BS EN 1384:2012

BSI Standards Publication

Helmets for equestrian activities

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National foreword

This British Standard is the UK implementation of EN 1384:2012. It supersedes BS EN 1384:1997 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PH/6/5, Helmets for equestrian activities.

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

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

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Helmets for equestrian activities

Casques de protection pour sports hippiques

Schutzhelme für reiterliche Aktivitäten

This European Standard was approved by CEN on 17 December 2011.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN 1384:2012) 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of an identical text or by endorsement, at the latest by August 2012, and conflicting national standards shall be withdrawn at the latest by August 2012.

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

This document supersedes EN 1384:1996.

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).

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

Annex B provides details of significant technical changes between this European Standard and the previous edition.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey 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.

1 Scope

This European Standard specifies requirement for protective helmets that can have a peak, for people involved in equestrian activities.

It gives safety requirements that include methods of test and levels of performance for shock absorption, for resistance to penetration and for the strength and effectiveness of the retention system and the deflection of a peak if fitted.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 960:2006, *Headforms for use in the testing of protective helmets*

ISO 6487, *Road vehicles — Measurement techniques in impact tests — Instrumentation*

3 Terms and definitions

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

3.1
shell
material that provides the hard outer case of the helmet

3.2
protective padding (liner)
padding material provided to absorb impact energy

3.3
comfort padding or size padding
padding material provided to ensure comfortable and correct fit

3.4
cradle
headband or other head fitting and those internal parts of the helmet other than the padding, which are in contact with the head

3.5
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

3.6
draw-lace
lace used by a wearer for making adjustments to the fit of the cradle on the head

3.7
chin strap
part of the retention system consisting of a strap that passes under the wearer's jaw to keep the helmet in position

3.8
chin cup
cup mounted on the retention system to locate the strap on the point of the wearer's chin

3.9
helmet type
category of helmets which does not differ in such essential respects as the materials, construction of the helmet, retention system or protective padding

Note 1 to entry Different sizes of the same design do not constitute different helmet types.

3.10
peak
extension from the basic form of the helmet above the eyes

3.11
area of protection
minimum area of the headform covered by the protective padding (liner)

4 Construction

4.1 General

The helmet may be constructed either with or without a shell, and with or without means of ventilation. If a shell is used, then protective padding shall be securely fastened to it. The helmet shall not be fitted with nor have a chin cup.

The minimum thickness of the protective padding (liner), measured at 12 mm from the edge of the area of protection, shall not be less than the minimum thickness of the protective padding (liner) in the test area as defined in 6.1.

4.2 Materials

The characteristics of the materials used in the manufacture of helmets shall be not generally known to undergo substantial reduction in protective ability under the influence of ageing, or during the circumstances of use to which the helmet is normally subjected.

For those parts of the helmet coming into contact with the skin, the materials used shall be not generally known to undergo reduction in protective ability arising from the effects of sweat or of toiletries. The manufacturer shall not use materials generally known to cause skin disorders of a non-allergic type.

4.3 Finish

All edges shall be smooth and rounded. There shall be no rigid projections on the inside of the helmet. Any external projection shall not exceed 5 mm or shall be smoothly faired to the adjacent surface, except for a button on the top of the helmet and a peak.

4.4 Retention system

A retention system shall be permanently fixed to the helmet and shall incorporate a chin strap not less than 15 mm wide. The system shall be permanently fitted with fastening and adjustment devices which may be combined. The retention system shall be freed by deliberate action only.

The fastening and adjusting devices shall have no sharp edges.

NOTE 1 It is recommended that the part of the device intended to be operated by the wearer to cause the device to open is coloured orange or red.

NOTE 2 It is permissible for the system to include padding or other means of enhancing comfort to the wearer.

The chin strap (see 3.7) shall not have a chin cup.

4.5 Headforms

The headforms shown in Table 1 shall be used for helmet sizing, extent of protection, retention effectiveness and retention strength.

NOTE Table 1 also gives the EN 960:1994 equivalent letter codes to the EN 960:2006 size designations for headforms with similar nominal dimensions. These are as given in EN 960:2006, Annex C. The EN 960:2006 size designation approximates to the circumference of the headform at the reference plane, in mm.

