inverted or Interchanged

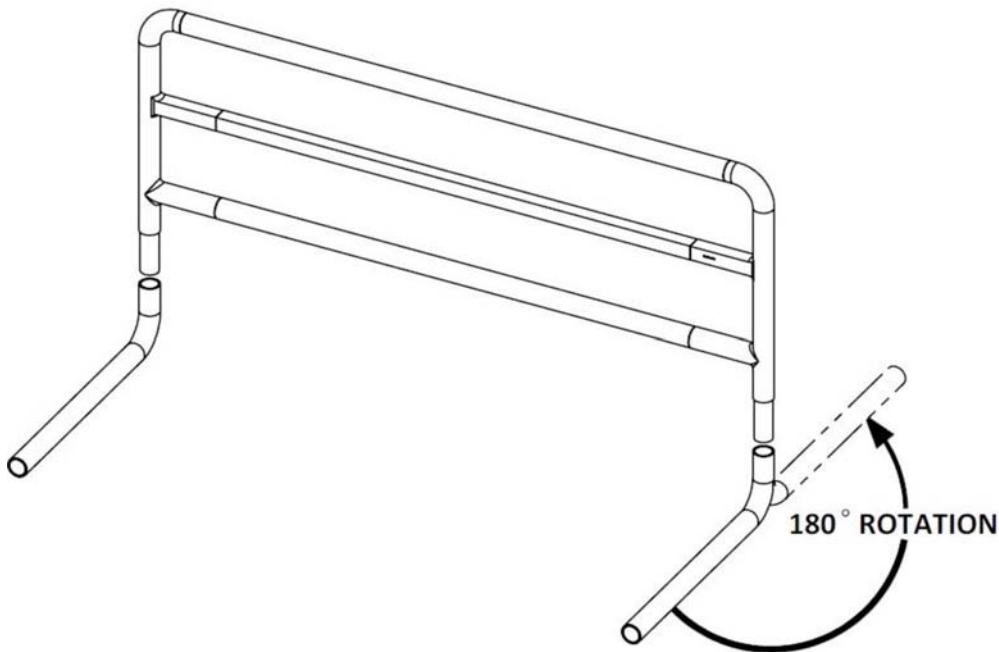


FIG. 9 Example of Test for Unidirectional Arm

7.3 Wedge Probe—Block shall be fabricated from sanded hardwood and have a smooth finish. This probe is to be used for the test method in 8.4 (see Fig. 4).

7.4 Ring Gauge—A rigid ring with a 1.0-in. (25-mm) O.D. and a 0.625-in. (15.9 mm) I.D. (see Fig. 10). This gauge is used for protrusion testing.

7.5 Weight Gauge—A 4.4 lb (2.00 kg) weight. Attached to the weight are a 30-in. (760 mm) loop of cord and a 6-in. (150-mm) loop of cord. The materials are steel and #18 seine twine/mason line (see Fig. 11). This gauge is used for testing protrusions.

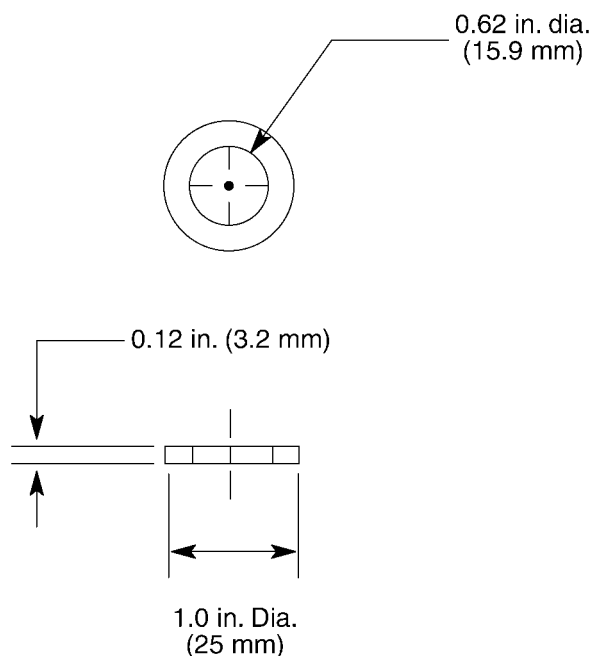
7.6 Force Gauge—Gauge shall have a minimum range of 0 to 50 lb (222 N) with a maximum tolerance of ± 0.25 lb (1.11 N).

