



# Standard Consumer Safety Specification for Non-Full-Size Baby Cribs<sup>1</sup>

This standard is issued under the fixed designation F 1822; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## INTRODUCTION

This consumer safety specification addresses incidents associated with non-full-size cribs that were identified by the U.S. Consumer Product Safety Commission (CPSC).

Incidents associated with wooden cribs involved dislodgment of slats due to breakage or failure of glue joints, collapse of the mattress support, and detachment of screws. Incidents associated with mesh/fabric cribs involved tears in the mesh sides, failure of stitched seams, collapse, failure of latching mechanisms, and choking on vinyl or padding bitten from the top rail.

In response to the incident data collected by the CPSC, this consumer safety specification attempts to minimize the risk of injury or death due to failure of mattress support hardware, failure of glued or bolted connections, latch failure, dislodgment of teething rails, entanglement on cords or strings, and tears in mesh or fabric sides. This specification also addresses incidents associated with poor maintenance or assembly by means of requirements for the contents of instructional literature that must accompany a non-full-size crib.

## 1. Scope

1.1 This consumer safety specification covers testing requirements for structural integrity and design requirements for non-full-size cribs, both rigid sided and mesh/fabric assemblies. It also provides requirements for labeling and instructional material. For purposes of this standard specification, the term “crib” will be used to refer to a non-full-size crib.

1.2 This specification covers products intended to provide sleeping accommodations for a child (excluding bassinets, cradles and baskets) that have interior dimensions between 17 in. (430 mm) and 26 in. (660 mm) wide and between 35 in. (890 mm) and 50  $\frac{3}{8}$  in. (1280 mm) long. Products exceeding both 26 in. (660 mm) wide and 50  $\frac{3}{8}$  in. (1280 mm) long, including over size cribs, will fall under the scope of Specification F 1169.

1.3 No crib 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 applicable requirements contained herein, before and after all testing.

1.4 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

1.5 The following safety hazards caveat pertains only to the test method portion, Section 10, 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 limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:

- D 1424 Test Method for Tear Resistance of Woven Fabrics By Falling Pendulum (Elmendorf) Apparatus<sup>2</sup>
- D 1683 Test Method for Failure in Sewn Seams of Woven Fabrics<sup>2</sup>
- D 3359 Test Methods for Measuring Adhesion by Tape Test<sup>3</sup>
- D 5034 Test Methods for Breaking Load and Elongation of Textile Fabrics (Grab Test)<sup>4</sup>
- F 966 Consumer Safety Specification for Full-Size and Non-Full-Size Baby Crib Corner Post Extensions<sup>5</sup>
- F 1169 Consumer Safety Specification for Full-Size Baby Cribs<sup>6</sup>

### 2.2 Federal Regulations:

- 16 CFR 1303 Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint<sup>7</sup>
- 16 CFR 1500 Hazardous Substances Act Regulations including sections:

<sup>2</sup> Annual Book of ASTM Standards, Vol 07.01.

<sup>3</sup> Annual Book of ASTM Standards, Vol 06.01.

<sup>4</sup> Annual Book of ASTM Standards, Vol 07.02.

<sup>5</sup> Annual Book of ASTM Standards, Vol 15.07.

<sup>6</sup> Annual Book of ASTM Standards, Vol 14.02.

<sup>7</sup> Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

<sup>1</sup> This consumer safety specification is under the jurisdiction of ASTM Committee F-15 on Consumer Products and is the direct responsibility of Subcommittee F15.18 on Cribs, Toddler Beds, and Play Yards.

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1500.44 Method for Determining Extremely Flammable and Flammable Solids<sup>7</sup>

1500.48 Technical Requirements for Determining a Sharp Point In Toys and Other Articles Intended for Use By Children Under Eight Years of Age<sup>7</sup>

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<sup>7</sup>

1500.50-.52 Test Methods for Simulating Use and Abuse of Toys and Other Articles Intended for Use By Children<sup>7</sup>

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<sup>7</sup>

16 CFR 1509 Requirements for Non-Full-Size Baby Cribs<sup>7</sup>

### 3. Terminology

#### 3.1 Definitions of Terms Specific to This Standard:

3.1.1 *cord*—a length of slender flexible material including: monofilaments, rope, plastic and textile tapes, ribbon and those materials commonly called string.

3.1.2 *dropside/dropgate*—a side that is intended to slide or pivot with respect to the frame when the product is in the manufacturer's recommended use position to provide easier access to the occupant.

3.1.3 *dynamic load*—application of an impulsive force by a free falling mass.

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

3.1.5 *foldable side or end*—a side or end panel intended to be stationary with respect to the frame when a product is in the manufacturer's recommended use position, but that folds to allow for carrying or storage of the product.

3.1.6 *load*—a static load applied by a dead weight or other means.

3.1.7 *manufacturer's recommended use position*—any position for use of the product that is presented as a normal, allowable, or acceptable configuration by the manufacturer in any descriptive or instructional literature. This specifically excludes positions that the manufacturer shows in a like manner in its literature to be unacceptable, unsafe or not recommended.

3.1.8 *mesh*—mesh may be either a woven fabric in which the warp and filling yarns are interlaced, a knitted fabric in which the wales and courses yarns are interlocked, or any other type of fabric that may be developed which provides openings therein.

3.1.9 *mesh/fabric crib*—a crib constructed with a rigid frame assembly and a fabric and/or mesh assembly used to function as sides, ends, and/or floor.

3.1.10 *nonpaper label*—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 or labels made from fabric.

3.1.11 *occupant*—that individual who is in a product that is setup in one of the manufacturer's recommended use positions.

3.1.12 *paper label*—any label material except fabric that tears without the aid of tools and leaves a fibrous edge.

3.1.13 *permanent (label/warning attachment)*:

#### 3.1.13.1 *labels not attached by a seam*:

(1) A nonpaper label or decal shall be considered permanent if, during an attempt to manually remove it without the aid of tools or solvents, it cannot be removed, or such action damages the surface to which it is attached.

(2) A paper label shall be considered permanent if, during an attempt to manually remove it without the aid of tools or solvents, it cannot be removed, it tears upon removal, or such action damages the surface to which it is attached.

#### 3.1.13.2 *labels attached by a seam*:

(1) A label attached by a seam shall be considered permanent if it complies with the requirements of 7.8.2.2 and does not tear, yielding a separate part, during the test.

3.1.13.3 *warning statements*—If warning statements are on a label, refer to 3.1.13.1 or 3.1.13.2.

(1) A storage pouch or other part with warning statements printed on it, excluding labels, shall be considered permanent if it cannot be removed when tested in accordance with 10.16.

(2) Warning statements applied directly onto the surface of the product by hot stamping, heat transfer, printing, wood burning, etc. will be considered permanent if the letters in the area tested are still legible and attached after being subjected to the test prescribed in 10.13.

3.1.14 *rigid sided crib*—a crib with sides/ends constructed of rigid materials like wood, plastic, or metal generally configured as a horizontal rail/vertical slat assembly.

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

3.1.16 *stationary side*—a side or end panel that is not intended to fold, slide, or move with respect to the frame when the product is in the manufacturer's recommended use position.

3.1.17 *structural failure*—damage to a component(s) or assembly resulting in partial separation (greater than 0.04 in. (1 mm) over original configuration), or complete separation of the component(s) or assembly.

### 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 test instructs differently.

4.2 The crib 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 item to be tested shall be preconditioned 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.

### 5. General Requirements

5.1 All crib corner post extensions must comply with Consumer Safety Specification F 966.

5.2 Prior to testing, any exposed wood parts shall be smooth and free of splinters.

5.3 There shall be no hazardous sharp points or edges as defined by 16 CFR 1500.48 and 16 CFR 1500.49 before or after testing to this specification.

5.4 There shall be no small parts, as defined by 16 CFR

1501, before testing or liberated as a result of testing in accordance with this specification.

5.5 *Scissoring, Shearing, or Pinching:*

5.5.1 A crib, when in the manufacturer’s recommended use position, 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, slide, pivot, fold or otherwise move relative to one another. Scissoring, shearing, or pinching exists when the edges of the rigid parts admit a probe which is greater than 0.210 in. (5.30 mm) and less than 0.375 in. (9.50 mm) diameter at any accessible point throughout the range of motion of such parts.

5.5.2 Cribs that allow the top rail to be in a lowered position when the crib is erected, as shown in Fig. 1, shall be evaluated for the potential for scissoring, shearing or pinching. Those components of the top rail, its hinges, locks, or mechanism that are deemed to be capable of scissoring, shearing or pinching shall be tested in accordance with 5.5.2.1-5.5.2.4.

5.5.2.1 At all intersections of the “drop top rail” with the “top rail saddle” (Point A, Fig. 1), the insertion of a probe greater than 0.210 in. (5.30 mm) in diameter and less than 0.375 in. (9.50 mm) in diameter to a depth of more than 0.210 in. (5.30 mm) shall not be permitted in any position throughout the range of motion of the top rail.

5.5.2.2 All intersections of the “hinge legs” and “saddle” with the “drop top rail” and the “inclined leg” (Point B, Fig. 1) where no padding of ¼ in. (6.30 mm) or less exists, shall allow a 0.375 in. (9.50 mm) diameter probe to pass between adjacent members in any and all positions when rotating the hinge legs about their respective pivots.

5.5.2.3 The hinge legs shall allow a 0.375 in. (9.50 mm) diameter probe to pass between said hinge legs in any and all positions allowed when rotating the hinge legs about their respective pivots.

5.5.2.4 At all intersections of the drop side rail locking mechanism (hinge legs with the saddle) (Point C, Fig. 1) the intersection of the probe greater than 0.210 in. (5.30 mm) in diameter, and less than 0.375 in. (9.50 mm) in diameter, and greater than 0.210 in. (5.30 mm) deep within the intersecting parts in any and all positions shall not be permitted.

5.6 *Latching and Locking Mechanisms:*

5.6.1 All latches that are intended to be latched and unlatched during normal use while the child is in the product shall engage automatically when placed in the use position before and after testing. Latches may be manually activated to allow placement into the use position but must engage automatically when released.

5.6.2 Any unit that folds shall have a latching or locking device or other provision in the design that will prevent the unit from unintentionally folding when placed in the manufacturer’s recommended use position.

5.6.2.1 During and upon completion of all testing, the unit shall remain in its manufacturer’s recommended use position.

5.6.3 If a unit is designed with a latching or locking device:

5.6.3.1 That device shall remain engaged and operative after testing.

5.6.3.2 Each single-action locking or latching device that is provided to prevent folding shall require a minimum force of 10 lbf (45 N) to activate the release mechanism when tested in accordance with 10.8.2.