Table 1 — Headforms for sizing, extent of protection, retention effectiveness and retention strength

Circumference of headform in mm	
Size designation (EN 960:1994 equivalent)	**Extent of protection, retention effectiveness and retention strength (mm)**
495 (A)	495
505 (B)	495
515 (C)	515
525 (D)	515
535 (E)	535
545 (F)	535
555 (G)	555
575 (J)	575
585 (K)	585
595 (L)	585
605 (M)	605
615 (N)	605
625 (O)	625
635 (P)	625
645 (Q)	645

5 Performance requirement

5.1 Shock absorption

When tested by the method in 6.4, the acceleration shall not exceed 250 g at any time, and the total time during which it exceeds 150 g shall not be greater than 5 ms. The helmet shall remain on the headform and the retention system shall remain fastened.

5.2 Penetration

When tested by the method described in 6.5, the point of the striker shall not leave visible indentation on the test block.

5.3 Retention system strength

When tested by the method described in 6.6, using a drop height of (250 ± 5) mm between the facing surfaces of the drop-weight and anvil, the dynamic extension of the retention system, including slippage of the buckle, as measured by displacement of the simulated chin, shall not exceed 35 mm and the residual extension, with the drop-weight at rest on the anvil, shall not exceed 25 mm. Without load on the system any damage to the retention system shall still permit release of the buckle.

5.4 Retention system effectiveness

When the helmet is fitted to an appropriate size headform and is subjected to the test described in 6.7, the helmet shall remain on the headform.

5.5 Peak deflection

Where the helmet has a peak, when the peak is tested by the method described in 6.8, the deflection at the lateral mid-point of the front edge of the peak shall be greater than 6,0 mm.

6 Testing

6.1 Assessment of extent of the area of protection and marking of test area

Completely slacken the draw-laces if fitted. Place the helmet on a headform of appropriate size, and apply a vertical load of 50 N in order to stabilize the helmet on the headform. Unless the normal wearing position is clearly specified by the manufacturer, position the helmet so that the lowest lateral mid-point at the front of the protective padding (liner) is no lower than the mid-point between the reference plane and the AA′ plane, and not above the AA′ plane.

NOTE In the case of the pony rider's style of helmets, the underside of the peak adjacent to the protective padding (liner) is considered to be the base of the shell.

Record the distance from the basic plane to the lowest lateral mid-point at the front of the protective padding (liner), for all consumer sizes on each helmet type.

The helmet is marked up as follows:

a) a horizontal line at the level of the AA′ plane of the headform;

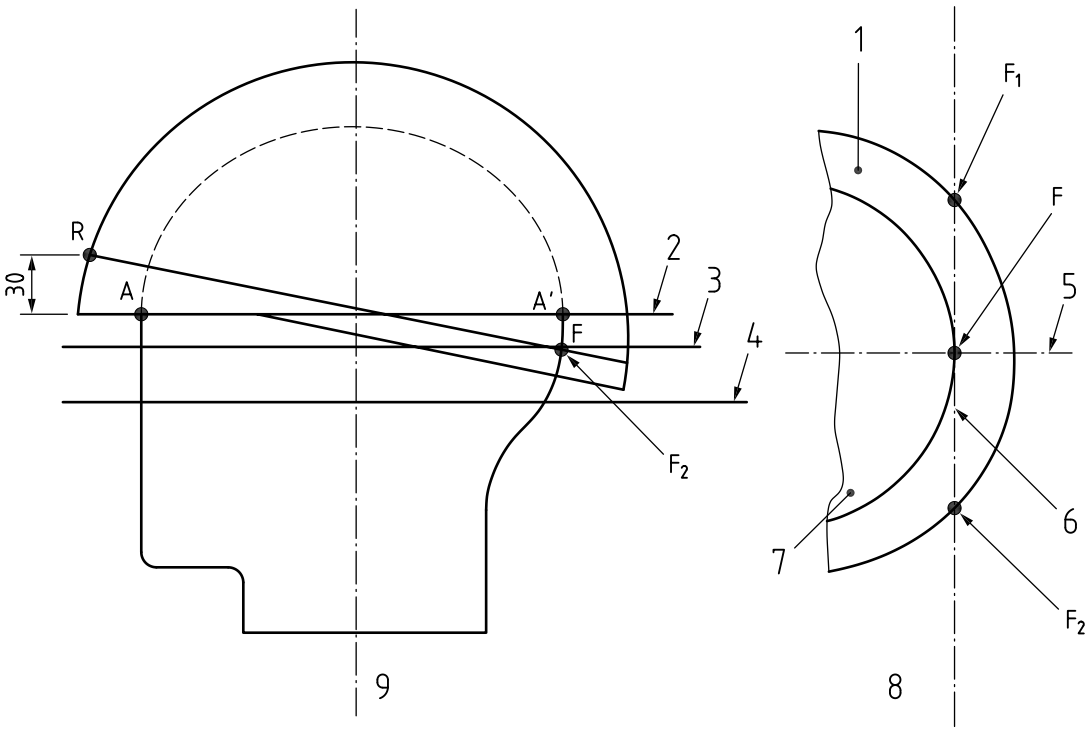
b) points F_1 and F_2 which are the sideways horizontal projection of the headform point F on to the outer surface of the helmet;

c) a front point R on the projected longitudinal vertical plane of the headform and 30 mm above the AA′ plane;

d) draw a line around the helmet joining points F_1, F_2 and R.

