

Personal protective equipment against falls from a height — Descender devices — Single-hand operated descender devices for self or assisted rescue

ICS 13.340.60

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
BSIF Test and Certification Association
British Telecommunications plc
Confederation of British Metalforming
Construction Fixings Association
Electricity Association
Health and Safety Executive
Industrial Rope Access Trade Association
Institution of Mechanical Engineers
Made-up Textiles Association
Ministry of Defence (UK Defence Standardization)
National Engineering Laboratory
National Federation of Master Steeplejacks and Lightning Conductor Engineers
North West Construction Safety Group
Personal Safety Manufacturers' Association
SATRA Technology Centre
Co-opted members

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 17 March 2003

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The following BSI references relate to the work on this British Standard:
Committee reference PH/5
Draft for comment 99/566209 DC

ISBN 978 0 580 61140 7

Amendments issued since publication

Amd. No.	Date	Comments
A1	February 2009	See foreword

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Foreword

This British Standard has been prepared by Technical Committee PH/5. BS 8405:2003+A1:2009 supersedes BS 8405:2003, which is withdrawn.

The start and finish of text introduced or altered by Amendment No. 1 is indicated in the text by tags **A1** **A1**.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 13 and a back cover.

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1 Scope

This British Standard specifies performance requirements for descender devices that are controllable by one person using one hand only, to be used for self-rescue, rescue assisted by a second person, or where the rescuer and rescuee descend in tandem.

This British Standard is applicable to descender devices for use in conjunction with personal protective equipment against falls from a height e.g. full body harnesses conforming to BS EN 361, and rescue equipment e.g. rescue harnesses conforming to BS EN 1497.

NOTE Other types of descender devices for self rescue are specified in BS EN 341.

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.

BS 7479, *Method for salt spray corrosion tests in artificial atmospheres*.

BS EN 364:1993, *Personal protective equipment against falls from a height — Test methods*.

BS EN 365, *Personal protective equipment against falls from a height — General requirements for instructions for use and for marking*.

BS EN 892:1997, *Mountaineering equipment — Dynamic mountaineering ropes — Safety requirements and test methods*.

BS EN 1891:1998, *Personal protective equipment for prevention of falls from a height — Low stretch kernmantel ropes*.

BS EN ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force measuring system*.

ISO 1140, *Ropes — Polyamide — Specification*.

ISO 1141, *Ropes — Polyester — Specification*.

3 Terms and definitions

For the purposes of this British Standard the following terms and definitions apply.

3.1

descender device

device used in conjunction with a descent line, that employs an integral hand-operated control element to control descent velocity

NOTE A descender device enables descent from a higher to a lower position at a controllable velocity.

3.2

maximum rated load

maximum load that a descender device is designated to carry as stated by the manufacturer

NOTE This load includes persons and tools and equipment.

3.3

minimum rated load

minimum load that a descender device is designated to carry as stated by the manufacturer

4 Requirements

4.1 Innocuousness

A1 4.1.1 Materials used in the descender device that might come into contact with the skin of the user shall not be known to cause irritating or sensitizing effects during intended use. Conformity to this requirement shall be verified in accordance with 5.4.

NOTE Attention is drawn to the Dangerous Substances and Preparations (Nickel)(Safety) Regulations 2005 [1].

4.1.2 When examined in accordance with 5.4, the descender device shall have no sharp edges or burrs which could cause injury to the user. ^{A1}

4.2 Ropes, webbing and terminations

4.2.1 General

If the manufacturer of the descender device supplies a descent line with the device, the descent line shall conform to 4.2.2 or 4.2.3, as applicable, and shall be fitted with terminations made exclusively by the manufacturer of the descender device or by a manufacturer authorized by him.

The manufacturer shall ensure that the instructions for use (see Clause 7) include a warning that the descender device should only be used with the descent line with which it has been supplied, and that if the descent line is replaced it is essential that it be replaced by one with exactly the same specification.

4.2.2 Synthetic fibre ropes

Synthetic fibre ropes of a non-sheathed core construction shall conform to ISO 1140 or ISO 1141. Sheathed core ropes shall be either single mountaineering ropes conforming to BS EN 892:1997 or low stretch kernmantel ropes, type A, conforming to BS EN 1891:1998.

4.2.3 Textile webbing

Textile webbing shall be made from virgin filament or multifilament synthetic fibres that have a minimum breaking strength of 0.6 N/tex.

4.3 Static performance

4.3.1 Operating force

When tested in accordance with 5.1.2.1, with a force applied to the descender device equal to the maximum rated load, the force needed to release and operate the integral hand-operated control element of the descender device (i.e. to cause the device to move down the descent line) shall not exceed 450 N.

4.3.2 Static strength

When tested in accordance with 5.1.2.2 the descender device shall withstand a force of 8 times the maximum rated load for 3 min without failure of the descent line or the descender device.

4.3.3 Emergency locking and slippage

4.3.3.1 Locking with control element in the hand-on position

When tested in accordance with 5.1.2.3, with a force of 450_{-45}^0 N applied to the integral hand-operated control element, the descender device shall withstand a force of 1.5 times the maximum rated load without moving down the descent line.

NOTE This requirement is intended to ensure that the descender device will support 1.5 times the maximum rated load, which might be applied to it in an emergency if the operator of the descender device is pulling or holding onto the integral hand-operated control element for support.

4.3.3.2 Slippage

When tested in accordance with 5.1.2.4, slippage of the descender device on the descent line shall occur at a force of no greater than 4 times the maximum rated load.

4.4 Dynamic performance

4.4.1 Descent velocity

^{A1} When tested in accordance with 5.2.1, 5.2.2 or 5.2.3, the descender device shall maintain a descent velocity not exceeding 2 m/s and it shall be possible for the descent rate of the descender device to be controlled by one person using one hand only in the following test situations:

- a) with a mass, or force, equivalent to the maximum rated load (two person condition);
- b) with a mass, or force, equivalent to the minimum rated load (low load test). ^{A1}