SLOVENSKI STANDARD
SIST EN 12312-3:2017+A1:2020

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Podporna oprema na tleh za letalski promet - Posebne zahteve - 3. del: Tračni transporterji

Aircraft ground support equipment - Specific requirements - Part 3: Conveyor belt vehicles

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil 3: Förderbandwagen

Matériel au sol pour aéronefs - Exigences particulières - Partie 3 : Convoyeurs à bande

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Aircraft ground support equipment - Specific requirements - Part 3: Conveyor belt vehicles

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This European Standard was approved by CEN on 30 October 2016 and includes Amendment 1 approved by CEN on 22 June 2020.

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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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN 12312-3:2017+A1:2020) has been prepared by Technical Committee CEN/TC 274 "Aircraft ground support equipment", 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of an identical text or by endorsement, at the latest by January 2021, and conflicting national standards shall be withdrawn at the latest by January 2021.

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.

This document includes Amendment 1 approved by CEN on 2020-05-22.

This document supersedes A1 EN 12312-3:2017 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

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 on machinery.

For relationship with EU Directive 2006/42/EC on machinery, see informative Annex ZA, which is an integral part of this document.

EN 12312, *Aircraft ground support equipment — Specific requirements*, consists of the following parts:

— Part 1: *Passenger stairs*;

— Part 2: *Catering vehicles*;

— Part 3: *Conveyor belt vehicles* (the present document);

— Part 4: *Passenger boarding bridges*;

— Part 5: *Aircraft fuelling equipment*;

— Part 6: *Deicers and deicing/antiicing equipment*;

— Part 7: *Aircraft movement equipment*;

— Part 8: *Maintenance or service stairs and platforms*;

— Part 9: *Container/Pallet loaders*;

— Part 10: *Container/Pallet transfer transporters*;

— Part 11: *Container/Pallet dollies and loose load trailers*;

— Part 12: *Potable water service equipment*;

— Part 13: *Lavatory service equipment*;

— Part 14: *Disabled/incapacitated passenger boarding vehicles*;

— Part 15: *Baggage and equipment tractors*;

— Part 16: *Air start equipment*;

— Part 17: *Air conditioning equipment*;

— Part 18: *Nitrogen or Oxygen units*;

— Part 19: *Aircraft jacks, axle jacks and hydraulic tail stanchions*;

— Part 20: *Electrical ground power units*.

Annexes A, C and D are normative. Annexes B, E and ZA are informative.

The main changes compared to the previous edition EN 12312-3:2003+A1:2009 are:

a) A1:2009 was incorporated;

b) the Introduction was updated in relation to the deviation from recommended criteria;

c) the Scope was updated to cover reasonably foreseeable misuse;

d) Clause 2, *Normative references*, was updated;

e) List of hazards was updated to exclude hazards due to traffic and repair and was moved to Annex A;

f) 5.1, *General requirements*, was changed to include a seat-belt or hip guard and further provisions regarding the driver's accommodation, e.g. protection from falling loads as well as compliance with EN 1915-3 and EN 1915-4;

g) 5.2, *Boom design* was completely revised;

h) 5.3, *Access* was added, thus making it necessary to re-number the following clauses and subclauses

i) 5.3 *Guard-rails, guide rails* was re-numbered as 5.4 and divided into 5.4 *Guard-rails* (covering the original 5.3.1 through 5.3.5) and 5.5 *Guide rails* (covering the original 5.3.6 through 5.3.9), it was expanded to cover foldable and adjustable elements, including the size of allowable gaps;

j) 5.4 *Performance (loads and speeds)* was re-numbered as 5.6 and contains new provisions regarding the driving speeds while in raised position and a seat-belt;

k) 5.5 *Controls* was re-numbered as 5.7 and contains new provisions regarding controls, also during aircraft loading/unloading operations, and the emergency stop;

l) 5.8, *Ergonomics* was added;

m) 6.3, *Instructions*, was extended to cover information about aircraft types and cargo doors, safe positions for opening/closing of cargo doors, belt bottom tray and restricted operation in adverse weather conditions;

n) Clause 7, *Verification of requirements*, was updated;

o) informative Annex A, *Typical designs of conveyor belt vehicles*, was deleted and replaced by normative Annex A, *List of hazards*;

p) informative Annex C, *Hazards at boom an belt*, was re-numbered as informative Annex B and nip points were re-named as drawing-in points;

q) informative Annex D, *Safety measures against drawing-in hazards on pulleys and idlers* was changed into normative Annex C with the same title and updated;

r) informative Annex E, *Safety measures on end cross arms or trays*, was changed into normative Annex D with the same title;

s) informative Annex F, *Safety distances for feet and hands (Extract from* EN 349*)*, was re-numbered as informative Annex E;

t) Annex ZA referring to the Machinery Directive 98/37/EC was replaced by Annex ZA referring to the new Machinery directive 2006/42/EC;

u) the Bibliography was updated.