The area of test extends down to the RF_1F_2 line and the area of protection shall extend down to and include both the area above the AA′ plane as marked in a) and the area above the RF_1F_2 line as marked in d). An example of a typical helmet is shown in Figure 1.

Dimensions in millimetres



Key

1	helmet	6	line of sideways horizontal projection of headform point F
2	AA′ plane	7	headform
3	reference plane	8	section on the reference plane
4	basic plane	9	central vertical axis
5	longitudinal vertical plane		

NOTE Longitudinal vertical plane – equivalent to EN 960:2006, 2.8 “vertical longitudinal plane”.

Figure 1 — Test headform showing test area (area above line RF_1F_2) and area of protection (both the area above the AA′ plane and the area above the RF_1F_2 line)

6.2 Test sequence and time schedule

For each helmet type at least twelve helmets shall be tested.

For each helmet type select three helmets of the largest size (set 1) and three helmets of the smallest size (set 2). Additionally select one helmet from each other available helmet size. If, using this selection procedure, less than twelve helmets are selected then the remainder shall be selected by the manufacturer to produce a total sample of twelve helmets.

After assessment of the extent of the area of protection of the helmet as described in 6.1, carry out the peak deflection test in 6.8 followed by the effectiveness of retention system test in 6.7.

The helmets shall then be conditioned using the following method. Helmets in set 1 shall be conditioned, one helmet by high temperature conditioning in 6.3.1, one helmet by low temperature conditioning in 6.3.2 and one helmet by ultraviolet radiation and moisture conditioning in 6.3.3. This method is repeated for helmets in set 2. Each of the remaining helmets are conditioned in the sequence: one helmet high temperature conditioning, one helmet low temperature conditioning, one helmet moisture conditioning (no ultraviolet radiation). This sequence is repeated until all the helmets have been conditioned by one of the three methods.

After the helmet has been conditioned subject it to the shock absorption test in 6.4 such that the first impact takes place within 30 s to 90 s of conditioning and the second impact within 240 s of conditioning. Condition the helmet at an ambient temperature of (20 ± 5) °C for a minimum of 4 h and then subject it, while maintaining ambient temperature, to the penetration test in 6.5 and the strength of retention test in 6.6.

If during sequential testing the helmet exhibits substantial damage such that the test house considers it may not pass the effectiveness of retention test in 6.7, then the helmet shall be tested to 6.7. If it fails this additional test then the helmet type shall not comply with this European Standard.

NOTE If the helmet is supplied with a removable cover then the tests should be conducted with this cover removed.

6.3 Conditioning before testing

6.3.1 High temperature conditioning

Expose the helmet to a temperature of (50 ± 2) °C for not less than 4 h and not more than 6 h.

6.3.2 Low temperature conditioning

Expose the helmet to a temperature of (–20 ± 2) °C for not less than 4 h and not more than 6 h.

6.3.3 Artificial ageing and moisture conditioning

Expose the outer surface of the helmet successively to ultraviolet radiation for (48 ± 2) h by a 125 W xenon filled quartz lamp at a range of (250 ± 10) mm from the nearest point on the helmet and then for 4 h to 6 h to a spray of water at ambient temperature of (20 ± 5) °C at the rate of (1 000 ± 25) ml/min.

NOTE A different method for accelerated ageing by ultraviolet light is given in Annex A for information only.

6.4 Shock absorption test

6.4.1 Principle

The shock absorption characteristics are determined from the deceleration of a headform carrying a conditioned helmet which is dropped in guided free fall on to a fixed steel anvil.

