BRITISH STANDARD

BS EN 12492:2000
Incorporating Amendment No. 1

Mountaineering equipment —Helmets for mountaineers — Safety requirements and test methods

The European Standard EN 12492:2000, with the incorporation of amendment A1:2002, has the status of a British Standard

ICS 13.340.20; 97.220.40

British Standards

National foreword

This British Standard is the official English language version of EN 12492:2000, including amendment A1:2002. It supersedes BS 4423:1969 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] ⟨A1]. 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 by Technical Committee PH/6, Head protection, to Subcommittee PH/6/6, Helmets for sports leisure, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled "International Standards Correspondence Index", or by using the "Search" facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

This British Standard, having been prepared under the direction of the Health and Environment Sector Committee was published under the authority of the Standards Committee and comes into effect 15 May 2000

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 21 and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments
14266	14 February 2003	See national foreword

ISBN 0 580 34350 2

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12492

March 2000

+ A1

October 2002

ICS 13.340.20; 97.220.40

English version

Mountaineering equipment – Helmets for mountaineers – Safety requirements and test methods
(includes amendment A1:2002)

Equipements d'alpinisme et d'escalade – Casques d'alpinistes – Exigences de sécurité et méthodes d'essai
(inclut l'amendement A1:2002)

Bergsteigerausrüstung – Bergsteigerhelme – Sicherheitstechnische Anforderungen und prüfverfahren
(enthält Änderung A1:2002)

This European Standard was approved by CEN on 24 January 2000. Amendment A1 was approved by CEN on 7 September 2002.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 12492:2000 + A1:2002 E

Contents **Page**

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 158, Head protection, the Secretariat of which is held by BSI.

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 September 2000, and conflicting national standards shall be withdrawn at the latest by September 2000.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Foreword to amendment A1

This document (EN 12492:2000/A1:2002) has been prepared by Technical Committee CEN/TC 158, Head protection, the Secretariat of which is held by BSI.

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 April 2003, and conflicting national standards shall be withdrawn at the latest by April 2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

The protection given by a helmet depends on the circumstances of the accident and wearing a helmet cannot always prevent death or long term disability.

A proportion of the energy of an impact is absorbed by the helmet, thereby reducing the force of the blow sustained by the head. The structure of the helmet may be damaged in absorbing this energy and any helmet that sustains a severe blow needs to be replaced even if damage is not apparent.

Mountaineers' helmets are fitted with a retention system to retain the helmet on the head. However, there may be a foreseeable risk that helmets could become trapped and thereby cause a risk of strangulation.

1 Scope

This European Standard specifies safety requirements and test methods for safety helmets for use in mountaineering.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 960	Headforms for use in the testing of protective helmets
ISO 4892-1	Plastics - Methods of exposure to laboratory light sources - Part 1 : General guidance
ISO 4892-2	Plastics - Methods of exposure to laboratory light sources - Part 2 : Xenon-arc sources
ISO 6487	Road vehicles - Measurement techniques in impact tests - Instrumentation

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply:

3.1
helmet for mountaineers (hereafter referred to as helmet)
headwear primarily intended to protect the upper part of a wearer's head against hazards which might occur during activities carried out by mountaineers

3.2
shell
the hard, smoothly finished material that provides the general outer form of the helmet

3.3
helmet type
helmet which is characterized by:

a) the tradename or mark;

b) the materials and dimensions of the shell;

c) the materials and dimensions of the protective padding;

d) the materials and dimensions of the retention system.

3.4
protective padding
material which is used to absorb impact energy

3.5
comfort padding
liner material provided for the wearer's comfort

3.6
sizing padding
liner material used for adjustment of the helmet size

3.7
retention system
complete assembly by means of which the helmet is maintained in position on the head, including any devices for adjustment of the system or to enhance the wearer's comfort

3.8
chin strap
part of the retention system consisting of a strap which passes under the wearer's jaw to retain the helmet in position

3.9
headform
a shape replacing the head which is used for testing certain characteristics

Note: The headform is designed in accordance with EN 960.

4 Requirements

4.1 Construction requirements

4.1.1 Materials

For those parts of the helmet that come into contact with the skin, materials which are known to be likely to cause skin irritation or any adverse effect on health shall not be used. For a material not in general use, advice as to its suitability shall be sought before its introduction.

4.1.2 Projections

There shall be no sharp edges, roughness or projection on any part of the helmet which is in contact or potential contact with the wearer when the helmet is worn, such as is likely to cause injury to the wearer.

4.1.3 Retention system

The helmet shall be fitted with a retention system, including a chin strap. The retention system shall have at least three separate points of attachment to the shell. The chin strap shall be adjustable in length. That part of the chin strap which comes into contact with the jaw shall have a minimum width of 15 mm under a load of 250 N.

4.1.4 Ventilation

All helmets shall be ventilated.
The sum of the cross-sectional areas of such ventilation shall not be less than 4 cm^2 when measured on the surface of the helmet.

4.2 Performance requirements

4.2.1 Shock absorption

4.2.1.1 Vertical energy absorption capacity

When a helmet is tested by the method described in 5.5, the force transmitted to the headform shall not exceed 10 kN, for a drop height of (2 000 ± 10) mm of the hemispherical striker described in 5.5.3.3.

4.2.1.2 Front energy absorption capacity

When a helmet is tested by the method described in 5.5, the force transmitted to the headform shall not exceed 10 kN, for a drop height of (500 ± 10) mm of the flat striker described in 5.5.3.3.

