December 2013

DIN EN ISO 13856-3

DIN

ICS 13.110

Supersedes
DIN EN 1760-3:2009-09

Safety of machinery – Pressure-sensitive protective devices – Part 3: General principles for design and testing of pressure-sensitive bumpers, plates, wires and similar devices (ISO 13856-3:2013); English version EN ISO 13856-3:2013, English translation of DIN EN ISO 13856-3:2013-12

Sicherheit von Maschinen –
Druckempfindliche Schutzeinrichtungen –
Teil 3: Allgemeine Leitsätze für die Gestaltung und Prüfung von Schaltpuffern, Schaltflächen, Schaltleinen und ähnlichen Einrichtungen (ISO 13856-3:2013);
Englische Fassung EN ISO 13856-3:2013,
Englische Übersetzung von DIN EN ISO 13856-3:2013-12

Sécurité des machines –
Dispositifs de protection sensibles à la pression –
Partie 3: Principes généraux de conception et d'essai des pare-chocs, plaques, câbles et dispositifs analogues sensibles à la pression (ISO 13856-3:2013);
Version anglaise EN ISO 13856-3:2013,
Traduction anglaise de DIN EN ISO 13856-3:2013-12

Document comprises 67 pages

Translation by DIN-Sprachendienst.
In case of doubt, the German-language original shall be considered authoritative.

12.13 2078728

A comma is used as the decimal marker.

Start of application

The start of application of this standard is 2013-12-01.

National foreword

This standard includes safety requirements within the meaning of the *9. Verordnung zum Produktsicherheitsgesetz (ProdSG)* (Ninth Ordinance to the German Product Safety Act) and in connection with European legislation (New Approach Machinery Directive).

This document (EN ISO 13856-3:2013) has been prepared by Technical Committee ISO/TC 199 “Safety of machinery” in collaboration with Technical Committee CEN/TC 114 “Safety of machinery”. Both secretariats are held by DIN, Germany.

The responsible German bodies involved in its preparation were the *Normenausschuss Sicherheitstechnische Grundsätze* (Safety Design Principles Standards Committee) and the *Normenausschuss Maschinenbau* (Mechanical Engineering Standards Committee), Joint Working Committee NA 095-01-02 GA *Schaltmatten, Schaltplatten, Schaltleisten*.

For the definition of the terms “Commissioning” (in German: *Inbetriebnehmen*) as used in this standard and “Putting into service” (in German: *Inbetriebnahme*) according to the Machinery Directive 2006/42/EC, see explanatory notes in DIN EN ISO 12100:2011-03, National foreword.

DIN EN ISO 13856 consists of the following parts, under the general title *Safety of machinery — Pressure-sensitive protective devices:*

— *Part 1: General principles for design and testing of pressure-sensitive mats and pressure-sensitive floors*

— *Part 2: General principles for design and testing of pressure-sensitive edges and pressure-sensitive bars*

— *Part 3: General principles for design and testing of pressure-sensitive bumpers, plates, wires and similar devices*

The DIN Standards corresponding to the International Standards referred to in this document are as follows:

ISO 4413	DIN EN ISO 4413
ISO 4414	DIN EN ISO 4414
ISO 12100	DIN EN ISO 12100
ISO 13849-1	DIN EN ISO 13849-1
ISO 13849-2	DIN EN ISO 13849-2
ISO 13850	DIN EN ISO 13850
ISO 13855	DIN EN ISO 13855
ISO 14119	DIN EN 1088
ISO 14120	DIN EN 953[1)]
IEC 60068-2-6	DIN EN 60068-2-6
IEC 60068-2-14	DIN EN 60068-2-14
IEC 60068-2-27	DIN EN 60068-2-27

1) Replaced by new 2009 edition which is not identical with ISO 14120:2002.

IEC 60068-2-78	DIN EN 60068-2-78
IEC 60204-1	DIN EN 60204-1
IEC 60529	DIN EN 60529
IEC 60664-1	DIN EN 60664-1
IEC 60947-5-1	DIN EN 60947-5-1
IEC 60947-5-5	DIN EN 60947-5-5
IEC 61000-4-2	DIN EN 61000-4-2
IEC 61000-4-3	DIN EN 61000-4-3
IEC 61000-4-4	DIN EN 61000-4-4
IEC 61000-4-5	DIN EN 61000-4-5
IEC 61000-4-6	DIN EN 61000-4-6
IEC 61000-6-2	DIN EN 61000-6-2
IEC 61439-1	DIN EN 61439-1[2)]
IEC 61496-1	DIN EN 61496-1
IEC 61496-2	DIN CLC/TS 61496-2
IEC 61496-3	DIN CLC/TS 61496-3
IEC 61508	DIN EN 61508
IEC 62061	DIN EN 62061

Amendments

This standard differs from DIN EN 1760-3:2009-09 as follows:

a) requirements for safety-related parts of control systems have been brought in line with DIN EN ISO 13849-1 (in particular 4.2.15 and 6.2);

b) the definition of “pressure-sensitive protective device” has been revised;

c) the terminology has been adapted to DIN EN ISO 12100;

d) normative and informative references have been updated;

e) Figures A.1 and A.2 have been technically revised;

f) the former Annex ZA regarding the correspondence between this European Standard and the Essential Requirements of EU Directive 98/37/EC has been deleted and the former Annex ZB is now Annex ZA;

g) the standard has been editorially revised.