6.4.2 Apparatus

6.4.2.1 General

The test apparatus comprises:

— an anvil which can be rigidly fixed to the base;

— a metal headform fitted with a triaxial accelerometer;

— a system to support the helmeted headform and to guide it in free fall;

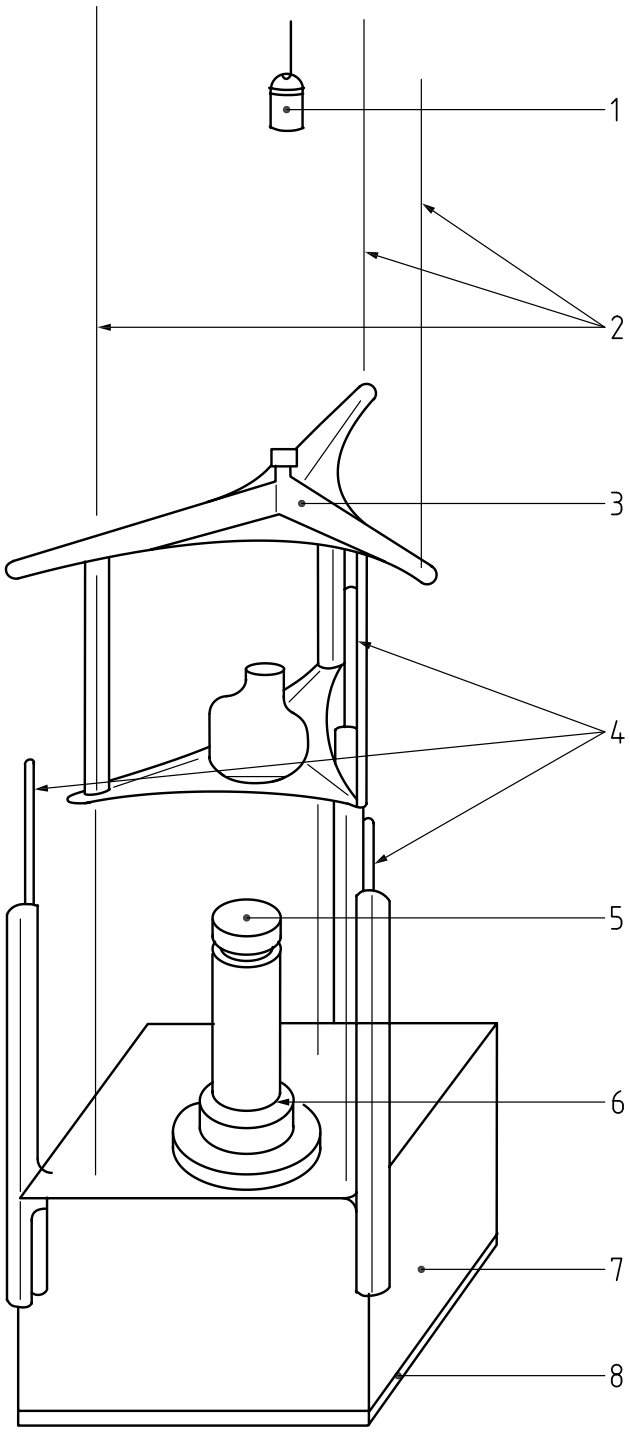
— a guidance system for the helmeted headform support system;

— a system to align the impact site with the centre of the anvil;

— a monolithic base of concrete and/or steel having a mass of at least 500 kg, and resting on a slab of rubber of hardness 60 Shore approximately.

No part of the base or anvil shall have a resonance frequency liable to affect the measurements.

An example of a suitable apparatus is shown in Figure 2.



Key

1	electromagnetic dropper	5	anvil
2	guide cables	6	plate magnet
3	headform support dolly	7	steel base
4	dolly dampers	8	rubber slab

Figure 2 — Typical apparatus for testing shock absorbing capacity

6.4.2.2 Anvil

The anvil shall have a flat, circular impact face of (130 ± 3) mm diameter.

6.4.2.3 Headform support system

The helmeted headform support shall be such that its characteristics do not affect the measurement of acceleration at the centre of gravity of the headform. It shall be so designed that any points within the test area in Figure 1 can be positioned vertically above the centre of the anvil. The guidance system shall be such that the impact velocity is not less than 95 % of the theoretical value. A measurement system shall be provided to measure and record to an accuracy of ± 1 % the velocity of the helmeted headform when it is within 60 mm of impact.

6.4.2.4 Accelerometer

The triaxial accelerometer shall be capable of measuring and recording accelerations up to 2 000 g. Its mass shall be not more than 50 g.

The accelerometer shall be mounted near the centre of gravity of the test headform.

The measuring system, including the drop assembly, shall have a frequency response in accordance with channel frequency class (CFC) 1 000 of ISO 6487.

