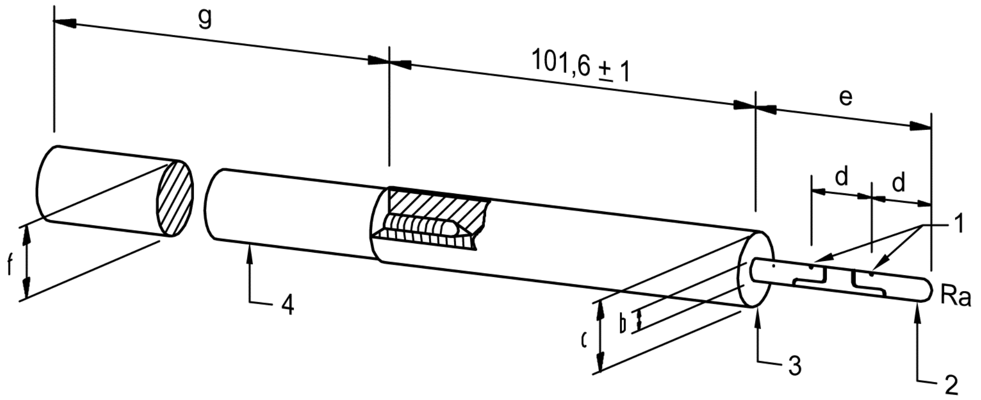
Dimensions in millimetres



Key

1 pivot points

2 spherical radius (R_a)

3 collar

4 extension

Figure 24 — Accessibility probe

Table 4 — Dimensions of accessibility probes

Age group	**Probe**	**Dimensions** mm						
		R_a	*b*	*c*	*d*	*e*	*f*	*g*
Under 36 months	A	2,8	5,6	25,9	14,7	44,0	25,4	464,3
36 months and over	B	4,3	8,6	38,4	19,3	57,9	38,1	451,6
Toys intended for children of both age groups	A and B (both probes shall be used)	According to specifications above.						

a) For any hole, recess, or other opening having a minor dimension (see NOTE 2) smaller than the collar diameter of the appropriate probe, insert the probe so that the total insertion depth for *accessibility* is up to the collar;

NOTE 2 The minor dimension of an opening is the diameter of the largest sphere that will pass through the opening.

b) for any hole, recess, or other opening having:

1) a minor dimension larger than the diameter of the collar of probe A but less than 187 mm when probe A is used, or

2) a minor dimension larger than the diameter of the collar of probe B but less than 230 mm when probe B is used,

determine the total insertion depth for *accessibility* by inserting the appropriate probe, with the extension shown in Figure 24 in any direction for up to 2,25 times the minor dimension of the hole, recess, or opening, measured from any point in the plane of the opening;

c) for any hole, recess, or other opening having:

1) a minor dimension of 187 mm or larger when probe A is used, or

2) a minor dimension of 230 mm or larger when probe B is used,

the total insertion depth for *accessibility* is unrestricted unless other holes, recesses, or openings within the original hole, recess, or opening are encountered that have dimensions conforming to a) or b) of this subclause; in such instances, follow the procedure in a) or b) as appropriate. If both probes shall be used, a minor dimension of 187 mm or larger shall determine the unrestricted access.

Determine whether a tested part or component can be contacted by any portion forward of the collar of the *accessibility* probe.

8.11 Sharpness of edges (see 4.5, 4.7, 4.9, 4.10.2, 4.14.2, 4.15.1.3 and 5.1)

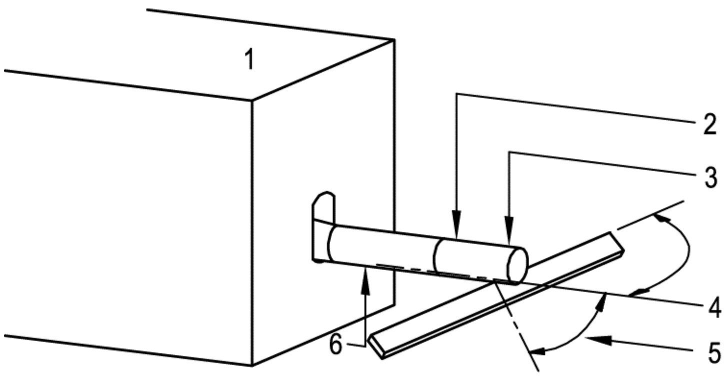
8.11.1 Principle

A self-adhesive *tape* is attached to a mandrel which is then rotated for a single 360° revolution along the *accessible edge* being tested. The *tape* is then examined for the length of cut.

