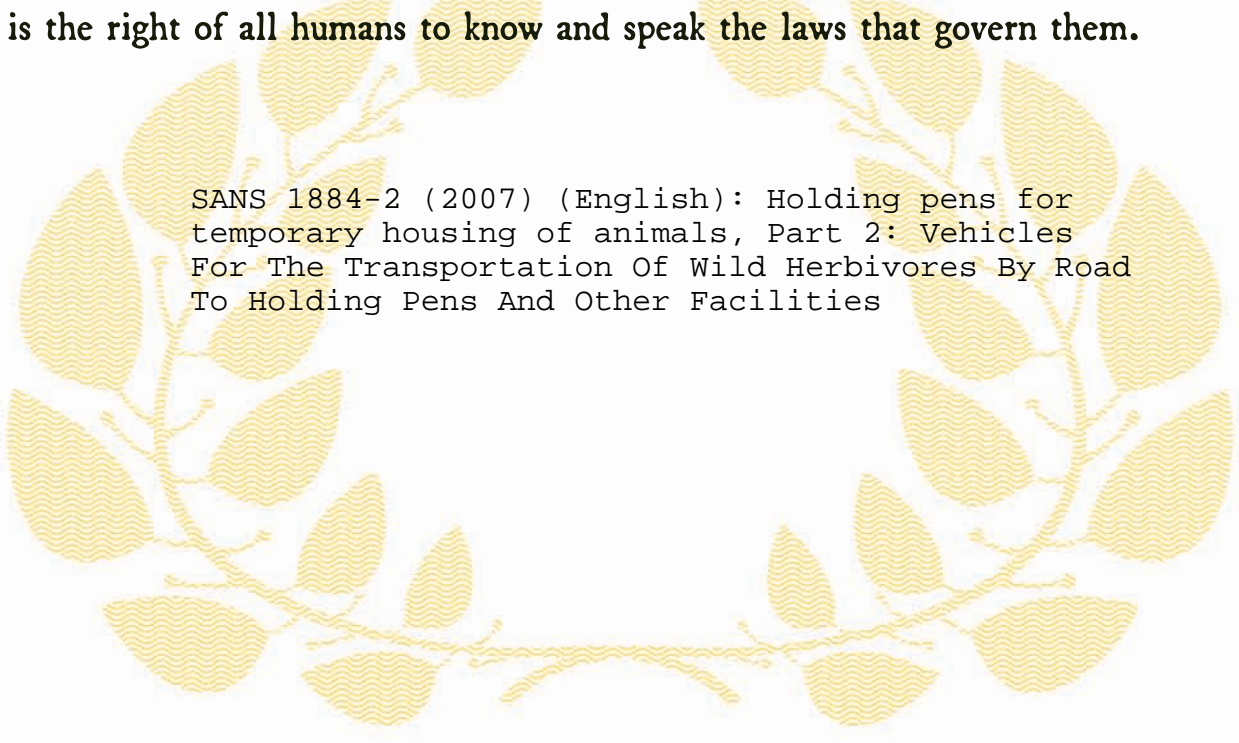




Republic of South Africa

EDICT OF GOVERNMENT

In order to promote public education and public safety, equal justice for all, a better informed citizenry, the rule of law, world trade and world peace, this legal document is hereby made available on a noncommercial basis, as it is the right of all humans to know and speak the laws that govern them.



SANS 1884-2 (2007) (English): Holding pens for temporary housing of animals, Part 2: Vehicles For The Transportation Of Wild Herbivores By Road To Holding Pens And Other Facilities



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SOUTH AFRICAN NATIONAL STANDARD

Holding pens for temporary housing of animals

Part 2: Vehicles for the transportation of wild herbivores by road to holding pens and other facilities

SANS 1884-2:2007
Edition 1

Table of changes

Change No.	Date	Scope

Foreword

This South African standard was approved by National Committee StanSA SC 5140.38A, *Steering committee for nature conservation – Translocation of wildlife*, in accordance with procedures of Standards South Africa, in compliance with annex 3 of the WTO/TBT agreement.

This part of SANS 1884 was published in August 2007.

A reference is made in 4.1.1 to "the national regulations and statutory requirements for the protection of animals". In South Africa this means the Animal Protection Act, 1962 (Act No. 71 of 1962, as amended).

A reference is made in 4.1.1, 5.1.1, 5.1.2.2, 5.3.1.1 to 5.3.1.3, 5.4 and 6.1.3.2 to "national road ordinances". In South Africa this means the Road Traffic Act, 1996 (Act No. 93 of 1996, as amended).

A reference is made in 6.1.3.2 to "the maximum height, width and length of mass crates". In South Africa these dimensions are currently: height 4,3 m, width 2,6 m, and the maximum overall length is 22 m if two joined trailers are used (including the horse), or 18,5 m for a single trailer and horse.

Annexes A and B form an integral part of this standard. Annexes C and D are for information only.

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Edition 1

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Holding pens for temporary housing of animals

Part 2:

Vehicles for the transportation of wild herbivores by road to holding pens and other facilities

1 Scope

1.1 This standard specifies the requirements for vehicles used for road transportation of wild herbivores.

1.2 This standard covers vehicles, and vehicle trailers, fitted with fixed or detachable mass crates, or individual animal crates which are specifically designed for the transportation of wild herbivores.

1.3 This standard covers specialized vehicles.

1.4 It does not cover the transportation of domestic livestock.

2 Normative references

The following referenced documents are indispensable for the application of this standard. All normative documents are subject to revision and, since any reference to a normative document is deemed to be a reference to the latest edition of that document, parties to agreements based on this document are encouraged to take steps to ensure the use of the most recent editions of the normative documents indicated below. Information on currently valid national and international standards can be obtained from Standards South Africa.

2.1 Standards

SANS 1884-1, *Holding pens for temporary housing of animals – Part 1: Holding pens for wild herbivores at auctions and in quarantine facilities.*

SANS 10331 (SABS 0331), *Translocation of certain species of wild herbivore.*

SANS 10391, *Welfare of wild animals transported by sea.*

2.2 Other publications

International Air Transport Association (IATA), Live Animal Regulations.

3 Definitions

For the purposes of this document, the definitions given in SANS 1884-1, SANS 10331 and the following apply.

3.1

compartment

section or subdivision of a mass crate, achieved by the use of an internal partition which can be either fixed or moveable

3.2

competent

qualified by training or suitable experience

3.3

crate

container, which can be either fixed or detachable from the vehicle, and which is purpose-designed and constructed for the temporary confinement of an individual wild animal for the purpose of transportation

3.4

large elephants

elephants which measure greater than 2,5 m at shoulder height (measured at highest point of the shoulder)

3.5

mass crate

container, which can be either fixed or detachable from the vehicle, and which is purpose-designed and constructed for the temporary confinement of several wild animals for the purpose of transportation

3.6

pole syringe

syringe fitted to a pole extension that is used to inject animals while they are housed in the transport vehicle

3.7

pushboard

device similar to a shield, generally made of wood or metal, that is used to physically manoeuvre an animal into a required position

3.8

road

roadway, road verge, parking area, resting place, watering place, fuelling place, or toll gate to which the public has a right of access

NOTE The road can be a track, gravel surface or a pavement, and includes the entire road reserve whether maintained by a provincial authority, a private person or a private company.

3.9

small elephants

elephants which measure less than 2,5 m at shoulder height (measured at the highest point of the shoulder)

3.10**wild animal**

any animal that belongs to a species which is not a recognized domestic species, irrespective of the tameness or degree of apparent domestication, of a particular animal

4 Usage and types of transport vehicles and containers**4.1 General**

4.1.1 Vehicles and containers constructed in accordance with this standard shall comply with the national regulations and statutory requirements for the protection of animals (see foreword), and with national road ordinances (see foreword).

4.1.2 The interpretation of this standard shall be such that compliance with this standard is intended to ensure that no animal is transported:

- a) under such conditions, or in such a manner or position, as to cause that animal unnecessary or avoidable suffering, or
- b) in conditions which do not provide adequate shelter or ventilation, or in which such animal is excessively exposed to heat, cold, sun, rain, dust exhaust fumes, noise, etc.

4.1.3 Wild animals shall be transported only in containers specifically designed and prepared for that purpose, with only one exception as listed in 4.1.4.

4.1.4 Wild animals which have been anaesthetized, or chemically immobilized, may be transported on, or in, a conventional vehicle, provided that the procedure shall be supervised by a veterinarian who is competent in this type of procedure.

4.1.5 Unless effectively tranquilized, adult male animals shall always be individually segregated during transportation. (See also annex A.)

4.1.6 Owner and drivers of transport vehicles shall also comply with the requirements of annex B.

4.2 Usage of transport vehicles

4.2.1 Transport vehicles, which comply with this standard, shall be used to move animals by road between any of the following locations:

- a) the point of capture;
- b) temporary holding pens;
- c) game auction pens;
- d) quarantine facilities; or
- e) a release site (from where animals are released into a natural environment), or final destination.

4.2.2 Further requirements for general usage requirements during transportation are given in annex A.

4.3 Types of transport vehicles

4.3.1 The types of vehicles and trailers used may range from light vehicles and trailers to large articulated vehicles, provided that they are suited to their purpose, and comply with the requirements of this standard.

4.3.2 Cattle or sheep trucks shall not be used, unless they have been appropriately modified to comply with the requirements of this standard.

4.3.3 The use of multi-deck vehicles is prohibited.

4.4 Types of transport containers

Containers and compartments used to transport animals may be of the following types:

- a) **Fixed containers** (either mass crates or individual crates), built onto the chassis or flatbed of a vehicle or trailer. The container may be further subdivided into compartments for the conveyance of single animals (which will usually be adult males of an aggressive nature), or small groups of more passive animals, or groups of different species, within individual compartments.
- b) **Detachable containers**, or mass crates, which might be carried on a variety of vehicle types (similar to the practice employed with shipping containers). The detachable containers may also be divided into internal compartments.
- c) **Individual crates**, into which a single animal each will be placed. The crates are then loaded onto a suitable vehicle for transportation.

4.5 Attachment of containers to the vehicle

Detachable containers shall be securely attached to the transport vehicle, by the use of purpose-designed clamps, webbing, straps, ropes or other suitable means.

5 General requirements

5.1 Fixed and detachable mass crates and containers

5.1.1 General

5.1.1.1 Vehicles and containers shall comply in all respects with the requirements of national road ordinances (see foreword).

5.1.1.2 If it is intended to transport the animals further by sea or by air in the same container, then the containers shall comply with the requirements of SANS 10391 (for sea transport), or of the Live Animal Regulations of the International Air Transport Association (IATA), as applicable.

