BS EN 15811:2014

BSI Standards Publication

Agricultural machinery — Fixed guards and interlocked guards with or without guard locking for moving transmission parts (ISO/TS 28923:2012 modified)

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National foreword

This British Standard is the UK implementation of EN 15811:2014. It was derived from ISO/TS 28923:2012. It supersedes BS EN 15811:2009 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee AGE/6, Agricultural tractors and forestry 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.

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

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Agricultural machinery - Fixed guards and interlocked guards with or without guard locking for moving transmission parts (ISO/TS 28923:2012 modified)

Matériel agricole - Protecteurs fixes et protecteurs avec dispositif de verrouillage ou d'interverrouillage pour éléments mobiles de transmission de puissance (ISO/TS 28923:2012 modifiée)

Landmaschinen - Feststehende trennende Schutzeinrichtungen und trennende Schutzeinrichtungen mit Verriegelung mit oder ohne Verriegelungseinrichtung für bewegliche Teile der Kraftübertragung (ISO/TS 28923:2012, modifiziert)

This European Standard was approved by CEN on 18 October 2014.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 15811:2014) has been prepared by Technical Committee CEN/TC 144 “Tractors and machinery for agriculture and forestry”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by June 2015 and conflicting national standards shall be withdrawn at the latest by June 2015.

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 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 2006/42/EC.

For relationship with EU Directives, see informative Annex ZA, which is an integral part of this document.

This European Standard specifies safety requirements for fixed guards and interlocked guards with or without guard locking for moving parts of mechanical power transmission and should be used with EN ISO 4254-1:2013.

This European Standard is also applicable to “access doors” when used as a guard.

This document supersedes EN 15811:2009.

The following changes were introduced compared to EN 15811:2009:

— modification of the title to indicate the scope of the standard;

— reference to the procedure of risk assessment was introduced in Clause 4;

— requirements for interlocking guards with or without guard locking were added in 5.3;

— editorial modifications were made.

The following changes were introduced compared to ISO/TS 28923:2012:

— modification of the title to indicate the scope of the standard;

— reference to the procedure of risk assessment was introduced in Clause 4;

— editorial modifications were made;

— modification of Table A.1;

— addition of Annex ZA.

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.

Introduction

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

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

b) Type-B standards (generic safety standards) deal with one or more safety aspect(s) or one or more type(s) of safeguards 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-hands controls, interlocking devices, pressure sensitive devices, guards);

c) Type-C standards (machinery safety standards) deal with detailed safety requirements for a particular machine or group of machines.

This European Standard is a type-C standard as stated in EN ISO 12100.

When provisions of this type-C standard are different from those which are stated in type-A or type-B standards, the provisions of this type-C standard take precedence over the provisions of the other standards for machines that have been designed and built according to the provisions of this type-C standard.

1 Scope

This European Standard specifies the safety requirements and their verification for the design and construction of fixed guards to be opened or removed by the use of a tool and interlocking guards with or without guard locking for moving parts of the power transmission on self-propelled ride-on machines and mounted, semi-mounted or trailed machines used in agriculture. In addition, it specifies the type of information on safe working practices (including residual risks) to be provided by the manufacturer.

It deals with the significant hazards (as listed in Annex A), hazardous situations and events relevant for fixed guards to be opened or removed by the use of a tool and interlocking movable guards of moving parts of power transmission used as intended and under the conditions reasonably foreseeable by the manufacturer (see Clause 4 and Clause 5).

It is not applicable to guards of moving parts of the power transmission of:

— agricultural and forestry tractors,

— aircraft and air cushion vehicles used in agriculture,

— lawn and garden equipment, or

— PTO drive shafts between agricultural and forestry tractors and mounted or towed implements.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 4254-1:2013, *Agricultural machinery - Safety - Part 1: General requirements (ISO 4254-1:2013)*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13857:2008, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and EN ISO 4254-1:2013 apply.

4 General

The exact choice of a guard for a particular machine shall be made on the basis of the risk assessment for that machine.

Selection of appropriate measures shall take into consideration the complete strategy for risk reduction specified in EN ISO 12100:2010, Clause 5, and shall consider both normal operation and service operations as specified in the operator’s manual.

