Road vehicles — Passenger vehicle body construction — Specification

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TECHNICAL COMMITTEE REPRESENTATION

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Ministry of Roads and Public Works — Mechanical Engineering Department
Automobile Association of Kenya
Office of the President — Vehicle Inspection Unit
Kenya Vehicle Manufacturers Ltd.
Kenya Industrial Research and Development Institute (KIRDI)
General Motors (K) Ltd.
Association of Vehicle Assemblers Ltd (AVA)
Kenya Auto Bazaar Association (KABA)
Kenya Used Motor Parts Importers Association (KUMPIA)
Kenya Automotive Repairers Association (KARA)
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Road vehicles — passenger vehicle body construction — Specification
**DKS 372: 2010**

**Foreword**

This Kenya Standard was prepared by the Road Vehicle Technical Committee under the guidance of the Standards Projects Committee and it is in accordance with the procedures of the Bureau.

This standard was formulated to be of guidance to the rapid growing passenger vehicle transport system, for safety and comfort of passengers and general road safety requirements. This standard will help harmonize the various sizes of passenger vehicles.

Following the approval of this standard the body building industry shall be given upto 1st July 2011 to implement the use of Q345 material or it's equivalent.

During the development of this standard, reference was made to the following documents:

- **KS 376: 1999** Specification for flexible polyurethane (polyester) foams.
- **KS ISO 898** Mechanical properties of fasteners.
- **KS ISO 7165** Fire fighting — Portable fire extinguishers.
- **E/ECE/324: 2002** United Nations Agreement concerning the adoption of uniform technical prescriptions for wheeled vehicles, equipment and parts, which can be fitted and/or be used on wheeled vehicles and the conditions or reciprocal recognition of approvals granted on the basis of these prescriptions.

- **KS 822:1999** Specification for anchorages for seat belts for automobiles.
- **KS 1017** Specification for approval testing of welders working approved welding procedures.
- **TZS – 598:1999**

Acknowledgement is made for the assistance derived from these sources.
DRAFT KENYA STANDARD  DKS 372: 2010

Road vehicles — Passenger vehicle body construction — Specification

1   Scope

This Kenya Standard specifies requirements for passenger vehicle body construction.

This standard applies to vehicles with bodies designed and constructed for carriage of persons. This standard does not include provisions for persons of reduced mobility.

This standard does not apply to saloon cars, station wagons and other public transport vehicles other than those specified in 2.1.

2   Definition and field of application

For the purpose of this Kenya Standard the following definitions shall apply:

2.1 vehicle
a bus designed and equipped for the transport of passengers. (See Clause 3 for vehicle classification)

2.2 articulated bus or coach
a vehicle, which consists of two or more rigid sections, which articulate relative to one another. The passenger compartments of each section intercommunicate so that passengers can move freely between them. The rigid sections are permanently connected so that they can only be separated by an operation involving facilities which are normally only found in a workshop

2.3 low floor vehicle
a vehicle in which at least 35% of the area available for standing passengers (or of its forward section in the case of articulated vehicles) forms a single area without steps, reached through at least one service door by a single step from the ground

2.4 vehicle type
a vehicle, which do not differ essentially with regard to the constructional features specified in this standard

2.5 approval of a vehicle
the approval of a vehicle type with regard to the constructional features specified in this standard

2.6 service door
a door used by passengers in normal circumstances providing access to and from vehicle

2.7 double door
a door affording two, or the equivalent of two accesses

2.8 emergency door
a door additional to the service door(s) intended for use as an exit by passengers in an emergency only
2.9 emergency window
a window, not necessarily glazed, intended for use as exit by passengers in an emergency only

2.10 double emergency window
an emergency window which, when divided into two by an imaginary vertical line (or plane), exhibits two parts each of which complies as to dimensions and accessibility with the requirements applicable to a normal emergency window.

2.11 escape hatch
a roof provision intended for use as an exit by passengers in an emergency only

2.12 emergency exit
an emergency door, emergency window or escape hatch

2.13 exit
means a service door or emergency exit

2.14 floor or deck
that part of the bodywork whose upper surface supports standing passengers, the feet of seated passengers and the driver, and the seat mountings

2.15 gangway
the passage providing access by passengers from any seat to any other seat or row of seats or to any access passage from or to any service door; it does not include:

a) the space extending 30 cm in front of any seat;
b) the space above the surface of any step or staircase; or
c) any space, which affords access solely to one seat or one row or seats.

