



BSI Standards Publication

Child care articles — Wheeled child conveyances

Part 1: Pushchairs and prams

National foreword

This British Standard is the UK implementation of EN 1888-1:2018+A1:2022. It supersedes BS EN 1888-1:2018, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee CW/1, Safety of child use and child care products.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Poussettes et landaus

Artikel für Säuglinge und Kleinkinder - Transportmittel
auf Rädern für Kinder - Teil 1: Kinderwagen und
Kinderwagenaufsätze

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Contents

Page

European foreword	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions	6
4 General requirements and test conditions.....	9
4.1 Samples.....	9
4.2 Principle of the most onerous condition	9
4.3 Tolerances for test equipment.....	9
4.4 Test conditions	10
4.5 Determination of the protected volume.....	10
4.5.1 Protected volume of seat units.....	10
4.5.2 Protected volume of pram bodies having a length greater than 800 mm.....	12
4.5.3 Protected volume for pram bodies having a maximum internal length of 800 mm and car seats.....	13
4.6 Determination of the junction line	13
4.7 Determination of the occupant space.....	14
4.7.1 Determination of occupant space for seat unit and car seat.....	14
4.7.2 Determination of occupant space for pram body having a length less than 800 mm	14
4.7.3 Determination of occupant space for pram body having a length greater than 800 mm	14
5 Test equipment.....	15
5.1 Test masses	15
5.1.1 General.....	15
5.1.2 Test mass <i>A</i>	15
5.1.3 Test mass <i>B</i>	16
5.1.4 Test mass <i>C</i>	16
5.1.5 Test mass <i>D</i>	17
5.1.6 Test mass <i>D</i> ₀	18
5.1.7 Test mass <i>F</i>	18
5.1.8 Test mass <i>G</i>	19
5.1.9 Test bar.....	20
5.2 Test probes.....	21
5.2.1 Finger probes	21
5.2.2 Hip probe	23
5.2.3 Large head probe	24
5.2.4 Conical probes.....	25
5.3 Angle measuring device.....	25
5.4 Test ball.....	27
5.5 Hinged board	27
5.6 Small parts cylinder	27
5.7 Bite tester	28
5.8 Test surface.....	29
5.9 Rectangular stops	29
5.10 Irregular surface test equipment.....	30

5.10.1	Obstacles.....	30
5.10.2	Articulating arms (see Annex B)	31
6	Chemical hazards (see A.2)	31
7	Thermal hazards (see A.3)	31
8	Mechanical hazards (see A.4).....	32
8.1	Protective function (see A.4.2)	32
8.1.1	Suitability of vehicle	32
8.1.2	Minimum internal height of pram body	35
8.1.3	Restraint system and fasteners	36
8.2	Entrapment hazards (see A.4.3)	39
8.2.1	Holes and openings.....	39
8.2.2	Entrapment between the handle and the pram body.....	39
8.3	Hazards from moving parts (see A.4.4)	39
8.3.1	General	39
8.3.2	Shearing hazards (see A.4.4)	40
8.3.3	Crushing hazards, requirement (see A.4.4)	40
8.3.4	Wheels	41
8.3.5	Locking mechanism(s).....	41
8.4	Entanglement hazards (see A.5).....	44
8.4.1	Requirements.....	44
8.4.2	Test method	45
8.5	Choking and ingestion hazards (see A.6)	46
8.5.1	Requirements.....	46
8.5.2	Test methods.....	46
8.6	Suffocation hazards (see A.7)	48
8.6.1	Internal lining of the pram body and seat unit	48
8.6.2	Plastic packaging	48
8.7	Hazardous edges and protrusions (see A.8)	48
8.8	Parking and braking devices (see A.9)	49
8.8.1	Requirements.....	49
8.8.2	Test methods.....	49
8.9	Stability (see A.10)	53
8.9.1	Stability of vehicle	53
8.9.2	Longitudinal stability of a pram body with carrying handles	57
8.9.3	Stability hazards due to the position of swivelling wheels Error! Bookmark not defined.	
8.10	Structural integrity (see A.11)	58
8.10.1	Carrying handles and handle anchorage points of pram bodies and detachable seat units.....	58
8.10.2	Strength and durability of attachment devices for pram bodies or seat units or car seats.....	58
8.10.3	Irregular surface test	59
8.10.4	Dynamic strength	60
8.10.5	Wheel strength	62
8.10.6	Handle strength.....	62
9	Durability of marking.....	66
10	Product information.....	66
10.1	General	66
10.2	Marking of product	66
10.3	Purchase information (A.12).....	67
10.4	Instructions for use.....	68

Annex A (informative) Rationales	70
A.1 General	70
A.2 Chemical hazards (see Clause 6)	70
A.3 Thermal hazards (see Clause 7)	70
A.4 Mechanical hazards (see Clause 8)	70
A.4.1 General	70
A.4.2 Protective function (see 8.1)	70
A.4.3 Entrapment hazards (see 8.2)	70
A.4.4 Hazards from moving parts (see 8.3)	71
A.5 Entanglement hazards (see 8.4)	72
A.6 Choking and ingestion hazards (see 8.5)	73
A.7 Suffocation hazards (see 8.6)	73
A.8 Hazardous edges and protrusions (see 8.7)	73
A.9 Parking and braking devices (see 8.8)	73
A.10 Stability (see 8.9)	73
A.11 Structural integrity (see 8.10)	73
A.12 Purchase information (see 10.3)	74
Annex B (informative) Examples of articulated arms to maintain the vehicle on the rig for the irregular surface test	75
Annex C (informative) Guideline for the application of 8.3.5.1.1.3 “Unintentional release of locking mechanism(s)”	77
C.1 Relevant definitions	77
C.2 Guidelines for the application of 8.3.5.1.1.3 “Unintentional release of locking mechanism(s)”	77
C.2.1 General	77
C.2.2 Products fitted with one single <i>operating device</i> (products that may be fold using only one hand)	77
C.2.3 Products fitted with two operating devices	78
C.2.4 Products having three or more <i>operating devices</i>	79
C.2.5 Products covered by different requirements	79
Annex D (informative) Examples of moving parts of the canopies inside 100 mm from the pivot point	81
D.1 Case A	81
D.2 Case B	82
D.3 Case C	83
Annex E (informative) Translation of Warnings in different European languages	84
Annex F (informative) A-deviations	110
Annex G (informative) Child restraint systems: arrangement of approval marks	111
Bibliography	112

European foreword

This document (EN 1888-1:2018+A1:2022) has been prepared by Technical Committee CEN/TC 252 “Child care articles”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2022, and conflicting national standards shall be withdrawn at the latest by October 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes  EN 1888-1:2018 .

This document includes Amendment 1 approved by CEN on 01 January 2022.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  .

In comparison with this EN 1888:2012, the significant technical changes relate to the following issues:

- a) chemical hazards;
- b) entrapment hazards;
- c) hazards from moving parts;
- d) entanglement hazards;
- e) parking device test method;
- f) stability of the vehicle;
- g) introduction of an informative Annex E giving relevant translations for warning sentences;
- h) introduction of an informative Annex D giving information on the assessment of moving parts of canopies;
- i) introduction of an informative Annex G giving information on the arrangement of approval marks for car seats.

In November 2014, the European Working Group decided to split EN 1888 into different parts to clearly treat in a different way, new products or new functions of wheeled child conveyances.

EN 1888 is currently composed with the following parts:

- EN 1888-1, *Child care articles — Wheeled child conveyances — Part 1: Pushchairs and prams*;
- EN 1888-2, *Child care articles — Wheeled child conveyances — Part 2: Pushchairs for children above 15 kg up to 22 kg*.

EN 1888 therefore becomes EN 1888-1 and is only applicable to *pushchairs* and *prams*. It will be used as a reference in future parts.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies the safety requirements and test methods for *pushchairs and prams*, designed for the carriage of one or more children, up to 15 kg each and up to 20 kg for any *integrated platform* on which a child can stand.

This document does not cover toys, baby carriers fitted with wheels; *pushchairs and prams* propelled by a motor and *pushchairs and prams* designed for children with special needs.

Where a *pushchair or pram* or any part of the *pushchair or pram* has several functions or can be converted into another function it is due to comply with relevant standard(s).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 71-1, *Safety of toys — Part 1: Mechanical and physical properties*

EN 71-2:2020, *Safety of toys — Part 2: Flammability*

EN 71-3, *Safety of toys — Part 3: Migration of certain elements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

wheeled child conveyance

vehicle designed for the carriage of one or more children which can be manually steered while being pushed or pulled

3.2

pushchair

vehicle comprising a *chassis* and one or more *seat units* or *car seats*

Note 1 to entry: Referred to as the “vehicle” for the purpose of this standard.

3.3

pram

vehicle comprising a *chassis* and one or more *pram bodies*

Note 1 to entry: Referred to as the “vehicle” for the purpose of this standard.

