



# SLOVENSKI STANDARD

## SIST EN 12312-15:2006+A1:2009

01-julij-2009

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Aircraft ground support equipment - Specific requirements - Part 15: Baggage and equipment tractors

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil 15: Gepäck- und Geräteschlepper

Matériel au sol pour aéronefs - Exigences particulières - Partie 15: Tracteurs à bagages et matériel

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Ta slovenski standard je istoveten z: EN 12312-15:2006+A1:2009

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**ICS:**

49.100

Oprema za servis in  
vzdrževanje na tleh

Ground service and  
maintenance equipment

**SIST EN 12312-15:2006+A1:2009**

**en,de**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 12312-15:2006+A1**

April 2009

ICS 49.100

Supersedes EN 12312-15:2006

English Version

**Aircraft ground support equipment - Specific requirements - Part  
15: Baggage and equipment tractors**

Matériel au sol pour aéronefs - Exigences particulières -  
Partie 15: Tracteurs à bagages et matériel

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil  
15: Gepäck- und Geräteschlepper

This European Standard was approved by CEN on 28 October 2005 and includes Amendment 1 approved by CEN on 1 March 2009.

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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 Management Centre has the same status as the official versions.

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## Contents

	page
Foreword.....	3
Introduction .....	4
1 Scope .....	5
2 Normative references .....	5
3 Terms and definitions .....	6
4 List of significant hazards .....	6
5 Safety requirements and/or measures .....	6
5.1 General requirements.....	6
5.2 Driver's accommodation .....	7
5.3 Driver's cabin .....	7
5.4 Seats .....	8
5.5 Controls, monitoring devices and displays .....	8
5.6 Additional operating positions.....	8
5.7 Chassis and body .....	9
5.8 Electrical equipment.....	9
6 Information for use .....	9
6.1 Marking .....	9
6.2 Additional marking .....	9
6.3 Instructions .....	10
7 Verification of requirements.....	10
Annex A (informative) Examples of typical baggage and equipment tractors .....	11
Annex B (normative) List of hazards in addition to those of EN 1915-1 .....	12
Annex C (normative) Minimum space envelope for seated operator enclosure.....	14
Annex D (informative) Examples of couplings .....	15
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive Machinery Directive 98/37/EC .....	17
Annex ZB (informative)  Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC  .....	18
Bibliography .....	19

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## Foreword

This document (EN 12312-15:2006+A1:2009) 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 October 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document includes Amendment 1, approved by CEN on 2009-03-01.

This document supersedes EN 12312-15:2006.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\boxed{A_1}$   $\boxed{A_1}$ .

This European Standard 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).

$\boxed{A_1}$  For relationship with EU Directives, see informative Annexes ZA and ZB, which are integral parts of this document.  $\boxed{A_1}$

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This European Standard is intended for use in conjunction with EN 1915-1.

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

- SIST EN 12312-15:2006+A1:2009  
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- 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: Electrical ground power units

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

**EN 12312-15:2006+A1:2009 (E)****Introduction**

This European Standard defines health and safety requirements as well as some functional and performance requirements for baggage and equipment tractors intended for towing equipment and baggage/cargo trailers on airports.

The minimum essential criteria are considered to be of primary importance in providing safe, serviceable, economical and practical baggage and equipment tractors. Deviations from the recommended criteria should occur only after careful consideration, extensive testing, risk assessment and thorough in service evaluation have shown alternative methods or conditions to be satisfactory.

This European Standard is a Type C standard as stated in **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 European Standard.

When provisions of this type C standard are different from those 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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## 1 Scope

This European Standard specifies the technical requirements to minimise the hazards listed in Clause 4 which can arise during the commissioning, operation and maintenance of baggage and equipment tractors, when used as intended and under the conditions of misuse which are reasonably foreseeable 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 European Standard applies to self-propelled baggage and equipment tractors with driver accommodation.

Examples of some typical baggage and equipment tractors are shown in Annex A.

This European Standard does not apply to pedestrian controlled equipment.

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

This European 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 baggage and equipment tractors manufactured before the date of publication by CEN of this standard.

