

67 Wheelchair accessible vehicle

67.1 Effective Date and Scope:

67.1.1 Effective from 2013/1/1, all variant of vehicle category M equipped with wheelchair space excluding low floor bus which complied with “63. Low floor vehicle”) shall comply with this regulation.

67.1.2 The applicants applying for low volume safety approval or vehicle-by-vehicle low volume safety approval could be exempted from paragraphs 67.6.2 to 67.6.4 the static and dynamic tests of wheelchair and wheelchair user restraint system.

67.2 Wheelchair accessible vehicle shall according to suitable variants and range of principle are as below:

67.2.1 The same vehicle category.

67.2.2 The same type of vehicle body.

67.2.3 The same axle set variant.

67.2.4 The same axle weight and gross vehicle weight.

67.2.5 The same brand and vehicle type.

67.2.6 The same chassis brand.

67.2.7 Chassis manufacturers announced that the same chassis vehicle type.

67.2.8 The same brand and type of boarding device.

67.2.9 The same brand and type of wheelchair and wheelchair user restraint system.

67.3 Dimension of wheelchair access door :

67.3.1 Dimension of wheelchair access entrance shall be not less than 750 mm wide and 1,300 mm high.

67.3.2 The entrance of wheelchair access entrance shall be installed with handrails, and the shape of handrails shall be easy to grip, the sectional diameter of handrail shall be 20 to 30 mm, slip-resistant and retro-reflective markings.

67.3.3 Unless wheelchair accessible vehicle equipped with power operated lifts, the height of the entrance from the ground shall not be larger than 300 mm. If the vehicle is equipped with ramp and comply with the requirements of 67.5.3.5 and 67.5.3.6, the height of the entrance from the ground may be larger than 300 mm

67.4 The vehicle wheelchair accommodation provisions :

67.4.1 Each wheelchair space shall be considered as a seating position.

67.4.2 Vehicle wheelchair space shall comply with the requirements specified below:

67.4.2.1 The dimension of wheelchair space shall be not less than 1,300 mm long, 750 mm wide, and 1,350 mm high.

67.4.2.2 If the category M1 vehicle is provided with two or more wheelchair space which were connected in longitudinal direction, the dimension of each wheelchair space shall be not less than 1,100 mm long, 750 mm wide, and 1,350 mm high.

67.4.3 The floor of vehicle wheelchair space shall be horizontal and slip-resistant. If the floor of vehicle wheelchair space is not horizontal, it shall be equipped the device for prevent wheelchair sliding.

67.4.4 The right-hand side and left-hand side of vehicle wheelchair accommodation shall be assembled with handrails or handgrips, and its shape shall be easy gripped for wheelchair users.

67.4.5 For vehicles, where the foot space of any seat, or part of a folding seat when in use, intrudes into a wheelchair space, those seats shall have signs fixed on or adjacent to them with the following text, equivalent text or pictogram: "First priority for wheelchair user". This text shall be clear and letter square shall not be less than 50 mm.

67.5 The wheelchair accessible vehicle shall be equipped with lifts or ramps boarding device, and shall comply with the following provisions :

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67.5.1 General requirements:

- 67.5.1.1 The controls actuating the boarding devices shall be clearly marked. Application of the boarding device shall be indicated by a tell-tale to the driver.
- 67.5.1.2 In the event of the failure of a safety device, lifts or ramps shall be incapable of operation, unless they can be safely operated by manual effort. The type and location of the emergency operating mechanism shall be clearly marked.
- 67.5.1.3 Access to one of the service or emergency doors on the vehicle may be obstructed by a boarding device providing the following two conditions are satisfied from both inside and outside the vehicle.
 - 67.5.1.3.1 The boarding device does not obstruct the handle or other device for opening the door.
 - 67.5.1.3.2 The boarding device can be readily moved to leave the doorway clear for use in an emergency.

