



**SLOVENSKI STANDARD**  
**SIST EN 12312-9:2005**  
**01-september-2005**

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**Podporna oprema na tleh za letalski promet – Posebne zahteve – 9. del:  
Nakladalniki zabojnikov/palet**

Aircraft ground support equipment - Specific requirements - Part 9: Container/Pallet loaders

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil 9: Container-/Paletten-Hubfahrzeuge

Matériel au sol pour aéronefs - Exigences particulières - Partie 9: Chargeurs de conteneurs/palettes

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EUROPEAN STANDARD

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**Aircraft ground support equipment - Specific requirements –  
Part 9: Container/Pallet loaders**Matériel au sol pour aéronefs - Exigences particulières -  
Partie 9: Chargeurs de conteneurs/palettesLuftfahrt-Bodengeräte - Besondere Anforderungen - Teil 9:  
Container/Paletten-Hubfahrzeuge

This European Standard was approved by CEN on 21 March 2005.

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## Foreword

This document (EN 12312-9:2005) 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of an identical text or by endorsement, at the latest by November 2005, and conflicting national standards shall be withdrawn at the latest by November 2005.

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(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

The Parts of EN 12312 — Aircraft ground support equipment — Specific requirements — are:

- Part 1: Passenger stairs
- Part 2: Catering vehicles
- Part 3: Conveyor belt vehicles
- 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 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 equipment
- 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: Ground power equipment

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

**EN 12312-9:2005 (E)****Introduction**

This document specifies health and safety requirements, as well as some functional and performance requirements for container/pallet loaders intended for loading/unloading of unit loads with the exception of bulk material for 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 container/pallet loaders. Deviations from the recommended criteria should occur only after careful consideration, extensive testing, risk assessment and thorough service evaluation have shown alternative methods or conditions to be satisfactory.

This document is a Type C standard as stated in EN ISO 12100:2003.

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

When provisions of this type C standard are different from those which 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.

For information, a summary of equipment functional design requirements covered by International Standards, e.g. ISO 6967 and ISO 6968, and IATA Airport Handling Manual are given in Annex A.

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## 1 Scope

This document specifies the technical requirements to minimise the hazards listed in Clause 4 which can arise during the commissioning, operation and maintenance of container/pallet loaders when carried out in accordance with the specifications given by the manufacturer or his authorised representative. It also takes into account some performance requirements recognised as essential by authorities, aircraft and ground support equipment (GSE) manufacturers as well as airlines and handling agencies.

This document applies to:

- Container/Pallet loader (self-propelled) single platform;
- Container/Pallet loader (self-propelled) two platforms;
- Container/Pallet loader/transporter (self-propelled);
- Container/Pallet loader/transfer platform (towed).

Examples of some of the different types of loaders are shown in Annex B.

This document does not establish requirements for noise and vibration.

Noise and vibration are dealt with respectively in prEN 1915-4 and prEN 1915-3.

This standard does not deal with hazards in respect to a standard automotive chassis and from other vehicles on the apron.

This Part of EN 12312 is not applicable to container/pallet loaders which are manufactured before the date of publication of this document by CEN.

NOTE Certain measurements have been given in imperial units (in parentheses) following the metric measurements since the containers/pallets to be handled are based mainly on the imperial system.

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## 2 Normative references

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

- EN 418:1992, *Safety of machinery — Emergency stop equipment, functional aspects — Principles for design*
- EN 954-1:1996, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*
- EN 1050:1996, *Safety of machinery — Principles for risk assessment*
- EN 1837:1999, *Safety of machinery — Integral lighting of machines*
- EN 1915-1:2001, *Aircraft ground support equipment — General requirements — Part 1: Basic safety requirements*
- EN 1915-2:2001, *Aircraft ground support equipment — General requirements — Part 2: Stability and strength requirements, calculations and test methods*
- EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*
- EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*
- ISO 2328:1993, *Fork lift trucks — Hook on type fork arms and fork arm carriages — Mounting dimensions*

**EN 12312-9:2005 (E)****3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN ISO 12100:2003 and EN 1915-1:2001 and the following apply.