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 European Standard specifies health and safety requirements, as well as some functional and performance requirements, for conveyor belt vehicles intended for loading/unloading of individual items of baggage or cargo on/off all aircraft types commonly in service in civil air transport.

The minimum essential criteria are considered to be of primary importance in providing safe, serviceable, economical and practical conveyor belt vehicles. Deviations should occur only after careful consideration, extensive testing, risk assessment and thorough service evaluation have shown alternative methods or conditions to be satisfactory. Such deviations are outside the scope of this standard and a manufacturer should be able to demonstrate an equivalent level of protection.

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 that are stated in Type A or 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. Deviations from requirements do not fall within the presumption of conformity given by the standard.

1 Scope

This European Standard specifies the technical requirements to minimize the hazards listed in Clause 4 that can arise during the commissioning, operation and maintenance of conveyor belt vehicles when used as intended, including misuse reasonably foreseeable by the manufacturer, when carried out in accordance with the specifications given by the manufacturer or his authorized representative. It also takes into account some requirements recognized as essential by authorities, aircraft and ground support equipment (GSE) manufacturers as well as airlines and handling agencies.

This European Standard applies to

a) self-propelled conveyor belt vehicles with or without driver's accommodation,

b) self-propelled conveyor belt vehicles equipped with a van body,

c) towed conveyor belt vehicles,

intended to be used for manual loading/unloading of aircraft.

This European Standard does not apply to any extensions or appurtenances of conveyor belt vehicles entering the aircraft cargo compartment in order to facilitate loading and unloading therein ("Aircraft Bulk Loading Systems", ABLS).

This European Standard does not apply to pneumatic systems and to cable-less remote controls.

This part of EN 12312 is not applicable to conveyor belt vehicles that were manufactured before the date of publication of this European Standard by CEN.

This part of EN 12312 when used in conjunction with EN 1915-1, EN 1915-2, EN 1915-3 and EN 1915-4 provides the requirements for conveyor belt vehicles.

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 349, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 1175-1, *Safety of industrial trucks — Electrical requirements — Part 1: General requirements for battery powered trucks*

EN 1837, *Safety of machinery — Integral lighting of machines*

EN 1915-1:2013, *Aircraft ground support equipment - General requirements - Part 1: Basic safety requirements*

EN 1915-2:2001+A1:2009, *Aircraft ground support equipment - General requirements - Part 2: Stability and strength requirements, calculations and test methods*

EN 1915-3, *Aircraft ground support equipment — General requirements — Part 3: Vibration measurement methods and reduction*

EN 1915-4, *Aircraft ground support equipment — General requirements — Part 4: Noise measurement methods and reduction*

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

EN ISO 13849-1:2015, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13850:2015, *Safety of machinery - Emergency stop function - Principles for design (ISO 13850:2015)*

EN ISO 14122-1, *Safety of machinery - Permanent means of access to machinery - Part 1: Choice of fixed means and general requirements of access (ISO 14122-1:2016)*

ISO 11532:2012, *Aircraft ground equipment — Graphical symbols*

ISO 11228-1, *Ergonomics — Manual handling — Part 1: Lifting and carrying*

ISO 11228-3, *Ergonomics — Manual handling — Part 3: Handling of low loads at high frequency*

DIN 51130:2014-02, *Testing of floor coverings — Determination of the anti-slip property — Workrooms and fields of activities with slip danger — Walking method — Ramp test*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100 and EN 1915-1:2013 and the following apply.

3.1
conveyor belt vehicle
vehicle comprising a chassis, a boom with a belt, and a lifting device

3.2
boom
load carrying assembly which includes a belt to move the load, and any possible tray attached to it

3.3
telescopic boom
load carrying assembly, adjustable in length

3.4
lifting device
system to vary the height of the boom

3.5
incline
angle of the boom to a horizontal plane

3.6
guide rail
lateral device attached to the boom to prevent loads from falling off the sides

3.7
tray
loading platform fitted at either end of the boom and independent of the belt

3.8
contact protection system
device at the end of the boom to disconnect the power source during approach/travel to the aircraft

4 List of hazards

The list of risks and hazards (given in Annex A) is based on EN ISO 12100:2010 and contains the hazards and hazardous situations, as far as they are dealt with in this European Standard, identified by risk assessment as significant for conveyor belt vehicles and which require action to eliminate or reduce risks. Not covered are risks and hazards due to the traffic and repair.