5.6.3.3 Each double-action locking or latching device that is provided to prevent folding shall require two distinct and separate actions for release. There are no force requirements for double-action locking or latching devices.

5.6.3.4 Crib designs requiring latching or locking of a top rail(s) to prevent folding that include central hinge(s) and rail assembly(ies) that moves downward when folded, as shown in Fig. 2, shall have a locking device which automatically engages when placed in a manufacturer’s recommended use position.

5.6.3.5 No top rail shall give the appearance of being in the manufacturer’s recommended use position unless the locking device is fully engaged.

5.7 *Openings:*

5.7.1 Any shaped holes, slots, or cracks that exist in the product in the manufacturer’s recommended use position and are accessible to the toes or fingers of the occupant, through or recessed into the surface of any rigid material, that admit a 0.210 in. (5.30 mm) diameter rod shall also admit a 0.375 in. (9.50 mm) diameter rod. Openings that have a minimum dimension between 0.210 in. (5.30 mm) and 0.375 in. (9.50

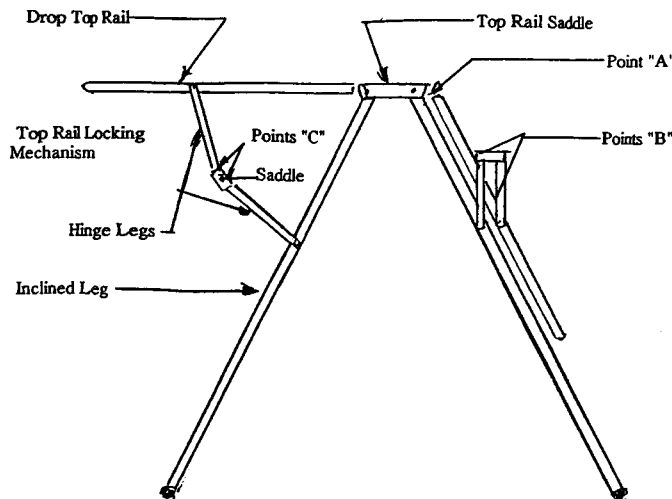


FIG. 1 Crib Frame Components

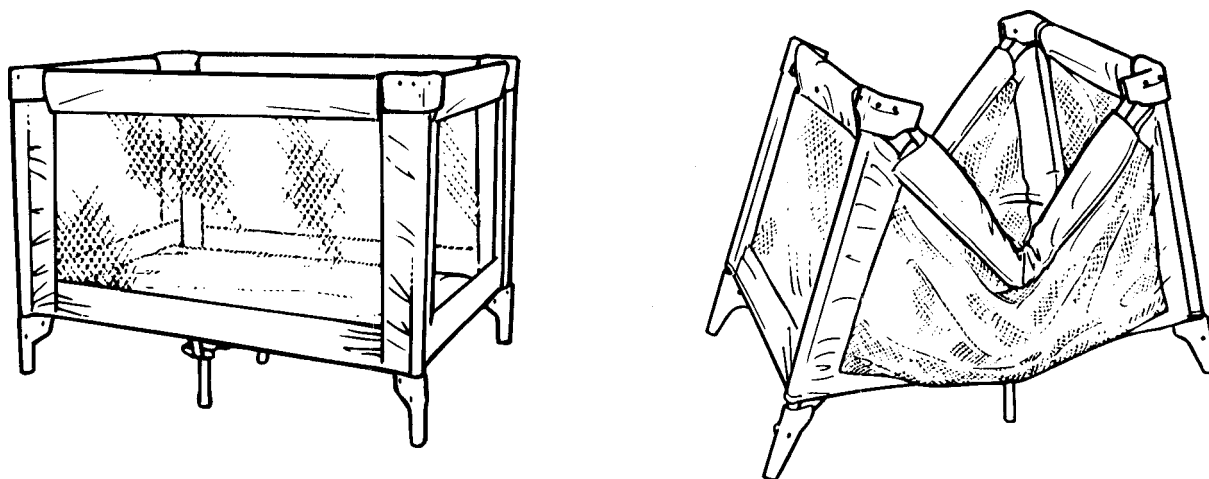


FIG. 2 Top Rail Assembly With Central Hinge(s)

mm) shall be permissible, providing the depth is no greater than the minimum dimension of the opening.

5.7.2 Openings in the surface of a mattress support made of a rigid material shall be designed to prevent entrapment of fingers, toes, hands, or feet if the occupant can readily move, lift, or fold the mattress to expose the opening. Round openings shall comply with 5.7.1 and shall not exceed 1.25 in. (32 mm) diameter. For other shaped openings, the opening shall comply with 5.7.1 and any linear continuous portion of an opening that admits a 0.375 in. (9.50 mm) diameter rod must fit within a 1.25 in. (32 mm) diameter circle.

5.8 *Protective Components:*

5.8.1 If the child can grasp components (such as caps, sleeves, or plugs used for protection from sharp edges, points, or entrapment of fingers or toes) between the thumb and forefinger, or teeth, 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 10.14.

5.9 *Nonpaper Labels:*

5.9.1 Nonpaper labels or decals (such as warning labels, brand name labels, decorative labels, or pin-stripping) that may present a choking hazard if removed must be permanent.

5.9.1.1 Nonpaper labels that may present a choking hazard are those which, upon removal, fit entirely within the small parts cylinder as defined in 16 CFR 1501. Nonpaper labels that tear during an attempt to remove them are considered labels that may pose a choking hazard since the size of the torn piece could vary such that it would fit in the small parts cylinder.

NOTE 1—Paper labels are exempt from the small parts requirements of 16 CFR Part 1501 because paper cannot be meaningfully tested.

5.9.1.2 Nonpaper labels attached by a seam, except warning labels, that tear along a seam only and do not yield a part that fits entirely within the small parts cylinder, defined in 16 CFR 1501, are not considered labels which pose a choking hazard and thus are not required to be permanent.

5.10 *Stability*—When subjected to the test described in 10.12, a minimum of three perimeter support points of the product not in a straight line shall remain in contact with the inclined plane. Products with an adjustable mattress support

shall be tested with the mattress in the lowest adjustment position.

5.11 *Cord Length*—No cord having a free, stretched length in excess of 7.4 in. (188 mm) shall be attached to a product. No cord intended or likely to be used to attach other products to the crib shall be provided.

5.12 *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. (5.30 mm) or greater during static load testing specified in 10.4, 10.6, 10.7 and 10.8 shall be covered or otherwise designed to prevent injury from entrapment.

5.13 *Mattress Pad:*

5.13.1 Each crib shall be sold with the mattress pad included.

5.13.2 For mesh/fabric cribs, the mattress pad shall not exceed a nominal 1 in. (25 mm) thickness.

**6. Performance Requirements for Rigid Sided Cribs**

6.1 After all testing, the crib shall comply with Title 16 Code of Federal Regulations (CFR) Part 1509.

6.2 *Vertical Impact Testing*—These tests assist in evaluating the structural integrity of the crib assembly. Glue joints and other means of fastening are subjected to abusive loads and stresses.

6.2.1 *Mattress Support Testing:*

6.2.1.1 This test consists of dropping an impactor repeatedly onto the mattress pad provided with the product (see 10.1).

6.2.1.2 Upon completion of testing, components attached by glue, screws or other fastening means shall not have separated by more than 0.04 in. (1 mm) over original configuration.

6.2.2 *Side or End Testing, or Both:*

6.2.2.1 This test consists of repeatedly impacting the bottom rail of a crib side or end with a mass. See 10.2.

6.2.2.2 Upon completion of testing, components attached by glue, screws or other fastening means shall not have separated by more than 0.04 in. (1 mm) over their original configuration.

6.3 *Mattress Support System Testing*—These tests assist in evaluating the integrity of the attachment of the mattress support to the crib.

6.3.1 A mattress support that is fixed with respect to the crib

frame, is tested in accordance with 10.3. Test failure occurs if the mattress support system becomes detached from the frame at any point of attachment, or if the force cannot be maintained.

6.3.2 A mattress support that is not fixed on opposite sides to the crib frame (for example, a hinged support or a support created by a recessed area in which the mattress support sits) is tested by gradually applying a 25 lbf (110 N) force in any direction to the mattress support to evaluate its attachment to the crib. The force is to be applied to the mattress support in each adjustment position. Test failure occurs if:

6.3.2.1 Any fixed portion of the mattress support system becomes detached from the crib at any point of attachment.

6.3.2.2 Any free moving portion of the mattress support system that does not return to its intended use position once the force is removed. The force shall be removed after the force of 25 lbf (110 N) has been applied or the edge of the mattress support has been lifted at least 12 in. (300 mm).

6.4 *Side(s) and/or End(s) Latch Testing*—This test assists in evaluating the integrity of the dropline(s) and/or end(s) latching system under abusive load conditions.

6.4.1 *Dropline Latch Testing*:

6.4.1.1 This test consists of horizontally loading the end while a prescribed force is applied to the dropline(s) (see 10.4.3 or 10.4.4).

6.4.1.2 The latching mechanism shall not disengage during testing and shall continue to function in the intended manner upon completion of the testing.

6.4.2 *Foldable Side or End Latch Testing*:

6.4.2.1 This test consists of loading the latches intended to prevent folding of the side when in the manufacturer's recommended use position (see 10.4.5).

6.4.2.2 The latching mechanism shall not disengage during testing and shall continue to function in the intended manner upon completion of the testing.

6.5 *Plastic Teething Rail*:

6.5.1 This test consists of deforming the plastic teething rail under load to determine the security of the attachment.

6.5.2 Failure occurs when the feeler gage as defined in 10.5.1.1 can freely enter into a gap created by the deflection or deformation of the plastic teething rail, or both, when tested in accordance with 10.5.

## 7. Performance Requirements for Mesh/Fabric Cribs

NOTE 2—Mesh/fabric cribs that include a rigid side, end, or floor should be tested in accordance with Section 6 on that side, end, or floor.

7.1 *Height of Sides*—With mattress support in its lowest position, the height of sides of a crib shall be a minimum of 20 in. (508 mm) from the top of the noncompressed pad to the top of the side rail when the side rail is in its fully erected position.

7.2 *Side Strength and Deflection*:

7.2.1 Top rails and supporting members of the crib shall withstand a static load and shall not fracture, disengage, fold or have a permanent deflection that reduces the height to less than that specified in 7.1 when tested in accordance with 10.6.2.2.

7.2.2 The side of the crib shall not deflect under load to a height less than 18 in. (460 mm) when measured vertically at the location where the load is applied when tested in accordance with 10.6.2.3.