2.16 access passage
the space extending inwards from the vehicle from the service door up to the outermost edge of the upper step (edge of the gangway). Where there is no step at the door, the space to be considered as access passage shall be up to a distance of 30 cm from the sitting position of the inner face of a dual panel.

2.17 driver's compartment
the space intended for the driver's exclusive use and containing the driver's seat, the steering wheel, controls, instruments and other devices necessary for the vehicle.

2.18 tare mass (MK) (kg)
the mass of the vehicle in running order unoccupied and unladen

2.19 technically permissible maximum mass
the maximum mass declared by the manufacturer of the vehicle. (This mass may be greater than the “permissible maximum mass” to be prescribed by national administrations)
2.20  
**technically permissible maximum axle mass**
that part of the technically permissible maximum mass of the vehicle, declared by the manufacturer, which results in the vertical force at the road surface in the contact area on the wheel/wheels of an axle. This mass may be greater than the maximum permissible axle mass authorized by national administrations. The sum of all technically permissible maximum axle masses of the vehicle may be greater than the technically permissible maximum mass of that vehicle.

2.21  
**passenger**
a person other than the driver or a member of the crew.

2.22  
**passenger with reduced mobility**
a passenger who has a special difficulty when using public transport, especially elderly and disabled person. Reduced mobility does not necessarily imply any form of medical impairment.

2.23  
**passenger compartment**
the space intended for passengers use excluding any space occupied by fixed appliances such as bars, kitchenettes or toilets.

2.24  
**automatically operated service door**
a power-operated service door which can be opened (other than by means of emergency controls) only after a control is operated by a passenger, and after activation of the controls by the driver, and which closes again automatically.

2.25  
**starting prevention device**
a device, which prevents the vehicle from being driven away from rest when a door is not fully closed;

2.26  
**driver operated service door**
a service door, which normally is opened and closed by the driver.

NOTE 1: Unless otherwise stated, all measurements shall be made when the vehicle is at its unladen kerb mass (MK) (kg) and it is standing on a smooth and horizontal ground surface. If a kneeling system is fitted to the vehicle, it shall not be in operation.

NOTE 2: Wherever there is a requirement in this standard for a surface in the vehicle to be horizontal or at a specific angle when the vehicle is at its unladen kerb mass (MK) (kg), in the case of a vehicle with mechanical suspension, the surface may exceed this slope or possess a slope when the vehicle is in the loading condition declared by the manufacturer. If a kneeling system is fitted to the vehicle, it shall not be in operation.

2.27  
**RHS**
rectangular hollow section

2.28  
**M.S**
mild steel

2.29  
**canel rail**
longitudinal stiffeners that provide support over the windows of the vehicle

2.30  
**MIG**
metal inert gas
2.31 **TIG**
tungsten inert gas

### 3 Vehicle classification

3.1 For the purpose of this standard, passenger vehicles shall be classified into the following five classes:

- **Class I** Micro-buses with a seating capacity of up to 14 passengers;
- **Class II** Mini-buses with a seating capacity of 15 — 25 passengers;
- **Class III** Medium-buses with a seating capacity of 26 — 40 passengers;
- **Class IV** Buses with a seating capacity of over 40 passengers;
- **Class V** Urban buses with a capacity of over 40 seated passengers;
- **Class VI** Double decker buses with a capacity of over 40-seated passengers.

**NOTE 1** Each of the above classifications shall be separated into:

- **A** Urban type;
- **B** Interurban type.

**NOTE 2** The carrying capacity shall be as permitted by the traffic act.

### 4 Requirements

4.1 **Conformity of production**

4.1.1 **Accreditation of body builders**

All body builders shall be accredited by Kenya National Accreditation Services (KENAS).

4.1.2 **Authorization of vehicle designs**

Approvals for vehicle designs shall be authorized by relevant registered engineer(s) to specific vehicle type as registered with KENAS and shall ensure that vehicle bodies are constructed to manufacturers specifications and safety.

4.1.3 **Application for approval**

Application for approval of a vehicle type, with regard to its constructional features, shall be submitted by the vehicle body builder to KENAS.

