



TANZANIA DRAT STANDARD

**MEDC 9 (5038)P2 Automotive Engineering – Bus Body Building – Part 3:
Code of practice for bus body building (Rev TZS 598:2010)**

FOR STAKEHOLDERS COMMENTS ONLY

TANZANIA BUREAU OF STANDARDS

TZS 598 (Part 3):2010

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- * Mechanical Engineering Industries Development Agency
- * Ministry of Infrastructure Development
- ALAF
- Weights and Measures Agency
- Tanzania Industrial Research and Development Organization
- * National Institute of Transport

The organizations marked with an asterisk (*) in the above list together with the following were directly represented on the Technical Committee entrusted with the preparation of this Tanzania Standard:

- Daima Associates Ltd
- Surface and Marine Transport Regulatory Authority (SUMATRA)
- Transport Resource Centre
- Traffic Police
- TABOA
- DARCOBOA
- Scania
- Dar Coach Bus Body Builders

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Automotive Engineering – Bus Body Building – Part 3: Code of practice for bus body building

O Foreword

Recently Tanzania has experienced introduction of different types of buses. These buses brought into the Tanzanian market, came from different countries and some were manufactured locally. These buses are still being available at different qualities, different sizes, models and, capability.

In addressing the safety issues of these buses, the first edition of this Tanzania Standard was published in 1999, which aimed at providing guides on how the bus bodies for Tanzania should be built. However, the first edition was concentrating on only interurban buses, which was difficult to implement to the other types, such as city busses. This revision is intended to take into account different types of buses with different sizes, models and capacities. The revision also has taken into account the new developments in technology for busses.

However, the countries, from which these buses come, have different levels of development of technology. As a result Tanzania is flooded with busses of multitude of standards. Some busses are very small with high squeezed seats. Some are big and luxurious. Some are heavier than the design weight and some do not meet the safety and environment requirements. In this regard many complaints from bus users are expressed.

In preparation of this Tanzania Standard assistance was derived from the following publications:

SABS 047: 1995, *Code of practice – The testing of motor vehicle for roadworthiness*, published by the South African Bureau of Standards.

ISO 612: 1978, *Road vehicles – Dimensions of motor vehicles and towed vehicles – terms and definitions*, published by International Organization for Standardization.

Road traffic ACT No 30 of 1973

Southern African Transport and Communication (SATC) standard

American Society for Testing and Material Standards (ASTM) A 656/A65M

In reporting the results of the tests made in accordance with this Tanzania Standard, if the final value observed or calculated is to be rounded off, it shall be done in accordance with TZS 4:1979 (see clause 2).

1 Scope

This part of Tanzania Standard gives guidelines for body building. It specifies seat arrangement, required seat dimensions, external dimensions of busses and several aspects regarding safety. It specifies material used for windows and windscreen. It also specifies the classes of busses based on comfortability but does not give details of design in terms of construction or mechanical condition.

2 Definition

For the purpose of this Tanzania Standard the definitions from TZS 598 (see clause 2) (part 1) shall apply.

3 References

For the purpose of this Tanzania Standard the following references shall apply:

TZS 4: 1979, *rounding off numerical values*

TZS 598: 2010(Part 1), *Automotive Components Engineering – Part 1: Terms and definitions*

TZS 598: 2010(Part 2), *Automotive Components Engineering Part 2: Specification for bus chassis*

TZS 1184: 2010, *Vehicle directional stability performance in the event of tyre failure*

4 General requirements for busses

4.1 Overall length of busses

The overall length of busses including any parts projecting from front to rear shall be as follows:

- a. A rigid bus body shall have an overall length not exceeding 12.5 m.
- b. An articulated bus body or any other combination of bus body consisting of a drawing vehicle and a semi trailer shall have an overall length of not exceeding 18.5 m.
- c. A bus train shall have an overall length not exceeding 20 m.

4.2 Overall width

The overall width of busses including mini bus shall not exceed 2.5 m except that 2.6 m is permitted in case of:

- a. Vehicle with gross vehicle mass of at least 12 000 kg and
- b. Buses of which the distance between the centre lines of the two front wheels exceeds 1.9 m.