7.3 *Floor Strength*—The floor of the crib shall withstand

application of a static load and a dynamic load when tested in accordance with 10.7. After completion of the test, the product shall comply with all requirements in Section 5 and have no structural failure in the frame, sides, ends, or floor.

7.4 *Locking Device*:

7.4.1 Each single-action locking or latching device that is provided to secure a dropline shall require a minimum force of 10 lbf (45 N) to activate the release mechanism when tested in accordance with 10.8.1.

7.4.2 Each double-action locking or latching device that is provided to secure a dropline shall require two distinct and separate actions for release. There are no force requirements for double-action locking or latching devices.

7.5 *Top Rail Covering Material*—When unsupported or nonreinforced vinyls are used to cover any top rail or component, the thickness of the vinyl shall not be less than 0.011 in. (0.28 mm) when measured in accordance with 10.15.

7.6 *Mesh Requirements*:

7.6.1 *Mesh Openings*—Openings in the mesh shall be designed to prevent entrapment of fingers and toes and the snaring of buttons normally used in infant clothing. A mesh opening shall not admit a 0.250 in. (6.30 mm) diameter rod with a full-radius tip, when tested in accordance with 10.9.

7.6.2 *Mesh Strength*—No mesh shall, when tested in accordance with Section 10.10:

7.6.2.1 Break or rupture, or

7.6.2.2 Become separated from its supporting structure or attachments.

7.7 *Fabric Material Requirements*:

7.7.1 *Fabric Strength*—See Note 3 in 7.8.2.1.

7.7.1.1 Fabric materials used for sides, ends, or floor support, excluding mesh, shall have a breaking strength of at least 50 lbf (220 N) when tested in a dry condition in accordance with the grab test in Section 9 of Test Methods D 5034, in both the warp and fill directions.

7.7.1.2 Fabric materials, used for sides, ends, or floor support excluding mesh, shall have a tear resistance of at least 2 lbf (9 N) when tested in accordance with Test Method D 1424 (Elmendorf) in both the warp and fill direction.

7.8 *Mesh/Fabric Assembly Requirements*—See Note 3 in 7.8.2.1.

7.8.1 *Sewn Assembly*—All stitching that is used in the sides, ends or floor support and is accessible to the occupant, shall be lock-stitching or a chain stitch where the key thread is not accessible to the occupant. The key thread is a thread at the end of a seam that if pulled will pull the stitching apart and disassemble the sewn assembly.

7.8.2 *Seam Strength*:

7.8.2.1 All seams used in the sides, ends, or floor support of the crib shall, when tested in accordance with Test Method D 1683, have a breaking strength of not less than 30 lbf (130 N).

NOTE 3—Samples required in this section should be taken from a new product assembly or representative raw materials, or both.

7.8.2.2 All labels or other attachments which can be grasped between the thumb and forefinger and are secured by a seam shall not separate from the product when subjected to a 15 lbf (67 N) pull force applied in any direction using a clamp with

a 3/4 in. (19 mm) diameter clamping surface.

7.8.3 *Mesh/Fabric Attachment Strength*—All locations where a mesh/fabric or fabric assembly is mechanically fastened to a rigid structural element (for example, fastening of the mesh/fabric side to the perimeter of the hardwood floor) shall not disengage or deform under a load such that the fabric can be disassembled when tested in accordance with 10.11.

## 8. Labeling and Warning Statements

NOTE 4—All cribs including mesh/fabric cribs must comply with Federal Regulation 16 CFR Part 1509 for labeling and identification marking requirements for rigid sided non-full-size cribs. The requirements listed below are in addition to those specified in 16 CFR Part 1509.

NOTE 5—These requirements are in addition to those specified in 16 CFR Part 1509.

### 8.1 Labeling:

8.1.1 A permanent code mark shall be provided on the crib and its package or shipping container, if multiple packaging is used. The code shall identify the date (month and year) of manufacture. Any upholstery label required by law shall not be used to bear the code label or mark.

8.1.2 The manufacturer shall change the model number of a crib whenever it undergoes a significant structural or design modification or a change that affects its conformance to this specification.

### 8.2 Warning Statements:

8.2.1 Each crib shall be labeled with warning statements. The warning statements shall be in contrasting color(s), permanent, and applied on the inside of the headboard, footboard, or top of surface of the mattress support system and visible in their entirety when the mattress is removed.

8.2.1.1 In warning statements, the letters of the words shall be in sans serif type and the word “WARNING” shall not be less than 0.2 in. (5 mm) high and the remainder of the text shall be in letters not less than 0.1 in. (2.5 mm) high except as specified.

NOTE 6—Some words appear in quotation marks; these words must be used on the product as specified in this specification.

8.3 The following warning shall be included exactly as stated below:

**WARNING**—Failure to follow these warnings and the assembly instructions could result in serious injury or death.

8.4 Additional warning statements shall address the following:

8.4.1 The crib, including side rails, must be fully erected prior to use.

8.4.1.1 For cribs with latches to prevent lowering a dropside or prevent folding, add the following statement to that in 8.4.1: Make sure latches are secure.

8.4.1.2 For cribs with removable top rails:  
Top support member must be installed prior to use.

Failure to install may result in child falling out of crib.

8.4.2 For mesh sided cribs:

8.4.2.1 Omit the cautionary statement specified in 16 CFR Part 1509 - 1509.11(b)(1) and add the following:

**Suffocation Hazard**—To help prevent suffocation from entrapment, use only the mattress provided by the manufacturer. Never use additional mattress or padding.

8.4.2.2 For rigid sided cribs that must use only the mattress provided, add the following:

**Suffocation Hazard**—To help prevent suffocation from entrapment, use only the mattress provided by the manufacturer. Never use additional mattress or padding.

8.4.2.3 Strings can cause strangulation! DO NOT place items with a string around a child’s neck such as hood strings or pacifier cords. DO NOT suspend strings over crib or attach strings to toys.

8.4.2.4 Discontinue use of the crib when child is able to climb out or reaches the height of 35 in. (890 mm).

8.4.2.5 When child is able to pull to standing position, remove bumper pads, large toys, and other objects that could serve as steps for climbing out.

8.4.2.6 For cribs with an adjustable height mattress support, replace warning in 8.4.2.3 with the following:

When child is able to pull to standing position, set mattress to lowest adjustment position and remove bumper pads, large toys, and other object that could serve as steps for climbing out.

8.4.2.7 DO NOT place crib near a window where cords from blinds or drapes can strangle a child.

8.4.3 Cribs equipped with teething rails must include the following statement in the list of warnings set out in 8.4:

Replace teething rail if damaged, cracked or loose.

8.4.3.1 Mesh cribs that are designed with fold down side rails must display the following warning label on either the inside of the top rail on opposite sides of the crib or on two opposite saddle covers:

**WARNING—NEVER LEAVE INFANT IN CRIB WITH SIDES DOWN.**

Infant may roll into space between pad and loose mesh side causing suffocation.

8.4.3.2 The label shall be printed in sans serif type. The words “warning,” “never leave,” and “sides down” shall be in boldface type and shall measure 0.2 in. (5 mm) high. All other words shall be standard type style and shall measure no less than 0.16 in. (4 mm) high.

8.4.4 Each crib shall be labeled with the statements to address the points listed in this section. The statements shall be in contrasting color(s), permanent, and shall be visible during assembly.

8.4.4.1 Before each usage or assembly, inspect crib for damaged hardware, loose joints, missing parts or sharp edges. DO NOT use crib if any parts are missing or broken. Ask your dealer or write to (manufacturer) for replacement parts and instructional literature if needed. DO NOT substitute parts.

8.4.4.2 If refinishing, use a non-toxic finish specified for children’s products.

### 8.4.5 Water Mattress Use:

8.4.5.1 Cribs not intended to hold water mattresses must include the following statement:

DO NOT use a water mattress with this crib.

8.4.5.2 Cribs designated to use a water mattress, must specify the maximum thickness and weight of the water mattress.

## 9. Instructional Literature

NOTE 7—All cribs including mesh/fabric cribs must comply with

Federal Regulation 16 CFR Part 1509 for labeling and identification marking requirements for rigid sided non-full-size cribs except for 1509.11 (e) for mesh/fabric cribs. The requirements listed below are in addition to those specified in 16 CFR Part 1509.

9.1 Instructions must be provided with the crib and shall be easy to read and understand. Assembly, maintenance, cleaning, operating, folding instructions, and warnings where applicable must be included. A means shall be provided to keep the instructions with the crib.

9.1.1 A note shall be at the top of the first page of the instructions:

Read all instructions BEFORE assembly and USE of crib.  
KEEP INSTRUCTIONS FOR FUTURE USE.

(The statement “KEEP INSTRUCTIONS FOR FUTURE USE” shall be highlighted.)

9.1.2 *Warning Statements*—In warning statements located in the instructional literature, the letters of the word “WARNING” shall be not less than 0.2 in. (5 mm) high and the remainder of the text shall be in letters not less than 0.1 in. (2.5 mm) high.

9.1.3 The following warning statement shall be included exactly as stated below:

**WARNING**—Failure to follow these warning and assembly instructions could result in serious injury or death.

9.2 Additional warning statements shall address the following:

9.2.1 The crib, including side rails, must be fully erected prior to use.

9.2.1.1 For cribs with latches to prevent lowering a dropside or prevent folding, add the following statement to that in 9.2.1:

Make sure latches are secured.

9.2.2 DO NOT leave child in crib with side lowered. Be sure side is in raised and locked position whenever child is in crib.

9.2.3 For cribs with removable top rails:

Top support member must be installed prior to use. Failure to install may result in child falling out of crib.

9.2.4 For mesh sided cribs:

9.2.4.1 Omit the cautionary statement specified in 16 CFR Part 1509-1509.11(b)(1) and add the following:

**Suffocation Hazard**—To help prevent suffocation from entrapment, use only the mattress provided by the manufacturer. Never use additional mattress or padding.

9.2.5 For rigid sided cribs that must use only the mattress provided, add the following:

**Suffocation Hazard**—To help prevent suffocation from entrapment, use only the mattress provided by the manufacturer. Never use additional mattress or padding.

9.2.6 Strings can cause strangulation! DO NOT place items with a string around a child’s neck such as hood strings or pacifier cords. DO NOT suspend strings over crib or attach strings to toys.

9.2.7 Discontinue use of the crib when child is able to climb out or reaches the height of 35 in. (890 mm).

9.2.8 DO NOT place crib near window where cords from blinds or drapes may strangle a child.

9.2.9 When child is able to pull to standing position, remove bumper pads, large toys and other objects that could serve as

steps for climbing out.