6.4.2.5 Headforms

The headforms shall conform to EN 960:2006 and shall be made of a metal, with no resonance frequency below 3 000 Hz.

The test headforms shall be chosen from those with the characteristics in Table 2.

NOTE Table 2 also gives the EN 960:1994 equivalent letter codes to the EN 960:2006 size designations for headforms with similar nominal dimensions. These are as given in EN 960:2006, Annex C. The EN 960:2006 size designation approximates to the circumference of the headform at the reference plane, in mm.

Table 2 — Characteristics of headforms for shock absorption test

Size designation (EN 960:1994 equivalent)	**Mass** kg
495 (A)	3,1 ± 0,10
535 (E)	4,1 ± 0,12
575 (J)	4,7 ± 0,14
605 (M)	5,6 ± 0,16
625 (O)	6,1 ± 0,18

For helmets not covered by these headforms use the nearest, smaller headform, e.g. a size 530 mm helmet shall be tested using a size designation 495 headform.

Where a discrete helmet size covers more than one impact headform size or where more than one impact headform size is considered appropriate by the test house, then the test house will select samples from sets 1 and 2 to test on the different headform size.

6.4.2.6 Test procedure

Impact each helmet once on each of two sites, the centres of which are within the test area described in 6.1, separated by at least 150 mm from each other and not closer than 75 mm to a penetration test site. In a test series the following sites should be impacted at least once: ventilation area, retention fixing point (or directly above if fixing point is outside the test area) and the temporal area.

For each impact, set the drop height at (1 500 ± 5) mm measured between the impact site on the helmet and the surface of the anvil.

6.5 Determination of resistance to penetration

6.5.1 Principle

A pointed striker drops in guided free fall on to the helmet mounted on a hemispherical test block. Note is taken whether the point of the striker reached the test block.

6.5.2 Apparatus

The test apparatus consists of a striker with a free fall guidance system and a rigidly mounted hemispherical test block of radius (65 ± 5) mm. The striker shall be conical with its lower end having a rounded point, and shall have the following characteristics:

Mass	(3 000 ± 25) g
Radius of tip	(0,5 ± 0,1) mm
Angle	(60 ± 0,5)°
Minimum height of cone	40 mm
Hardness of tip	50 HRC to 45 HRC

The guidance system shall be such that the impact velocity is not less than 95 % of the theoretical velocity measured at a distance not exceeding 60 mm prior to impact.

The contactable surface of the hemispherical test block shall be of a material that will readily permit detection if contact with the striker occurs, and that can be restored after contact, if necessary.

The hemispherical test block shall be rigidly mounted on a base in such a way that it can be orientated so that the plane tangential to the surface of the helmet at the point selected for the test is substantially horizontal.

6.5.3 Procedure

Remove the helmet from conditioning, and mount it firmly on the hemispherical test block. Completely slacken any means of adjustment, with the exception of the chin strap.

Choose three impact sites that lie within the test area defined in 6.1 and not less than 50 mm apart. If the helmet incorporates ventilation features within the test area, then on each sample one impact site shall be over a ventilation feature, and within the series of tests all features shall be assessed. Allow the striker to fall once on to each of the three sites from a height of (500 ± 5) mm measured between the point of the striker and the impact site.

Observe whether or not contact is made between the striker and the hemispherical test block. If the surface of the hemispherical test block has been damaged by contact, restore it before the next impact.

6.6 Test for strength of retention system

6.6.1 Principle

With the helmet fixed and the retention system fastened round the headform, a downward load is suddenly applied to the headform and the peak and residual displacements of the headform are observed.

6.6.2 Apparatus

A headform conforming to EN 960:2006 and with a simulated chin is mounted at the top of a vertical guide, down which a weight can move in guided free fall on to an anvil attached to the lower end of the guide. Means shall be provided for observing the position and displacement of the headform in a vertical direction. The headform and parts attached to it shall have a mass of (15 ± 0,5) kg and the falling weight has a mass of (10 ± 0,1) kg.

NOTE A suitable apparatus is shown in Figure 3.

6.6.3 Procedure

Fix the helmet rigidly in an upright position by means of a hole drilled into its highest point. Insert the headform into the helmet and locate the guide so that the weight is free to move only along a vertical line that passes through the point at which the shell is held. Fasten the retention system in accordance with any instructions from the manufacturer. Measure the vertical position of the headform without the falling weight resting on the system. Allow the weight to fall on to the anvil through a height of (250 ± 5) mm. Observe the maximum dynamic displacement of the headform. During the test measure the maximum dynamic displacement of the point of application of the force. After 2 min measure the residual displacement of the point of application of the force whilst the drop weight is resting on the anvil.

