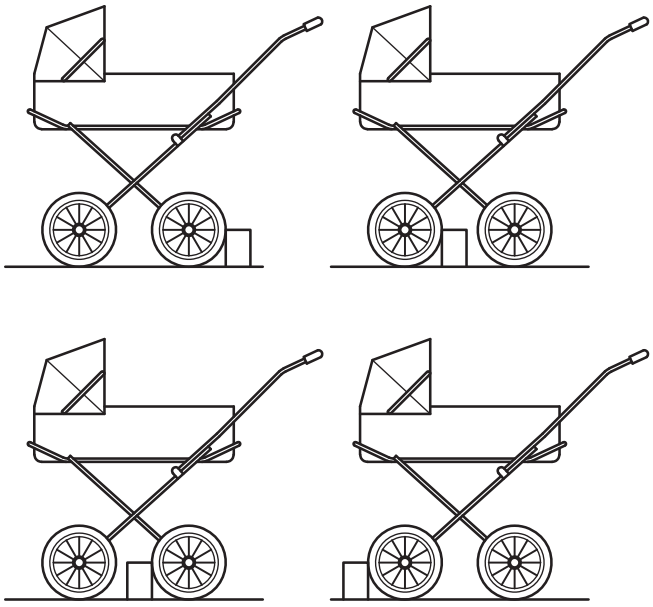


Figure 35 — Positioning of the stop

8.3.5.2 Pushchairs with rotating seat units

Pushchairs with rotating seat units on any axis shall be fitted with at least one automatic locking device to prevent inadvertent rotation.

8.3.5.3 Handle movement

8.3.5.3.1 Requirements for reversible handles

Any locking device(s) for the reversible handle shall be positioned so that it is not possible to operate more than one device in a single action.

To avoid hazards due to inadvertent operation by an adult or operations by a child, there shall be at least two locking mechanisms, which require either:

a) two separate operations acting on two separate parts of the vehicle;

b) two consecutive actions, the first being maintained while the second is carried out.

To avoid hazards due to an unlocked handle, at least one of the locking mechanisms shall engage automatically when the handle is in a position of use.

When tested in accordance with the following tests, the locking mechanism(s) of the handle shall not be released:

— irregular surface test (see 8.10.4);

— dynamic strength test (see 8.10.5);

— handle strength test (see 8.10.7).

8.3.5.3.2 Requirements for telescopic handles

Telescopic handles shall be fitted with devices to avoid inadvertent separation or detachment during use.

8.3.5.4 Requirements for the attachment of pram body, seat unit and car seats to the chassis

When the pram body, seat unit or car seat is attached to the chassis in accordance with the manufacturer's instructions, it shall be obvious to the carer that the pram body, seat unit or car seat is correctly placed and locked in position.

To avoid hazards due to the unintentional detachment of the pram body, seat unit or car seat, the weight of the child shall act against the detachment of the pram body, seat unit or car seat, and one of the following requirements shall be fulfilled:

a) a minimum force of 50 N or a minimum torque of 0,34 N·m is required to release the attachment device attaching the pram body, seat unit or car seat to the chassis;

b) at least two consecutive actions are required to detach the pram body, seat unit or car seat or to release the attachment device, the first of which shall be maintained while the second is carried out;

c) at least two independent simultaneous actions are required to detach the pram body, seat unit or car seat or to release the attachment device;

d) more than two independent actions are required to detach the pram body, seat unit or car seat.

This shall be assessed with and without the test mass in the product. The pram body, seat unit or car seat shall not fall under its own weight when all the attachment devices are disengaged.