9.2.9.1 For cribs with an adjustable height mattress support, replace warning in 9.2.9 with the following:

When child is able to pull to standing position, set mattress to lowest adjustment position and remove bumper pads, large toys, and other objects that could serve as steps for climbing out.

9.2.10 Cribs equipped with teething rails must include the following statement in the list of warnings set out in 9.1.2:

Replace teething rail if damaged cracked or loose.

9.2.11 The instructions shall include the statements to address the following:

9.2.11.1 Before each usage or assembly, inspect crib for damaged hardware, loose joints, missing parts, or sharp edges. DO NOT use crib if any parts are missing or broken. Ask your dealer or write to (manufacturer) for replacement parts and instructional literature if needed. DO NOT substitute parts.

9.2.11.2 Never use plastic shipping bags or other plastic film as mattress covers not sold and intended for that purpose. They can cause suffocation.

9.2.11.3 If refinishing, use a non-toxic finish specified for children’s products.

9.2.12 *Water Mattress Use:*

9.2.12.1 Cribs not intended to hold water mattresses must include the following statement:

DO NOT use a water mattress with this crib.

9.2.12.2 Cribs designed to use a water mattress, must specify the maximum thickness and weight of the water mattress.

## 10. Test Methods

NOTE 8—All wood blocks are fabricated from 1 in. (25 mm) nominal thickness lumber having a finished thickness of  $\frac{3}{4}$  in. (19 mm) unless otherwise specified.

10.1 *Mattress Support Impact Test for Rigid Sided Cribs:*

10.1.1 *Equipment:*

10.1.1.1 *Impactor*—A circular device with a contact area of 1 ft<sup>2</sup> (930 cm<sup>2</sup>), 13.5 in. (340 mm) diameter, with a 12 in. (3 mm) radius to ease the edges between the circular contact surface and the vertical cylindrical surface. The total weight shall be 45 lb (20 kg). The impactor shall pivot freely.

10.1.1.2 *Typical Test Frame*—See Fig. 3.

10.1.2 *Test Procedure*

10.1.2.1 Remove casters from the crib.

10.1.2.2 Prevent the crib from sliding in a manner that does not prevent changes of angle that may take place in the crib structure (see Fig. 4).

10.1.2.3 Conduct all testing with the mattress support in the lowest position.

10.1.2.4 Allow the impactor specified in 10.1.1.1 to pivot freely and to free fall 6 in. (150 mm) onto the upper surface of the mattress provided with the crib or the pad at a rate of 4 seconds per cycle for the following number of cycles.

10.1.2.5 500 cycles within  $\frac{1}{2}$  in. (13 mm) of the geometric center of the mattress area.

10.1.2.6 100 cycles at each of two diagonally opposite corners, the weight center line, centered 9 +  $\frac{1}{2}$ , -0 in. (230 +13, -0 mm) from the crib sides forming the corner.

10.2 *Side or End Impact Test, or Both, for Rigid Sided Cribs*

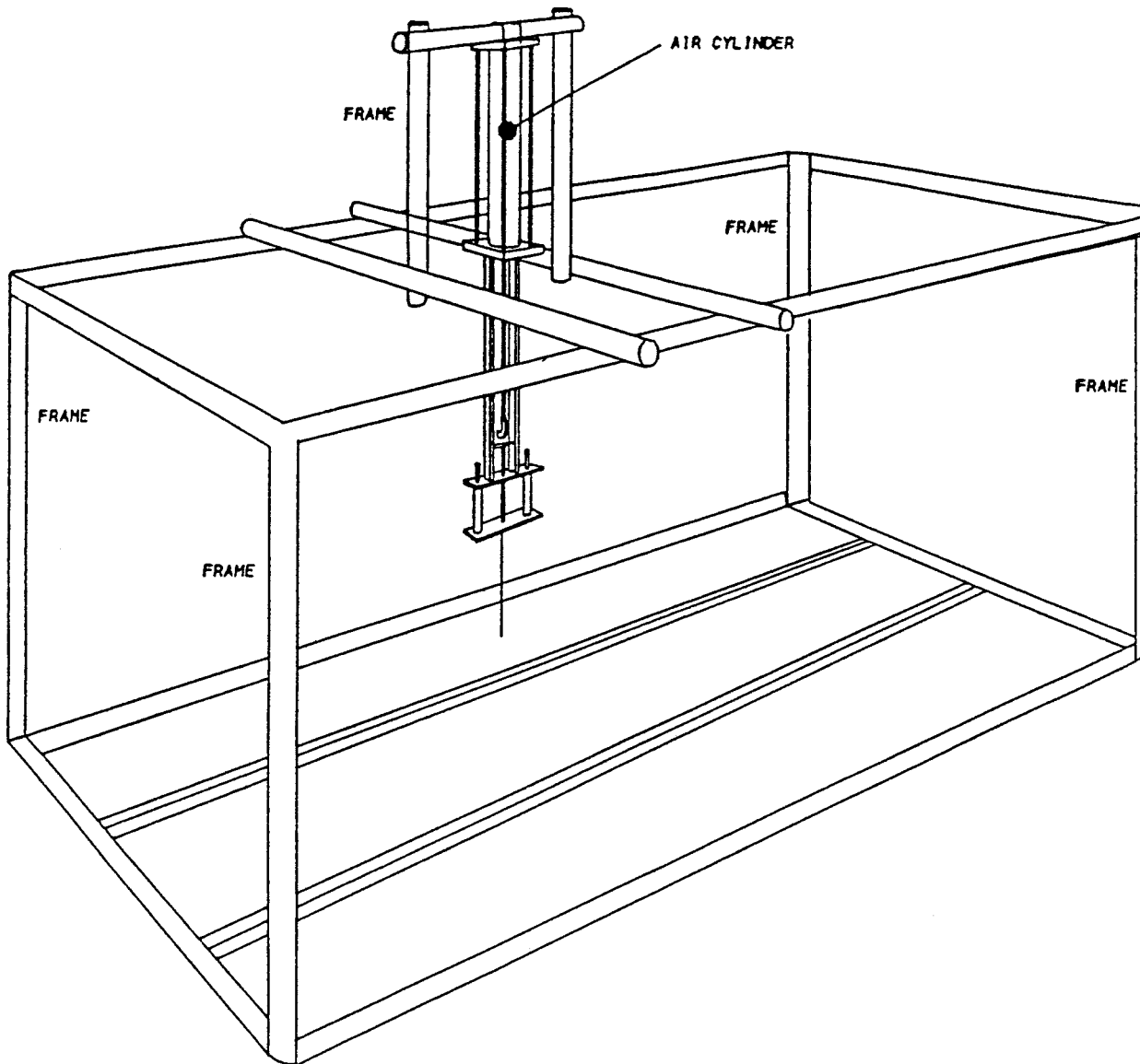
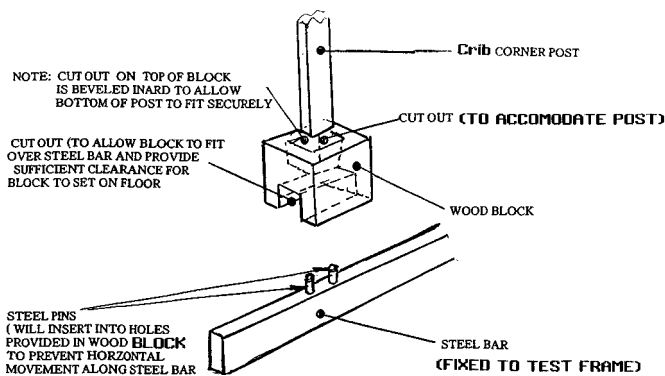


FIG. 3 Typical Test Frame



NOTE 1—Block system provided for all crib posts.

FIG. 4 Typical Crib Corner Post Positioning Block

10.2.1 Equipment:

10.2.1.1 Typical Side Assembly Test Fixture (See Fig. 5):

10.2.1.2 Rubber pad  $\frac{3}{8} \pm \frac{1}{16}$  in. ( $9 \pm 1.6$  mm) thick 30 to

40 durometer, Type A scale. Large enough to cover the impact area specified in 10.2.1.6.

10.2.1.3 Support hanger (see Fig. 6) for dropside(s) only.

10.2.1.4 Two vertical stops (see Fig. 7) for dropside(s) only.

10.2.1.5 Test frame (see Fig. 8) for dropside(s) only.

10.2.1.6 Impactor with contact dimensions of 1.5 by 1 in. (38 by 25 mm) and a weight of 25 lb (11.3 kg) with the 1 in. (25 mm) positioned perpendicular to the length of the frame.

10.2.2 Dropside Impact Test:

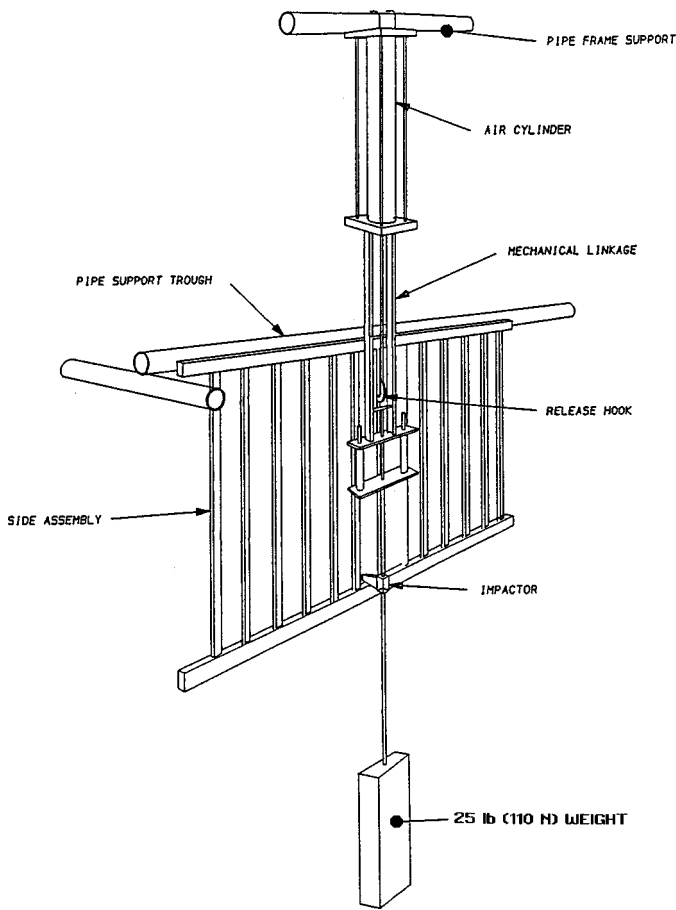
NOTE 9—Cribs designed with a stationary lower side section and movable upper section will be tested in accordance with 10.2.4.