6.7 Test for effectiveness of retention system

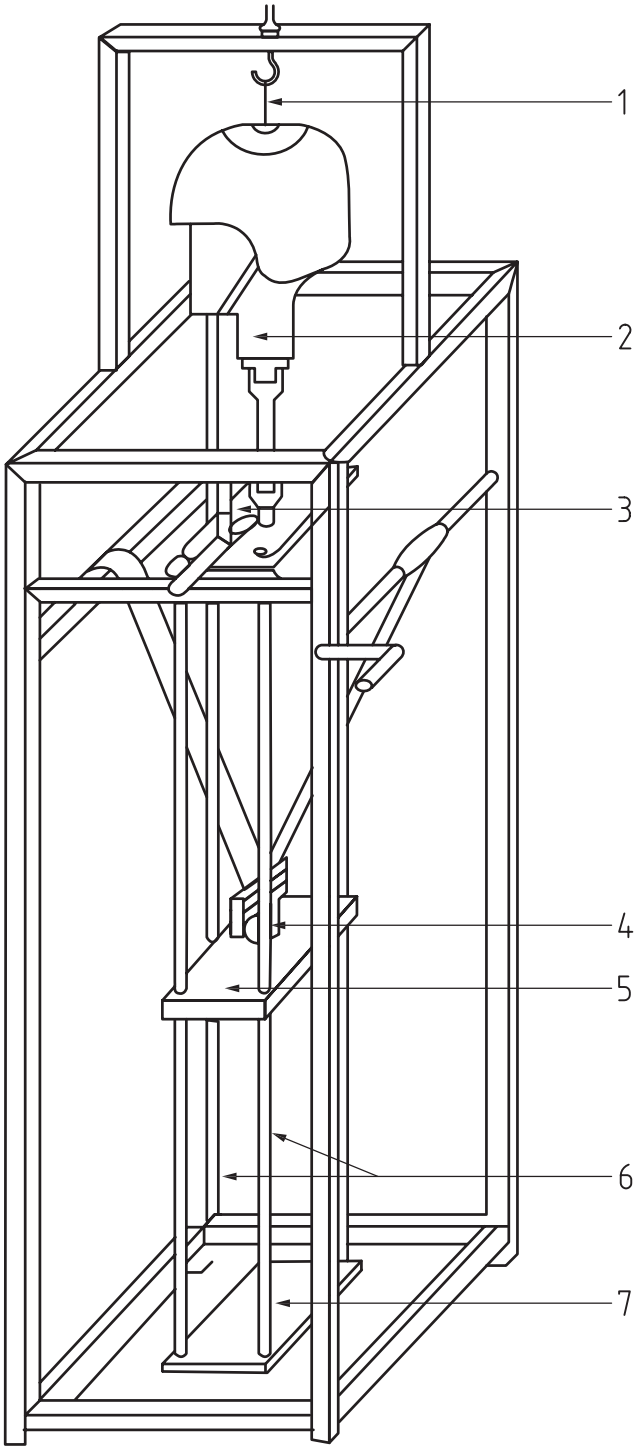
6.7.1 Principle

The helmet is mounted on an appropriate headform with the retention system fastened in the way in which it is intended to be worn. The helmet is subjected to a sudden upward force applied at the rear edge of the shell, rotating it forwards on the headform. The rotation is measured and recorded.

6.7.2 Apparatus

A device (the total mass being (3,0 ± 0,1) kg) to release a falling weight is hooked on to the rear part of the helmet in the median vertical plane of the helmet. The falling weight shall have a mass of (10 ± 0,1) kg. The mass is dropped in guided free fall, the guiding devices shall be such as to ensure that the actual impact speed is not less than 95 % of the theoretical speed.

NOTE A suitable apparatus is shown in Figure 4.