4.3 Overall height

The overall height of a bus laden and not laden shall be as follows;

- a. A double deck bus shall not exceed 4.5 m

- b. Any other bus shall not exceed 4.3 m

4.4 Overhang of buses

4.4.1 Front overhang

- a. A semitrailer shall have the front overhang not exceeding 1.8 m.
- b. A vehicle, other than semi trailer or a trailer with one axle or one axle unit, the front overhang which exceeds;
 - i. 60 % of wheelbase
 - ii. 6.2 m in case of vehicle having the front surface of backrest of the driving seat at sea level not more than 1.7 m from the front end of the vehicle when such seat, if adjustable, is in the rearmost position, less ½ the wheel base: Provided that the wheelbase of a bus train shall be the distance measured from the centre of the front axle to the centre of the middle axle; or

4.4.2 Rear overhang

- a. A trailer, or other than a semitrailer, which is equipped with either one axle, one axle unit, or two axles with the distance between the centre lines of which is less than 1.8 m, the rear overhang shall not exceed 50 % of the length of the body of such trailer.
- b. Any other vehicle shall not exceed 60 % of the wheelbase.

4.5 Marking

An information plate shall be clearly imprinted or stamped with those items of the following and shall be affixed in an accessible position on the vehicle,

- a. The tare weight
- b. The gross vehicle weight
- c. The gross axle mass load or axle unit mass load of each axle
- d. The maximum net engine power at sea level
- e. Chassis number.

4.6 Bumper bars, protective devices, bonnets and roof carriers

4.6.1 A bumper bar, protective device, bonnet, roof carrier or similar fitting shall be securely fixed and shall have no sharp edges that could cause injury.

4.6.2 Any lamp, retro reflector or registration plate shall not be obscured by the bumper bar or protective device. Use of bull bars, shall not be allowed.

4.6.3 All busses shall be provided with fire extinguisher of at least 2 kg and first aid kit. The position for a fire extinguisher and aid kit shall be clearly marked.

4.7 Restriction on combination of bus bodies

No person shall operate on a public road any combination of bus bodies other than the following:

- a. Drawing vehicle and one or two trailers
- b. Motor vehicle drawing one other motor vehicle which is not a trailer, and

- c. Motor vehicle drawing another motor vehicle which is not a trailer and a trailer, in case of an emergence or a breakdown

5 Specific requirements

5.1 Construction requirements for sides, roof and floor

5.1.1 The construction shall be of prime commercial quality steel or other material with strength at least equivalent to all-steel as in accordance to table 1. All such construction materials shall be fire resistant.

Table 1: Requirements for the tensile strength

Characteristics	Yield point (MPa)	Tensile strength (MPa)	Elongation in 200 mm Min %	Elongation in 50 mm Min %
Grade 50 (345)	(50) 345	(60) 415	20	23
Grade 60 (415)	(60) 415	(70) 485	17	20
Grade 70 (485)	(70) 485	(80) 550	14	17
Grade 80 (550)	(80) 550	(90) 620	12	15

5.1.2 Bus body (including roof bows, body posts, strainers, stringers, floor, inner and outer linings, rub rails and other reinforcements) shall be of sufficient strength to support entire weight of fully loaded vehicle on its top or side if overturned. Bus body as unit shall be designed and built to provide impact and penetration resistance.

5.1.3 Side posts and roof bows.

There shall be a body side post and roof bow fore after each window opening. This may be a continuous bow or two separate pieces effectively joined.

5.1.4 The construction shall provide reasonable dust proof and watertight unit and shall also protect the passenger compartment from excessive heat.

5.1.5 The floor shall be of prime commercial quality steel of at least 14-gauge or other metal or other material at least equal in strength to 14-gauge steel. Floor shall be level from front to back and from side to side except in wheel housing, toe board, and driver's seat platform areas. The floor shall be slippage free and corrosion resistance. The floor shall protect the passengers against shock and noise. The floor under seat area, including tops of wheel housings, driver's compartment and toe board shall be covered with fire-resistant rubber floor covering or an approved equivalent, having minimum overall thickness of 12 mm.

Connections between sides and floor system shall be capable of distributing loads from vertical posts to all floor sills, and the openings between chassis and passenger-carrying compartment made due to alternations of body manufacturer shall be sealed

5.1.6 Requirement for strainers

Bus body shall be constructed with the strainers of the following characteristics

- a. For roof strainers.

Two or more roof strainers or longitudinal members shall be provided to connect roof bows, to reinforce flattest portion of roof skin, and to space roof bows. These strainers may be installed between roof bows or applied externally. They shall extend from windshield header and, when combined with rear emergency doorpost, are to

function as longitudinal members extending from windshield header to rear floor body cross member. At all points of contact between strainers or longitudinal members and other structural material, attachment shall be made by means of welding, riveting or bolting.

b. For side strainers.