67.5.2 Lifts :

- 67.5.2.1 Lifts shall only be capable of operation when the vehicle is at standstill. Any movement of the platform shall be prevented unless a device preventing the wheelchair from rolling off has been activated or has automatically come into operation.
- 67.5.2.2 The lift platform shall not be less than 1,000 mm long and 720 mm wide.
- 67.5.2.3 The lift platform shall be capable of operating when carrying a mass of at least 300 kg. if the companion is no need to accompany wheelchair user on the platform when the lift is operating, then the capacity of the lift shall not be less 200 kg. and the capacity shall be marked adjacent to lift.
- 67.5.2.4 The lifts shall be equipped with slip-resistant and an device to prevent wheelchair slip backward, and it also shall be equipped with safety belt or the device to prevent wheelchair fall off from the lift.
- 67.5.2.5 Operation of lift : The lift shall be designed to be operated by controls adjacent to the lift, and easy to operated.
- 67.5.2.6 Additional technical requirements for power-operated lifts :
 - 67.5.2.6.1 During the power-operated lift is in operating, there shall be indication by flashing yellow lights and an audible signal.
 - 67.5.2.6.2 The operating control shall be designed in such a way that, if released, the movement of the lift shall immediately be stopped and it shall be able to initiate a movement in either direction.
 - 67.5.2.6.3 Manual device is necessary , when power-operated lift is out of order, just like electric power system is malfunctioned or breakdown, the manual device shall able to operate the lift.

67.5.3 Ramp :

- 67.5.3.1 The ramp shall only be capable of operation when the vehicle is at standstill.
- 67.5.3.2 Edges on the outside shall be rounded to a radius of no less than 2.5 mm. Corners on the outside shall be rounded to a radius of not less than 5 mm.
- 67.5.3.3 The outer edge of ramp surfaces available for use by a wheelchair shall be clearly marked with a band of colour 45 mm to 55 mm in width which contrasts visually with the remainder of the ramp surface. The band of colour shall extend along the outermost edge and along both edges parallel to the direction of travel of the wheelchair.
- 67.5.3.4 A portable ramp must be secure when in its position for use. A portable ramp must be provided with a suitable position where it can be safely stowed and where it is readily available for use.
- 67.5.3.5 Any ramp which when ready for use exceeds 1,200 mm in length shall be fitted with a device to prevent the wheelchair rolling off the sides.

67.5.3.6 The slope of the ramp shall be no more than 14 degrees, Nevertheless , if the vehicle has a power assisted boarding device, the slope of the ramp shall not be more than 20 degrees.

67.5.3.7 The ramp shall be capable of operating safely with a load of 300 kg, If the companion is not necessary to board the ramp , the load shall not be less than 200 kg. the capacity shall be marked adjacent to the ramp.

67.5.3.8 The ramp shall not be less than 720 mm wide, and it shall be firmly and not easy to fall off when ramp is operating.

67.5.3.9 Deployment and stowage of the ramp may be either manual or power-operated.

67.5.3.10 The ramp shall be so designed that excessive forces are not required to operate the ramp.

67.5.3.11 Additional technical requirements for power-operated ramps :

67.5.3.11.1 During the power-operated ramp is operating, there shall be indication by flashing yellow lights and an audible signal.

67.5.3.11.2 Operation of power-operated ramp : The power-operated ramp shall be designed for operation by controls adjacent to the lift, and easy to be operated.

67.5.3.11.3 Manual device is necessary, when power-operated ramp is out of order, like electric power system is malfunctioned or breakdown, the manual device shall be capable to control power-operated ramp.

67.5.4 Electric safety requirements for power-operated boarding devices (power-operated lifts or power-operated ramps):

67.5.4.1 All wirings should be well insulated.

67.5.4.2 All wirings should be properly protected and securely installed, and should be free from any damage of amputation, wear and friction.

67.5.4.3 Supply power directly from the vehicle's battery, and shall be protected with fuses or switches of adequate level. The model of connectors should be in line with battery terminals to ensure that they are securely fastened.

67.5.4.4 The insulating materials for circuit should comply with the selection of both labeled voltage and working voltage. Insulating paint, glue, enamel and other similar stuffs should not be used as materials for basic insulation.

67.6 Restraint system for wheelchair and wheelchair user :

67.6.1 Each wheelchair space shall be equipped with restraint system designed for forward facing or backward facing wheelchair users, and restraint system shall include wheelchair restraint system and the wheelchair user restraint system.

67.6.2 A static test shall be carried out on the anchorage points for both the wheelchair restraint system and the wheelchair user restraint in accordance with the following requirements:

67.6.2.1 The forces specified in paragraph 67.6.3 shall be applied by means of a device reproducing the geometry of the wheelchair restraint system;

67.6.2.2 The forces specified in paragraph 67.6.3.3 shall be applied by means of a device reproducing the geometry of the wheelchair user restraint.

67.6.2.3 The forces in paragraph 67.6.2.1 and 67.6.2.2 shall be applied simultaneously in the forward direction and at an angle of 10 +/- 5 degrees above the horizontal plane;

67.6.2.4 The forces in paragraph 67.6.2.1 shall be applied in the rearward direction and at an angle of 10 +/- 5 degrees above the horizontal plane;

67.6.2.5 The forces shall be applied as rapidly as possible through the central vertical axis of the wheelchair space; and

67.6.2.6 The force shall be maintained for a period of not less than 0.2 seconds.

67.6.2.7 The test shall be carried out on a representative section in the vehicle, this section contains any accessories arranged on the vehicle body to the strength or rigidity required.

