

Specification for

Safety requirements for wheeled child conveyances

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- Baby Equipment Hirers' Association
- Baby Products Association
- British Association of Nursery and Pram Retailers
- British Retail Consortium
- British Toy and Hobby Association
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- Consumer Policy Committee of BSI
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Foreword

This British Standard has been prepared by Technical Committee CW/39. It replaces BS 7409 : 1991 which is withdrawn and which superseded BS 4792 : 1984 and BS 4139 : 1967. These two standards are currently referred to in UK legislation.

This standard is the revision of BS 7409 : 1991 which was written to bring together the requirements and tests of three previous standards dealing with separate designs of wheeled child conveyance. It therefore covers the more popular convertible pram/push chair combination which previously would need to conform to two standards.

Compliance with a British Standard does not of itself confer immunity from legal obligations. In particular, attention is drawn to the following statutory instruments:

Statutory Instrument 1978 No. 1372 The Perambulators and Pushchairs (Safety) Regulations;

Statutory Instrument 1985 No. 2047 The Pushchairs (Safety) Regulations;

Statutory Instrument 1988 No. 1324 The Furniture and Furnishings (Fire) (Safety) Regulations;

Statutory Instrument 1989 No. 2358 The Furniture and Furnishings (Fire) (Safety) (Amendment) Regulations.

Specification

1 Scope

This British Standard specifies safety requirements for wheeled conveyances for one or more children.

It does not cover wheeled conveyances designed for invalid children and does not specify requirements for accessories or products not designed for use with a chassis.

NOTE. Bodies designed solely for use as carry cots and Moses baskets, i.e. items not designed for use with a chassis, are the subject of a separate standard BS 7551 : 1992.

2 References

2.1 Normative references

This British Standard incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this British Standard only when incorporated in it by updating or revision.

2.2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

For the purposes of this standard the following definitions apply:

3.1 applied

A parking device is considered to be applied when the user has fully and correctly operated any lever or other device that is intended to be used in order to change the condition of the parking device from one in which it is not preventing and will not prevent movement of the vehicle or rotation of the wheel or wheels on which it operates to a condition in which it is intended to be effective. The parking device is considered to be applied as soon as the operation by the user of that lever or other device has been completed and no account is taken of whether or not the completion of that operation causes the parking device to become immediately effective in preventing movement of the vehicle or rotation of the wheel or wheels on which it operates. The word 'apply' is construed accordingly.

3.2 body

A structure of boat or box-like shape primarily designed to transport a child in an essentially horizontal position.

3.3 chassis

A wheeled framework with an extended handle or handles for pushing and steering, designed to accommodate and transport a body or seat.

3.4 seat

A structure primarily designed to support a child in a sitting position, that may or may not be adjustable to achieve a reclining or recumbent position.

3.5 wheel

Either a single wheel or a set of adjacent wheels attached to the same mounting point, unless otherwise stated.

3.6 wheeled child conveyance

A wheeled vehicle designed for the carriage of one or more children.

NOTE. The term wheeled conveyance is intended to cover the whole range of vehicles currently available or likely to be developed and includes perambulators, pushchairs, strollers, combination perambulators and the like.

4 General test conditions

4.1 Number of samples

4.1.1 At least one complete vehicle (comprising one chassis and at least one pram body or seat unit) shall be tested.

4.1.2 The tests shall be carried out in the order that occurs in the standard with repeat testing as indicated in clause 18.

4.1.3 A combination shall meet all the requirements for prams and all the requirements for pushchairs. It shall be tested as one pushchair (i.e. a chassis plus seat unit) and one pram (i.e. another chassis plus pram body) to avoid subjecting one chassis to two complete sets of dynamic tests in clause 18, annexes T, U and V.

4.1.4 Vehicles with multiple places for seats and body units shall meet all requirements in any possible arrangement, with the exception that performance tests in clause 18, annexes T, U and V shall be conducted with the maximum number of seat units on one chassis, and the maximum number of pram bodies on a separate chassis. In all cases there shall be either a seat unit or pram body in each position a child would normally occupy.