3.4

integrated platform

A1 integral part of the vehicle designed to support a child in a standing position **A1**

3.5**chassis**

wheeled framework with extended handle(s) for pushing, pulling and steering, designed to accommodate and transport a *pram body* (bodies) or *car seat(s)* or *seat unit(s)* or a combination of these items

3.6**seat unit**

structure which may or may not be adjustable to achieve a reclining or recumbent position designed to support one or more children

3.7**type A car seat**

Child Restraint System (CRS) used for children up to 9 kg according to Regulation ECE R44 (group 0) or Regulation ECE R129

Note 1 to entry: Child Restraint Systems are covered by UNECE regulations.

Note 2 to entry: Arrangement of approval marks is shown in Annex G

3.8**type B car seat**

Child Restraint System (CRS) used for children up to 13 kg according to Regulation ECE R44 (group 0+) or Regulation ECE R129

Note 1 to entry: Child Restraint Systems are covered by UNECE regulations.

Note 2 to entry: Arrangement of approval marks is shown in Annex G.

3.9**pram body**

structure with essentially vertical and continuous sides and ends with an internal base designed to transport one or more children in a primarily horizontal position

3.10**protected volume**

volume accessible by the child (occupant) when sitting or lying in the *pushchair* or *pram*, where specific safety requirements are necessary

3.11**junction line**

intersection of the seat and the backrest

3.12**restraint system**

system to restrain the child within the vehicle

3.13**crotch restraint**

device positioned between the child's legs to prevent the child from sliding forwards

3.14**harness anchorage point**

device suitable for the attachment of an additional child's harness

3.15

footrest

support for the feet or a foot, used when sitting

3.16

shearing hazard

hazard due to the movement of components relatively one to another resulting in a scissoring action

3.17

crushing hazard

hazard due to the movement of components relatively one to another resulting in a compression action

3.18

folding system

 assembly of moving parts which enables the vehicle to be changed from an erected position to a folded position and vice versa under the control of the carer 

3.19

locking mechanism

assembly of components consisting of one or more *locking device(s)* and *one or more operating device(s)*

3.20

locking device

mechanical component that maintains part(s) of the vehicle erected in the position of use (e.g. latch(es), hooks, over centre lock...) which could be deactivated or activated by action(s) on the *operating device*

3.21

operating device

part of the *locking mechanism(s)* designed to be activated by the carer through one or several positive action(s)

3.22

automatic locking device

device that engages with no additional voluntary action by the carer, when the vehicle is erected to its position of use

3.23

reversible handle

 handle that can be rotated on the *chassis* to change the direction of pushing or pulling 

3.24

occupant space

space enclosed by the surfaces, for example, side and ends or the base, or both, of a *pram body*, *seat unit* or *car seat* that contains the child (occupant) within a *pram* or *pushchair*

3.25

parking device

device to maintain the vehicle in a stationary position

3.26

braking device

device to reduce the speed of the vehicle

3.27**carry cot**

product consisting of a base, sides, ends and carrying handle(s), within which a child can be laid down and transported by hand(s)

Note 1 to entry: Carry cot is the generic term generally used.

4 General requirements and test conditions

NOTE Words in *italics* are defined in Clause 3 (Terms and definitions). Additional information on the background and rationale for various requirements is given in Annex A.

4.1 Samples

Tests should be carried out in the order of the clauses given in this European standard, unless otherwise stated. Each test shall be carried out only using one vehicle, unless otherwise stated.

Vehicles with multiple places for *pram bodies* and/or *seat units* shall comply with all applicable requirements in any possible arrangement in accordance with the manufacturer's instructions. If a vehicle can be equipped with an additional *seat unit* or *pram body* or *type A/B car seat* supplied or recommended by the manufacturer, the combination shall comply with this European Standard.

4.2 Principle of the most onerous condition

Unless otherwise stated each test shall be conducted with the vehicle in the most onerous condition for that test in terms of:

- the choice and number of *seat units* and/or *pram bodies* and/or *car seats* attached to the *chassis* stated in the manufacturer's instructions;
- the addition of any additional *seat unit(s)* approved by the manufacturer;
- the use of test masses: for vehicles transporting more than one child, at least one place that a child can occupy shall be loaded with a test mass;
- the loading (or not) of any receptacle designed for carrying additional load(s) allowed for in the instructions or otherwise approved by the manufacturer and the placing (or not) of load(s) in any such facility, up to the maximum mass allowed in the manufacturer's instructions, or 2 kg if nothing is indicated; small pockets fitted onto textile parts are not concerned by this condition;
- the addition (or not) of any other accessories supplied or recommended by the manufacturer for use with the vehicle and with accessories loaded according to the manufacturers instructions;
- the adjustment of *seat units*, *pram bodies*, handles, *car seats*, 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 do not always produce the most onerous conditions.

4.3 Tolerances for test equipment

Unless otherwise stated, the accuracy of the test equipment shall be:

- forces $\pm 5 \%$;
- masses $\pm 0,5 \%$;

- dimensions $\pm 0,5$ mm;
- timing ± 1 s;
- angles $\pm 0,5^\circ$.

4.4 Test conditions

The vehicle shall be conditioned at a temperature of (23 ± 5) °C for at least 2 h prior to tests. All tests shall be carried out at a temperature of (23 ± 10) °C unless otherwise specified.

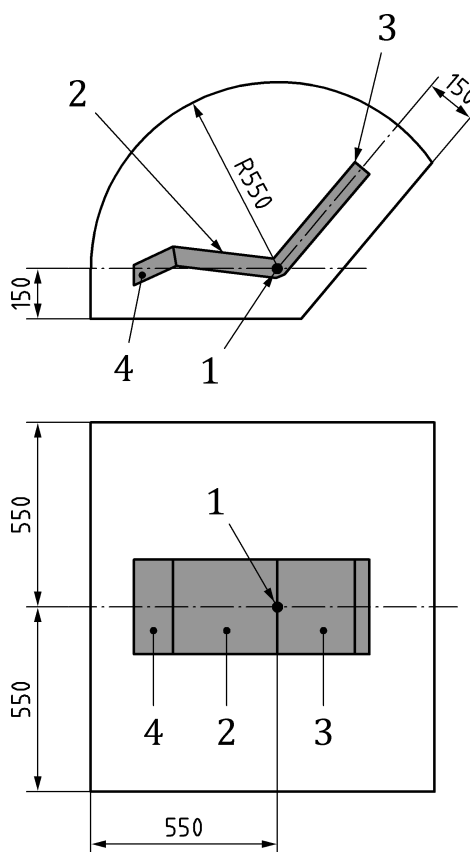
For vehicles fitted with inflatable tyres, the tyre pressure shall be adjusted according to manufacturer's instructions for use before conducting the entire test procedure. If a tyre is punctured during the test procedure, the tyre shall be replaced and the test procedure continued.

4.5 Determination of the protected volume

4.5.1 Protected volume of seat units

The *protected volume* of *seat units* shall be determined in accordance with Figure 1 below.

Dimensions in millimetres

**Key**

- 1 origin from which the *protected volume* has been defined (mid-point of the *junction line*, on the uncompressed upper surface of the *seat unit*)
- 2 seat
- 3 back rest
- 4 leg rest

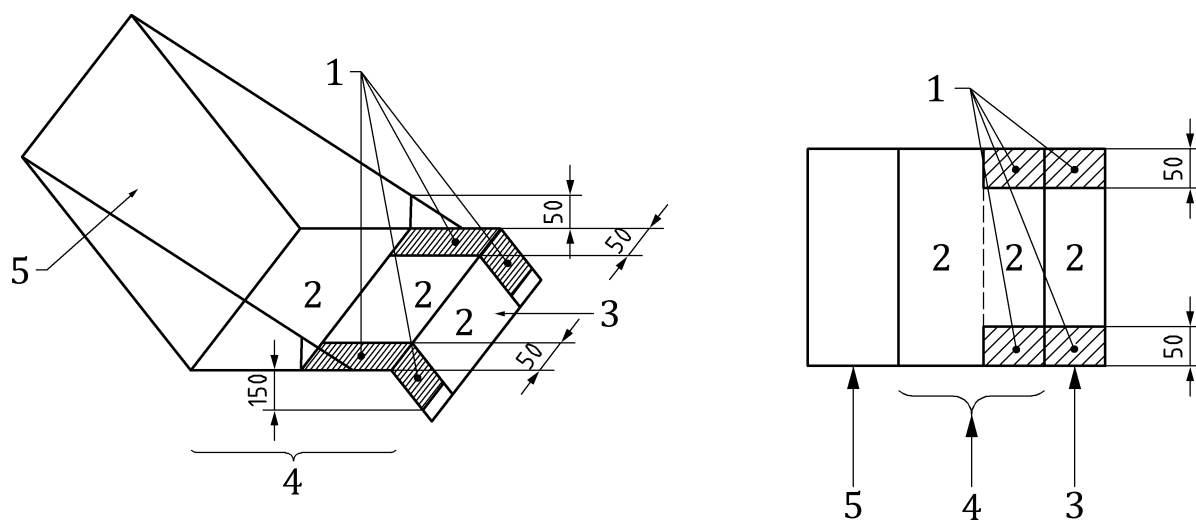
Figure 1 — Protected volume for seat units

The space located behind the backrest is excluded from the *protected volume*.

