



**SLOVENSKI STANDARD**  
**SIST EN 12312-11:2005**  
**01-junij-2005**

---

**Podporna oprema na tleh za letalski promet - Posebne zahteve - 11. del:  
Transportni vozički za zabojnike/paleta in prikolice za tovor v razsutem stanju**

Aircraft ground support equipment - Specific requirements - Part 11: Container/Pallet dollies and loose load trailers

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil 11: Container-/Paletten-Dollies und Anhänger für lose Ladung

Matériel au sol pour aéronefs - Exigences particulières - Partie 11: Remorques porte-conteneurs/porte-palette et pour charges en vrac

<https://standards.iteh.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-9ef9b18e3c30/sist-en-12312-11-2005>

**Ta slovenski standard je istoveten z: EN 12312-11:2005**

---

**ICS:**

49.120	Oprema za tovor	Cargo equipment
55.180.01	Distribucija blaga s prevozom na splošno	Freight distribution of goods in general

**SIST EN 12312-11:2005**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 12312-11:2005](#)

<https://standards.iteh.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-9ef9b18e3c30/sist-en-12312-11-2005>

EUROPEAN STANDARD

EN 12312-11

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2005

ICS 49.100

English version

## Aircraft ground support equipment - Specific requirements - Part 11: Container/Pallet dollies and loose load trailers

Matériel au sol pour aéronefs - Exigences particulières -  
Partie 11: Remorques porte-conteneurs/porte-palette et  
pour charges en vrac

Luffahrt-Bodengeräte - Besondere Anforderungen - Teil  
11: Container-/Paletten-Dollies und Anhänger für lose  
Ladung

This European Standard was approved by CEN on 3 February 2005.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of 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.

[SIST EN 12312-11:2005](https://standards.iteh.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-9e9b18e3c30/sist-en-12312-11-2005)

<https://standards.iteh.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-9e9b18e3c30/sist-en-12312-11-2005>



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

## Contents

	Page
Foreword.....	3
Introduction .....	4
1 Scope .....	5
2 Normative references .....	5
3 Terms and definitions .....	5
4 List of hazards.....	7
5 Safety requirements and/or measures .....	7
5.1 General requirements.....	7
5.2 Structure .....	7
5.3 Platform .....	7
5.4 Load securing points .....	8
5.5 Steering.....	8
5.6 Manoeuvring.....	8
5.7 Wheel assemblies .....	8
5.8 Over-run brakes .....	8
5.9 Couplings and drawbars.....	9
5.10 Options .....	9
6 Information for use .....	9
6.1 Marking .....	9
6.2 Safety marking .....	9
6.3 Instructions .....	9
7 Verification of requirements .....	10
Annex A (informative) Typical designs of dollies and trailers.....	11
Annex B (normative) List of hazards in addition to those of EN 1915-1.....	17
Annex C (informative) Conveying surface minimum design requirements for compatibility with aircraft ULD bases .....	18
Annex D (informative) Typical data for unit load devices .....	20
Annex E (informative) Coupling types.....	22
Bibliography .....	23

## Foreword

This document (EN 12312-11:2005) 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 September 2005, and conflicting national standards shall be withdrawn at the latest by September 2005.

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

NOTE Container/Pallet dollies and loose load trailers as defined in this document EN 12312-11 are not "machines" as defined in article 1 of the EU Directive 98/37/EC, amended by Directive 98/79/EC (Machinery Directive).

This document includes a Bibliography.

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 12312-11:2005 (E)****Introduction**

This document specifies health and safety requirements, as well as some functional and performance requirements for container/pallet dollies and loose load trailers intended for moving unit load devices (ULD), loose freight, mail and baggage on an airport.

The minimum essential criteria are considered to be of primary importance in providing safe, serviceable, economical and practical container/pallet dollies and loose load trailers. 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 both parts of EN ISO 12100.

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.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 12312-11:2005](https://standards.iteh.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-9e9b18e3c30/sist-en-12312-11-2005)

<https://standards.iteh.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-9e9b18e3c30/sist-en-12312-11-2005>

## 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 dollies and loose load trailers 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 dollies using ball-mat, inverted cargo castors, or rollers and loose load trailers intended to be used for the transportation of baggage and cargo on airports (Examples see Annex A).

This document does not apply to trailers of similar design as used on public roads, e.g. truck type trailers.

This document does not establish requirements for noise and vibration.

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

This document is not applicable to container/pallet dollies and loose load trailers which are manufactured before the date of publication by CEN of this document.

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.

