BRITISH STANDARD

BS EN
1497:2007

Personal fall protection equipment — Rescue harnesses

The European Standard EN 1497:2007 has the status of a British Standard

ICS 13.340.60

BSi
British Standards

National foreword

This British Standard is the UK implementation of EN 1497:2007. It supersedes BS EN 1497:1996 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PH/5, Industrial safety belts and harnesses.

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

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Personal fall protection equipment - Rescue harnesses

Equipement de protection personnel contre les chutes - Harnais de sauvetage

Persönliche Absturzschutzausrüstungen - Rettungsgurte

This European Standard was approved by CEN on 30 June 2007.

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 Management Centre or to any CEN member.

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Foreword

This document (EN 1497:2007) has been prepared by Technical Committee CEN/TC 160 “Protection against falls from a height including working belts”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by February 2008, and conflicting national standards shall be withdrawn at the latest by February 2008.

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 89/686/EEC.

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

Annex A provides details of significant technical changes between this European Standard and the previous edition: EN 1497:1996.

This document supersedes EN 1497:1996.

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, 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 and United Kingdom.

Introduction

A rescue harness conforming to this European Standard can be such that it is either intended to be used only for rescue or it may be incorporated into the design of other types of harnesses for personal fall protection, e.g. a full body harness.

A rescue harness is intended to be worn during normal working activities.

1 Scope

This European Standard specifies requirements, test methods, marking and information supplied by the manufacturer for rescue harnesses. Rescue harnesses conforming to this European Standard are used as components of rescue systems, which are personal fall protection systems.

Rescue harnesses are not intended to be used as body holding devices in fall arrest systems.

2 Normative references

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

EN 362, *Personal protective equipment against falls from a height — Connectors*

EN 363:2002, *Personal protective equipment against falls from a height — Fall arrest systems*

EN 364:1992, *Personal protective equipment against falls from a height — Test methods*

EN 365, *Personal protective equipment against falls from a height — General requirements for instructions for use, maintenance, periodic examination, repair, marking and packaging*

EN 892, *Mountaineering equipment — Dynamic mountaineering ropes — Safety requirements and test methods*

EN ISO 9227, *Corrosion tests in artificial atmospheres - Salt spray tests (ISO 9227:2006)*

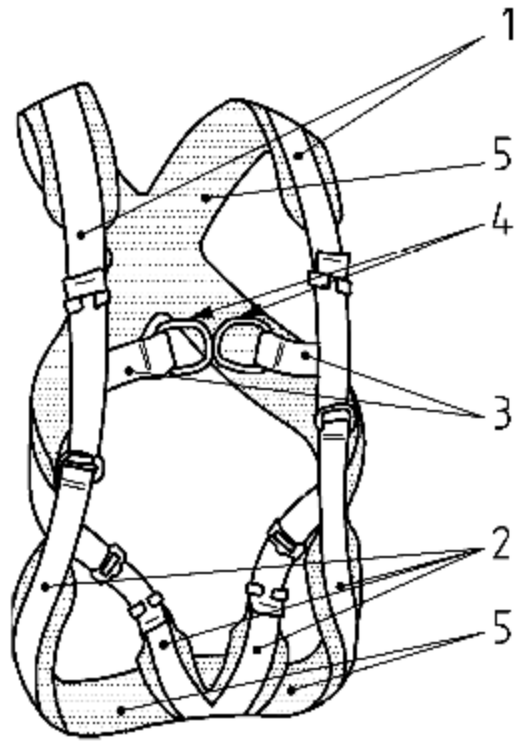
3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 363:2002 and the following apply.

3.1
rescue harness
body support for rescue purposes comprising straps, fittings, buckles or other elements, suitably arranged and assembled to support the whole body of a person in an appropriate position during a rescue

NOTE 1 See Figure 1.

NOTE 2 Rescue harnesses are intended to be worn during normal working activities.



Key

1 Primary straps (shoulder straps)
2 Primary straps (thigh straps)
3 Primary straps
4 Attachment point (consisting of two attachment elements)
5 Padding

Figure 1 — Example of a rescue harness

3.2
primary straps (for rescue harnesses)
straps intended by the manufacturer to support the body or exert pressure on the body during a rescue

NOTE Other straps are called secondary straps.

3.3
attachment point
specific connecting point for the attachment to other components, consisting of one or more attachment elements

3.4
rescue system
personal fall protection system by which a person can rescue himself/herself or others, in such a way that a fall is prevented

3.5
personal fall protection system
assembly of components for protection against falls from a height at work, including at least a body holding device connected to a reliable anchor

NOTE Excludes systems for professional and private sports activities.