4.2.1.3 Side energy absorption capacity

When a helmet is tested by the method described in 5.5, the force transmitted to the headform shall not exceed 10 kN, for a drop height of (500 ± 10) mm of the flat striker described in 5.5.3.3.

4.2.1.4 Rear energy absorption capacity

When a helmet is tested by the method described in 5.5, the force transmitted to the headform shall not exceed 10 kN, for a drop height of (500 ± 10) mm of the flat striker described in 5.5.3.3.

4.2.2 Penetration

When a helmet is tested on two points of impact, apart from each other as at least 50 mm, by the method described in 5.6, there shall be no contact between the striker and the headform, for a drop height of (1 000 ± 5) mm of the conical striker described in 5.6.3.3.

4.2.3 Retention system strength

When a helmet is tested by the method described in 5.7, the maximum elongation of the whole system shall not exceed 25 mm.

4.2.4 Retention system effectiveness (roll off)

When a helmet is tested by the method described in 5.8, for the front way and rear way tests, the helmet shall not come off the headform.

5 Test methods

5.1 Sampling

For every type of helmet, helmet samples shall be submitted for testing in the condition in which they are offered for sale, including any requisite holes in the shell and any means of attachment for accessories specified by the manufacturer.

No helmet that has been subjected to testing shall be offered for sale.

For every type of helmet, 11 helmet samples are required for the tests (see Table 1):

- 6 of the smallest size of the range of the helmet type; and

- 5 of the largest size of the range of the helmet type.

5.2 Helmet adjustment

Before any testing on a headform, the helmet shall be adjusted to the headform size and positioned in accordance with the manufacturer's instructions.

The smallest headform is the smallest size, in accordance with 5.4, which is within the size range specified by the manufacturer for the particular size and type of helmet.

The largest headform is the largest size, in accordance with 5.4, which is within the size range specified by the manufacturer for the particular size and type of helmet.

5.3 Conditioning

5.3.1 General

Before any testing the helmet shall be conditioned in accordance with the conditioning defined in Table 1 and the relevant specifications defined in 5.3.2 to 5.3.5.

Table 1 - Conditioning of test samples and size of test headforms

	Stabilizing procedure	UV ageing	Thermal plus +35 °C	Thermal minus -20 °C	Ambient +20 °C	Helmet N°
Top impact	Yes	Smallest	Largest	Largest		1-2-3
Front impact	Yes	Size and conditioning to be chosen by the laboratory				4
Side impact	Yes	Size and conditioning to be chosen by the laboratory				5
Back impact	Yes	Size and conditioning to be chosen by the laboratory				6
Penetration	Yes	Largest	Smallest	Smallest		7-8-9
Retention strength	Yes				Smallest	10
Roll off front & back	Yes				Smallest	11

5.3.2 〚A1〛 *Text deleted* 〚A1〛

5.3.3 U.V. ageing

5.3.3.1 Apparatus

A high pressure xenon 450 watt lamp with quartz casing, operated in accordance with the lamp manufacturer's instructions.

A means to support the helmet so that it is exposed to the radiation.

5.3.3.2 Procedure

Secure the helmet so that the vertical axis through the crown of the helmet (as worn) is perpendicular to the axis of the lamp and the distance between the crown of the helmet and the axis of the lamp is (150 ± 5) mm.

Expose the helmet to the radiation for (400 ± 4) h. It shall then be removed and allowed to return to laboratory ambient conditions.

Note: The method described in Annex A may be used as an alternative.

5.3.4 'Thermal plus' conditioning

The helmet shall be exposed to a temperature of (35 ± 2) °C for between 4 h and 24 h.

5.3.5 'Thermal minus' conditioning

The helmet shall be exposed to a temperature of (-20 ± 2) °C for between 4 h and 24 h.

5.4 Headforms

The head forms used shall comply with EN 960. The sizes in Table 2 shall be used, except for determination of shock absorbing capacity, for which only sizes A, E, J, M and O are available.

Table 2 - Sizes of headforms

CODE LETTER	HEADFORM CIRCUMFERENCE (mm)
A	500
C	520
E	540
G	560
J	570
K	580
M	600
O	620

5.5 Shock absorption

5.5.1 Impact points

The four impact points are shown in Figure 1.

5.5.2 Principle

A specified striker is allowed to fall with specified energy on to a helmet which is fitted to a rigidly mounted headform. The transmitted force is measured by means of a force transducer located beneath the headform.

5.5.3 Apparatus

The apparatus shall include:

- a base;
- a test headform;
- a striker;
- a guidance system;
- a means to measure impact speed;
- instrumentation to record and analyse the data.

5.5.3.1 Base

The base shall be solid, made of steel or a combination of steel and concrete and have a mass of not less than 500 kg. At least the uppermost 25 mm consist of steel, which shall be firmly attached to the concrete if present. No part of the base and headform mounting assembly shall have a resonant frequency liable to affect the measurements

Note: See 5.5.3.6 regarding frequency response.

5.5.3.2 Test headforms

The headforms shall be in accordance with 5.4.

The headform shall be positioned so that the impact axis coincides with those of the force transducer and striker.

5.5.3.3 Striker

The striker shall be made of steel and have a mass of (5 ± 0,05) kg.

