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Podporna oprema na tleh za letalski promet ï Posebne zahteve ï 16. del: Oprema za zraļ ni pogon motorjev

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

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil 16: Luftstartgeräte

Matériel au sol pour aéronefs - Exigences particulieres - Partie 16 : Matériels de démarrage a air

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

Matériels 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.

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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 Central Secretariat has the same status as the official versions.

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Contents

Foreword

This European Standard (EN 12312-16:2005) 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of an identical text or by endorsement, at the latest by January 2006, and conflicting national standards shall be withdrawn at the latest by January 2006.

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).

For relationship with EU Directives, see informative Annex ZA, which is an integral part of this European Standard.

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.

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

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.

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.

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.

EN 418:1992, *Safety of machinery — Emergency stop equipment, functional aspects — Principles for design.*

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.*

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).*

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, unless otherwise specified in this European 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.