



SLOVENSKI STANDARD
SIST EN 12312-16:2005+A1:2009
01-julij-2009

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Aircraft ground support equipment - Specific requirements - Part 16: Air start equipment

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil 16: Luftstartgeräte

Matériel au sol pour aéronefs - Exigences particulières - Partie 16: Matériels de
décollage à air

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Ta slovenski standard je istoveten z: **EN 12312-16:2005+A1:2009**

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ICS:

49.100

Oprema za servis in
vzdrževanje na tleh

Ground service and
maintenance equipment

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12312-16:2005+A1

April 2009

ICS 49.100

Supersedes EN 12312-16:2005

English Version

Aircraft ground support equipment - Specific requirements - Part 16: Air start equipment

Matériel au sol pour aéronefs - Exigences particulières -
Partie 16: Matériels de démarrage à air

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil
16: Luftstartgeräte

This European Standard was approved by CEN on 13 June 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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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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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 hazards.....	6
5 Safety requirements and/or measures	7
5.1 General requirements.....	7
5.2 Stored air systems.....	7
5.3 Diesel powered air start units.....	7
5.3.1 Power source	7
5.3.2 Air compressor	7
5.3.3 Air delivery system.....	8
5.4 Turbine powered air start units	8
5.4.1 Power source	8
5.4.2 Air compressor	8
5.4.3 Air delivery system.....	8
5.5 Air delivery hoses	8
5.6 Controls, monitoring devices and displays	9
5.7 Options	9
6 Information for use	9
6.1 Marking	9
6.2 Additional marking	9
6.3 Instructions	9
7 Verification of requirements	10
Annex A (informative) Examples of air start units	11
Annex B (normative) List of hazard in addition to those of EN 1915-1	13
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC	14
Annex ZB (informative) [A1] Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC [A1]	15
Bibliography	16

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Foreword

This document (EN 12312-16:2005+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 12312-16:2005.

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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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: Air-craft 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, 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 12312-16:2005+A1:2009 (E)**Introduction**

This European Standard specifies health and safety requirements, as well as some functional and performance requirements for air start equipment intended for servicing 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 air start 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 differ 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 air start 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 handling agencies.

This European Standard applies to the following types of air start equipment used for civil aircraft:

- stored air systems without compressors;
- mobile diesel powered air start units;
- mobile turbine powered air start units;
- air delivery systems of ramp or passenger boarding bridges,

as defined in Clause 3 (Examples see Annex A).

This European Standard does not establish requirements for the pressure vessels included in the air start equipment.

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 air start 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 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 1012-1, *Compressors and vacuum pumps — Safety requirements — Part 1: Compressors*

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*

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

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

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

EN 12312-16:2005+A1:2009 (E)

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 2026, *Aircraft — Connections for starting engines by air*

3 Terms and definitions

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

3.1**air start equipment**

ground support equipment (GSE) to start aircraft main engines by means of compressed air, including hoses and couplers

3.2**air start unit**

self-contained air start equipment

3.2.1**stored air system**

mobile air start equipment with pressure vessels containing compressed air

3.2.2**diesel powered air start unit**

mobile air start unit with a diesel engine as the power source

3.2.3**turbine powered air start unit**

mobile air start unit with a turbine as the power source

3.3**air delivery system**

all parts of the air start equipment controlling and delivering compressed air to the aircraft ground connecting point. On systems installed on ramps or passenger boarding bridges this is limited to hoses, couplings and end valves

3.4**compressor**



machine to compress air, gases or vapours to a pressure higher than the inlet pressure

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 European Standard, identified by risk assessment as significant for air start equipment and which require action to eliminate or reduce risks.

5 Safety requirements and/or measures

5.1 General requirements

5.1.1  Air start 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.  It shall also conform to the specific requirements of this European Standard.

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

5.1.3 The overall dimensions of the air start unit shall be kept to a minimum.

NOTE See also Clause 0 of EN 1915-1:2001 — negotiation.

5.1.4 Self-propelled air start units shall be equipped with driver accommodation.

5.1.5 Air start equipment shall be equipped with a suitable air delivery regulator to protect the aircraft system from over-pressure or loss of pressure during aircraft engine start procedure.

NOTE See also Clause 0 of EN 1915-1:2001 — negotiation.

5.1.6 For air start equipment with more than one air delivery hose a system shall be installed to prevent each spare hose being pressurized e.g. an interlock within the storage receptacle for the hose coupling, activated by removal of the coupling.

5.1.7 Air start equipment shall have a pressure relief valve to prevent over-pressurization of the system. The exhaust from the relief valve shall be directed away from work areas, e.g. vertically downwards or upwards.

5.2 Stored air systems

5.2.1 Pressure vessels and components shall be securely fitted to the chassis of the air start unit, to avoid relative movement between unit and chassis, working loose, wear and tear.

5.2.2 An adjustable air pressure valve shall be installed to fix the air delivery characteristics in accordance with the aircraft engine type.

5.3 Diesel powered air start units

5.3.1 Power source

5.3.1.1 The power source shall be sufficient to start all aircraft engines for which the unit is designed.

5.3.1.2 The engine shall be protected against low oil pressure and overheating.

5.3.1.3 During aircraft engine start procedure these safety systems shall be automatically overridden in order to avoid aircraft engine damage.

5.3.1.4 The air start unit shall be equipped with a suitable governor to regulate the speed of the engine.

5.3.2 Air compressor

5.3.2.1 In steady state, the compressor shall maintain the necessary air flow and pressure for the aircraft engine start procedure, measured at the end of the intended hose.

5.3.2.2 An adjustable air pressure valve shall be installed to fix the air delivery characteristics in accordance with the aircraft engine type and environmental conditions. Information about the adjusted pressure and flow shall be provided.

5.3.2.3 Compressors shall be in accordance with EN 1012-1.