



Designation: F833 – 19

Standard Consumer Safety Performance Specification for Carriages and Strollers¹

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INTRODUCTION

This consumer safety performance specification addresses carriage and stroller incidents that were identified by the U.S. Consumer Product Safety Commission (CPSC).

The CPSC identified injuries to children associated with the following: stability, brakes, restraint systems, latches and folding mechanisms, structural integrity, cords, wheel detachment, and deaths due to entrapment in openings of convertible carriage/strollers. In response to the incident-data compiled by the CPSC, this consumer safety performance specification attempts to minimize the previously listed problems. This specification does not cover carriages and strollers that are blatantly misused, although warnings and safety instructions are required to be prominently displayed on or with each carriage or stroller.

NOTE 1—This consumer safety performance specification is not intended to address incidents and injuries resulting from the interaction of other persons with children in carriages or strollers or incidents resulting from unforeseeable abuse or misuse.

This consumer safety performance specification is written within the current state of the art of carriage and stroller technology. It is intended that this specification will be updated whenever substantive information becomes available which necessitates additional requirements or justifies the revision of existing requirements.

1. Scope

1.1 This consumer safety specification establishes safety performance requirements, test methods, and labeling requirements to minimize the hazards to children presented by carriages and strollers as identified in the introduction. Children's products such as tricycles, bicycles or other similar wheeled products that can be self-propelled by a child are not considered carriages or strollers subject to the requirements of this standard, even if the item has a temporary or permanent handle.

1.2 No carriage or stroller produced after the approval date of this consumer safety performance specification shall, either by label or other means, indicate compliance with this specification unless it conforms to all requirements herein.

1.3 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 This specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.17 on Carriages, Strollers, Walkers and Stationary Activity Centers.

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1.4 The following precautionary caveat pertains only to the test method portion, Section 7, of this consumer safety specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

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

2. Referenced Documents

2.1 ASTM Standards:²

- D3359 Test Methods for Rating Adhesion by Tape Test
- F406 Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards
- F963 Consumer Safety Specification for Toy Safety

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.



F2680 Test Methods and Specifications for Bicycle Manually Operated Front Wheel Retention Systems

2.2 Federal Standards:

16 CFR 1303 Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint³

16 CFR 1500 Hazardous Substances Act Regulations³ including sections:

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

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

1500.50-52 Test Methods for Simulating Use and Abuse of Toys and Other Articles Intended for Use by Children

16 CFR 1501 Method for Identifying Toys and Other Articles Intended for Use by Children Under Three Years of Age Which Present Choking, Aspiration, or Ingestion Hazards Because of Small Parts³

16 CFR 1508.07 (c)

2.3 Other Standards:

AS/NZS 2088 Prams and strollers—safety requirements⁴

EN 1888 Child care articles - Wheeled child conveyances - Safety requirements and test methods⁵

cords, plastic textile tapes, ribbon, and those fibrous materials commonly called string.

3.1.8 *double action release mechanism*, *n*—a release mechanism that requires either two consecutive actions, the first of which must be maintained while the second is carried out, or two separate and independent single action locking mechanisms that must be activated simultaneously to fully release.

3.1.9 *harness system*, *n*—shall include a waist and crotch restraint and a means of restraining the upper torso.

3.1.10 *infant*, *n*—young child who is not capable of sitting unassisted.

3.1.11 *jogging stroller*, *n*—stroller intended to be used for children at a jogging rate (run at a steady slow trot).

3.1.12 *manufacturer's recommended use position*, *n*—any position that is presented as a normal, allowable, or acceptable configuration for use of the product 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.

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

3.1.14 *occupant(s)*, *n*—that individual or those individuals who are in a product that is set up in one of the manufacturer's recommended use positions.

3.1.15 *occupant retention space*, *n*—space enclosed by the surfaces, for example, side walls or the floor, or both, of a carriage or convertible carriage/stroller that contains the occupant within a carriage or a stroller in the reclined carriage position.

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

3.1.17 *quick release mechanism*, *n*—lever-actuated cam mechanism that connects and retains a wheel in a fork assembly.

3.1.18 *reclined carriage position*, *n*—adjustment position of a convertible carriage/stroller that allows for an interior angle of greater than 150° between the seat surface and the backrest.

3.1.19 *removable-wheel fork assembly*, *n*—fork assembly from which the wheel can be removed and reattached as a manufacturer recommended normal product use.

3.1.19.1 *Discussion*—A removable-wheel fork assembly can employ a quick release mechanism or other manually operated mechanism that does not require the use of tools for installation or removal.

3.1.20 *saddle hinge link*, *n*—a folding joint on the side of a 3D fold stroller that connects the front leg tube and handle tube.

3.1.20.1 *Discussion*—It includes a component (saddle hinge) that contains a pivot location and a recessed groove (see Fig. 1). When the stroller is unfolded, one of the tubes rotates around the saddle hinge pivot and rests in the recessed groove.

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

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *2D fold stroller*, *n*—a stroller that folds the handlebars and leg tubes only in the front-to-back (or back-to-front) direction.

3.1.2 *3D fold stroller*, *n*—a stroller that, when folded, collapses all handlebars and leg tubes both in the front-to-back (or back-to-front) and side-to-side directions.