There shall be one or more side strainers or longitudinal members to connect vertical structural members and to provide impact and penetration resistance in event of contact with other vehicles or objects. Such strainers shall be formed (not in flat strip) from metal of at least 16-gauge and three inches wide.

Side strainers shall be installed in area between bottom of window and bottom of seat frame and shall extend completely around bus body except for door openings and body cowl panel. Side strainers shall be fastened to each vertical structural member in any one or any combination of the following methods as long as stress continuity of members is maintained:

- i. Installed between vertical members;
- ii. Installed behind panels but attached to vertical members; and,
- iii. Installed outside external panels.
- iv. Fastening method employed shall be such that strength of strainers is fully utilized.

Side strainers or longitudinal members may be combined with one of required rub rails or be in form of additional rub rail, as long as separate conditions and physical requirements for rub rails are met. No portion of side strainer or longitudinal member is to occupy same vertical position as rub rail.

5.2 Requirements for entrances and exits.

5.2.1 Requirements for service doors

- a) Service door shall be manually or power-operated, under control of driver, and so designed as to afford easy release and prevent accidental opening. No parts shall come together so as to shear or crush fingers
Every entrance to, or exit from the bus shall be fitted with a door. The door shall be secured such that it can be opened and closed. The door shall be able to be opened from both inside and outside. The hinges, catches or pillars of a door shall not be loose to the extent the door is not secured when closed.
- b) The minimum number of doors in a vehicle shall be two, either two service doors or one service door and one emergence door. The minimum number of service doors required shall be as indicated in table 2.

Table 2: Requirements for the minimum number of service doors

Number of passengers	Number of service doors		
	Class I & A	Class II	Class II & B
9 - 45	1	1	1
46 - 70	2	1	1
71 - 100	3	2	1
>100	4	3	1

- c) Each rigid section of an articulated vehicle or deck (for the case of double-decker) shall be treated as a separate vehicle for the purpose of determining the minimum

number and the position of exits. Toilets compartments or galleys are not considered to be separate compartment for the purpose of defining the number of emergence exits. A number of passengers shall be determined for each rigid section.

- d) A double service door shall count as two doors
- e) All passenger entrances to the main passenger compartment shall be provided on the left side of the vehicle.
- f) All service doors shall be outward opening type. The doors opening towards the interior of the vehicle and its mechanism shall be constructed that the movement is not likely to cause injury to the passengers in normal conditions of use. Where necessary, appropriate protection devices shall be fitted.
- g) All passenger doors shall be provided with entrance steps

5.2.2 Requirements for emergence exits

All emergence exits shall be marked with instruction in both English and Swahili. All persons accommodated in the lower deck must in an emergence situation, have access to the exterior of the vehicle without having to enter the upper deck.

a) Requirements for the emergence doors

The emergence door(s) shall not be on the same side as entrance shall not be of sliding type and shall be hinged at their forward edge and shall open outwards.

The emergence door shall be protected against unintentional operation.

b) Requirements for emergence windows.

Every hinged or ejectable emergence window shall open outwards. Ejectable types shall not become totally detached from the vehicle when operated. The operation of ejectable windows shall be such that inadvertent ejection is effectively prevented.

Every emergence window shall either be capable of being easily and instantaneously opened from inside and from outside the vehicle by means of a device or be made readily-breakable safety glass. This latter provision precludes the possibility of using panes of laminated glass or of plastic material. A device shall be provided adjacent to each emergence window, readily available to persons inside the vehicle, to ensure that each window can be broken.

All emergence windows shall have dimensions not less than 430 mm X 600 mm.

A Double window shall count as two emergence windows.

c) Requirements for escape hatches

The escape hatches, additional to the emergence doors and windows, shall be fitted in class II and class III vehicles. They may also be fitted in case of class I vehicles. The minimum number of hatches shall be in accordance to table 2:

Table 2: Minimum number of escape hatches

Number of passengers	Number of hatches
Not exceeding 50	1
Exceeding 50	2

Every escape hatch shall operate so as not to obstruct the clear passage from inside or outside the vehicle.

Roof escape hatches shall be either be ejectable, hinged or made of readily breakable safety glass.

For any amount of escape hatches present in an apartment, shall be counted as only one emergence exit.

5.2.3 Dimensional requirements for the entrances and exits

The entrances and exits shall have the dimensions not less than those described under table 3.