**[A1]** This part of EN 12312 is intended to be used in conjunction with EN 1915-1, EN 1915-2, EN 1915-3 (for vehicles) and EN 1915-4. **[A1]**

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## 2 Normative references

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

**[A1]** *deleted text* **[A1]**

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

**[A1]** EN 1175-1 **[A1]**, *Safety of industrial trucks — Electrical requirements — Part 1: General requirements for battery powered trucks*

**[A1]** EN 1175-2 **[A1]**, *Safety of industrial trucks — Electrical requirements — Part 2: General requirements of internal combustion engine powered trucks*

**[A1]** EN 1175-3 **[A1]**, *Safety of industrial trucks — Electrical requirements — Part 3: Specific requirements for the electric power transmission systems of internal combustion engine powered trucks*

**[A1]** EN 1726-1 **[A1]**, *Safety of industrial trucks — Self-propelled trucks up to and including 10 000 kg capacity and industrial tractors with a drawbar pull up to and including 20 000 N — Part 1: General requirements*

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

**[A1]** EN 1915-2 **[A1]**, *Aircraft ground support equipment — General requirements — Part 2: Stability and strength requirements, calculations and test methods*

**[A1]** EN 1915-3 **[A1]**, *Aircraft ground support equipment — General requirements — Part 3: Vibration measurement methods and reduction*

**EN 12312-15:2006+A1:2009 (E)**

EN 1915-4 <sup>A1</sup>, *Aircraft ground support equipment — General requirements — Part 4: Noise measurement methods and reduction*

EN ISO 2860, *Earth moving machinery — Minimum access dimensions (ISO 2860:1992)*

EN ISO 2867, <sup>A1</sup> *Earth-moving machinery — Access systems (ISO 2867:2006)* <sup>A1</sup>

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)* <sup>A1</sup>

EN ISO 13850:2008, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)* <sup>A1</sup>

EN ISO 21281:2005, *Construction and layout of pedals of self-propelled sit-down rider-controlled industrial trucks — Rules for the construction and layout of pedals (ISO 21281:2005)*

### 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in <sup>A1</sup> EN ISO 12100:2003 <sup>A1</sup> and EN 1915-1:2001 and the following apply.

#### 3.1 baggage and equipment tractor

industrial truck, travelling on the ground, intended for use on airports, fitted with coupling means and specially designed to draw trailers

#### 3.2 rated drawbar pull

horizontal drawbar pull at the coupling, given in Newtons, as intended by the manufacturer, that the tractor can develop at a specified coupling height whilst travelling on a smooth, dry and horizontal concrete surface

- for tractors powered by an internal combustion engine: whilst moving at a uniform speed of not less than 10 % of the rated no-load speed;
- for battery powered tractors: which can be sustained continuously for a period of one hour

NOTE When establishing the rated drawbar pull, an operator's mass of 90 kg should be taken into account.

### 4 List of significant hazards

The list of risks and hazards (see Annex B) is based on EN 1050:1996. This list contains all the specific hazards, hazardous situations and events, additional to those of EN 1915 series, as far as they are dealt with in this European Standard, identified by risk assessment as significant for baggage and equipment tractors and which require action to eliminate or reduce the risk.

### 5 Safety requirements and/or measures

#### 5.1 General requirements

5.1.1 <sup>A1</sup> Baggage and equipment tractors 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 standard. <sup>A1</sup> They shall also conform to the specific requirements of this European Standard.



**5.1.2** The overall dimensions of baggage and equipment tractors shall be kept to a minimum, consistent with their function.

NOTE The following requirements should be stipulated between manufacturer and user (see Clause 0 of EN 1915-1:2001 — negotiation):

- overall dimensions;
- speeds;
- rated drawbar pull (towing capacity);
- drawbar interface heights;
- maximum un-braked train mass.

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

**5.1.4** Internal combustion engine powered baggage and equipment tractors using liquefied petroleum gas (LPG) shall be in accordance with the requirements of **EN 1726-1**.

**5.1.5** Vibration measurement and reduction shall be carried out in accordance with **EN 1915-3**.

**5.1.6** Noise measurement and reduction shall be carried out in accordance with **EN 1915-4**.

## **5.2 Driver's accommodation**

**5.2.1** Baggage equipment tractors shall be equipped with seated driver accommodation.

**5.2.2** The minimum dimensions for the driver's envelope shall be as given in Annex C.

**5.2.3** Provision shall be made for the storage of operating instructions in the vicinity of the driver's accommodation. This shall not obstruct the driver's usual field of operation and view.

**5.2.4** Restraint systems shall be fitted to all seats on tractors with driver accommodation, a lap type seatbelt as a minimum.

## **5.3 Driver's cabin**

**5.3.1** For fully enclosed cabins, in addition to the requirements in EN 1915-1:2001, 5.3.1, the rear windscreen shall have at least one power-operated wiper.

NOTE A rear windscreen washing unit should be provided if agreed between manufacturer and user.

**5.3.2** A fully enclosed cabin shall have at least one door conforming to the requirements of EN ISO 2867, plus an emergency exit conforming to the requirements of EN ISO 2860, allowing escape in another direction, which may be a window. It shall be positioned as far as possible away from the normal exit.

**5.3.3** The air intake of a heater/de-mister for a fully enclosed cabin shall be connected to a fresh air inlet.

## EN 12312-15:2006+A1:2009 (E)

**5.4 Seats**

**5.4.1** Baggage and equipment tractors shall be equipped with an adjustable seat for the driver to minimize fatigue during the intended work period.