8.11.2 Apparatus

8.11.2.1 General

The apparatus shall be as illustrated in Figure 25.



Key

1 any suitable device, portable or non-portable, to apply a known force and rotation to the mandrel

2 (6 ± 0,5) N applied to the mandrel axis

3 single wrap of self-adhesive *tape*

4 (90 ± 5)° (test *edge* relationship to mandrel)

5 variable angle to seek worst case situation

6 during the test the mandrel rotates one full revolution

Figure 25 — Edge test apparatus

8.11.2.2 Mandrel, made of steel

The test surface of the mandrel shall be free from scratches, nicks or *burr* and shall have a surface roughness R_a according to EN ISO 4287 which is not greater than 0,40 µm. The surface shall have a Rockwell C scale hardness of not less than 40 when measured according to EN ISO 6508-1. The diameter of the mandrel shall be (9,53 ± 0,12) mm.

8.11.2.3 Device for rotating the mandrel and applying a force to it

The device shall be capable of rotating the mandrel at a constant tangential velocity of (23 ± 4) mm/s during the central 75 % of its 360° travel, starting and stopping of the mandrel being smooth. Portable or non-portable and of any suitable design, the device shall be capable of applying any force up to 6 N to the mandrel, perpendicular to the mandrel axis.

8.11.2.4 Self-adhesive tape

The self-adhesive *tape* shall be pressure-sensitive polytetrafluoroethylene (PTFE) high temperature electrical insulation *tape*.

The thickness of the polytetrafluoroethylene *backing* shall be between 0,066 mm and 0,090 mm. The adhesive shall be pressure-sensitive silicone polymer with a nominal thickness of 0,08 mm. The width of the *tape* shall be 6 mm or more. During the tests, the temperature of the *tape* shall be maintained at (20 ± 5) °C.

8.11.3 Procedure

Ascertain that the *edge* to be tested is *accessible* by the method described in 8.10 (accessibility of a part or component).

Support the toy in such a manner that the *accessible edge* to be tested does not bend or move when the force of the mandrel (8.11.2.3) is applied. Ensure that the support is 15 mm or more from the *edge* to be tested.

If part of the toy shall be removed or disassembled in order to test a particular *edge*, and as a result, the rigidity of the *edge* being tested is affected, support the *edge* so that its stiffness approximates to the *edge* stiffness in the assembled toy.

Wrap the mandrel with one layer of the *tape* (8.11.2.4) to provide a sufficient area for performing the test.

Place [A1⟩ the mandrel ⟨A1] so that its axis is at (90 ± 5)° to the line of a straight *edge*, or at (90 ± 5)° to a tangent at the test point of a curved *edge*, and the *tape* is in contact with the sharpest part of the *edge* (i.e. the worst case situation) when the mandrel is rotated (see Figure 25).

Apply a force of (6 ± 0,5) N to the mandrel at the centre of the *tape* and rotate the mandrel 360° about its axis against the *edge*, ensuring that no relative motion occurs between the mandrel and the *edge* during the rotation of the mandrel. If this procedure causes the *edge* to bend, apply the maximum force that will not cause the *edge* to bend.

Remove the *tape* from the mandrel without enlarging any cut in the *tape* or causing any score in the *tape* to become a cut. Measure the length of *tape* that is cut, including any intermittent cuts. Measure the length of *tape* which has contacted the *edge* during the test. In this way, calculate the percentage of the length of *tape* which has been cut during the test. If this is more than 50 % of the contact length, the *edge* tested is considered to be a sharp *edge*.

