

# Personal protective equipment against falls from a height — Retractable type fall arresters

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## Personal protective equipment against falls from a height - Retractable type fall arresters

Équipement de protection individuelle contre les chutes de  
hauteur - Antichutes à rappel automatique

Persönliche Schutzausrüstung gegen Absturz -  
Höhensicherungsgeräte

This European Standard was approved by CEN on 15 March 2002.

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## Foreword

This document EN 360:2002 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of an identical text or by endorsement, at the latest by November 2002, and conflicting national standards shall be withdrawn at the latest by November 2002.

This document supersedes EN 360:1992. This new edition contains the old text of the standard and incorporates some urgent amendments that are intended to give additional information and clarify inconsistencies. A comprehensive revision of the standard will follow at a later stage.

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.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This European Standard specifies the requirements, test methods, marking, information supplied by the manufacturer and packaging for retractable type fall arresters. Retractable type fall arresters 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. Other types of fall arresters are specified in EN 353-1 and EN 353-2. Energy absorbers are specified in EN 355.

## 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 (including amendments).

EN 354:2002, *Personal protective equipment against falls from a height – Lanyards.*

EN 355:2002, *Personal protective equipment against falls from a height – Energy absorbers.*

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 and for marking.*

## 3 Terms and definitions

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

### 3.1

#### **retractable type fall arrester**

fall arrester with a self-locking function and an automatic tensioning and return facility for the lanyard, i.e. the retractable lanyard. An energy dissipating function may be incorporated in the device itself or an energy absorber may be incorporated in the retractable lanyard [EN 363]

### 3.2

#### **retractable lanyard**

connecting element of a retractable type fall arrester. A retractable lanyard may be of wire rope, webbing or synthetic fibre rope and may be longer than 2 m [EN 363]

### 3.3

#### **energy absorber**

element or a component of a fall arresting system, which is designed to dissipate the kinetic energy developed during a fall from a height [EN 363]

### 3.4

#### **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 [EN 363]

### 3.5

#### arrest distance

vertical distance  $H$  in metres measured at the mobile load bearing point of the connecting sub-system 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 [EN 363]

## 4 Requirements

### 4.1 Design and ergonomics

The general requirements for the design and ergonomics are specified in 4.1 of EN 363:2002.

A retractable type fall arrester may comprise a drum around which the retractable lanyard reels or unreels, or a return pulley with counterweights.

### 4.2 Materials and construction

The retractable lanyard shall be a wire rope, a webbing or a synthetic fibre rope. The material of a retractable lanyard shall conform to 4.2.2 and 4.2.3 of EN 354:2002.

It shall be confirmed by the static strength test specified in 5.2 that the internal end of the retractable lanyard is suitably secured to the device.

The external end of the retractable lanyard shall be suitably terminated.

Energy absorbers not integrated in the retractable lanyard shall conform to EN 355. Energy absorbers integrated in the retractable lanyard shall conform to EN 355, but need not be tested in accordance with 5.2 of EN 355:2002.

Connectors for retractable type fall arresters shall conform to EN 362 and shall incorporate a swivel function.

### 4.3 Locking

#### 4.3.1 Locking after conditioning

When conditioned as described in 5.1.2.1 and tested as described in 5.1.2.3 with a minimum test mass of 5 kg, the retractable type fall arrester shall in each case lock and remain locked until released.

#### 4.3.2 Locking after optional conditioning

If the marking on the retractable type fall arrester and the information supplied by the manufacturer (see clauses 6 and 7) claims a feature concerning the use under specific conditions (see 5.1.2.2), the locking function of the retractable type fall arrester shall be tested accordingly.

When conditioned as described in 5.1.2.2 and tested as described in 5.1.2.3 with a minimum test mass of 5 kg, the retractable type fall arrester shall in each case lock and remain locked until released.

### 4.4 Static strength

Retractable type fall arresters with a retractable lanyard made from synthetic fibre rope or webbing shall sustain a force of at least 15 kN when tested as described in 5.2.

Retractable type fall arresters with a retractable lanyard made from wire rope shall sustain a force of at least 12 kN when tested as described in 5.2.

## 4.5 Dynamic performance

When tested as described in 5.3.2 with a rigid steel mass of 100 kg, the braking force  $F_{\max}$  shall not exceed 6 kN and the arrest distance  $H$  shall not exceed 2 m.

## 4.6 Optional requirement concerning endurance

If the marking on the retractable type fall and the information supplied by the manufacturer (see clauses 6 and 7) claims the feature concerning endurance, the retractable type fall arrester shall be tested as described in 5.4 with a total of 1 000 relative movements.

## 4.7 Corrosion resistance

After tested as described in 5.5 the elements of the retractable type fall arrester shall be examined. Where necessary to gain visual access to the internal elements, the device shall be dismantled. The test is classed as a failure if any corrosion is evident that could affect the function of the device. (White scaling or tarnishing is acceptable.)

## 4.8 Marking and information

Marking of the retractable type fall arrester shall be in accordance with clause 6.

Information shall be supplied with the retractable type fall arrester in accordance with clause 7.

# 5 Test methods

## 5.1 Locking test after conditioning

### 5.1.1 Apparatus

#### 5.1.1.1 Apparatus for conditioning

The conditioning apparatus shall conform to 4.8 of EN 364:1992.