3.6
maximum rated load (for the rescue harness)
maximum mass of the person, including tools and equipment, as specified by the manufacturer for the rescue harness

NOTE Maximum rated load is expressed in kilograms.

4 Requirements

4.1 Ergonomics

4.1.1 When tested and examined in accordance with 5.1, the rescue harness shall be designed so that in the conditions of use for which it is intended:

— it should offer an acceptable degree of comfort;

— rescuee is not endangered and safety is not impaired due to a displacement of the straps.

4.1.2 The width of the primary straps shall be at least 40 mm.

4.2 Materials and construction

4.2.1 General

The elements of the harness shall have no sharp edges or burrs that may cause injury to the user.

Materials that may come into contact with the skin of a user shall not be known to cause irritating or sensitization effects during normal use of the rescue harness.

4.2.2 Webbings and yarns

Webbings and yarns shall be made of filament or multifilament synthetic fibres, suitable for the use intended. The breaking tenacity of the synthetic fibre shall be known to be at least 0,6 N/tex.

Threads used for sewing shall be physically compatible with the webbing and their quality shall be comparable to that of the webbing. They shall, however, be of a contrasting shade in order to facilitate visual inspection.

4.2.3 Construction

4.2.3.1 General

The rescue harness shall be provided with means of adjustment to ensure that it can be correctly fitted to the wearer.

The rescue harness may be incorporated within a garment. It shall be possible to inspect visually each element and component of the rescue harness.

4.2.3.2 Attachment

The rescue harness shall have at least one attachment point, which is located above the user's centre of gravity.

NOTE Attachment points can be located at the front and/or at the back of the rescue harness.

The eye of each attachment element shall be designed so that a rod of a diameter of 25 mm can pass through it.

4.2.3.3 Connectors

Connectors shall conform to EN 362.

4.3 Dynamic strength

When tested in accordance with 5.2 with a torso dummy with a mass equivalent to the maximum rated load, but at least 100 kg, the torso dummy shall be held and no primary strap or attachment element of the rescue harness shall break or rupture. No element of the rescue harness shall become detached.

If the rescue harness has more than one attachment point, the test shall be carried out at each attachment point.

4.4 Static strength

When tested in accordance with 5.3, with a test force equivalent to 10 times the maximum rated load, but at least 15 kN applied for 3 min, no primary strap or attachment element of the rescue harness shall break or rupture. No element of the rescue harness shall become detached.

If the rescue harness has more than one attachment point, the test shall be carried out at each attachment point.

4.5 Corrosion resistance

Metal parts of rescue harnesses shall be tested in accordance with 5.4. After the test, they shall show no evidence of corrosion that would affect their function (white scaling or tarnishing is acceptable if the function is not impaired).

NOTE Conformity with this requirement does not imply suitability for use in a marine environment.

4.6 Marking and information

Marking of the rescue harness shall be in accordance with Clause 6.

Information shall be supplied with the rescue harness in accordance with Clause 7.

5 Test methods

5.1 Examination of design

Confirm by reference to appropriate documentation, e.g. document of compliance or test report on allergenic substances, and by visual and/or tactile examination of the rescue harness that it meets the requirements of 4.2.

Verify the width of each primary strap by measuring it with a steel rule.

Verify the opening of the eye of each attachment element by passing a rod with a diameter of $(25\ ^{+1}_{0})$ mm through the eye.

Carry out a suspension test with two persons of differing height and weight within the range of 160 cm to 190 cm and within the range of 60 kg to 95 kg, wearing lightweight clothing, and of suitable size for the rescue harness being tested. The size difference between the two persons shall be at least 15 cm and 20 kg.

Following the information supplied by the manufacturer, fit the rescue harnesses to the test persons. Suspend them for a maximum of 4 min clear off the ground by connecting a suitable lanyard or rope to the attachment point of the rescue harness. Movement of the test persons while in suspension is required. Check by visual inspection and interviews with the test persons whether the test persons feel an acceptable level of comfort for at least 3,5 min and that all requirements of 4.1.1 are met.

5.2 Dynamic strength test

5.2.1 Test apparatus

The test apparatus shall conform to EN 364:1992, 4.2, 4.4 and 4.6.