8.12 Sharpness of points (see 4.5, 4.8, 4.9, 4.10.2, 4.14.2, 4.15.1.3, 5.1 and A.40)

8.12.1 Principle

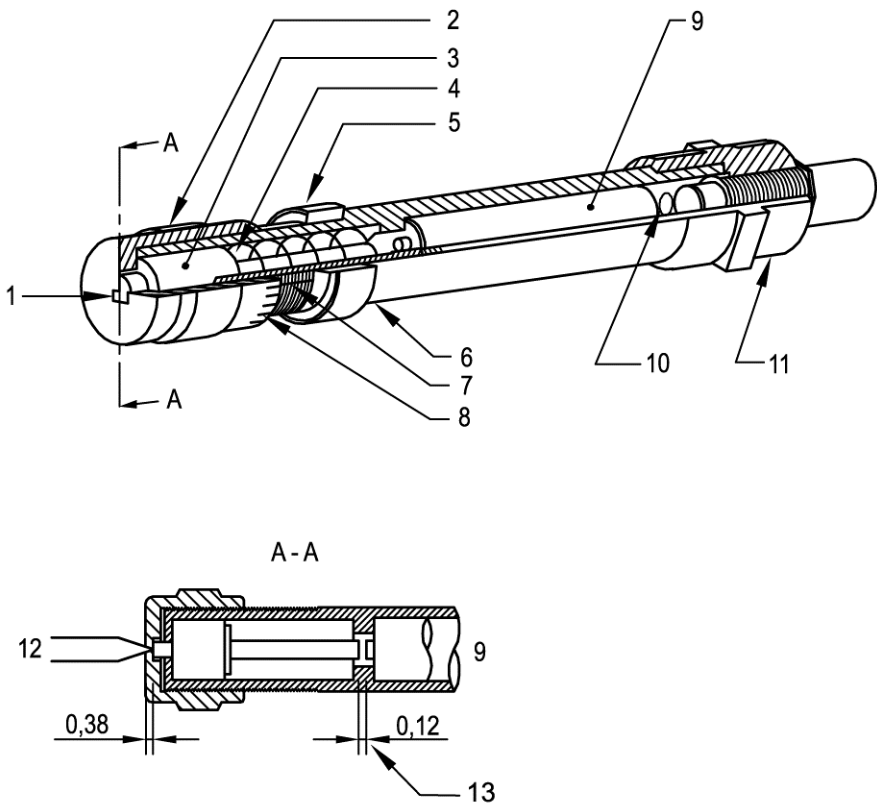
A point tester is applied to an *accessible* sharp point and it is determined whether or not the point being tested penetrates a specified distance into the sharp point tester.

8.12.2 Apparatus

Point tester (for example as shown in Figure 26).

A rectangular opening measuring (1,02 ± 0,02) mm by (1,15 ± 0,02) mm in the end of the slotted cap establishes two reference dimensions. The sensing head is recessed (0,38 ± 0,02) mm below the end cap. There is a distance of (0,12 ± 0,02) mm between it and a return *spring* having a force of $2{,}5^{0}_{-0{,}3}$ N.

Dimensions in millimetres



Key

1 gauging slot
2 gauging cap
3 sensing head
4 loading *spring*
5 lock ring
6 barrel
7 adjusting reference mark
8 micrometer divisions
9 R03 dry cell
10 electrical contact *spring*
11 indicator lamp assembly and adapter nut
12 test point
13 gap is closed upon insertion of sufficiently sharp point to pass through gauging slot and depress sensing head 0,12 mm. Electrical circuit is thereby completed and indicator test lamp lights – sharp point fails test

Figure 26 — Point tester

8.12.3 Procedure

Ascertain that the point to be tested is *accessible* by the method described in 8.10 (accessibility of a part or component).

Support the toy in such a manner that the *accessible* point to be tested does not move during the test. In most cases it will not be necessary to support the point directly; if necessary, ensure that the support is 6 mm or more from the point to be tested.

If part of the toy shall be removed or disassembled in order to test a particular point, and, as a result, the rigidity of the point being tested is affected, support the point so that its stiffness approximates to the point stiffness in the assembled toy.

Adjust the point tester (8.12.2) by loosening the locking ring and rotating it so that it moves a distance toward the indicator lamp assembly sufficient to expose the calibration reference mark on the barrel. Rotate the gauging cap clockwise until the indicator lamp lights. Rotate the cap counter-clockwise until the sensing head moves a distance of (0,12 ± 0,02) mm from making contact with the dry cell, as shown in Figure 26.