The flat striker shall have a flat striking face of diameter (130 ± 3) mm, with the edge of its circumference radiused to nominally 2 mm.

The hemispherical striker shall have a hemispherical striking face of radius (50 ± 1) mm.

5.5.3.4 Guidance system

Means shall be provided for the striker to be dropped in free or guided fall.

The guidance system shall be such as to ensure that the striker:

- shall be positioned above the headform so that its central axis coincides with the central vertical axis of the force transducer; and
- falls on to the required impact point with an impact speed of not less than 95 % of that which would theoretically obtain for a free fall.

5.5.3.5 Means to measure impact speed

Unless free fall is employed, means shall be provided to measure the striker speed at a distance of not more than 60 mm prior to impact, to within an accuracy of ±1 %.

The impact speed shall be measured during the commissioning of the apparatus. It need not be done for each impact.

5.5.3.6 Instrumentation to record and analyse data

5.5.3.6.1 Force transducer

The non-inertial force transducer shall be firmly attached to the base and arranged so that its sensitive axis coincides with the axis passing through the Z point of the headform and the centre of the striker. The transducer shall be capable of withstanding a maximum compressive force of 100 kN without damage.

5.5.3.6.2 Signal conditioning instrumentation

The instrumentation shall provide for the complete measuring channel to have a frequency response in accordance with channel frequency class (CFC) 600 of ISO 6487. If digital sampling is employed, a sample rate of at least 10 kHz shall be used. The required 600 Hz low pass filter may be included within the computer software.

Means shall be provided to record the maximum force transmitted during impact, to the nearest 10 N.

5.5.4 Procedure

Within 2 min of its removal from conditioning (this time applies to temperature conditioning only), the helmet shall be fitted to the appropriate headform in accordance with 5.2 and the striker shall be allowed to fall on to the specified impact point.

If the design of the helmet permits direct contact between the headform and the striker, the test shall not be performed and the result shall be declared a failure.

5.5.5 Report

Record and report the maximum force transmitted during the impact, to the nearest 10 N.

5.6 Resistance to penetration

5.6.1 Impact area

The impact area to determine the resistance to penetration of the helmet is defined within a circle of radius 50 mm centred on the top of the helmet. Two tests shall be carried out in this area at least 50 mm apart from each other.

5.6.2 Principle

A specified striker is allowed to fall with specified energy on to a helmet which is fitted to a rigidly mounted test block. Note is taken of whether or not contact is made between the striker and the test block.

5.6.3 Apparatus

The apparatus shall include:

- a base;
- a test block;
- a restraining system;
- a striker;
- a guidance system;
- a means to measure impact speed.

5.6.3.1 Base

The base shall be solid, made of steel or a combination of steel and concrete and have a mass of not less than 500 kg. At least the uppermost 25 mm shall consist of steel, which shall be firmly attached to the concrete if present.

5.6.3.2 Test block

A hemispherical test block of hardwood with a soft metal insert located at the top of its central vertical axis is mounted on a rigid support. Elasticated restraining straps are provided to assist in retaining the helmet in position during the test. They should be such as not to affect the correct performance of the test. A suitable apparatus is shown in Figure 2.

5.6.3.3 Striker

The characteristics of the conical striker are as follows:

- mass:	(3 000 $\pm$ 25) g;
- angle of point:	(60 $\pm$ 1)°;
- radius of point:	(0,5 $\pm$ 0,1) mm;
- minimum height of cone:	40 mm;
- hardness of tip:	(50 to 45) HRC.

5.6.3.4 Guidance system

Means shall be provided for the striker to be dropped in free or guided fall.

The guidance system shall be such as to ensure that the striker:

- shall be positioned above the test block so that its central axis coincides with the point of impact on the helmet; and
- falls on to the required impact position with an impact speed of not less than 95 % of that which would theoretically obtain for a free fall.

5.6.3.5 Means to measure impact speed

Unless free fall is employed, means shall be provided to measure the striker speed at a distance of not more than 60 mm prior to impact, to within an accuracy of ±1 %.

The impact speed shall be measured during the commissioning of the apparatus. It need not be done for each impact.

5.6.4 Procedure

Within 2 min of its removal from conditioning (this time applies to temperature conditioning only), the helmet shall be fitted to the test block and secure using the restraining system. Rotate the helmet so as to present the required impact point to the striker. The striker shall be allowed to fall on to the specified impact point.

Note whether or not contact is made between the striker and the test block or whether the surface of the soft metal (or equivalent) insert in the test block is visibly damaged. If necessary, restore the surface of the soft metal (or equivalent) insert in the test block, prior to a subsequent test.

If the design of the helmet permits direct contact between the headform and the striker, the test shall not be performed and the result shall be declared a failure.

5.6.5 Report

Report whether contact was made between the striker and the test block or whether the surface of the soft metal (or equivalent) insert in the test block was visibly damaged.

5.7 Retention system strength

5.7.1 Principle

A helmet is supported on a headform and a specified varying force is applied to the retention system via an artificial jaw. The elongation as well as the ultimate tensile strength of the system is measured.

5.7.2 Apparatus

The apparatus shall include:

- a test headform;
- a rigid structure to support the headform;
- an artificial jaw;
- a means of applying a known variable force to the artificial jaw;
- a means to measure the displacement of the artificial jaw.

An arrangement of a suitable apparatus is shown in Figure 3

5.7.2.1 Test headforms

The headforms shall be in accordance with 5.4.