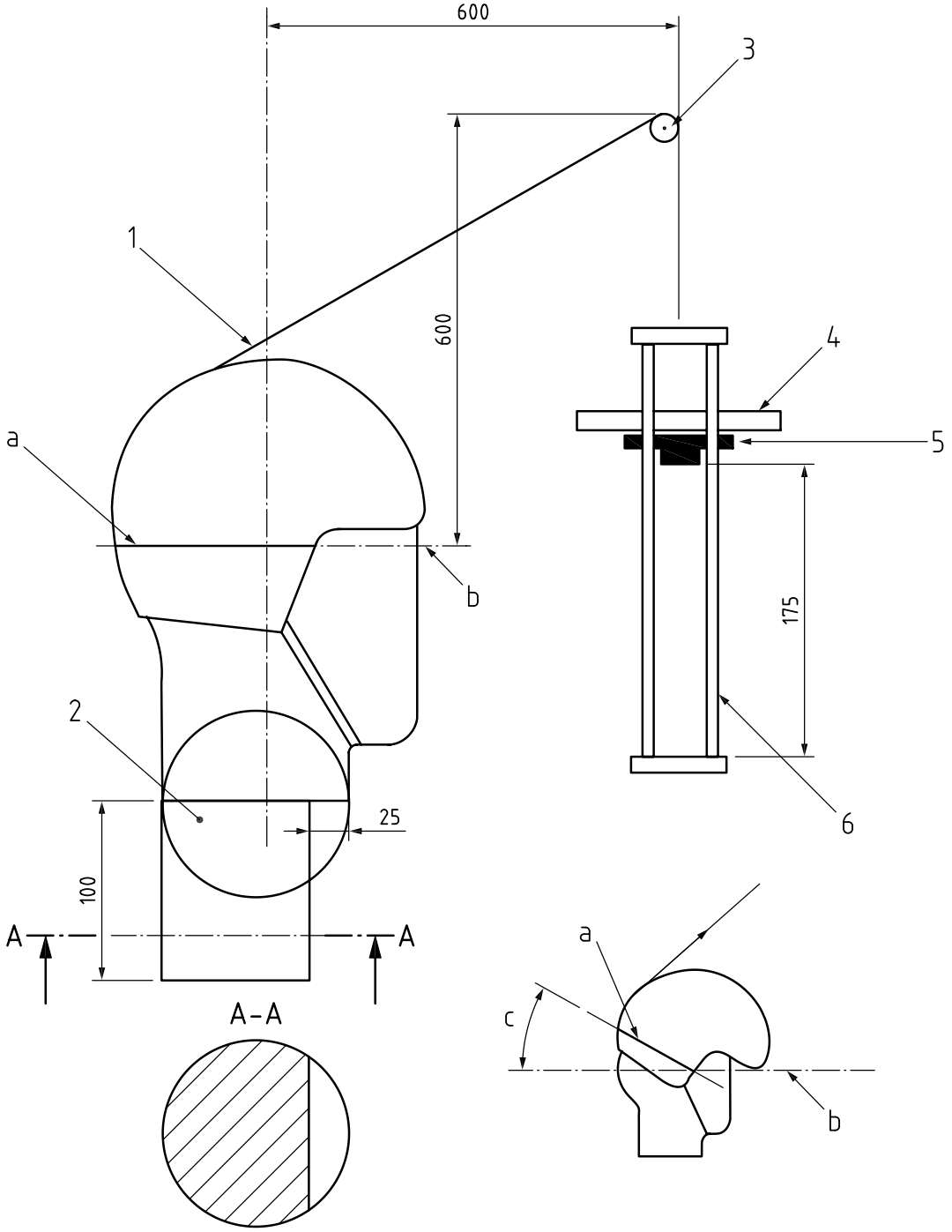


Key

1 fixed helmet support
2 headform
3 displacement recorder
4 drop release
5 drop weight, mass 10 kg
6 guides
7 anvil

Figure 3 — Apparatus for testing of retention system strength

Dimensions in millimetres, not to scale



Key

1 flexible connection
2 base
3 pulley
4 frame
5 drop weight
6 guiding line on helmet
a reference line on helmet
b reference plane
c angle of rotation for helmet after test

Figure 4 — Apparatus for testing retention system effectiveness

6.7.3 Procedure

Condition the helmet to ambient temperature and humidity. Mount it on the headform and fasten the retention system in the way in which it is intended to be worn. Mark a line on the helmet for measurement of the angle of rotation relative to the headform. Engage the hook in the rear edge of the shell and raise the weight. Release the drop weight so that it falls through (175 ± 5) mm. Observe and record the angle through which the helmet has rotated.

6.8 Test for deflection of the peak

6.8.1 Principle

The ability of the peak to deflect is assessed by applying a known load to it and measuring the resultant deflection.

6.8.2 Apparatus

The apparatus consists of a rigid base on to which a headform is fitted and includes a system to apply the load and measure the resulting deflection.

6.8.3 Test procedure

Place the helmet on the appropriate size headform and load it with a mass of 12 kg ± 100 g to hold it securely in place. Freely suspend a mass of 2 kg ± 10 g from the edge of the peak at a point within 12,5 mm of the centre of the front edge. Measure the deflection under load, in millimetres, at the front edge of the peak after the load has been applied within 20 s.