NOTE Where the gauging cap includes micrometer markings, the distance can be readily achieved by rotating the cap counter-clockwise until the appropriate micrometer marking corresponds to the calibration reference mark. The gauging cap can now be locked in this position by rotating the locking ring until it fits firmly against the cap.

Insert the point into the cap slot in the direction which confers the greatest rigidity on the point, and apply a force of 4,5 N to depress the *spring* as far as possible without shaving the point on the *edges* of the slot or extruding the point through the slot.

Determine whether or not the indicator lamp lights up.

If the point penetrates a distance of 0,50 mm or more into the gauging slot, causing the indicator lamp to light, and the point maintains its original shape while under a force of 4,5 N, the point tested is considered to be a sharp point.

8.13 Flexibility of metallic wires (see 4.8 and A.41)

8.13.1 General

If the metallic wire has a covering, apply the test to the metallic wire in the condition in which it appears in the toy (i.e. do not remove the metallic wire from the toy).

Grip the metallic wire firmly between two metal cylinders, radiused pliers, or equivalent metal pieces with a diameter of (10 ± 1) mm. At a point 50 mm from the point of gripping or, if less than 50 mm protrudes, at the end of the metallic wire, apply a force of (70 ± 2) N perpendicular to the metallic wire. If the metallic wire bends more than 60°, continue the test as follows.

Bend the metallic wire from the upright position to one side through 60°, and then bend in the opposite direction through 120°, and finally return to the upright position. This is one cycle.

8.13.2 Metallic wires and other metallic components intended to be bent

Perform the cycle described in 8.13.1 (general) 30 times at a rate of one cycle per 2 s with a 60 s rest period after each 10 cycles. To ensure that the metallic wire or other metallic component bends at the point emerging from the cylinders, it shall be kept taut during the test.

Examine the metallic wire or metallic component for breakage or hazardous sharp points (8.12, sharpness of points), removing any covering material, if applicable, to aid the examination.

8.13.3 Metallic wires likely to be bent

Perform the cycle described in 8.13.1 (general) one time.

Examine the metallic wire for breakage or hazardous sharp points (8.12, sharpness of points), removing any covering material, if applicable, to aid the examination.

8.14 Expanding materials (see 4.6)

Condition the toy or component at (20 ± 5) °C and at a relative humidity of 40 % to 65 % for at least 7 h before the test. Measure the maximum dimensions of the toy or any component of the toy in the *x*, *y* and *z* dimensions using callipers. Submerge the toy or component completely in a container of demineralized water at (37 ± 3) °C for (24 ± 0,5) h. Ensure that sufficient water is used so that the toy or component still remains under water at the end of the test.

Remove the item using a pair of tongs. If the item cannot be removed because of insufficient mechanical strength, it is considered to pass this test.

Allow water adhering to the toy or component to drain for 1 min and re-measure the item.

After re-measuring, repeat the above procedure twice, from the point where the toy or component is submerged in the demineralized water, such that the item has been measured after 24 h, 48 h and 72 h of submergence.

Calculate the expansion in the *x*, *y* and *z* dimensions as a percentage of the original dimension and determine whether it has expanded more than 50 % in any direction after 24 h, 48 h or 72 h.

If the toy fails the requirement in 4.6 after 24 h or 48 h no further testing is required.

8.15 Leakage of liquid-filled toys (see 5.5 and A.42)

Condition the toy at a temperature of (37 ± 1) °C for 4 h or more.

Within 30 s of removing the toy from conditioning, apply a force of $5_{0}^{+0,5}$ N to the external surface of the toy through a steel needle with a diameter of (1 ± 0,05) mm and with a tip radius of (0,5 ± 0,05) mm.

Apply the force gradually over a period of approximately 5 s. Maintain the force for 5 s.

After completion, examine the toy for leakage of the contents. In determining leakage, apply cobalt-chloride paper over the area where the force was applied while elsewhere compressing with a force of $5_{0}^{+0,5}$ N using suitable means other than a needle.

Repeat the test after conditioning the toy at a temperature of (5 ± 1) °C for 4 h or more.

Cobalt-chloride paper shall not be used after the 5 °C test as condensation may give false results.

After completion, visually examine the toy and determine whether leakage of its contents has occurred.