4.2 Principle for most onerous condition

References to the most onerous condition are based on the following principles, in order to produce the greatest likelihood of failure for a specific test:

- the choice and number of seat units and/or pram bodies attached to the chassis. For vehicles with multiple places there shall always be at least one place for carrying a child.

- the addition (or not) of any additional or removable places for carrying children.
- the use of test mass **B.1** or **B.2** or neither in any place for conveying a child. At least one test mass shall be used on a vehicle being tested.
- the addition (or not) of any basket/bag/tray for carrying additional load(s) allowed for in the manufacturer's instructions or otherwise approved by the manufacturer; and the placing (or not) of load(s) in any such facility, up to the maximum mass permitted in the manufacturer's instructions.
- the adjustment of seat units, footrests, handles and any other adjustable features or accessories, or any other optional arrangement of the vehicle allowed in the manufacturer's instructions or otherwise approved by the manufacturer.

NOTE. The heaviest loads will not always produce the most onerous condition.

In the cases where the most onerous condition is required, record on the test report the exact condition selected.

5 Materials

5.1 Plastics

Plastics on all parts of the vehicle, whether exposed or accessible to a child, shall not contain a proportion by mass of any soluble antimony, arsenic, barium, cadmium, chromium, lead, mercury or selenium or any soluble compound of any of those elements, which exceeds the following amounts when determined in accordance with clauses 8 and 9 of BS 5665 : Part 3 : 1995.

antimony	250 mg/kg;
arsenic	100 mg/kg;
barium	1000 mg/kg;
cadmium	100 mg/kg;
chromium	100 mg/kg;
lead	250 mg/kg;
mercury	100 mg/kg;
selenium	500 mg/kg.

5.2 Coatings and finishes

Any coating of paint, varnish, lacquer or similar substance on any part of the vehicle, whether exposed or accessible to a child, shall not contain a proportion by mass of any soluble antimony, arsenic, barium, cadmium, chromium, lead, mercury or selenium, or any soluble compound of any of those elements, which exceeds the following amounts when determined in accordance with clauses 8 and 9 of BS 5665 : Part 3 : 1995.

antimony	250 mg/kg;
arsenic	100 mg/kg;
barium	1000 mg/kg;

cadmium	100 mg/kg;
chromium	100 mg/kg;
lead	250 mg/kg;
mercury	100 mg/kg;
selenium	500 mg/kg.

Where a surface is coated with a multi-layer of paint or similar coating, the sample shall be taken down to the substrate.

5.3 All materials

Where different parts of a vehicle are coated with different materials, the coating of each part shall conform to 5.1 and 5.2.

5.4 Linings

Where linings are of plastics or plastics coated material they shall be not less than 0.27 mm thick. Where linings are of fabric that is not coated with plastics they shall be so tensioned as not to present an undue ingestion hazard to the child. When tested in accordance with BS 1006 : 1990, section E04, lining of fabric not coated with plastics shall give a numerical rating for change in colour of not less than 4 and for staining of not less than 3. When tested in accordance with BS 1006 : 1990, section X12, lining of fabric not coated with plastics shall give a numerical rating for staining of not less than 3 to 4 for both wet and dry rubbing.

6 Construction

6.1 Vehicles shall not contain any open-ended tubes, projections, holes, loose washers, speed fixings, nuts, crevices or closing mechanisms in which a child's finger(s) or flesh is likely to be trapped when the vehicle is assembled in a functional or apparently functional manner.

6.2 Vehicles shall not have any exposed or accessible edges, points or burrs sharp enough to inflict a wound or abrasion.

6.3 Any permanent fixture that can be gripped by a child's fingers or teeth shall be attached to the vehicle in such a manner that it cannot be removed or broken by applying a force to the fixture of 90 N in any direction.

6.4 Any part of the vehicle that is essential for its safe operation shall be attached in such a manner that it cannot be displaced from a normal operating position or broken when a force of 90 N is applied in any direction to that part.

This requirement does not apply to the force needed to operate any locks, levers, parking devices or any other device intended to be operated by the user.

