54 Prevention of fire risks for the large passenger vehicle

Refer to: R36 03-S12, R52 01-S9

54.1 Effective date and Scope: As for the large passenger vehicles with wheelbase exceeding four meter (class I vehicle), and wheelbase not exceeding four meters and certified gross vehicle weight exceeding 4.5 tons (class II vehicle), the all vehicle types from 2008/12/31 shall comply with this regulation.

54.2 Definitions:

54.2.1 "Passenger compartment" means the space intended for passengers use excluding any space occupied by fixed appliances such as bars, kitchenettes or toilets or luggage compartment;

54.2.2 "Driver's compartment" means 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 driving the vehicle.

54.3 Prevention of fire risks for the large passenger vehicle shall according to suitable types and range of principle are as below：

54.3.1 The same vehicle category symbol.

54.3.2 The same type of vehicle body.

54.3.3 The same axle set type.

54.3.4 The same brand and vehicle type series.

54.3.5 The chassis vehicle have had same axle set type.

54.3.6 The same chassis brand.

54.3.7 Chassis manufacturers announced that the same chassis vehicle type series.

54.4 Declaration of design compliance of prevention of fire risks for the large passenger vehicle

54.4.1 Engine compartment

54.4.1.1 No flammable sound-proofing material or material liable to become impregnated with fuel or lubricant shall be used in the engine compartment unless the material is covered by an impermeable sheet.

54.4.1.2 Precautions shall be taken, either by a suitable layout of the engine compartment or by the provision of drainage orifices, to avoid, so far as possible, the accumulation of fuel or lubricating oil in any part of the engine compartment.

54.4.1.3 A partition of heat-resisting material shall be fitted between the engine compartment or any other source of heat (such as a device designed to absorb the energy liberated when a vehicle is descending a long gradient, e.g. a retarder or a device for heating the interior of the body other, however, than a device functioning by warm water circulation) and the rest of the vehicle. A heating device operating of class II vehicle other than by hot water may be provided in the passenger compartment if it is encased in material designed to resist the temperatures generated by the device, emits no toxic fumes and is positioned such that no passenger is likely to come into contact with any hot surface.

54.4.2 Fuel filler-holes

Fuel filler-holes shall not be located such that there is a risk of fuel falling onto the engine or exhaust system during fillings.

54.4.3 Fuel-feed systems

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

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

54.4.3.3 The unions of pliable or flexible pipes with rigid parts of the fuel-feed system shall be so designed and constructed as to remain leakproof in the various conditions of use of the vehicle, despite aging, twisting or bending movements, or vibration of the vehicle structure or the power unit.

54.4.3.4 Fuel leaking from any part of the system shall be able to flow away freely to the road surface, but never on any exhaust system. Class I vehicle never on any high voltage electrical equipment.

54.4.4 Electrical equipment and wiring

54.4.4.1 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. In the engine compartment, particular attention shall be paid to their suitability to withstand the environmental temperature, oil and vapour.

54.4.4.2 No cable used in an electrical circuit shall carry a current in excess of that acceptable for such a cable in the light of its mode of installation and the maximum ambient temperature.

54.4.4.3 Every electrical circuit feeding an item of equipment other than the starter, the ignition circuit (positive ignition), the glow-plugs, the engine-stopping device, the battery charging circuit and the battery ground terminal and each circuit shall be has a fuse or a breaker. However，Circuits feeding common circuit-breaker, provided that its rated capacity does not exceed 16 A. In the case where electronics are incorporated, these circuits may be protected by built-in protection devices integrated into the electronic components or systems. In such a case, the manufacturer shall give all the relevant technical information at the request of the technical service responsible for conducting the tests.*/

54.4.4.4 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.

54.4.4.5 Where the voltage exceeds 100 Volts RMS (root mean square) in one or more electrical circuits in the class I vehicle, a manually-operated isolating switch which is capable of disconnecting all such circuits from the main electrical supply shall be connected in each pole of that supply which is not electrically connected to earth, and shall be located inside the vehicle in a position readily accessible to the driver, provided that no such isolating switch shall be capable of disconnecting any electrical circuit supplying the mandatory external vehicle lights.