5.7.2.2 Rigid structure

The rigid structure shall be such as to support the headform so that it does not move during the test.

5.7.2.3 Artificial jaw

The artificial jaw comprises two rigid cylindrical rollers of diameter (12,5 ± 0,5) mm, with their longitudinal axes separated by (75 ± 2) mm. Any suitable means of applying a known variable force to the artificial jaw and measuring the displacement of the artificial jaw may be used

5.7.3 Procedure

Mount the helmet on the appropriate headform and pass the chinstrap around the artificial jaw and secure it.

Apply an initial force of (30 ± 3) N in order to ensure that the fastening device is correctly tightened. Note the position, P0, of the load bearing spindle to the nearest mm.

Increase the force linearly over a period of (30 ± 3) s up to (500 ± 10) N. Maintain this force for (120 ± 3) s, then note the position, P1, of the load bearing spindle to the nearest mm.

Increase the force linearly at a rate of (500 ± 50) N/min until the artificial jaw is released due to failure of the retention system. Record, for information only, the maximum force measured during the test and the mode of failure of the retention system.

5.7.4 Report

Calculate and report the elongation of the retention system as the difference between positions P0 and P1.

Report, for information only, the maximum force measured during the test and the mode of failure of the retention system.

5.8 Retention system effectiveness

5.8.1 General

Testing shall be performed in ambient conditions as described in 5.3.2.

The helmet shall be fitted to the appropriate headform, this shall be done in accordance with the manufacturer's fitting instructions, if supplied. If none are supplied, the helmet shall be fitted so as to simulate typical in use fitting.

The test shall be performed so that the pull is exerted from the front and the rear.

5.8.2 Principle

The helmet is mounted on a test headform and then subjected to a sudden force applied at the front and rear edge of the helmet, tending to rotate it on the headform. The degree of any rotation is observed.

5.8.3 Apparatus

The apparatus shall include:

- a test headform;
- a rigid base to support the headform;
- a falling mass and associated guidance system;
- a means to measure impact speed.

An arrangement of a suitable apparatus is shown in Figure 4.

5.8.3.1 Test headforms

The headforms shall be in accordance with 5.4.

5.8.3.2 Rigid base

The rigid base shall be such as to support the headform so that its vertical axis is indeed vertical and so that during the test it does not move.

5.8.3.3 Falling mass and guidance system

A guidance system shall be provided to enable the falling mass of (10 ± 0,1) kg to be dropped in guided fall on to the metal end stop. The guidance system shall have a total mass of (3 ± 0,1) kg.

The falling mass shall be connected to the helmet by means of a twisted steel wire of minimum diameter 3 mm running over a pulley of diameter (100 ± 2) mm and a hook of nominal width 25 mm.

The guidance system shall be such as to ensure that the falling mass falls with an impact speed of not less than 95 % of that which would theoretically obtain for a free fall.

5.8.3.4 Means to measure impact speed

Means shall be provided to measure the speed of the falling mass at a distance of not more than 60 mm prior to impact, to within an accuracy of ±1 %.

The impact speed shall be measured during the commissioning of the apparatus. It need not be done for each test.

5.8.4 Procedure

Mark a horizontal datum line on the outside of the helmet. Fit the helmet in accordance with the manufacturer's fitting instructions to the smallest available headform appropriate to the helmet size.

Adjust the retention system as tight as possible, by hand.

Attach the hook over the front/rear edge of the helmet at the centre and arrange the wire to pass over the longitudinal vertical median plane of the helmet.

Arrange for the falling mass to drop through a distance of (175 ± 5) mm and release the mass.