8.4 Entanglement hazards

8.4.1 Requirements[4)]

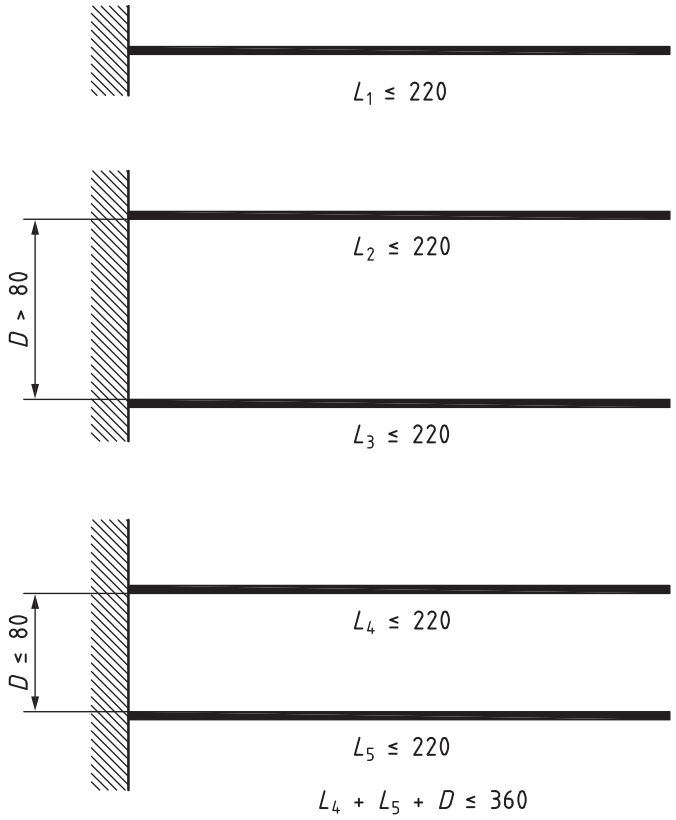
The restraint system, handles of bags, and carrying handles of pram bodies or carry cots are excluded from these requirements.

Cords, strings and other narrow fabrics that originate within or extend into the pram body, seat unit or car seat shall not create a loop that has a peripheral dimension exceeding 360 mm. They shall not have a free stretched length that exceeds a length of 220 mm, when measured in accordance with 8.4.2.

Cords strings and other narrow fabrics that do not originate within the occupant space (see 4.7) but that can extend into the pram body, seat unit or car seat shall not create a loop that has a peripheral dimension exceeding 360 mm. They shall not have a free stretched length that exceeds a length of 220 mm within the pram body, seat unit or car seat, when measured in accordance with 8.4.2, only on the portion of the component that can extend into the pram body, seat unit or car seat.

Where cords, ribbons and similar parts are attached to the vehicle together or within 80 mm of each other, all single cords shall have a maximum free length of 220 mm. The combined length from one loose end to the end of another loose end shall be a maximum of 360 mm (see Figure 36).

4) Based on ASTM F833[30].



Key

L_x length of cords, ribbons and parts used as ties

D distance between attachment points

Figure 36 — Examples of measuring cords, ribbons or parts used as ties

8.4.2 Test method

The length of a cord, ribbon or similar part shall be measured from the fixing point on the vehicle to the free end of the cord, ribbon or similar part under a 25 N tensile force.

The peripheral dimension of a loop shall be measured from the fixing point on the vehicle of one end to the fixing point of the other end under a 25 N tensile force.

When cords, ribbons, loops or similar parts do not originate within an occupant space (see 4.8), the measurement shall be made from the edge all around the inner upper surface that supports the child.

8.5 Choking and ingestion hazards

8.5.1 Requirements

When tested in accordance with 8.5.2.1 and 8.5.2.2, any component or part of a component within the protected volume that is removed, whether intended to be removed without the use of a tool or not, shall not fit entirely within the small parts cylinder (see 5.6) in any orientation without compression.

Self-adhesive plastic labels shall not be used on the inside surfaces of a pram body or seat unit. Heat transfer labels are not considered as self-adhesive.

Bumper bars that are accessible and forward of the occupant shall meet any one of the following:

a) the bumper bar does not contain foam or other filling material;

b) the bumper bar covering prevents the underlying foam or other filling material from being exposed when tested in accordance with 8.5.2.3.