3.1.3 *carriage*, *n*—wheeled vehicle generally used for the transport of an infant who is generally in a lying down position. The motive power is supplied by a person or persons pushing or pulling on a handle attached to the vehicle. A carriage may be capable of being folded for storage.

3.1.4 *conspicuous*, *n*—label that is visible, when the unit is in a 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.

3.1.5 *convertible car seat/stroller*, *n*—car seat that has wheels and handle that can be converted to become a stroller without the addition of other components.

3.1.6 *convertible carriage/stroller*, *n*—wheeled vehicle that is intended to be converted by the owner to be used as either a carriage or a stroller.

3.1.7 *cord*, *n*—a length of slender, flexible material including monofilaments, woven and twisted cord, rope, elastic

³ Code of Federal Regulations, available from U.S. Government Printing Office, Washington, DC 20402.

⁴ Available from SAI Global, <http://www.saiglobal.com>.

⁵ Available from European Committee for Standardization (CEN), Avenue Marnix 17, B-1000, Brussels, Belgium, <http://www.cen.eu>.

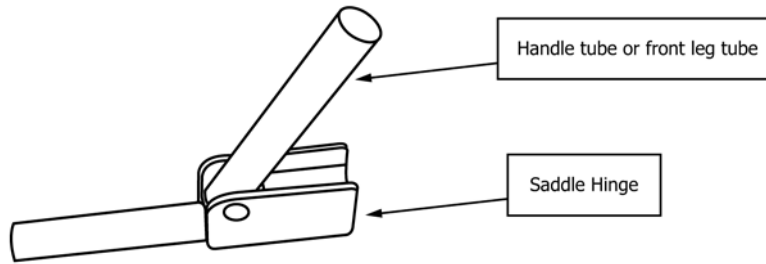


FIG. 1 Saddle Hinge Link

3.1.22 *strap*, *n*—piece of flexible material of which the width is significantly greater than the thickness.

3.1.23 *stroller*, *n*—wheeled vehicle for the transport of infants or children generally in a sitting-up or semi-reclined position. The motive power is supplied by a person moving at a walking rate while pushing on a handle attached to the stroller. A stroller generally is capable of being folded for storage. Strollers normally are used for children from infancy to 36 months of age.

3.1.24 *tray/grab bar locking position*, *n*—any position in which the tray or grab bar can lock including positions intended by the manufacturer for non-occupant use.

3.1.25 *tray/grab bar protective covering*, *n*—component designed and intended as a means to prevent exposure of any underlying *accessible foam* material. Examples include, but are not limited to woven, knit, coated, laminated, extruded, or calendered textile-based materials and leathers.

3.1.26 *tray/grab bar stop position*, *n*—any position in which the tray or grab bar is forward of the occupant, is not in a locking position, and remains stationary when a 5 lb force is applied to it for 10 s at any location and in any direction likely to cause it to change position.

3.1.26.1 *Discussion*—The 5 lb force is designed to overcome any small frictional force which would otherwise be overcome during normal use.

4. Calibration and Standardization

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

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

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

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

4.5 All testing required by this specification shall be conducted on the same unit with the exception of 7.2, where a new unit can be used if the unit frame permanently deforms.

5. General Requirements

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

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

5.3 The paint and surface-coating on the product shall comply to 16 CFR 1303.

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

5.5 Latching Mechanisms:

5.5.1 Any unit that folds shall have a latching device or other provision in the design that will prevent the unit from unintentional folding when properly placed in the manufacturer's recommended use position. Products with latching devices for prevention of unintentional folding shall be tested in accordance with 7.2. During and upon completion of this test, the unit shall meet the requirements in 5.5.1.1 or 5.5.1.2.

5.5.1.1 The locking device on the unit shall remain latched.

5.5.1.2 The stroller frame components yield and permanently deform in a manner such that the full load specified cannot be applied in the direction of folding and the locking device remains engaged.

5.5.2 Strollers that employ hinged links with a geometric over center action (see Fig. 2) to maintain the product in the normal use position shall require two distinct and separate actions on the part of the user to initiate folding of the product. Such strollers shall require only a single action on the part of the user to secure the stroller in the normal use position.

5.6 *Openings*—Holes or slots that extend entirely through a wall section of any rigid material less than 0.375 in. (9.53 mm) thick and admit a 0.210-in. (5.33-mm) diameter rod shall also admit a 0.375-in. (9.53-mm) diameter rod. Holes or slots that are between 0.210 in. (5.33 mm) and 0.375 in. (9.53 mm) and have a wall thickness less than 0.375 in. (9.53 mm) but are limited in depth to 0.375 in. (9.53 mm) maximum by another rigid surface shall be permissible (see Fig. 3). The product shall be evaluated in all manufacturer's recommended use positions.

5.7 Scissoring, Shearing, and Pinching:

5.7.1 The unit, when in the manufacturer's recommended use position, shall be designed and constructed so as to prevent injury to the occupant from any scissoring, shearing, or pinching when members or components rotate about a common axis or fastening point, slide, pivot, fold, or otherwise move relative to one another. Scissoring, shearing, or pinching that may cause injury exists when the edges of the rigid parts admit a 0.210-in. (5.33-mm) diameter probe but do not admit a 0.375-in. (9.53-mm) diameter probe at any accessible point