Where a vehicle is suitable for two or more children the space located behind the backrest shall be considered if it enters another *protected volume*.

The space underneath the seat and underneath the leg rest is excluded from the *protected volume*, except for a 50 mm wide band measured from the outermost edge of the seat/leg rest sides where the seat/leg rest is not fitted with lateral protections of a height greater than 50 mm (textile or any rigid component) (see Figure 2).

Dimensions in millimetres

**Key**

- 1 space to be checked
- 2 space not to be checked
- 3 leg rest
- 4 seat
- 5 backrest

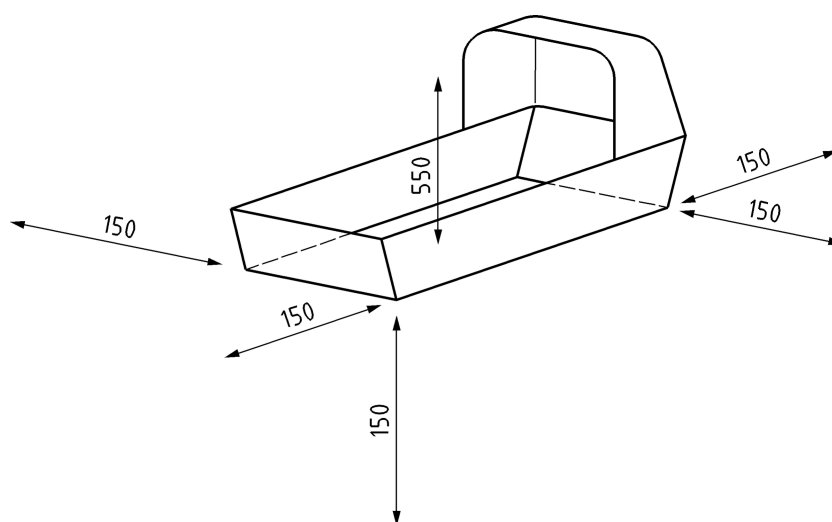
Figure 2 — Effect of lateral protection on the determination of the protected volume**4.5.2 Protected volume of pram bodies having a length greater than 800 mm**

The *protected volume* of *pram bodies* having a length greater than 800 mm shall be determined in accordance with Figure 3.

The 550 mm height shall be measured in accordance with 8.1.2.2.

The surface underneath the *pram body* is excluded from the *protected volume*.

Dimensions in millimetres

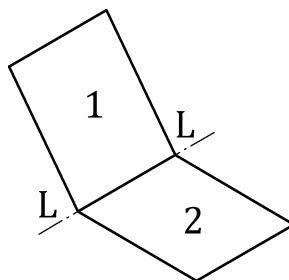
**Figure 3 — Protected volume for pram bodies having a length greater than 800 mm**

4.5.3 Protected volume for pram bodies having a maximum internal length of 800 mm and car seats

For vehicles designed only for children under 6 months of age, *pram bodies* with a maximum internal length of 800 mm and for *car seats*, the *protected volume* is considered to be the inner upper surface that supports the child and the inner surface of the sides and ends of the *pram body*.

4.6 Determination of the junction line

The *junction line* shall be determined as the intersection between the seat and the backrest as shown on Figure 4.

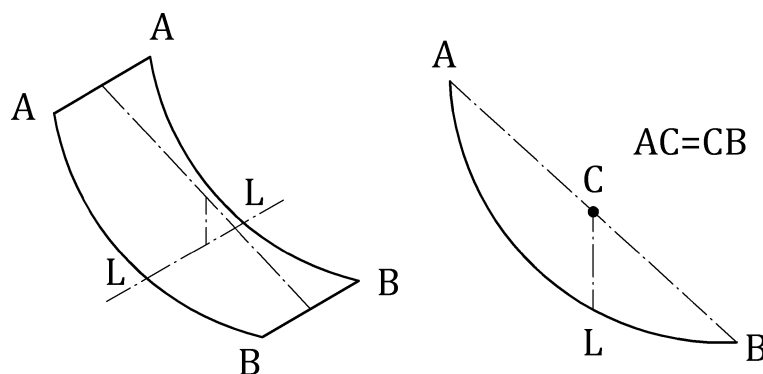


Key

- LL junction line
- 1 backrest
- 2 seat

Figure 4 — Junction line

When the *seat unit* is in the form of a hammock, then a theoretical *junction line*, “LL”, is determined as shown in Figure 5.



Key

- LL junction line
- L vertical projection of C on the hammock

Figure 5 — Junction line for seat unit in form of a hammock

NOTE The *junction line* may vary when the backrest is adjusted to different positions.

4.7 Determination of the occupant space

4.7.1 Determination of occupant space for seat unit and car seat

The occupant space is defined 550 mm from the mid-point of the *junction line*, on the uncompressed upper surface of the seat unit or car seat and the sides of the inner upper surface that support the child.

Ⓐ The volume stops at the vertical projection of the front edge of the seat. Ⓐ See Figure 6.

Dimensions in millimetres

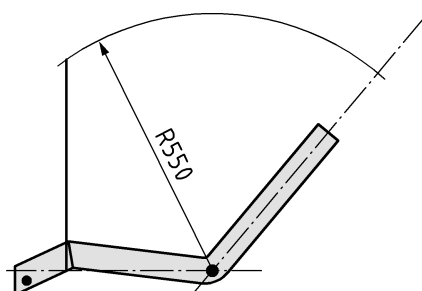
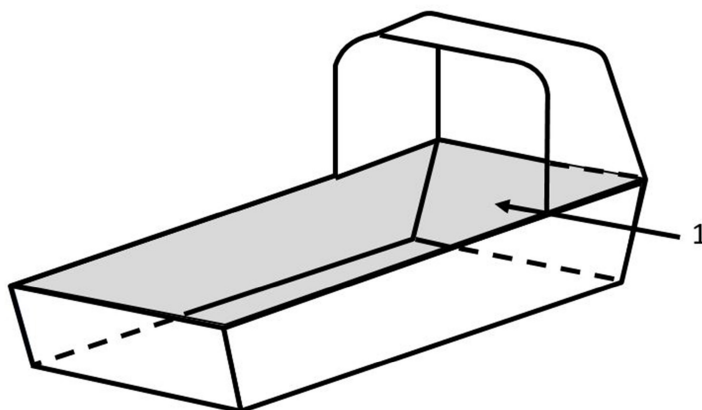


Figure 6 — Occupant space for seat unit and car seat

4.7.2 Determination of occupant space for pram body having a length less than 800 mm

For vehicles designed only for children under 6 months of age, *pram bodies* with a maximum internal length of 800 mm, the occupant space is considered to be the volume of the inner upper surface that supports the child and the inner surface of the sides and ends of the *pram body*. See Figure 7.



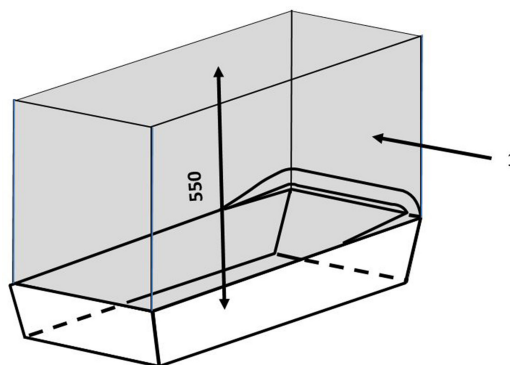
Key

1 occupant space

Figure 7 — Occupant space for pram body having a length less than 800 mm

4.7.3 Determination of occupant space for pram body having a length greater than 800 mm

For *pram bodies* with a internal length greater than 800 mm, the occupant space is considered to be the volume of the inner upper surface that supports the child and the inner surface of the sides and ends of the *pram body* up to 550 mm above. See Figure 8.

**Key**

- 1 occupant space

Figure 8 — Occupant space for pram body having a length greater than 800 mm

5 Test equipment

5.1 Test masses

5.1.1 General

Unless otherwise specified, the test masses shall be those given in 5.1.2 to 5.1.9.

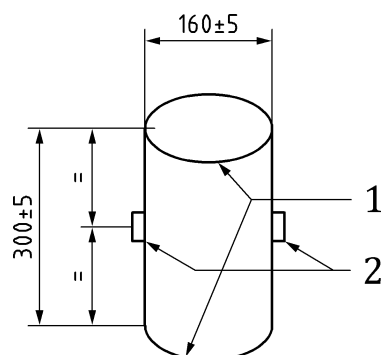
Any damage to fabric which may occur as a result of abrasion by the test masses during tests shall be ignored. Damage can be minimized by using a convenient means of protection of negligible mass. Where damage is not caused by abrasion by the test masses it constitutes a structural failure.

Test masses may be fitted with additional handles for carrying purposes, as long as the centre of gravity is not changed and mass remains within tolerances and the test procedure is not affected.