4.1.3.1 The application shall include a detailed description of the vehicle type, its structure, dimensions, configuration, and constituent materials. The following shall also be submitted:

- **a)** drawings of vehicle and its interior arrangements;
- **b)** the unladen mass of the vehicle in kg;
- **c)** the technical maximum mass of each axle;
- **d)** the intended total number of passengers (N) as calculated in Annex A;
- **e)** the class for which approval is requested.
- **f)** KENAS Type approval Number i.e
4.2 Vehicles shall be built by approved body builders and in accordance with requirements of this standard and shall conform to 4.1.

4.3 Drilling and welding of chassis

4.3.1 Vehicle chassis welding

The body structures shall not be welded to the chassis. Brackets shall be welded to the chassis, on which the body structure can be welded, and in line with vehicle manufacture's specifications.

4.3.2 Welding of body structure and cladding

Welders shall be approved in accordance with KS 1017, Specifications for testing of welders working to approved welding procedures.

4.3.3 Arc welding

Arc welding shall be limited to the welding of angle iron or channel iron sections in excess of 6 mm, to chassis mounting brackets.

4.3.4 MIG and TIG equipment

The MIG and TIG equipment shall be employed for welding all other material including RHS, lip channel and cladding sheets.

4.3.5 Vehicle chassis drilling

Chassis drilling shall follow manufacturer's recommendations and shall achieve a "push fit" with the fixings employed.

4.4 Body sections

The materials used shall be Q345 or equivalent and dimensions of body sections shall be as specified in Table 1, or may be different if a finite element analysis is submitted to KENAS at approval stage, which shows that an alternate is safe.
**Table 1 — Material and dimensions of body sections**

<table>
<thead>
<tr>
<th><strong>Body sections</strong></th>
<th><strong>Class II, III</strong></th>
<th><strong>Class IV, V, VI</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Body cross members</td>
<td>RHS 100 mm x 50 mm x 3 mm</td>
<td>Channel 100 mm x 50 mm x 6 mm</td>
</tr>
<tr>
<td>Seat anchorage</td>
<td>Continuous oval or circular tubular 40 mm x 40 mm x 4.5 mm</td>
<td>Continuous oval or circular tubular 40 mm x 40 mm x 4.5 mm</td>
</tr>
<tr>
<td>Floor covering</td>
<td>M.S. chequer plate 3.0 mm or M.S. (flat) plate 2.5 mm with anti-skid covering or marine ply 10.0 mm with floor covering</td>
<td>M.S. chequer plate 3.0 mm or M.S. (flat) plate 2.5 mm with anti-skid covering</td>
</tr>
<tr>
<td>Side verticles</td>
<td>RHS 40 mm x 40 mm x 2.0 mm</td>
<td>RHS 60 mm x 40 mm x 2.5 mm or Lip channel 80 mm x 40 mm x 2.5 mm</td>
</tr>
<tr>
<td>Side horizontals</td>
<td>RHS 40 mm x 40 mm x 2.0 mm, and shall be diagonally braced.</td>
<td>RHS 60 mm x 40 mm x 2.5 mm, and shall be diagonally braced.</td>
</tr>
<tr>
<td>Window spacings</td>
<td><strong>min.</strong> 940 mm</td>
<td><strong>min.</strong> 940 mm</td>
</tr>
<tr>
<td>Window spacings</td>
<td><strong>max.</strong> 1 150 mm</td>
<td><strong>max.</strong> 1 150 mm</td>
</tr>
<tr>
<td>Window height</td>
<td>Sliding 600 mm</td>
<td>Sliding 600 mm</td>
</tr>
<tr>
<td>Window height</td>
<td>Fixed 430 mm</td>
<td>Fixed 430 mm</td>
</tr>
<tr>
<td>Sliding window position</td>
<td>Top position for all school buses and either position for other applications (see Figure 2)</td>
<td>Top position for all school buses and either position for other applications (see Figure 2)</td>
</tr>
<tr>
<td>Cant rail</td>
<td>Angle iron 40 mm x 40 mm x 3 mm, with strip of 3mm flat bar to form continuous triangular section</td>
<td>Angle iron 60 mm x 40 mm x 3 mm or 80 mm x 40 mm x 3 mm, with strip of 3mm flat bar to form continuous triangular section</td>
</tr>
<tr>
<td>Roof sticks</td>
<td>To be formed into even radius and raised to 200 mm over cant rail, and following line of side verticals 60 mm x 40 mm x 1.5 mm and fit intermediate roof sticks. Weld angle iron to roof sticks for the attachment of roof rack fixings</td>
<td>To be formed into even radius and raised to 200 mm over cant rail, and following line of vertical side rails. 80 mm x 40 mm x 2.0 mm or fit intermediate roof sticks. Weld angle iron to roof sticks for the attachment of roof rack fixings</td>
</tr>
<tr>
<td>Roof longitudinals</td>
<td>Material as for roof sticks. Weld in four equally spaced to support the centre cladding (48°)</td>
<td>Material as for roof sticks. Weld in four equally spaced to support the centre cladding (48°)</td>
</tr>
<tr>
<td>Outer cladding</td>
<td>M.S., galvanized 0.5 mm(for glued skin) and 0.8mm (for welded skin), or aluminium 1 mm</td>
<td>M.S., galvanized 0.5 mm(for glued skin) and 0.8mm (for welded skin), or aluminium 1 mm</td>
</tr>
<tr>
<td>Inner cladding</td>
<td>M.S., galvanized 0.5 mm(for glued skin) and 0.8mm (for welded skin), or aluminium 0.8 mm</td>
<td>M.S., galvanized 0.5 mm(for glued skin) and 0.8mm (for welded skin), or aluminium 0.8 mm</td>
</tr>
<tr>
<td>Front and rear sections</td>
<td>Must have strong supporting structure as for side frames (braced), for either metal sheeting (18 guage) or fibreglass</td>
<td>Must have strong supporting structure as for side frames (braced), for either metal sheeting (18 guage) or fibreglass</td>
</tr>
</tbody>
</table>

