

BS EN ISO 13856-1:2013



BSI Standards Publication

Safety of machinery — Pressure-sensitive protective devices

Part 1: General principles for design and testing of pressure-sensitive mats and pressure-sensitive floors (ISO 13856-1:2013)

bsi.

...making excellence a habit.™

This is a preview. [Click here to purchase the full publication.](#)

National foreword

This British Standard is the UK implementation of EN ISO 13856-1:2013. It supersedes BS EN 1760-1:1997+A1:2009 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MCE/3, Safeguarding of machinery.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2013. Published by BSI Standards Limited 2013

ISBN 978 0 580 72191 5

ICS 13.110; 29.120.50

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 April 2013.

Amendments issued since publication

Date	Text affected
------	---------------

English Version

**Safety of machinery - Pressure-sensitive protective devices -
Part 1: General principles for design and testing of pressure-
sensitive mats and pressure-sensitive floors (ISO 13856-1:2013)**

Sécurité des machines - Dispositifs de protection sensibles
à la pression - Partie 1: Principes généraux de conception
et d'essai des tapis et planchers sensibles à la pression
(ISO 13856-1:2013)

Sicherheit von Maschinen - Druckempfindliche
Schutzeinrichtungen - Teil 1: Allgemeine Leitsätze für die
Gestaltung und Prüfung von Schalmatten und
Schaltplatten (ISO 13856-1:2013)

This European Standard was approved by CEN on 7 March 2013.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 13856-1:2013) has been prepared by Technical Committee ISO/TC 199 "Safety of machinery" in collaboration with Technical Committee CEN/TC 114 "Safety of machinery" 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 2013, and conflicting national standards shall be withdrawn at the latest by October 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1760-1:1997+A1:2009.

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.

For relationship with EU Directive, 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, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 13856-1:2013 has been approved by CEN as EN ISO 13856-1:2013 without any modification.

Annex ZA (informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive Machinery 2006/42/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 2006/42/EC

Clause(s)/sub-clause(s) of this European Standard	Essential Requirements (ERs) of Directive 2006/42/EC	Qualifying remarks/Notes
Clause 4	Annex I, 1.2	Control systems
	Annex I, 1.3	Protection against mechanical hazards
	Annex I, 1.4	Required characteristics of (guards and) protection devices
	Annex I, 1.5	Risks due to other hazards
	Annex I, 1.6	Maintenance
Clauses 5 and 6	Annex I, 1.7	Information

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Requirements for design and testing	3
4.1 General	3
4.2 Actuating force	5
4.3 Response time	7
4.4 Static loading	7
4.5 Number of operations	7
4.6 Output state of sensor	7
4.7 Response of output signal switching device(s) to actuating force	8
4.8 Access for maintenance	8
4.9 Adjustments	8
4.10 Connections	9
4.11 Environmental conditions	9
4.12 Power supply	10
4.13 Electrical equipment	10
4.14 Enclosure	11
4.15 Performance levels and categories for SRP/CSs in accordance with ISO 13849-1	11
4.16 Sensor fittings	12
4.17 Tripping	12
4.18 Slip-resistance	12
4.19 Additional coverings of top surfaces of sensor(s)	13
4.20 Failure due to blocking or wedging	13
5 Marking	13
5.1 General	13
5.2 Marking of control unit	13
5.3 Marking of sensor	13
5.4 Marking of other components	13
6 Information for use	13
6.1 General	13
6.2 Instructions for use	14
7 Testing	16
7.1 General	16
7.2 Sensor test sample	17
7.3 Test pieces for load tests	17
7.4 Test No. 1 — Actuating force	18
7.5 Test No. 2 — Response time	20
7.6 Test No. 3 — Static loading	22
7.7 Test No. 4 — Number of operations	22
7.8 Test No. 5 — Output state of sensor	27
7.9 Test No. 6 — Response of output signal switching device to actuating force	28
7.10 Test No. 7 — Access for maintenance	28
7.11 Test No. 8 — Adjustments	28
7.12 Test No. 9 — Connections	28
7.13 Test No. 10 — Environmental conditions	28
7.14 Test No. 11 — Electrical power supply	30
7.15 Test No. 12 — Electrical equipment	30
7.16 Test No. 13 — Enclosure	30
7.17 Test No. 14 — PL according to ISO 13849-1	30