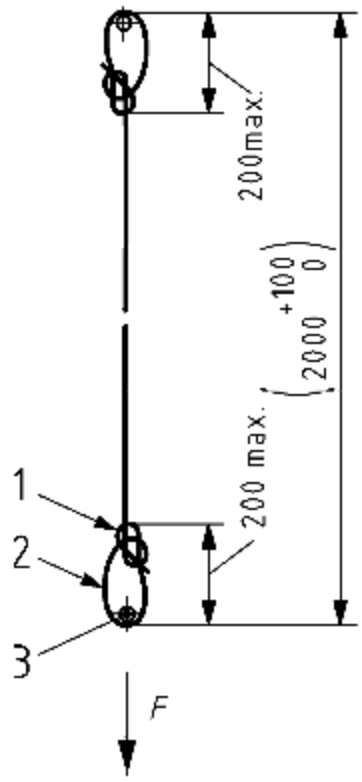
5.2.2 Test lanyard

The test lanyard shall be an unused sample of mountaineering rope, which shall conform to EN 892 for single rope, have a nominal diameter of 11 mm and be known to have an impact force of (9 ± 1,5) kN in the first impact force test in that standard.

Terminate the rope in loops produced by tying bowline knots (see Figure 3) and ensure the length of the termination loop is a maximum of 200 mm.

Adjust the length so that, under a load of $(100\ ^{+1}_{0})$ kg, the length of the test lanyard including the termination loops to be formed at the two ends is $(2000\ ^{+100}_{0})$ mm (see Figure 2).