8.5.2 Test methods

8.5.2.1 Torque test[5)]

Apply a torque gradually to the component within a period of 5 s in a clockwise direction until either:

— a rotation of 180° from the original position has been attained;

— a torque of 0,34 Nm is reached.

The maximum rotation or required torque shall be applied for 10 s.

The component shall then be allowed to return to a relaxed condition and the procedure repeated in an anticlockwise direction.

Where projections, components or assemblies are rigidly mounted on an accessible rod or shaft designed to rotate together with the projections, components or assemblies, during the test, the rod or shaft shall be clamped to prevent rotation.

If a component attached by a screw thread becomes loosened during the application of the required torque, the torque shall continue to be applied until the required torque is exceeded, the component disassembles or it becomes apparent that the component will not disassemble.

When using clamps and test equipment, care shall be taken not to damage the attachment mechanism or body of the component.

Check whether any component or part of a component that is removed during the test fits wholly within the small parts cylinder.

8.5.2.2 Tensile test

The tensile test shall be carried out on the same components as the torque test.

Attach a suitable clamp to the component, taking care not to damage the component or any part of the product.

Apply a tensile force of up to 70 N for fabrics and 90 N to other components to be tested. Apply the force gradually within a period of 5 s and maintain it for 10 s.

Check whether the component or any part of a component that is removed during the test fits wholly within the small parts cylinder.

8.5.2.3 Bumper bar protective covering removal test method

If the covering is removable, install the bumper bar protective covering in accordance with the manufacturer's instructions on the bumper bar.

Attach a force gauge to the protective covering by means of a clamp such as the one described in 5.11. This test shall be considered a pass if the bumper bar protective covering material cannot be grasped between the thumb and forefinger of the test personnel sufficient for clamping by the 19 mm diameter washer jaws.

The clamp device shall only attach to the bumper bar protective covering and shall not attach to the underlying foam or other filling under the cover or to attachment devices such as zippers or Velcro tabs.

5) Based on ASTM F833[30].

Gradually apply a 70 N force in the direction that is most likely to expose the foam or other filling under the covering over a 5 s period and hold for an additional 10 s.

Visually inspect if the foam or other filling has become uncovered.

8.6 Suffocation hazards

8.6.1 Internal lining of the pram body and seat unit

Where the internal lining of a pram body or seat unit is made of plastic or of a plastic-coated material, it shall have a minimum thickness of 0,2 mm.

Where the internal lining of a pram body or seat unit is made of a fabric not coated with plastic, it shall be tensioned so as not to present any suffocation hazard to the child.

8.6.2 Requirements — Packaging

NOTE Packaging includes single use and repeated use packaging.

Flexible plastics used for packaging including bags shall conform to either of the following:

a) packaging that covers an area greater than 100 mm × 100 mm when tested in accordance with ISO 8124-1:2018, 5.10, should have an average thickness of not less than 0,038 mm;

b) packaging with an average thickness of less than 0,038 mm and that covers an area greater than 100 mm × 100 mm should be perforated with holes so that a minimum of 1 % of the area has been removed over any area of 30 mm × 30 mm.

Bags made of impermeable material with an opening perimeter greater than 360 mm should not have a drawstring or cord as a means of closing.

8.7 Hazards from edges and protrusions

All exposed edges, surfaces and protrusions within the vehicle's protected volume shall be rounded or chamfered and free from burrs and sharp edges.

All other surfaces shall be free from burrs and sharp edges.

8.8 Parking and braking devices

8.8.1 Requirements

The vehicle shall be fitted with a parking device, the mechanism of which can be operated by the carer standing adjacent to the handle.

If the parking device or its operating mechanism is within the protected volume, it shall be designed so that it cannot be operated by the child sitting within the vehicle. This requirement is met under one of the following conditions:

a) a minimum force of 50 N or a minimum torque of 0,34 N·m is required to release the parking device;

b) at least two consecutive actions are required to release the parking device, the first of which shall be maintained while the second is carried out;

c) at least two independent simultaneous actions are required to release the parking device;

d) at least three independent actions are required to release the parking device.

