



**SLOVENSKI STANDARD**  
**SIST EN 12312-20:2005+A1:2009**  
**01-julij-2009**

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Aircraft ground support equipment - Specific requirements - Part 20: Electrical ground power units

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil 20: Ausrüstung zur Bodenstromversorgung

Matériel au sol pour aéronefs - Exigences particulières - Partie 20: Matériel d'alimentation électrique au sol

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**Ta slovenski standard je istoveten z: EN 12312-20:2005+A1:2009**

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49.100

Oprema za servis in vzdrževanje na tleh

Ground service and maintenance equipment

**SIST EN 12312-20:2005+A1:2009**

**en,de**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 12312-20:2005+A1**

April 2009

ICS 49.100

Supersedes EN 12312-20:2005

English Version

## Aircraft ground support equipment - Specific requirements - Part 20: Electrical ground power units

Matériel au sol pour aéronefs - Exigences particulières -  
Partie 20: Matériel d'alimentation électrique au sol

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil  
20: Ausrüstung zur Bodenstromversorgung

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

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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.



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## Foreword

This document (EN 12312-20:2005+A1:2009) has been prepared by Technical Committee CEN/TC 274 "Aircraft ground support equipment", the secretariat is of which 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 12312-20:2005.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\square_{A1}$   $\square_{A1}$ .

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).

$\square_{A1}$  For relationship with EU Directives, see informative Annexes ZA and ZB, which are integral parts of this document.  $\square_{A1}$

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

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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.

## Introduction

This European Standard specifies health and safety requirements, as well as some functional and performance requirements for ground power equipment intended for the electrical supply for aircraft to be used on 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 ground power equipment. 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 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 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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## 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 ground power equipment, 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 service companies.

This European Standard applies to:

- ground power units either self-propelled or towable (Examples see Annex A);
- ground power equipment when mounted on other GSE;
- ground power accessories intended for ground power equipment (including accessories for fixed equipment).

This European Standard does not apply to:

- the electrical characteristics of the supply, the type of power supply system and related measures against contact;
- any electrical supply system not intended for aircraft use;
- the on-board electrical system of the aircraft.

This European Standard does not establish requirements for noise and vibration.

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 ground power equipment which is manufactured before the date of publication of this European Standard by CEN.

**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**

## 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.

**A1** *deleted text* **A1**

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

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

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*

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

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

EN 12601, *Reciprocating internal combustion engine driven generating sets — Safety*

EN 60204-1:1997, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:1997)*

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)*

EN ISO 13850:2008, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)*

ISO 461-1 *Aircraft — Connectors for ground electrical supplies — Part 1: Design performance and test equipment*

ISO 461-2, *Aircraft — Connectors for ground electrical supplies — Part 2: Dimensions*

**3 Terms and definitions**

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

**3.1****ground power equipment**

system used to deliver external electrical power to the aircraft, designed to substitute the on-board electrical power supply

**3.2****ground power unit (GPU)**

mobile ground power equipment

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NOTE This term includes units mounted on other mobile GSE.

**3.3****ground power accessory**

components of ground power equipment: cable handling systems, cables, connectors

**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 ground power equipment and which require action to eliminate or reduce risks.

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

Ground power equipment 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. They shall also conform to the specific requirements of this document.

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

The overall dimensions of a GPU shall be kept to a minimum (see Clause 0 of EN 1915-1:2001 — negotiation).

If a GPU is propelled by means of a battery operated system, this system shall conform to EN 1175-1.



- 5.1.5** Self-propelled GPU not designed to be pedestrian controlled shall be equipped with driver accommodation.
- 5.1.6** Restraint systems shall be fitted to all seats on self-propelled GPU with driver accommodation, a lap type seatbelt as a minimum.
- 5.1.7** Structural parts of pedestrian controlled self-propelled GPU shall not protrude within the operating range of the tiller.
- 5.1.8** Self-propelled GPU with driver's cabin shall have an alternative means of exit for the driver in the event of an emergency. It shall be positioned as far as possible away from the normal exit.
- 5.1.9** Towable GPU shall be capable of being towed at speeds up to 32 km/h (20 mph).

NOTE The maximum travelling speed of towable GPU should be stipulated between manufacturer and user (see Clause 0 of EN 1915-1:2001 — negotiation).

**5.1.10** Means shall be provided to prevent movement of the vehicle during engine start up, e.g. by the use of a drive start interlock.

## 5.2 Power sources

- 5.2.1** Diesel-powered generating sets shall conform to the requirements in EN 12601.
- 5.2.2** On turbine-powered generating sets, the turbine shall be of sufficient power to supply all aircraft the unit is designed for.
- 5.2.3** The turbine shall be protected against overspeed, over temperature and low oil pressure.
- 5.2.4** Turbines shall be equipped with a speed regulation system.
- 5.2.5** Turbine inlets and outlets shall be arranged so that suck-in and blast risks are avoided, e.g. upwards.
- 5.2.6** On generators/converters it shall not be possible to reach live parts of the electrical system during operation, in accordance with 6.2 of EN 60204-1:1997.

## 5.3 Cables and connectors

- 5.3.1** Connectors shall be in accordance with the requirements in ISO 461-1 and ISO 461-2.
- 5.3.2** Cable and connector assembly shall be fit for use, cable to connectors assembly shall be protected against water ingress, IPX4 as a minimum.
- 5.3.3** Cables shall be of adequate length for the intended use.
- NOTE Exact specifications cannot be provided. They may differ depending on aircraft type and airport of use (see Clause 0 of EN 1915-1:2001 — negotiation).
- 5.3.4** For ground power equipment with more than one connector, an interlock system shall be installed to prevent the connector not in use from being energised.
- 5.3.5** Means shall be provided to stow cables during transport without damage, e.g. bending beyond intended radius, kinking or twisting or trailing on the ground.
- 5.3.6** Cables shall withstand being rolled over by any ramp equipment (see Clause 0 of EN 1915-1:2001 — negotiation).
- 5.3.7** Cables shall be resistant to environmental influences and fluids commonly found on the ramp, e.g. water, aircraft fuel, motor oil, hydraulic fluid (see also Clause 0 of EN 1915-1:2001 — negotiation).