#### 5.1.1.2 Apparatus for the locking test

The locking test apparatus shall consist of an anchor point and a minimum test mass of 5 kg according to 5.11.6.2 of EN 364:1992.

### 5.1.2 Method

#### 5.1.2.1 Conditioning

The conditioning to heat, to cold and to wet is described in 5.11 of EN 364:1992.

#### 5.1.2.2 Optional conditioning

The conditioning to dust and to oil is optional and described in 5.11 of EN 364:1992.

#### 5.1.2.3 Locking test

The locking test shall be conducted as described in 5.11.6.2 of EN 364:1992.

## 5.2 Static strength test

### 5.2.1 Apparatus

The static strength apparatus shall conform to 4.1 of EN 364:1992.

### 5.2.2 Method

The static strength test shall be conducted as described in 5.7.4 of EN 364:1992.

## 5.3 Dynamic performance test

### 5.3.1 Apparatus

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

### 5.3.2 Method

The dynamic performance test shall be conducted as described in 5.7.2 of EN 364:1992.

## 5.4 Endurance test

### 5.4.1 Apparatus

The endurance test apparatus shall conform to 4.9 of EN 364:1992.

### 5.4.2 Method

The endurance test shall be conducted as described in 5.12.2 of EN 364:1992.

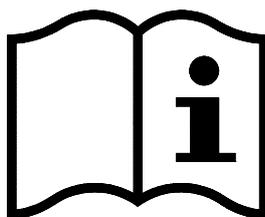
## 5.5 Corrosion test

The corrosion test shall be conducted as described in 5.13 of EN 364:1992 for a minimum period of 24 h.

## 6 Marking

Marking on the retractable type fall arrester shall conform to 2.2 of EN 365:1992 and any text shall be in the languages of the country of destination. In addition to conforming to 2.2 of EN 365:1992 the marking shall include the following:

- a) on the retractable type fall arrester, a pictogram to indicate that users shall read the information supplied by the manufacturer (see figure);



- b) the specific conditions under which a retractable type fall arrester may be used, e.g. vertical, horizontal or inclined;
- c) the model/type identification mark of the retractable type fall arrester;

- d) the number of this European Standard, i.e. EN 360.

## **7 Information supplied by the manufacturer**

The information supplied by the manufacturer shall be provided in the languages of the country of destination. It shall conform to 2.1 of EN 365:1992 and in addition shall include at least advice or information as follows:

- a) the specific conditions under which the retractable type fall arrester may be used, e. g. vertical, horizontal or inclined;
- b) the characteristics required for a reliable anchor point;
- c) the correct way of connecting to a reliable anchor point, to a full body harness and to other components of a fall arrest system;
- d) on how to ensure the compatibility of any components to be used in conjunction with the retractable type fall arrester, e.g. by reference to other European Standards;
- e) if a complete system is supplied, that components of any complete system shall not be substituted;
- f) the correct way of operating the retractable type fall arrester;
- g) the necessary minimum clearance below the feet of the user, in order to avoid collision with the structure or ground in a fall from a height. With a mass of 100 kg the clearance is the arrest distance  $H$  (see 3.5) plus an extra distance of 1 m;
- h) the materials from which the retractable lanyard is made;
- i) on limitations of the materials in the product or hazards which may affect its performance, e.g. temperature, the effect of sharp edges, chemical reagents, electrical conductivity, cutting, abrasion, UV degradation, other climatic conditions;
- j) that before and during use, consideration should be given as to how any rescue could be safely and efficiently carried out;
- k) that the product should only be used by a trained and/or otherwise competent person or the user should be under the direct supervision of such a person;
- l) on how to clean the product, including disinfection, without adverse effect;
- m) if information exists, the expected lifespan of the product (obsolescence) or how this may be determined;
- n) on how to protect the product during transportation;
- o) the model/type identification mark of the retractable type fall arrester;
- p) on the meaning of any markings on the product;
- q) the number of this European Standard, i.e. EN 360.

## **8 Packaging**

Retractable type fall arresters shall be supplied wrapped, but not necessarily sealed, in a material that provides some resistance against the penetration of moisture.

## 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 European Standard.

The following clauses of this European Standard are likely to support requirements of Directive 89/686/EEC, Annex II :

EU-Directive 89/686/EEC, Annex II	clauses of this standard
1.1 Design principles	4.1 and 4.2
1.2 Innocuousness of PPE	4.2
1.3.2 Lightness and design strength	4.4, 4.5 and 4.6
1.4 Information supplied by the manufacturer	4.8 and 7
2.1 PPE incorporating adjustment systems	7
2.12 PPE bearing one or more identification or recognition marks directly or indirectly relating to health and safety	6
3.1.2.2 Prevention of falls from height	4.3, 4.5 and 7

Compliance with the clauses of this European Standard provides one means of conforming to the specific essential requirements of the Directive concerned and associated EFTA regulations.

## Bibliography

EN 353-1, *Personal protective equipment against falls from a height – Part 1: Guided type fall arresters including a rigid anchor line.*

EN 353-2, *Personal protective equipment against falls from a height – Part 2: Guided type fall arresters including a flexible anchor line.*

EN 361, *Personal protective equipment against falls from a height – Full body harnesses.*



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