10.2.2.1 Remove the dropside from the crib assembly.

10.2.2.2 Mount the dropside in a rigid test fixture so that it will hang vertically as it would when assembled to a crib (see Fig. 5).

10.2.2.3 Support the dropside within 2 in. (5 mm) of each end of the top rail by placing the top rail in support hanger (a trough-like support fixture) (see Fig. 6).





NOTE 1—Used only if side or end rails are removable.

FIG. 5 Typical Side Assembly Test Fixture

10.2.2.4 To prevent “pendulum swing” of the side during testing, the side bottom rail may be loosely constrained between two vertical stops (see Fig. 7).

10.2.2.5 Allow the impactor to free-fall  $3 + \frac{1}{2}, -0$  in. ( $76 + 13, -0$  mm) 50 times at a rate of  $4 \pm 1$  s per cycle using the impactor contact dimensions specified in 10.2.1.6. The weight should impact either directly or indirectly through a mechanical linkage upon the rubber pad specified in 10.2.1.2 located on the top surface of the bottom rail between two adjacent spindles or slats as near the center of the rail as possible.

10.2.3 *Dropside Static Test:*

10.2.3.1 Upon completion of the cyclic test 10.2.2, a load of 100 lb (45 kg) will be applied at the point of impact testing while the side is supported by the top rail at a point vertically in line with the point of load application (see Fig. 8).

10.2.3.2 The contact area for the load and reaction support shall be the same as the impact area defined in 10.2.1.6.

10.2.3.3 This load shall be applied gradually within a period of 5 s and maintained for an additional 30 s.

10.2.4 *Stationary Side or Foldable Side Impact Test:*

10.2.4.1 Assemble the crib in accordance with manufacturer’s instructions.

10.2.4.2 Secure the bottom ends of the crib to eliminate horizontal motion at the base.

10.2.4.3 Allow the impactor to free-fall  $3 + \frac{1}{2}, -0$  in. ( $76 + 13, -0$  mm) 50 times at a rate of  $4 \pm 1$  s per cycle using the

impactor contact dimensions specified in 10.2.1.6. The impactor should impact either directly or indirectly through a mechanical linkage upon the rubber pad specified in 10.2.1.2 located on the top surface of the bottom rail between two adjacent spindles or slats as near the center of the rail as possible.

10.2.5 *Stationary Side or Foldable Side Static Test:*

10.2.5.1 The stationary side will remain mounted to the crib for this portion of the test.

10.2.5.2 Upon completion of the cyclic test 10.2.4, apply a load of 100 lb (45 kg) at the point of impact testing.

10.2.5.3 The contact area for the load shall be the same as the impact area previously defined in 10.2.1.6.

10.2.5.4 Apply the load gradually within a period of 5 s and maintained for an additional 30 s.

10.3 *Mattress Support System Test for Rigid Sided Cribs—*

This test assists in evaluating the integrity of the attachment of the mattress support to the crib.

10.3.1 *Equipment:*

10.3.1.1 *Wood Corner Block (See Fig. 9)*— $1\frac{1}{2}$  in. (40 mm) by  $3\frac{1}{2}$  in. (90 mm) by 12 in. (300 mm)

10.3.2 *Test Procedure:*

10.3.2.1 Prevent upward motion of the crib during this test.

10.3.2.2 Conduct all procedures with no mattress in the crib.

10.3.2.3 If the mattress support system utilizes a common support design at all points of attachment, testing is required in only one corner. If more than one support design is used, each point of attachment utilizing a different design must be tested.

10.3.2.4 Apply the force with the mattress support in each of the adjustment positions.

10.3.2.5 Apply the 25 lbf (110 N) force to the mattress support through the wood corner block diagonally positioned such that the centerline of this wood corner block contacts the underside of the mattress support at points  $6 \pm \frac{1}{2}$  in. ( $150 \pm 13$  mm) from the corner of the support. (6 in. [150 mm] from the projected corner for a mattress support not having a square corner) (see Fig. 9).

10.3.2.6 Apply the 25 lbf (110 N) force gradually within a period of 5 s and maintain for an additional 10 s before releasing the force.

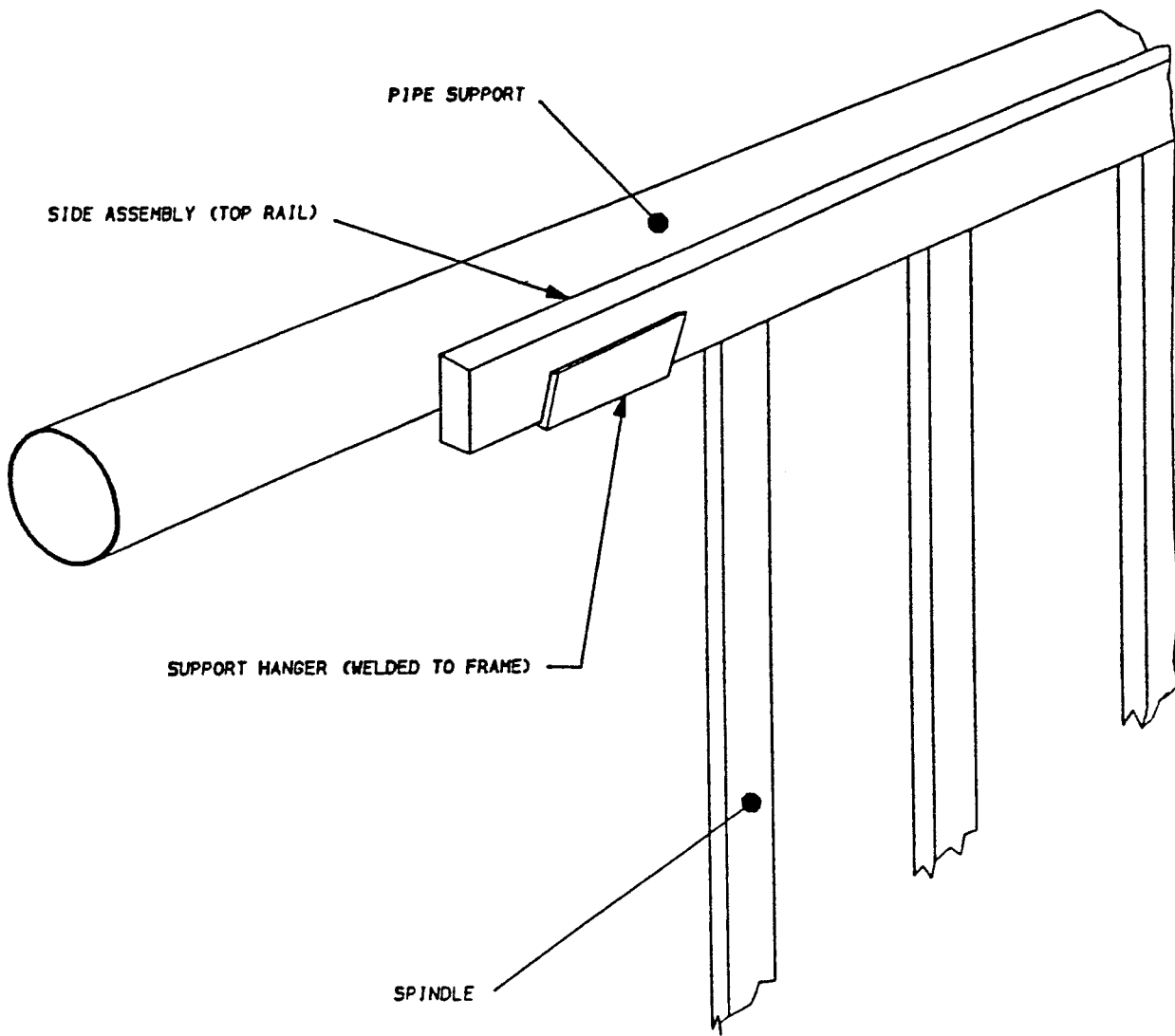
10.4 *Side or End Latch Test, or Both, for Rigid Sided Cribs:*

10.4.1 *Equipment*—Two 2 by 2 in. (50 by 50 mm) wood blocks for transmission of applied loads.

10.4.2 *Test Method for Dropside Latch*—Remove casters from the crib. Secure the bottom of the crib in a manner that will prevent horizontal motion.

10.4.3 *Procedure for Vertical Dropside Latch Tests:*

10.4.3.1 Gradually apply within 5 s a vertically downward force of 60 lbf (270 N) through a hardwood block with 2 in. (50 mm) by 2 in. (50 mm) contact area to the upper horizontal rail of the crib side at a point that is  $6 \pm \frac{1}{2}$  in. ( $152 \pm 13$  mm) from one end of the dropside rail. While the 60 lbf (270 N) downward force is applied to the dropside, gradually apply within 5 s a 30 lbf (133 N) horizontal force in a direction parallel to the dropside. The point of application of this force is to be coincident with the horizontal extension of the longitudinal centerline of the dropside and  $1 \pm \frac{1}{2}$  in. ( $25 \pm 13$  mm) down from the top of the crib corner post or crib end



NOTE 1—Used only if side or end rails are removeable.

**FIG. 6 Typical Support Trough**

panel for construction not incorporating crib corner posts (see Fig. 10). Maintain this horizontal force for an additional 30 s then reverse its direction and maintain for an additional 30 s.

10.4.3.2 Repeat this procedure at the other end of the crib dropside and, if the crib has more than one dropside, perform the test at each end of each dropside.