Dimensions in millimetres



Key

F Mass of $(100\ ^{+1}_{0})$ kg or equivalent force

1 Bowline knot

2 Termination loop

3 Attachment point/eye

Figure 2 — Test lanyard for the dynamic strength test

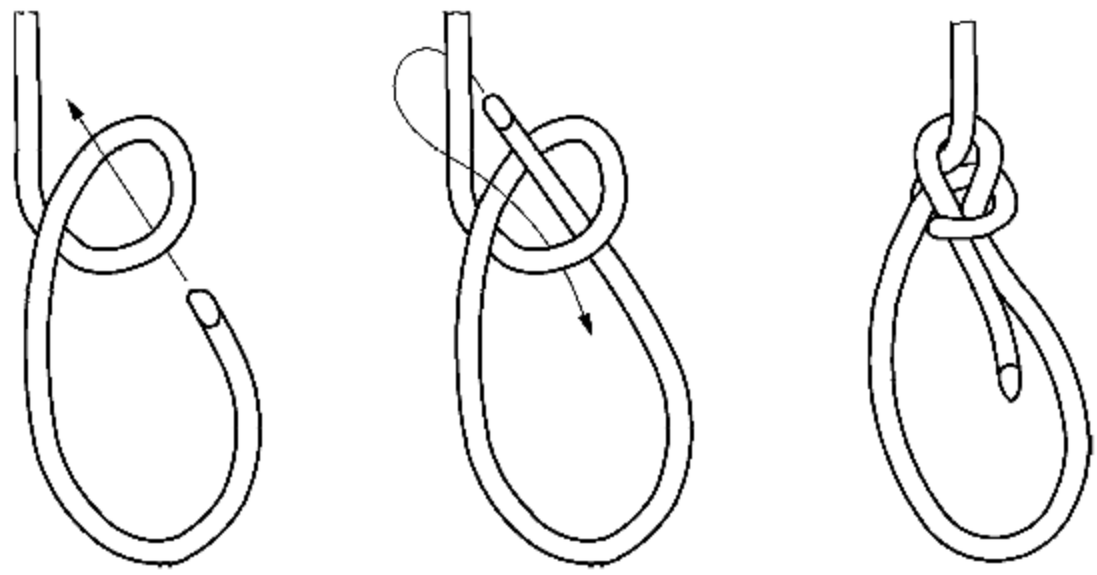


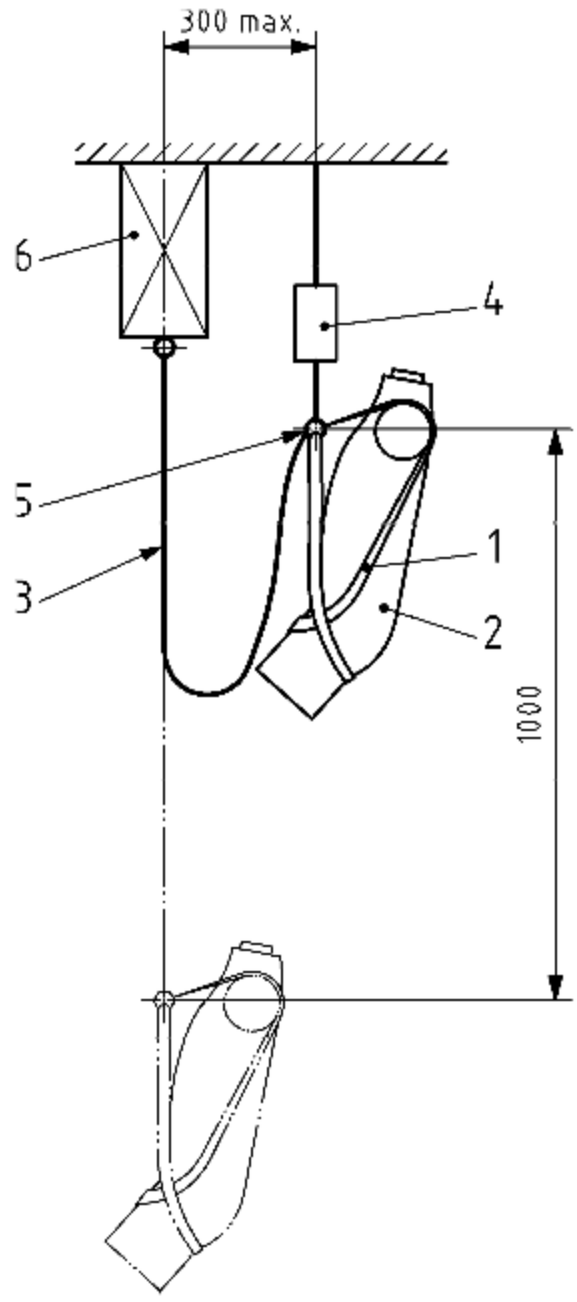
Figure 3 — Bowline knot

5.2.3 Test procedure

Fit the rescue harness to the torso dummy in accordance with the information supplied by the manufacturer. Connect one termination loop of the test lanyard to the attachment point of the rescue harness and the other to the test apparatus.

Suspend the torso dummy by means of the rescue harness, then raise it by (1000 $^{+50}_{0}$) mm with a maximum distance of 300 mm from the centre line (see Figure 4). Hold it with the quick release device.

Dimensions in millimetres



Key

1 Rescue harness
2 Torso dummy
3 Test lanyard
4 Quick release device
5 Attachment point
6 Test apparatus

Figure 4 — Dynamic strength test

Operate the quick release device so as to drop the torso dummy with the rescue harness without initial velocity.

Check whether the torso dummy is held and whether any elements of the rescue harness have become detached. Check the primary straps and attachment elements for signs of breaking or rupture.

Within 15 min, carry out a second drop test using the same test lanyard. Readjustment of the rescue harness to the torso dummy is permitted.

Check whether the torso dummy is held and whether any elements of the rescue harness have become detached. Check the primary straps and attachment elements for signs of breaking or rupture.

Repeat the test for each attachment point. Readjustment of the rescue harness to the torso dummy or a replacement of the rescue harness is permitted.

5.3 Static strength test

5.3.1 Test apparatus

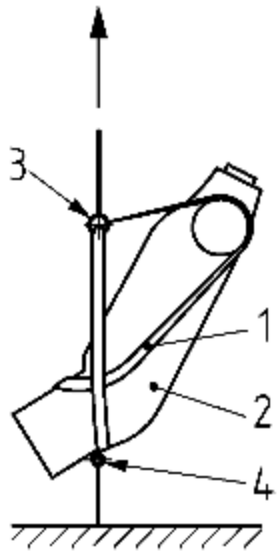
The test apparatus for the static strength test shall conform to 4.1 and 4.2 of EN 364:1992.

5.3.2 Test procedure

Fit the rescue harness to the torso dummy in accordance with the information supplied by the manufacturer.

Install the torso dummy and rescue harness in the test apparatus, apply a force equivalent to 10 times the maximum rated load with a tolerance of $(^{+0,2}_{0})$ kN, but with a minimum of $(15\ ^{+0,2}_{0})$ kN, between the attachment point of the rescue harness and the lower ring of the torso dummy and maintain it for $(3\ ^{+0,25}_{0})$ min (see Figure 5).

Where appropriate, any material of the rescue harness that might interfere with the ability to apply force to the lower ring of the torso dummy, with the exception of primary straps, may be cut away in the area of the lower ring.