**NOTE:** Shall be full coverage inside with no sharp edges.
4.5 Gangways

4.5.1 Floor to roof height

The minimum inside floor to roof height for vehicle classes II and III shall be minimum 1 700 mm, while for vehicles of classes IV, V and VI shall be minimum 1 800 mm. The maximum (overall) height shall be 1 900 mm.

4.5.2 Gangway measurements

The gangway for public service vehicle shall be so designed and constructed as to permit the free passage of gauging devices whose dimensions are as specified in Table 2 and as illustrated in Figure 1.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV, V and VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter of lower cylinder</td>
<td>300</td>
<td>350</td>
<td>450</td>
</tr>
<tr>
<td>Height of lower cylinder</td>
<td>900</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>Diameter of upper cylinder</td>
<td>450</td>
<td>550</td>
<td>650</td>
</tr>
<tr>
<td>Height of upper cylinder</td>
<td>500</td>
<td>500</td>
<td>600</td>
</tr>
<tr>
<td>Overall height</td>
<td>1 700</td>
<td>1 800</td>
<td>1 900</td>
</tr>
</tbody>
</table>
4.6 Windows

4.6.1 Window design and construction

The recommended windows design for vehicles of class I, IV, V and VI shall be made of three parts, as shown in the Figure 2. Window dimensions shall be as specified in Table 1.
4.6.2 The windows shall be fixed to the vertical pillars firmly.

4.6.3 Window fittings shall be of good quality and weather proof.

4.6.4 The windows shall be so designed and constructed as to allow proper view and ventilation.

4.6.5 Compliance of window glass and windscreens

Window glass and windscreens shall comply with KS 649, Specification for automotive windscreens.

4.6.6 Front windscreen

4.6.6.1 The windscreen and side-windows of the driver’s compartment shall be constructed as to give the driver adequate view ahead and to either side at an angle of at least 90° from the centre line of the vehicle.

4.6.6.2 The corner posts and pillars supporting the windshield shall be 100 mm max. and 50 mm max. respectively. They shall be so designed and constructed such that they do not impair driver’s visibility as in 4.6.6.1.

4.7 Hand-rails and hand-holds

Every public service passenger vehicle shall be provided with hand-rails and hand-holds which are of adequate strength and so designed and installed as to present no risk of injury to passengers. Every hand-rail shall provide a length of at least 10 cm to accommodate a hand. The hand-rails shall have a diameter greater than 20 mm and less than 45 mm except for hand-rails on doors and seats.