Table 3: Requirements for number of escape hatches

Type of the vehicle/Part		Class I	Class II	Class III	Remarks
Service door	Door aperture	Height (mm)	1800	1650	–
		Width (mm)	Single door : 650 Double door : 1200		This dimension may be reduced by 100 mm when the measurement is made at the level of the hand locks.
Emergence door		Height (mm)	1250		–
		Width (mm)	550		
Emergence window	Area (mm ²)	400 000			It shall be possible to inscribe in this area a rectangle 500 mm x 700 mm
Emergence window situated in the rear face of the vehicle, if the manufacturer does not provide an emergence window of the minimum dimensions prescribed above.		It shall be possible to inscribe in the emergence widow aperture a rectangle 350 high and 1550 mm wide. The corners of the rectangle may be rounded to a radius of curvature not exceeding 250 mm.			
Escape hatch	Aperture area (mm ²)	400 000			It shall be possible to inscribe in this area a rectangle measuring 500 mm x 700 mm

5.3 Requirements for windows and windscreen

5.3.1 All side windows shall be capable of being opened

5.3.2 Any window pane, windscreen or transparent partition shall be in a sound, unbroken and clear condition.

5.3.3 The glass used in window shall be identifiable as toughened glass.

5.3.4 The glass used in windscreen shall be identifiable as laminated glass.

5.3.5 Material other than safety glass shall not be fitted as a windscreen, windows or transparent partition except that;

- a. Roof windows partition and windows in the sides of buses or coaches may be ultra high impact acrylic or polycarbonate plastic material that are marked with the trade name or trade mark of the manufacturer or with the trade name of the material and with material identification mark.
- b. Flexible windows or partition that folds away may be of plastic glazing material.

5.4 Requirement for fire extinguisher and first – aid equipment

Space shall be provided for the fitting of one or more fire extinguisher, one being near the driver's seat. In vehicles of class A or B the space shall not be less than 8 dm³ and in class I, II or III not less than 15 dm³.

Space shall be provided for the fitting of one or more first-aid kits. The space provided shall not be less than 7 dm³, the minimum dimension shall not be less than 80 mm.

Fire extinguisher and first aid kits may be secured against theft or vandalism (e.g in an internal locker or behind breakable glass), provided that the locations of these items are clearly marked and means are provided for persons to extract them easily in an emergence.

5.5 Requirements for the seats

5.5.1 Requirement for reference data concerning seating positions

Reference data shall be listed consecutively for each seating position. Seating positions shall be identified by a two-digit code. The first digit as an Arabic numeral shall designate the row of seats, counting from the front to the rear of the vehicle. The second digit is a capital letter, which designates the location of the seating position in a row, as viewed in the direction of forward motion of the vehicle.

5.5.2 Requirement for seats dimension

- a. General seat dimensions

Any seat backrest shall have height not less than 520 mm, measured from seat level to the highest point. Every seat shall be designed in such a way that it provides head restraint except for class I and II.

Where transverse seats face one another the minimum distance between the front faces of the seat squabs of facing seats, as measured across the highest points of the seat cushions, shall be not less than 1300 mm.(see fig 3)

In the case of seats facing in the same direction, the distance between the front of a seat squab and the back of the squab of the seat preceding it (dimension H) see table 4, shall,

when measured horizontally and at all heights above the floor between the level of the top surface of the seat cushion and a point 620 mm above the floor, not be less than:

Table 4: The horizontal distance between seats

Class of bus or coach	Distance in mm
Classes I, A and B	650
Classes II and III	680

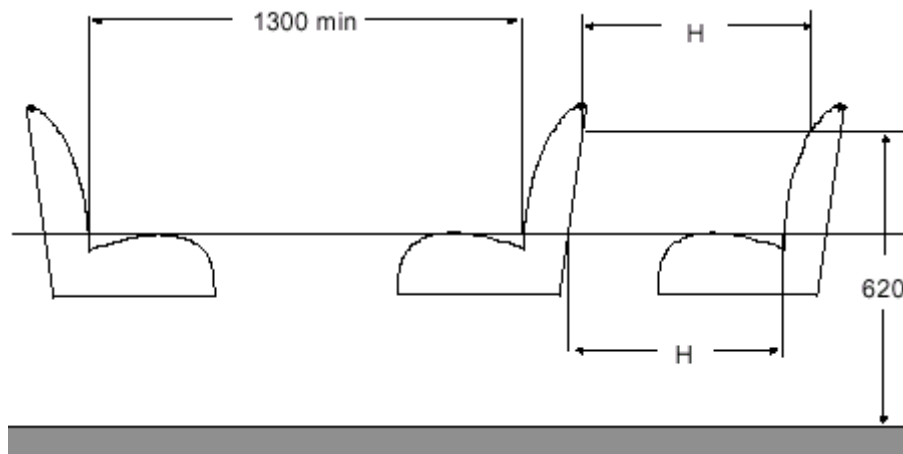


Figure 2: The minimum distance required between seats

b. Minimum seat width

The minimum width of the backrest shall not be less than 400 mm measured at its widest point for class I and class II and shall not be less than 450 mm for class III.

c. Minimum seat height

The height of any seat from the floor or the height from the foot rest of such seat to seat level shall be not less than 300 mm, except in the case of a seat positioned over wheel arch, where no limit applies.