5.1.2 Size of mass crate or container

5.1.2.1 Height

The height of the roof of the container shall be high enough to allow the largest animal for which the container is designed to stand naturally (with protective pipes attached to the horns, if applicable).

5.1.2.2 Width

The minimum width of the container shall be such that the largest animal for which the container is designed shall be able to turn around in it without becoming stuck. The maximum width shall comply with the requirements of national road ordinances (see foreword).

5.1.3 Construction materials and methods**5.1.3.1 Strength**

Containers shall be constructed from durable materials, such as sheet metal, wood or fibre-reinforced polymers, and the construction shall be sufficiently robust to safely confine the wild herbivores, and (in particular) to withstand kicks and horn blows from powerful and aggressive species such as zebra, eland and buffalo.

5.1.3.2 Use of temporary materials

No part of a container shall be manufactured, or modified, by the use of temporary material such as wire mesh, netting, canvas, shade cloth, wooden or metal poles, or galvanized sheeting (for example, IBR sheet).

5.1.3.3 Protection from the elements

5.1.3.3.1 The materials used shall be able to provide protection for the animals against wind and rain.

5.1.3.3.2 Wherever possible, the materials used shall also be capable of providing insulation against heat and cold.

5.1.3.4 Vibration effects

Walls, doors, compartments, roofing and hatch covers shall be so constructed, and of such materials as to eliminate, or at least minimize, vibration noise or rattling while driving on rough and corrugated gravel roads.

5.1.3.5 Controlled use of wire

5.1.3.5.1 Wire shall not be used to secure any part of a container, crate, door, compartment, loading ramp, sorting crush, or any other piece of equipment, in such a manner that the wire might cause injury to an animal during loading, transportation or off-loading.

5.1.3.5.2 Where wire is used, the following restrictions shall apply:

- a) sharp or exposed ends shall not be able to come into contact with the animals;
- b) the wire shall not form loops that can trap the animal's legs or horns; and
- c) all loose wires and off-cuts shall be removed from the container.

5.1.4 Floors**5.1.4.1 Floor area**

5.1.4.1.1 The floor area shall be suited to the maximum number of individual animals of a particular age or height class, that the vehicle is designed to transport.

5.1.4.1.2 The floor area shall be such that each animal is able to lie down comfortably. A general guide to floor area allowances for a range of animal species is given in table 1. (See also 5.1.4.1.3.)

NOTE There should be enough space for the animals to move around and avoid dominant individuals; however, too much space might result in the animals being thrown off balance, and falling due to severe braking and sharp turns. A suitable compromise should be reached.

Table 1 — Recommended minimum floor areas for various animal species

1	2	3	4	5
Species	Height at shoulder (typical) cm	Horn length (typical) cm	Mass (typical) kg	Floor area per animal m ² , min.
Blesbok and Bontebok	102	45	60	0,7
Buffalo	101 to 152	116	273 to 818	2,0
Bushbuck	69 to 92	30	45 to 77	0,7
Bushpig	66 to 79	10	55 to 77	0,5
Duiker (blue)	35	5	5	0,5
Duiker (grey)	66	15	18	0,5
Duiker (red)	46 to 48	8	16	0,5
Eland	178	90	682	2,0
Gemsbok	125	102	205	1,5
Hartebeest (red)	122 to 127	60	160	1,4
Hippopotamus	153	n.a.	2000	Individual crate
Impala	86 to 96	60	59 to 72	0,5
Klipspringer	51 to 56	11	10 to 18	0,5
Kudu	135	140	296	1,5
Nyala	106	70	111 to 127	1,0
Oribi	56 to 66	15	18	0,5
Reedbuck (common)	89 to 94	36	68	Individual crate
Reedbuck (mountain)	71 to 78	17	27	0,5
Rhinoceros (black)	160	61	1150	Individual crate
Rhinoceros (white)	180	71	2000 to 3000	Individual crate
Roan antelope	145	69	273	1,5
Sable antelope	137	107	227	1,5
Suni	31 to 35	5,5	5	0,5
Springbok	76	36	32 to 36	0,5
Steenbok	56	11,5	13	0,5
Tsessebe	125	35	150	1,4
Vaal rhebok	76	20	23	0,7
Warthog	76	33	114	0,7
Waterbuck	122 to 134	71	227	1,5
Wildebeest (black)	117	58	164	1,4
Wildebeest (blue)	122 to 127	75	250	1,5
Zebra	125	n.a.	300	1,5

NOTE Most of the values are taken from the Live Animal Regulations of the IATA, 28th Edition.

5.1.4.2 Strength

Floors shall be strong enough to carry the mass of the animals. Due consideration shall also be given in the design to the corrosive nature of urine and manure, and its effect on the load-bearing properties of the floor.

5.1.4.3 Drainage

Adequate drainage shall be provided to allow for the escape of urine and water during routine usage and cleaning.

NOTE A low-level ventilation slot (see 5.1.9.3.1.4) may also be used to assist with drainage.

5.1.4.4 Floor surfaces

5.1.4.4.1 All floor surfaces (including loading ramps) shall be of a non-slip nature. This can be achieved by a number of means, including the use of:

- a) a grid system of wood or metal strips (battens) attached to the floor (see 5.1.4.4.2);
- b) woven rubber matting (see 5.1.4.5.1);
- c) straw (which can be very slippery, depending on the surface on which it is placed) or other suitable bedding material (see also 5.1.4.5.4); or
- d) a combination of (a), (b) and (c).

5.1.4.4.2 The floor shall be free of any protrusions that could cause injury to the animals. Where battens or welded metal grids are used as non-slip devices, these shall not be able to become detached or to have broken welds or become distorted to such an extent that animals might be injured, or have their hooves or legs trapped.

5.1.4.4.3 The floor, including the lower sections of the walls and doors, shall have no unprotected openings or holes through which the animals might put their hooves, unless the openings are of such dimensions that the animals cannot get their legs caught.

5.1.4.5 Floor coverings

5.1.4.5.1 Where woven rubber mats are used as floor covering, these shall be firmly attached to the floor in such a way that they cannot be rolled up or pushed aside by the animals.

NOTE 1 Considerable lateral forces are exerted on the mats by the animals during loading, transportation and off-loading operations.

NOTE 2 The use of flat-bar metal strips (typically 30 mm wide × 5 mm thick) around the edges of the mats, and at intervals of approximately 1 m between the strips, bolted through the mats to the floor, have been found to be effective.

5.1.4.5.2 Where only bolts are used to secure the mats (i.e. no metal strips), these shall be fitted with adequately-sized washers to prevent the bolt heads from pulling through the mats.

5.1.4.5.3 Loose mats shall not be used.

5.1.4.5.4 Wood shavings may be used to cover the floor, but sawdust is prohibited.

5.1.4.5.5 Dampened river sand may be used where appropriate, for example with a grid floor, but dry soil is not permitted due to the dust factor. (See also 6.4.1.6.)

5.1.5 Sides

5.1.5.1 Robustness of construction

The sides of crates and containers shall be of rigid and robust construction.

5.1.5.2 Avoidance of protrusions

5.1.5.2.1 There shall be no protrusions, sharp edges, brackets, hinges, handles or locks on the inside of the container that could cause injury, bruising or lesions to the animals.

5.1.5.2.2 Where bolts are used to secure the cladding inside the container, the bolt heads shall be domed or recessed, such that no sharp edges are presented

5.1.5.2.3 No screw threads shall protrude beyond the nut thickness inside the container. Where possible, the head of the bolt should be on the inside of the container.

5.1.5.3 Openings

There shall be no holes or openings in the sides which are large enough to allow animals to put their heads through, or allow their horns to become jammed.

5.1.5.4 External colour

In order to reflect heat, the exterior of the vehicle shall be of a light colour.

5.1.6 Compartments

5.1.6.1 General

Compartments within a container shall comply to the same requirements as for the doors and the sides of a container (see 5.1.5 and 5.1.7).

5.1.6.2 Moveable partitions

When the container is used as a mass crate, the compartment partitions shall either be able to be removed, or be able to be securely locked back against the walls. In the latter configuration, the compartment partitions, hinges, runners and locks shall not present any protrusions that could cause injury to the animals.

5.1.7 Doors

5.1.7.1 Types of doors

Doors may be of a sliding or a hinged design. Doors for loading or off-loading by means of a ramp equipped with side walls shall be of the sliding type, while doors for loading or off-loading without such a ramp may be of either type.

5.1.7.2 Size of doors

5.1.7.2.1 Door openings shall be large enough to allow the unrestricted entrance and exit of the animals, with a recommended minimum width of 750 mm.

5.1.7.2.2 Door openings shall be the same width, or wider, than the width of the loading ramp.

5.1.7.2.3 Provisions shall be made so that all openings which might occur (during loading or off-loading) between the sides of the ramp and the edges of the door opening, can be closed off, either by the sliding door itself, or by other means.

5.1.7.2.4 All gaps which might exist between the top of the ramp and the vehicle floor shall be closed off by suitable means, such as a bridge plate, foot plate, or a gumpole, in order to prevent animals from trapping their feet in, or falling through, the gap. (See also 5.1.7.8.)

5.1.7.3 Positioning of doors

Doors should preferably be positioned adjacent to the corners of the crates or compartments, to facilitate an unrestricted movement of animals through them (i.e. to produce a funnelling effect).

5.1.7.4 Locks

5.1.7.4.1 All doors, external and internal, shall be secured by two locking devices, i.e. a primary and a secondary (back-up) locking device, which may be of the same or of different types.

5.1.7.4.2 Door-locking mechanisms shall be secure and designed in such a way that they cannot be opened by wind or road vibration while the vehicle is in motion.

NOTE Additional locking pins are strongly recommended.

5.1.7.4.3 The use of wire as a primary door locking device is prohibited.

5.1.7.5 Prevention of rattles and noise

5.1.7.5.1 Doors shall close firmly and not cause rattles while on the road. An anchor bolt device suitable for clamping the door while the vehicle is in motion is shown in figure 1.

