SLOVENSKI STANDARD
SIST EN 17067:2019

01-marec-2019

Gozdarski stroji - Varnostne zahteve za radijsko daljinsko upravljanje

Forestry machinery - Safety requirements on radio remote controls

Forstmaschinen - Sicherheitsanforderungen für Funkfernsteuerungen

Ta slovenski standard je istoveten z: **EN 17067:2018**

ICS:

65.060.80 Gozdarska oprema Forestry equipment

SIST EN 17067:2019 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 17067

December 2018

ICS 65.060.80

English Version

Forestry machinery - Safety requirements on radio remote controls

Matériel forestier - Prescriptions de sécurité pour les systèmes de commande à distance radio

Forstmaschinen - Sicherheitsanforderungen für Funkfernsteuerungen

This European Standard was approved by CEN on 3 September 2018.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 17067:2018 E

Contents

Page

European foreword

This document (EN 17067:2018) 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 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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

Cableless control systems are increasingly used in forestry. As only the fundamental requirements are defined in the standard EN 62745, it is necessary to formulate a draft standard that defines the particular requirements in respect to safety in forestry.

This standard draft regulates all special features of cableless control systems up to the machine interface. Safety system specifications for the machines resulting through cableless control systems according to this standard or which are controlled according to these specifications can be found in the relevant safety standards of these machines (e.g. EN ISO 11850).

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 amended by Directive 2009/127/EC and EU Directive 2014/30/EU.

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

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document is a type-C standard as stated in EN 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 etc.)

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 at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the scope of this document.

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

1 Scope

This document specifies both common and machine specific requirements for cableless control systems for use with the following forestry machinery.

— forestry cable winches according to ISO 19472, winches for log splitters;

— self-propelled machinery for forestry according to EN ISO 11850 (machines for felling, moving and debranching, forwarders, log loaders, skidders, processors, harvesting machines, mulchers as well as multipurpose machines of these construction types, as described in ISO 6814); the definitive part of the standard defines essential requirements for the driving function of the machine;

— mobile yarders for timber logging corresponding to EN 16517;

— log splitters and combined firewood splitters according to EN 609-1:2016, 5.9.2.1 Chipping machines according to EN 13525 and chipping machines with mechanical feed systems for the production of woodchips and shredding /grinding machines;

— forestry boom loaders and similar devices that are used on self-propelled machinery and trailers for forestry according to EN ISO 11850 and, as indicated above, for timber transport, timber loading, the loading of forestry goods or forestry products as well as for the handling and arrangement of timber harvesters, felling attachments, machines for felling and moving, attachments, saw heads, gripper-saw combinations with or without load or similar devices and machines, insofar they are not dealt with in EN 12999. Forestry boom loaders can be a component of the forestry machine on which they are mounted.

This document deals with significant hazards (as listed in Annex ZA), hazardous situations and events relevant to cableless control systems used with the above specific forestry machinery when used as intended and under the conditions of misuse foreseeable by the manufacturer.

NOTE General requirements for cableless controls for machinery are given in the standard EN 62745 and these are applicable to cableless control systems of forestry machinery.

This document deals only with the remote operation of machines. Risk reduction (protective) measures related to the operations carried out by the machine are specified in machine specific standards.

This document is not applicable to cableless control systems for forestry machinery manufactured before the date of its publication.

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 388, *Protective gloves against mechanical risks*

EN 13525, *Forestry machinery - Wood chippers - Safety*

EN 60068-2-1, *Environmental testing - Part 2-1: Tests - Test A: Cold*

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

EN 60068-2-31, *Environmental testing - Part 2-31: Tests - Test Ec: Rough handling shocks, primarily for equipment-type specimens*

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

EN 60447, *Basic and safety principles for man-machine interface, marking and identification - Actuating principles*

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

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*

EN 62745:2017, *Safety of machinery - Requirements for cableless control systems of machinery*

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

EN ISO 13850, *Safety of machinery - Emergency stop function - Principles for design (ISO 13850)*

EN ISO 14982, *Agricultural and forestry machinery - Electromagnetic compatibility - Test methods and acceptance criteria (ISO 14982)*

ISO 10968, *Earth-moving machinery — Operator's controls*

ISO 15817:2012, *Earth-moving machinery — Safety requirements for remote operator control systems*

ISO 19472, *Machinery for forestry — Winches — Dimensions, performance and safety*

3 Terms and definitions

For the purposes of this document, the terms and definitions of EN 62745 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
cableless controller
device, via which commands from the machine operator are transmitted without physical connection via at least one part of the distance between a remote station of the operator and the machine

3.2
cableless control system
CCS
system, comprising at least one remote station and one base station, which uses a cableless controller for transmission of the commands between both

3.3
general safe stop
GSS
safety related stop function to stop hazardous movements of the controlled machines in order to reach an off- state

Note 1 to entry: A GSS is not an emergency stop.