When tested in accordance with 8.8.2.2, 8.8.2.3 and 8.8.2.4, the vehicle shall remain static on the slope for a minimum of 1 min.

The maximum movement of any one wheel or set of wheels shall be 90 mm when tested in accordance with 8.8.2.5. This requirement does not apply to vehicles where the parking device acts directly on the tyre(s) and parking devices where there is no gap between different positions.

The parking device shall be tested in accordance with 8.8.2.2 to 8.8.2.5 both before and after undergoing the irregular surface test (see 8.10.4). The abrasion conditioning (see 8.8.2.6), if applicable, shall be performed after the irregular surface test (see 8.10.4).

If the vehicle has a braking device, the carer shall be able to activate the braking device when walking.

NOTE For vehicles with reversible handles and foot-operated activating devices, it can be necessary to have such devices on each side where the carer walks, pushing or pulling the vehicle.

When braking and parking devices are combined in one mechanism, the action to activate the braking device shall be different from the action to activate the parking device. Braking action shall not activate the parking device.

Any platform or any part of the vehicle shall not impede the accessibility to the operating mechanism of the parking device or the braking device.

8.8.2 Test methods

8.8.2.1 General test conditions

Operate the parking device 200 times before carrying out the tests.

Position the relevant test mass(es) as follows:

— In a pram body, test mass A or test mass B for pram bodies having an internal length greater than 800 mm when measured in accordance with 8.1.2.2 shall be placed centrally and in a horizontal position.

— In a type A car seat, test mass A and, in a type B car seat, test mass F shall be placed centrally against the backrest in such a way that its bottom edge is in contact with the seat/back junction line.

— In a seat unit, test mass B shall be placed centrally against the backrest in such a way that its bottom edge is in contact with the seat/backrest junction line.

— For vehicles fitted with a platform, the test shall be performed with test mass G uniformly positioned and secured so that the middle point of the base of test mass G is on the centre line of the platform in the most perpendicular position with respect to the ground when the vehicle is positioned on the slope. If necessary, wedges of negligible mass shall be used to maintain the position defined for test mass G.

For positions in which the angle between the backrest and the seat is equal to or greater than 150°, test mass B shall be positioned such that the seat backrest junction line and transverse plane through the centre of the test mass coincide.

If the vehicle is designed for more than one child, use any number of appropriate masses, up to one in each position is to be occupied by a child. Additional test load(s) shall be positioned centrally within any receptacle designed for carrying additional load(s). Any test mass and additional load shall be secured to prevent movement by using packing of negligible mass.

NOTE 1 The most onerous conditions for parking device tests can be obtained when the number of test masses placed in the vehicle is less that the number of children the vehicle is designed for.

If a vehicle is designed for more than one child and the chassis can accommodate pram bodies, seat units and/or car seats, combinations of these as described in the manufacturer's instructions for use and by product markings shall be loaded with the appropriate test mass. The most onerous conditions for the test shall be established with regard to the combination of pram body, seat unit or car seat.

Any initial movement of the wheels on the slope shall be disregarded for test purposes.

NOTE 2 This movement can result from the interaction of the parking device and the vehicle, and from the suspension and structural settlement.

8.8.2.2 Vehicle facing up the slope

Place the vehicle on the test surface (see 5.7) inclined at 9° facing up the slope. Engage the parking device. If the vehicle is fitted with swivelling or steering wheels, then:

— the swivelling or steering wheels opposite the handle shall be unlocked and placed in the position they would normally assume when the vehicle travels in the direction it is facing;

— any lockable swivelling or steering wheels on the handle end shall be locked.

8.8.2.3 Vehicle facing down the slope

Repeat 8.8.2.2 with the vehicle facing down the slope.

8.8.2.4 Vehicle perpendicular to the slope

Place the vehicle at 90° to the direction of the slope on the test surface (see 5.7) inclined at 9°. Engage the parking device. If the vehicle is fitted with swivel wheels, then:

— any swivel wheels on the handle end shall be locked;

— the swivel wheels opposite to the handle shall be unlocked and placed in the position they would normally assume when the vehicle travels in the direction it is facing.