5.1.2 Test mass A

Test mass A is a rigid cylinder (160 ± 5) mm in diameter and (300 ± 5) mm in height, having a mass of $(9 + 0, 1/0)$ kg and with its centre of gravity in the centre of the cylinder. All edges shall have a radius of (5 ± 1) mm. Two anchorage points shall be provided, positioned $(150 \pm 2,5)$ mm from the base and at 180° to each other around the circumference as shown in Figure 9.

Dimensions in millimetres

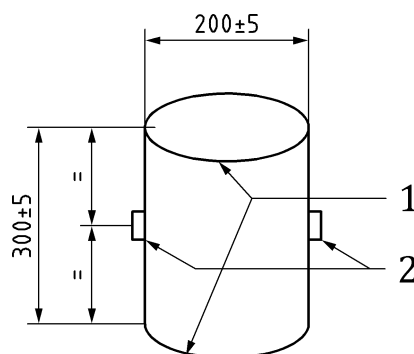
**Key**

- 1 radius: (5 ± 1) mm
- 2 two anchorage points

Figure 9 — Test mass A**5.1.3 Test mass B**

Test mass *B* is a rigid cylinder (200 ± 5) mm in diameter and (300 ± 5) mm in height, having a mass of $(15 + 0, 1/0)$ kg and with its centre of gravity in the centre of the cylinder. All edges shall have a radius of (5 ± 1) mm. Two anchorage points shall be provided, positioned $(150 \pm 2,5)$ mm from the base and at 180° to each other around the circumference (see Figure 10).

Dimensions in millimetres

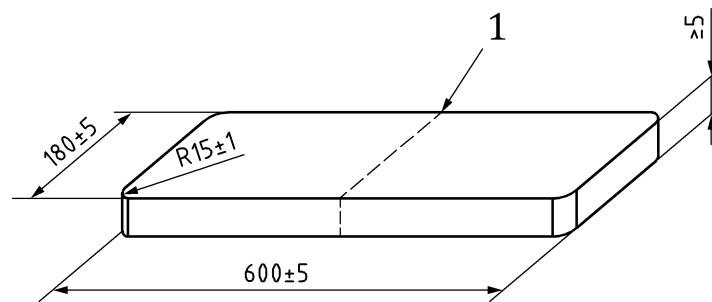
**Key**

- 1 radius: (5 ± 1) mm
- 2 two anchorage points

Figure 10 — Test mass B**5.1.4 Test mass C**

Test mass *C* is a rigid plate (600 ± 5) mm long and (180 ± 5) mm wide, having a minimum thickness of 5 mm and a mass of $(9 + 0, 1/0)$ kg hinged along the centre line (see Figure 11).

Dimensions in millimetres

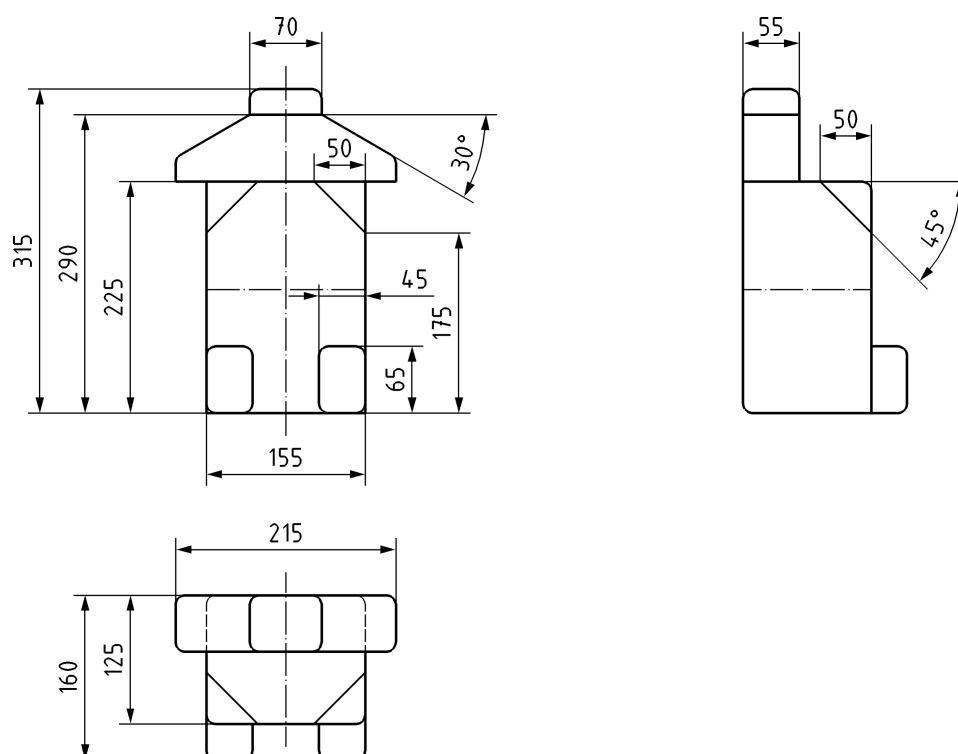
**Key**

1 hinge line

Figure 11 — Test mass C**5.1.5 Test mass D**

Test mass *D* is made of a rigid material with a smooth finish and a total mass of $(9 \pm 0,1)$ kg (see Figure 12).

Dimensions in millimetres

**Tolerances:**

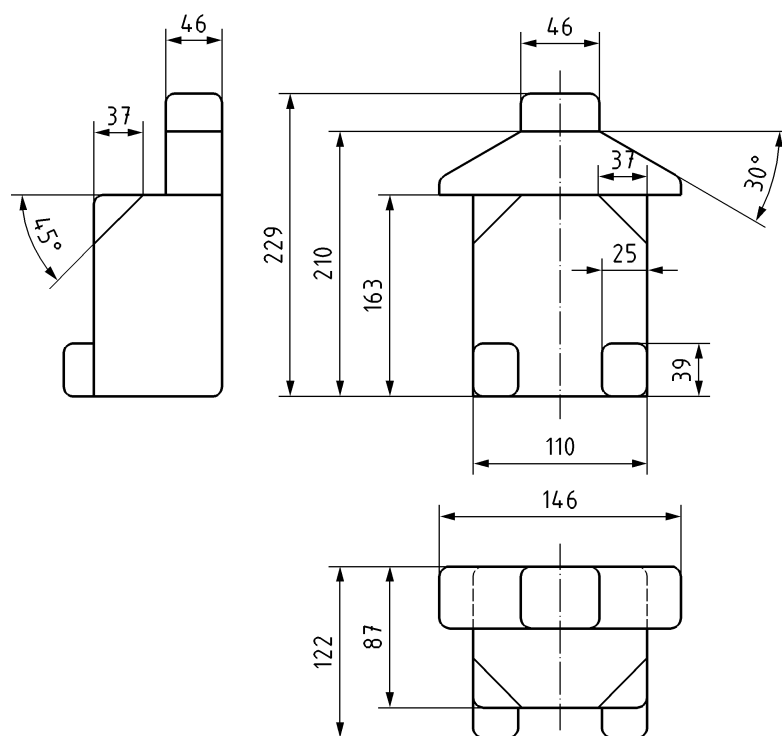
- dimensions ± 2 mm;
- angles $\pm 2^\circ$;
- where shown, corner radii shall be (10 ± 1) mm.

Figure 12 — Test mass D

5.1.6 Test mass D_0

Test mass D_0 is made of a rigid material with a smooth finish and a total mass of $(3,7 \pm 0,1)$ kg (see Figure 13).

Dimensions in millimetres



Tolerances:

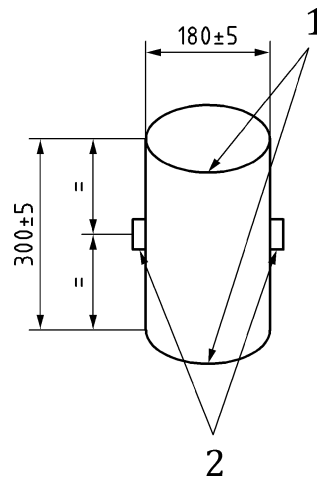
- dimensions ± 2 mm;
- angles $\pm 2^\circ$;
- where shown, corner radii shall be (10 ± 1) mm.

Figure 13 — Test mass D_0

5.1.7 Test mass F

Test mass F is a rigid cylinder (180 ± 5) mm in diameter and (300 ± 5) mm in height, having a mass of $(13 + 0, 1/0)$ kg and with its centre of gravity in the centre of the cylinder. All edges shall have a radius of (5 ± 1) mm. Two anchorage points shall be provided. These shall be positioned $(150 \pm 2,5)$ mm from the base and at 180° to each other around the circumference (see Figure 14).