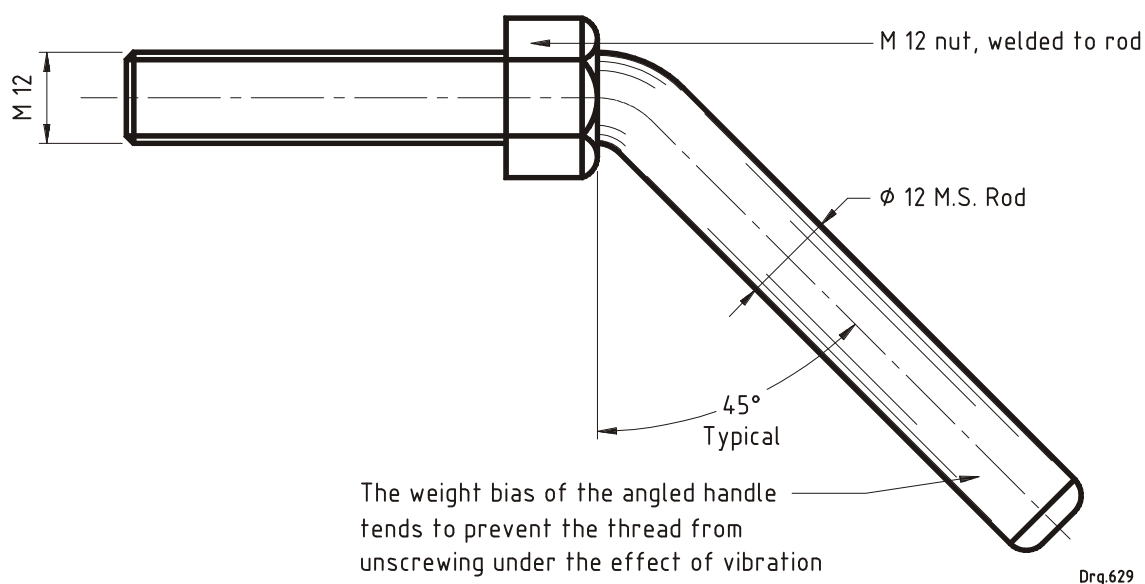


Figure 1 — Typical anchor bolt

5.1.7.5.2 Door-locking mechanisms and similar devices, shall be able to be opened without the use of hammers, crowbars or any other means that could cause excessive noise.

5.1.7.6 Ease of operation and movement

Doors shall be designed in such a way that they will open easily and quietly, and cannot become jammed by floor coverings, soil or dung, or will not require the use of excessive force or hammering in order to be opened.

5.1.7.7 Protrusions

Doors, and open doorways, shall be free of any protrusions or rough edges, especially on the sides, hinges, locks, runners or bolts.

5.1.7.8 Closing of gaps

5.1.7.8.1 Adequate provision shall be made to effectively close any gaps, holes or openings between doors and the loading or off-loading ramp (see also 5.1.7.2.3 and 5.1.7.2.4).

5.1.7.8.2 Extra care shall be taken with the closure of gaps, holes or openings in the floor, in order to prevent animals from stepping into the gap and sustaining an injury.

5.1.7.8.3 Gaps, holes or openings between the walls of the loading ramp and the door jambs shall not be large enough for animals to attempt to push through them.

5.1.8 Roof

5.1.8.1 Access (or inspection) hatches

5.1.8.1.1 The roof of all mass crates or containers shall be provided with openings or hatches for the purpose of providing ventilation, observation and easy access from above.

5.1.8.1.2 If the crate has only one door, then the roof access hatch shall be large enough to accommodate a person equipped with a push-board.

5.1.8.1.3 Hatch covers may be of the hinged or sliding type.

5.1.8.1.4 Hatch covers shall be able to be secured in both the open and closed positions to prevent vibration, noise and inadvertent opening or closing.

5.1.8.1.5 Hinged hatch covers shall hinge open to the rear (relative to the direction of vehicle motion) or to the sides of the vehicle only, and not to the front of the vehicle.

5.1.8.2 Roof construction

5.1.8.2.1 Roofs may be of fully-closed (other than for access hatches (see 5.1.8.1)), or of slatted construction (see also 5.1.8.3).

5.1.8.2.2 Roofs shall be of robust and rigid construction.

NOTE It is not uncommon to have several people standing on a roof at one time.

5.1.8.3 Protection from the elements

5.1.8.3.1 If the roof is designed with slats to facilitate ventilation, an additional provision shall be made to adequately cover the openings (for example, by the use of hinged or sliding flaps) in the event of rain or wind-chill temperatures below 12 °C.

5.1.8.3.2 Except in the case of 5.1.8.3.3, tarpaulins shall only be used for protection when vehicles are stationary, since they cause undesirable flapping when the vehicle is in motion.

5.1.8.3.3 In conditions of extreme cold, tarpaulins may be used to cover vehicles in motion, where the extra protection against cold provided by the tarpaulin would outweigh the detrimental effect of flapping. In this case the tarpaulin shall be secured as far as possible against flapping.

5.1.8.4 Roof colour

The exterior of roofs shall be of a light colour, preferably white or cream, in order to reflect heat.

5.1.9 Ventilation

5.1.9.1 General

Adequate ventilation of compartments is essential for respiration, cooling, thermoregulation and the removal of vapours and fumes. However, many animals are susceptible to pneumonia and a balance shall be found between the provision of good air circulation and protection from the elements.

NOTE See annex C for further aspects to be considered when designing or using ventilation facilities in transport vehicles.

5.1.9.2 Aperture shape and depth

5.1.9.2.1 Aperture shape

For ventilation purposes, slots or elongated openings are preferable, as opposed to round holes.

5.1.9.2.2 Aperture depth

Ventilation slots shall not be so deep as to allow an animal's horns to become trapped.

NOTE A depth of 20 mm has been found to be suitable.

5.1.9.3 Positioning of ventilation slots

5.1.9.3.1 Low-level slots

5.1.9.3.1.1 Except as described in 5.1.9.3.1.4, the lowest ventilation slot shall be positioned approximately 200 mm above floor level.

5.1.9.3.1.2 An alternative design (instead of a continuous slot) which has been found to be effective, is to provide a number of specially-constructed vent plates. These vent plates are generally constructed from steel plate, and are welded into the sides of the container at a low level. The plates are usually 700 mm long × 500 mm deep × 4 mm thick, and incorporate a series of elongated apertures, each approximately 35 mm long × 10 mm deep, which are punched out of the plate.

NOTE Vent plates constructed in this manner can also double as observation facilities (see 5.1.10).

5.1.9.3.1.3 Where vent plates such as these described in 5.1.9.3.1.2 are used, they shall be able to be closed off by hatch covers.

5.1.9.3.1.4 Irrespective of which method of low-level ventilation is used, an additional, continuous (with intermediate supports) slot shall be provided at floor level to allow for drainage and additional ventilation. A typical arrangement is shown in figure 2.

5.1.9.3.1.5 In the configuration shown in figure 2, the gap between the mats and the wall shall be sufficiently small so that animals cannot trap their hooves in it.

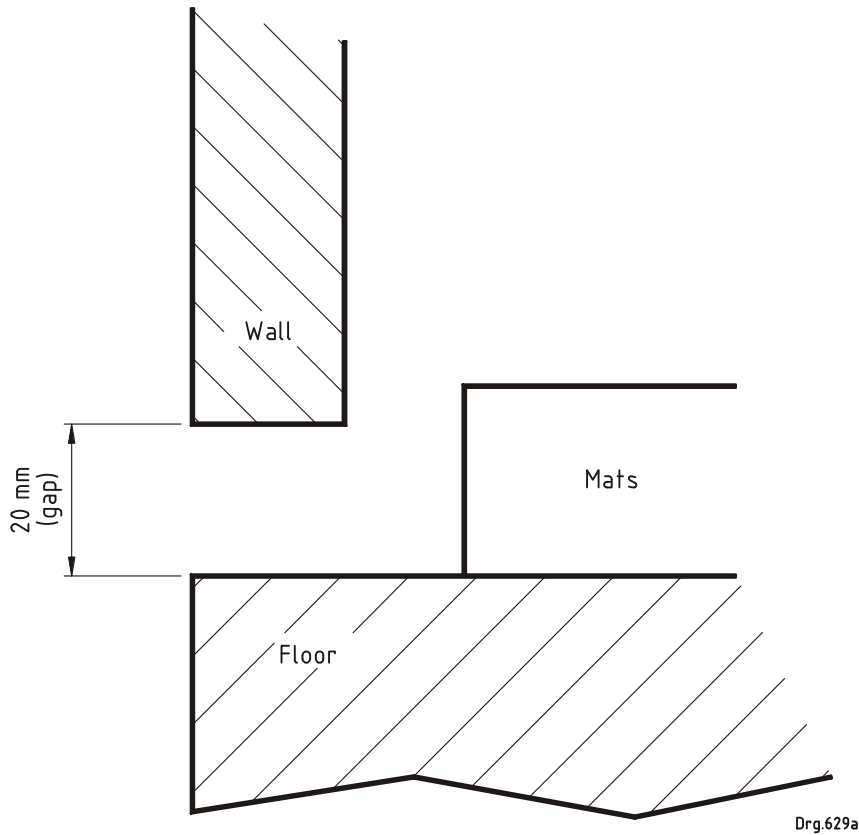


Figure 2 — Typical drainage and ventilation slot

5.1.9.3.2 High-level slots

5.1.9.3.1.1 A number of ventilation slots shall be provided in the top area of the side wall, within a depth of 500 mm from the roof.

5.1.9.3.2.2 Slots may be open, but a louvred construction is preferred.

NOTE It is generally considered desirable that animals should not be able to see out of the vehicle, and that they are more calm if transported in a semi-dark environment.

5.1.9.3.2.3 A typical high-level vent louvre construction is shown in figure 3.

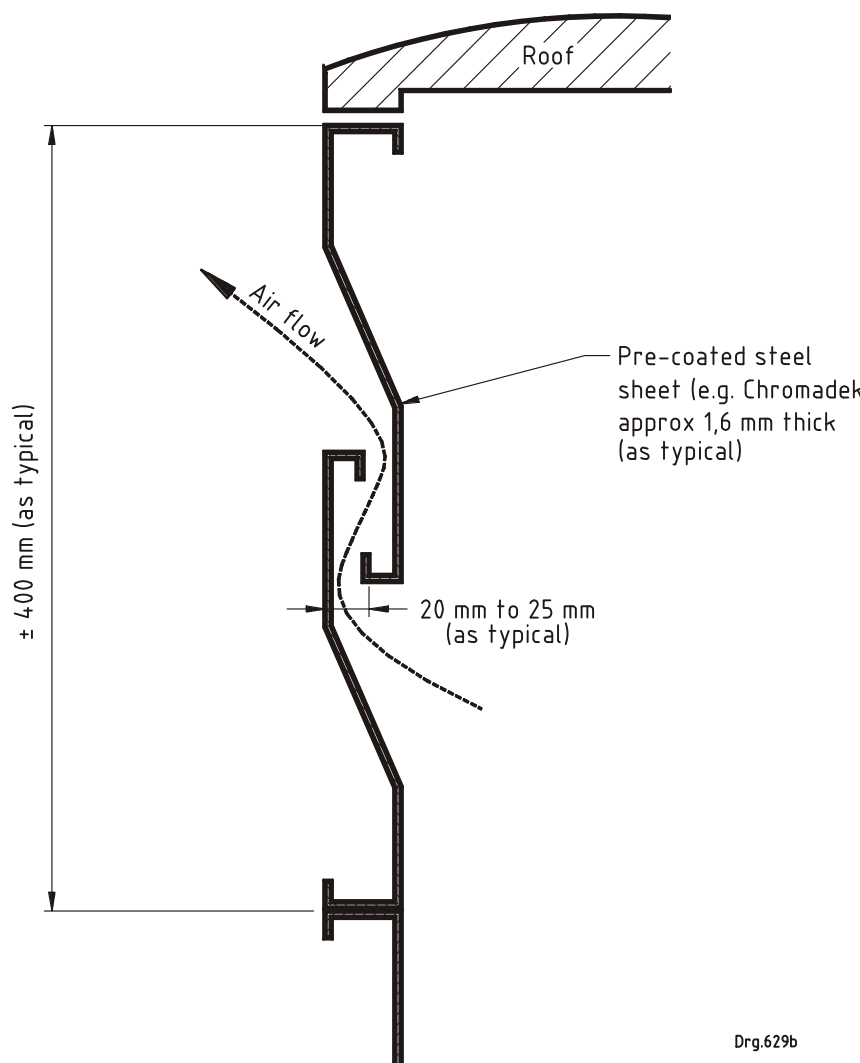


Figure 3 — Typical high-level vent louvre system

5.1.9.4 Roof ventilation

Additional ventilation facilities may be provided in nominally closed roofs, provided that they can be closed off as necessary (see also 5.1.8.1.1).

