

# INTERNATIONAL STANDARD

**ISO**  
**9469**

First edition  
1991-12-15

---

---

## **Air cargo equipment — Unit load devices for transportation of horses**

*Équipement pour le fret aérien — Unités de charge pour le transport de  
chevaux*



Reference number  
ISO 9469:1991(E)

## 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.

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.

International Standard ISO 9469 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Sub-Committee SC 9, *Air cargo and ground equipment*.

Annex A of this International Standard is for information only.

STANDARDSISO.COM : Click to view the full PDF of ISO 9469:1991

© ISO 1991

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization  
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

## Introduction

The nature of horse transportation by air creates unique problems which must be considered during the container design if conflicts between the shipper and the airline are to be avoided. The stall may be owned by someone other than the airline operating the aircraft or by someone other than the person handling the shipping and loading of the animal. The stall often gets into an airline route system and remains at an airport away from the owner's repair facility until needed for a return movement.

STANDARDSISO.COM : Click to view the full PDF of ISO 9469:1991

This page intentionally left blank

STANDARDSISO.COM : Click to view the full PDF of ISO 9469:1997

# Air cargo equipment — Unit load devices for transportation of horses

## 1 Scope

This International Standard specifies the design and performance of unit load devices (ULD) for transportation of horses on suitably equipped aircraft. Each ULD may be designed to accommodate one or more horses.

It specifies minimum requirements for horse stalls to maintain a structurally safe operation and protect aircraft from corrosion created by waste spills.

It provides for two types of unit.

Type 1: Airworthiness Certified Structural Unit, complying with ISO 8097, appropriate to the base size.

Type 2: Non-certified unit, designed for use with certified pallet and net, or straps which envelop the horse stall.

### NOTES

1 In the absence of International Standards dealing with transportation of horses by air, consideration should be given to national or local regulations or codes of practice.

2 The air transportation industry, under the aegis of IATA, publishes packaging standards and handling procedures through their live animals regulations (see ref. [5]) which include requirements for horses.

3 IATA also defines a range of maximum contours for ULDs which should be taken into account. These are shown in the IATA ULD Technical Manual<sup>[6]</sup>.

4 The metric equivalents for dimensions have been rounded up or down to the nearest millimetre, except for critical dimensions. Masses have been rounded up to the nearest kilogram.

## 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 8097:1986, *Aircraft — Minimum airworthiness requirements and test conditions for certified air cargo unit load devices (Endorsement of NAS 3610)*.

## 3 General

**3.1** It is the responsibility of the carrier to ensure that the unit is in a condition fit for use prior to carriage.

**3.2** Consideration shall be given to the comfort and well-being of the horse, in accordance with veterinary practice and applicable national codes of practice.

**3.3** Allowance should be made for the wide range of size and mass of horses. In order to avoid unclear boundaries when using descriptive groupings (for example, ponies, horses, heavy draught-horses, etc.), they have been divided into three classes which include all but the extreme outsized animals. See table 1.

Table 1

Class (description)	Height to withers <sup>1)</sup> mm (in)	Length (breast to tail) mm (in)	Width across hips mm (in)	Mass kg
I (small)	up to 1 420 (56)	1 520 (60)	610 (24)	400
II (medium)	up to 1 650 (65)	1 700 (67)	750 (29,5)	580
III (large)	up to 1 875 (73,8)	2 180 (86)	840 (33)	1 080

NOTE — Table 1 is based on data obtained from the Warwickshire College of Agriculture (United Kingdom) and from *Fraser's Horse Book* [7].

1) Withers: ridge between shoulder bones.

## 4 Structure design

**4.1** The unit shall be constructed of materials which are usable in an airline environment and shall remain serviceable with the minimum of maintenance.

**4.2** The unit construction shall be strong and resilient. It shall be capable of resisting possible kicking and be free of fixing protrusions or other projections likely to cause injury. Reinforcing metal plates should be covered with protective material. Any catches used shall be simple and easy to operate. The mass of the unit shall be kept to a minimum.

**4.3** All internal sides of the container shall be padded from the top of the box to 750 mm (30 in) above the floor; a washable foam plastic cushion is recommended. The lower part of the sides shall be covered with coconut matting, approximately 50 mm (2 in) thick, to protect both animal and container against kicking; it shall be non-resonant so as not to encourage kicking. Consideration should be given to minimizing the noise within the stall.

**4.4** Securing points for halter ropes shall be provided.

**4.5** The unit shall include an enclosed area for the horse's head, extending at least 600 mm (24 in) forward of the main barrier which restricts the forward movement of the horse. The groom shall have access to the area enclosing the horse's head to feed, water and tend to the horse. The front end of the stall should be cut out and padded to accept the neck of the horse. Completely enclosed stalls shall be properly ventilated.

**4.6** The unit shall be designed to ensure that all surfaces that come into contact with the horse are not of a nature to cut, bruise or cause injury.

**4.7** The floor of the container shall provide grip for hooves and shall prevent leakage of droppings or urine. Any drainage outlets shall be provided with leak-proof plugs.

**4.8** The stall shall be designed so as to be cleaned as easily as possible. It shall be possible to use steam of up to 110 °C.

**4.9** If the stall is designed to accommodate more than one horse, it shall be equipped with one or more removable separation wall(s).

