(Figure 40 a)). The test mass is positioned centrally on the backrest such that the longitudinal axes of the test mass and backrest are aligned (Figure 40 b)).

When the backrest is reclinable the backrest shall be inclined without removing the test mass B from the seat and maintaining contact with the backrest at all time.



- 6 longitudinal axis of test mass
- 7 longitudinal axis of seat unit (centreline of seat)

Figure 40 — Positioning of test mass *B* in the seat unit for stability tests

For positions in which the angle between the backrest and the seat is equal 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 (5) are aligned coincide (see Figure 41).



Key

- 1 test mass B
- 2 reclined backrest
- 3 seat
- 4 junction of the seat base and the backrest
- 5 tranverse plane through the centre of the test mass

Figure 41 — Positioning of test mass *B* for stability test of *pushchairs* in which the angle between the backrest and the seat is equal or greater than 150°

8.9.1.2.4 Stability of vehicles fitted with a car seat

Place test mass *A* in *Type A car seats* and test mass *F* in *Type B car seat* positioned centrally on the backrest so that the bottom edge of the test mass is in contact with the lowest point inside the car seat. Where necessary in order to maintain the position of the test mass use wedges of negligible mass to support the test mass.



Figure 42 — Positioning of test mass A or test mass F for stability test of vehicles fitted with a car seat

8.9.1.2.5 Stability of vehicles for more than one child

If a *pram* is designed for more than one child, use any number of test masses, up to one in each place intended to be occupied by a child as described in 8.9.1.2.2.1 or 8.9.1.2.2.2.

If a *pushchair* is designed for more than one child, use any number of test masses, up to one in each place intended to be occupied by a child as described in 8.9.1.2.3.

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 appropriate test mass in accordance with 8.9.1.2.2. to 8.9.1.2.4. The most onerous conditions for the test shall be established with regard to the combination of *pram* body, *seat unit* or *car seat.*

NOTE The most onerous stability condition can occur when less than the total number of test masses is in the vehicle.

8.9.1.2.6 Stability of vehicles fitted with an integrated platform

The test shall be carried out on a vehicle fitted with an *integrated platform* with and without test masses A or B or F on the *seat unit* or *pram body* or *car seat.*

The vehicle is placed on a horizontal surface.

The backrest shall be placed in the most upright position.

Place and secure test mass G and fix it uniformly putting the middle point of the base of test mass G on the centre line of the integrated *platform*. The test mass G shall be maintained along the *integrated platform* with a rigid bar and both parts shall be maintained apart from each other by any connecting means of negligible mass.

Test mass G shall be positioned and fixed in such a way it is perpendicular to the test surface. Where the geometry of the vehicle does not allow test mass G to be in a vertical position it shall be placed in the most vertical position.

Apply a force of 50 N vertically downwards in the middle of the handle. For separate handles connect handles with a rigid bar and apply the force in the middle of the bar.

8.9.2 Longitudinal stability of a pram body with carrying handles

8.9.2.1 Requirement

When tested in accordance with 8.9.2.2 the maximum angle of inclination of the *pram body* towards the head or foot shall be 10°.

8.9.2.2 Test procedure

Place test mass *A* in the geometric centre of the *pram body*. If the vehicle is designed for more than one child use any number of test masses, up to one in each place intended to be occupied by a child. Movement of the test mass (es) may be limited, if necessary, using any convenient means of negligible mass.

If the *pram body* has a hood, this shall be in the down position.

If the *pram body* has rigid handles take two equal lengths of 20 mm wide webbing and attach each length to the rigid handles to form webbing loops.

Suspend the *pram body* by either the handles or the webbing loops from a metal bar having a cross section of 40 mm × 40 mm with an external radius of approximately 5 mm.

If the *pram body* has a transverse handle suspend it by the handle from the metal bar described previously in such a way that the handle is perpendicular to the metal bar.