4.8 Emergency exits/entrances

All vehicles shall be provided with an unhindered emergency exit with a clearly marked direction of opening at the back of the vehicle of height not less than 120 mm and width not less than 457 mm.
4.8.1 Emergency doors

Emergency doors shall be capable of being easily opened from inside and from outside when the vehicle is stationary.

4.8.1.1 Emergency doors shall not be of the power-operated or the sliding type.

4.8.1.2 The driver shall make sure that all emergency doors are securely closed.

4.8.2 Entrance doors

Entrance and exits of the vehicle shall be through single door(s) or double door(s) situated on the left side of the vehicle, whose minimum height for class II, III and IV shall be 1 650 mm, and for class V, 1 800 mm while the minimum width for single door shall be 450 mm and for double shall be 1 200 mm.

4.8.3 Exits

The minimum number of service doors required is as follows:

a) class V and VI vehicle shall have minimum two double doors;
b) class III and IV shall have minimum one service doors.

4.8.4 Entrance and service doors shall not be deemed to be an emergency door.

4.8.5 Emergency windows

4.8.5.1 Emergency windows shall be rectangular, measuring 700 mm x 500 mm minimum.

4.8.5.2 Every hinged emergency window shall open outwards.

4.8.5.3 Every emergency window shall be capable of being easily and instantaneously operated from inside and from outside the vehicle by means of a device recognized as satisfactory by the authority, or shall be made of readily breakable safety glass. This shall preclude the possibility of using panes of laminated glass or plastic material.

4.9 Ventilation

Every vehicle shall be fitted with a suitable ventilator constructed such that it shall under normal use, not leak rainwater into the vehicle.

4.10 Passenger seats (including folding seats and space for seated passengers)

4.10.1 Minimum seat width shall be as specified in Table 3 and as illustrated in Figure 4.

<table>
<thead>
<tr>
<th>Class</th>
<th>F minimum</th>
<th>G minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Continuous seats</td>
<td>Individual seats</td>
</tr>
<tr>
<td>Class IV and V</td>
<td>200</td>
<td>225</td>
</tr>
<tr>
<td>Class III</td>
<td>200</td>
<td>225</td>
</tr>
<tr>
<td>Class II</td>
<td>225</td>
<td>225</td>
</tr>
</tbody>
</table>

Table 3 — Minimum seat width in mm
Figure 3 — Doors
4.10.2 Seat spacing and cushion height

The minimum seat spacing for legroom shall be 660 mm for class V and VI, while for other classes the minimum seat spacing shall be 680 mm, when the seats are arranged one behind the other.

4.10.3 Seat anchorage

The seats shall be firmly bolted on the floor steel frame and not on floor sheets with bolts complying with KS ISO 898. The general seat construction shall be as stated in Figure 5. The tubes used in the construction of seats shall be round or oval shaped and of minimum 25 mm diameter and minimum 2 mm thickness and of grade A.

Where

\[ H = \text{seat spacing} \]
\[ I = \text{Cushion height} \]

Figure 5 — Seat spacing and cushion height
4.10.4 Seat belts anchorage

The seat belts and their anchorage fitted in vehicles shall meet the requirements specified in KS 664, Specification for seat belt assemblies for motor vehicles and KS 822, Specification for anchorages for seat belts — Automobiles.

4.10.4.1 All vehicles shall be provided with 3-point seat belts for the driver’s seat, and all other occupied seats as shown in Figure 6. The other seats may be provided with 2-point seat belts.

![3-point Seat belt](image)

Figure 6 — Seat belt anchorage for vehicles

4.10.4.2 All other classes of vehicles shall be provided with seat belts for each seat.

4.11 The minimum clearance from the roof to the head for classes III, IV, V and VI of a standard height passenger 1.95 m shall be 0.3 m.

4.12 Each seat shall have a height difference of 25 mm between the front and rear legs to facilitate inclination.

4.13 Cushions

If used, cushions for the seat and backrest shall be made of high-density foam conforming to KS-376, Specification for flexible polyurethane foams.