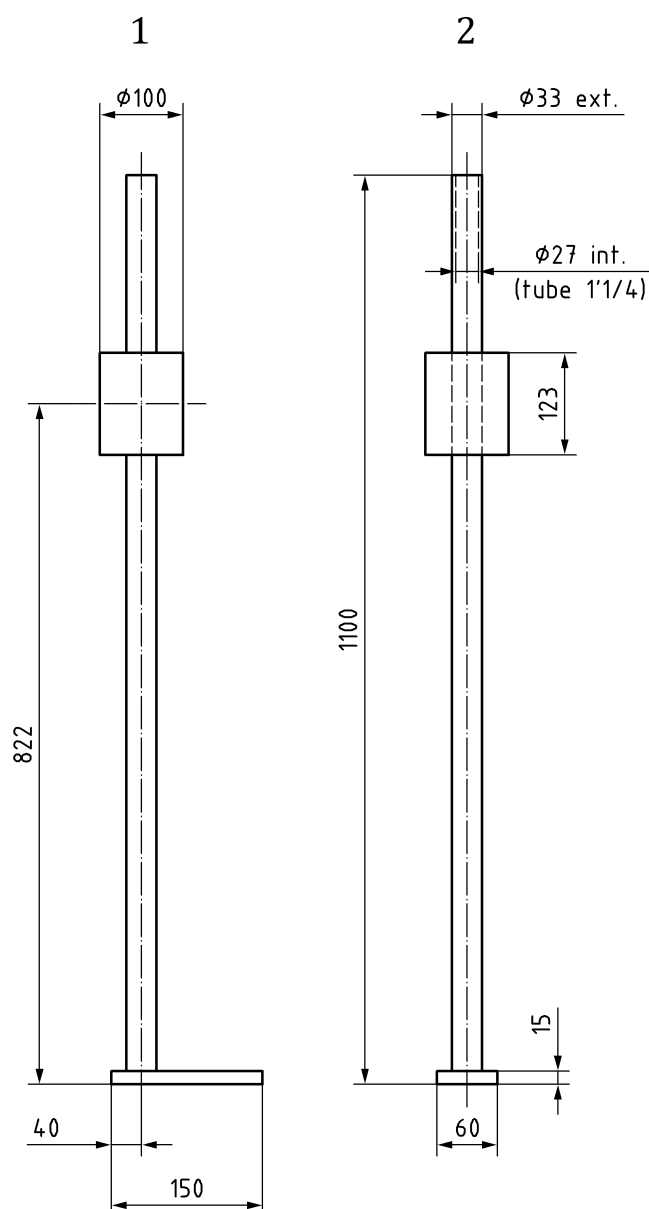
Dimensions in millimetres

**Key**

- 1 radius (5 ± 1) mm
- 2 anchorage points

Figure 14 — Test mass *F***5.1.8 Test mass *G***

Test mass *G* comprises two identical parts made of steel and with the dimensions given in Figure 15. Each part shall have a mass of $(10 + 0,1 - 0)$ kg.

**Key**

- 1 Side view
- 2 Front view

Figure 15 — Test mass G

The distance between the two identical parts of test mass G shall be adjusted in accordance with the shape and dimensions of the *integrated platform* that is tested.

A rigid bar of negligible mass shall be used to maintain the test mass along the *integrated platform* and both parts shall be maintained apart from each other by any connecting means of negligible mass.

5.1.9 Test bar

Rigid square bar with a cross section of (25 × 25) mm, having a length greater than the length of the *pram body* and a mass of 0,75 kg.

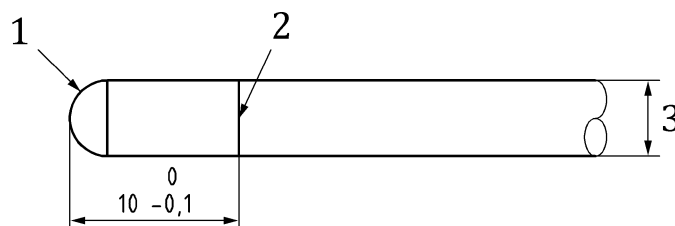
5.2 Test probes

5.2.1 Finger probes

5.2.1.1 Finger probe with hemispherical end

Probes made from plastics or other hard, smooth material of diameters $5_{-0,1}^0$ mm, $7_{-0,1}^0$ mm and $12_{+0,1}^0$ mm, with a full hemispherical end (see Figure 16).

Dimensions in millimetres



Key

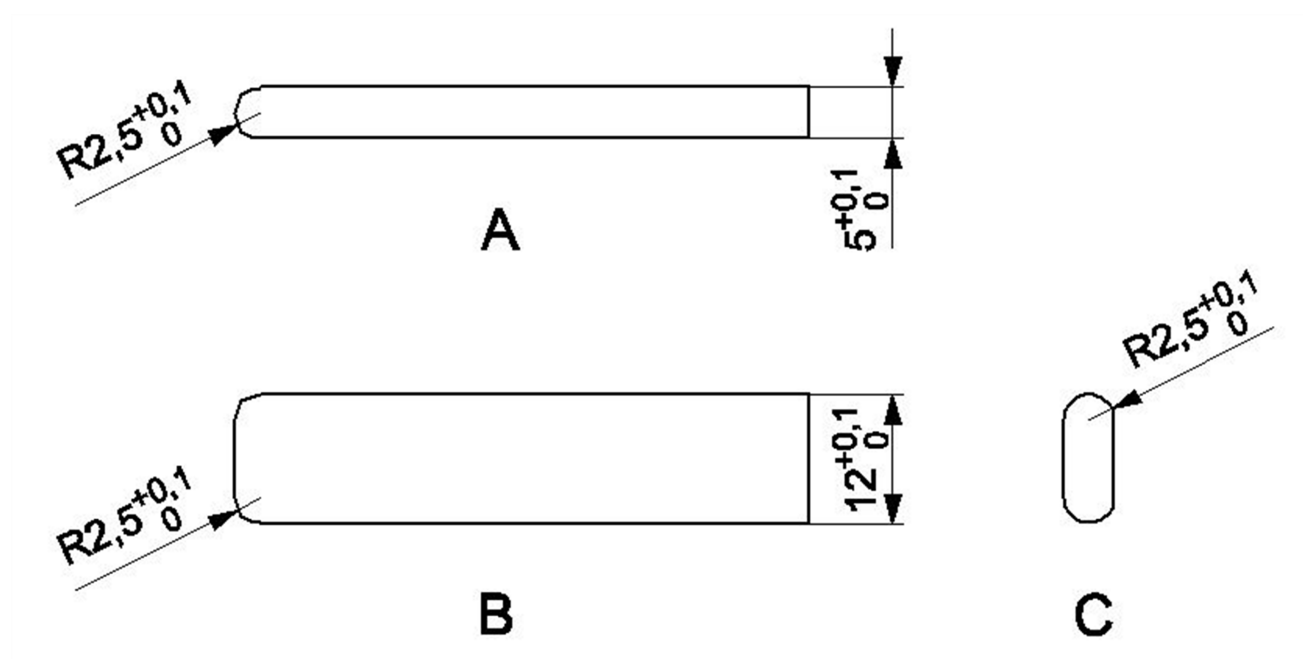
- 1 hemispherical end
- 2 scribed line around circumference
- 3 Ø 5 mm 7 mm and 12 mm

Figure 16 — Probes with hemispherical end

5.2.1.2 Shape assessment probe

Probe made from plastics or other hard, smooth material with the dimensions shown in Figure 17.

Dimensions in millimetres



[A1] Key

- A Lateral view
- B Top view
- C Front view **[A1]**

Figure 17 — Shape assessment probe

5.2.1.3 Conical probe for mesh

Probe for assessing mesh made from plastics or other hard, smooth material as shown in Figure 18 which shall be capable of being mounted on a force measuring device, so that the conical end can be presented to the opening being assessed.

Dimensions in millimetres

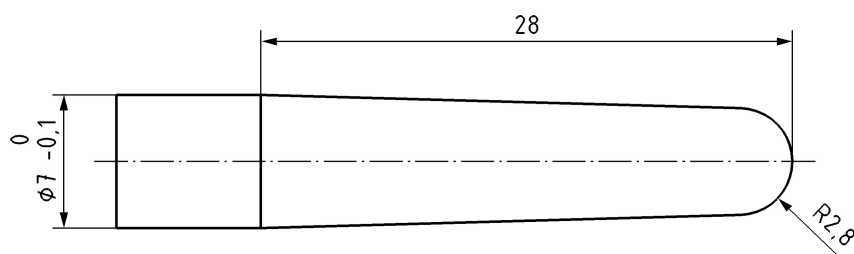


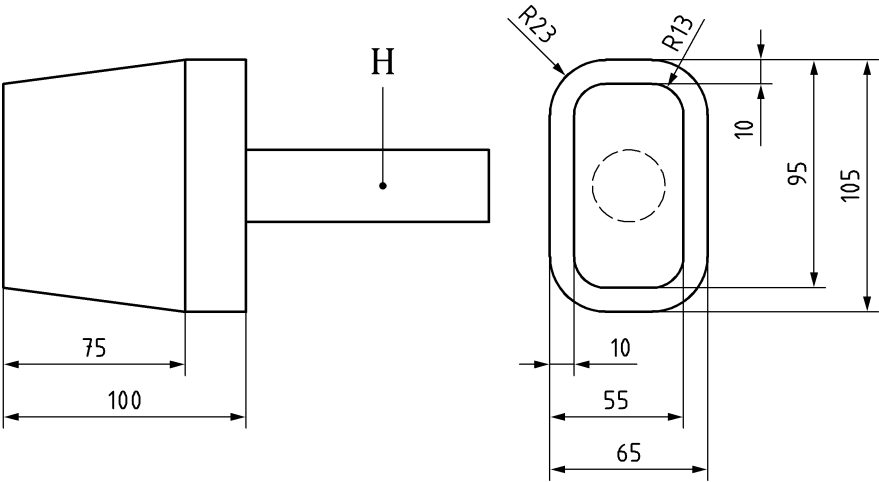
Figure 18 — conical probe for mesh

The tolerance on the radius is $\pm 0,2$ mm.

