

Rescue equipment — Rescue lifting devices

The European Standard EN 1496 : 1996 has the status of a
British Standard

ICS 13.340.20; 53.020.10

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee PH/5, Industrial safety belts and harnesses, upon which the following bodies were represented:

- Arboricultural Safety Council
- Association of Consulting Scientists
- British Constructional Steelwork Association Ltd.
- British Electrical Systems Association (BEAMA Ltd.)
- British Forging Industry Association
- British Narrow Fabrics Association
- British Telecommunications plc
- Construction Fixings Association
- Cordage Manufacturers Institute
- Department of Trade and Industry (National Engineering Laboratory)
- Electricity Association
- Health and Safety Executive
- Industrial Rope Access Trade Association
- National Federation of Master Steeplejacks and Lightning Conductor Engineers
- Royal Society for the Prevention of Accidents
- Safety Equipment Association
- Tes-Brethby Ltd.

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National foreword

This British Standard has been prepared by Technical Committee PH/5 and is the English language version of EN 1496 : 1996 *Rescue equipment — Rescue lifting devices*, published by the European Committee for Standardization (CEN).

EN 1496 was produced as a result of international discussions in which the United Kingdom took an active part.

Cross-references

Publication referred to	Corresponding British Standard
EN 341	BS EN 341 : 1993 <i>Personal protective equipment against falls from a height — Descender devices</i>
	BS EN 353 <i>Personal protective equipment against falls from a height: guided type fall arresters</i>
EN 353-1 : 1992	BS EN 353-1 : 1993 <i>Specification for guided type fall arresters on a rigid anchorage line</i>
EN 353-2 : 1992	BS EN 353-2 : 1993 <i>Specification for guided type fall arresters on a flexible anchorage line</i>
EN 355 : 1992	BS EN 355 : 1993 <i>Personal protective equipment against falls from a height — Energy absorbers</i>
EN 360 : 1992	BS EN 360 : 1993 <i>Personal protective equipment against falls from a height — Retractable type fall arresters</i>
EN 362	BS EN 362 : 1993 <i>Personal protective equipment against falls from a height — Connectors</i>
EN 363	BS EN 363 : 1993 <i>Personal protective equipment against falls from a height — Fall arrest systems</i>
EN 364 : 1992	BS EN 364 : 1993 <i>Personal protective equipment against falls from a height — Test methods</i>
EN 365	BS EN 365 : 1993 <i>Personal protective equipment against falls from a height — General requirements for instructions for use and for marking</i>
EN 919 : 1995	BS EN 919 : 1995 <i>Fibre ropes for general service — Determination of certain mechanical and physical properties</i>
EN 1497 : 1996	BS EN 1497 : 1996 <i>Rescue equipment — Rescue harnesses</i>

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

ICS 13.220.10; 13.340.20; 53.020.10

Descriptors: rescue equipment, personal protective equipment, lifting equipment, winches, specifications, human factors engineering, materials, ropes, webbing, equipment specifications, tests, performance tests, corrosion tests, instructions, marking

English version

Rescue equipment — Rescue lifting devices

Équipement de sauvetage —
Dispositifs de sauvetage par élévation

Rettungsausrüstung —
Rettungshubgeräte

This European Standard was approved by CEN on 1996-03-07. 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.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 160, Protection against falls from 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 October 1996, and conflicting standards shall be withdrawn at the latest by October 1996.

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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This standard specifies requirements, test methods, instructions for use and marking for rescue lifting devices (hereinafter referred to as 'devices'). A rescue lifting device is not a component of personal protective equipment against falls from a height. For descender devices, see EN 341.

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.