8.9.3 Stability hazards due to the position of swivelling wheels

To avoid any hazards due to the swivelling wheels being in contact with each other impairing the proper run of the wheeled child conveyance, any swivelling wheel shall be able to rotate without blocking each other when orientated in the most onerous position. This requirement shall be checked with and without placing the test mass A, B or F respectively into the *pram body, seat unit* or *car seat,* and before and after testing in accordance with 8.10.

8.10 Structural integrity (see A.11)

8.10.1 Carrying handles and handle anchorage points of pram bodies and detachable seat units

8.10.1.1 Requirements

The attachment points or the top of the flexible handles' maintaining device shall be located in a position which is at least three quarters of the height of the *pram body*, measured on the outside from the base.

When tested in accordance with 8.10.1.2 the anchorage points of the carrying handles of the *pram body* or of the detachable seat unit shall not break or be pulled out.

The integrity of the anchorage points shall have been maintained.

There shall be no permanent distortion or damage to any part of the *pram body* or of the detachable *seat unit*, or of the handles or points of attachment when these are tested in accordance with 8.10.1.2.

8.10.1.2 Test method

Place test mass *C* in the geometric centre of the *pram body* and load uniformly the *pram body* to a total mass of 38 kg, or to a total mass of 38 kg per child if designed for more than one child.

Load uniformly the detachable *seat unit* to a total mass of 38 kg, or to a total mass of 38 kg per child if designed for more than one child.

Suspend the *pram body* or *seat unit* by its handle(s) as described in 8.9.2.2 for 30 min.

8.10.2 Strength and durability of attachment devices for pram bodies or seat units or car seats

8.10.2.1 Requirements

After testing in accordance with 8.10.2.2 the devices used to connect the *pram* body or the *seat unit* or *car seat* to the *chassis* shall not become disconnected, loosened or show signs of damage during or after test and the *pram* body or *seat unit* or *car seat* shall not become detached from the *chassis*.

After testing in accordance with 8.10.2.2 any *carry cot* attached to a *seat unit* shall not become detached from the *seat unit*.

8.10.2.2 Test method

With the *pram* body or the *seat unit* or *car seat* mounted on the *chassis* operate the attachment devices securing the *pram* body or the *seat unit* or *car seat* to the *chassis* 200 times.

When a *carrycot* is attached to the *seat unit* operate the attachment device 200 times.

Place test mass *A* at the bottom of a *pram* body or *Type A car seat* or test mass *B* in a *seat unit* or test mass *F* in a *Type B car seat* and secure it in a central position.

If the vehicle is designed for more than one child use any number of test masses, up to one in each position intended to be occupied by a child.

Attach the vehicle by its wheels or axles to a rigid platform which can be orientated in an axis parallel to the ground.

Slowly rotate the vehicle with the test mass through an angle of 100° to the horizontal both in a clockwise and anticlockwise direction such that the attachment devices alone transmit the test load to the *chassis* or *seat unit* (see Figure 43).

Maintain this position for 5 min in each direction.



Figure 43 — Test for strength and durability of attachment devices for *pram bodies* and *seat units* and *car seats*

8.10.3 Irregular surface test

8.10.3.1 Requirements

When tested in accordance with 8.10.3.2 there shall be no break or deformation of any part of the product that can impair the safety of the vehicle. Signs of wear shall not be regarded as a failure.

The vehicle shall not collapse; the *locking mechanisms* and attachment devices shall still function as intended.

The devices used to connect the *pram* body or the *seat unit* or *car seat* to the *chassis* shall not become disconnected, loosened or damaged during or after testing.

After testing in accordance with 8.10.3.2 the vehicle shall still comply with the requirements of:

- 8.2 entrapment hazards;
- 8.3 hazards from moving parts;
- 8.8 parking and braking device; and
- 8.9 stability.

8.10.3.2 Test method

The vehicle shall be placed on the irregular surface test equipment (5.10) in a position so that the vehicle handle(s) can be attached to the independent articulating arms (5.10.2). The handle(s) shall be attached to the articulating arms initially positioned horizontally so that the free movement of the handle(s) is not restricted or controlled by the articulating arms. Where there are more than two handles, the articulating arms shall be attached to the outer pair of handles.