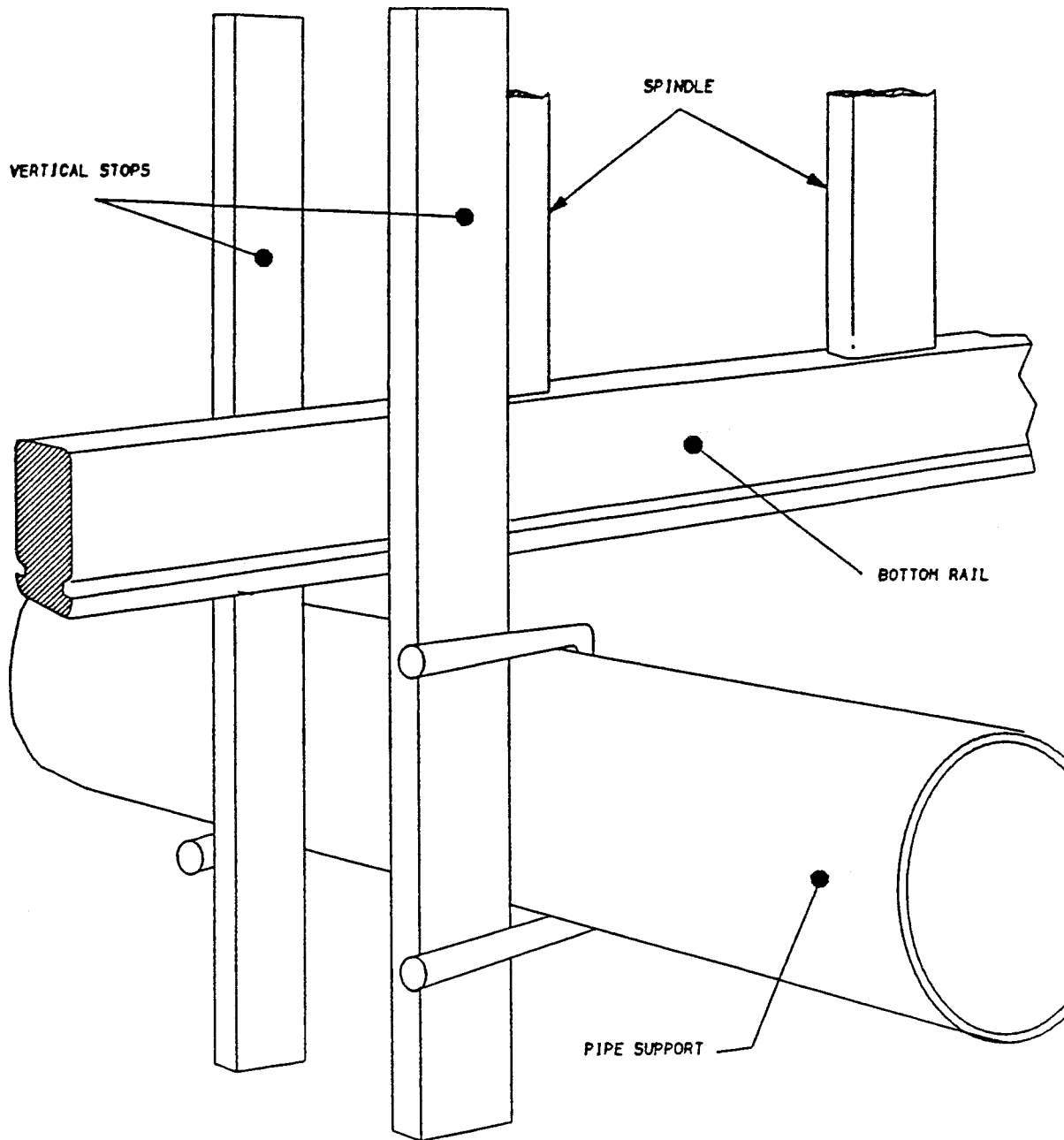
10.4.3.3 Upon completion of the test, release the dropside latch and lower the dropside. Then raise the side and observe whether the latch automatically engages in the manner intended by the manufacturer.

**10.4.4 Procedure for Horizontally Hinged Dropside Latch Test:**

10.4.4.1 Place the hinged dropside in the latched position. Through a hardwood block with contact area of 2 in. (50 mm) by 2 in. (50 mm), gradually apply within 5 s a force of 30 lbf (130 N) horizontally outward, perpendicular to, and at a point that is  $6 \pm \frac{1}{2}$  in. ( $152 \pm 13$  mm) from one end of the hinged dropside upper rail. While this 30 lbf (130 N) force is applied to the dropside, gradually apply within 5 s a 30 lbf (130 N) horizontal force in a direction parallel to the hinged side. The

point of application of this force is to be coincident with the horizontal extension of the longitudinal centerline of the hinged dropside and  $1 \pm \frac{1}{2}$  in. ( $25 \pm 13$  mm) down from the top of the crib corner post or crib end panel for construction not incorporating crib corner posts (see Fig. 10). Maintain this horizontal force for an additional 30 s then reverse its direction and maintain for an additional 30 s.

10.4.4.2 Place the hinged dropside in the latched position. Through a hardwood block with contact area of 2 in. (50 mm) by 2 in. (50 mm), gradually apply within 5 s a force of 30 lbf (130 N) horizontally inward, perpendicular to, and at a point that is  $6 \pm \frac{1}{2}$  in. ( $152 \pm 13$  mm) from one end of the hinged dropside upper rail. While this 30 lbf (130 N) force is applied to the dropside, gradually apply within 5 s a 30 lbf (130 N) horizontal force in a direction parallel to the hinged dropside. The point of application of this force is to be coincident with the horizontal extension of the longitudinal centerline of the hinged dropside and  $1 \pm \frac{1}{2}$  in. ( $25 \pm 13$  mm) down from the top of the crib corner post or crib end panel for construction not incorporating crib corner posts. Maintain this horizontal force



NOTE 1—Used only if side or end rails are removeable.

**FIG. 7 Typical Side Test Vertical Stop Detail**

for an additional 30 s then reverse its direction and maintain for an additional 30 s.

10.4.4.3 Repeat the procedures at the other end of the hinged dropside. If the crib has more than one hinged dropside, perform this test at each end of each hinged dropside.

10.4.4.4 Upon completion of the test, release the dropside latch and lower the dropside. Then raise the side and observe whether the latch automatically engages in the manner intended by the manufacturer.

10.4.5 *Test Procedure for Latches to Prevent Folding of a Foldable Side or End:*

10.4.5.1 With the product in the manufacturer's recommended use position, apply a 30 lbf (130 N) force at the center

of the latch, in the direction the side folds. Gradually apply the force within 5 s and hold for an additional 30 s.

10.4.5.2 Repeat at other folding latch locations.

10.4.5.3 Upon completion of the test, inspect the latch for proper function.

10.5 *Plastic Teething Rail Test for Rigid Sided Cribs:*

10.5.1 *Equipment:*

10.5.1.1 *Feeler Gage*, 0.040 by 1 in. (1 by 25 mm).

10.5.1.2 *Wood Block*, 2 by 2 in. (50 by 50 mm).

10.5.1.3 *Chatillon Push, Pull Force Gage*, DPPH-100 or equivalent.

10.5.2 *Procedure for Plastic Teething Rail Test:*

10.5.2.1 With plastic teething rail assembled to crib top rail,

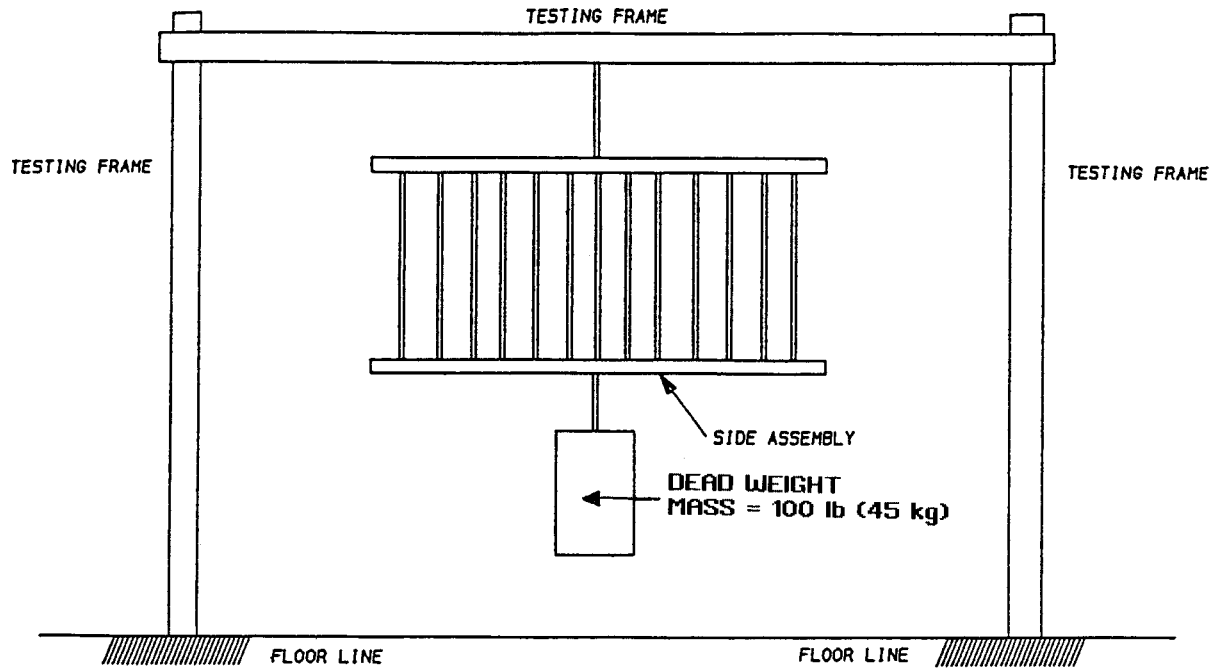


FIG. 8 Typical Testing Frame

apply a 50 lbf (220 N) vertically downward force to the top of the teething rail through the hardwood block at the center top of the teething rail.

10.5.2.2 While this force is maintained, the feeler gage shall not fit between the vertical surfaces of the top rail and the inside surface or edge of the plastic teething rail (see Fig. 11).

10.5.2.3 Repeat at center location wherever a plastic teething rail is located.

10.6 *Side Strength and Deflection Tests for Mesh/Fabric Cribs:*

10.6.1 *Equipment*—Wood block, 6 by 6 in. (150 by 150 mm).

10.6.2 *Test Method:*

10.6.2.1 Perform test described in 10.6.2.2 and 10.6.2.3 in sequence at the same location without refurbishing or adjusting the test sample.

10.6.2.2 When the crib sides fully erected, gradually apply a 50 lbf (220 N) force vertically downward over a 2 in. (50 mm) length of the top edge of side and hold for 10 s. Remove the force and measure the permanent deflection. Perform the test at locations deemed to be the weakest or the most likely to fail.

10.6.2.3 Place a 6 by 6 in. (150 by 150 mm) wooden block on the crib floor  $1 \pm \frac{1}{2}$  in. ( $25 \pm 13$  mm) from the center of the top edge of the side positioned so the vertical centerline is in line with the point of application of the 30 lbf (130 N) force. Center a 10 lb (4.5 kg) weight on the wooden block. Gradually apply a 30 lbf (130 N) force vertically downward over a 2 in. (50 mm) length of the side top edge. Maintain the force for 10 s while measuring the height of the side from the edge of the crib floor to the point of application of the force. Perform the test at locations deemed to be the weakest or the most likely to fail.