4.14 The combination of the plywood and foam must be reinforced with steel sections or flat bar of 25 mm x 3 mm.

4.15 Interior lighting

All vehicles shall have interior lights operated by the driver and two bell switches, operated by the passengers to alert the driver to stop. The bell switches shall be on the inside roof one at about 610 mm from the rear emergency door and the other switch at a distance of about 300 mm from the driver’s partition.

4.16 Height above ground and steps for passengers

The lowest step for entering into the vehicle shall not exceed a height of 460 mm from the ground.
D shall be the height above the ground of vehicle unla... D, for class V shall be maximum 360 mm, while for other classes, D shall be 400 mm maximum. Mechanical suspensions shall solely be maximum 430 mm.

4.17 Fire extinguisher

4.17.1 Space shall be provided for fitting one or more fire extinguishers, such that one is near the driver’s seat and the space provided for each measuring not less than 600 mm x 200 mm x 200 mm.

4.17.2 Class III, IV and V vehicle shall be provided with dry chemical powder type of fire extinguisher for general purpose use (ABC) ranging from 1.5 kg to 2.0 kg. Fire extinguisher complying with KS ISO 7165, Fire fighting — Portable fire extinguishers — Performance and construction. While classes I, II shall use fire extinguisher type 0.6 kg minimum complying with KS ISO 7165.

4.18 Emergency first aid equipment

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

4.18.2 Every vehicle shall be provided with a fully equipped first aid box.

4.19 Vehicles shall be constructed such that engine noise shall be limited to 90 decibels inside the vehicles.

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4.20 Locks
Every vehicle shall be fitted with quality passenger door locks, boot locks and window locking devices shall
hold the window firmly preventing it from sliding.

4.21 Maneuverability

4.21.1 The vehicle shall be able to maneuver on either lock, inside a circle of 12.5 m radius, without any of
its outermost points projecting outside the circumference of the circle.

4.21.2 When the outer points of the vehicle are moving on either lock on a circle of 12.5 m, the vehicle
shall be able to move within the limits of a circular track 7.2 m wide (see Figure 8).
Figure 8 — Vehicle maneuverability

R = 12.5 m.
r = 5.3 m.
U = max. 0.8 m.
4.22  Engine noise reduction

Non-flammable sound-proof material or materials, which are not liable to be impregnated with fuel or lubricant, shall be used in the engine compartment.

4.23  Protection against fire risks

A partition of heat-resistant material shall be fitted between the engine compartment or other source of heat and rest of the vehicle.

4.23.1  Fuel tanks

Fuel system assembly shall be in accordance with KS 13 , Recommendation for fuel tank assembly for automotive.

4.23.1.1  Every fuel tank shall be securely fixed. No part of a fuel tank shall be less than 600 mm from the front of the vehicle or less than 300 mm from the rear of the vehicle so as to provide protection in the event of front or rear impact.

4.23.1.2  No part of the fuel tank shall project beyond the overall width of the bodywork.

4.23.1.3  Fuel tanks shall be made so as to be corrosion resistant.

4.23.2  Fuel-feed systems

4.23.2.1  No apparatus used for the fuel feed shall be placed in the driver's compartment or the passenger compartment.

4.23.2.2  Fuel lines and all other parts of the fuel-feed system shall be accommodated in the positions on the vehicle where they have the fullest reasonable protect.

4.23.2.3  Twisting or bending movements and vibrations of the vehicle structure or the power unit shall not subject the fuel lines to abnormal stress.

4.23.2.4  Fuel leaking from any part of the system shall be able to flow away freely to the road surface, but never onto the exhaust system.

4.23.3  Fuel filler holes

4.23.1  Fuel filler holes shall be accessible only from outside the vehicle.

4.23.3.2  Fuel filler holes shall be not less than 500 mm from any door aperture when the fuel tank is intended to contain petrol, and not less than 250 mm when it is intended to contain diesel fuel; they shall moreover not be in the passenger compartment, nor in the driver's compartment.

4.23.4  Fuel filler hole caps

Fuel filler hole caps shall be so designed and constructed that they cannot be opened accidentally.

4.24  Electrical equipment and wiring

4.24.1  All cables shall be well insulated and all cables and electrical equipment shall be able to withstand the temperature and humidity conditions to which they are exposed. Cables used in the engine compartment shall be able to withstand the environmental temperature, oil and vapour.
4.24.2 All cables shall be well protected and shall be held securely in position in such a way that they cannot be damaged by cutting, abrasion or chafing.