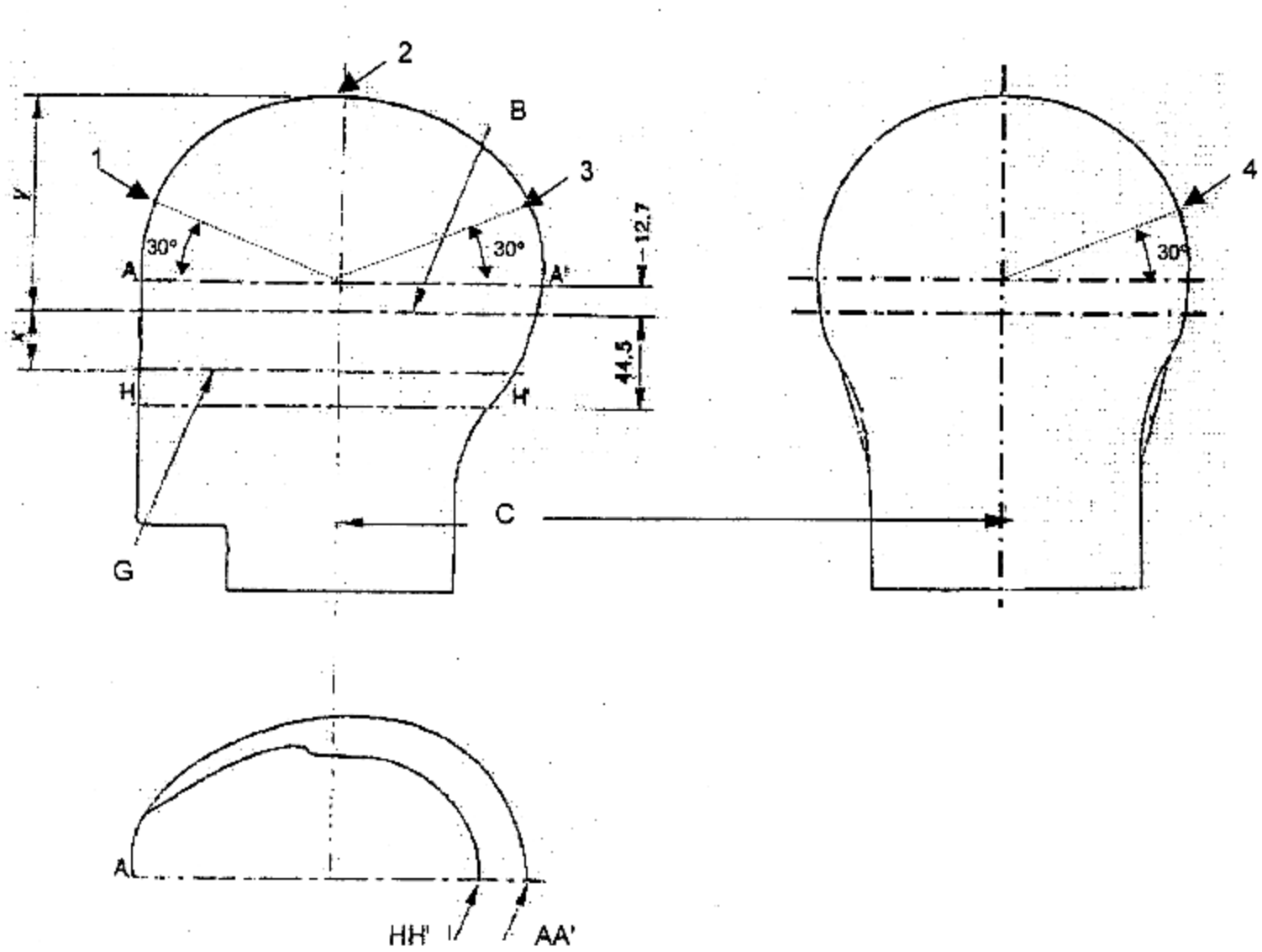
Observe whether the helmet comes off the headform completely. If it does not, measure the angle that the helmet has rotated to the nearest degree, being the angle between the datum line drawn on the helmet and the horizontal.

5.8.5 Report

Report if the helmet came off the headform completely or, alternatively, the angle through which it rotated.

A1

Dimensions in millimetres (with a tolerance of ± 1 mm, unless otherwise indicated)