NOTE Access hatches in the roof may also double as ventilation slots.

5.1.9.5 Wind chill factor

A guide to wind chill factors experienced at various vehicle speeds and ambient temperatures is given in table I.1 of SANS 10331:2000.

5.1.9.6 Temperature monitoring devices

The use of temperature monitoring equipment is encouraged.

5.1.10 Observation facilities

5.1.10.1 Hatches

5.1.10.1.1 Hatches shall be provided in the roof (see 5.1.8.1) for observation purposes, and to facilitate easier handling, injecting and the application or removal of horn pipes. (See also 5.1.8.1.2.)

5.1.10.1.2 Ventilation slots on the sides of the vehicle may be used for observation purposes. Additional observation openings may also be provided, but these shall be fitted with a facility to cover them when not in use.

5.1.10.2 Video cameras and monitors

A desirable observational feature is a video camera, which may be mounted in the container, with a monitor in the cab, to allow the animals to be observed during transportation.

5.1.10.3 Lighting

5.1.10.3.1 A dull red light should be fitted in the container to allow observation of the animals at night.

NOTE It is recommended that a white light is also fitted to provide illumination in emergencies.

5.1.10.3.2 Where fitted, lighting shall be suitably protected against damage.

5.1.10.3.3 The switches for such lights shall be located in the cab of the vehicle or at a secure location on the container.

5.1.11 Lifting eyes

Detachable containers shall be fitted with suitable lifting eyes to facilitate safe lifting and manoeuvring by cranes.

5.1.12 Forklift access

Detachable crates should be provided with facilities to allow the usage of forklift and pallet trucks.

5.1.13 Spare wheels

5.1.13.1 The vehicle shall be provided with at least one spare wheel for each type or size of wheel used on the vehicle.

5.1.13.2 Additional spare wheels are strongly recommended.

5.1.13.3 Spare wheels shall not be carried in the compartment intended for animals.

5.1.14 Fuel tank capacity

An additional reserve tank should be fitted to the vehicle to double the fuel storage capacity.

5.1.15 Sleeping facilities

Where the vehicle is intended for long-distance transportation, it shall be fitted with sleeping facilities for the driver.

5.1.16 Fixed ladder

At least one, permanently-attached, ladder shall be provided on the side of the vehicle to allow easy access to the roof area.

5.2 Individual crates

5.2.1 General

Individual crates are mainly used for the transportation of individual small animals, for example duiker, reedbuck and young antelope, but they can also be used for the transportation of individual large animals.

5.2.2 Construction materials and methods

5.2.2.1 Individual crates for smaller animals can generally be of a lighter construction than mass crates. A metal frame with wood (or glass-fibre reinforced plastics) cladding has generally been found to be sufficient.

5.2.2.2 Individual crates for large animals shall be of a suitably stronger construction.

5.2.3 Doors

5.2.3.1 Doors for individual crates used for the transportation of small animals shall preferably be of the sliding type (vertical or horizontal) since this design contributes to the structural strength of the crate.

5.2.3.2 If a narrow crate is used, the crate should have doors at both ends since it is very difficult for animals to reverse out of a crate.

5.2.4 Dimensions

5.2.4.1 The width of the individual crate shall be such that the animal can lie down comfortably, and is either unable to attempt to turn around in the crate or, if able to do so, is able to turn around completely without becoming stuck.

5.2.4.2 A guide to generally-accepted sizes for individual crates for the transportation of various species of antelope is given in table 2.

Table 2 — Internal dimensions of individual crates for the transportation of antelope

Dimensions in metres

1	2	3	4
Type of animal	Length	Width	Height
Oribi, duiker, steenbok and klipspringer	1,0	0,3	Minimum of 0,8, but sufficient to allow the animal to stand erect, with 20 mm to 30 mm free space above its head or horns, as applicable
Blesbok, bontebok, impala, reedbuck and female nyala	1,4	0,4	Minimum of 1,25, but sufficient to allow the animal to stand erect, with 20 mm to 30 mm free space above its head or horns, as applicable
Male nyala, female black and blue wildebeest, female waterbuck, tsessebe, female red hartebeest and female kudu	1,8	0,6	Minimum of 1,8, but sufficient to allow the animal to stand erect, with 20 mm to 30 mm free space above its head or horns, as applicable
Male black and blue wildebeest, male waterbuck, gemsbok, sable antelope and roan antelope	1,9	0,7	Minimum of 1,8, but sufficient to allow the animal to stand erect, with 20 mm to 30 mm free space above its head or horns, as applicable
Male eland and male kudu	2,3	0,8	Minimum of 1,85, but sufficient to allow the animal to stand erect, with 20 mm to 30 mm free space above its head or horns, as applicable

5.3 Trailers (fixed and loose)

5.3.1 General

5.3.1.1 Constructional aspects of trailers shall comply with the requirements of national road ordinances (see foreword).

5.3.1.2 Mass limits and loading restrictions shall be as specified in national road ordinances (see foreword).

5.3.1.3 The braking system of the trailer shall be suited to the mass and carrying capacity of the trailer (see national road ordinances (see foreword) for details).

5.3.1.4 The vehicle pulling the loaded trailer shall be of sufficient mass and power for this purpose.

5.3.2 Types

5.3.2.1 Mechanical horse and trailer (in the range 4 tonnes to 36 tonnes)

The requirements for trailers with rear axles, and equipped with goosenecks for connection to the horse, are the same as those given in 5.1.

5.3.2.2 Four-wheel trailers with towbar (up to 3,5 tonnes)

5.3.2.2.1 Where the wheels are at the corners of the trailer, this type of trailer shall have fixed rear wheels and steerable front wheels.

5.3.2.2.2 Where the axles are grouped together, the requirement in 5.3.2.2.1 shall not apply.

5.3.2.2.3 All other requirements as given in 5.1 and 5.2 shall be applicable.

5.3.2.3 Small trailers (horse box type)

5.3.2.3.1 The construction of this type of trailer is similar to that of horse boxes, i.e. two wheels and a drawbar or a triangular towbar.

5.3.2.3.2 All other requirements as given in 5.1 and 5.2 shall be applicable.

5.3.2.3.3 Standard horse boxes shall not be used unless they have been modified to comply with the requirements of this standard.

5.3.2.4 Flatbed open trailers (in the range 1 tonne to 3,5 tonnes)

5.3.2.4.1 Unless the wheels are provided with independent suspension, flatbed open trailers shall preferably be of the four-wheel type since the two-wheel type tends to bounce around.

5.3.2.4.2 Some guidelines on good trailer design are given in annex D.

5.4 Registration of vehicles, containers and trailers

The constructed vehicle, container or trailer shall be roadworthy in terms of national road ordinances (see foreword) and suitably registered under the same Acts, before being placed in service.

6 Requirements for specific species

6.1 Giraffes

6.1.1 General

6.1.1.1 Giraffes shall only be transported in trailers attached to a separate driving vehicle, for example, a mechanical horse and trailer (see 5.3.2.1 and 6.1.2).

6.1.1.2 Trailers used for the transportation of giraffes may be one of two types, as follows:

a) recovery trailers (see 6.1.2); or

NOTE Recovery trailers are also known as "chariots".

b) mass crate trailers (see 6.1.3).

6.1.2 Recovery trailers

6.1.2.1 General

6.1.2.1.1 Recovery trailers shall always be open on top and are generally intended for short distance transportation, for example, from point of capture to a mass crate. They are also generally designed for the transportation of a single adult giraffe.

NOTE Typical examples of recovery trailers are shown in figure 4.



4(a) — Typical giraffe recovery trailer (small)



4(b) — Typical giraffe recovery trailer (large)

Figure 4 — Giraffe recovery trailers

6.1.2.1.2 The axles of recovery trailers shall be fitted with good shock absorbers, to prevent the animal being jolted around excessively when travelling at high speed or over rough terrain.

6.1.2.1.3 Recovery trailers shall not be used for transport in the following conditions:

- a) for distances of more than 100 km;
- b) for durations of more than 2 h; or
- c) for speeds in excess of 60 km/h, unless a wind deflector (see 6.1.2.8) is fitted.

6.1.2.1.4 Recovery trailers shall not be used for night transportation or to stable animals overnight.

6.1.2.1.5 The giraffe's movements shall be controlled while travelling in recovery trailers. For the required restraint methods, see A.4.

6.1.2.2 General construction and heights

6.1.2.2.1 The height from ground level to the floor of the trailer should be 500 mm.

6.1.2.2.2 The side walls shall be closed up to a minimum height of 1,8 m. This may be achieved by cladding the framework with panelling, rubber conveyor belting, or other suitable material of sufficient strength for its purpose.

6.1.2.2.3 The side walls shall be further extended upwards to a horizontal top rail at a minimum height of 2,5 m from floor level. The extended portion may be open-sided.

6.1.2.2.4 The horizontal top rail shall not contain any protrusions which might injure the animal. The top rail should be suitably padded or cushioned.

6.1.2.3 Width

The width shall be such that the animal is unable to turn around, with a recommended maximum width of 1,6 m for adult giraffes.

6.1.2.4 Length

The length of the animal-carrying space should be a minimum of 2,6 m.

6.1.2.5 Doors

Doors shall be of the hinged type (horizontal or vertical), and shall be of a solid construction, and not louvred (see also 6.1.2.6.2).