5.5.3 Requirement for cushioning

a. Minimum cushion height

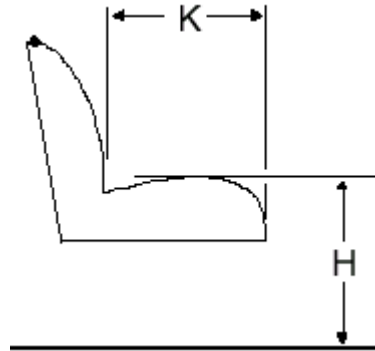
The height of the uncompressed seat cushion, (see fig 3, dimension H) relative to the floor shall be such that the distance from the floor to a horizontal plane tangential to the front upper surface of the seat cushion is between 400 mm and 500 mm: this height may however be reduced to not less than 350 mm at the wheel arches and at the engine compartment.

b. Minimum cushion depth

The minimum depth (See fig 3, dimension K) of any seat from the front of the seat to the front of the backrest shall not be less than as in accordance to table 5

Table 5: The minimum depth and height of cushions

Class of bus or coach	Cushion depth(K) mm	Cushion height (H) mm
Classes I, I A and B	350	400 to 500
Classes II and III	400	



NOTE: H = 400/500 mm (*)
 K = 350 mm min. (**)
 (*) 350 mm at wheel arches and engine compartment.
 (**) 400 mm in vehicles of Classes II and III.

Figure 3: The minimum height and depth of cushion required for seats

5.5.4 Requirement for the partitions

- a. Where seats faces partition or similar obstruction, the horizontal distance between the backrest and the partition shall not be less than 550 mm.
- b. Where seat faces an entrance a rail partition shall be provided between the seat and the entrance.
- c. The driver seat shall be adjustable and shall have partition or rail behind it to separate the driver and passengers.

5.5.5 Requirements for seat belts

All seats shall be securely fixed and shall be provided with the seat belts. The seat belt anchorage shall not break when a test load of 2225 daN \pm 20 daN applied to a traction device.

5.6 Requirement for free height over seating position

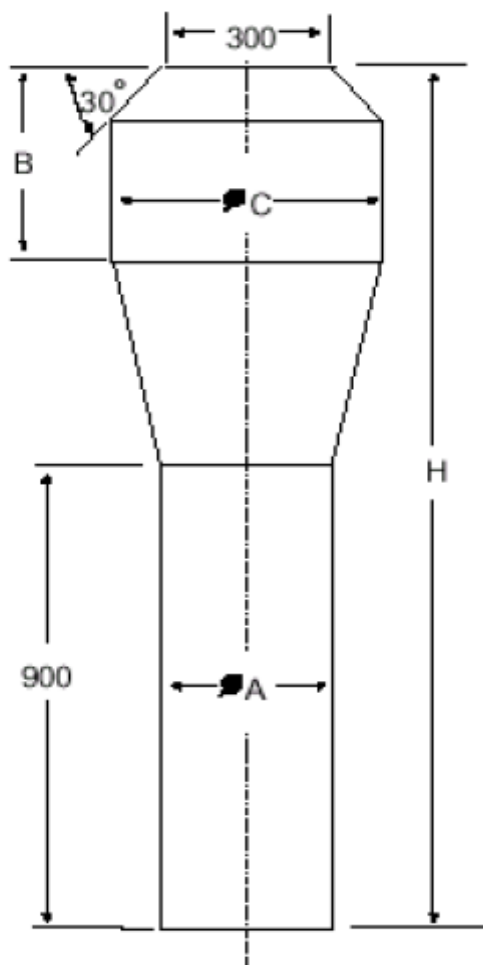
Each seating position shall have a free height of not less than 900 mm measured from the the highest point of the uncompressed cushion. This free height shall extend over the vertical projection of the whole area of the seat and associated foot space. In case of the upper deck, this free height may be reduced to 850 mm.

