SLOVENSKI STANDARD
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Aircraft ground support equipment - General requirements - Part 1: Basic safety requirements

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Luftfahrt-Bodengeräte - Allgemeine Anforderungen - Teil 1: Grundlegende Sicherheitsanforderungen

Matériels au sol pour aéronefs - Exigences générales - Partie 1: Caractéristiques fondamentales de sécurité

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This European Standard was approved by CEN on 6 January 2001.

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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 Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Foreword

This European Standard 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of an identical text or by endorsement, at the latest by September 2001, and conflicting national standards shall be withdrawn at the latest by September 2001.

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 EC Directive(s).

For relationship with EC Directive(s), see informative Annex Z, which is an integral part of this standard.

EN 1915 - Aircraft ground support equipment - General requirements consists of:

Part 1: Basic safety requirements

Part 2: Stability and strength requirements, calculations and test methods

Part 3: Vibration measurement methods

Part 4: Noise measurement methods.

This is the first edition of this Part of EN 1915.

A further European Standard (EN 12312) in several parts covering specific requirements for different aircraft ground support equipment is in preparation.

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: 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: Oxygen/Nitrogen 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

0 Introduction

The abbreviation GSE means a complete item of aircraft ground support equipment in the context of this European Standard.

When compiling this European Standard it was assumed that:

- GSE is operated only by competent persons on the airport ramp;
- components without specific requirements are:

  a) designed in accordance with the usual engineering practice and calculation codes;
  b) of sound mechanical and electrical construction;
  c) made of materials with adequate strength and of suitable quality;
  d) made of materials free of defects;

- materials known to be harmful, such as asbestos, are not used as part of GSE;
- components are kept in good repair and working order, so that the required characteristics remain despite wear;
- by design of the load bearing elements, a safe operation of the machine is assured for loading ranges from zero to 100 % of the rated possibilities and during tests;
- a negotiation took place between the user and the manufacturer concerning particular conditions for the use and places of use of the GSE;
- the place of operation allows a safe use of GSE.

The extent to which hazards are covered is indicated in the scope of this European Standard.

Enumerations in this European Standard are not to be considered exclusive, they are compiled according to the present state of the art.

The minimum essential criteria are considered to be of primary importance in providing safe, economical and usable GSE. Deviation from the recommended methods and conditions should occur only after careful consideration, extensive testing and thorough in service evaluation have shown alternative methods or conditions to be satisfactory.

This European Standard is a Type C standard as defined in EN 1070 : 1998.

1 Scope

This Part of EN 1915 applies to GSE when used in civil air transport as intended by the manufacturer and contains safety requirements relating to the equipment in general.

This Part of EN 1915 deals with the technical requirements to minimize the hazards listed in clause 4 which can arise during operation and maintenance of GSE as intended by the manufacturer or his authorised representative.

This Part of EN 1915 should be used together with the specific standard of the EN 12312 series for the specific type of GSE (see also Foreword).

This Part of EN 1915 does not apply to unmodified automotive parts when used on GSE for the purpose for which they are designed.

This Part of EN 1915 does not establish additional requirements for the following:

- operation elsewhere than in an airport environment;
- operation in severe conditions, e.g. ambient temperature below -20 °C or over 50 °C, tropical or saturated salty atmospheric environment, strong magnetic or radiation field;
- operation subject to special rules, e.g. potentially explosive atmosphere except as regards operation in the vicinity of an aircraft fuel tank during fuelling operation;
- hazards caused by power supply other than from electrical networks;
- hazards occuring during construction, transportation, commissioning and decommissioning of the GSE;
- hazards caused by wind velocity in excess of the figures given in this European Standard;
- direct contact with food stuffs;
- earthquake, flood, landslide, lightning and more generally any natural catastrophe;
- electromagnetic compatibility (EMC);
- cableless remote control;
- hazards caused by noise and vibration;
- hazards caused by errors in the software.

This Part of EN 1915 is not applicable to GSE which are manufactured before the date of publication by CEN of this Standard.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 292-1 : 1991
Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology

EN 292-2 : 1991/A1 : 1995
Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles and specifications

EN 294
Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs

EN 349
Safety of machinery - Minimum gaps to avoid crushing of parts of the human body

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

EN 457 : 1992
Safety of machinery - Auditory danger signals - General requirements, design and testing (ISO 7731:1986, modified)

EN 563
Safety of machinery - Temperatures of touchable surfaces - Ergonomics data to establish temperature limit values for hot surfaces

EN 811
Safety of machinery - Safety distances to prevent danger zones being reached by the lower limbs

EN 894-1 : 1997
Safety of machinery - Ergonomic requirements for the design of displays and control actuators - Part 1: General principles for human interactions with displays and control actuators