8. Test Methods

8.1 Test Method for Structural Integrity:

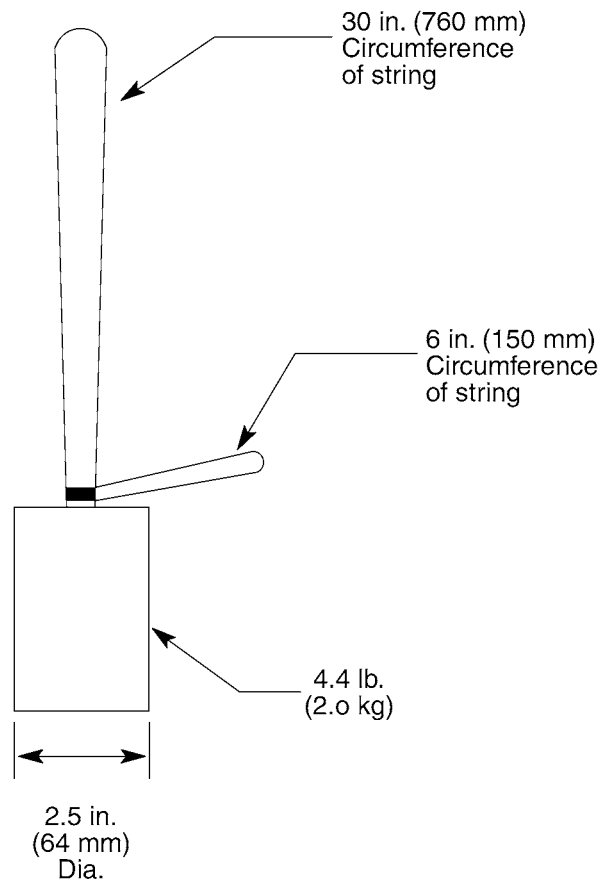
8.1.1 Firmly secure the bed rail on a table top or other stationary flat surface using clamps. The clamps should be located 4 ± 1 in. from the intersection of the bedrail legs to the vertical plane (Fig. 13). If the legs of the bed rail move or disengage during testing, re-clamp securely and re-test.

8.1.2 Gradually apply a force of 40 lbf (178 N) at the uppermost horizontal part of the rail in a direction perpendicular to the plane of the rail. The force should be applied in the center along the length of the rail and then repeated with the force applied directly over each of the outermost legs of the bed rail (Fig. 13). The direction of force should be maintained



Material: rigid

FIG. 10 Ring Gauge



Material: Steel and
18 seine twine/mason line

FIG. 11 Weight Gauge

at a 90° angle to the plane of the rail and applied in the direction away from the mattress as if the bed rail were installed on a bed. The force should be applied within a period of 5 s and maintained for an additional 10 s.

8.2 Test Method for Enclosed Openings Within Portable Bed Rail:

8.2.1 Secure bed rail.

8.2.2 Place the Torso Probe shown in Fig. 3 into any opening in the bed rail structure. Place the probe, tapered end first, in the orientation most likely to permit its passage and gradually apply a force of 30 lbf (133 N) in a direction perpendicular to the plane of the opening. Sustain the force for 5 s.

8.3 Test Method for Displacement of Adjacent Style Portable Bed Rails:

8.3.1 Install the portable bed rail on Test Platform 1 in accordance with the manufacturer's instructions. Unless specified otherwise, the bed rail shall be centered along the length of the mattress. Offset the mattress over the mattress support (so that the mattress extends over the edge of the support) 1 in. (25 mm), or as far as the bed rail design allows, up to 1 in. (25 mm).

8.3.2 Starting at one end of the rail, place the tapered end of the Torso Probe shown in Fig. 3 into the intersection of the mattress edge and the face of the rail. Gradually apply

sufficient force, not to exceed 30 lbf (133 N), to the probe to create a small gap such that the tapered end enters the gap to a depth of 1/2-in. (13-mm). Align the probe in the orientation most likely to permit its passage (generally with vertical centerline of the probe as close as possible to perpendicular to the plane of the gap opening).

8.3.3 Gradually apply a pull force of 30 lbf (133 N) vertically downward. Sustain the force for 5 s.

8.3.4 Reinstall the bed rail prior to testing a new location.

8.3.5 Repeat the probe test along the entire length of the bed rail, at intervals not to exceed 12 in. (300 mm) and at locations most likely to fail.