5.2.2 Hip probe

The hip probe shall be made from plastics or other hard, smooth material with the dimensions given in Figure 19.

Dimensions in millimetres



Key

H handgrip

Tolerances on dimensions:

— 65 (0 / -0,5) mm

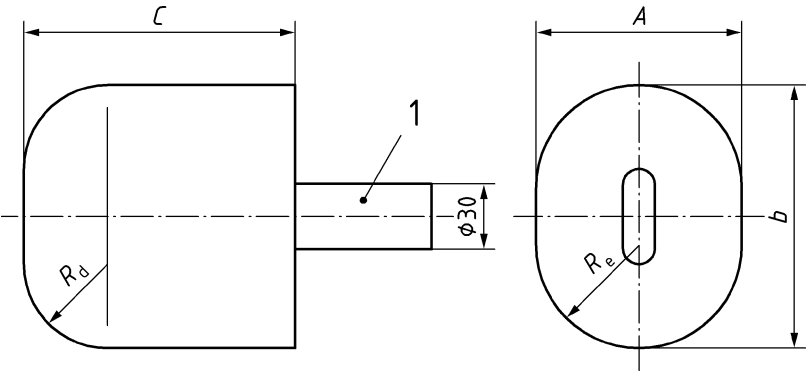
— 105 (0 / -0,5) mm

All other dimensions shall be ± 1 mm.

Figure 19 — Hip probe

5.2.3 A1 Small head probe

The small head probe shall be made from plastic or other hard smooth material, with dimensions as shown in Figure 20.



Key

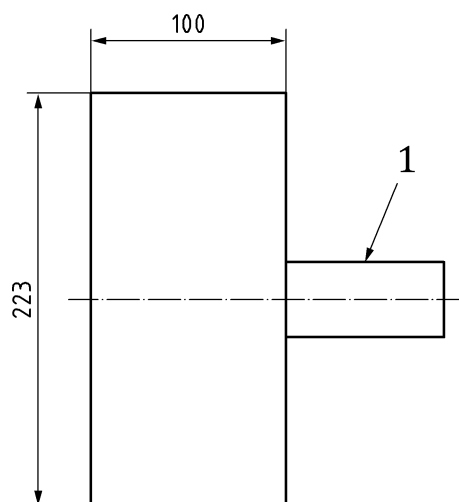
A	106	Re	53
b	145	Rd	40
C	126		

Figure 20 — Small head probe A1

5.2.4 Large head probe

The large head probe shall be made from plastic or other hard smooth material, with dimensions as shown in Figure 21.

Dimensions in millimetres



Key

1 handgrip

All dimensions shall be ± 1 mm.

Figure 21 — Large head probe

5.2.5 Conical probes

Probes made from plastics or other hard smooth material of diameters $(12 + 0,1/0)$ mm, $(25 \ 0 / -0,1)$ mm and $(45 + 0,1 / 0)$ mm with one conical end (with an angle of 30°), that can be mounted on a force measuring device (see Figure 22).

Dimensions in millimetres

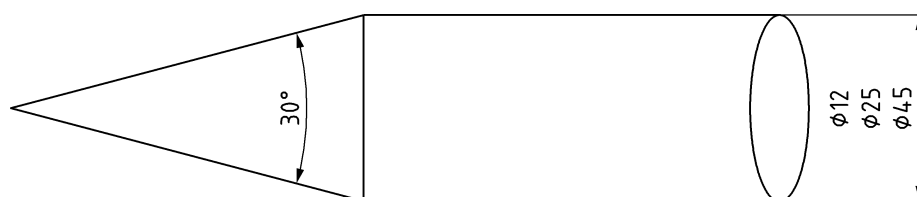
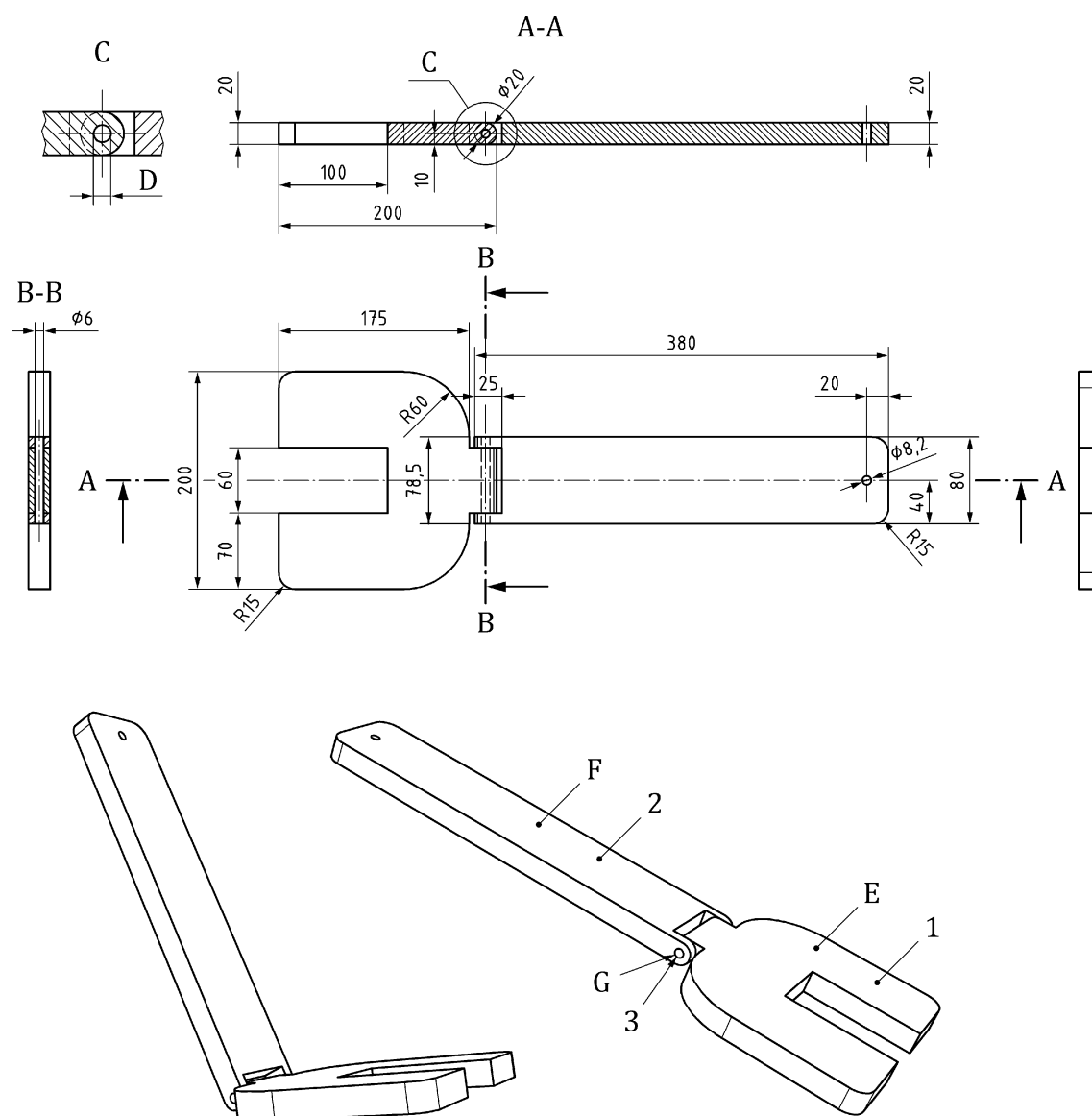


Figure 22 — Conical probes

5.3 Angle measuring device

A 9 kg articulated steel device used to measure the angle between the seat and the backrest (see Figure 23).

Dimensions in millimetres

**Key**

- 1 part to be placed onto the seat surface made of steel
- 2 part to be placed onto the backrest surface made of steel
- 3 hinge pin made of steel

E mass: (4495 ± 50) g

F mass: (4501 ± 50) g

G mass of hinge axle: $(17 \pm 0,5)$ g, length: 79,5 mm

total mass: $(9 \pm 0,1)$ kg

dimensions tolerance: ± 2 mm

All edges shall be chamfered.