54.4.5 Materials: No flammable material shall be permitted within 10 cm of any exhaust system component, any high voltage electrical equipment or any other significant source of heat of a vehicle unless the material is effectively shielded. For the purpose of this paragraph, a flammable material is considered to be one which is not designed to withstand the temperature likely to be encountered in that location. Where necessary, shielding shall be provided to prevent grease or other flammable materials coming into contact with any exhaust system, any high voltage electrical equipment or any other significant source of heat.

54.5 Checking items of design compliance of prevention of fire risks for the large passenger vehicle

54.5.1 Fuel filler-holes

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

54.5.1.2 Fuel filler-holes shall not be underneath a door aperture; they shall moreover, not be in the passenger compartment or the driver's compartment. For class Ⅱ vehicle that fuel-filler-holes shall not be so located that there is a risk of fuel falling on to the engine or exhaust system during filling.

54.5.1.3 If the filler-hole is situated on a side of the vehicle, the cap shall, when closed, not project beyond the adjacent surfaces of the bodywork.

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

54.5.2 Fuel-feed systems

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

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

54.5.3 Emergency switch: There shall be provided an emergency switch of class I vehicle which is intended to reduce the risk of fire after the vehicle has come to a standstill. This emergency switch shall have the following characteristics. If an emergency switch of class II vehicle is fitted to reduce the risk of fire after the vehicle has come to a standstill, this emergency switch shall have the following characteristics:

54.5.3.1 It shall be located within immediate reach of the driver seated in the driver's seat.

54.5.3.2 It shall be clearly marked and be provided with a protective cover or other suitable means to prevent inadvertent operation. Clear instructions concerning the method of operation shall be displayed in the immediate vicinity of the emergency switch, e.g. "Remove cover and move lever downwards! Actuate only when the vehicle has been brought to a stop".

54.5.3.3 Its actuation shall cause simultaneous performance of the following functions:

54.5.3.3.1 quick stoppage of the engine

54.5.3.3.2 operation of a battery isolating switch, fitted as close to the batteries as possible, and which isolates at least one battery terminal from the electrical circuit, with the exception of the circuit performing the function required by

paragraph 54.4.4.3.3 below, the circuits which ensure the uninterrupted function of the tachograph as well as those devices whose sudden removal from service could provoke a greater risk than the one avoided, for example:

54.5.3.3.2.1 emergency interior lighting;

54.5.3.3.2.2 cooling scavenger of auxiliary heaters;

54.5.3.3.2.3 centralized electronic door locking;

54.5.3.3.3 switching-on of the vehicle's hazard warning signal;

54.5.3.4 Performance of the functions mentioned in paragraph 54.4.4.3 above may be initiated not only by the emergency switch, but also by separate controls, provided that these do not in an emergency interfere with the functioning of the emergency switch.

54.5.4 Electrical equipment and wiring

54.5.4.1 There shall be at least two internal lighting circuits such that failure of one will not affect the other for class I vehicle. A circuit serving only permanent entry and exit lighting can be considered as one of these circuits.

54.5.5 Batteries

54.5.5.1 All batteries shall be well secured and easily accessible.

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

54.5.6 Fire extinguishers and first-aid equipment

54.5.6.1 Each extinguisher shall comply with CNS fire extinguisher standards..

54.5.6.2 Fire extinguishers and first aid kits of class II vehicle 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 easily extract them in an emergency.

54.6 Testing items of prevention of fire risks for the large passenger vehicle

54.6.1 Fuel filler-holes: No part of fuel filler-holes of class I vehicle shall be less than 50 cm from any service door or emergency door aperture when the fuel tank is intended to contain petrol, and not less than 25 cm when it is intended to contain diesel fuel; they shall moreover not be in the passenger compartment, nor in the driver's compartment.

54.6.2 Fire extinguishers and first-aid equipment

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

54.6.2.2 The vehicle shall be fitted with one or more fire extinguishers (Double decker city buses shall set fire extinguisher separately in both deck), one being near the driver's seat. Space shall be provided for the fitting of one or more fire

extinguishers, one being near the driver's seat and the space of class I vehicle provided for each measuring not less than 600 mm x 200 mm x 200 mm.