EN 894-3:2000
Safety of machinery – Ergonomic requirements for the design of displays and control actuators – Part 3: Control actuators

EN 953
Safety of machinery – Guards – General requirements for the design and construction of fixed and moveable guards

EN 954-1 : 1996
Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design

EN 982 : 1996
Safety of machinery - Safety requirements for fluid power systems and their components - Hydraulics

EN 983 : 1996
Safety of machinery - Safety requirements for fluid power systems and their components - Pneumatics

EN 1050 : 1996
Safety of machinery – Principles for risk assessment

EN 1070 : 1998
Safety of machinery – Terminology

EN 1915-2 : 2001
Aircraft ground support equipment – General requirements – Part 2: Stability and strength requirements, calculations and test methods

EN 60073
Basic and safety principles for man-machine interface, marking and identification – Coding principles for indication devices and actuators (IEC 60073 : 1996)

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

EN 60529 : 1991
Degrees of protection provided by enclosures (IP code) (IEC 60529 : 1989)

EN ISO 3411 : 1999
Earth-moving machinery - Human physical dimensions of operators and minimum operator space envelope (ISO 3411 : 1995)

EN ISO 3457
Earth-moving machinery - Guards and shields - Definitions and specifications (ISO 3457 : 1986)

EN ISO 6682 : 1995
Earth-moving machinery - Zones of comfort and reach for controls (ISO 6682 : 1986 including Amendment 1 : 1989)

ISO 3795 : 1989
Road vehicles and tractors and machinery for agriculture and forestry - Determination of burning behaviour of interior materials

ISO 3864 : 1984
Safety colours and safety signs

ISO 6966 : 1993
Aircraft - Basic requirements for aircraft loading equipment

3 Terms and definitions

For the purposes of this Part of EN 1915, the terms and definitions of EN 1070 : 1998 apply. Additional terms and definitions are:

3.1
aircraft ground support equipment (GSE)

mobile equipment built for the special requirements of aviation

NOTE 1 The "special requirements" result from the specific design and turnaround procedure of aircraft, giving rise to designs not generally used in other areas, in particular:

- GSE for passenger, baggage and cargo handling;
- GSE for aircraft ground handling and servicing;
- mobile parts of passenger boarding bridges (PBB).

NOTE 2 A trilingual list of GSE is given in annex A.

3.2
passenger

any person other than a crew member, an employee of the carrier in an official capacity, an authorized representative of a national authority or a person accompanying a cargo consignment, who is carried aboard a flight handled by the GSE

NOTE Passengers exclusively use those types of GSE specifically designed for their access to and from the aircraft.

3.3
lifting/work platform

platform, cabin or workplace which is designed for lifting loads and/or persons

3.4
workplace

area where operators stay during normal operation e.g. driver/co-driver seats, passageways, fixed walkways, stairs, ladders, platforms

3.5
standing area

area on GSE where a person stands or works in an upright position during operation

3.6
walkway

area on GSE intended to be used by persons moving from one place to another

3.7
stabilizer

support used to maintain and/or increase the stability and capable of supporting and/or levelling the GSE

3.8
friction-type safeguard

safety equipment which restricts or prevents movement of parts in relation to each other by the use of frictional forces e.g. brakes, safety gears

3.9
instructions

documents supplied by the manufacturer or supplier describing the intended use of the GSE and containing informations for safe operation, installation, transport and maintenance

3.10
operational use

activities, effects, processes or movements that result from intended use of the GSE

3.11
unintentional movement

any movement without operator's conscious intent e.g. caused by failure of the GSE

3.12
unit load device (ULD)

assembly of components comprising one of either e.g. an aircraft pallet and pallet net, an aircraft pallet, a container with integral pallet or an aircraft container

4 List of hazards

This list is based on EN 1050 : 1996 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 this type of machinery and which require action to eliminate or reduce risks. For additional hazards related to specific types of GSE see standards of the EN 12312 series.