8.3.6 Repeat 8.3.1-8.3.5, with the portable bed rail installed on Test Platform 2.

8.3.7 Repeat 8.3.1-8.3.5, with the portable bed rail installed on Test Platform 3, if applicable.

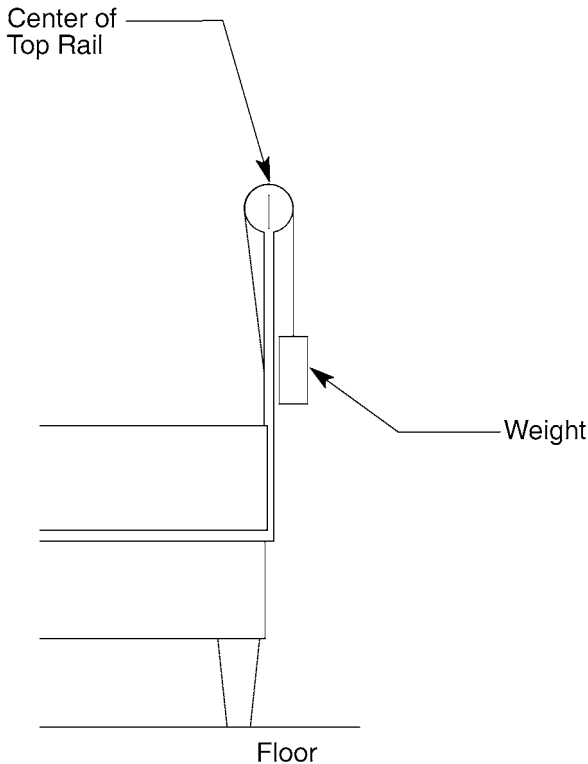


FIG. 12 Test Over Top Rail

centerline of the probe as close as possible to perpendicular to the plane of the gap opening).

8.5.3 Gradually apply a pull force of 30 lbf (133 N) vertically downward. Sustain the force for 5 s.

8.5.4 Reinstall the bed rail prior to testing a new location.

8.5.5 Repeat the probe test along the entire length of the bed rail, at intervals not to exceed 12 in. (300 mm) and at locations most likely to fail.

8.5.6 Repeat 8.5.1-8.5.5 with the portable bed rail installed on the specific manufacturer's bed using the mattress specified in Test Platform 2 and the mattress support recommended by the manufacturer.

8.6 Test Method for Entanglement on Protrusions:

8.6.1 Place the product in the manufacturer's recommended use position on Test Platform 1 (see 7.1.1). Using the ring gauge (Fig. 10), evaluate the product's protrusions using the following procedure. Evaluate the inside (facing toward center of bed) of the product from the center of the top rail to the plane of the mattress top surface. Evaluate the outside of the product from the center of the top rail to the plane of the top surface of the mattress foundation. Orient the ring gauge perpendicular to the axis of the protruding object. Attempt to place the ring gauge hole over the protrusion. If the protrusion extends beyond the outer face of the ring gauge, continue evaluating by means of the string and weight gauge (Fig. 11). Place the short string around the protrusion with the weight freely hanging down. Then place the long string around the protrusion with the weight hanging over the top rail and freely hanging down on the other side of the bed rail (see Fig. 11). Depending on the location of the protrusion being tested, the length of the long string may have to be shortened to prevent the weight from contacting the mattress surface.

9. Marking and Labeling

9.1 Each product and the retail packaging shall be marked clearly and legibly to indicate the following:

9.1.1 Name and place of business (city, state and mailing address, including zip code) or telephone number of the manufacturer, importer, distributor, or seller.

9.1.2 Code mark or other means that identifies the date (month and year as a minimum) manufactured.

9.2 Any upholstery label required by law shall not be used to meet the requirements of 9.1.

9.3 Each product and the retail packaging shall have warning statements. The warning statements shall be in contrasting colors, permanent, conspicuous, and sans serif style font. In warning statements, the safety alert symbol "⚠" and the word "WARNING" shall not be less than 0.20 in. (5 mm) high. The remainder of the text shall be characters whose upper case shall be at least 0.10 in. (2.5 mm) high.