Position relevant test mass (es) as follows:

- in a *pram body* the 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* the test mass *A* and in a *Type B car seat* the 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*, the test mass *B* shall be placed centrally against the backrest in such a way that its bottom edge is in contact with the seat/back rest *junction lin*, Restrain the test mass with the *restraint system* and any appropriate strap if needed.

Place any adjustable backrest of *seat units* in the most upright position.

If the vehicle is designed for more than one child use any number of appropriate test masses, up to one in each place intended to be occupied by a child.

Swivelling or steering wheels shall be unlocked.

The maximum movement of the test mass during set up shall be limited to 50 mm in any direction by the use of straps linking the anchorage points on the test mass to the attachment points on the vehicle.

To enable the vehicle to remain central on the irregular surface test equipment during the test, side straps may be used to guide the vehicle with a minimum of tension applied to the vehicle. The straps should be attached horizontally to the front legs of the vehicle and the side and/or the front of the irregular surface test equipment.

The vehicle shall pass over the configuration shown in Figure 23 a total of 72 000 times at a speed of 5 km/h \pm 0,1 km/h.

For vehicles having alternative arrangements, the test shall be carried out for a total of 72 000 times, with a minimum of 48 000 cycles in the *seat unit* arrangement, and for the remaining 24 000 cycles, with an equal number of cycles for each arrangement.

For vehicles fitted with a *platform*, half of the total number of cycles: i.e. 36 000 shall be performed placing and securing two masses of 10 kg each, fixed uniformly about the centre line on the *platform*. The test masses used shall not break the platform due to their shape or material.

8.10.4 Dynamic strength

8.10.4.1 Requirements

When tested in accordance with 8.10.4.2 there shall be no visible damage to the vehicle. The vehicle shall not collapse; the *locking mechanisms* and attachment devices shall still function as intended.

The devices used to attach the *pram* body or the *seat unit* or the *car seat* to the *chassis* shall not become detached, loosened or damaged during or after testing.

After testing in accordance with 8.10.4.2 any *carry cot* attached to the *seat unit* shall not become detached from the *seat unit*.

The *pram* body or the *seat unit* or the *car seat* shall not be displaced by more than 10 mm on the *chassis* after testing in each direction in accordance with 8.10.4.2. This requirement does not apply to soft *carry cots* attached to a *seat unit* or in a *pram* body.

8.10.4.2 Test method

Position relevant test mass (es) as follows:

- in a *pram body* the 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* the test mass *A* and in a *Type B car seat* the test mass *F* shall be placed centrally against the backrest in such a way that its bottom edge is in contact with the seat/backrest *junction line*;

— in a *seat unit*, the test mass *B* shall be placed centrally against the backrest in such a way that its bottom edge is in contact with the seat/back rest *junction line*. Restrain the test mass with the *restraint system* and any appropriate strap if needed.

Place any *seat unit(s)* adjustable backrest(s) in the most upright position.

If the vehicle is designed for more than one child use any number of appropriate test masses, up to one in each place intended to be occupied by a child.

Position the vehicle as shown in Figure 44. Release the vehicle and allow it to run freely down the slope, against a rigid stop made of steel and which is at least equal to the height of the axle of the wheels of the vehicle.

Carry out the test for a total of 10 times and check the displacement of the *pram* body or *seat unit* or *car seat*

During test the vehicle shall be prevented from tipping over.

If the *pram* body or *seat unit* or *car seat* has moved, reposition the *pram* body or *seat unit* or *car seat* to its original position before testing in the backwards direction.

Repeat the test with the vehicle facing in the reverse direction and check the displacement of the *pram body* or *seat unit* or *car seat*.