6.1.2.6 Loading ramps

6.1.2.6.1 The slope of loading ramps for loading giraffes should be not more than 15° from the horizontal.

6.1.2.6.2 A door, hinged at the bottom, may also double as a loading ramp when in the open position. If a door is to be used as a ramp, it shall be of sufficient strength for this purpose, and be clad in a suitable non-slip material (see 5.1.4.4 and 5.1.4.5).

6.1.2.7 Catwalks

The recovery trailer shall be fitted with an external catwalk, running along the sides of the crate portion, to allow safe and easy handling of the animal.

6.1.2.8 Wind deflectors

Where a recovery vehicle is to be used on a main road, or at speeds in excess of 60 km/h, the front end of the trailer shall be fitted with a suitable wind deflector to protect the animal against cold winds, wind-blown debris and moisture.

6.1.2.9 Axles

A recovery trailer shall be of a double-axle construction. (See annex D for axle positions.)

NOTE An adult giraffe can have a body mass of 1,2 tonnes, and has a high centre of gravity.

6.1.3 Mass crate trailers (for giraffes)

6.1.3.1 General

Mass crates for the transportation of giraffes may be of the fixed type or the detachable type.

A typical construction of a mass crate trailer for the transportation of giraffes is shown in figure 5.



Figure 5 — Typical mass crate trailer for the transportation of giraffes

6.1.3.2 Dimensions

The maximum height, width and length of mass crates (see foreword) shall comply with national road ordinances (see foreword).

NOTE Special permits for abnormal heights and widths may be obtained from Provincial Traffic Departments.

6.1.3.3 Roofs

A mass crate for the transportation of giraffes should be of closed-roof construction.

6.2 Rhinoceroses

6.2.1 General

6.2.1.1 Rhinoceroses are generally transported individually.

6.2.1.2 Crates for the transportation of rhinoceros shall be of roofed construction, which may be either fully closed or slatted (but see also 5.1.8).

6.2.1.3 Drainage and ventilation slots shall not be positioned in the area adjacent to the animal's head, or they shall be so dimensioned that the animal cannot wedge its horn in the slot.

6.2.1.4 Crates and equipment for the transportation of rhinoceroses shall be so designed that the animal can be loaded into the crate at ground level, and not via a loading ramp.

6.2.1.5 Crates shall be fitted with suitable lifting eyes.

6.2.2 Individual crates

6.2.2.1 A crate for an individual rhinoceros shall be of robust construction.

NOTE The average mass of an adult bull is 2,5 tonnes.

6.2.2.2 Recommended dimensions for individual rhinoceros crates are given in table F.2 of SANS 10331:2000.

6.2.2.3 A recommended construction method is by using sides of steel plate not less than 2,5 mm thick, and a floor supported on lipped channel steel beams, 75 mm deep, and fitted with steel chequer-plate flooring.

6.2.2.4 Crates for rhinoceroses should preferably be designed with doors at each end, so that the animal can be positioned in either direction (fore and aft) within the crate.

6.2.2.5 Wherever possible, crates shall be fitted with skids to allow for handling using forklift trucks, and to provide ground clearance in wet conditions.

6.2.3 Mass crates

If rhinoceroses are transported in mass crates, the crates shall be so constructed that each animal can be separated by a partition, and that direct access from the roof shall be available to each individual animal.

6.2.4 Doors

6.2.4.1 Doors shall be hinged swing doors or vertical sliding doors.

6.2.4.2 If swing doors are used, three locking devices shall be fitted (at the top, middle and bottom).

NOTE A three-door configuration, which has proved successful in practice, is shown in figure 6.

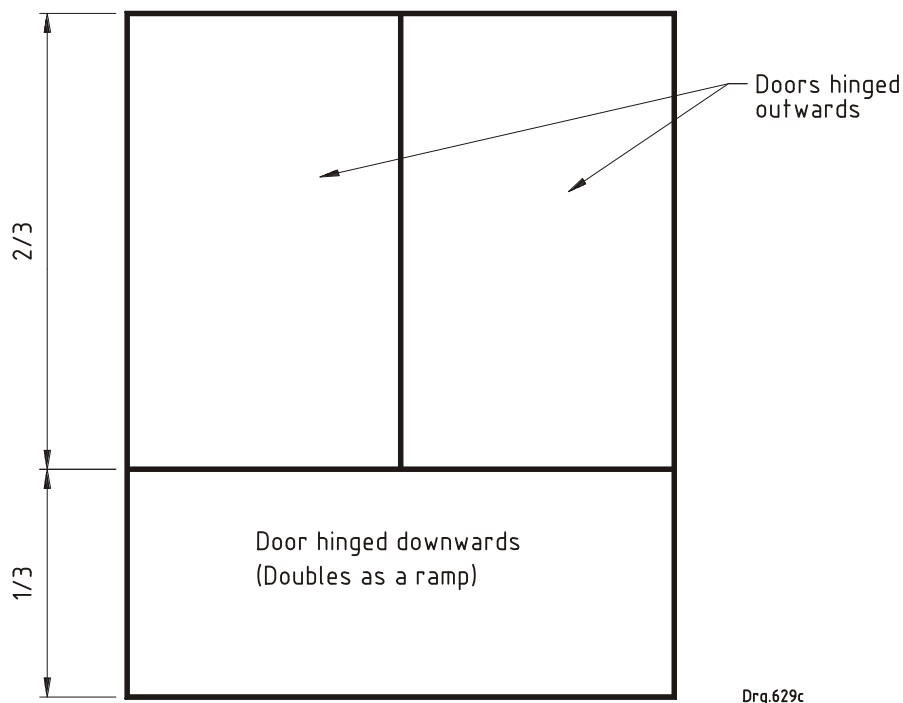


Figure 6 — Three-door configuration

6.3 Hippopotamuses

6.3.1 The requirements for crates used for the transportation of hippopotamuses shall be the same as those given for the transportation of rhinoceroses in 6.2, with certain exceptions regarding the roof (see 6.3.2).

6.3.2 The roof shall be of a fully-closed construction so that the animal cannot try to climb out. However, the closed-roof construction shall be fitted with access hatches to allow the animal to be wetted from above during transportation.

6.4 Elephants

6.4.1 General construction of crates (for adult elephants)

6.4.1.1 Adult elephants may be transported in mass crates or individual crates.

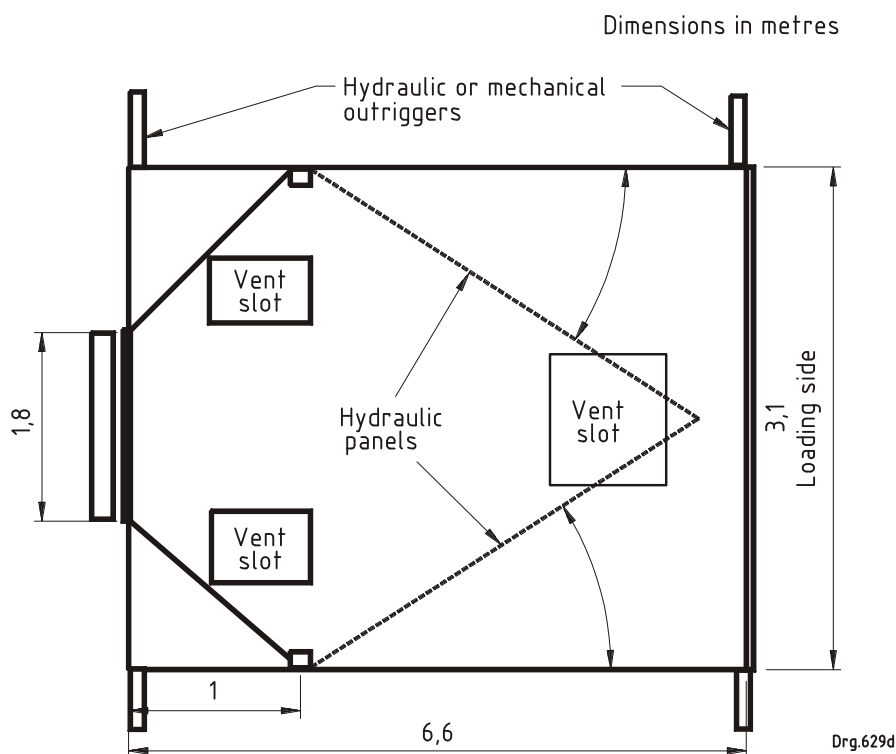
6.4.1.2 Crates used for the transportation of elephants may be one of the following:

a) **Holding and recovery units** (see figure 7)

These units are used at the point of capture of elephants in order to house them while they are being revived from the anaesthetic, i.e. to allow a previously-prone animal to get back onto its feet, and to transport the animal (as in the case of giraffe) to the mass crate.

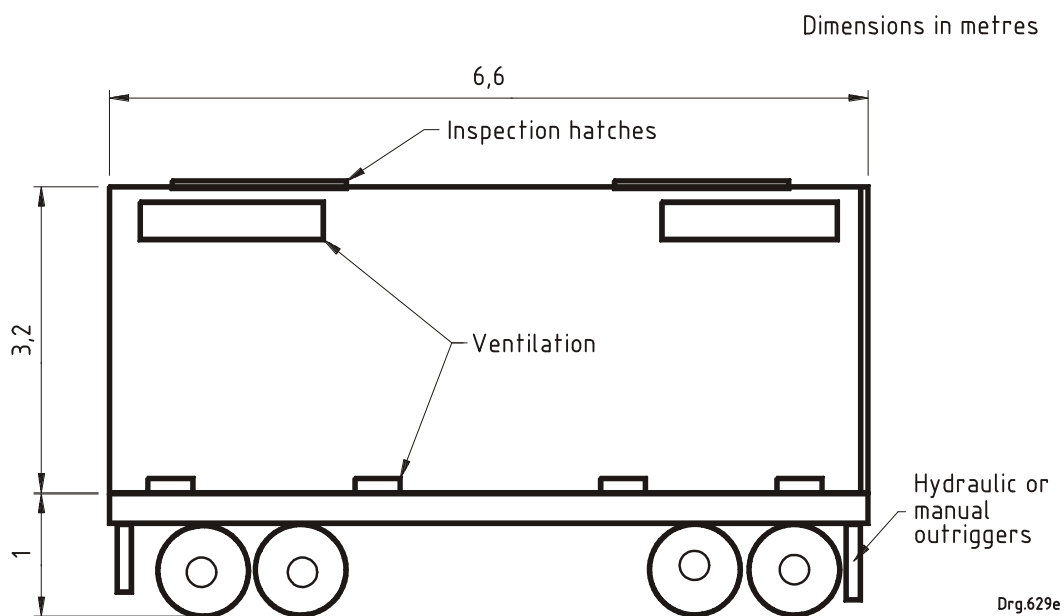
The holding and recovery units are too wide for use on public roads and the animals, once upright, are transferred to the road transport vehicles (see 6.4.1.2(b) and 6.4.1.2(c)) at the same location, or at the nearest convenient transfer point.