9.3.1 The warning statements shall include the following wording, exactly as stated below:

⚠ WARNING

SUFFOCATION AND STRANGULATION HAZARD

Gaps in and around bed rails have entrapped young children and killed infants.

NEVER use with children younger than 2 years old. Use ONLY with older children who can get in and out of adult bed without help. NEVER use in place of crib.

8.4 Test Method for Displacement of "Mattress-Top" Style Portable Bed Rails:

8.4.1 Install the portable bed rail on Test Platform 1 in accordance with the manufacturer's instructions.

8.4.2 Starting at one end of the bed rail, place the Wedge Probe shown in Fig. 4 on its side with the tapered end between the mattress and the underside of the inner edge of the rail. The longer side of the probe that forms the right angle shall be against the mattress surface. The short side of the right angle shall be perpendicular to the mattress surface. Push the probe under the guard to a depth of 1/2 in. (13 mm).

8.4.3 Gradually apply a force of 30 lbf (133 N) to the short side of the probe in a direction toward the bed rail and parallel to the mattress surface. Sustain the force for 5 s.

8.5 Test Method for Portable Bed Rails Intended for Use on a Specific Manufacturer's Bed:

8.5.1 Install the portable bed rail on the specific manufacturer's bed per the portable bed rail instructions. Using the mattress specified in Test Platform 1 and the mattress support recommended by the manufacturer, ensure the mattress and mattress support are properly aligned.

8.5.2 Starting at one end of the rail, place the tapered end of the Torso Probe shown in Fig. 3 into the intersection of the mattress edge and the face of the rail. Gradually apply sufficient force, not to exceed 30 lbf (133 N), to the probe to create a small gap such that the tapered end enters the gap to a depth of 1/2 in. (13 mm). Align the probe in the orientation most likely to permit its passage (generally with vertical

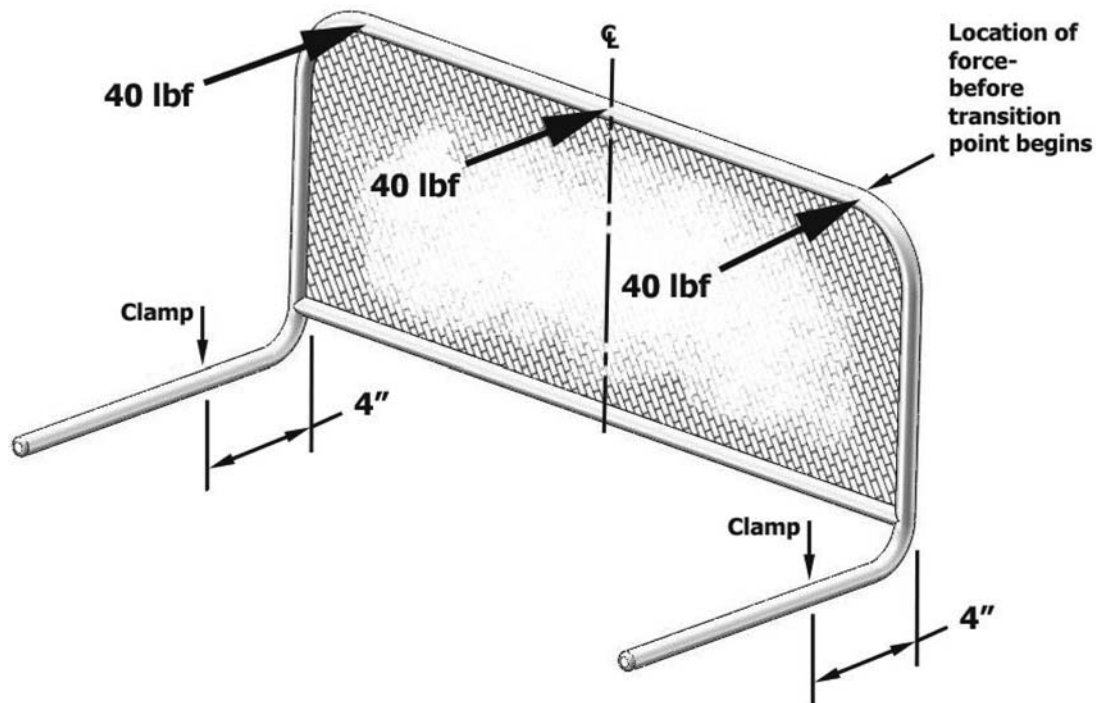


FIG. 13 Structural Integrity

NEVER use unless bed rail is tight against mattress, without gaps, and at least 9 in. from headboard and footboard. Do not fill gaps with pillows, blankets, or other items that can suffocate children.