**5.4.2** Seat mountings shall withstand the forces which may occur during operation, e.g. braking or coupling forces, minor collisions with trailers/dollies.

**5.4.3** It shall be possible to adjust the driver's seat without using tools.

**5.4.4** Where a weight adjustable seat is fitted, the adjustment shall cater for a weight range of at least 55 kg to 110 kg.

**5.5 Controls, monitoring devices and displays**

**5.5.1** Internal combustion engine powered baggage and equipment tractors with automatic transmission shall be fitted with a device preventing the engine from being started whilst the transmission is engaged.

**5.5.2** Travel controls on internal combustion engine powered baggage and equipment tractors with automatic transmission shall be so arranged that on level ground the tractor will not move from rest until the transmission has been engaged. During normal driving operations when the transmission is engaged, the tractor shall not move faster than 5 km/h as long as the controls for the driving speed are not activated.

**5.5.3** Pedal operated travel and braking controls shall conform to EN ISO 21281:2005 as shown in pedal layout, Table 1.

**5.5.4** Battery powered baggage and equipment tractors shall be equipped with means to prevent automatically powered travel when the driver dismounts from the tractor.

**5.5.5** Movement of battery powered baggage and equipment tractors shall not be possible while the safeguard against unauthorized use is activated, see EN 1915-1:2001, 5.4.2.

**5.6 Additional operating positions**

**5.6.1** Where additional operating positions are provided, e.g. push-button operation at the rear of the baggage and equipment tractor, the initiated movement per activation shall be limited to a maximum of 300 mm.

**5.6.2** The controls, e.g. rear push-button device, shall be arranged so that the operator does not have to step between tractor and trailer/dolly for activation.

**5.6.3** Where a travel control from outside the baggage and equipment tractor is provided, the maximum speed of the tractor during operation of this control shall be restricted to 2,5 km/h.

**5.6.4** Where a travel control from outside the baggage and equipment tractor is provided, it shall only be enabled by means of a separate switch or automatically when the driver leaves the tractor, overriding the requirements of 5.5.4. As soon as the control actuator of the travel control is released, it shall switch off automatically and a parking brake or equivalent device shall be engaged. Simultaneous operation from the driver's position shall not be possible.

**5.6.5** Controls for additional operating positions shall be secured against unauthorized use and unintentional operation, e.g. by key switch, solid guarding.

**5.6.6** Emergency stops shall be provided within reach of the additional operator position. **[A]** They shall meet the requirements in EN ISO 13850:2008, category 0. **[A]**

## 5.7 Chassis and body

**5.7.1** Where unguarded moving parts within the engine compartment are accessible when the engine cover is open, opening of the cover shall be possible only by means of a key or tool, or by a release handle within a lockable driver's cabin.

**5.7.2** Towing couplings shall be designed and positioned to ensure that the towbars of trailers remain as horizontal as possible during operation (see Annex D).

**5.7.3** It shall be possible to operate towing couplings with one hand.

NOTE A remote control may be provided.

**5.7.4** A front tow hitch shall only be installed where provisions are made by the manufacturer.

**5.7.5** Where a fuel tank is installed within or adjacent to the engine compartment and excessively high temperatures may occur, the tank and/or filling arrangement shall be isolated from the electrical and exhaust systems by suitable protection, e.g. separate enclosures, baffles. The tank location and the facilities for filling shall be such that spillage or leakage will not drain into the engine compartment or onto electrical or exhaust system parts.

**5.7.6** Fuel spillage shall not be possible under intended operating conditions of the baggage and equipment tractor, e.g. starting, stopping, cornering.

**5.7.7** Where a baggage storage area is installed, provisions shall be made for securing of loads, see EN 1915-1:2001, 5.15.

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## 5.8 Electrical equipment

**5.8.1** The electrical system of battery powered baggage and equipment tractors shall conform to **EN 1175-1**.

SIST EN 12312-15:2006+A1:2009

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**5.8.2** The electrical system of internal combustion engine powered baggage and equipment tractors shall conform to **EN 1175-2** and **EN 1175-3** as appropriate.

## 6 Information for use

### 6.1 Marking

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

### 6.2 Additional marking

**6.2.1** In addition to the name-plate, the following shall be marked:

- un-laden mass of the tractor in working order and without battery for battery powered tractors;
- the authorized maximum and minimum battery mass on battery powered tractors;
- the system voltage on battery powered tractors;
- the nominal power in kW;
- the drawbar pull in Newtons.

**6.2.2** The following data shall be marked on the tractor at a prominent position, affixed permanently and legible from a suitable distance, depending on type and application:

- drawbar pull;
- maximum un-braked train mass;
- load capacity, where a baggage storage area is provided on the tractor.