EN 341	<i>Personal protective equipment against falls from a height — Descender devices</i>
EN 353-1 : 1992	<i>Personal protective equipment against falls from a height — Guided type fall arresters on a rigid anchorage line</i>
EN 353-2 : 1992	<i>Personal protective equipment against falls from a height — Guided type fall arresters on a flexible anchorage line</i>
EN 355 : 1992	<i>Personal protective equipment against falls from a height — Energy absorbers</i>
EN 360 : 1992	<i>Personal protective equipment against falls from a height — Retractable type fall arresters</i>
EN 362	<i>Personal protective equipment against falls from a height — Connectors</i>
EN 363	<i>Personal protective equipment against falls from a height — Fall arrest systems</i>
EN 364 : 1992	<i>Personal protective equipment against falls from a height — Test methods</i>
EN 365	<i>Personal protective equipment against falls from a height — General requirements for instructions for use and for marking</i>
prEN 892-1	<i>Mountaineering equipment — Ropes — Part 1: Safety requirements, testing, marking</i>
EN 919 : 1995	<i>Ropes — Determination of certain physical and mechanical properties</i>

EN 1497 : 1996	<i>Rescue equipment — Rescue harnesses</i>
prEN 1891 : 1995	<i>Personal protective equipment for the prevention of falls from a height — Low stretch kernmantel ropes</i>
ISO 1140	<i>Ropes — Polyamide — Specification</i>
ISO 1141	<i>Ropes — Polyester — Specification</i>
ISO 2232	<i>Round drawn wire for general purpose non-alloy steel wire ropes and for large diameter steel wire ropes — Specifications</i>

3 Definitions

For the purposes of this standard, the definitions given in EN 363 apply, together with the following:

3.1 rescue lifting device class A

Component of personal protective equipment for rescue purposes. By means of this lifting device, persons are able to lift themselves from a lower to a higher place, or they are lifted by a rescuer.

3.2 rescue lifting device class B

As rescue lifting device class A, but in addition persons can descend from a higher to a lower place, or they can be lowered by a rescuer.

4 Requirements

4.1 Ergonomics

The device shall be designed so that in the conditions of use for which it is intended and in the foreseeable period of usage the rescuee is not essentially impaired. The degree of protection provided shall correspond to the risks.

The device shall not cause any additional risk and it should offer an acceptable degree of comfort.

4.2 Materials and construction

4.2.1 Ropes and webbings

Fibre ropes of a non-sheathed core construction shall conform to ISO 1140 or ISO 1141.

Sheathed core ropes shall conform to prEN 892-1 or prEN 1891, with the case displacement not exceeding 15 mm over a rope length of 2000 mm when tested according to prEN 892-1, with a breaking strength of at least 22 kN when tested according to 4.1, 5.1, clause 6, 8.1, 8.2 and 8.5 of EN 919 : 1995 and with the elongation in use not exceeding 5 % when tested according to prEN 1891.

Wire ropes shall conform to ISO 2232.

Webbings shall conform to 4.2.1 of EN 1497 : 1996 with the elongation in use not exceeding 5 % when tested according to 5.6 of prEN 1891 : 1995.

4.2.2 Connectors

Connectors shall conform to EN 362.

4.3 Dynamic strength

When tested in accordance with 5.2.2, the test mass shall be held.

If the device is integrated into a fall arrest system according to EN 363 and the fall arrest system is in use, the requirements concerning the maximum braking force specified in 4.5 of EN 353-1 : 1992 or 4.5 of EN 353-2 : 1992 or 4.4 of EN 355 : 1992 or 4.5 of EN 360 : 1992 shall be met.

4.4 Static strength

When tested in accordance with 5.3 with a test force of 10 times the rated load, but at least 15 kN for textile ropes (lanyards) or 12 kN for steel wire ropes, the device shall withstand the test force applied for at least 3 min (the rated load being the maximum load for the device allowed according to the manufacturer's marking).

If the device is combined with a descender device which conforms with EN 341, the minimum strength shall be 12 kN for both steel wire and textile ropes.

4.5 Corrosion resistance

After the test in accordance with 5.4, the components of the device shall be examined. The device shall be dismantled if necessary for the visual examination of the internal components. The test is classed as a failure if any corrosion is evident that could affect the function of the device.

NOTE. White scaling or tarnishing is acceptable.

4.6 Function

When tested in accordance with 5.5, lifting or lifting and lowering of both test masses shall be possible without obstruction.