6.5 Any detachable seat, body or other component, the removal of which would be hazardous to the child, shall be attached to the vehicle in such a manner that the means of attachment shall be either:

- a) inaccessible to the child whilst in the vehicle; or
- b) incapable of being operated by the child.

Any detachable component shall conform to the requirements of **3.2.2.1** of BS 5665 : Part 1 : 1989.

6.6 It shall not be possible to assemble the vehicle in such a manner that the parking device is not effective.

6.7 Any handle that is adjustable, e.g. such as those that have a telescopic action to adjust the length, shall not present a finger entrapment hazard, as described in **6.1**, throughout its total range of movement.

6.8 Pushchairs with rotating seat units, in order to provide seat recline, shall be fitted with positive stops to prevent inadvertent rotation. When tested in accordance with annex X, the test dummy shall not move past the horizontal.

NOTE. The purpose of this requirement is to prevent the unrestrained child from falling from the seat when adjustments are being made to the seat recline mechanism.

7 Parking devices

7.1 For the purposes of this clause and of annex A each reference to a wheel shall be taken to mean a single wheel. Vehicles shall be fitted with a parking device that limits movement of the vehicle as specified in **7.2** to **7.6**.

7.2 If the vehicle has two or more independently operated parking devices, each device shall be tested separately and shall conform to clause **7**.

7.3 There shall be no visible damage to the mechanism of the parking device when tested in accordance with **A.2**.

7.4 The maximum amount of movement of the wheel which the parking device will allow, shall be measured in accordance with **A.3**, on the test surface described in **A.1**. The maximum allowable movement of the wheel shall be 40 mm when tested as in **A.3.1.3**. A total movement which results from the sum of the movements recorded in **A.3.1.3** and **A.3.1.4** shall not exceed 80 mm.

7.5 The parking device shall be self-adjusting or be capable of simple adjustment if normal wear of any component within the system is likely to prevent the vehicle from meeting these requirements.

7.6 When the parking device is applied it shall, without further adjustment by the user, maintain the vehicle in a static condition on the slope when tested in accordance with **A.4**.

8 Folding vehicles

8.1 Locking devices

Each folding chassis shall have at least one primary locking device and at least one secondary locking device, all of which shall act directly on the folding mechanism.

When the chassis is assembled for use, in cases where it is possible to fold, reverse or pivot the handle or parts of the handle independently of other parts of the chassis, the handle or parts of the handle shall have at least one primary locking device and a secondary locking device in each design location that shall conform to **8.2** and **8.3**. Handles that are adjustable, e.g. that have a telescopic action to adjust the length, but do not fold, reverse or pivot shall conform to **6.7**.

The lever or any other device, intended to operate a locking mechanism shall be positioned so that it is not possible, in normal use, to inadvertently operate more than one device in a single action.

With all locking devices engaged and when tested in accordance with **C.2** none of the locking devices shall be released or damaged.

8.2 Primary locking device

The primary locking device(s) shall lock the folding mechanism in the normal operating position of the chassis.

NOTE. The device(s) may be manual in operation.

It shall require positive action on the part of the user to release the device(s).

When the secondary locking device(s) is released, the primary locking device(s) on the main folding mechanism of the chassis shall not permit the folding mechanism to move more than one-third of its total movement between the normal operating and fully folded position when tested in accordance with **C.3**.

8.3 Secondary locking device

The secondary locking device(s) shall be different in design and/or operation from, and shall be separate from and act independently of, the primary locking device(s). It shall lock automatically when the chassis is erected for use. It shall require positive action on the part of the user to release the device.

When the primary locking device(s) is released, the secondary locking device(s) on the main folding mechanism of the chassis shall not permit the folding mechanism to move more than one-third of its total movement between the normal operating and fully folded position when tested in accordance with **C.4**. In the case of secondary locking devices on handles, when the main handle locking device is released the secondary locking device shall prevent the presentation of finger entrapment hazards as described in **6.1** when tested in accordance with **C.4**.