When guarding is shown to be an appropriate means for risk reduction, the selection of an appropriate guard for a particular type of machine or hazard zone, shall take into account that:

— a fixed guard as specified in 5.2.1 is simple and shall be used where access of an operator to the hazard zone is not or infrequently required during normal operation (operation without malfunction) of the machinery;

— in case of frequent access, this inevitably leads to the fixed guard not being replaced. This requires the use of alternative protective measure (e.g. interlocking guard, sensitive protective equipment).

The frequency of access used in the selection of the type of guard shall account for any difficult working conditions that could increase the need for access.

5 Requirements

5.1 General

The design of guards shall take into consideration the risks to the operator and other persons without preventing the proper function of the machine or generating other hazards such as preventing drainage, debris accumulation, blockages or malfunctions.

Guards shall be designed and constructed in such a way that normal operation and service of the machine can be readily carried out.

Guards can be formed from rigid mesh or grille. The size of openings permitted in guards depends on the distance between the guard and the hazard/hazardous area and shall be in accordance with EN ISO 13857:2008, Tables 3, 4 or 6 as applicable.

The strength of guards shall comply with EN ISO 4254-1.

5.2 Additional requirements for fixed guards

5.2.1 Fixed guards shall be securely held in place:

— by permanent fixing (e.g. by welding, riveting, one-way screws); or

— by means of fasteners such as screws and nuts which require a common tool for opening or removal. The fixing system shall remain attached to the guard or to the machine when the guards are removed. Where possible, the guards shall be incapable of remaining in place without their fixings; or

— by means of hinges and a locking system, which can only be released using a tool, (in order to make opening an intentional action) and which can be automatically closed without the use of a tool.

5.2.2 In case of fixed guards which can be opened or removed in order to provide access to hazardous power transmission parts which continue to rotate or move after the power supply is disengaged, the following requirements apply:

— a safety sign in the immediate vicinity of the hazardous parts (e.g. on the outside of the guard) shall be provided to give a warning of the hazard; and

— a visible (while in the hazard area) or audible indication, starting from the moment that the power supply is disengaged until the hazardous parts stop rotating or moving. It is not required that the indication is given when the machine is in ground motion / travelling.

5.3 Additional requirements for interlocking guards

Interlocking guards shall:

— as far as possible, remain attached to the machine when open, and

— be designed and constructed in such a way that they can be adjusted only by means of an intentional action.

Interlocking guards shall have an interlocking device which:

— prevents the start of the hazardous transmission parts when the guard is open, and

— gives a command to disengage hazardous power transmission parts when the guard is opened.

If the run-down time of the power transmission parts exceeds the time needed for an operator to reach them, a guard locking device shall be provided which:

— locks the guard when closed, and

— keeps the guard locked until the hazardous movement has stopped.

6 Verification of safety requirements or protective measures

See Table1.

Table 1 – List of safety requirements and/or protective measures and their verification

Clause	Verification		
	Inspection	Measurement	Test with reference
5	X	X	Shall be verified by carrying out normal operation and service of the machine as specified in the operator's manual.

7 Information for use

7.1 Operator's manual

The manual shall include warnings about the significant residual risks and how these are to be controlled, as well as any training requirements (see 5.2).

7.2 Safety signs

A safety sign in the immediate vicinity of the hazardous parts (e.g. on the outside of the guard or access door) shall be provided to indicate the rotation of parts, if applicable (see 5.2.2).

Annex A
(informative)

List of significant hazards

Table A.1 specifies the significant hazards, significant hazardous situations and significant hazardous events that have been identified as being significant to the guards for moving parts of power transmission covered by this European Standard and which require specific action by the designer or manufacturer to eliminate or to reduce the risk.

Table A.1 — List of significant hazards

Clause / Subclause of EN ISO 4254-1:2013	Hazard	Hazardous situation and event	Clause of this document
A.1	**Mechanical hazards**		
A.1.1	Crushing hazard	Power transmission	4; 5
A.1.2	Shearing hazard	Power transmission	4; 5
A.1.4	Entanglement hazard	Power transmission	4; 5
A.1.5	Drawing-in or trapping hazard	Power transmission	4; 5

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 2006/42/EC on machinery.

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 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements 1.3.8.1, 1.4 and 1.7 of that Directive and associated EFTA regulations.

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

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