67.6.3 The forces specified in paragraph 67.6.2 are:

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- 67.6.3.1 In the case of anchorages provided for a wheelchair restraint system fitted to a category M2 vehicle:
- 67.6.3.1.1 1,110 +/- 20 daN applied in the longitudinal plane of the vehicle and towards the front of the vehicle at a height of not less than 200 mm and not more than 300 mm measured vertically from the floor of the wheelchair space, and
 - 67.6.3.1.2 550 +/- 20 daN applied in the longitudinal plane of the vehicle and towards the rear of the vehicle at a height of not less than 200 mm and not more than 300 mm measured vertically from the floor of the wheelchair space;
- 67.6.3.2 In the case of anchorages provided for a wheelchair restraint system fitted to a category M3 vehicle:
- 67.6.3.2.1 740 +/- 20 daN applied in the longitudinal plane of the vehicle and towards the front of the vehicle at a height of not less than 200 mm and not more than 300 mm measured vertically from the floor of the wheelchair space, and
 - 67.6.3.2.2 370 +/- 20 daN applied in the longitudinal plane of the vehicle and towards the rear of the vehicle at a height of not less than 200 mm and not more than 300 mm measured vertically from the floor of the wheelchair space;
- 67.6.3.3 In the case of anchorages provided for a wheelchair user restraint system the forces shall be in accordance with the requirements of “Safety belt anchorage”. The forces shall be applied by means of a traction device as appropriate to the belt type as specified in “Safety belt anchorage”.
- 67.6.4 A wheelchair restraint system shall be subject to a dynamic test carried out in accordance with the following requirements:
- 67.6.4.1 A representative wheelchair test trolley of mass 85 kg shall, from a speed of between 48 km/h to 50 km/h to rest, be subject to a deceleration-time pulse:
 - 67.6.4.1.1 exceeding 20 g in the forward direction for a cumulative period of at least 0.015 seconds;
 - 67.6.4.1.2 exceeding 15 g in the forward direction for a cumulative period of at least 0.04 seconds;
 - 67.6.4.1.3 exceeding a duration of 0.075 seconds;
 - 67.6.4.1.4 not exceeding 28 g and for not more than 0.08 seconds;
 - 67.6.4.1.5 not exceeding a duration of more than 0.12 seconds, and
 - 67.6.4.2 For the above test, the wheelchair restraint system shall be attached to either:
 - 67.6.4.2.1 Anchorages fixed to the test rig which represents the geometry of the anchorages in a vehicle for which the restraint system is intended, or
 - 67.6.4.2.2 Anchorages forming part of a representative section of the vehicle for which the restraint system is intended, set up as described in paragraph 67.6.2.7.
- 67.6.5 The restraint system for wheelchair and wheelchair user(straps and related accessories), shall comply with the requirements of “Safety Belt” or an equivalent test of the deceleration-time pulse or acceleration-time pulse specified in paragraph 67.6.4.1. A seat belt approved to “Safety Belt” and so marked shall be deemed to comply.
- 67.6.6 The wheelchair and wheelchair user of restraint system shall be inspect and test by technical service that base on paragraphs 67.6.2 to 67.6.5.
- 67.6.7 Wheelchair user toward the head of vehicle shall use the three-point safety belt, except for the wheelchair user toward the rear of vehicle or wheelchair user toward the gangway can use the three-point or two-point safety belt, and length of safety belt shall be enough for a wheelchair user use.
- 67.6.8 The wheelchair area shall provide firmly wheelchair restraint system, and the setting position of wheelchair restraint system shall be easy to find out.
- 67.6.9 wheelchair restraint system fitted to a wheelchair space shall be capable of being easily released in the case of an emergency;
- 67.6.10 Wheelchair restraint system shall be designed to because of sharp edges or other protrusions, the part is capable of causing injury.

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67.6.11 Wheelchair restraint system operating instructions shall be clearly displayed adjacent to it.

67.7 Identification marking for wheelchair accessible vehicle: Vehicles fitted with a wheelchair space shall have identification marking (s) visible from the outside, both on the front nearside of the vehicle and adjacent to the relevant service door(s).



Figure : Identification marking for wheelchair accessible vehicle
Size: at least 100 mm side, the ratio of length and width 1:1
Colour: white background with blue symbol