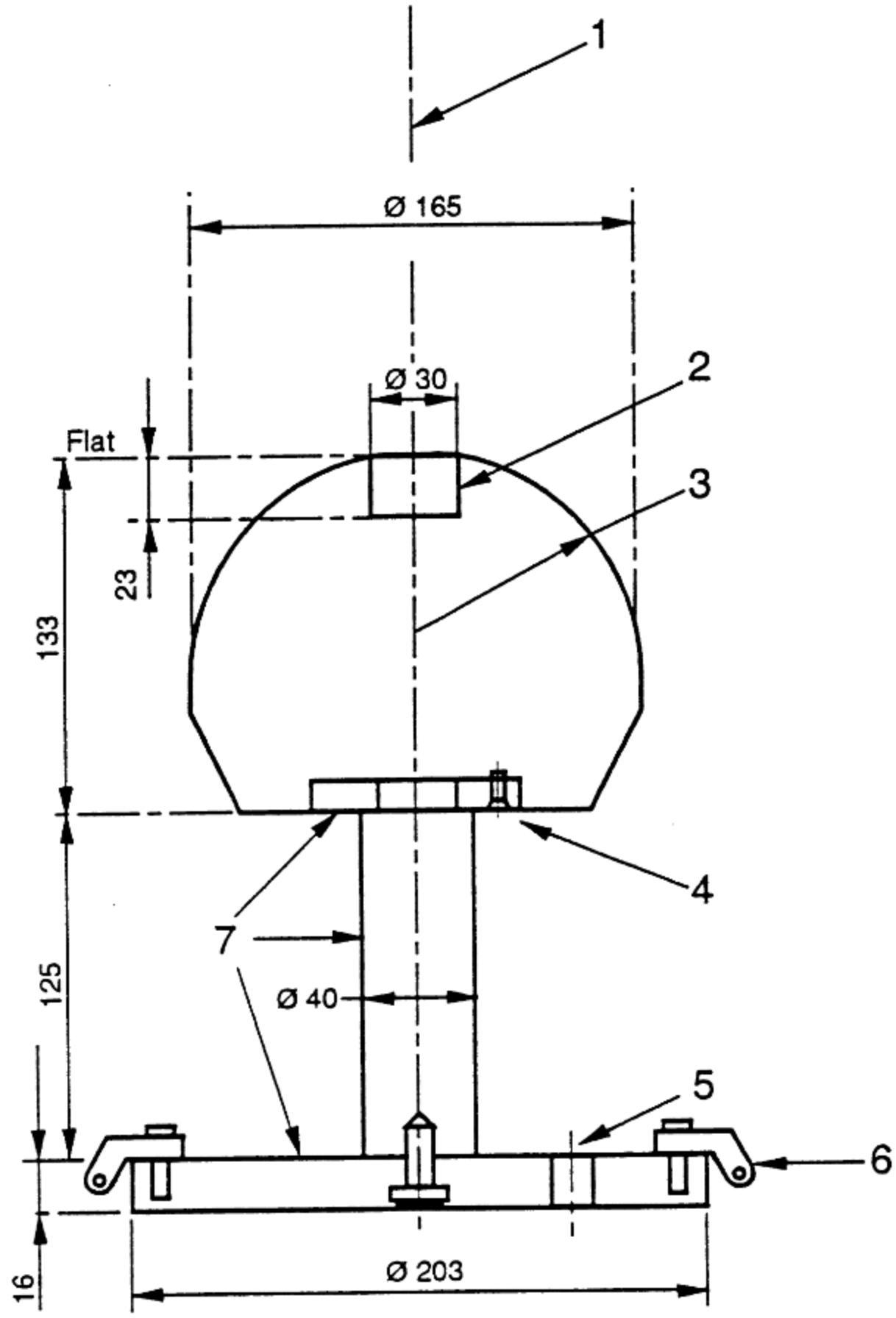
Key

1 to 4	Impact points
B	Reference plane
C	Central vertical axis
G	Basic plane
AA', HH'	See EN 960

A1

Figure 1 - Impact points on helmet

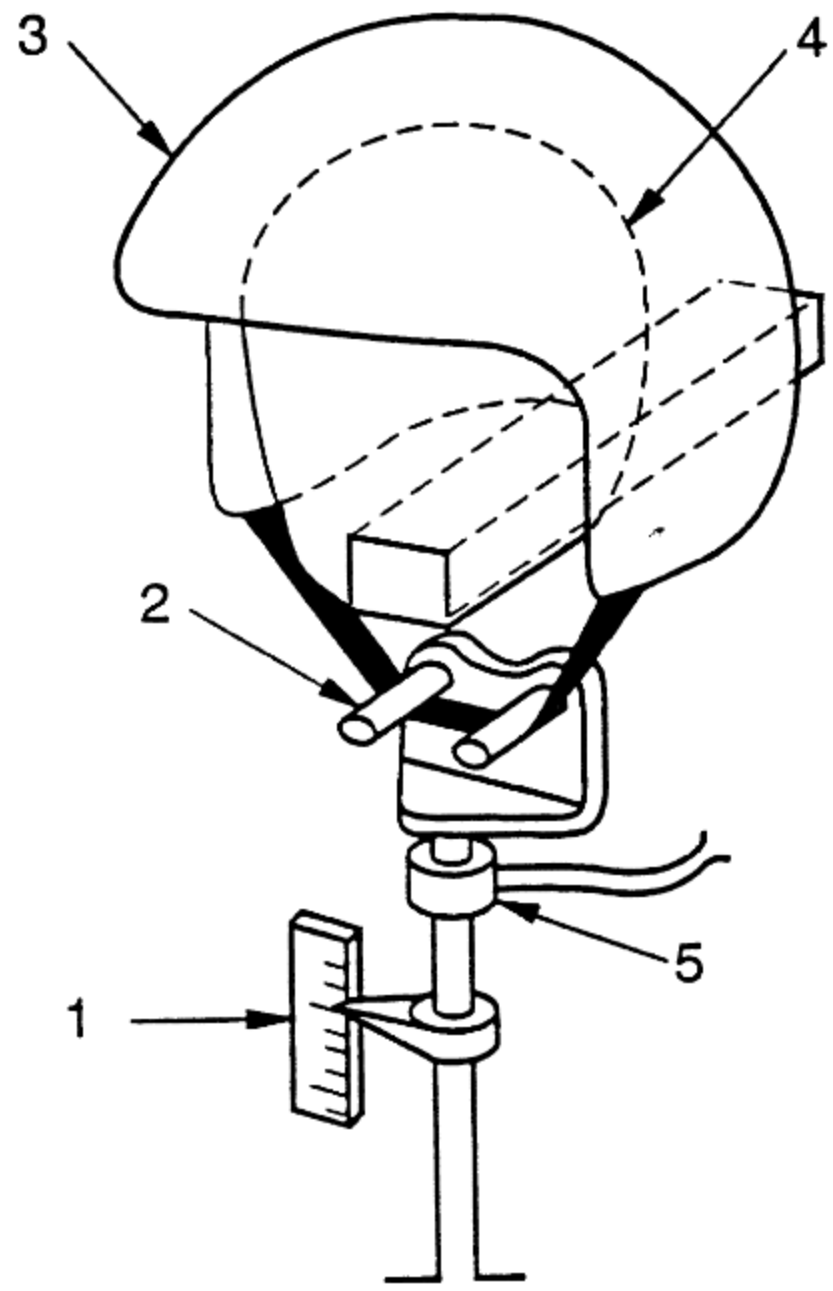
Dimensions in millimetres
Tolerances ± 1 mm (unless otherwise indicated)



Key

1 Striker axis
2 Soft metal insert
3 Spherical radius (66,5 ± 0,5)
4 3 screws equi-spaced
5 Holes equi-spaced
6 Strap anchors
7 Metal