9 Separate detachable bodies designed for use with a range of chassis

9.1 If the body has handles, the handles shall be so placed that, when tested in accordance with annex D, the angle of the base of the body shall not move by more than $\pm 5^\circ$ in the horizontal plane.

9.2 Flexible handles shall show no signs of damage when tested in accordance with annex E.

9.3 There shall be no permanent distortion or damage in any part of the body, handles or points of attachment when the handles are tested in accordance with annex F.

9.4 Bodies that can be folded for storage purposes by the removal or movement of loose components shall be so designed that when assembled for use the loose components are fully secured and cannot be accidentally dislodged.

9.5 When a body is tested in accordance with annex G the base shall support the body throughout the test.

9.6 The overall external size of the body shall be within the range of (760 ± 25) mm long by (340 ± 25) mm wide when measured (30 ± 1) mm above the base of the body.

9.7 The total mass of the body (excluding mattress, bedding and safety harness but including hood and apron) shall not exceed 9 kg.

9.8 Adjustable retaining straps shall be provided at each end to secure the body to a chassis. When disconnected no part of any such strap shall hang below the base of the body by more than 175 mm when the body is held horizontally.

9.9 When tested in accordance with annex H the adjustable retaining straps shall not become disconnected, slip or show signs of damage during or after the test.

9.10 Provision shall be made inside the body for the attachment of a child's safety harness conforming to BS 6684. The attachment points, one on each side of the base of the body, shall be located within 245 mm from the hood end of the body to midway along the body. The attachment points shall show no signs of damage when tested in accordance with annex J.

9.11 The minimum depth of the body at, or at any position within 300 mm from, the harness attachment points, shall be 140 mm when measured from the top edge to the top surface of the mattress or the next horizontal plane (the seat if there is one). The minimum depth at any point on the sides or ends of the body shall be 100 mm.

9.12 When tested in accordance with annex K the difference between the two dimensions measured shall be not more than 50 mm.

10 Separate detachable bodies designed for use with specific chassis

10.1 If the body has handles, the handles shall be so placed that, when tested in accordance with annex D, the angle of the base of the body shall not move by more than $\pm 5^\circ$ in the horizontal plane.

10.2 The flexible handles shall show no signs of damage when tested in accordance with annex E.

10.3 There shall be no permanent distortion or damage in any part of the body, handles or points of attachment when the handles are tested in accordance with annex F.

10.4 Bodies that can be folded for storage purposes by the removal or movement of loose components shall be so designed that when assembled for use the loose components are fully secured and cannot be accidentally dislodged.

10.5 When a body is tested in accordance with annex G the base shall support the body throughout the test.

10.6 Provision shall be made inside the body for the attachment of a child's safety harness conforming to BS 6684. The attachment points, one on each side of the base of the body for each child that could occupy the body, shall be located within 245 mm from the hood end of the body to midway along the body. The attachment points shall show no signs of damage when tested in accordance with annex J.

10.7 The minimum depth of the body at, or at any position within 300 mm from, the harness attachment points shall be 140 mm when measured from the top edge to the top surface of the mattress or the next horizontal plane (the seat if there is one). The minimum depth at any point on the sides or ends of the body shall be 100 mm.

10.8 When tested in accordance with annex H the devices used to attach the body to the chassis shall not become disconnected, loosened or show signs of damage during or after the test.

10.9 When tested in accordance with annex K the difference between the two dimensions measured shall be not more than 50 mm.

11 Chassis designed for use with a range of separate detachable bodies

11.1 A chassis shall be designed to accommodate and support all sizes of body specified in 9.6. Chassis designed to be fitted with a range of bodies by means of adjustable straps shall be provided with structural members to which the adjustable retaining straps shall be secured such that

attachment and removal of the body shall only be made by opening and closing the connecting device of the retaining straps. Sideways restraint shall be provided such that any sideways movement of the test body as specified in annex L does not exceed 70 mm.

11.2 When tested in accordance with annex M the chassis shall not be permanently distorted or show signs of structural failure.

11.3 When fitted with any body conforming to this standard and with the mass of the body made up to 9 kg by the addition of bags of dry sand equally distributed over the base of the body, the assembled unit shall conform to the requirements of **12.2**.