5.7 Requirement for passageway (gangway)

The gangway of the bus body shall be designed and constructed as to permit the free passage of a gauging device consisting of two co-axial cylinders (see fig 4) with an inverted truncated cone interposed between them, the gauging device having dimensions as in accordance to table 6. Allowable measuring limitation shall be as accordance to annex A.

Table 5: The dimensions for gauging devices

Dimensions/Classes	Class I	Class II	Class III	Class A	Class B
Diameter of lower cylinder A	450	350	300	350	300
Height of lower cylinder	900	900	900	900	900
Diameter of lower cylinder C	550	550	450	550	450
Height of lower cylinder B	500	500	500	500	300
Overall height H	1900	1900	1900	1900	1500



Note: For details see table 5

Figure 4: The gangway gauging device

5.8 Requirements for the paints

Paints allowed to be applied to all buses shall be lead free

5.9 Requirements for steps

The maximum and minimum height and the minimum depth of steps for passenger within the vehicle shall be as in accordance to the table 7 and figure 5.

Table 7: Steps dimensional requirement

Classes of bus and coaches		I and A	II, III and B
First step from the ground (D)	Maximum height (mm)	340 ^{1/}	380 ^{1/2/}
	Minimum depth (mm)	300*	
Other steps (E)	Maximum height (mm)	250 ^{3/}	350 ^{4/}
	Minimum height (mm)	120	
	Minimum depth (mm)	200	

NOTES:
 At double doorway the steps in each half of the access passage shall be treated separately.
 *230 mm for vehicles having capacity not exceeding 22 passengers
 1/ 700 mm in the case of an emergency door
 1500 mm in the case of an emergency door in the upper deck of a double deck vehicle
 2/ 430 mm in the case of a vehicle with solely mechanical suspension.
 3/ 300 mm in the case of steps at the door behind the rearmost axle
 4/ 250 mm in a gangway for vehicles having capacity not exceeding 22 Passengers.

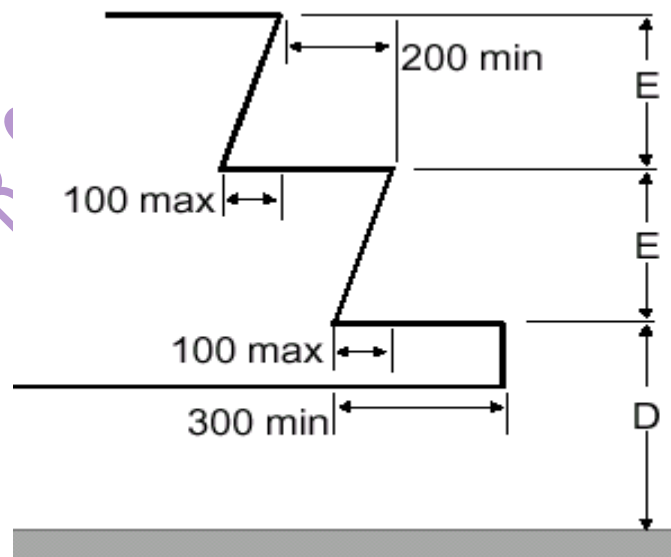


Figure 5: The minimum and maximum height and depth of steps

5.10 Requirements for interior

The interior of a bus shall be free of all unnecessary projections likely to cause injury. This Tanzania Standard requires inner lining on ceilings and walls. Ceiling panels shall be constructed so as to contain lapped joints with all exposed edges hemmed to minimize sharpness. If lateral panels are used, forward panels shall be lapped by rear panels

Ceilings and walls shall be coated with proper materials to deaden sounds and to reduce vibrations to a minimum.

5.11 Requirement for passengers with reduced mobility

Buses with wheelchair used for transporting passengers with physical disabilities shall display universal handicapped symbols located on the front and rear of the vehicle below the window line. Such emblems shall be white or blue.

Wheelchair fastening devices shall be provided and attached to the floor or walls or both to enable securing of wheelchairs in the vehicle. The devices shall be of the type that requires human intervention to unlatch or disengage.