8.8.2.5 Test for available wheel movement

Place the vehicle to be tested on the test surface (see 5.7) inclined at 9° facing up the slope and engage the parking device. Allow the vehicle to reach a state of equilibrium.

Using a rectangular stop, mark the position(s) of the down slope wheel(s) with a line perpendicular to the direction of the slope. Remove the stop.

Maintain the position of the vehicle by hand and at the same time release the parking device(s). Allow the vehicle to move down the slope so that the parking device is engaged in the next position for use. Using the rectangular stop, mark the position(s) of the down slope wheel(s) with a line perpendicular to the slope.

Measure the distance between the two lines.

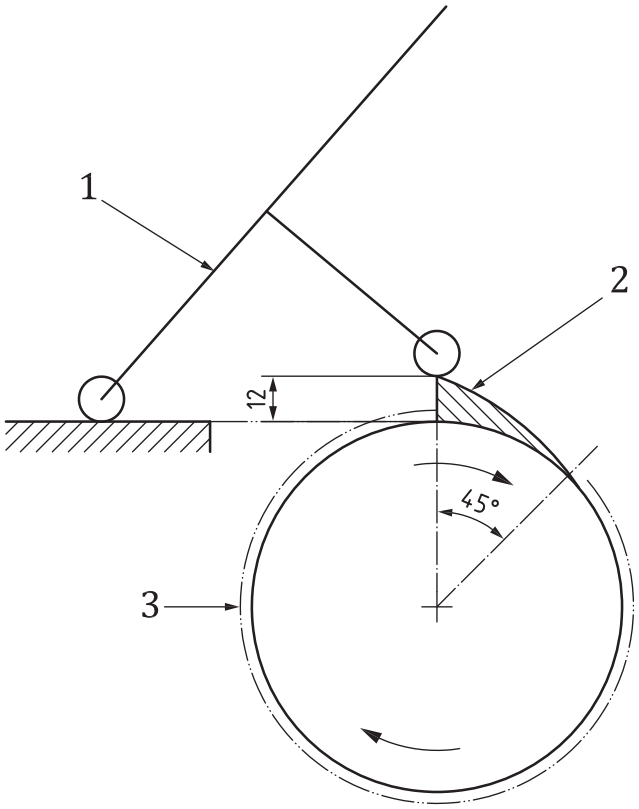
8.8.2.6 Abrasion conditioning

The abrasion conditioning shall be performed if the vehicle is fitted with a parking device that operates on the tyre(s) of the wheel(s). It shall be carried out on the wheel(s) on which the parking device operates.

The abrasion conditioning shall be performed after the irregular surface test (see 8.10.4).

The abrasion conditioning shall be performed on a drum, the surface of which is capable of being run at a speed of (5 ± 0,1) km/h. The drum shall be covered with aluminium oxide paper of grade 80 with cam obstacles of 12 mm in height, as shown in Figure 37. New aluminium oxide paper shall be used for each test.

Dimensions in millimetres



Key

1 vehicle
2 cam obstacles
3 aluminium oxide paper of grade 80

Figure 37 — Abrasion conditioning

Place and secure one of the following:

— test mass A at the bottom of pram bodies having an internal length of 800 mm or less when measured in accordance with 8.1.2.2 or in type A car seats;

— test mass B for pram bodies having an internal length greater than 800 mm when measured in accordance with 8.1.2.2;

— test mass F on type B car seats;

— test mass B on seat units.

The abrasion conditioning shall comprise 100 000 cam obstacles. The distance between obstacles shall be (400 0/+40) mm.

For vehicles having alternative arrangements, the test shall be carried out for a total of 100 000 times with a minimum of 50 000 cycles in the seat unit arrangement and, for the remaining 50 000 cycles, with an equal number of cycles for each arrangement.

