



**International  
Standard**

**ISO 32312-11**

**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-conteneur/porte-palette et pour  
charges en vrac*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted (see [www.iso.org/directives](http://www.iso.org/directives)).

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This document was prepared by the European Committee for Standardization (CEN) (as EN 12312-11:2005) and drafted in accordance with its editorial rules. It was assigned to Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 9, *Air cargo and ground equipment* and adopted under the "fast-track procedure".

A list of all parts in the ISO 32312 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## 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 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.

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# Aircraft ground support equipment — Specific requirements —

## Part 11: Container/Pallet dollies and loose load trailers

### 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 ISO 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 documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 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+A1, *Aircraft ground support equipment — General requirements — Part 2: Stability and strength requirements, calculations and test methods*

ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

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 ISO 12100-1:2003, ISO 12100-2:2003 and EN 1915-1:2001 and the following apply.

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

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

#### 3.1 dolly

trailer designed for the transportation of containers or palletized loads

#### 3.2 loose load trailer

trailer capable of transporting loose loads

EXAMPLE Baggage, parcels, mail bags.

#### 3.3 container overhang

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

#### 3.4 overrun 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

**3.19**

**cover storage 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 1050:1996 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 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 1915-1:2001, 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+A1.

**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 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.

**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.