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Personal protective equipment against falls from a height - Part 1: Guided type fall
arresters including a rigid anchor line

Persönliche Schutzausrüstung gegen Absturz - Teil 1: Mitlaufende Auffanggeräte
einschließlich fester Führung

Équipement de protection individuelle contre les chutes de hauteur - Partie 1 : Antichutes
mobiles pour supports d'assurage rigides

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English Version

Personal protective equipment against falls from a height - Part 1: Guided type fall arresters including a rigid anchor line

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 160.

If this draft becomes a European Standard, 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.

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

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Foreword

This document (prEN 353-1:2008) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 353-1:2002.

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 EC Directive(s).

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

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1 Scope

This European Standard specifies the requirements, test methods, marking, information supplied by the manufacturer and packaging for guided type fall arresters including a rigid anchor line usually attached to or integrated in fixed ladders or rungs adequately adjusted to suitable structures. Guided type fall arresters including a rigid anchor line conforming to this European Standard are sub-systems constituting one of the fall arrest systems covered by EN 363, when combined with a full body harness specified in EN 361 including a front attachment point located appropriately in relation to the fall arrester. Other types of fall arresters are specified in EN 353-2 or in EN 360.

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 361, *Personal protective equipment against falls from a height — Full body harnesses*

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 365:2004, *Personal protective equipment against falls from a height — General requirements for instructions for use, maintenance, periodic examination, repair, marking and packaging*

ISO 2232:1990, *Round drawn wire for general purpose non-alloy steel wire ropes and for large diameter steel wire ropes — Specifications*
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3 Terms and definitions

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

3.1

guided type fall arrester including a rigid anchor line

sub-system consisting of a rigid anchor line and a self-locking guided type fall arrester which is attached to the rigid anchor line.

NOTE An energy dissipating function may be part of the guided type fall arrester and/or the rigid anchor line.

3.2

guided type fall arrester

fall arrester with a self-locking function which incorporates a connecting element/s and which travels along the rigid anchor line

3.3

rigid anchor line

rail or wire rope including (where fitted as part of the line) terminations, connectors, energy absorbers and end stops secured to a structure in such a way that lateral movements of the line are limited, intended for use with a guided type fall arrester

3.4**energy absorber**

element or component of a fall arrest system, which is designed to dissipate the kinetic energy developed during a fall from a height

3.5**braking force**

maximum force F_{\max} in kilonewtons measured at the anchor point or the anchor line during the braking period of the dynamic performance test

3.6**arrest distance**

vertical distance H in metres measured at the mobile load bearing-point of the connecting element from the initial position (onset of the free fall) to the final position (equilibrium after the arrest), excluding the displacements of the full body harness and its attachment element

3.7**horizontal distance A**

horizontal distance in metres measured between the front side of the anchor line and the load-bearing point of the connector intended to be attached to the full body harness

3.8**connecting element**

element or combination of elements which form the link between the guided type fall arrester and the user

NOTE

An example of a connecting element is a connector or a connector terminated lanyard.

3.9**end stop**

device which is fitted to the rigid anchor line to prevent the guided type fall arrester from passing it unintended, either during a normal ascent, descent or in a fall

3.10**end stop type A**

end stop fitted to the rigid anchor line to prevent the guided type fall arrester from passing it unintended in an upwards direction

3.11**end stop type B**

end stop fitted to the rigid anchor line to prevent the guided type fall arrester from passing it unintended in a downwards direction

3.12**maximum rated load**

maximum mass of the person, including tools and equipment, as specified by the manufacturer

NOTE

Maximum rated load is expressed in kilograms.

3.13**minimum rated load**

minimum mass of the person, including tools and equipment, as specified by the manufacturer

NOTE

Minimum rated load is expressed in kilograms.

4 Requirements

4.1 Materials and construction

4.1.1 Materials

4.1.1.1 A rigid anchor line shall be a rail or a wire rope. The material of a rigid anchor line made from wire rope shall be steel and its minimum diameter shall be 8 mm.

4.1.1.2 Wire ropes that are not made from stainless steel shall be galvanized in accordance with ISO 2232.

NOTE Manufacturers of guided type fall arresters including a rigid anchor line should be aware that stainless steel can be susceptible to pitting and stress corrosion cracking where chloride levels are high.

4.1.1.3 Where a ferrule is used in a termination, it shall be made from ductile metallic material.

4.1.1.4 Fibre ropes, webbing and sewing threads shall be made from virgin filament of multifilament synthetic fibres, suitable for their intended use. The braking tenacity of the synthetic fibres shall be known to be at least 0,6 N/tex.

4.1.1.5 Materials used in the guided type fall arrester, including a rigid anchor line, that may come into contact with the skin of the user, shall not be known to cause irritating or sensitization effects during intended use. When checked in accordance with 5.1, the guided type fall arrester, including a rigid anchor line, shall have no sharp edges and burrs that may cause injury to the user.

4.1.2 Construction

4.1.2.1 The anchor line shall be so designed that it permits movement of the guided type fall arrester in the specified directions only and that it prevents any unintentional separation of the guided type fall arrester from the anchor line.

4.1.2.2 All points of the rigid anchor line where the guided type fall arrester could unintentionally run off the rigid anchor line and there is or could be a fall hazard shall be fitted with an end stop.

4.1.2.3 The connecting element/s shall be permanently attached to the guided type fall arrester

4.1.2.4 A guided type fall arrester shall be capable of accompanying the user during upward and downward changes of position without requiring manual adjustment.

4.1.2.5 If the guided type fall arrester is equipped with any load-bearing element made from textiles, the guided type fall arrester shall be removable by the user from the rigid anchor line.