- b) **Family crates**, used to transport families of elephants, but excluding large bulls. See figure 8 and figure 9(d).
- c) **Bull crates**, used to transport individual large bull elephants in separate compartments. See figure 9.

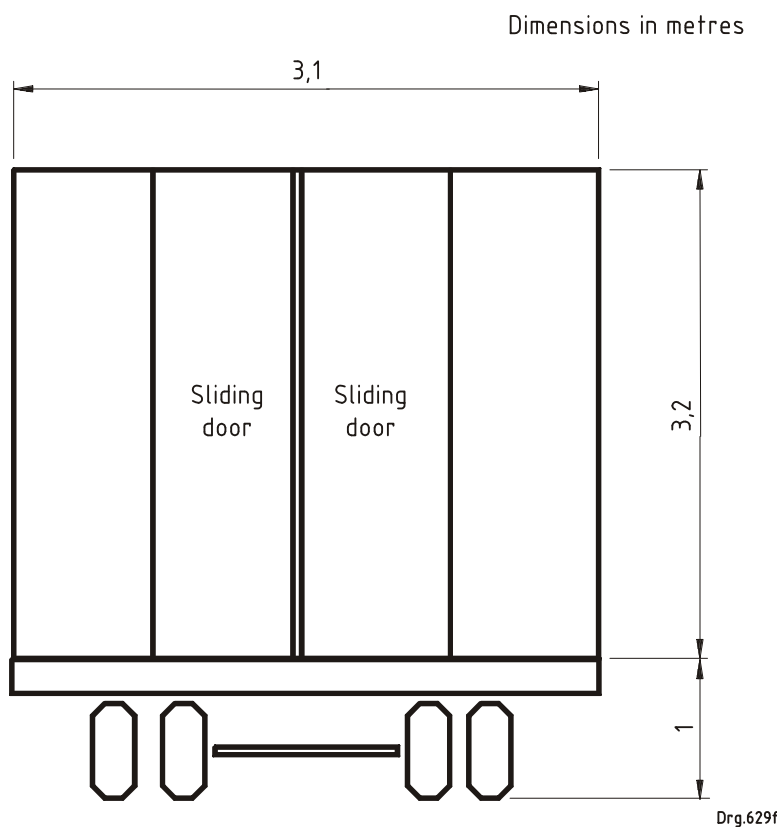


NOTE The hydraulic panels are used to restrain the backward or rotational movement of large adult elephants and, if necessary, to assist the animal to rise to its feet in an emergency and to urge them backwards into the road transport vehicle.

7(a) — Elephant holding and recovery unit (top view)



7(b) — Elephant holding and recovery unit (side view)



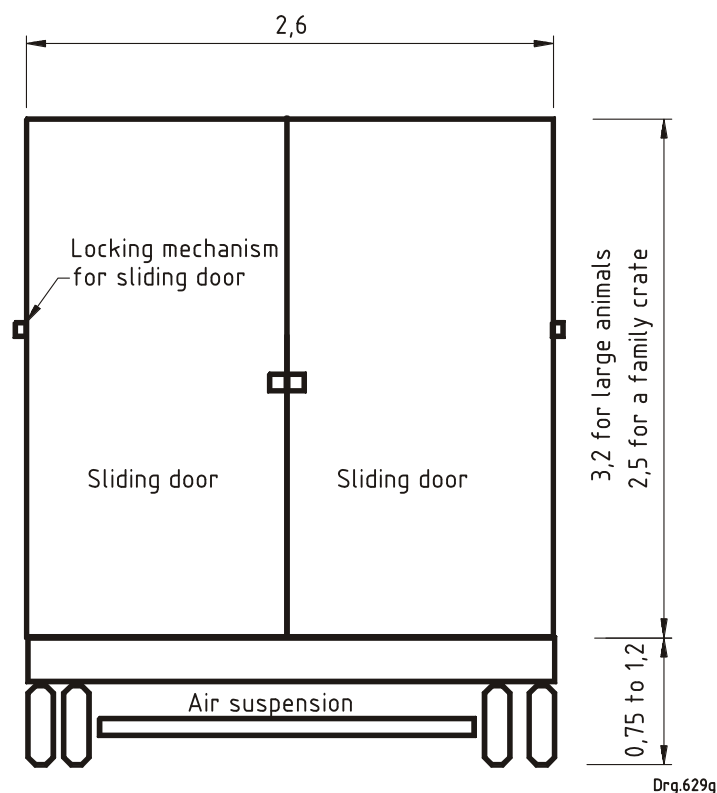
7(c) — Elephant holding and recovery unit (front view)



7(d) — Perspective view of an elephant holding and recovery unit

Figure 7 — Typical elephant holding and recovery units

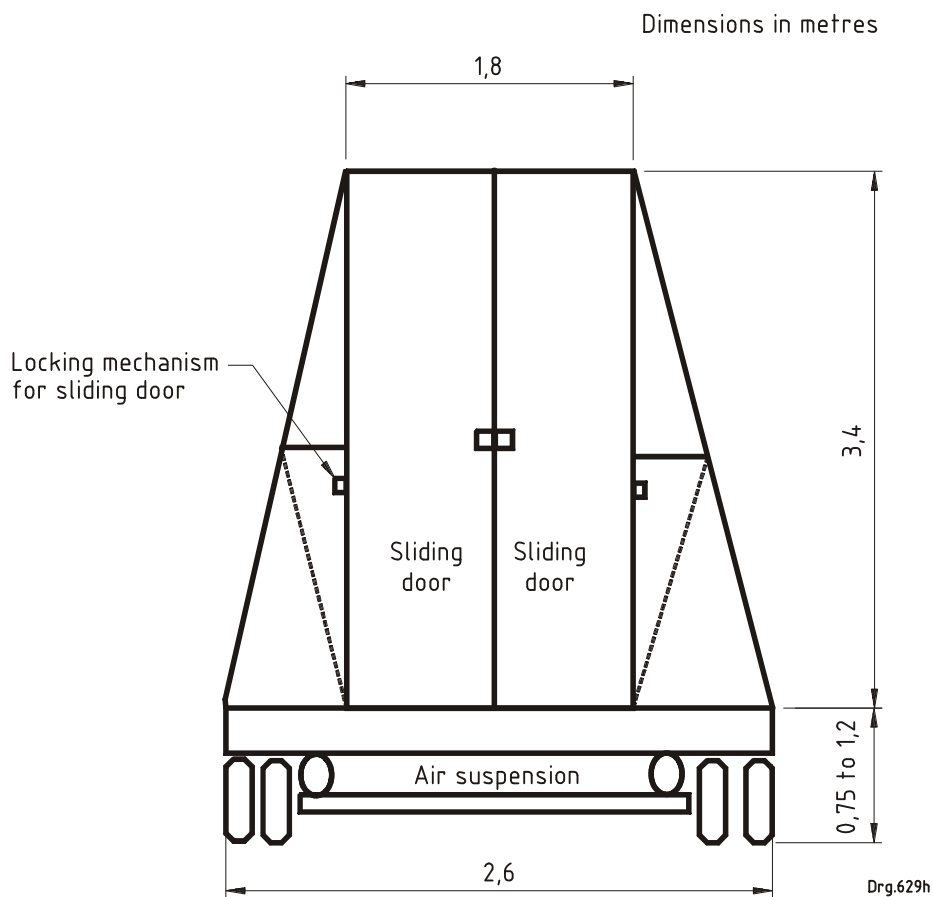
Dimensions in metres



NOTE 1 See figure 9(d) for side view.

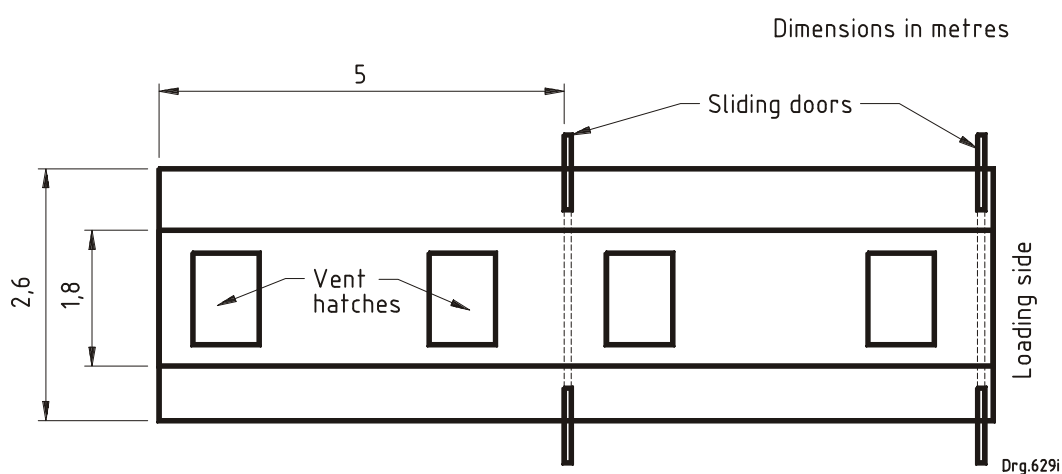
NOTE 2 The air suspension, shown (as typical) in figure 8, provides a smoother ride and also allows the floor level of the vehicle to be raised or lowered in order to align it with the recovery unit (see figure 7). It also allows the vehicle to run at its lowest level for stability reasons, and to maintain the height within road ordinances.

Figure 8 — Elephant family crate (rear view)



NOTE The width of bull crates is kept to a minimum, or tapered, so that elephants cannot turn around or rock from side-to-side. Their high centre of gravity, coupled with a rocking motion, could make the vehicle unstable.