7 Marking and labelling

7.1 Marking

Each helmet shall be marked with the following information in a manner consistent with the language and practice of the country where the helmet is offered for sale:

a) the name of the manufacturer and either the trademark or other means of identification;

b) the number and date of this European Standard, i.e. EN 1384:2012;

c) the size in centimetres and a symbol or statement indicating the intended use of the helmet;

d) an indication of the year and either the month or quarter of manufacture;

e) a unique designation of the model by the manufacturer.

The markings shall be legible and shall be sufficiently durable that the marking is likely to remain legible throughout the life of the helmet.

NOTE The protected marking is for the information of an examiner both before and after use of the helmet. Compliance with the requirements for accessible and protective markings can be achieved either by two sets of markings or by one set that satisfies both requirements.

7.2 Information and instruction for the user

Every helmet for sale shall have a tag or a label attached to it indicating, in the language of the country of sale, the following information:

a) warning label;

b) for maximum protection this helmet shall fit closely and the hardness shall always be correctly adjusted and used according to the appropriate instructions supplied by the manufacturer;

c) the helmet is designed to absorb some of the energy of a blow by partial destruction of the shell or protective padding material, or both. This damage may not be visible and therefore any helmet which suffers an impact should be discarded and replaced by a new one;

d) the protection offered by the helmet depends on the circumstances of the accident; the wearing of a protective helmet will not always prevent death or long-term disability;

e) the weight of the helmet.

Every helmet offered for sale shall have attached to it by means of a tag, a label giving instructions for use, maintenance, fitting and adjustment in the language of the country of sale.

Annex A
(informative)

Alternative procedure for artificial ageing

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 is directed towards the lamp. The plane tangent 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 receive a total energy of 1 GJ/m^2 over the wavelength range of 280 nm to 800 nm.

The samples should be sprayed with distilled or demineralise water (having 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 EN ISO 4892-1, EN ISO 4892-2 and EN ISO 4892-3, Method A.

NOTE 1 Not all available test apparatus otherwise meeting the requirements of EN ISO 4892-1, EN ISO 4892-2 and EN ISO 4892-3 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 place required by this procedure.

Annex B
(informative)

Significant technical changes between this European Standard and EN 1384:1996

The significant changes with respect to the first edition of EN 1384 are as listed below.

Table B.1 — Significant changes between this European Standard and EN 1384:1996

Clause/paragraph/table/figure	Change
Clause 2	The normative references in Clause 2 and in the text have been updated. EN 960 has been dated throughout the text.
Figure 1	1 explanatory notes has been added.
6.4.2.5 and 6.6.2	EN 960 has been dated.
Table 1, both columns	Helmet sizing (column 1) have been changed into size designations plus between brackets EN 960:1994 equivalent code letters and the sizes have been adapted. The values of the 2nd column have been updated.
Table 2, columns 1 and 2	Code letters (column 1) and circumferences of headforms (column 2) have been merged to size designations with between brackets EN 960:1994 equivalent code letters. The circumferences have been adapted. An explanatory note has been added before the table.
Annex ZA	Has been updated.
Bibliography	Has been added according to references in Annex A.
NOTE The technical changes referred include the significant technical changes from the EN revised but is not an exhaustive list of all modifications from the previous version.	

Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 89/686/EEC Personal Protective Equipment

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 89/686/EEC Personal Protective Equipment.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and the EU Directives

EU Directive 89/686/ECC, Annex II	Clauses of this European Standard	Qualifying remarks/notes
1.2.1 Absence of risks and other inherent nuisance factors	4.4, 5.4, 5.5	
1.2.1.2 Satisfactory surface condition of all PPE parts in contact with the user	4.3	
1.3.1 Adaptation to users morphology	4.5	
1.3.2 Lightness and design strength	6.3	
1.4 Information supplied by the manufacturer	7	
2.1 PPE incorporating adjustment systems	5.3	
2.12 PPE bearing one or more identification or recognition marks directly or indirectly relating to health and safety	7	
3.1.1 Impact caused by falling or projecting objects and collision of parts of the body with an obstacle	5.1, 5.2	

Bibliography

[1] EN ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance (ISO 4892-1)*

[2] EN ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps (ISO 4892-2)*

[3] EN ISO 4892-3, *Plastics — Methods of exposure to laboratory light sources — Part 3: Fluorescent UV lamps (ISO 4892-3)*

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