International Standard

ISO 21100

Third edition
2025-08

Air cargo unit load devices — Performance requirements and test parameters

Unités de charge de fret aérien — Exigences de performances et paramètres d'essai

Reference number
ISO 21100:2025(en)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

This third edition cancels and replaces the second edition (ISO 21100:2020), which has been technically revised.

The main changes are as follows:

— addition of T and U size and their respective restraint conditions.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document specifies the performance and testing requirements for approved (certified) cargo unit load devices (containers, pallets and nets) intended to be used for cargo restraint on board civil transport aircraft.

The civil aviation requirements referred to in this document are those concerning certification of transport aircraft and appliances to be installed aboard them and constitute the set of design and operation requirements internationally agreed in application of International Civil Aviation Organization (ICAO) Annex 8, *Airworthiness of aircraft*, to the Convention on International Civil Aviation. This document provides one means of compliance for unit load devices.

Dimensions and tolerances are expressed in millimetres, with dimensions in inches shown between brackets. The nominal values of outer unit load device base dimensions are those expressed in inches. Forces are expressed in newtons, with forces in pound-force shown between brackets.

Air cargo unit load devices qualified prior to publication of the first edition of this document were approved in accordance with the requirements of ISO 8097:2001. This document is intended as a TSO (Technical Standard Order) approval reference for all new models of unit load devices in the sizes and types it covers, in replacement of ISO 8097. For air cargo unit load devices, the size or type of which is not covered in this document, see the requirements of ISO 8097:2001, if their size or type is contained therein, or other equivalent criteria, if not.

NOTE ISO 8097 is based on USA National Aerospace Standard NAS 3610 revision 10:1990, Specification for Cargo Unit Load Devices.

Air cargo unit load devices — Performance requirements and test parameters

1 Scope

This document specifies the minimum requirements for airworthiness approval of air cargo pallets, nets and containers, generally designated as air cargo unit load devices (ULD).

This document is intended to provide a uniform technical reference for air cargo unit load devices approval. As a prerequisite, it is presupposed that the applicable general civil aviation requirements and the aircraft manufacturer's approved Weight and Balance Manual are followed.

This document defines the minimum performance requirements and test parameters for air cargo unit load devices requiring approval of airworthiness for installation in an approved aircraft cargo compartment and restraint system that complies with the cargo restraint and occupant protection requirements of CCAR 25, EASA CS-25 or 14 CFR Part 25, except for the 9,0 g forward ultimate inertia force of § 25.561 (b) (3) (ii).

This document applies to airworthiness approved air cargo unit load devices intended for carriage on board civil transport category airplanes type certificated under CCAR 25, EASA CS-25 or 14 CFR Part 25, or equivalent.

This document exclusively applies to unit load devices airworthiness approval and testing parameters. It does not apply to aircraft design or aircraft operating requirements, which are provided by the approved Weight and Balance Manual for each aircraft type.

Other aspects that do not directly pertain to air cargo unit load devices airworthiness approval and testing are not covered by this document, e.g.:

— ULD design specifications;

— ULD in service damage limits;

— ULD restraint malfunction limitations;

— ULD test methods;

— ULD load distribution models;

— ULD maximum allowable contours;

— ULD CG (centre for gravity) location control means;

— ULD pressure equalization methods;

— ULD utilization guidelines.

NOTE The requirements for cargo covers are not defined in this document, except insofar as net restraint is incorporated therein.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 7166, *Aircraft — Rail and stud configuration for passenger equipment and cargo restraint*