

Submitted for recognition as an American National Standard

ULD FOR AIRCRAFT TRANSPORTATION OF HORSES

1. SCOPE:

This SAE Aerospace Recommended Practice (ARP) defines minimum requirements for an aircraft transport ULD to transport horses properly and safely by air, to protect the horse(s) from injuries and to protect the aircraft from corrosion created by waste spill. The ULD is designed to accommodate one horse or several.

There are two types of ULDs for aircraft transportation of horses:

- a. Type 1: The ULD is an airworthiness certified structural container, satisfying the requirements of NAS 3610 for the appropriate base size.
- b. Type 2: The ULD consists of a self-contained stall which is positioned on a standard aircraft pallet and restrained to the pallet by means of a cargo pallet net or by straps.

2. PURPOSE:

This ARP provides recommendations for the design of unit load devices for transportation of horses in aircraft equipped with a NAS 3610 restraint system.

3. REFERENCES:

- 3.1 NAS 3610, Minimum Airworthiness Requirements and Test Conditions for Air Cargo Unit Load Devices. Aerospace Industries Association of America, Inc., 1725 De Sales Street N.W., Washington, DC 20046.
- 3.2 SAE AS1491, Interline Air Cargo Pallets
- 3.3 SAE AS1492, Interline Air Cargo Pallet Nets

SAE Technical Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

- 3.4 ISO 4171, Interline Air Cargo Pallets, International Standards Organization, 1 Rue de Varombé, Case Postale 56, CH-1211, Genève, Switzerland
- 3.5 ISO 4170, Interline Air Cargo Pallet Nets
- 3.6 ISO DP 9469, ULD for Aircraft Transportation of Horses
- 3.7 IATA 50/1, Pallet for NAS 3610 Class II Restraint Systems, International Air Transport Association, 2000 Peel Street, Montreal, Quebec, Canada H3R 2R4
- 3.8 IATA 50/9, 20' Pallet for NAS 3610 Class II Restraint System
- 3.9 IATA 50/2, Aircraft Pallet Net
- 3.10 IATA 50/0, Condition Requirements for Interlining of ULD's.
- 3.11 IATA Live Animals Regulations.
- 3.12 IATA 40/0, Marking of Unit Load Devices
4. DESIGN:
 - 4.1 The ULD for aircraft transportation of horses shall be designed for following base/pallet dimensions:
 - a. 88 x 125 in (2235 x 3175 mm)
 - b. 96 x 125 in (2438 x 3175 mm)
 - c. 88 x 108 in (2235 x 2743 mm)
 - d. 96 x 238.5 in (2438 x 6058 mm)
 - 4.2 The base or pallet of the unit shall be designed according to SAE, ISO, and IATA standards per specifications listed in 3.2, 3.4, 3.7, and 3.8.
 - 4.3 Type 2 stalls shall be restrained to the pallet by means of a cargo pallet net or by straps.
 - 4.4 The cargo pallet net shall be in accordance with SAE, IATA, or ISO standards as per specifications listed in 3.3, 3.5, or 3.9.
 - 4.5 Knock-down units must not sacrifice durability or structural integrity for the knock-down feature.
 - 4.6 Considerations shall be given in the design to minimize the noise within the unit.
 - 4.7 Cleaning of the stall shall be as easy as possible and shall permit the use of water steam up to 110°C (230°F).
 - 4.8 The weight of the stall shall be kept to a minimum.

4.9 The following load-factors should be considered for design of Type 2 stalls:

- a. 1.5 g forward
- b. 1.5 g side
- c. 5.0 g down
- d. 3.0 g up

5. CONSTRUCTION:

- 5.1 The stall shall be constructed of materials which require only a minimum of maintenance to keep it in airworthy and functional condition.
- 5.2 All materials used shall be resistant to corrosion and deterioration.
- 5.3 The stall shall be constructed to safely contain an unruly horse within the confines of the stall under all conditions.
- 5.4 The construction of the stall shall provide a maximum of space for the horse(s) within the given contour.
- 5.5 Due to the different breeds of horses, the following weights and sizes in Table 1 may be observed for design of special stalls:

TABLE 1

Group	Height of Horse (between shoulder blades)	Weight	Length (Breast to tail)	Width (across hips)
Ponies	up to 1420 mm (56 in)	400 kg (882 lb)	1520 mm (60 in)	610 mm (24 in)
Horses	up to 1650 mm (65 in)	580 kg (1278 lb)	1700 mm (67 in)	750 mm (29.5 in)
Draft Horses	up to 1875 mm (73.8 in)	1080 kg (2380 lb)	2180 mm (86 in)	850 mm (33 in)

- 5.6 All surfaces or edges which may come into contact with the horse shall be designed to prevent injuries to the horse. Specific protection shall be provided for all sharp edges and those nonmetallic edges that can splinter.
- 5.7 The floor of the stall shall be built of or coated with skid-proof and noise absorbing material.
- 5.8 Completely closed stalls shall provide sufficient ventilation area and head clearance for the horse(s).
- 5.9 In front of the horse-body a barrier (wall or bar) shall be provided to restrict the forward movement of the horse. This front limitation shall be up to a maximum height of 55 in (1400 mm). There should be a clearance for the head of the horse of a minimum of 24 in (600 mm) in front of the barrier.

- 5.10 It shall be possible to attach a nose-bag in the head area of the horse.
- 5.11 Attachment points to fasten the horse inside the stall shall be provided in the head area.
- 5.12 If the stall is designed to accommodate more than one horse, it shall be equipped with one or more separation wall(s).
- 5.12.1 Separation wall(s) shall be designed to support the horses sideways and to prevent them from contacting and seeing each other.
- 5.12.2 It should be possible to place the separation wall(s) at various positions to align the width of the compartments with the width of the horses.
- 5.12.3 Vertical clearance between separation walls and the floor of the stall shall be a maximum of 2 in (51 mm).
- 5.13 In the "kick area" of the horse, the walls/ramp should be coated/protected with an impact absorbing material to minimize deformations and noise.
- 5.14 All internal sides of the stall should be padded 30 in (762 mm) from the floor to the top of the box; material used shall be designed for repeated cleaning.
- 5.15 The stall shall be designed to allow access to the head(s) of the horse(s) for feeding and watering.
- 5.16 Pallet net or straps used to secure the stall to the aircraft pallet shall not come in contact with the horse(s).
- 5.17 The stall rear wall(s) shall be easily removeable for loading and unloading the horse(s).
6. AIRCRAFT CORROSION PROTECTION:
- 6.1 The stall shall be of 60 in (1520 mm) height minimum at the rear to ensure liquids are deflected into the stall. If aircraft design dictates a height lower than 60 in (1520 mm), a deflector of some type shall be provided.
- 6.2 The stall shall have a one piece (leak proof) pan in the floor with no joints. If joints are required, the seal shall be permanent such as welded. The pan shall be a minimum of 4 in (102 mm) deep and shall be durable to resist cracking.
- 6.3 The manufacturer shall conduct a leak test on each unit by filling the pan full of water. Test reports shall be made and kept on file.
- 6.4 The rear door (ramp) shall be water tight with the door overlapping inside the floor pan to ensure all liquids are diverted into the pan.
- 6.5 Knock down designs must demonstrate ability to retain corrosion protection features after the unit has been repeatedly knocked down and reassembled.