Figure 2 - Test block for testing penetration resistance

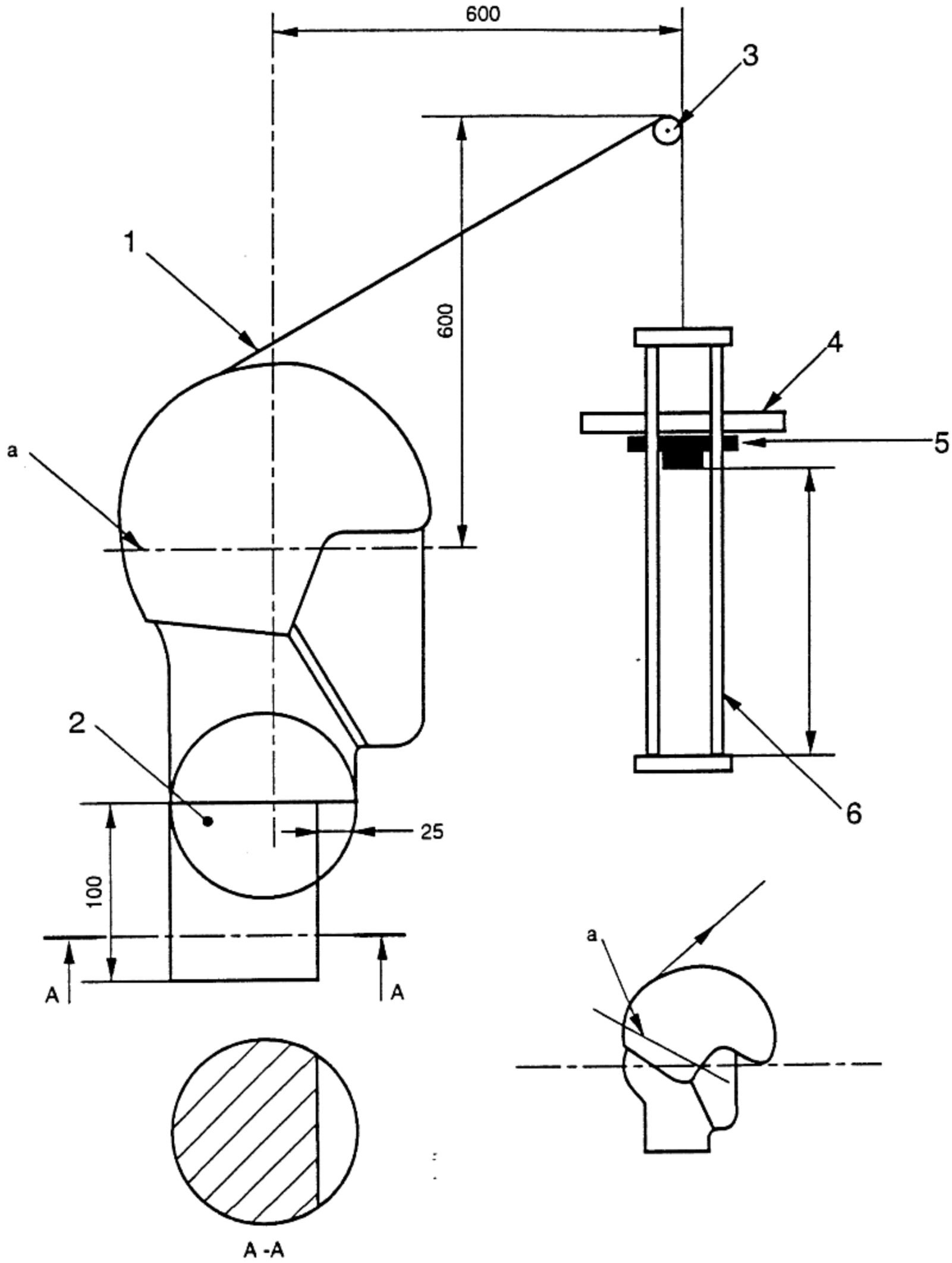


Key

1 Extension measuring device
2 Chin strap stirrup
3 Helmet
4 Headform
5 Load cell (optional)

Figure 3 - Apparatus for testing of the retention system strength

Dimensions in millimetres



Key

1 Flexible connection
2 Base
3 Pulley
4 Frame
5 Drop weight
6 Guiding system
a Datum line on helmet

Figure 4 - Apparatus for testing of the retention system effectiveness

6 Marking and labelling

6.1 Marking

Each helmet shall be marked in such a way that the following information is easily legible by the user and is likely to remain legible throughout the life of the helmet:

a) the number of this European Standard;

b) the name or trademark of the manufacturer and/or his authorized representative;

c) the designation of the model;

d) the year and quarter of manufacture;

e) the size or size range (in cm).

6.2 Labelling

A label shall be attached to each helmet when offered to sales, giving the following instructions, at least in the official language(s) of the Member State of destination:

a) The designation “Helmet for mountaineers”.

b) For adequate protection this helmet has to fit or to be adjusted to the size of the user’s head.

c) The helmet is made to absorb the energy of a blow by partial destruction or damage, and even though such damage may not be readily apparent, any helmet subjected to severe impact should be replaced.

d) The attention of the users is also drawn to the damage of modifying or removing any of the original component parts of the helmet, other than as recommended by the helmet manufacturer. Helmets should not be adapted for the purpose of fitting attachments in any way not recommended by the helmet manufacturer.

e) Do not apply paint, solvents, adhesives or self-adhesive labels, except in accordance with instructions from the helmet manufacturer.

f) For cleaning, maintenance or disinfection, use only substances that have no adverse effect on the helmet and are not known to be likely to have any adverse effect upon the wearer, when applied in accordance with the manufacturer’s instructions and information.