5.12 Requirements for the number of persons to be carried in a bus

The permitted number of persons recorded in the documentation (and on the clearance certificate) shall not exceed the number of persons (including the driver) obtained by taking the lesser of the totals obtained in a) and b)

- a) For the adults

Divide the difference between permissible maximum vehicle mass and the tare by 70

i.e.

$$N_{per} = \frac{V - T}{70 \text{ kg}}$$

Where

V is the permissible maximum vehicle mass

T is the tare

N per is the permitted number of persons recorded in documentation

70 kg is the average weight of a passenger including 3 kg for hand luggage (See table 7)

- b) For school children

Divide the difference between permissible maximum vehicle mass and the tare by 45

i.e.

$$N_p = \frac{V - T}{45 \text{ kg}}$$

Where

V is the permissible maximum vehicle mass

T is the tare

N_p is the permitted number of persons
45 kg is the average weight of a student

5.13 Requirements for standing passenger

- a. The number of standing passenger per square metres shall not exceed 8 (see table 8).
- b. The sum of standing passenger and seated passengers and the driver multiplied by 7 kg and the tare T of the vehicle shall not exceed the permissible vehicle mass V.

i.e.

$$(P_s + P_c) 70 \text{ kg} + T < V$$

Where

P_s is the number of standing passengers

P_c is the number of seating passenger + driver

T is the tare weight of the vehicle

V is the permissible maximum vehicle mass

Table 8: Allowable number of standing passenger

Vehicle class	Mass of one person	Conventional space for one standing passenger (m ² /passenger)
Class I and A	67	0.125
Class II	70*	0.15
Class III and B	70*	None
NOTE * including 3 kg for hand baggage		

5.14 Requirements for handrail and handholds

5.14.1 General

- a. Handrail and handholds shall be adequate in strength. They shall be so designed and installed as to present no risk of injury to the passengers. The surface of every handrail, handhold or stanchion shall be colour contrasting and slip resistant. Handrails shall not have sharp bends.
- b. The clearance between a handrail or handhold and adjacent part of the vehicle body or walls shall be of at least 40 mm. However, in case of a handrail on a door or seat, or in access passage of vehicle of class II, III or B, a minimum clearance of 35 mm shall be permitted.
- c. Handrail and handholds shall be a section enabling passenger to grasp them easily and firmly. Every handrail shall provide a length of at least 100 mm to accommodate a hand. No dimension of a section shall be smaller than 20 mm or greater than 45 mm except in case of handrail on doors and seats and, in case of a vehicle of class II, III, or B in access passage. In these cases handrails a minimum dimension of at least 15 mm shall be permitted provided that one other dimension is of at least 25 mm.

5.14.2 Handrails and handholds for standing passengers

- a. Handrail and/or handholds shall be provided in sufficient number for each point of the floor area, in conformity with clause 5.12 for standing passengers. For this purpose,

strap hangers, if fitted, may be counted handholds, provided that they are held in their position by suitable means.

- b. For every position occupied that can be occupied by standing passenger, at least one or two required handrail or handholds shall be not more than 1800 mm above the level of the floor at that position.

5.15 Classification of long distance coaches (Buses)

Long distance coaches (buses) are classified according to comfortability and services offered during the travel. These aspects of comfortability includes, seat spacing, ventilation, interior lights/lamps, seat articulation and seat arraignment. Service offered during the travel may include, air conditioning, Television, radio, Microphone, Toilet/rest room and USB charging port.

Table 9: Classification of Busses (long distance coaches)

S/N.	ITEM	ORDINARY BUS		SEMI LUXURY BUS	LUXURY BUS
		Class A Lower	Class A Upper		
1.	Requirements for seats	Where seats faces in one direction and the horizontal distance between the fronts of a backrest to the back of the seat in front does not exceed 680 mm at seat level then the passenger seats must not be adjustable.	a) All passenger seats must be adjustable. b) where seats faces in one direction, then the minimum horizontal distance between the fronts of a backrest to the back of the seat in front must be 690mm	a) All passenger seats must be adjustable. b) where seats faces in one direction, then the minimum horizontal distance between the fronts of a backrest to the back of the seat in front must be 690mm	a) All passenger seats must be adjustable. b) where seats faces in one direction, then the minimum horizontal distance between the fronts of a backrest to the back of the seat in front must be 690mm
2.	Seats arrangements	3x2 or 2x2	2x2	2x2	2x2 or 2x1
3.	Seats belts	All passenger seats including drivers seat must have seat belts	All passenger seats including drivers seat must have seat belts	All passenger seats including drivers seat must have seat belts	All passenger seats including drivers seat must have seat belts
4.	Interior lights/lamps	A minimum of three lights must be placed at equal distance along the passage way.	A minimum of three lights must be placed at equal distance along the passage way.	In addition to the lights in ordinary passenger vehicle each passenger seat must have a position illuminating light.	In addition to the lights in ordinary passenger vehicle each passenger seat must have a position illuminating light.
5.	Air conditioning	optional	Optional	The bus should be installed with adequate air conditioning system	The bus should be installed with adequate air conditioning system and indoor units that can be open/closed by each passenger
6.	Television	optional	There must be a Minimum of two	There must be a Minimum of two	There must be a reasonable number of