NEVER use on toddler bed, bunk bed, water bed, or bed with inflatable mattress. Use ONLY on adult bed.

9.3.2 For manufacturers' specific bed rails, the warning statements shall also address the following:

Use only on (*manufacturer insert applicable bed and mattress/platform information*).

9.4 At least one installation component must be labeled with the entrapment hazard warning in 9.4.1. The entrapment hazard warning shall be in contrasting colors, permanent, conspicuous, and sans serif style font. In the entrapment hazard warning statement the safety alert symbol "Δ" and the words "WARNING - ENTRAPMENT HAZARD" shall not be less than 0.20 in. (5 mm) high. The remainder of the text shall be characters whose upper case shall be at least 0.10 in. (2.5 mm) high.

9.4.1 The following warning shall be addressed:

Δ WARNING – ENTRAPMENT HAZARD

NEVER use bedrail without properly securing bed rail to bed. Incorrect installation can allow bedrail to move away from mattress, which can lead to entrapment and death.

NOTE 2—Addressed means that verbiage other than what is shown can be used as long as the intent is the same or information that is product specific is presented.

10. Permanency of Labels and Warnings

10.1 A paper label (excluding labels attached by a seam) shall be considered permanent if, during an attempt to remove it without the aid of tools or solvents, it cannot be removed, it tears into pieces upon removal, or such action damages the surface to which it is attached.

10.2 A nonpaper label (excluding labels attached by a seam) shall be considered permanent if, during an attempt to remove it without the aid of tools or solvents, it cannot be removed or such action damages the surface to which it is attached.

10.3 A warning label attached by a seam shall be considered permanent if it does not detach when subjected to a 15-lbf (67-N) pull force applied in any direction using a 3/4-in. (19-mm) diameter clamp surface.

10.4 Adhesion test for warnings applied directly onto the surface of the product.

10.4.1 Apply the tape test defined in Test Method B, Cross-Cut Tape Test of Test Methods D3359, eliminating parallel cuts.

10.4.2 Perform this test once in each different location where warnings are applied.

10.4.3 The warning statements will be considered permanent if the printing in the area tested is still legible and attached after being subjected to this test.

10.5 A nonpaper label, during an attempt to remove it without the aid of tools or solvents, shall not be removed or shall not fit entirely within the small parts cylinder defined in 16 CFR 1501 if it can be removed.

11. Instructional Literature

11.1 Instructions shall be provided with the bed rail and shall be easy to read and understand. Assembly, installation, maintenance, cleaning, operating and adjustment instruction and warnings, where applicable, shall be included.

11.1.1 The instructions shall contain the warning statements, required by 9.3.1, and, where applicable, shall address the statements in 9.3.2. In addition, instructions shall address the following:

11.1.1.1 Discontinue use if damaged, broken, or if parts are missing.

11.2 Warning statements located within the instructional literature shall meet the same requirements as specified in 9.3.

12. Keywords

12.1 bed rail; portable bed rail

APPENDIX

(Nonmandatory Information)

X1. RATIONALE

X1.1 *Section 1.3*—CPSC staff recommends that infants never be placed in an adult bed. Since portable bed rails are intended for use on adult beds, CPSC staff recommends that bed rails be intended and labeled for use by children ages 2 to 5 years.

X1.2 *Sections 6.2, 6.3, 6.4, 6.5*—Fatal incidents associated with portable bed rails involved children ranging in age from 3 months to 4 years. Eight of these incidents involved children under the age of one year. Four incidents involved children between one and two years of age. Two children were older than 2 years (2½ years and 4 years). Three of the children were disabled, including the two oldest children. Since the fatal incidents (without physical or mental impairment contributing factors) involved children ranging in age from 3 months to almost 2 years, the staff recommends that the torso and wedge probes be based on the body dimensions of the youngest user at risk. The width at the top of the probes (2.7 in.) is based on the 5th percentile hip depth of a 3 to 4-month-old child. The length of the probes (4.5 in.) is based on the 5th percentile hip breadth for children 3 to 5 months of age. The use of a torso or wedge probe is consistent with other established standards that address entrapment risks such as standards for playground equipment and bunk beds.

