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Aircraft ground support equipment - Specific requirements - Part 18: Nitrogen or Oxygen units

Luftfahrt-Bodengeräte - Besondere Anforderungen - Teil 18: Stickstoffgeräte oder Sauerstoffgeräte

Matériel au sol pour aéronefs - Exigences particulières - Partie 18: Matériels d'alimentation en azote ou en oxygène

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Contents

Foreword

This document (EN 12312-18:2005) 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of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

This document 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 document.

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/anticing 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: 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, 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.

Introduction

This document specifies health and safety requirements, as well as some functional and performance requirements for nitrogen or oxygen units intended to be used for 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 nitrogen or oxygen units. 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 document is a Type C standard as stated in EN ISO 12100:2003.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document.

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.

1 Scope

This document specifies the technical requirements to minimise the hazards listed in Clause 4 which can arise during the commissioning, operation and maintenance of nitrogen or oxygen units 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 document applies to:

— all types of mobile nitrogen units and oxygen units with transportable gas cylinders interchangeable for filling purposes;

— equipment to be carried with other GSE or vehicles, e.g. skid mounted units,

intended for the manual refill of gaseous nitrogen or oxygen on aircraft (Examples see Annex A).

NOTE Generally oxygen units are used under aircraft maintenance conditions, not under commercial servicing conditions.

This document does not establish requirements for noise and vibration.

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

This document 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 nitrogen or oxygen units which are manufactured before the date of publication of this document by CEN.

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.

EN 837-1, *Pressure gauges — Part 1: Bourdon tube pressure gauges — Dimensions, metrology, requirements and testing*

EN 849, *Transportable gas cylinders — Cylinder valves — Specification and type testing*

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 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*

EN 1964-1, *Transportable gas cylinders — Specification for the design and construction of refillable transportable seamless steel gas cylinders of water capacities from 0,5 litre up to and including 150 litres — Part 1: Cylinders made of seamless steel with an R_m value of less than 1100 MPa*

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).*

3 Terms and definitions

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

3.1
nitrogen unit
mobile or transportable ground support equipment (GSE) to replenish aircraft nitrogen systems including tyres

3.2
oxygen unit
mobile or transportable ground support equipment (GSE) to replenish aircraft oxygen systems

3.3
nitrogen or oxygen truck
self-propelled unit, equipped with ride-on driver accommodation

3.4
nitrogen or oxygen cart
towable unit

3.5
pedestrian controlled nitrogen or oxygen cart
self- propelled unit without ride-on driver accommodation

3.6
skid mounted nitrogen or oxygen unit
unit mounted on a pallet or frame to be loaded on a vehicle by a fork lift truck or crane

3.7
pressure filling system
means to fill/refill pressurised systems, e.g. oxygen system, tyres, actuators

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 nitrogen or oxygen units and which require action to eliminate or reduce risks.

5 Safety requirements and/or measures

5.1 General requirements for nitrogen and oxygen units

5.1.1 Units shall be designed for use with one type of gas only.

5.1.2 Units shall conform to the relevant requirements of EN 1915-1, unless otherwise specified in this document.

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

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

5.1.5 The electrical system of battery powered self-propelled units shall conform to EN 1175-1.

5.1.6 Self-propelled units not designed to be pedestrian controlled shall be equipped with ride-on driver accommodation.

5.1.7 Restraint systems shall be fitted to all seats on self-propelled units. Minimum requirement: a lap type seat belt.

5.1.8 Structural parts of pedestrian controlled self-propelled units shall not protrude within the operating range of the tiller.

5.1.9 Self-propelled units 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.

5.1.10 Towable units shall be capable of being towed at speeds up to 32 km/h (20 mph).

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

5.2 Pressure vessels

5.2.1 Gas cylinders shall meet the requirements of EN 1964-1.

5.2.2 Gas cylinders shall be secured in their provided positions, e.g. by clamping, permanent fixing.

5.2.3 Gas cylinders mounted on units with internal combustion engines shall be protected against exceeding the allowable temperature caused by the engine and/or the exhaust system, e.g. by distance, shielding.

5.2.4 Cylinder valves shall meet the requirements of EN 849.

5.2.5 Cylinder valves of gas cylinders in the mounted position on the unit shall be within the contour of the unit. Otherwise they shall be protected against mechanical damage, e.g. by solid cover.

5.3 Pressure filling system

5.3.1 Pressure filling systems shall be equipped on the low pressure side with a pressure indicator, accuracy class 1, in accordance with EN 837-1:1996.

5.3.2 Pipes, fittings and other components of the pressure filling system for nitrogen shall meet the requirements of EN 983.

5.4 Hoses

5.4.1 Hoses shall be of adequate strength and made of suitable material for use with oxygen or nitrogen.

5.4.2 Hoses shall be of adequate length for the intended purpose.

5.4.3 Means shall be provided to stow hoses and fittings during transport without damage, e.g. in a protecting box to avoid bending beyond intended radius, kinking or twisting.

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

5.5 Special requirements for oxygen units only

5.5.1 Components in contact with oxygen shall be made of suitable material, e.g. copper, nickel, copper alloy with a minimum share of 55 % copper, copper/nickel alloy.

5.5.2 Oxygen units whether self-propelled or not shall be designed with provisions to accommodate at least one 6 kg fire extinguisher easily accessible for the operator.