Table 1 - List of hazards

No corresponding to EN 1050 : 1996	Hazards identified in Annex A of EN 1050 : 1996	Relevant clauses of Annex A of EN 292-2 : 1991/ A1 : 1995	Relevant clauses in this Part of EN 1915 or EN 1915-2:2001
1	**Mechanical hazards** due to: – machine parts or workpieces, e.g.: a) shape; b) relative location; c) mass and stability (potentional energy of elements which may move under the effect of gravity); d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion); e) inadequacy of mechanical strength.	1.3	EN 1915-2:2001 5.2, 5.3, 5.4
	– accumulation of energy inside the machinery, e.g.: f) elastic elements (springs); g) liquids and gases under pressure; h) the effect of vacuum.	1.5.3, 1.6.3	EN 1915-2:2001 5.3.2
1.1	Crushing hazard	1.3	5.2, 5.3.1, 5.3.2, 5.6.1, 5.12.2, 5.14, 5.18
1.2	Shearing hazard		
1.3	Cutting or severing hazard		
1.4	Entanglement hazard		
1.5	Drawing-in or trapping hazard		
1.6	Impact hazard		
1.7	Stabbing or puncture hazard		
1.8	Friction or abrasion hazard		
1.9	High pressure fluid injection or ejection hazard	1.3.2	5.6.2, 5.17
2	**Electrical hazards** due to:		
2.1	Contact of persons with live parts (direct contact)	1.5.1, 1.6.3	5.24, 5.25
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	1.5.1	5.25

(continued)

Table 1 (continued)

No corresponding to EN 1050 : 1996	Hazards identified in Annex A of EN 1050 : 1996	Relevant clauses of Annex A of EN 292-2 : 1991/ A1 : 1995	Relevant clauses in this Part of EN 1915
2.3	Approach to live parts under high voltage	1.5.1, 1.6.3	not dealt with
2.4	Electrostatic phenomena	1.5.2	not dealt with
2.5	Thermal radiation or other phenomena such as the projection of molten particles and chemical effect from short circuits, overloads, etc.	1.5.1, 1.5.5	5.24, 5.25
3	**Thermal hazards**, resulting in:		
3.1	Burns, scalds and other injuries by a possible contact of persons with objects or materials with an extreme high or low temperature, by flames or explosions and also by the radiation of heat sources	1.5.5, 1.5.6, 1.5.7	5.9, 5.25.3
3.2	Damage to health by hot or cold working environment	1.5.5	not dealt with
4	**Hazards generated by noise**, resulting in:		
4.1	Hearing loss (deafness), other physiological disorders (e.g. loss of balance, loss of awareness)	1.5.8	not dealt with
4.2	Interference with speech communication, acoustic signals, etc.		
5	**Hazards generated by vibration**		
5.1	Use of hand-held machines resulting in a variety of neurological and vascular disorders	1.5.9	not dealt with
5.2	Whole body vibration, particularly when combined with poor postures		
6	**Hazards generated by radiation**		
6.1	Low frequency, radio frequency radiation, micro waves	1.5.10	not dealt with
6.2	Infrared, visible and ultraviolet light		
6.3	X and gamma rays		
6.4	Alpha, beta rays, electron or ion beams, neutrons	1.5.10, 1.5.11	
6.5	Lasers	1.5.12	

(continued)

Table 1 (continued)

No corresponding to EN 1050 : 1996	Hazards identified in Annex A of EN 1050 : 1996	Relevant clauses of Annex A of EN 292-2 : 1991/ A1 : 1995	Relevant clauses in this Part of EN 1915
7	**Hazards generated by materials and substances** (and their constituent elements) processed or used by the machinery		
7.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes, and dusts	1.1.3, 1.5.13, 1.6.5	5.3.2, 5.25.3
7.2	Fire or explosion hazard	1.5.6, 1.5.7	5.25.3
7.3	Biological or microbiological (viral or bacterial) hazards	1.1.3, 1.6.5, 2.1	not dealt with
8	**Hazards generated by neglecting ergonomic principles in machinery design as**, e.g. hazards from:		
8.1	Unhealthy postures or excessive effort	1.1.2d, 1.1.5, 1.6.2, 1.6.4	5.2, 5.6.1
8.2	Inadequate consideration of hand-arm or foot-leg anatomy	1.1.2d, 2.2	5.4.1
8.3	Neglected use of personal protection equipment	1.1.2e	not dealt with
8.4	Inadequate local lighting	1.1.4	5.4.1, 5.5
8.5	Mental overload and underload, stress	1.1.2d	not dealt with
8.6	Human error, human behavior	1.1.2d, 1.2.2, 1.2.5, 1.2.8, 1.5.4, 1.7	5.4.3, 6
8.7	Inadequate design, location or identification of manual controls	1.2.2	5.4.1
8.8	Inadequate design or location of visual display units	1.7.1	5.5
9	**Combination of hazards**		
10	**Unexpected start-up, unexpected overrun/overspeed** (or any similar malfunction) from:		
10.1	Failure/disorder of the control system	1.2.7, 1.6.3	5.4, 5.25.1
10.2	Restoration of energy supply after an interruption	1.2.6	5.25.1
10.3	External influences on electrical equipment	1.2.1, 1.5.11, 4.1.2.8	not dealt with
10.4	Other external influences (gravity, wind, etc.)	1.2.1	5.18
10.5	Errors in the software	1.2.1	not dealt with

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