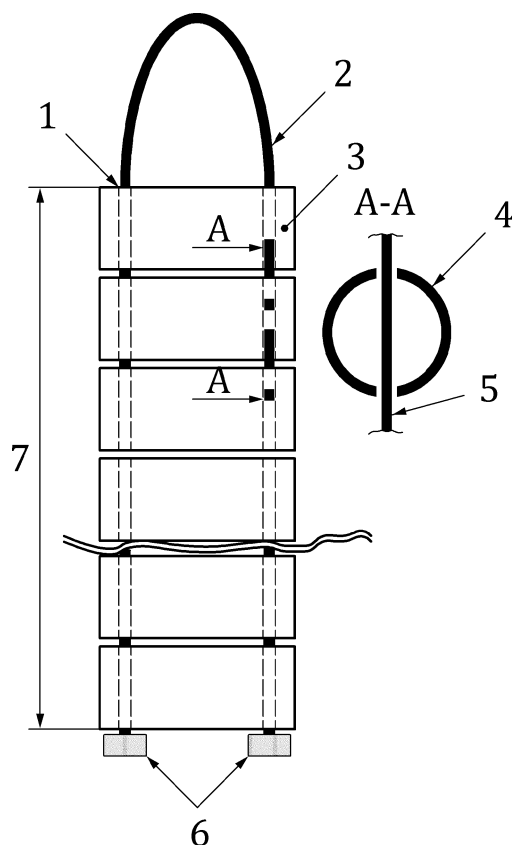
Figure 23 — Angle measuring device

5.4 Test ball

Sphere with a hard smooth surface of 120 mm diameter and 5 kg mass.

5.5 Hinged board

Articulated board used to allow slackness while adjusting the straps of the *restraint system* around test mass D_0 (see Figure 24).



Key

- 1 hole $\varnothing$ 3 mm
- 2 steel cable $\varnothing$ 1,5 mm
- 3 tube $\varnothing$ 25 mm
- 4 tube $\varnothing$ 25 mm
- 5 steel cable $\varnothing$ 1,5 mm
- 6 cable ends cycle type
- 7 total length = 13 tubes

Length of each tube: 60 mm

Figure 24 — Hinged board

5.6 Small parts cylinder

Cylinder having dimensions as shown in Figure 25.

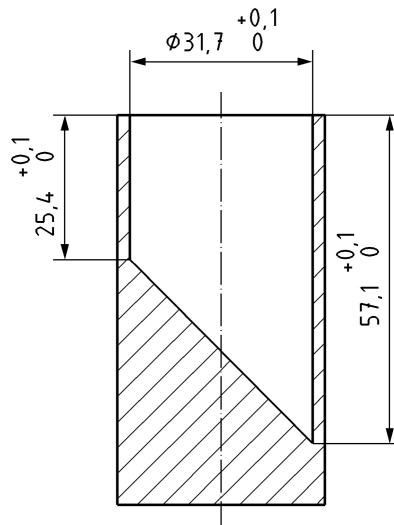


Figure 25 — Small parts cylinder

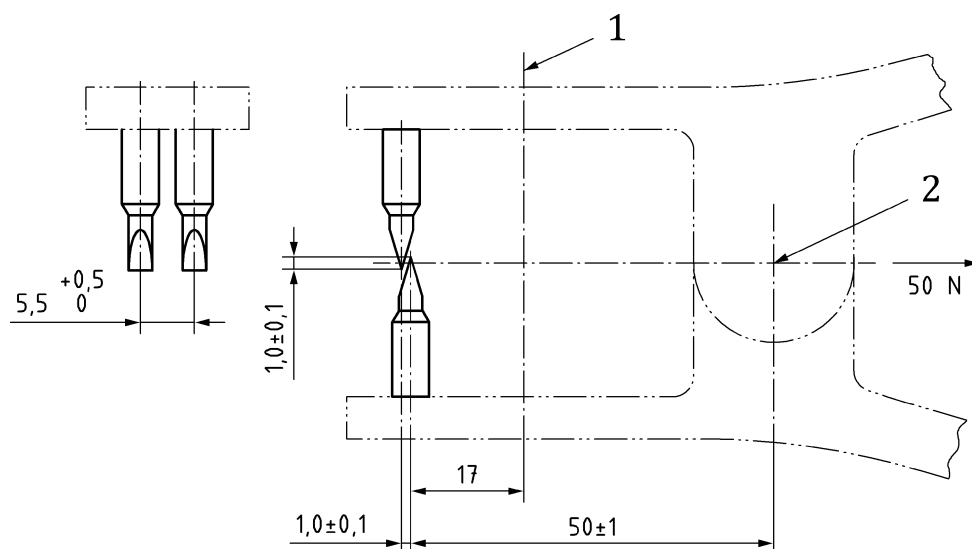
5.7 Bite tester

The bite tester, see Figure 26, consists of two sets of teeth, see Figure 27, made from H13 high chrome tool steel or equivalent and hardened to 45-50 Rockwell C. There are two teeth at the top and two at the bottom of the bite tester, positioned so that the vertical centre line of one pair of teeth is $(1 \pm 0,1)$ mm in front of the centre line of the other set of teeth. In the fully closed position, the teeth shall overlap each other by $(1 \pm 0,1)$ mm. The outer most corners of the teeth shall have a radius of $(0,3 \pm 0,1)$ mm.

The teeth shall be mounted so as to pivot about a point (50 ± 1) mm from the rear most pair of teeth and positioned so that when closed the centre lines of the two pairs of teeth are parallel to each other. The bite tester shall be equipped with a stop to prevent the distance between the teeth from exceeding (28 ± 1) mm when fully opened. The closing force of the teeth shall be set at (50 ± 5) N.

The bite tester shall be provided with a guide to prevent items entering further into the fully opened jaws by more than (17 ± 1) mm. The bite tester shall be equipped with a means whereby a force of (50 ± 5) N may be applied along its centre line in a direction tending to pull the teeth off the sample.

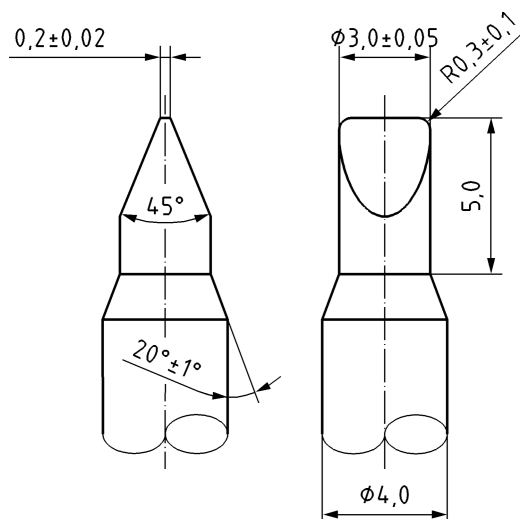
Dimensions in millimetres

**Key**

- 1 position of guide
- 2 pivot point

Figure 26 — Bite tester

Dimensions in millimetres

**Figure 27 — Test teeth****5.8 Test surface**

Test surface, capable of inclination at an angle of 9° (0/+0,5)°, 12° (0/+0,5)° or 45° (0/+0,5)° to the horizontal and covered with aluminium oxide paper of grade 80.

5.9 Rectangular stops

Rectangular stops of height 25 mm.

5.10 Irregular surface test equipment

5.10.1 Obstacles

The surface of the irregular surface test equipment shall comprise two types of obstacles: Type A and Type B as shown in Figures 28 and 29.

These obstacles shall be mounted on a conveyor system as shown in Figure 30 so that the wheels on each side of the vehicle are lifted alternately. The conveyor system shall run at a speed of $(5 \pm 0,1)$ km/h.

Dimensions in millimetres

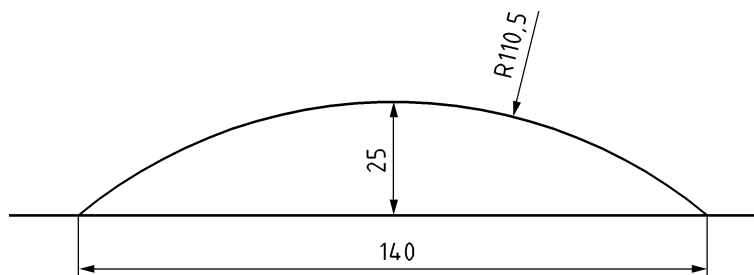
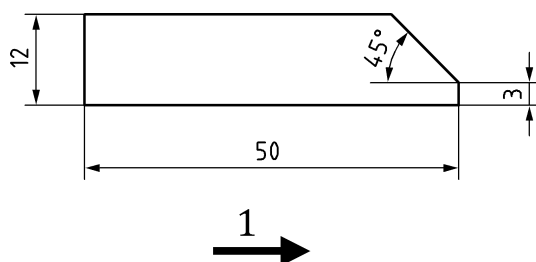