10.7 *Floor Strength Test for Mesh/Fabric Cribs:*

10.7.1 *Equipment*—Wood block, 6 by 6 in. (150 by 150 mm).

10.7.2 *Test Method:*

10.7.2.1 Remove cushions that are not part of the floor or mattress support. Place a 50 lb (23 kg) and a 30 lb (14 kg) weight each onto a 6 by 6 in. (150 by 150 mm) wood block spaced  $6 \pm \frac{1}{2}$  in. ( $150 \pm 13$  mm) apart and maintain for 60 s. Perform the test in those locations deemed to be the weakest or the most likely to fail. Remove the load and check for structural failure.

10.7.2.2 Remove cushions that are not part of the floor or mattress support. Allow a 30 lb (14 kg) rigid weight to drop freely from a height of  $3 \pm \frac{1}{2}$  in. ( $76 \pm 13$  mm) onto a 6 by 6 in. (150 by 150 mm) wood block. Conduct the drop test 50 times in the same place with no more than 10 s between drops. Perform the test in those locations deemed to be the weakest or the most likely to fail.

10.8 *Locking Mechanism Test:*

10.8.1 *Dropside Locking Device Test Method*—With the dropside rail of the crib in its uppermost position, gradually apply a force of 10 lbf (45 N) to the locking mechanism in the direction tending to unlock it. The locking mechanism shall not unlock until the force of 10 lbf (45 N) has been exceeded.

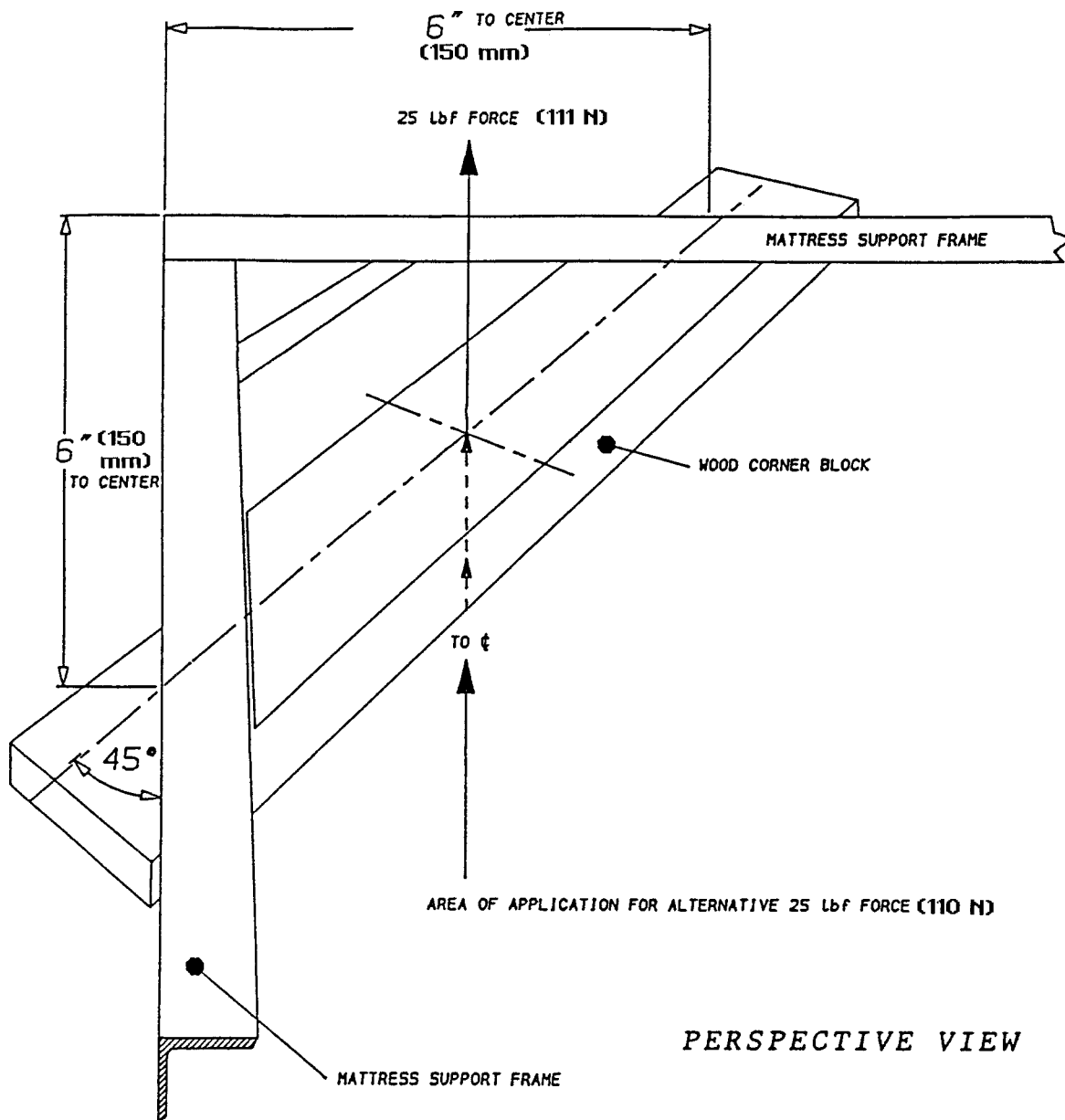
10.8.2 *Folding Latch Test Method*—With the product in the manufacturer's recommended use position, gradually apply a force of 10 lbf (45 N) to the locking mechanism in the direction tending to unlock it. The locking mechanism shall not unlock until the force of 10 lbf (45 N) is exceeded.

10.9 *Mesh Opening Test:*

10.9.1 *Equipment:*

10.9.1.1 *Steel Rod*— $\frac{1}{4} \pm 0.005$  in. ( $6.3 \pm 0.1$  mm) diameter with full-radius tip.

10.9.2 *Test Method*—With the crib and the side rails in their fully erected position, gradually apply a force of 5 lbf (22 N)



NOTE 1—Force may have to be applied from underside or drill hole for scale attachments, if support is of solid material.

FIG. 9 Typical Mattress Support Detail

perpendicular to the plane of the mesh opening using the rod specified in 10.9.1.1. Perform the test in those locations deemed to be the weakest or the most likely to fail.

10.10 Test for Strength of Mesh and Integrity of Attachment:

10.10.1 Equipment—Wood block, 6 by 3 in. (150 by 75 mm).

10.10.2 Test Method:

10.10.2.1 Assemble the product in accordance with the manufacturer's instructions. Place the product on its side so that its side lies in a horizontal plane. Secure the product so that it does not move or collapse when placed on its side. Any blocking or support necessary to maintain the position described may be used if the blocking does not act directly on the frame of the side under test.

10.10.2.2 Place the wooden block on the side of crib with 6

in. (150 mm) sides running parallel to the top rail.

10.10.2.3 Gradually apply a force of 20 lbf (90 N) on the wood block over 5 s and maintain for an additional 10 s. Gradually remove the force over 1 s.

10.10.2.4 Perform the test specified in 10.10.2.3 ten times, allowing 10 s recovery time between tests.

10.10.3 The loading procedure described in 10.10.2.3 and 10.10.2.4 shall be applied to three areas of each side of the product as follows:

10.10.3.1 At the geometrical center of the side or, where exterior framing interferes with the test, as close as possible to the geometric center;

10.10.3.2 At the top rail of the side, with the closer 3 in. (75 mm) edge of the load block between 1 and 2 in. (25 and 50

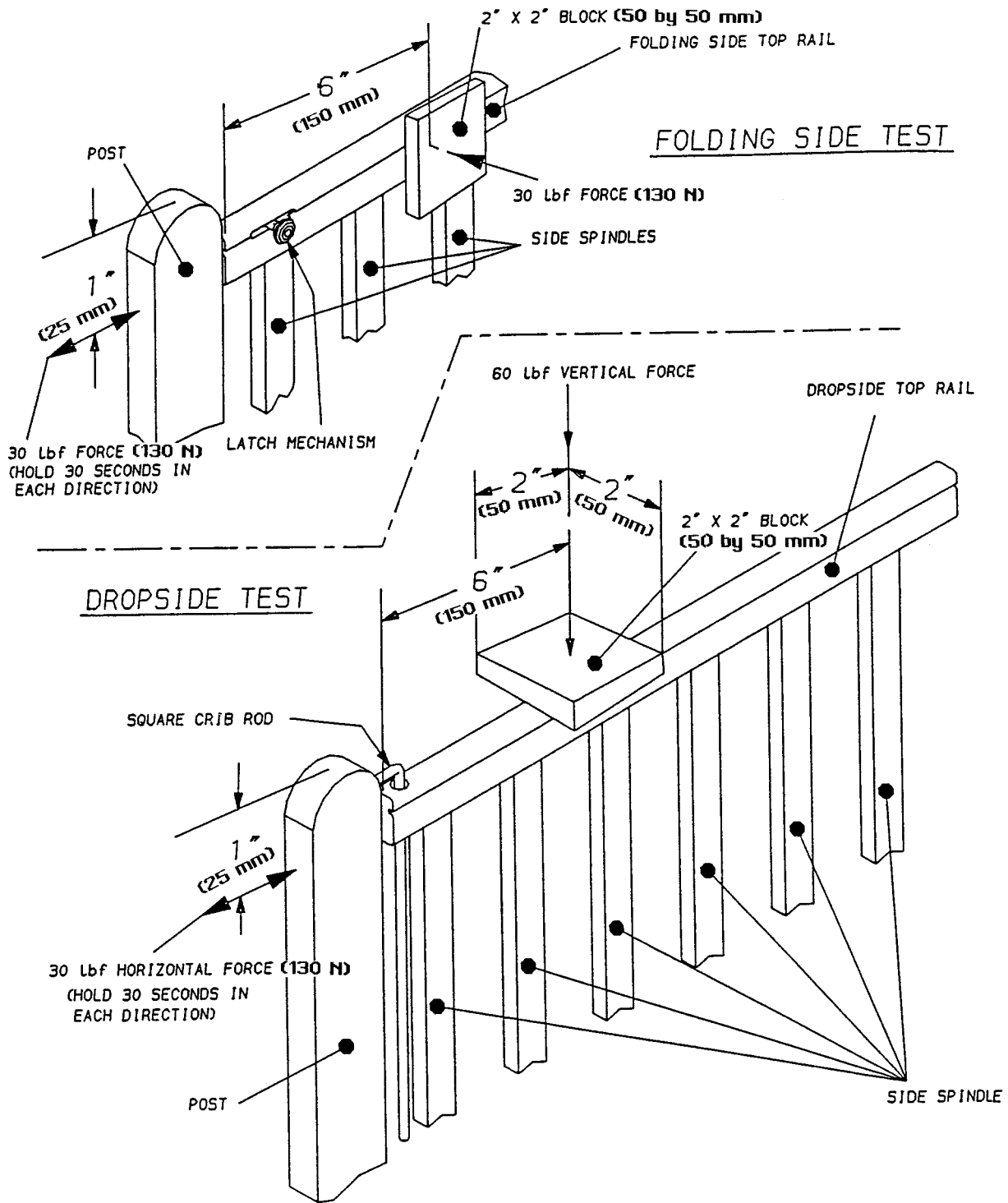


FIG. 10 Crib Side Latch Test

mm) from the center of the rail at the center line of the top rail; and

10.10.3.3 At the bottom rail with the closer 3 in. (75 mm) edge of the load block between 1 and 2 in. (25 and 50 mm) from the center of the rail at the center line of the top rail.