## 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.

[SIST EN 12312-11:2005](https://standards.iteh.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-7cd976e3c59f/sist-en-12312-11-2005)

EN 1050:1996, *Safety of machinery — Principles for risk assessment*

EN 1915-1:2001, *Aircraft ground support equipment — General requirements — Part 1: Basic safety requirements*.

EN 1915-2, *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)*.

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003, EN ISO 12100-2:2003 and EN 1915-1:2001 and following apply.

### 3.1 dolly

trailer designed for the transportation of containers or palletized loads

### 3.2 loose load trailer

trailer capable of transporting loose loads, e.g. baggage, parcels, mail bags

### 3.3 container overhang

part of a container contoured beyond the base to match the design of an aircraft

**EN 12312-11:2005 (E)**

- 3.4  
over-run brake**  
brake operated by inertia to slow down a trailer in addition to the braking power of the towing vehicle
- 3.5  
auto reverse brake**  
brake that releases automatically when the trailer is reversed
- 3.6  
end towing**  
towing of a dolly from the shorter edge
- 3.7  
side towing**  
towing of a dolly from the longer edge
- 3.8  
end transfer (end loading)**  
loading/unloading of the ULD in line with the direction of travel of the trailer/dolly
- 3.9  
side transfer (side loading)**  
loading/unloading of the ULD at 90° to the direction of travel of the dolly
- 3.10  
roller**  
uni-directional transfer unit
- 3.11  
inverted castor**  
omni-directional transfer unit
- 3.12  
ball transfer unit**  
omni-directional transfer unit using ball modules
- 3.13  
guide**  
fixed or retractable device used to maintain the desired direction of movement of ULDs
- 3.14  
lead-on roller**  
special roller, positioned close to the edge of the platform to ease transfer of loads and absorb initial impact
- 3.15  
lead-in flare**  
tapered end of guides to facilitate the easy transfer of ULDs
- 3.16  
stop**  
fixed or retractable device capable of preventing horizontal movement of ULDs
- 3.17  
lock**  
fixed or retractable device capable of preventing horizontal and vertical movement of ULDs
- 3.18  
protective cover**  
fixed or flexible sheet to protect the load

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 12312-11:2005](https://standards.iteh.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-9e9b18e3c30/sist-en-12312-11-2005)

<https://standards.iteh.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-9e9b18e3c30/sist-en-12312-11-2005>



**3.19****cover stowage box**

device to store flexible protective covers when not in use

**4 List of hazards**

The list of risks and hazards (see Annex B) is based on EN 1050 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 dollies and loose load trailers and which require action to eliminate or reduce risks.

**5 Safety requirements and/or measures****5.1 General requirements**

**5.1.1** Container/pallet dollies and loose load trailers shall conform to the relevant requirements of EN 1915-1, unless otherwise specified in this document. They shall also conform to the specific requirements of this document.

**5.1.2** Stability and strength calculations shall be carried out in accordance with EN 1915-2.

**5.1.3** Container/pallet dollies and loose load trailers shall be designed to be towed in trains, e.g. by having a drawbar at one end and a towing coupling at the other.

**5.1.4** When dollies/trailers are towed in trains, the design shall be such as to avoid any contact between adjacent dollies/trailers and ULDs intended to be carried when dollies/trailers are at 90° to each other.

**5.1.5** Control device actuators, e.g. handles, foot pedals, shall be accessible and positioned so that they can be operated whilst wearing protective clothing, e.g. cold weather protection, safety shoes. Handles shall be designed to be operated by gloved hands.

**5.1.6** In the case 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. The manufacturer shall also carry out a specific risk assessment for the interface with other machines.

NOTE This risk assessment is part of the general legal risk assessment.

**5.2 Structure**

**5.2.1** The support structure stiffness shall be such that the requirements of Annex C, in respect of the support area, are satisfied taking into account the dimensions and masses of the payloads given in Annex D.

**5.2.2** The structure of the trailer/dolly shall include no projections or corners that could cause injury, e.g. corners shall be chamfered to a minimum radius of 3 mm unless smooth corners are provided by the intrinsic design of the standard material profiles used in its construction.

**5.3 Platform**

**5.3.1** On loose load trailers, drainage shall be provided to avoid accumulation of water on the platform.

**5.3.2** On loose load trailers, the loading platform shall be designed to ease loading and assist with load stability, e.g. the loading platform may be sloped towards the centre.

**5.3.3** The platform of dollies shall be designed to keep the efforts needed for manual movements of ULDs within acceptable limits.

**5.3.4** All parts of the platform structure of dollies, including retractable components, shall be at least 13 mm (0,5 in) below the top of the conveying surface.