Previous editions

DIN EN 1760-3: 2004-10, 2009-07, 2009-09
DIN EN 1760-3 Corrigendum 1: 2006-04

2) modified

National Annex NA
(informative)

Bibliography

DIN EN 953, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

DIN EN 1088, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

DIN EN 60068-2-6, *Environmental testing — Part 2-6: Tests — Test Fc: Vibration (sinusoidal)*

DIN EN 60068-2-14, *Environmental testing — Part 2-14: Tests — Test N: Change of temperature*

DIN EN 60068-2-27, *Environmental testing — Part 2-27: Tests — Test Ea and guidance: Shock*

DIN EN 60068-2-78, *Environmental testing — Part 2-78: Tests —Test Cab: Damp heat, steady state*

DIN EN 60204-1, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

DIN EN 60529, *Degrees of protection provided by enclosures (IP code)*

DIN EN 60664-1, *Insulation coordination for equipment within low-voltage systems — Part 1: Principles, requirements and tests*

DIN EN 60947-5-1, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices*

DIN EN 60947-5-5, *Low-voltage switchgear and controlgear — Part 5-5: Control circuit devices and switching elements — Electrical emergency stop device with mechanical latching function*

DIN EN 61000-4-2, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test*

DIN EN 61000-4-3, *Electromagnetic compatibility (EMC) — Part 4-3: Testing and measurement techniques — Radiated, radio-frequency, electromagnetic field immunity test*

DIN EN 61000-4-4, *Electromagnetic compatibility (EMC) — Part 4-4: Testing and measurement techniques — Electrical fast transient/burst immunity test*

DIN EN 61000-4-5, *Electromagnetic compatibility (EMC) — Part 4-5: Testing and measurement techniques — Surge immunity test*

DIN EN 61000-4-6, *Electromagnetic compatibility (EMC) — Part 4-6: Testing and measurement techniques — Immunity to conducted disturbances, induced by radio-frequency fields*

DIN EN 61000-6-2, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity for industrial environments*

DIN EN 61439-1, *Low-voltage switchgear and controlgear assemblies — Part 1: General rules*

DIN EN 61496-1, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests*

DIN CLC/TS 61496-2, *Safety of machinery — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)*

DIN CLC/TS 61496-3, *Safety of machinery — Electro-sensitive protective equipment — Part 3: Particular requirements for active opto-electronic protective devices responsive to diffuse reflection (AOPDDR)*

DIN EN 61508 *Functional safety of electrical/electronic/programmable electronic safety-related systems*

DIN EN 62061, *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems*

DIN EN ISO 4413, *Hydraulic fluid power — General rules and safety requirements for systems and their components*

DIN EN ISO 4414, *Pneumatic fluid power — General rules and safety requirements for systems and their components*

DIN EN ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

DIN EN ISO 13849-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

DIN EN ISO 13849-2, *Safety of machinery — Safety-related parts of control systems — Part 2: Validation*

DIN EN ISO 13850, *Safety of machinery — Emergency stop — Principles for design*

DIN EN ISO 13855, *Safety of machinery — Positioning of safeguards with respect to the approach speeds of parts of the human body*

— This page is intentionally blank —

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 13856-3

July 2013

ICS 13.110

Supersedes EN 1760-3:2004+A1:2009

English Version

Safety of machinery - Pressure-sensitive protective devices - Part 3: General principles for design and testing of pressure-sensitive bumpers, plates, wires and similar devices (ISO 13856-3:2013)

Sécurité des machines - Dispositifs de protection sensibles à la pression - Partie 3: Principes généraux de conception et d'essai des pare-chocs, plaques, câbles et dispositifs analogues sensibles à la pression (ISO 13856-3:2013)

Sicherheit von Maschinen - Druckempfindliche Schutzeinrichtungen - Teil 3: Allgemeine Leitsätze für die Gestaltung und Prüfung von Schaltpuffern, Schaltflächen, Schaltleinen und ähnlichen Einrichtungen (ISO 13856-3:2013)

This European Standard was approved by CEN on 5 July 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

Ref. No. EN ISO 13856-3:2013: E

Contents