10.11 Mesh/Fabric Attachment Strength Test Method:

10.11.1 Gradually apply a force of 30 lbf (130 N) using a clamp with a 3/4 in. (19 mm) diameter clamping surface to the attachment point in the direction of the force applied by the

fabric shell. Gradually apply the force over 5 s and hold for an additional 10 s.

10.11.2 Repeat the test in 10.11.1 at each different type of attachment at least once per side, if present.

10.11.3 After testing per 10.11.1 and 10.11.2, inspect the attachment to determine if the attachment has separated or can be inadvertently unhooked or disconnected.

10.12 Test for Stability of Product:

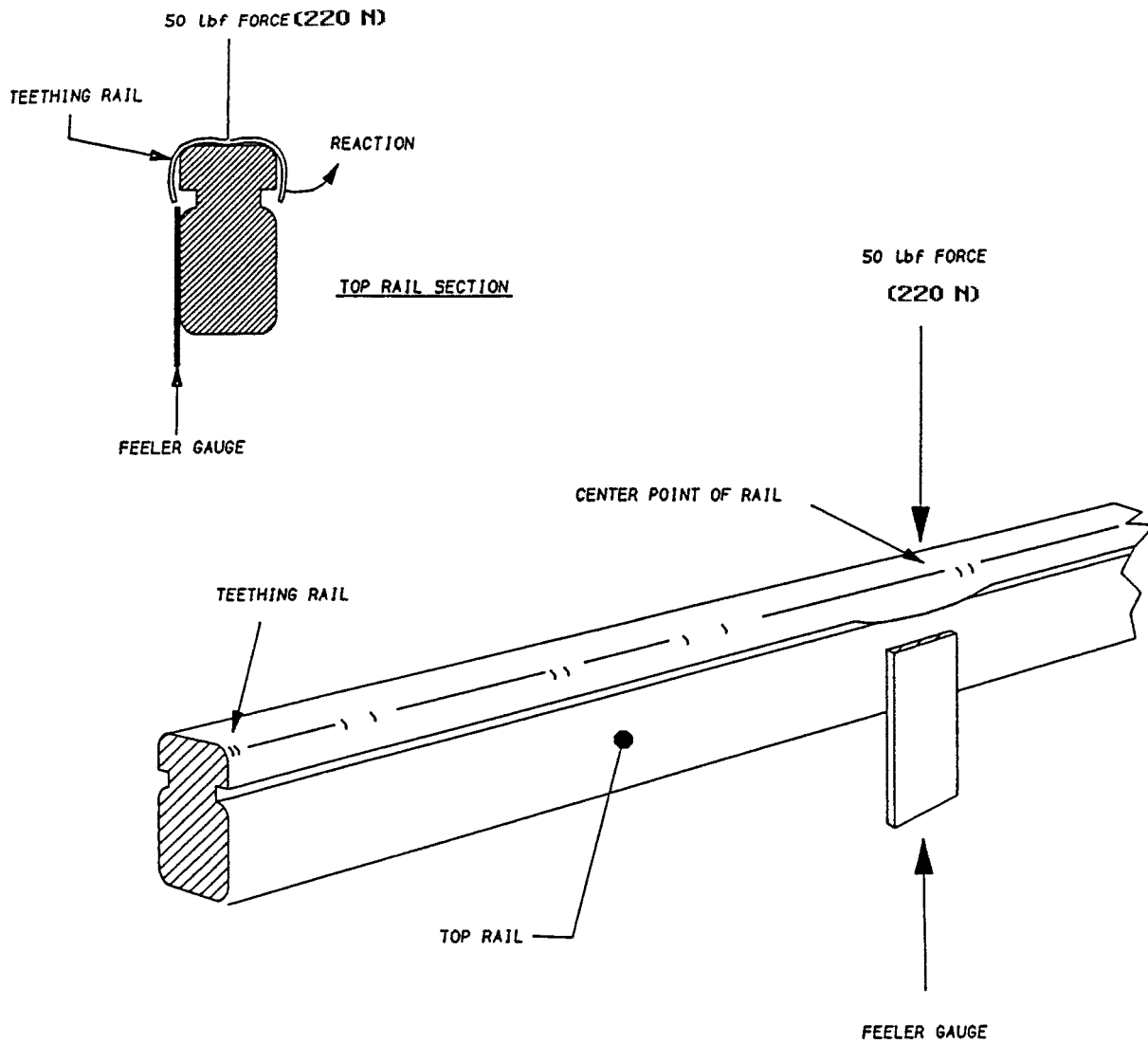


FIG. 11 Teething Rail Test

10.12.1 Assemble the product in accordance with the manufacturer's instructions.

10.12.2 Place the product on a sheet of  $\frac{3}{4}$  in. (19 mm) plywood of such a size that all support points or legs are at least 2 in. (50 mm) from any edge of the plywood.

10.12.3 Orient the product so that one set of support points or legs in the same plane is parallel to the edge of the plywood.

10.12.4 Place the 52 lb (23 kg) stability test device described in Fig. 12 on the floor of the product with the 12 in. (300 mm) edge parallel to the side of the product and as close as possible to the side of the product that is parallel to the edge of the plywood.

10.12.5 Tilt the plywood about the parallel edge until the plywood forms an angle of  $10^\circ$  with the horizontal.

10.12.6 Repeat test for each possible orientation of the product.

10.13 Adhesion Test for Printing:

10.13.1 Apply the tape test defined in Test Method B, Cross-Cut Tape Test, of Test Method D 3359, eliminating the parallel cuts.

10.13.2 Perform the test once in each different location

where warnings are applied.

10.14 Removal of Protective Components:

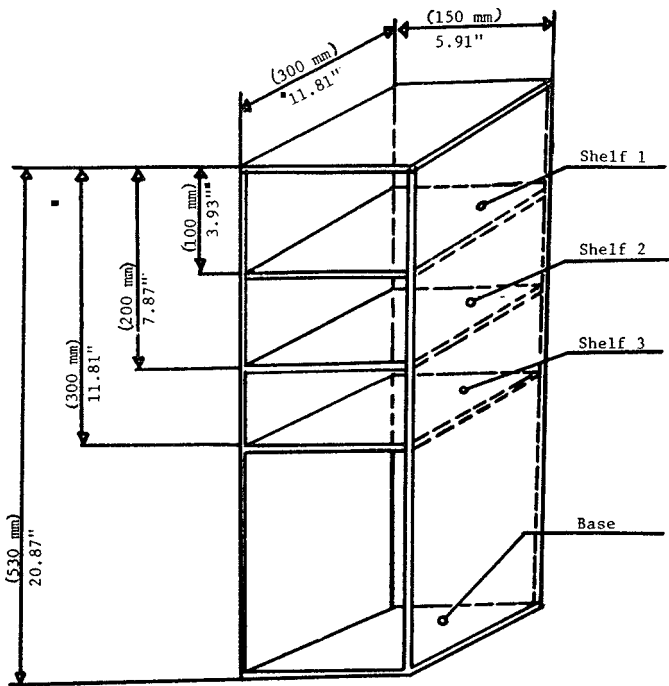
10.14.1 Test components in accordance with each of the following methods in the sequence listed:

10.14.2 Secure the crib so that it cannot move during the performance of the following tests.

10.14.3 *Torque Test*—Apply a torque of 4 lbf-in (0.5 N·m) gradually within a period of 5 s in a clockwise direction until a rotation of  $180^\circ$  from the original position has been attained or 4 lbf-in (0.5 N·m) has been reached. Maintain the torque or maximum rotation for an additional 10 s. Maintain then remove the torque and permit the test components to return to a relaxed condition. Then repeat this procedure in the counter clockwise direction.

10.14.4 *Tension Test*:

10.14.4.1 Attach a force gage to the component cap, sleeve or plug 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 0.04 in. (1.0 mm) or more between the rear surface of the component and the structural member of the crib to which they



NOTE 1—Ballast Loads:  
 Shelves: 1 to 3; 14.91 lb (6.75 kg) each.  
 Base: As required to make up total weight of 51.6 lb (23 kg).

FIG. 12 Stability Test Device

15 lbf (67N) MAX TENSION

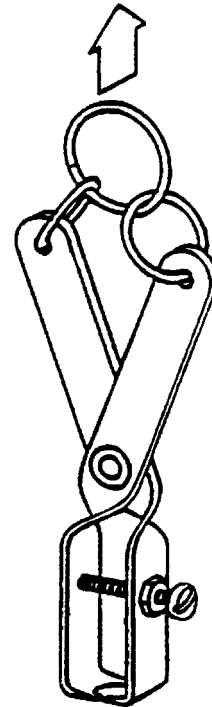


FIG. 13 Tension Test Adapter/Clamp

are attached, a clamp such as shown in Fig. 4 may be a suitable device.

10.14.4.2 Be sure the attachment device does not compress or expand the component to hinder removal of the component.

10.14.4.3 Gradually apply a 15 lbf (67 N) force in the direction that would normally be associated with the removal of the component. Apply the force within 5 s and maintain for an additional 10 s.


10.15 Vinyl Thickness Measurement:

10.15.1 Equipment—A paper micrometer with spring loaded foot.

10.15.2 Test Method—Measure the thickness at four locations, one at each end and two in a location near the middle.

10.16 Test for Attachment of Storage Pouch or Other Parts With Printed Warnings—Using a clamp with a 3/4 in. (19 mm) diameter clamping surface to grasp the pouch or part, gradually apply a 30 lbf (130 N) force in a direction parallel to the plane of the surface of the pouch or part it is fastened to. Apply the force over a 5 s period and hold for an additional 10 s.



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