**3.1 loader**  
vehicle having a prime purpose of lifting, lowering and transferring unit load devices (ULD's), also known as an elevator

**3.2 single platform loader**  
loader which only has a single lifting platform

**3.3 wide body aircraft nose loader**  
single or two platform loader which interfaces with the nose opening of a wide body aircraft

**3.4 two platform loader**  
loader having a front platform and a main platform

**3.5 tail loader**  
loader which interfaces with the tail opening of the aircraft

**3.6 main platform**  
load bearing device which interfaces with the aircraft on a single platform loader or with the front platform of a two platform loader, and with ground transportation systems

**3.7 front platform**  
load bearing device which interfaces with the aircraft on a two platform loader, also known as a transfer platform or bridge

**3.8 lower deck**  
aircraft compartment below the main deck

**3.9 main deck**  
aircraft deck on which the major portion of the payload is carried

**3.10 container**  
completely enclosed unit load device (ULD) which interfaces directly with the aircraft cargo handling and restraint system

**3.11 pallet**  
unit load device consisting of a platform with a flat undersurface of standard dimensions on which goods are assembled and secured before being loaded onto the aircraft and which interfaces directly with the aircraft cargo handling and restraint system

**3.12 lower deck container**  
aircraft container shaped to fit the lower deck of the aircraft



NOTE The containers come in half and full sizes, dimensioned to fit a particular position in a specific aircraft type.

## 4 List of hazards

The list of risks and hazards (see Annex C) is based on EN 1050:1996 and contains the hazards and hazardous situations, as far as they are dealt with in this document, identified by risk assessment as significant for container/pallet loaders and which require action to eliminate or reduce risks.

## 5 Safety requirements and/or measures

### 5.1 General requirements

**5.1.1** Container/Pallet loaders shall conform to the relevant requirements of EN 1915-1:2001, unless otherwise specified in this document. They shall also conform to the specific requirements of this document.

**5.1.2** Strength calculations shall be carried out in accordance with EN 1915-2:2001.

### 5.2 Overall dimensions

The overall dimensions of the loader shall be kept to a minimum, consistent with its function in handling the loads described in Annex D, and in accordance with the requirements of 5.4. The overall height of the entire loader shall not exceed 4,0 m, when being driven with the platform(s) in the lowest position.

### 5.3 Platform design, guide rails and stops

#### 5.3.1 Platform types

Depending on the type, loaders may have one or two platforms.

Single platform loaders shall provide a platform which is capable of up and down movement between the heights given in Annex D, as appropriate to the type(s) of container/pallets to be handled.

Two-platform loaders shall provide:

- a front platform which is positioned adjacent to the aircraft door and which remains at this position during the loading/unloading operation, or, for main deck operation, may be lowered to a lower deck position to interface with the main platform; and
- a main platform, for up and down movement between the heights given in Annex D as appropriate to the type(s) of containers/pallets to be handled.

#### 5.3.2 Guide rails and stops

**5.3.2.1** Guide rails shall be provided along the whole length of both sides of the platform to guide containers/pallets onto the aircraft and to prevent them from falling off. On single platforms and the front platform of two-platform loaders they shall be adjustable laterally to align with the corresponding in-aircraft guides. On container-only loaders, guide rails may be fixed. Powered guide rails shall consist of either one or more sections and for each section be able to operate independently. All powered guide rails shall be in the "up" position when the main platform raises more than 150 mm from the rest position. For the transfer of loads, it should be possible for the operator to control the retraction/removal of the guide rails on the main platform, at any height of the main platform between 1 524 mm and the fully lowered position.

**5.3.2.2** Stops shall be provided as follows:

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- on the front platform of a two-platform loader, automatic stops shall be fitted at the end adjacent to the main platform. These stops shall rise when the main platform moves down and retract when the main platform reaches the front platform level;
- for loaders designed for main deck operation, and where the front platform is lowered to the lower deck position for interface with the main platform, stops shall be provided at the forward end of the front platform;
- automatic stops shall be provided at the rear end of the main platform of a two-platform loader. An automatic stop shall be provided at the forward end in order to prevent overhanging pallet loads or container contours to interfere with the front platform;
- on a single platform, retractable stops shall be provided at both ends;
- where the stops on the rear end of a main platform of a two platform loader are capable of being manually controlled, it shall only be possible to retract the stops when the main platform is stopped at any height between the fully lowered position and 1 524 mm (60 in) above the ground;
- where stops are provided at the forward end of the main platform or at the separation between two powered sections of the main platform, the forward end stop shall automatically retract as the main platform lines up with the front platform. The stop between the sections shall be controlled independently by the operator.