8.16 Geometric shape of certain toys (see 5.8, 5.11 and A.43)

Position and clamp template A shown in Figure 27 so that the axis of the slot is substantially vertical and the slot is unobstructed at its top and bottom openings.

Dimensions in millimetres

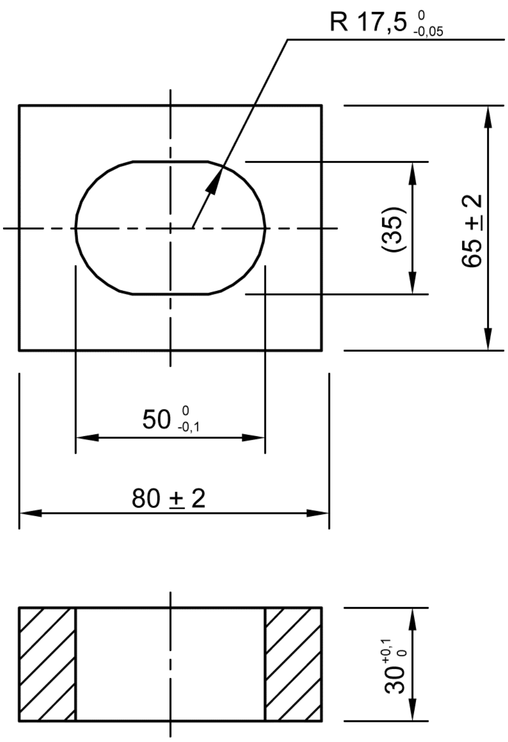


Figure 27 —Template A

Dimensions in millimetres

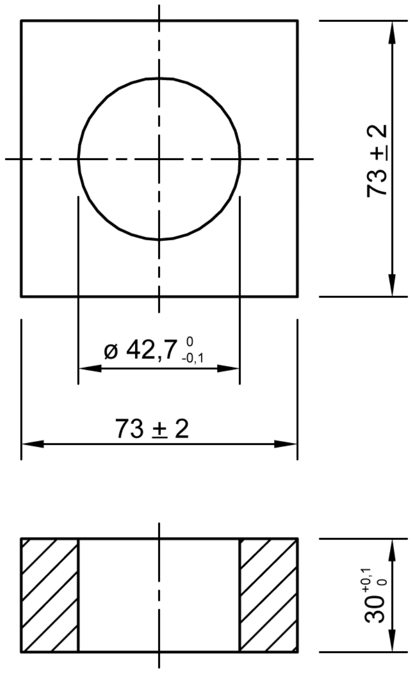


Figure 28 — Template B

Orientate the toy in a position which would most likely permit the entry of the toy through the slot in Template A. Place the toy in the slot so that the force on the toy is only the force due to its mass.

Determine whether the toy passes through the slot or whether any part of the toy protrudes past the base of Template A.

Repeat the procedure for toys with nearly spherical, hemispherical or circular flared ends using template B shown in Figure 28.

8.17 Durability of mouth-actuated toys (see 4.11 and A.44)

8.17.1 Mouth-actuated projectile toys

Load the mouth-actuated *projectile* toy with the intended *projectile* and apply a pressure of 13,8 kPa ± 5 % in the direction of the mouthpiece for 5 s.

Carry out the test 10 times in total.

8.17.2 Other mouth-actuated toys

Connect a piston pump capable of discharging and receiving more than 300 cm^3 of air in less than 3 s to the mouthpiece of the toy. Arrange a relief valve so that the pump will not generate a positive or negative pressure of more than 13,8 kPa. Subject the toy to 10 alternating blowing and sucking cycles, each within 5 s and of at least (295 ± 10) cm^3 of air including the volume which may be discharged through the relief valve. If the air outlet is *accessible*, ensure that the above is also applied to the outlet.

Determine whether any released component fits entirely in the small parts cylinder when tested according to 8.2 (small parts cylinder).