3.4
emergency stop
EMS
safety related stop function to stop hazardous movements of the controlled machines in order to reach an off- state which is available at any time

Note 1 to entry: The emergency stop is defined in EN ISO 13850.

3.5
receiver
part of a cableless control system, which only receives commands from a transmitter

Note 1 to entry: See Figure 1.

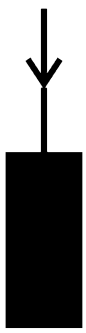

Figure 1 — Receiver

3.6
transmitter
part of a cableless control system, which only sends commands to a receiver

Note 1 to entry: See Figure 2.

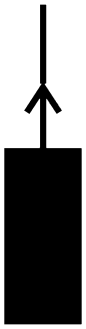

Figure 2 — Transmitter

3.7
transceiver
part of a cableless control system, which both sends and receives commands

Note 1 to entry: See Figure 3.

Figure 3 — Transceiver

3.8
repeater
device to increase the maximum signal range and bypass obstructing terrain structures

Note 1 to entry: See Figure 4.

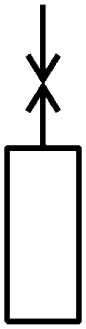

Figure 4 — Repeater

3.9
operator control unit
control unit
arrangement of one or more actuators (part of a device to which an external manual effect is to be applied) permanently mounted on the same control panel or located in the same housing

Note 1 to entry: A control unit of the operator can also comprise associated devices (e.g. potentiometer, indicator lights, instruments, display devices etc.)

3.10
frame
"package" of bits that is sent between a remote station and a base station and typically comprises the following:

a) address code;

b) operational control commands;

c) other control commands;

d) codes for fault detection (and correction)

3.11
address code
part of a frame that enables a base station or a remote station to detect frames that are provided to transmit commands to them

Note 1 to entry: The base station or remote station respond to commands with recognized relevant address code.

3.12
operational control command
control command, which is to initiate, change or maintain a machine function or movement

3.13
fault detection code
additional bits added to each frame in order to enable the detection of transmission errors

3.14
neutral frame
frame in which all operational control commands are in such a state that it does not initiate any hazardous movements by the machine, if it is received by the base station

Note 1 to entry: Neutral frames are able to contain data (i.e. a valid signal) between a transmitter and a base station, e.g. in order to exclude the automatic initiation of the stop function at a machine.

Note 2 to entry: The transmission of neutral frames is intended to prevent hazardous movements by the machine derived from the assumption or resumption of the communication.

Note 3 to entry: Neutral frames are able to contain data, e.g. parameterisation data and commands, which cannot lead to hazardous machine movements.

3.15
time limited transmission
transmission of frames, executed during any operational control commands, followed by a specified time period of the transmission of neutral frames

3.16
continuous transmission
transmission of frames, executed during any operational control commands, followed by the transmission of neutral frames until the next operational control command

3.17
hamming distance
number of points in which the bits of two frames of the same bit length differ from each other

3.18
remote station
part of a cableless control system, via which an operator is connected to the cableless control system

Note 1 to entry: The remote station of a cableless control system is often referred to as “transmitter”; however, a remote station that is part of a bidirectional cableless control system contains a transmitter and a receiver.

Note 2 to entry: The remote station forms the control unit of the operator of a cableless control system.

Note 3 to entry: The remote station can be hand-held, mobile (relative to the base station) or stationary.

3.19
base station
part of the cableless control system, which forms an interface between the cableless controller and other parts of the machine control system

Note 1 to entry: The base station of a cableless control system is sometimes referred to as a “receiver”, but a base station that is part of a bi-directional cableless control system will incorporate both a receiver and a transmitter.

Note 2 to entry: The base station may be installed on stationary or mobile machines.

3.20
stop output
output circuit of the base station, which is connected to the control system of the machine in order to execute a stop

Note 1 to entry: Stop outputs can be executed as safety relevant or not as safety relevant.

3.21
OFF-state
state of the stop output(s) of the base station, in which the controlled machine is initiated to stop operation and in which its start-up is prevented (e.g. the output circuit is interrupted and hence prevents the current flow)

[Source: EN 61496-1:2013; term 3.17, modified]