4.24.3 There shall be at least two internal lighting circuits such that failure of one will not affect the other.

4.24.4 Every electrical circuit feeding an item of equipment other than the starter, the ignition circuit (positive ignition), the glow-with, the engine-stopping device, the battery-charging circuit and the battery, shall include a fuse or a circuit breaker.

4.25 Batteries

4.25.1 All batteries shall be secured and easily accessible.

4.25.2 The battery compartment shall be separated from the passenger compartment and driver’s compartment and ventilated to outside air.

5 External dimensions

5.1 Overall length

The overall length of classes IV, V and VI including any parts projecting from front to rear shall not exceed 12.5 metres.

5.2 Overall width

The overall width of classes IV, V and VI shall not exceed 2.65 m.

6 Inspection and criteria of conformity

6.1 During Production

Every vehicle shall be inspected by an engineer accredited by KENAS at end of the framing stage, for the integrity of the welding and materials used in the building of the frame. They will sign for conformity of this frame, using the form in annex B.

6.2 Final Inspection

6.2.1 Every vehicle shall have an approval mark as prescribed in this standard after undergoing sufficient random inspection in the form of plate specified in annex C. Approval granted shall be withdrawn if this requirement is not complied with and production discon inued.

6.2.2 Every vehicle shall be inspected in accordance with requirements of KS 1515, code of practice for inspection of road vehicles. Dimension inspections shall ensure that vehicle external dimensions are in accordance with this standard and the design authorized by KENAS. A vehicle shall be inspected with all parts and accessories in place. The accredited engineer shall sign for conformity, using the form in annex B, which shall be a requirement for registering this PSV vehicle.

7 Marking

The following information shall be legibly and indelibly marked on a plate permanently affixed on the side of the vehicle body:

a) manufacture/body builder’s name, address and trade mark;

b) year of manufacture;

c) capacity;

d) batch number;
e) reference to this standard.
Annex A
(informative)

Passenger Capacity

A.1 There shall be on the vehicle a number \( P_s \) of seating places other than folding seats, which conform to this standard. If the vehicle is of class V and IV, the number \( P_s \) shall be at least equal to the number of square metres of floor available for passengers and crew \( (S_0) \) rounded down to the nearest whole number; the required number may be reduced by 10% in the case of V vehicles \( (0.9 \ S_0) \).

A.2 The total number \( N \) of seating and standing places in the vehicle shall be calculated such that both of the following conditions are fulfilled:

\[
N = P_s + \frac{S_1}{S_{sp}}
\]

and

\[
N = \frac{MT - MV - L \ V - R \ VX}{Q}
\]

where,

\( P_s \) = number of seating places;

\( S_1 \) = surface area \( (m^2) \) available for standing passengers;

\( S_{sp} \) = area assumed for one standing passenger \( (m^2/\text{standing passenger}) \);

\( MT \) = technically permissible maximum mass \( (kg) \);

\( MV \) = unladen mass \( (kg) \) as defined in 2.16.1;

\( L \) = specific load of baggage \( (kg/m^2) \) in the baggage compartment(s);

\( V \) = total volume \( (m^3) \) of the baggage compartments;

\( R \) = specific mass of baggage in the roof area \( (kg/m^2) \);

\( VX \) = total surface area \( (m^2) \) available for baggage to be carried on the roof;

\( Q \) = mass \( (kg) \) assumed for the load on each passenger seating and standing place, if any.

A.3 In the case of Class III, vehicles \( S_1 = 0 \).

A.4 The values of \( Q, S_{sp}, L \) and \( R \) for every class of vehicle are as follows:

<table>
<thead>
<tr>
<th>Class</th>
<th>( Q ) (kg)</th>
<th>( S_{sp} ) (m²/standing passengers)</th>
<th>( L ) (kg/m³)</th>
<th>( R ) (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>71'</td>
<td>0.150</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>III</td>
<td>71'</td>
<td>(No standing passengers)</td>
<td>100</td>
<td>75</td>
</tr>
</tbody>
</table>

'Including 3 kg of hand baggage.'