If the device has control functions, the lifting/lowering process shall come to a halt immediately after the control device has been released and the stopping distance shall not be longer than 100 mm.

5 Test methods

5.1 Sampling

At least two test samples shall be provided for the tests.

5.2 Dynamic test

5.2.1 Test apparatus

The test apparatus for the dynamic test shall conform to 4.2, 4.4, 4.5 and 4.6 of EN 364 : 1992.

If the device is integrated into a guided type fall arrester on a rigid anchorage line according to EN 353-1 and the guided type fall arrester on a rigid anchorage line is active, 5.6.1 of EN 364 : 1992, concerned with the dynamic performance test apparatus, is allowed.

5.2.2 Dynamic test procedure

Attach the device to the anchorage point of the test apparatus.

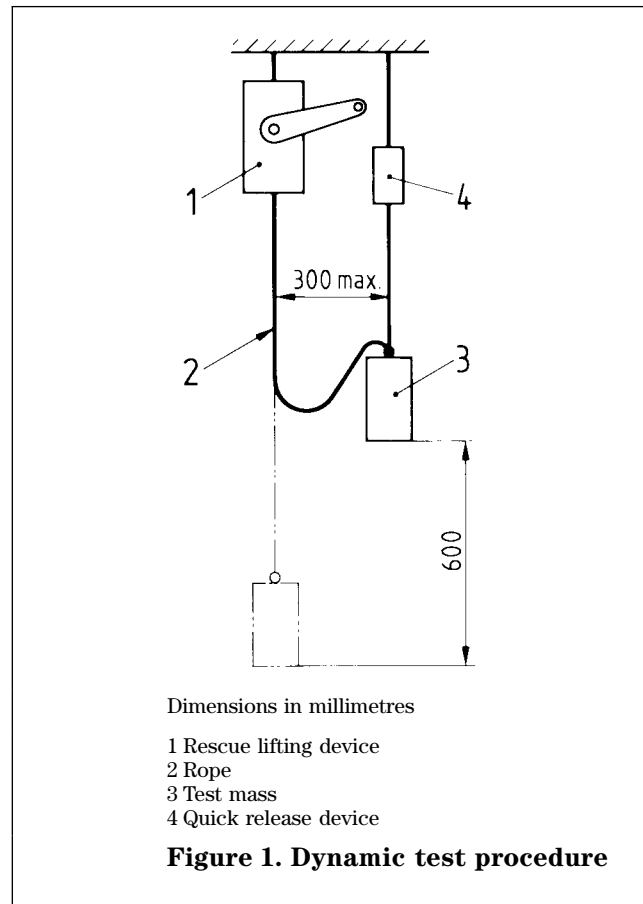
Withdraw the rope by 4000^{+50}_0 mm from the device and attach the test mass (steel mass) according to the rated load, at least 100 kg.

Then raise the test mass by 600^{+50}_0 mm, with a maximum horizontal distance of 300 mm from the centre line. Hold the test mass by the quick release device (see figure 1). In the case of devices with an automatic retraction function, prevent the lanyard from retracting by a clamp.

Release the test mass without initial velocity.

Check that the requirements of 4.3 are met.

If the device is integrated in a fall arrest system according to EN 363 and the fall arrest system is in use (e.g. retractable type fall arrester), measure the braking force.



5.3 Static test

5.3.1 Test apparatus

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

5.3.2 Static test procedure

Withdraw the rope of the device from the device so that a length of (1000 ± 50) mm is held in a way that further withdrawal of the rope due to the applied test force is not possible.

Fit the device into the test apparatus by the attachment point of the device at one end and by the attachment point of the rope at the other end. A static test force according to 4.4 shall be applied and maintained for 3 min.

Check that the requirements of 4.4 are met.

5.4 Corrosion test

The corrosion test shall be carried out in accordance with 5.13 of EN 364 : 1992 with a duration of 24^{+1}_0 h. Check that the requirements of 4.5 are met.

5.5 Functional test

5.5.1 Test apparatus

A rigid test mass of $(30 \pm 0,5)$ kg is required.

