INTERNATIONAL STANDARD

ISO 16004

First edition
2005-04-15

Aircraft ground equipment — Passenger boarding bridge or transfer vehicle — Requirements for interface with aircraft doors

Matériel au sol pour aéronefs — Passerelle passagers ou autobus élévateur — Exigences d'interface avec les portes d'aéronefs

Reference number
ISO 16004:2005(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16004 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 9, *Air cargo and ground equipment*.

Introduction

Many aircraft types include, in the vicinity of the main deck doors used for passenger access, a variety of protruding items such as pitots, probes, sensors, strakes, etc. which are exposed to inadvertent damage and have been known to suffer from inappropriate design and/or positioning of passenger boarding bridges or passenger transfer vehicles. Since perfect condition of these items is generally essential to flight safety, it is the intent of this International Standard to specify minimum interface requirements on passenger boarding bridges or passenger transfer vehicles such that systematic or inadvertent contact with one of them is avoided.

This International Standard accordingly specifies the minimum interface requirements to be met by the aircraft mating section of either a passenger boarding bridge or a passenger transfer vehicle, in order to allow compatibility with aircraft passenger doors and their surroundings without interference with or risk of damage to these protruding items.

Throughout this International Standard, the minimum essential criteria are identified by the use of the key-word “shall”. Recommended criteria are identified by the use of the key-word “should” and, while not mandatory, are considered to be of primary importance in providing safe passenger boarding bridge or passenger transfer vehicles and minimizing the risk of inadvertent damage to vital aircraft parts. Deviation from recommended criteria should only occur if positively required by basic passenger boarding bridge or passenger transfer vehicle design factors with a significant cost impact, and after careful consideration, extensive testing, and thorough service evaluation have shown alternative methods to be satisfactory.

Aircraft ground equipment — Passenger boarding bridge or transfer vehicle — Requirements for interface with aircraft doors

WARNING — Compliance of a passenger boarding bridge or passenger transfer vehicle with the provisions of this International Standard will only ensure protection of the exposed devices on the indicated existing aircraft types. As to other potential circumstances,

- **where a passenger boarding bridge or passenger transfer vehicle is to be operated on another existing aircraft type, the responsible design or operating body should check the nature and location of any items protruding in the vicinity of the passenger door(s) used, in order to check if the aircraft is protected against interference or if particular positioning precautions are required;**
- **where features specific to one aircraft type or sub-type have been identified, passenger boarding bridge design might not take them into account where bridge and/or aircraft stand characteristics preclude handling of the particular aircraft type concerned. Passenger transfer vehicles shall take them into account, inasmuch as the vehicle is capable of reaching the aircraft type's door sill height.**

1 Scope

This International Standard specifies dimensional interface and unobstructed space requirements applicable to the aircraft mating section of either

a) passenger boarding bridges, or

b) passenger transfer vehicles

used at airports for boarding and disembarkation of passengers on the types of civil transport aircraft listed below. These types of aircraft have a door sill height greater than 2,0 m (80 in) above the ground. Lower aircraft usually do not require such means of access, and have not been taken into account.

Data was compiled and checked as to the exact location of such items on the most frequently used civil transport aircraft types (i.e. families of aircraft sub-types with the same fuselage design and the same general type designator, which potentially includes any future derivative aircraft with the same fuselage). These types include the following:

- AIRBUS INDUSTRIE: A300 / A310 / A318 / A319 / A320 / A321 / A330 / A340
- BOEING COMMERCIAL AIRPLANE: B717 / B727 / B737 / B747 / B757 / B767 / B777
- LOCKHEED AIRCRAFT: L1011
- McDONNELL DOUGLAS: DC9 / DC10 / MD11 / MD80 / MD90

It is not the intent of this International Standard to specify any requirements applicable to aircraft design. Future aircraft types with a new fuselage should meet the main deck passenger doors requirements for interface with passenger boarding bridges or passenger transfer vehicles of ISO 7718, which would ensure their compatibility with the aircraft mating section of passenger boarding bridges or passenger transfer vehicles meeting the requirements of this International Standard.

NOTE Read this International Standard in conjunction with the documents indicated in Bibliography.

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.

ISO 6966-1:—[1)], *Aircraft ground equipment — Basic requirements — Part 1: General design requirements*

ISO 6966-2:—[1)], *Aircraft ground equipment — Basic requirements — Part 2: Safety requirements*

ISO 7718, *Aircraft — Main deck passenger doors — Interface requirements for connection with passenger boarding bridge or transfer vehicle*

3 General safety requirements

3.1 The passenger boarding bridge or passenger transfer vehicle design shall meet the appropriate requirements of ISO 6966-1 and ISO 6966-2.

3.2 In addition, the passenger boarding bridge design should, where applicable, meet the specific safety requirements of IATA AHM 922 and EN 12312-4 (see Bibliography).

4 Equipment requirements for interface with aircraft

4.1 Reference planes

4.1.1 General

The reference planes defined in 4.1.2 and 4.1.3 are used in order to define the location of the potential interference areas in relation with the aircraft passenger doors.

4.1.2 Vertical reference plane

The vertical reference plane is the plane, perpendicular to the local aircraft skin, passing through the most forward edge of the door when stowed in the open position.

For aircraft types with an inward opening door, the vertical reference plane shall be the plane, perpendicular to the local aircraft skin, located 0,915 m (3 ft) forward of the forward edge of the door opening.

NOTE This vertical reference plane was chosen because the most flight safety critical items on commonly operated aircraft types are located immediately forward of it, and it is usually situated immediately in front of a passenger boarding bridge's operator, thus allowing optimum positioning accuracy.

4.1.3 Horizontal reference plane

The horizontal reference plane is the plane of the aircraft door sill.

NOTE 1 This plane is horizontal only in reference to the aircraft, not to the ground: most civil transport aircraft types present a nose-down cabin floor slope of, typically, 1° to 2°. Unless the passenger boarding bridge or passenger transfer vehicle's platform is equipped with a “twisting” adjustment system, it will usually be at a slight angle from the reference plane.

NOTE 2 On those aircraft with an outward opening door, the lower edge of the door when stowed in the open position is located between 51 mm (2,0 in) and 90 mm (3,5 in) above the horizontal reference plane.

1) To be published.