8.9 Stability

8.9.1 Stability of vehicle

8.9.1.1 Requirements

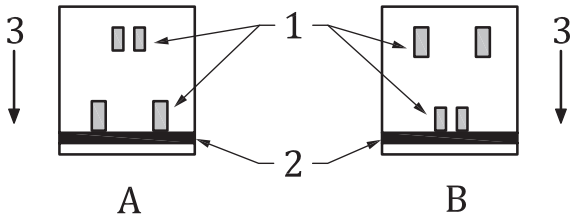
The vehicle shall not tip over when tested in accordance with 8.9.1.2. Any pram body, seat unit or car seat attachment device shall not become detached during the test.

8.9.1.2 Test procedure

8.9.1.2.1 Positioning of the vehicle

Position the vehicle on the test surface (see 5.7) inclined at an angle of 12° without engaging the parking device.

The vehicle shall be placed gently against the 25 mm stop(s) (see 5.8) without added force. Carry out the tests with the vehicle first facing forward, then rearward (see Figure 38) and then perpendicular to the slope, facing left and right.

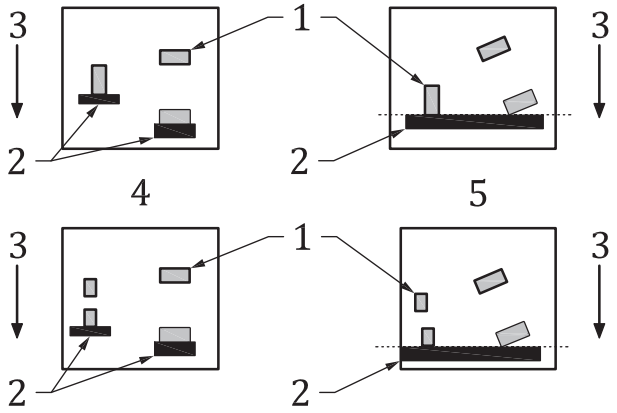


Key

1 wheel(s)
2 stop
3 slope direction
A rearward stability example
B forward stability example

Figure 38 — Rearward and forward stability

When assessing the lateral stability, place the vehicle once perpendicular to the test surface and once with the front- wheel(s) aligned with the rear wheel(s), as shown in Figure 39.



Key

1 wheel(s)
2 stop
3 slope direction
4 perpendicular to the test surface
5 front wheel(s) aligned with rear wheel(s)

Figure 39 — Lateral stability

If the vehicle passes over the 25 mm × 25 mm stop, use a stop of 50 mm × 50 mm that retains the vehicle on the test surface. The additional stop shall block only the wheel(s) that passes over the 25 mm × 25 mm stop.

Where the vehicle has swivelling or steering wheels, they shall be placed perpendicular and/or parallel to the slope direction whichever is the most onerous.

To change the position of the vehicle, it shall be unloaded then loaded again to assess its stability.

8.9.1.2.2 Stability of prams (for one child)

8.9.1.2.2.1 Prams (for one child) having an internal length of 800 mm or less

Load the pram with an internal length of 800 mm or less with test mass A placed centrally in the pram body, within a tolerance of ±10 mm so that the longitudinal and transverse axes of the pram body and test mass are aligned.

Limit the movement of the test mass with wedges of negligible mass.

8.9.1.2.2.2 Prams (for one child) having an internal length greater than 800 mm

Load the pram with an internal length greater than 800 mm with test mass B placed centrally in the pram body, within a tolerance of ±10 mm so that the longitudinal and transverse axes of the pram body and test mass are aligned.

Limit the movement of the test mass with wedges of negligible mass.

8.9.1.2.3 Stability of pushchairs (for one child)

For any positions in which the angle between the backrest and the seat is less than 150° when measured in accordance with 8.1.1.2.1, adjust the seat unit in the most upright position and place test mass B on the seat unit against the backrest. Raise the whole of test mass B at least 50 mm from the seat with the test mass maintaining complete contact with the backrest. With the test mass in this position, gently lower it down as far as possible until it rests on the seat by its own weight. Where necessary in order