This test assesses the functioning of the device with a test mass of $(30 \pm 0,5)$ kg and with a test mass of 1,5 times the rated load with a minimum of 150 kg.

5.5.2 Devices class A

5.5.2.1 Fully extract the rope to correspond to the working length of the device. Engage the rescue mechanism in accordance with the manufacturer's instructions for use.

Attach the test mass (1,5 times the rated load, with a minimum of 150 kg) to the free end of the extracted rope.

By means of the controlling feature lift the test mass until there is (1000 ± 100) mm of rope remaining outside the device. Release the controlling feature, observe that the requirements of 4.6 are met and that the device functions without failure.

5.5.2.2 Repeat 5.5.2.1 using the $(30 \pm 0,5)$ kg test mass.

5.5.2.3 Repeat 5.5.2.1 and 5.5.2.2 with a device conditioned to wet in accordance with 5.11.3 of EN 364 : 1992. Fully extract the rope during conditioning.

5.5.2.4 Where a device has more than one controlling feature, test each one in accordance with 5.5.2.1.

5.5.3 Devices class B

5.5.3.1 Engage the rescue mechanism in accordance with the manufacturer's instructions for use.

Attach the test mass (1,5 times the rated load, with a minimum of 150 kg) to the free end of the rope.

Using the controlling feature, lower the test mass to a depth corresponding to the working length of the device.

By means of the controlling feature, lift the test mass until there is (1000 ± 100) mm of rope remaining outside the device. Release the controlling feature, observe that the requirements of 4.6 are met and that the device functions without failure.

5.5.3.2 Repeat test clause 5.5.3.1 using the $(30 \pm 0,5)$ kg test mass.

5.5.3.3 Repeat the procedures of 5.5.3.1 and 5.5.3.2 with a device conditioned to wet in accordance with 5.11.3 of EN 364 : 1992. Fully extract the rope during conditioning.

5.5.3.4 Where a device has more than one controlling feature, test each one in accordance with 5.5.3.1.

6 Instructions for use and marking

6.1 Instructions for use

The information given in the instructions for use shall conform to the requirements of EN 365.

In addition, the instructions for use shall contain at least the following information:

- a) the class of the device;
- b) the rated load of the device;
- c) limitations of use, e.g. in an aggressive atmosphere, temperature;
- d) how to disinfect the product if contaminated;
- e) the obsolescence deadline or period of obsolescence of the device or certain of its components;
- f) a warning if chemical substances can damage the materials used;
- g) the meaning of any markings on the product.

In addition, the instructions for use for devices class A shall contain the following information:

The device shall only be used if an unhindered lifting process is possible. It shall not be used if obstacles present a hazard.

6.2 Marking

The marking shall conform to EN 365 and shall contain at least the following information:

- a) type identification;
- b) class of the device;
- c) the rated load of the device;
- d) the last two digits of the year of manufacture, e.g. 95 for 1995;
- e) the manufacturer's or supplier's name, trade mark or other means of identification;
- f) the manufacturer's batch number or serial number;
- g) the number of this European Standard, i.e. EN 1496;
- h) the information 'For rescue purposes only'.

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 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 clauses of this standard as detailed in table ZA.1 are likely to support requirements of Directive 89/686/EEC:

Table ZA.1 : Correspondence between this European Standard and Directive 89/686/EEC

EU Directive 89/686/EEC, Annex II	Clauses of this standard
1.1 Design principles	clause 4
1.2 Innocuousness of PPE	clause 4
1.3 Comfort and efficiency	clause 4
1.4 Information supplied by the manufacturer	clause 6
2.1 PPE incorporating adjustment systems	clause 4
2.4 PPE subject to ageing	4.2, 4.5 and clause 6
2.7 PPE intended for emergency use or rapid installation and/or removal	4.1 and 4.2
2.9 PPE incorporating components which can be adjusted or removed by the user	4.2
2.10 PPE for connection to another, external complementary device	4.2 and clause 6
3.1 Protection against mechanical impact	4.3

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.

List of references

See national foreword.

BSI — British Standards Institution

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