**5.3.2.3** All stops and guide rails shall have a minimum height of 50 mm (2 in) above the conveying surface.

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NOTE For the majority of containers and pallets, a maximum height of 100 mm (4 in) is required to avoid damage to overhanging loads or the sloping undersides of some containers. For certain lower deck containers, the maximum height becomes 50 mm (2 in). The maximum height should take into account the types of containers to be handled.

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## 5.4 Operation and loading

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**5.4.1** To ensure alignment, it shall be possible to adjust the container/pallet in lateral and longitudinal direction on the platforms. The length and width of platforms shall be sufficient to handle the appropriate container/pallet size as given in Annex D.

**5.4.2** Platform elevating mechanisms shall be designed to hold platforms, at the full capacity specified for the platform, with a decrease in height of no greater than 2 mm/m of maximum height after setting.

**5.4.3** On a two-platform loader, the operator's position on the front platform in the lowered position shall be accessible from the ground, by use of an access ladder/stair.

**5.4.4** On two-platform loaders, it shall not be possible for the operator to alter the relative heights of the platforms by more than 100 mm (4 in) when containers/pallets are bridging the platforms.

**5.4.5** Platform(s) and operator's accommodation shall be designed not to interfere with the opening and closing of aircraft doors and when the doors are fixed open.

## 5.5 Transportability

**5.5.1** Lifting points shall be provided to ensure that lifting of loaders can be achieved.

**5.5.2** Where fork-lift pockets are used, they shall be compatible with the dimensions of fork arms given in ISO 2328.

## 5.6 Crushing, shearing and falling

Where the risk of crushing, shearing and falling is covered by the general requirements of EN 1915-1:2001, but where it is not possible to identify clearly the crushing, shearing and falling points in this document, the manufacturer shall carry out a specific risk assessment.

## 5.7 Warning devices

An audible warning device should be provided which is activated automatically when the loader is in reverse drive mode (see Clause 0 of EN 1915-1:2001 — negotiation).

## 5.8 Controls, monitoring devices and displays

### 5.8.1 Controls

**5.8.1.1** All control device actuators necessary to move and position the loader shall only be located at the operator's position, and be designed in such a way that the loader can be controlled by one person. Safety related parts of the control system shall be designed in accordance with EN 954-1 and shall at least conform to Category 1.

**5.8.1.2** A control panel shall be provided to allow control of the loader platform(s) from the operator's position. The front and main platforms of a two platform loader shall have separate control actuators. Activation of the control actuator for one platform shall not initiate movement of the load on the other platform.

**5.8.1.3** All controls shall be designed to be capable of being operated by gloved hands.

Where a remote control is used to allow control of the front (bridge) platform loading/unloading processes, either from the platform in an elevated position or from the aircraft door area, the remote control shall be installed in such a way that simultaneous activation of the controls on the aircraft and the controls for the loader is possible. <https://standards.iteh.ai/catalog/standards/sist/5411b8a4-b861-4247-ad36-eb611f206f16/sist-en-12312-9-2005>

### 5.8.2 Emergency stops

Emergency stops stopping all movements shall be provided one at the operator's control console and one at ground level close to the power source. They shall meet the requirements of EN 418:1992 and shall be Category 0 or Category 1. For hydrostatic drives they shall be Category 1 (see EN 418:1992, 4.1.5).

## 5.9 Stability

**5.9.1** Stability calculations shall be carried out in accordance with EN 1915-2.

NOTE For additional information see Annex E.

**5.9.2** Where stability is not provided by the intrinsic design, stabilizers shall be installed in order to provide for the stability required both for loading/unloading operations. It shall not be possible to raise the main platform from the rest position if the stabilizers are not extended.

**5.9.3** It shall not be possible to drive the loader with the stabilizers extended.

**5.9.4** In the event of main power failure it shall be possible to release the stabilizers.

## 5.10 Mobility

**5.10.1** Powered steering shall be provided.