9(a) — Elephant bull crate (rear view)

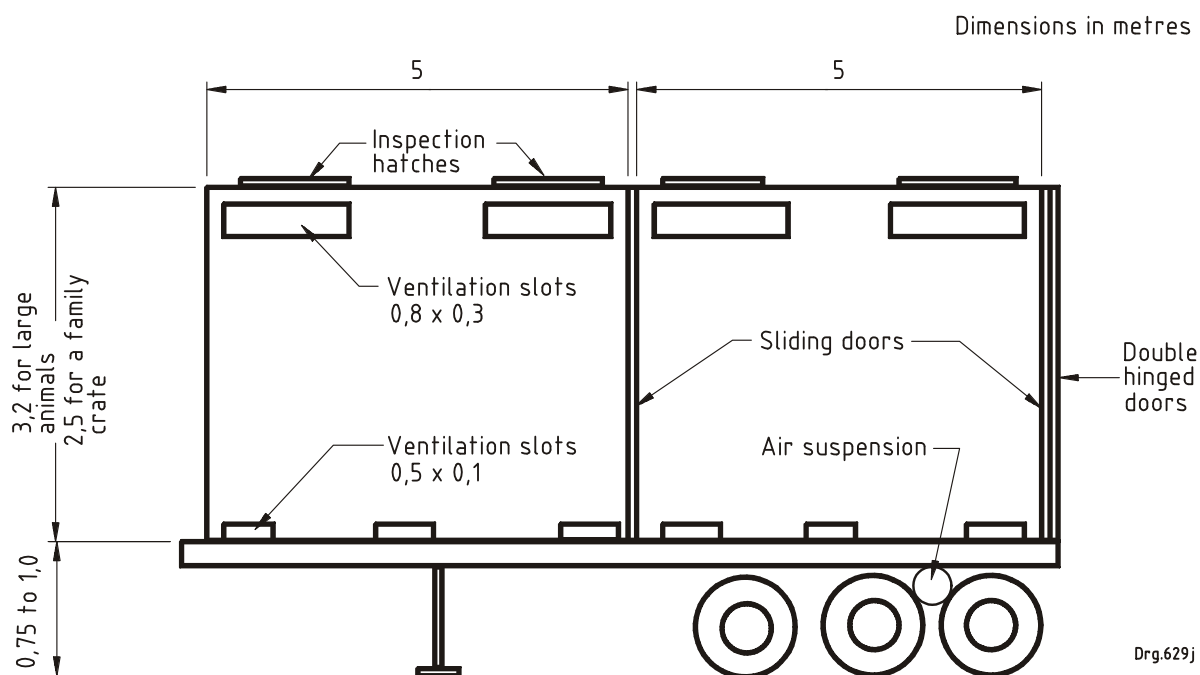


NOTE The width varies for family crates and bull crates.

9(b) — Elephant bull crate (top view)



9(c) — External detail of elephant bull crate



NOTE 1 The compartmentalization shown in figure 9(c) and figure 9(d) can also be achieved by using two separate 5 m crates.

NOTE 2 Standard (6 m length) containers may be used for family crates and bull crates, but if large bulls are being transported, then the internal length should be reduced to 5 m (for example, by internal partitions) to prevent the bull being able to build up speed in a forward charge.

9(d) — Elephant family crate and bull crate (side view)

Figure 9 — Elephant family crate and bull crate

6.4.1.3 Mass crates, which might accommodate two to five adult elephants, shall be constructed to withstand continual physical abuse from the elephants.

6.4.1.4 If conveyor belting is used to line the crates, it shall be well secured as elephants will pull on any loose ends.

6.4.1.5 Considerable body heat is generated by elephants in closed containers. Care shall be taken to provide adequate and effective ventilation.

6.4.1.6 High urine volumes should be catered for. The floor should be covered in dampened river sand, dry teff, bailed lucerne or hay bedding (to a depth of ± 100 mm) to assist with drainage.

6.4.1.7 For strength reasons, floors shall be constructed of steel. Wooden floors shall not be used.

6.4.1.8 High-level ventilation slots shall be able to be closed off during motion, for example by woven mesh steel grilles, to prevent the elephant from being able to poke its trunk out but still allowing adequate ventilation.

6.4.1.9 The ladder that provides access to the roof shall not bridge or occlude the high-level ventilation slots.

NOTE Elephants can sweep a person from the ladder with their trunks via the ventilation slots.

6.4.2 Recovery equipment

6.4.2.1 Special recovery equipment is required to lift an immobilized elephant from ground level to the floor height of the holding unit (see 6.4.1.2(a)). This is generally a height of up to 1,2 m.

6.4.2.2 Various types of equipment may be used, but generally the recovery equipment will consist of the following:

- a) a stretcher with tie ropes at each end (similar in shape to a large hammock), and made typically of conveyor belting; and
- b) a loading platform, which can either be a tipping trailer or a set of heavy-duty rollers constrained within a steel framework to form a loading ramp.

NOTE Figure 10 shows the use of a conveyor belt stretcher and an inclined roller ramp, while figure 11 shows the use of a family crate in conjunction with a tipping trailer.

6.4.2.3 In practice, the immobilized elephant is rolled onto the stretcher and constrained before being pulled up the loading platform to the floor level of the holding unit.



Figure 10 — Elephant recovery using a stretcher and an inclined roller ramp



Figure 11 — Elephant recovery to a family crate using a tipping trailer

6.4.3 Crates for elephant calves

Recommended dimensions for individual crates for the transportation of elephant calves are given in table 3.

Table 3 — Recommended dimensions of individual crates for elephant calves

Dimensions in millimetres			
1	2	3	4
Calf size ^a	Length	Width	Height
Small	2 000	900	1 900
Medium	2 000	1 100	1 900
Large	2 500	1 200	2 200
^a Sizes range from “small” at roughly 1 150 shoulder height to “large” at 1 800 shoulder height.			

6.5 Zebra

6.5.1 The basic constructional requirements for vehicles used for the transportation of zebra shall be the same as for the transportation of large antelopes, with the exceptions as listed in 6.5.2 and 6.5.3.

6.5.2 The roof shall be of closed construction (with access hatches).

6.5.3 The height of the roof should be 1,6 m so that the animal cannot concuss itself against the roof by being able to jump through too high a height.

6.5.4 The recommended minimum floor area is 1,5 m² per adult animal.

6.5.5 Untranquilized zebra should be tightly packed (but without overcrowding) during transportation, to minimize the possibility of kicking, butting or trampling.

6.5.6 It is preferable to transport zebra in family groups. Zebra from different families shall not be mixed.

6.6 Miniature antelopes

6.6.1 Miniature antelopes are small, delicate creatures and containers used for their accommodation during transportation shall be constructed accordingly.

6.6.2 Crates for the transportation of miniature antelope may be mass crates or individual crates.

6.6.3 Large mass crates shall not be used unless they contain smaller crates, or can be compartmentalized to suit the animals being transported.

6.6.4 The height of an individual crate shall not exceed 1 000 mm.

6.6.5 The sides and roofs of mass crates shall be padded. Sacking filled with grass, or mattress padding, has been found to be suitable for this purpose.

6.6.6 Individual crates, which might be transported on an open trailer, should preferably be of wood or plywood construction. Metal containers should not be used, due to tactile heat and coldness considerations.

6.6.7 Female miniature antelopes may be transported together (preferably tranquilized), but males shall be separated. (See also annex A.)

6.6.8 In order to prevent the animals from trying to jump, and to provide a feeling of security for the animals, it is recommended that a forest effect be created in the crate, for example by suspending tree branches at the desired height from horizontal ropes tied across the crate.

6.7 Warthogs and bushpigs

6.7.1 Containers for the transportation of warthogs or bushpigs shall be partitioned to allow them to be transported as family units.

NOTE Warthogs and bushpigs are normally transported in family units, but not with adult males (see 6.7.2).

6.7.2 Adult males shall be separated from family groups during transportation.

6.7.3 Warthogs and bushpigs shall not be transported in the same compartment.

6.7.4 Warthogs and bushpigs are susceptible to extremes of temperature (both hot and cold). Care shall be taken in the design of the container, and during transportation, that the animals are not exposed to temperature extremes, for example, by providing adequate ventilation but preventing draughts.

6.7.5 Abundant supplies of bedding (hay, teff or similar) shall be provided since the animals like to burrow under it for protection and warmth.

6.7.6 Extra care shall be taken to secure upward sliding doors (see also 5.1.7.4) since warthogs and bushpigs can lift doors if not properly secured.

7 Auxiliary equipment

The auxiliary equipment listed in (a) to (c) shall be provided (as minima) on vehicles used for the transportation of wild herbivores

a) Handling equipment

- Pushboards (recommended minimum of two to be provided).
- Pole syringes (recommended minimum of two to be provided).
- Marking device, with a range of dyes (colours).
- Electric prodder (standard livestock prodder); the voltage of prodders shall not be boosted by auxiliary power sources.
- Rope (cotton) (recommended minimum diameter 16 mm and minimum length 10 m).

b) Vehicle equipment

- Communication equipment, for example, a radio or a cellphone.

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- Winch, preferably attached to the vehicle.
- Shovels (recommended minimum of two).
- Tool box.
- Jack.
- Jumper leads (electric jumper cables).
- Torches (recommended minimum of two), with spare batteries.
- Towing cable or chain, with shackles.
- Tyre pump.
- Wheel spanner.
- Tarpaulin.
- Axes and pangas.
- 20 L water cans.

c) Medical equipment

- A standard medical First Aid box, suitable for the treatment of small wounds or abrasions.
- Veterinary drug box, the type, size and contents of which shall be decided by a veterinarian who is competent in wildlife translocation.

Annex A
(normative)

Care of animals during transportation

A.1 Separation of genders

A.1.1 Adult male animals shall be transported individually.

A.1.2 Juvenile males may be transported with females, but care shall be taken that small animals cannot be injured by larger ones.

A.2 Tranquilization

A.2.1 Where necessary, animals shall be tranquilized before and during transportation.

A.2.2 Tranquilization shall be conducted in accordance with the instructions of a wild-life veterinarian.

A.3 Piping of horns

A.3.1 Animals belonging to species which are known to be aggressive (for example, gemsbok) shall have their horns piped, i.e. enclosed in a protective covering (for example, rubber hoses) which will make them less dangerous before and during transportation.

A.3.2 Piping shall be removed before the animal is released.

NOTE This is essential to prevent necrosis of the horns.

A.4 Restraint methods for giraffes in recovery trailers

A.4.1 When a giraffe is being transported in a recovery trailer (see 6.1.2), the animal shall be haltered and its sensory perceptions shall be dulled by means of a blindfold and earplugs or ear-muffs. A typical halter-harness and blindfold configuration is shown in figure A.1.



Figure A.1 — Typical halter-harness and blindfold configuration

A.4.2 The purpose of the halter is to stabilize the animal's movements during transportation and to prevent small animals from being able to turn around. The size and length of the halter used shall be appropriate to the animal's size.

A.5 Inspections *en route*

A.5.1 When animals are to be transported over long distances that require several days' travel, the first stop shall be made within an hour after departure to check the condition of the animals.

A.5.2 Stops shall be made regularly thereafter, at intervals of 3 h to 4 h, to ensure that the animals are well and calm.

A.5.3 All stops shall be made on a level surface.

A.5.4 Inspections shall be carried out in such a way as to minimize disturbance to the animals, using the inspection hatches provided.

A.6 Food and water *en route*

A.6.1 For journeys of less than 24 h duration, feeding and watering *en route* is not necessary, however, feeding (with an appropriate feed, see A.6.2) is essential in the event of unexpected delays in the journey.