8.18 Folding or sliding mechanisms (see 4.10.1 and A.45)

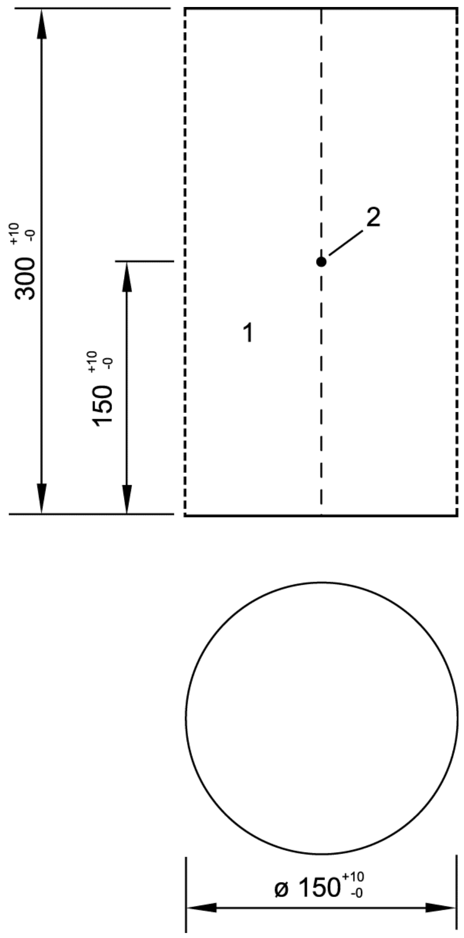
8.18.1 Loads

Load the toy with a mass of (50 ± 0,5) kg.

For toys labelled as not suitable for children of 36 months and over, load the toy with a mass of (25 ± 0,2) kg.

The dimensions of the load are given in Figure 29.

Dimensions in millimetres



Key

1 mass, < 36 months, 25 kg
mass, ≥ 36 months, 50 kg

2 centre of gravity

Figure 29 — Load for determination of strength and stability

8.18.2 Toy pushchairs and perambulators

Precondition the toy by erecting and folding it 10 times.

a) Toy pushchairs and perambulators covered by 4.10.1 a).

Erect the toy on a horizontal surface with the locking devices engaged and load the toy with the appropriate mass ensuring that the load is borne by the frame. Where necessary, use support so that the seat material is not damaged. Apply the load to the frame in the most onerous position with respect to the folding parts. Apply the load for 5 min.

Determine whether it is possible to partially erect the toy without engaging either of the locking devices. If so, also perform the above loading in the partially erect position.

If the seat of the body is detachable from the chassis, this test shall also be performed on the chassis only, using suitable support for the test load.

Determine whether the toy *collapses* and whether the locking devices are still operable and engaged.

b) Toy pushchairs and perambulators covered by 4.10.1 b).

Erect the toy on a horizontal surface with the locking devices engaged and load the toy with the appropriate mass ensuring that the load is borne by the frame. Where necessary, use support so that the seat material is not damaged. Apply the load to the frame in the most onerous position with respect to the folding parts. Apply the load for 5 min.

Determine whether it is possible to partially erect the toy without engaging the locking device. If so, also perform the above loading in the partially erect position.

Determine whether the toy *collapses* and whether the locking device or safety stop is still operable and engaged.

8.18.3 Other collapsible toys (see 4.10.1 c))

a) Erect the toy. Lift the toy and determine whether the locking device disengages when the toy is tilted in any (30 ± 1)° angle from the horizontal.

b) Erect the toy on a surface inclined at (10 ± 1)° and in the most onerous position with respect to the folding parts. Engage any locking device. Load the toy for 5 min with the appropriate mass. Apply the load wherever it is possible for a child to sit and in the most onerous position with respect to the folding parts. Ensure that the load is borne by the frame. Where necessary, use support so that the seat material is not damaged (see A.45).

Determine whether the toy *collapses* and whether the locking mechanism disengages.

8.19 Electric resistivity of cords (see 4.13)

Condition the samples for 7 h or more at a temperature of (25 ± 3) °C and at a relative humidity of 50 % to 65 % and perform the test in this atmosphere.

Determine the electric resistance, using an appropriate appliance.

8.20 [A1) Cords cross-sectional dimension (see 5.4.7) (A1]

[A1) While under a tension of (25 ± 2) N, measure the maximum cross-sectional dimension of the *cord* (see Figure 30) at five approximately equidistant points along its length using an instrument capable of measuring in units of 0,1 mm or less. Determine the average cross-sectional dimension to the nearest 0,1 mm. For *cords* approaching 1,5 mm in cross-sectional dimension, use a non-compressible measuring device, e.g. an optical projector. (A1]