



**SLOVENSKI STANDARD**  
**SIST EN 60068-2-32:2001**  
**01-september-2001**

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**Basic environmental testing procedures - Part 2: Tests - Test Ed: Free fall**

Basic environmental testing procedures -- Part 2: Tests - Test Ed: Free fall

Grundlegende Umweltprüfverfahren -- Teil 2: Prüfungen - Prüfung Ed: Frei Fallen

Essais fondamentaux climatiques et de robustesse mécanique -- Partie 2: Essais - Essai  
Ed: Chute libre

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**Ta slovenski standard je istoveten z: EN 60068-2-32:1993**

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**ICS:**

19.040	Preskušanje v zvezi z okoljem	Environmental testing
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**en**

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EUROPEAN STANDARD

EN 60068-2-32

NORME EUROPEENNE

EUROPÄISCHE NORM

April 1993

UDC 621.3:620.193:620.178.153

Supersedes HD 323.2.32 S2:1991

Descriptors: Electricity, equipment, mechanical test, free fall,  
procedures, equipment specifications writing

## ENGLISH VERSION

Basic environmental testing procedures  
Part 2: Tests  
Test Ed: Free fall  
(IEC 68-2-32:1975 + A1:1982 + A2:1990)

Essais fondamentaux climatiques  
et de robustesse mécanique  
Deuxième partie: Essais  
Essai Ed: Chute libre  
(CEI 68-2-32:1975 + A1:1982  
+ A2:1990)

Grundlegende Umweltprüfverfahren  
Teil 2: Prüfungen  
Prüfung Ed: Frei Fallen  
(IEC 68-2-32:1975 + A1:1982  
+ A2:1990)

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This European Standard was approved by CENELEC on 1993-03-09.  
CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat  
has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium,  
Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg,  
Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

## CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

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#### FOREWORD

At the request of CENELEC Reporting Secretariat, HD 323.2.32 S2:1991 (IEC 68-2-32:1975 + A2:1990 - incorporating A1:1982) was submitted to the CENELEC voting procedure for conversion into a European Standard.

The text of the International Standard and its amendments was approved by CENELEC as EN 60068-2-32 on 9 March 1993.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-03-01
- latest date of withdrawal of conflicting national standards (dow) -

#### ENDORSEMENT NOTICE

The text of the International Standard IEC 68-2-32:1975 and its amendment 2:1990 (incorporating amendment 1:1982) was approved by CENELEC as a European Standard without any modification.

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**COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE**

(affiliée à l'Organisation Internationale de Normalisation — ISO)

**NORME DE LA CEI****INTERNATIONAL ELECTROTECHNICAL COMMISSION**

(affiliated to the International Organization for Standardization — ISO)

**IEC STANDARD****Publication 68-2-32**

Deuxième édition — Second edition

1975

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**Essais fondamentaux climatiques et de robustesse mécanique**

Deuxième partie: Essais

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Essai Ed: Chute libre  
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**Basic environmental testing procedures**

Part 2: Tests

**Test Ed: Free fall**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**BASIC ENVIRONMENTAL TESTING PROCEDURES****Part 2 : Tests — Test Ed : Free fall**

## FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
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## PREFACE

This publication has been prepared by Sub-Committee 50A, Shock and Vibration Tests, of IEC Technical Committee No. 50, Environmental Testing.

It supersedes the first edition issued in 1969.

A first draft was discussed at the meeting held in Stockholm in 1972. As a result of this meeting, a draft, document 50A(Central Office)138, was submitted to the National Committees for approval under the Six Months' Rule in March 1973.

The following countries voted explicitly in favour of publication:

Australia	Norway
Belgium	Poland
Brazil	Portugal
Czechoslovakia	Romania
Denmark	South Africa (Republic of)
Egypt	Spain
Finland	Sweden
France	Switzerland
Germany	Turkey
Israel	Union of Soviet Socialist Republics
Japan	United Kingdom
Netherlands	United States of America

## HISTORICAL SURVEY OF TEST Ed: FREE FALL

### First edition (1969)

Contained a test procedure for a single free fall.

### Second edition (1975)

Introduces a repeated free fall test using a standardized drop, repeated for a prescribed number of operations by means of a suitable apparatus, for example a tumbling barrel whose dimensions are specified.

*For directly related specification, see:*

Publication 68-1: General.

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## BASIC ENVIRONMENTAL TESTING PROCEDURES

### Part 2: Tests — Test Ed: Free fall

#### INTRODUCTION

This test is divided into two procedures. The first simulates falls which a specimen, normally in the unpacked state, could undergo during handling and is normally restricted to two falls from a prescribed attitude onto a specified surface from a specified height.

The second procedure simulates repeated falls which may occur to such devices as connectors or small remote control units which are normally attached to cables during use. Repeated falls onto a specified surface from a specified height are achieved by using a suitable apparatus, e.g. a tumbling (rotating) barrel.

#### Procedure 1 — Free fall

##### 1. Object

To assess the effects on a specimen of simple standard tests intended to be representative of the fall likely to be experienced during rough handling, or to demonstrate a minimum degree of robustness, for the purpose of assessing safety requirements.

This test is primarily intended for specimens not in their packing and for items in their transport case when the latter may be considered as part of the specimen itself.

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##### 2. Test conditions

###### 2.1 Test surface

The test surface shall be a smooth, hard, rigid surface of concrete or steel. Where necessary, other surfaces may be prescribed in the relevant specification.

###### 2.2 Height of fall

The height shall be measured from the part of the specimen nearest to the test surface, when the specimen is suspended prior to letting it fall.

###### 2.3 Method of release

The method of releasing the specimen shall be such as to allow free fall from the position of suspension, with a minimum of disturbance at the moment of release.

##### 3. Severities

The height of fall shall be taken from the following series:

25 mm, 50 mm, **100 mm**, 250 mm, **500 mm**, **1 000 mm**

The values in bold type are preferred values.

*Note.* — It may not be appropriate for heavy equipment to be subjected to the higher severities.



#### 4. Initial measurements

The specimen shall be visually examined and electrically and mechanically checked, as required by the relevant specification.

#### 5. Conditioning

5.1 The specimen in its normal attitudes in carrying or use, as prescribed in the relevant specification, shall be allowed to fall freely.

5.2 Unless otherwise prescribed in the relevant specification, the specimen shall be subjected to two falls from each prescribed attitude.

#### 6. Final measurements

The specimen shall be visually examined and electrically and mechanically checked, as required by the relevant specification.

#### 7. Information to be included in the relevant specification

When the test (Procedure 1) is included in the relevant specification, the following details shall be given as far as they are applicable:

	Clause or Sub-clause
a) Test surface if other than concrete or steel	2.1
b) Height of fall	3
c) Initial measurements	4
d) Attitude from which the specimen is dropped	5.1
e) Number of falls, if other than two	5.2
f) Final measurements	6

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#### Procedure 2 — Free fall — Repeated

#### 8. Object

This procedure is primarily intended for testing cable-connected devices such as connectors and small remote control units where the apparatus may be dropped frequently onto hard surfaces.

#### 9. Description of the test

Each specimen is tested individually, and to simulate practical conditions a length of cable is normally attached to the specimen during the test, which consists of subjecting the specimen to a prescribed number of falls from a specified height onto a hard surface. The effect of the test is checked in relation to the changes, if any, in the mechanical and electrical parameters of the specimen.

#### 10. Description of test apparatus

The apparatus shall be such that the prescribed number of falls from the specified height may be applied to individual specimens in accordance with the requirements of the relevant specification. One suitable form of apparatus is shown in Figure 1, page 12, and is based on a rotating or tumbling barrel.