**EN 12312-11:2005 (E)**

**5.3.5** To absorb the initial impact load and to ease the transfer of ULDs, one or a combination of the following shall be used:

- lead-on rollers with the maximum possible diameter commensurate with design (see Annex C);
- a maximum distance of 100 mm between centre line of first roller and outer edge of platform;
- any parts extending beyond the first rollers shall be ramped down to a minimum of 15° to the horizontal;
- any parts extending beyond the first rollers shall be mounted 15 mm below the horizontal centre line of the first rollers.

**5.3.6** Guides on dollies shall be smooth and continuous. Where practicable, a lead-in flare shall be provided to guide ULDs into position and minimize impact loads.

**5.3.7** Turntables fitted to platform dollies shall be capable of being positively locked in the transport and loading/unloading positions.

**5.4 Load securing points**

Dollies and loose load trailers shall be designed so that loads are secured. This may be achieved on dollies e.g. by using locks and stops, and on loose load trailers by using fully enclosed bodies. If this is not feasible, load securing points shall be provided to enable the load to be secured in all directions with load restraint devices.

Stops shall have a minimum height of not less than 50 mm (2 in) above the conveying surface. Stops shall be retractable to permit loading/unloading. The maximum height shall take into account the types of containers to be handled.

**iTeh STANDARD PREVIEW**

NOTE For majority of containers and pallets a maximum height of 100 mm (4 in) is required to avoid damage to overhanging loads or sloping undersides of some containers. For certain lower deck containers the maximum height becomes 54 mm.

**5.5 Steering**

SIST EN 12312-11:2005

[https://standards.itih.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-](https://standards.itih.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-0ef9b18e3c30/sist-en-12312-11-2005)

[0ef9b18e3c30/sist-en-12312-11-2005](https://standards.itih.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-0ef9b18e3c30/sist-en-12312-11-2005)

Trailers or dollies of the same model shall be designed in such a way that, when towed in a train, they are capable of following the direction provided by the towing vehicle, i.e. by following a straight line in a train, maintaining straight line stability and maintaining the line of a curve when rounding a corner.

**5.6 Manoeuvring**

When under manual control, the hand forces needed to move the steering device of a fully laden trailer or dolly shall not exceed 300 N. Handles fitted to the structure itself, or the drawbar, shall be designed so as not to cause injury to the operator, e.g. by crushing, squeezing or trapping. This shall be achieved by avoidance of sharp edges or corners and the use of smooth material profiles.

**5.7 Wheel assemblies**

The design or selection of the rims and tyres shall take into account:

- maximum speed;
- maximum load;
- heat generation as caused by e.g. route, distance and environment;
- intended local environment.

**5.8 Over-run brakes**

Where over-run brakes are installed, they shall be able to stop trailers/dollies in a straight line, when towed in a train.

NOTE 1 For requirements for over-run brakes see 98/12/EC.

NOTE 2 The user should agree with the supplier which type of tow tractors to be used with the trailers/dollies and whether or not over-run brakes are required.

## 5.9 Couplings and drawbars

**5.9.1** The rated capacity of couplings and drawbars shall take into account the loads imposed by the maximum number of dollies/trailers in a train, in front or behind.

**5.9.2** Towing couplings and drawbars shall be compatible with the towing points on the tow tractors for which they are intended. (see Annex E).

NOTE Towing couplings should ensure that the towbars remain as horizontal as possible during operation.

## 5.10 Options

Optional equipment shall conform to the relevant requirements of this document and EN 1915-1. Such optional equipment may include:

- axle suspension;
- destination board/placard holder;
- protective cover for the load;
- cover stowage box attached to the forward wall;
- stowage facility for removable attachments.

iTech STANDARD PREVIEW  
(standards.iteh.ai)

## 6 Information for use

[SIST EN 12312-11:2005](#)

<https://standards.iteh.ai/catalog/standards/sist/c8e28a2f-55bf-4a61-960f-9e9b18e3c30/sist-en-12312-11-2005>

### 6.1 Marking

Permanent marking of data shall consist of metal plates fixed with rivets or welded to the structure.

### 6.2 Safety marking

Parts protruding into work and passage areas beyond the contour during intended use shall have safety markings.

### 6.3 Instructions

**6.3.1** Operating and maintenance instructions shall be supplied with each trailer or dolly. They shall generally meet the requirements in 6.2 of EN 1915-1:2001. In addition, the operating and maintenance instructions shall contain, depending on type and design of the trailer/dolly, information about:

- minimum turning radius;
- towing capacity of rear tow bar hitch in worst-case scenario;
- maximum speed;
- payload;
- the type of ULDs to be carried;
- information about load transferring and positioning;
- routine checks to be carried out by the operator;
- minimum training programme for the operator;