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Safety of machinery — Interlocking devices associated with guards — Principles for design and selection

Sécurité des machines — Dispositifs de verrouillage associés à des protecteurs — Principes de conception et de choix

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This document was prepared by Technical Committee ISO/TC 199, *Safety of machinery*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 114, *Safety of machinery,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 14119:2013), which has been technically revised.

The main changes are as follows:

— ISO/TS 19837 has been integrated as new Annex K with specific requirements for Type 5 interlocking devices – “trapped key interlocking devices” (see definition 3.18.1);

— trapped key interlocking systems and Type 5 interlocking devices have been defined;

— Table 5 has been improved and renamed;

— test procedures are described in new Annex I;

— ISO/TR 24119 has been integrated into new Annex J.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

The structure of safety standards in the field of machinery is as follows:

a) type-A standards (basic safety standards) giving basic concepts, principles for design, and general aspects that can be applied to all machinery;

b) type-B standards (generic safety standards) dealing with one safety aspect or one type of safeguard that can be used across a wide range of machinery:

   — type-B1 standards on particular safety aspects (e.g. safety distances, surface temperature, noise);

   — type-B2 standards on safeguards (e.g. two-hand controls, interlocking devices, pressure-sensitive devices, guards);

c) type-C standards (machine safety standards) dealing with detailed safety requirements for a particular machine or group of machines.

This document is a type-B2 standard as stated in ISO 12100.

This document is of relevance, in particular for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organizations, market surveillance).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate in the drafting process of this document.

In addition, this document is intended for standardization bodies elaborating type-C standards.

The requirements of this document can be supplemented or modified by a type-C standard.

For machines which are covered by the scope of a type-C standard and which have been designed and built according to the requirements of that standard, the requirements of that type-C standard take precedence.

This document has been prepared to give guidance to machinery designers and writers of product safety standards on how to design and select interlocking devices associated with guards.

Relevant clauses of this document, used alone or in conjunction with provisions from other standards, may be used as a basis for verification procedures for the suitability of a device for interlocking duties.

Annexes A to E describe the technology and the typical characteristics of the defined interlocking devices types 1 to 4. Other solutions may be adopted, provided that they are in conformity with the principles of this document.

Annexes F to H give information on particular aspects such as interlocking devices used within safety functions, risk assessment considering the motivation to defeat and static action forces.

Annex I describes a locking force test and an impact resistance test for guard-locking devices.

Annex K provides requirements for trapped key interlocking systems and describes their technology.