Key

1 Rescue harness

2 Torso dummy

3 Attachment point

4 Lower ring of the torso dummy

Figure 5— Static strength test

Check whether any elements of the rescue harness have become detached. Check the primary straps and attachment elements for signs of breaking or rupture.

Repeat the test for each attachment point. Readjustment of the rescue harness to the torso dummy or a replacement of the rescue harness is permitted.

5.4 Corrosion resistance test

5.4.1 Test apparatus

The apparatus for testing the corrosion resistance shall be capable of the neutral salt spray test procedure described in EN ISO 9227.

5.4.2 Test procedure

5.4.2.1 Expose any metal parts of the rescue harness to the neutral salt spray test in accordance with EN ISO 9227 for $(24\ ^{+0,5}_{0})$ h. Dry for $(60\ ^{+5}_{0})$ min at (20 ± 2) ºC. Then repeat the procedure, so that the metal parts are subjected in total to $(24\ ^{+0,5}_{0})$ h exposure and $(60\ ^{+5}_{0})$ min drying plus another $(24\ ^{+0,5}_{0})$ h exposure and $(60\ ^{+5}_{0})$ min drying.

5.4.2.2 Examine the specimens and check for signs of corrosion.

NOTE If the complete rescue harness is subjected to the corrosion test, it may be necessary to dismantle the rescue harness to gain visual access to some metal parts.

6 Marking

Marking on the rescue harness shall conform to EN 365. In addition, the marking shall include the following:

— maximum rated load of the rescue harness.

7 Information supplied by the manufacturer

The information supplied by the manufacturer shall conform to EN 365 and in addition shall include at least advice or information as follows:

a) that the user (the rescuer or rescuee, as appropriate) should read and understand the information supplied by the manufacturer before using the rescue harness;

b) maximum rated load of the rescue harness;

c) warning of the dangers of suspension trauma;

d) advice that the rescue harness is intended to be worn during normal working activities and that the user should carry out a suspension test in a safe place before using the rescue harness for the first time, to ensure that it is the correct size, has sufficient adjustment and is of an acceptable comfort level for the intended use;

e) number and year of publication of this European Standard, i.e. EN 1497:2007;

f) warning that the rescue harness shall not to be used as the body holding device in a fall arrest system.

Annex A
(informative)

Significant technical changes between this European Standard and the previous edition EN 1497:1996

Table A.1 — Significant technical changes

Clause/ Paragraph / Table / Figure	Change
1 Scope	The scope has been modified: The statement that a rescue harness is not a component of personal protective equipment has been deleted.
2 Normative references	EN ISO 9227 has been added.
3 Terms and definitions	The definitions "primary straps", "attachment point", "rescue system", "personal fall protection system", "maximum rated load (for the rescue harness)" have been incorporated.
4.1 Ergonomics	This clause has been revised.
4.2 Materials and construction	This clause has been re-structured.
4.5 / 5.4 Corrosion resistance	Requirements and a test method for corrosion resistance have been supplemented.
5.1 Examination of design	This new clause has been added.
5.2.2 Test lanyard	A separate description of the test lanyard has been introduced.
Clause 6 and 7	The order of "marking" and "information supplied by the manufacturer" have been changed.
Annex ZA	Due to the changed Foreword/Scope, an Annex ZA regarding the correspondence between this European Standard and Directive 89/686/EEC has been added.

Annex ZA
(informative)

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

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 "Council Directive of 21 December 1989 on the approximation of the laws of the member states relating to personal protective equipment".

Once this standard is cited in the Official Journal of the European Communities 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 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 — Correspondence between this European Standard and Directive 89/686/EEC

Clause(s)/sub-clause(s) of this EN	Essential Requirements (ERs) of Directive 89/686/EEC, Annex II	
4.1.1	1.1.1	Ergonomics
4.1.1	1.2.1	Absence of risk and other "inherent" nuisance factors
4.1.2	1.2.1	Absence of risk and other "inherent" nuisance factors
4.2.1	1.2.1.1	Suitable constituent materials
4.2.1	1.2.1.2	Satisfactory surface condition of all PPE parts in contact with the user
4.2.3.1	1.3.1	Adaptation of PPE to user morphology
4.2.3.2	1.2.1	Absence of risk and other "inherent" nuisance factors
4.3, 4.4	1.3.2	Lightness and design strength
6	2.12	PPE bearing one or more identification or recognition marks directly or indirectly relating to health and safety
7	1.4	Information supplied by the manufacturer

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

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