			pcs of Television in a bus	pcs of Television in a bus	TV installed at an adequate distance.)
7.	Microphone	optional	optional	There should be a microphone to facilitate announcements	There should be a microphone to facilitate announcements.
8.	Window curtain	optional	Necessary	There should be a curtain in every window	There should be a curtain in every window
9.	Toilets	No toilet services	No toilet services	No toilet services	There should be an operating toilet.
10.	Refreshments	optional	Optional	Optional	There must be a supply of refreshments
11.	USB port and Wi-Fi	Optional	Optional	Optional	There should be USB charging port and Wi-Fi

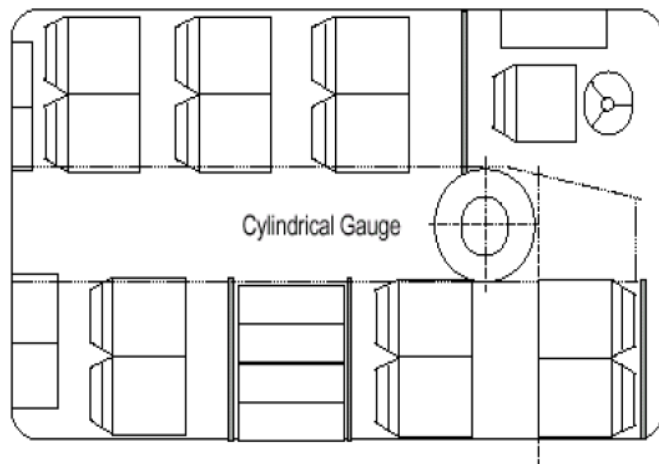
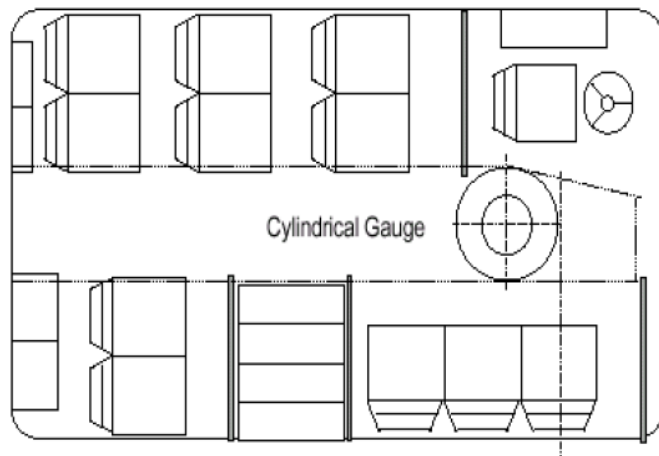
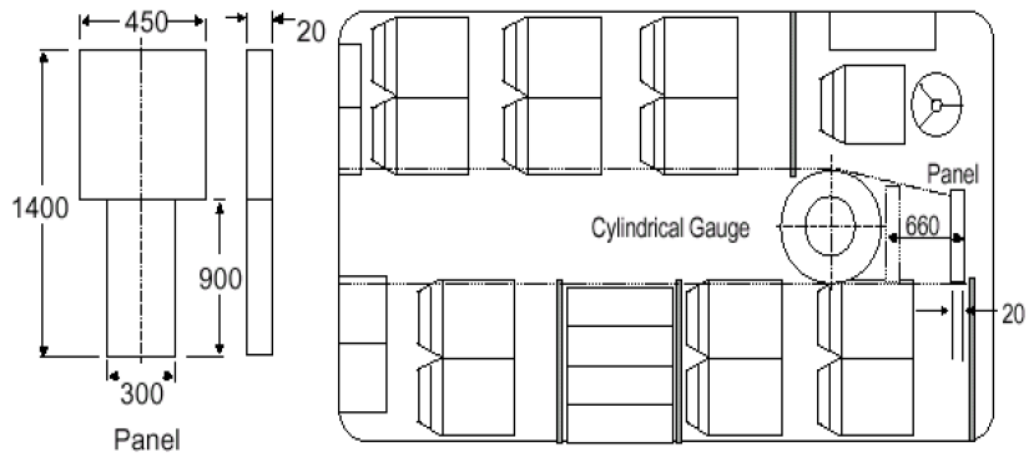
FOR STAKEHOLDERS COMMENTS ONLY

Annex A

(Normative)

Gauging of the gangways

FOR STAKEHOLDERS COMMENTS ONLY



FOR