X1.3 *Section 6.7*—Protrusions can present strangulation hazards by creating catch points for strings and loose clothing. One of the bed rail related fatalities involved a 14-month-old child who hung by his shirt collar that was caught on a protrusion. The proposed protrusion provisions are copied from a requirement now being proposed for the ASTM Standard for Children’s Play Yards.

X1.4 *Section 6.8*—A 9-in. gap between the end of a portable bed rail and the end of a mattress ensures that if a child’s body falls into an opening between the end of a rail and a bedpost, the child’s head will also fall through the opening, avoiding an entrapment.

X1.5 *Sections 7.1.1 through 7.1.2*—Test Platform 1 is lightweight, inexpensive, and commonly available. The mattress is combined with a typical box spring support. This bed was chosen to represent a reasonably foreseeable use that would be a “worst case” mattress for portable bed rail retention performance. Test Platform 2 is a moderately priced, thick mattress. It was chosen to ensure that bed rail performance was not influenced by mattress thickness. Bed rails should be

designed to accommodate a variety of mattress thicknesses, from the thinnest (Test Platform 1) to the thickest (Test Platform 2).

X1.6 *Section 7.1.1.1*—Information regarding the density of the mattress was distributed to the subcommittee concluding that variations in mattress density had a significant effect on bed rail performance test results. A tolerance of +0.2, –0 (+3.2, –0) was added to clearly define an acceptable mattress density parameter.

X1.7 *Section 8.1*—Incidents of bed rails breaking at the hinge joints have occurred in the field. It is assumed that children in bed could sit up and lean against or push against the bed rail, causing it to break. The 40-lbf static load for the test represents the 50th percentile 5-year-old.

X1.8 *Sections 8.2, 8.3, 8.4*—All forces and test loads are either 30 lbf or 30 lb. This is based on the 95th percentile weight of a 19-month-old boy (based on CDC growth charts) of 31.5 pounds. A 19-month-old was chosen since that is the oldest fatality to date, ignoring those with physical or mental impairments. Thus, the force of 30 lbs approximately equals 31.5 minus the weight of the probe itself (since the weight of the probe will help push it through a gap between the PBR and mattress). To provide confidence that an opening does not pose an entrapment hazard, the staff believes it is appropriate to combine the body dimensions of the youngest user at risk (3-month-old) with the body weight of the oldest user at risk (19-month-old).

X1.9 *Section 8.6*—The ring gauge comes from Consumer Safety Performance Specification **F1487**, Section 6.2.2, for testing for protrusions with the thickness and inside diameter modified. The amount of weight used in **Fig. 11** is 4.4 lbs (2 kg). It is the force required for the compression of the jugular veins in the neck⁸ at approximately six months of age, a child may possibly pull himself to a standing position, using objects for support. Eleven inches is at least half the height of a 5th percentile 6-month-old.

X1.10 *Sections 5.7 and 9.4*—The Consumer Product Safety Commission has received consumer complaints associated

⁸ Deppa, Shelly Waters, “Characteristics of Catch Point Incidents Contributing to Strangulation on Crib Toys and Other Children’s Products,” U.S. Consumer Product Safety Commission, 1992, p. 10.

with bed rail mis-installation. Installation components, such as anchor plates with straps and telescoping rods, are considered critical to the safety of the product and, if not properly installed, can result in an entrapment hazard. The requirement that installation components be attached to a structural component and be inseparable is designed to prevent lost or omission of components. For example, installation systems that reside under the mattress which use telescoping rods as a means of attaching the bedrail to that mattress, may allow for sliding to achieve consumer adjustment, however these rods must remain inseparable as to avoid omission or loss by the consumer. Similarly straps used to secure the bedrail to the mattress must not be designed in a manner that requires

connecting points to reside under the mattress and consequently must be a complete system with no subassemblies. The goal is to limit the number of installation components so that installation is made easier and components cannot be lost.

X1.11 *Section 6.9*—The Consumer Product Safety Commission received incident IDI 050324HCC1605, in which the middle bar of the bed rail bar was not installed resulting in an entrapment death. IDI030730HCC1771 involved an incident in which the horizontal bar was not inserted through the mesh pocket resulting in an entrapment death. **Note 1** is intended to prevent evaluation with fasteners only partially engaged or not engaged at all.

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