Dimensions in millimetres



Key

- 1 rigid and flat surface
- 2 stop made of steel
- 3 at least the height of the axle of the wheels

Figure 44 — Dynamic strength test

8.10.5 Wheel strength

8.10.5.1 Requirements

After testing in accordance with 8.10.5.2 removable or fixed wheels shall remain attached to the axle and shall show no distortion that impairs the safety of the vehicle and the wheel assembly shall function as intended.

8.10.5.2 Test method

Removable wheels shall be fitted and removed 200 times. Each type of removable wheel assembly shall be tested.

Place the wheel and the axle in a holding device. Gradually apply a force of 200 N in a direction that would remove the wheel or wheel assembly and maintain it for (120 ± 1) s.

8.10.6 Handle strength

8.10.6.1 Requirements

After testing in accordance with 8.10.6.2.2 there shall be no structural failure of the handle or any part of the vehicle that impairs its safety and the vehicle shall still conform to the requirements of 8.3.1.

After testing in accordance with 8.10.6.2.3 adjustable or reversible handles or part of handles shall not be detached, any attachment point of the reversible handle shall not be released or broken.

During testing in accordance with 8.10.6.2.4 the end stops shall prevent the release of telescopic handles or part of the handle.

8.10.6.2 Test methods

8.10.6.2.1 General test conditions

Before testing in accordance with 8.10.6.2.2 and 8.10.6.2.3 reversible handles shall be reversed 200 times, each time engaging the *locking mechanism*.

8.10.6.2.2 Durability test

Position the vehicle on a horizontal surface without the *parking device* applied.

Position relevant test mass (es) as follows:

- in a *pram body* the 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* the test mass *A* and in a *Type B car seat* the 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* the test mass *B* shall be placed centrally against the backrest in such a way that its bottom edge is in contact with the seat/back rest *junction line*, Restrain the test mass with the *restraint system* and any appropriate strap if needed.

Place any *seat unit*(s) adjustable backrest(s) in the most upright position.

If the vehicle is designed for more than one child use any number of appropriate test masses, up to one in each place intended to be occupied by a child.

Alternately raise and lower the handle(s) by applying a vertical force to the handle so that the rear wheels and front wheels in turn are raised (120 ± 10) mm, measured at the start of the test from the floor and then lowered in a controlled manner without pause (see Figure 45).

Carry out the test for a total of 10 000 cycles at a frequency of (15 ± 2) cycles/min.

Where the downwards force necessary to lift the front wheels exceeds 450 N, carry out the test by applying alternately a downwards 450 N force and an upwards force necessary to raise the rear wheels for 3 000 cycles at a frequency of (15 ± 2) cycles/min, then continue the test by only raising the rear wheels (120 ± 10) mm for additional 7 000 cycles at a frequency of (15 ± 2) cycles/min.

For vehicles having alternative arrangements the test shall be carried out a total of 10 000 cycles, with an equal number of cycles for each arrangement.

Any swivelling and steering wheels shall be locked.

For vehicles fitted with an *integrated platform*, place and secure uniformly 2 masses of each 10 kg about the centre line on the *platform*.

Dimensions in millimetres



Figure 45 — Motion of the vehicle during handle test

8.10.6.2.3 Dynamic resistance of reversible and/or adjustable handles

Restrain the vehicle in such a way that any existing suspension does not absorb any movement and force when moving the handle.

All automatic handle *locking devices* shall be locked.

If a vehicle is equipped with any extra *locking devices* that need to be activated manually to secure the reversible handle the handle test shall be performed without the extra *locking device* attached.

Attach a steel cable at the handle, 200 mm off centre or, in the case of individual handles, to one handle, or, if the measurement is not possible, in the most onerous position.

Lead the cable via pulleys in such a way that a force at an angle of 90° in the direction of the movement of the handle can be applied. Attach test mass *B* to the other end of the cable and allow it to hang down freely (see Figure 46).

Allow the mass to reach a state of equilibrium.

Lift the mass vertically 100 mm and release.

Repeat the test with the cable attached at the other side of the handle or on the other single handle.

Reverse the handle(s) and repeat the above procedure.