5 Safety requirements and/or measures

5.1 General requirements

5.1.1 Conveyor belt vehicles shall conform to the relevant requirements of EN 1915-1, EN 1915-2, EN 1915-3 and EN 1915-4 unless otherwise specified in this European Standard. They shall also conform to the specific requirements of this European Standard.

5.1.2 Strength calculations shall be carried out in accordance with EN 1915-2.

5.1.3 Stability calculations shall be carried out according to EN 1915-2. Special attention shall be paid to travel conditions.

5.1.4 Driver's accommodation of self-propelled vehicles shall be fitted with at least a two-point seat belt. A hip guard shall be provided for non-fully enclosed accommodation.

Driver accommodation shall provide unobstructed visibility across the boom when it is in the lowered driving position.

Driver position controls shall be protected against a load falling from the boom.

5.1.5 The electrical system of battery powered conveyor belt vehicles shall conform to EN 1175-1, with the exception of standard automotive chassis.

5.1.6 The boom shall protrude at least at the ramp side.

5.1.7 The conveyor belt vehicle shall be capable of servicing any aircraft sill height, for which it is designed, with the opposite end within the height range specified in 5.2.9 and 5.8.4.

NOTE See 6.3, Instructions for use, for listing by the manufacturer of aircraft types the conveyor is intended to serve

5.1.8 Where adjustment of elevation of both ends of the boom is provided it shall be possible to adjust the ends independently from each other.

5.1.9 Independent of the position of the boom it shall be possible to gain access to service points requiring frequent use (e.g. daily) at any time without operating the power source.

5.1.10 All sharp edges or corners resulting from the manufacturing process shall be chamfered or rounded with a minimum radius of 3 mm.

5.1.11 Where a sprung front axle is used, the suspension shall be restricted so as to limit vertical movement at the aircraft end of the boom, when the conveyor belt vehicle is being driven, e.g. by using shock absorbers.

5.1.12 Where power operated stabilizers are provided, it shall be possible to retract the stabilizers in the event of primary power loss by auxiliary means, e.g. hand pump.

5.1.13 Structural parts or stabilizers of pedestrian controlled self-propelled conveyor belt vehicles shall not protrude from the overall length within the operating range of the tiller.

5.1.14 Where lights for the illumination of working areas or positioning lights are fitted, their design shall conform to EN 1837. The minimum luminous flux of the lamp shall be 250 lm.

5.2 Boom design

5.2.1 The design of the boom, where intended, shall be such that it can be used by the operator as a ramp to gain access to the hold door and safely open or close it, enter the hold or exit from it (see EN 1915-1:2013, Introduction, f) — negotiation).

NOTE Requirements for guard-rails, see 5.4 and 5.5.

5.2.2 Access from the ground to the chassis and from the chassis to the belt shall meet the requirements of EN 1915-1:2013, 5.14 and 5.3 hereafter.

5.2.3 The boom shall be connected to the lifting system by a means that prevents unintended disconnection.

5.2.4 The lifting device of the boom shall be protected against unintentional movement, e.g. on hydraulic cylinders by a lock-valve mounted directly to the cylinder.

5.2.5 Drawing-in to trapping points at conveyor belt pulleys shall be prevented by one of the measures described at Annex C, or equivalent. Annex B provides examples of drawing-in points.

5.2.6 Where a tray is mounted at either end of the boom, protection against trapping of limbs between the tray and the running belt shall be provided by construction in accordance with Figure D.2 and Figure D.3 or by safety distances in accordance with Figure D.1 (see Annex E).

5.2.7 Protection against crushing and shearing between the boom and accessible fixed parts shall be provided, e.g. by shielding with protective plates. It shall meet the requirements of EN 1915-1:2013, 5.15, in particular where the conveyor belt vehicle is equipped with driver's accommodation.

5.2.8 The end of the boom interfacing with the aircraft shall be protected by suitable means, e.g. bumpers and/or side wheels.

The aircraft protection device(s) shall:

a) be of a non-marking semi-soft material with a Shore surface hardness not exceeding A50,

b) ensure a minimum 60 mm crushing capability,

c) be designed to minimize any force exerted onto the aircraft cargo compartment doorframe.

It is recommended that the static force equivalent does not exceed 1 500 N distributed over the length, or 1 500 N on any 100 mm x 100 mm contact area.

The aircraft interface device may include a contact detection feature able to provide an electrical signal when contact with the aircraft is achieved at any point and which can be used to stop movement. In this case, the related interlocking systems shall achieve Performance Level "b" according to EN ISO 13849-1:2015.