11.4 When fitted with the rigid box specified in annex N and tested in accordance with that annex it shall not be possible to move the rigid box into such a position in the chassis that it becomes unsupported.

12 Chassis designed for use with a specific detachable body or seat

12.1 When tested in accordance with annex M the chassis shall not be permanently distorted or show signs of structural failure.

12.2 When tested in accordance with annex H the devices used to attach the body or seat to the chassis shall not become disconnected, loosened or show signs of damage during or after the test.

13 Seats

Where the dividing line between the seat and the backrest is not clearly defined, i.e. in hammock type seats, the angle shall be measured in accordance with annex P. Seats that are not adjustable to give an angle between the backrest and the horizontal of less than 60° shall be marked in accordance with **19.3**.

14 Safety harness

NOTE. The requirements of this clause are intended to help prevent children from falling or climbing out of the product.

14.1 Seat and chassis assemblies

Seat and chassis assemblies shall be fitted with a permanently attached harness assembly, comprising shoulder straps, front waist strap and a crotch strap (see figure 1) except in the case of seats conforming to BS AU 202a and BS 3254 : Part 2 and/or ECE Regulation 44.

The front waist strap shall be positively located on a rigid part of the structure excluding any bumper bar.

NOTE. Any straps may be designed to be reversible.

The crotch strap shall be linked to the front waist strap.

The waist strap(s) and crotch strap shall have a minimum width of 20 mm and the shoulder straps shall have a minimum width of 15 mm.

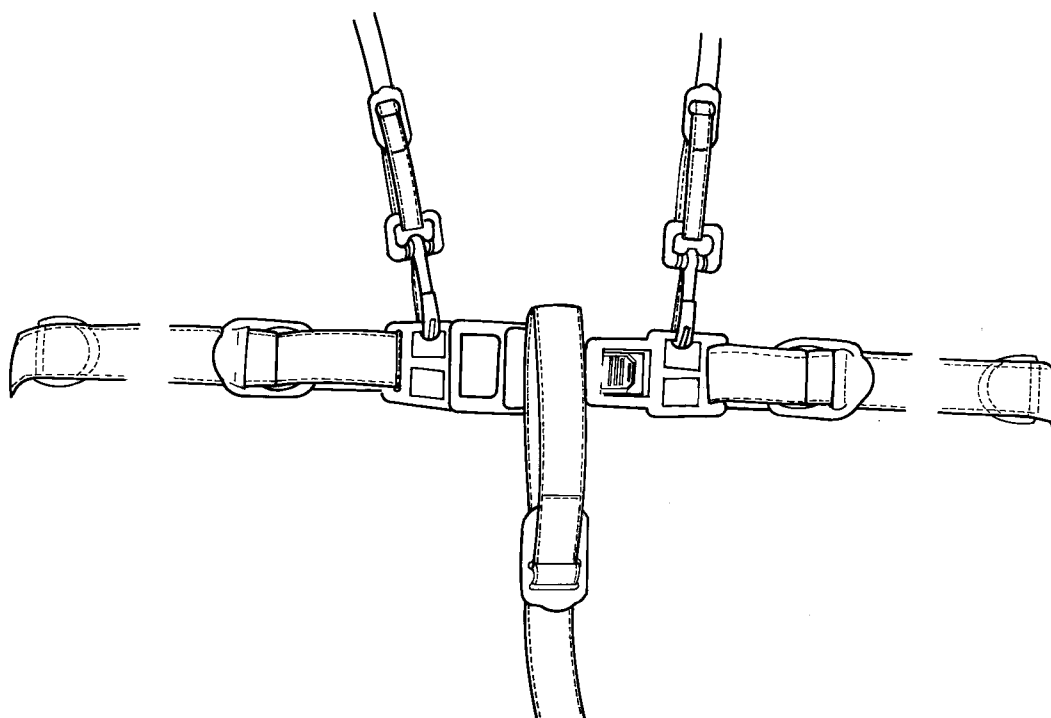


Figure 1. Harness assembly