Figure 28 — Type “A” obstacle for the irregular surface test

Dimensions in millimetres

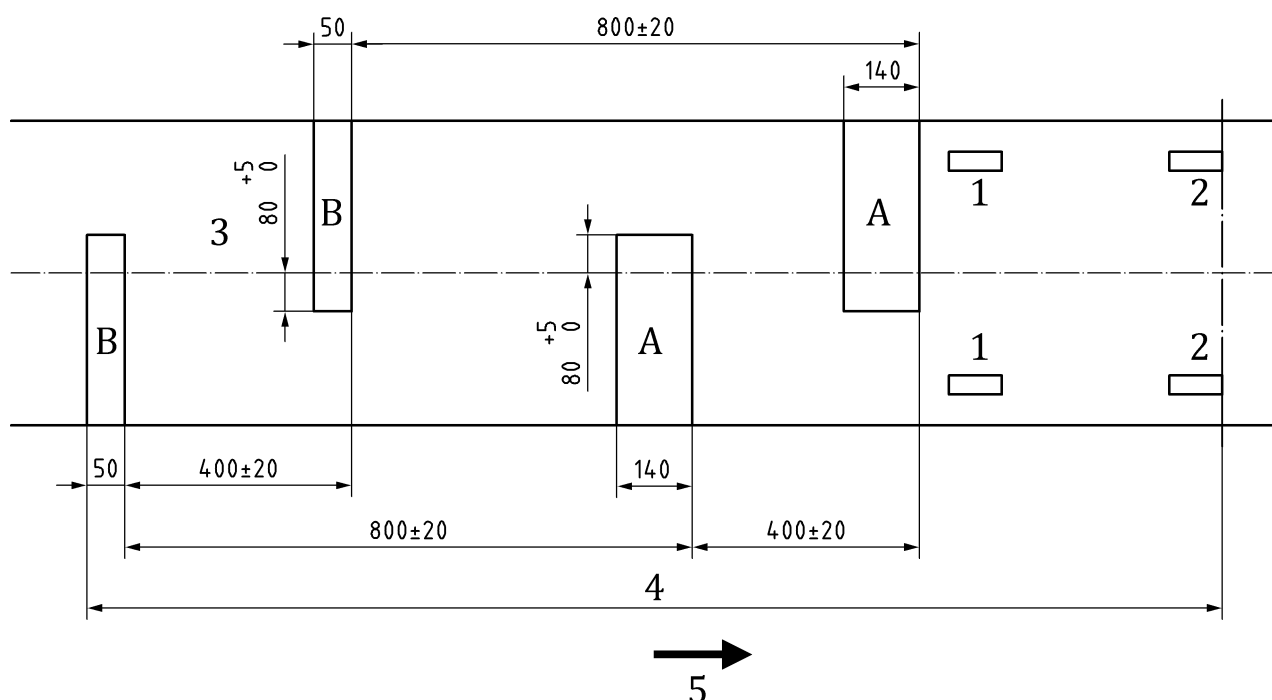


Key

1 direction of travel

Figure 29 — Type “B” obstacle for the irregular surface test

Dimensions in millimetres

**Key**

- 1 front wheels
- 2 back wheels
- 3 centre line
- 4 length of 1 cycle
- 5 direction of the travel of obstacles

Figure 30 — Arrangement for the irregular surface test**5.10.2 Articulating arms (see Annex B)**

The test apparatus comprises two independent articulating arms capable of moving independently of each other in the vertical plane.

The test apparatus shall allow the articulating arms to be adjustable in height and across the width of the irregular surface test equipment to accommodate different types and sizes of vehicle.

The articulating arms shall pivot around their fixing point

When in the horizontal position, each arm shall exert a vertical force on the handles of (20 ± 1) N.

6 Chemical hazards (see A.2)

A1 A separate sample may be used for these tests.

For *seat units* inside the *protected volume* defined in 4.5.1, the materials used for the surface of the seat and the parts located within the volume above the surface of the seat, shall comply with the migration of elements requirements of EN 71-3.

For pram bodies and for car seats, the materials used for the inner upper surfaces that support the child and the inner surface of the sides and ends of the pram body, shall comply with the migration of elements requirements of EN 71-3.

NOTE All the parts or components that are accessible to the mouth of the child when installed in accordance with the manufacturer's instruction are covered by the above sentences (e.g. bumper bar, armrest, tray, child restraint system...). ^{A1}

7 Thermal hazards (see A.3)

Fabrics shall not produce a surface flash when applying a flame as described in EN 71-2.

A separate sample may be used for these tests.

8 Mechanical hazards (see A.4)

8.1 Protective function (see A.4.2)

8.1.1 Suitability of vehicle

8.1.1.1 Requirements

8.1.1.1.1 Vehicles intended for use from birth

Vehicles intended for children from birth shall comprise one of the following:

- a) a *pram body* conforming to the requirements of 8.1.2; or
- b) a *seat unit* where the angle between the backrest and the seat (angle "1" in ^{A1} Figure 31 ^{A1}) is capable of adjustment to an angle of 150° or more measured in accordance with 8.1.1.2.1 and conforming to 8.1.2: any parts, whose function is essential for complying to 8.1.2, shall not allow the test ball to fall from the *seat unit* when tested in accordance with 8.1.1.2.2. In this configuration, the *restraint system* shall be capable of being removed or hidden or covered in accordance with the manufacturer's instructions to avoid any risk of strangulation; or
- c) a *seat unit* where the angle between the backrest and the seat (angle "1" in ^{A1} Figure 31 ^{A1}) is capable of adjustment to an angle of 150° or more measured in accordance with 8.1.1.2.1 and equipped with a *restraint system* suitable from birth complying with 8.1.3;
- d) any "*car seat*" suitable from birth.

8.1.1.1.2 Vehicles intended for use from 6 months of age

Car seats are exempt from this clause.

Vehicles intended for children from 6 months of age shall have a *restraint system* complying with the relevant requirements of 8.1.3.

Seat units intended to be used from 6 months of age shall be marked with the warning in 10.2.5. The warning shall be visible during folding, unfolding or adjustment of the vehicle.

8.1.1.1.3 Seat units

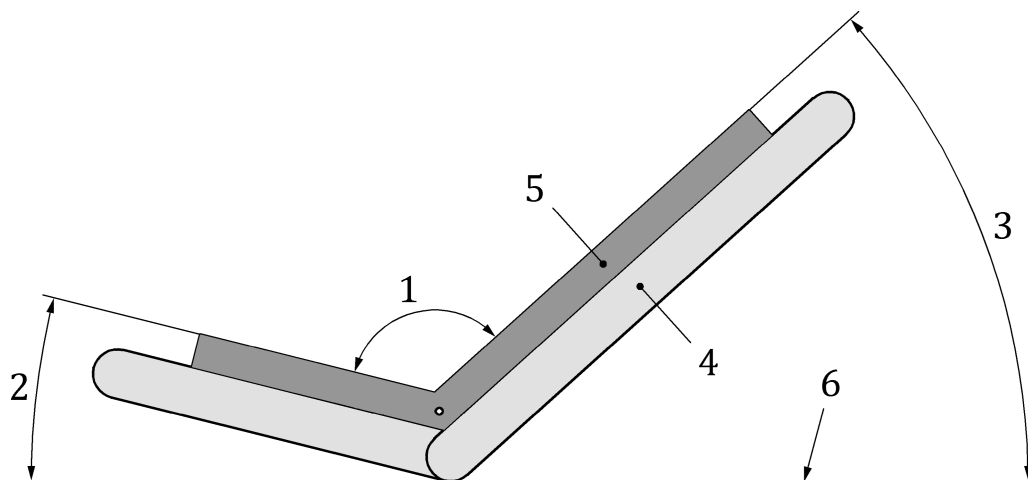
Car seats are exempt from the requirements of this clause.

When measured in accordance with 8.1.1.2.1:

- the angle (1) between the seat and the backrest (see Figure 31) shall not be less than 95°; and
- the angle (2) between the seat and the horizontal (see Figure 31) shall not be less than 0°; and
- the angle (3) between the backrest and the horizontal (see Figure 31) shall not be less than 0°.

NOTE Angles below the horizontal line are considered to be less than 0°.

The length of the backrest shall not be less than 380 mm. When tested in accordance with 8.1.1.2.1 the top of the backrest of the *seat unit* shall be equal to or higher than the top of part 2 of the angle measuring device.



Key

- 1 angle between the seat and the backrest
- 2 angle between the seat and the horizontal
- 3 angle between backrest and the horizontal
- 4 seat unit
- 5 angle measuring device
- 6 horizontal

Figure 31 — Measurement of angle of backrest

8.1.1.2 Test methods

8.1.1.2.1 Measurement of angle and length of the backrest

Adjust the backrest of the *seat unit* to its most upright position.

Any removable head cushion shall be removed before performing the measurements

Any component that may impair the correct positioning of part 1 of the angle measuring device (crotchstrap, padded parts, buckle, etc.) should be positioned such as to ensure part 1 of the device is correctly placed onto the seat.

Place the angle measuring device (see 5.3) on the *seat unit* with part 1 against the seat and with part 2 (Figure 23) against the backrest as shown in Figure 31.

Raise the whole device for at least 50 mm from the seat with part 2 (Figure 23) maintaining complete contact with the backrest. With the device in this position fold up part 1 to its maximum reach. Then lower the whole device as far as possible by its own weight, with part 2 (Figure 23) maintaining complete contact with the backrest. Then slowly unfold part 1 (Figure 23) in such a way that it leans fully on the seat as far as possible under its own weight.

Measure angles 1, 2 and 3 (see Figure 31) on the top surface of the angle measuring device. During measurement, the angle measuring device shall not move from its position.