4.1.2.6 If the guided type fall arrester is removable by the user from the rigid anchor line, other than by removing it from the ends of the anchor line, it shall be so designed that it can only be detached by at least two consecutive deliberate manual actions.

4.1.2.7 End stops shall be designed so that they may only be opened by deliberate manual action.

4.1.2.8 Connectors shall conform to EN 362.

4.2 Static strength

4.2.1 Energy absorber preloading

If any part of the guided type fall arrester including the rigid anchor line is fitted with an energy absorber then it shall be tested in accordance with 5.2.1. The permanent extension caused by activation of an energy absorber after pre-loading with 2 kN shall not be greater than 20 mm.

4.2.2 Guided type fall arrester including rigid anchor line

4.2.2.1 When tested in accordance with 5.2.2.2, the rigid anchor line with the attached guided type fall arrester shall sustain a force of 15 (0, +0,2) kN.

4.2.2.2 In addition, if any load-bearing element of the rigid anchor line with the attached guided type fall arrester is made from non-metallic materials, e. g. synthetic fibre ropes or webbing, then those parts shall sustain a force of 22 (0, +0,2) kN when tested in accordance with 5.2.2.3.

NOTE The synthetic materials may be tested as part of the total system or be isolated from the metallic parts.

4.2.2.3 For rigid anchor lines made from wire rope that have been tested in accordance with 5.3.2 and have a peak force at the top anchor greater than 6 kN, the wire rope and all other elements from the top of the anchor line, but excluding the guided type fall arrester, shall be tested in accordance with 5.2.2.4 and shall sustain a force of 2.5 times (0, +0,2) kN that maximum peak force

4.2.3 End stops

4.2.3.1 When tested in accordance with 5.2.2.5.1, end stops type A shall sustain a force of 2 (0, +0.2) kN.

4.2.3.2 When tested in accordance with 5.2.2.5.2, end stops type B shall sustain a force of 12 (0, +0.2) kN.

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4.3 Dynamic performance

4.3.1 Maximum rated load

4.3.1.1 When tested in accordance with 5.3.2 with a test mass equivalent to the maximum rated load, with a tolerance on the mass of (0, +2%) kg and a minimum of 100 (0, +2) kg, the braking force F_{\max} shall not exceed 6 kN, the mass shall be held clear of the ground and the arrest distance H shall not exceed 1 m.

For wire systems, the force measured at the position of the top anchor shall be recorded.

4.3.2 Minimum rated load

When tested in accordance with 5.3.3 with a test mass equivalent to the minimum rated load, with a tolerance on the mass of (0, +2%) kg, the braking force F_{\max} shall not exceed 6 kN, the mass shall be held clear of the ground and the arrest distance H shall not exceed 1 m.

4.3.3 Multiple users

Where the manufacturer permits more than one user and when tested in accordance with 5.3.4 with a test mass equivalent to the maximum rated load, with a tolerance on the mass of (0, +2%) kg and a minimum of 100 (0, +2) kg, the braking force F_{\max} on the guided type fall arrester shall not exceed 6 kN, the mass shall be held clear of the ground and the arrest distance H shall not exceed 1 m.

4.3.4 Orientation of rigid anchor line

Where the manufacturer claims that the rigid anchor line can be used at angles/deviations greater than 5° from the vertical, the guided type fall arrester shall be tested in accordance with 5.3.5. The test mass shall be held clear of the ground and the vertical arrest distance H shall not exceed 1 m. The test mass shall be equivalent to the maximum rated load, with a minimum of 100 kg and a tolerance of (0, +2%) kg.

4.3.5 Cold conditions

Where the manufacturer claims that the system can be used in temperatures below 0° C, the guided type fall arrester shall be conditioned at the coldest temperature claimed by the manufacturer and tested in accordance with 5.3.6. The test mass shall be equivalent to the maximum rated load, with a tolerance on the mass of (0, +2%) kg and a minimum of 100 (0, +2) kg. The mass shall be held clear of the ground and the arrest distance H shall not exceed 1 m.

4.3.6 Minimum distance from rigid anchor line

When tested in accordance with 5.3.7 with a test mass equivalent to the maximum rated load, with a tolerance on the mass of (0, +2%) kg and a minimum of 100 (0, +2) kg, the mass shall be held clear of the ground and the arrest distance H shall not exceed 1 m.

4.3.7 Maximum distance from rigid anchor line

When tested in accordance with 5.3.8 with a test mass equivalent to the maximum rated load, with a tolerance on the mass of (0, +2%) kg and a minimum of 100 (0, +2) kg, the mass shall be held clear of the ground and the arrest distance H shall not exceed 1 m.

4.4 End stop type B dynamic strength

When tested in accordance with 5.4 with a test mass equivalent to the maximum rated load, with a tolerance on the mass of (0, +2%) kg, and a minimum of 100 (0, +2) kg, the guided type fall arrester shall retain the test mass on the rigid anchor line.

4.5 Corrosion resistance

After the test described in 5.5 has been carried out, all metallic elements of the guided type fall arrester including a rigid anchor line shall be examined. Metal parts shall show no evidence of corrosion that would affect their function. The presence of tarnishing and white scaling is acceptable.

NOTE 1 Care should be taken by the manufacturer not to combine different metals in such a way that there could be adverse galvanic reaction.

NOTE 2 Conformity to this requirement does not imply suitability for use in a marine environment.

4.6 Marking and information

Marking of the guided type fall arrester including a rigid anchor line shall be in accordance with clause 6.

Information shall be supplied with the guided type fall arrester including a rigid anchor line in accordance with clause 7.