**4.10** Separation wall(s) shall be designed to support the weight of the horses leaning against them and to prevent the horses from touching each other.

**4.11** It should be possible to move the separating wall(s) to adjust the width of the compartments to the size of the horses.

**4.12** Vertical clearance between separation walls and the floor of the stall shall be 51 mm (2 in) max.

**4.13** The rear wall(s) or doors of the stall shall be easily removed or opened for loading and unloading the horse(s).

**4.14** The basic dimensions of type 1 units shall comply with ISO 8097.

**4.15** Type 2 units shall be compatible with standard pallets complying with ISO 8097.

**4.16** Type 2 units shall incorporate means to facilitate the positioning of the horsebox on the pallet.

**4.17** Type 2 stalls should be equipped with tie-down facilities on the outside of the side-walls of the stall to prevent movement of the stall in relation to the pallet.

**4.18** The pallet nets used with type 2 units shall be modified to incorporate means of access to the area enclosing the horse's head.

**4.19** Type 2 stalls shall incorporate a structural framework to prevent the net or straps touching the horse.

**4.20** Type 2 units shall not necessitate the use of any special equipment other than approved tie-down straps, pallets and nets.

**4.21** Units designed to be dismantled for return flights shall be constructed so that the component parts can withstand without damage the full pallet maximum gross weight being placed upon them.

## 5 Optional features

**5.1** The stall should comprise one or two integrated ramps for loading and unloading the horse. The ramp shall be designed so that it is possible to load and unload the horse when the unit is standing on a dolly or pallet stand 508 mm (20 in) high. The walk area of the ramp shall be covered with a skid-proof rubber lining and cross bars.

**5.2** The stall may be equipped with fork-lift pockets.

## 6 Aircraft corrosion protection

**6.1** The stall shall be at least 1 524 mm (60 in) high at the rear to ensure liquids are deflected into the stall. If aircraft design necessitates a height lower than 1 524 mm (60 in), a deflector of lower height is acceptable.

**6.2** The floor of the stall shall include a one-piece leak-proof pan with no joints. If joints are required, the seal shall be permanent (for example welded). The pan shall be at least 51 mm (2 in) deep and shall be resistant to cracking.

**6.3** The rear door or doors shall be splash-proof. The bottom of the door shall overlap inside the floor pan to ensure that all liquids are diverted into the pan.

**6.4** If the unit is designed to be dismantled, then it shall be able to retain liquid after it has been repeatedly assembled and dismantled.

## 7 Holder for destination placard

One or more holders shall be fitted to accept a destination placard of size A5 [148 mm × 210 mm (5 7/8 in × 8 1/4 in)].

## 8 Racking test

**8.1** The complete assembly shall be secured at the edge of the pallet to prevent sideways and vertical movement.

**8.2** Forces acting sideways, representing the mass of a horse, shall be applied in each of the horse locations at a height and distribution appropriate to the size of the animal for which the unit is designed.

**8.3** The maximum displacement at any point on the periphery of the unit shall not exceed 38 mm (1.5 in).

**8.4** Upon completion of the test, there shall be no permanent deformation or abnormality which may render the unit unsuitable for use. The dimensional requirements affecting handling, securing and interchange shall be satisfied.

## 9 Maintenance inspection

Serviceability limits shall be defined by the manufacturer for both types of unit.

## 10 Certification and approval

**10.1** Certification or approval for type 1 units shall be made by the airworthiness authority, according to the requirements of ISO 8097 for the applicable restraint systems with which it will be used.

**10.2** The owner of the stall shall have the following data available for inspection by the engineering departments of the airlines agreeing to transport the unit:

- a) a copy of the airworthiness approval certificate(s), for type 1 units;
- b) a copy of restraint diagrams and placards;
- c) a copy of the service and maintenance schedule and repair manual.

## 11 Markings

**11.1** Type 2 units shall have a legible placard on one side showing the tie-down points to a cargo pallet for all possible configurations; i.e. if one, two or three stalls attached to a single pallet are to be used, then a restraint diagram for each configuration is required.

**11.2** The following additional manufacturer's markings shall be permanently marked on the outside of the unit in a convenient position near the lower right-hand corner of a panel. The characters shall be not less than 10 mm (0,4 in) high.

Manufacturer: .....  
(Name) (Country)

Part number .....

**11.3** The tare weight shall be clearly shown in characters 25,4 mm (1 in) high on the outside of the unit in a prominent position.

STANDARDSISO.COM : Click to view the full PDF of ISO 9469:1991

## Annex A (informative)

### Bibliography

- [1] ISO 4115:1987, *Air cargo equipment — Air/land pallet nets*.
- [2] ISO 4117:—<sup>1)</sup>, *Air and air/land cargo pallets — Specification and testing*.
- [3] ISO 4170:1987, *Air cargo equipment — Interline pallet nets*.
- [4] ISO 4171:1980, *Interline air cargo pallets*.
- [5] IATA, *Live Animals Regulations* (published yearly).
- [6] IATA, *ULD Technical Manual* (published yearly).
- [7] MONOLSEN, F. and FRASER, A. *Fraser's Horse Book*. London: Pitman, 1979.

STANDARDSISO.COM : Click to view the full PDF of ISO 9469:1991

---

1) To be published. (Revision of ISO 4117:1980)