NOTE A rhinoceros accustomed to feeding in its crate can be fed to calm it during the journey.

A.6.2 Any feed given shall be the same as that to which the animals are accustomed.

A.6.3 Fixed water containers are not permitted within the compartments as they might injure the animals. Any water spillage (which might cause animals to slip, with resultant injuries) shall also be cleaned up before resuming the journey.

A.7 Extreme weather conditions

A.7.1 Animals shall not be transported over long distances in extremely cold conditions. Hypothermia can occur even at low speeds (see also B.3.2 and B.3.3).

A.7.2 Wind chill factors shall be taken into consideration (see 5.1.9.5).

A.7.3 It is generally not recommended that animals be transported in extremely hot conditions, however, if this is unavoidable, adequate ventilation shall be provided (see also B.3.1).

A.7.4 When transporting animals in hot weather conditions, good ventilation will normally provide sufficient cooling while the vehicle is in motion. However, an adequate supply of water should be carried, for the purpose of hosing down the animals or allowing them to drink, in case the vehicle breaks down or is forced to stand for lengthy periods.

A.8 Cleanliness and housekeeping

A.8.1 Containers and crates shall be thoroughly cleaned after each journey, and before reuse.

A.8.2 Containers and crates shall be disinfected regularly, preferably with a chlorine-based disinfectant, and thoroughly washed afterwards. The disinfectant manufacturer's instructions regarding usage shall be followed.

A.8.3 Loose items, such as wire, capture equipment, baggage, tool boxes and fuel containers, shall not be carried in the same compartment as the animals.

A.9 Driver etiquette

A.9.1 The vehicle shall be accelerated away slowly, with a smooth changing of the gears.

A.9.2 The brakes shall always be applied gently and smoothly. Sudden braking shall be avoided at all times (see also A.9.3).

A.9.3 If sudden braking is unavoidable, the vehicle shall be stopped immediately thereafter and the condition of the animals checked.

A.9.4 On hot days, the driver should travel as fast as possible, but always within speed limits, and with due regard to the safety and welfare of the animals.

A.9.5 On hot days, stops shall be minimized (but see also A.5) and shall always be in the shade.

A.9.6 The driver shall never rush or drive when tired.

A.9.7 The driver shall exercise caution at all times, especially if driving on bad or unfamiliar roads.

Annex B

(normative)

Responsibilities of owners and drivers of transport vehicles

B.1 It is the responsibility of owners and drivers of transport vehicles to ensure that the journey, and travelling conditions to which an animal is subjected, shall be of such a nature as to minimize discomfort and avoid causing suffering or stress to the animal.

B.2 The owners of transport vehicles shall ensure that their drivers are sufficiently trained for this purpose and are in possession of a valid drivers' licence appropriate to the type of vehicle being driven by them.

B.3 Some important basic responsibilities of the driver and the owner (before and during transportation) include, but are not limited to, the following:

- a) Before commencement of the journey, the driver shall ensure that the vehicle is in a roadworthy condition and is adequately ventilated.
- b) The driver shall ensure that he has all the necessary permits (conservation, veterinary, import/export, etc.) for the particular consignment of animals being transported, and that these are available at all times.
- c) Once the animals have been loaded, the transport vehicle shall depart with a minimum of delay and follow the shortest practical route to the destination.
- d) For journeys which will exceed 8 h in duration, two drivers shall be used. It is also recommended that a competent assistant accompany the drivers to assist with taking care of the animals, opening and closing of gates, etc.
- e) The driver shall ensure that he is equipped with suitable road maps, information regarding preferred routes and road conditions, and that his communication equipment (for example, cellphone) is in working order.
- f) The driver shall plan the route to avoid large towns and cities as far as possible. Stops shall be limited to necessities, for example for inspections or refuelling, and the duration of stops shall be minimized. Wherever possible, stops shall be made at quiet places, preferably away from inquisitive onlookers.
- g) Where applicable, the driver shall obtain information regarding possible cold fronts. Daily weather reports on radio or television should also be monitored for information on pending weather conditions.
- h) Drivers shall be provided with emergency contact numbers for use in the event of breakdowns or other emergencies.

Annex C

(informative)

**Further aspects to be considered when designing or using
ventilation facilities in transport vehicles****C.1 Body temperature fluctuations**

The normal body temperature of most wild herbivores is nominally 38,5 °C. However this can increase due to fear or stress (for example, at auctions, while feeding, or because of the presence of humans) to as high as 44 °C (at which point the animal will die), or it can fall as low as 35 °C due to low ambient temperature, draughts, dampness, etc. (at which point the animal will also die).

It is therefore important to ensure that the ambient temperature within the vehicle is regulated to ensure that the animal's body temperature remains within acceptable limits during transportation.

C.2 Importance of shelter

Data analysis has established the importance of providing adequate shelter at night for animals in order to reduce heat loss by radiation. Animals without shelter frequently experience very low body temperatures at night and their temperatures are usually lower than those of animals with shelter. Prolonged exposure to cold night air, combined with the stresses of transportation, boma housing and diet changes, might easily lead to death.

C.3 Aperture openings and settings

C.3.1 In hot ambient temperatures (typically above 30 °C), all ventilation apertures should be secured in the fully-open position.

C.3.2 In cold ambient temperatures (typically below 15 °C), all apertures should be closed to the minimum necessary for respiration in order to minimize heat loss from the container.

C.3.3 On cold days, it is recommended that the low-level drainage slots (see figure 2) be closed off with straw, grass or similar porous material, to prevent draughts but to still allow drainage.

Annex D
(informative)

**Guidelines for the design of trailers in
the range 1 tonne to 3,5 tonnes**

D.1 Dynamic aspects

D.1.1 The stability of the trailer is greatly affected by the ratio of the dimensions from the front of the trailer forward to the connection point, and backward to the road wheels. A configuration which has proved successful is shown in figure D.1.

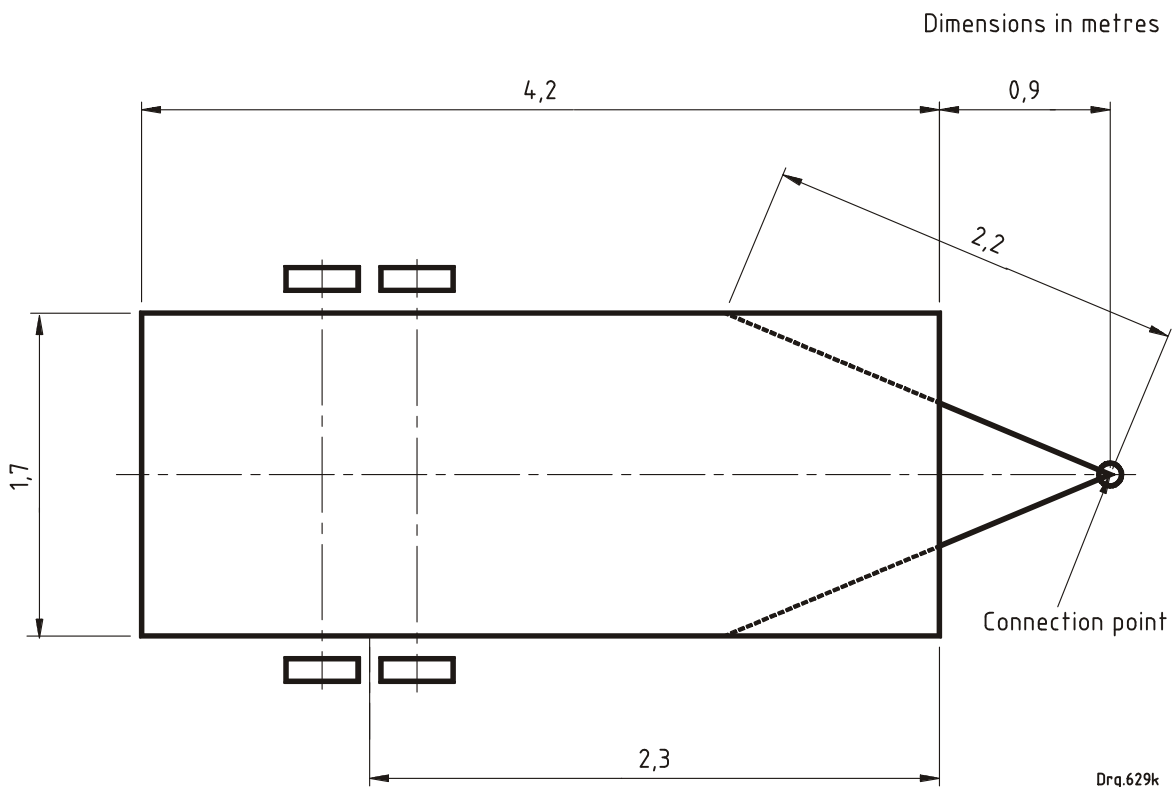


Figure D.1 — Schematic diagram of trailer construction

D.1.2 In figure D.1, the length from the front of the trailer to the road wheels is determined using an empirically derived formula (which is recommended by trailer manufacturers), as follows:

$$I = \frac{L \times 163}{300}$$

where

I is the length from the front of the trailer to the road wheels;

L is the overall design crate length.

NOTE The design crate length is multiplied by 163 and the product is divided by 300.

D.1.3 The resultant length is then measured from the front of the trailer towards the rear, to the centre of the wheel axle if only one axle is used, or to a point midway between the axles if two axles are used.

D.3 Chassis construction

D.3.1 The chassis should be constructed from a strong channel framework (for example, mild steel 100 mm deep × 20 mm wide × 3 mm thick). Rolled-lipped channel is preferred to hot-rolled channel or forged channel since it is more flexible.

D.3.2 The floor supports can be of 40 mm diameter mild steel tubing, welded between the framework channels, on 350 mm centres.

D.3.3 The floor should preferably be constructed of mild steel plate, and be 4 mm thick in order to carry heavy animals.

D.3.4 It is recommended that the underside of the chassis and framework be treated with bitumen for protection against corrosion.

D.4 Height from ground

The recommended height from the ground to the centre of the connection ball is 560 mm.

D.5 Tyre dimensions

D.5.1 The recommended tyre outside diameter (O.D.) is 582 mm and wheel rim size is 14", with a low profile to minimize sway, for example, 205/55 R14 (as typical).

D.5.2 The tyres used shall be of the correct rating for the required loading.

D.6 Loading at connection point

If the trailer is constructed in accordance with the configuration described in D.1 to D.5, the resultant mass applied at the ball of the connection point will be between 75 kg and 100 kg (which is the desired loading for maximum stability in operation).

D.7 Nose cone

It is recommended that a nose cone be fitted to the front of the trailer to act as a wind breaker.

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