7 Information supplied by the manufacturer

The following information, provided precisely and comprehensibly in the official language(s) of the country of sale, shall accompany each helmet:

a) the name and address of the manufacturer and/or his authorized representative established in the community;

b) instructions or recommendations regarding adjustment, fitting, use, cleaning, disinfection, maintenance, servicing and storage;

c) details of suitable accessories and appropriate spare parts;

d) relevant information regarding the obsolescence deadline or period of obsolescence of the helmet and component parts;

e) relevant information regarding details of the type of packaging suitable for storage and transporting to the point of sale.

Annex A (informative)

U.V. ageing. Alternative test method

The helmet submitted to artificial ageing should be exposed to the radiation of a xenon arc lamp. The radiant energy of the lamp should be filtered to provide a spectral power distribution that closely approximates that of terrestrial daylight.

The helmet should be fixed on a cylindrical holder concentric to the lamp and which rotates at a speed of 1 rev/min to 5 rev/min around its axis.

Each helmet which will subsequently be tested for shock absorption, or for penetration, should be orientated so that the area of test should be directed towards the lamp. The plane tangential to the shell at this point should be normal to a radius of the cylindrical holder.

The radiant energy incident in the plane of the test areas should be either measured or calculated from information provided by the manufacturer of the test apparatus the exposure interval should be adjusted so that the exposed samples should receive a total energy of 1 GJ/m² over the wavelength range 280 nm to 800 nm.

The sample should be sprayed with distilled or demineralized water (having a conductivity below 5 µs/cm) intermittently with a cycle of 18 min of spraying and 102 min without spraying. During the latter periods, the measured relative humidity should be (50 ± 5) %.

The temperature within the test chamber should be measured with a black standard thermometer placed at the same distance from the lamp as the exposed test areas of the helmets. The temperature should be maintained at (70 ± 3) °C.

All other test and calibration conditions for the apparatus should be in accordance with ISO 4892-1 and ISO 4892-2, Method A.

> Note 1: Not all available test apparatus, otherwise meeting the requirements of ISO 4892, will incorporate sample holder frames of diameter sufficient to accommodate complete helmets.
>
> Note 2: The position of the water sprays may require adjustment in order to avoid interference with the test samples.
>
> Note 3: The energy output of the xenon arcs should be capable of being reduced below normal operational levels, so as to maintain acceptable intensities in the sample surface plane required by this procedure.

Annex ZA (informative)

Clauses of this European Standard addressing essential requirements or other provisions of EU Directives

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU Directive on personal protective equipment (PPE) 89/686/EEC.

WARNING: Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

The following clauses of this standard are likely to support requirements of Directive 89/686/EEC:

EU Directive 89/686/EEC, Annex II	Clause of this standard
1.1.1	4.1
1.1.2	4.2
1.2.1.1	4.1.1
1.2.1.2	4.1.2
1.2.1.3	7
1.3.1	4.1.3, 7
1.3.2	5.3, 4.2
1.3.3	5.1, 7c)
1.4	7
2.1	4.2.3, 4.2.4
2.2	4.1.4
2.4	5.3, 7d)
2.12	6
3.1	4.2

Compliance with the clauses of this standard provides one means of conforming with the specific essential requirements of the Directive concerned and associated EFTA regulations.

Bibliography

No	Document	Title
1	EN 892	Mountaineering equipment - Dynamic mountaineering ropes - Safety requirements and test methods
2	EN 12275	Mountaineering equipment - Connectors - Safety requirements and test methods
3	EN 13089	Mountaineering equipment - Ice-tools - Safety requirements and test methods
4	EN 12277	Mountaineering equipment - Harnesses - Safety requirements and test methods
5	EN 12492	Mountaineering equipment – Helmets for mountaineers - Safety requirements and test methods
6	EN 564	Mountaineering equipment - Accessory cord - Safety requirements and test methods
7	EN 565	Mountaineering equipment - Tape - Safety requirements and test methods
8	EN 566	Mountaineering equipment - Slings - Safety requirements and test methods
9	EN 12276	Mountaineering equipment - Frictional anchors - Safety requirements and test methods
10	EN 12270	Mountaineering equipment - Chocks - Safety requirements and test methods
11	EN 567	Mountaineering equipment - Rope clamps - Safety requirements and test methods
12	EN 958	Mountaineering equipment - Energy absorbing systems for use in klettersteig (via ferrata) climbing - Safety requirements and test methods
13	EN 959	Mountaineering equipment - Rock anchors - Safety requirements and test methods
14	EN 568	Mountaineering equipment - Ice anchors - Safety requirements and test methods
15	EN 569	Mountaineering equipment - Pitons - Safety requirements and test methods
16	EN 893	Mountaineering equipment - Crampons - Safety requirements and test methods
17	[1)]	Mountaineering equipment - Descenders - Safety requirements and test methods (00136079)
18	EN 12278	Mountaineering equipment - Pulleys - Safety requirements and test methods
[1)] in preparation		

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001. Fax: +44 (0)20 8996 7001. Email: orders@bsi-global.com. Standards are also available from the BSI website at http://www.bsi-global.com.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: info@bsi-global.com.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001. Email: membership@bsi-global.com.

Information regarding online access to British Standards via British Standards Online can be found at http://www.bsi-global.com/bsonline.

Further information about BSI is available on the BSI website at http://www.bsi-global.com.

BSI

389 Chiswick High Road

London

W4 4AL