66 Fuel tank

Refer to: R34 02-S3

66.1 Effective Date and Scope:

66.1.1 Effective date from 2014/1/1, the new types of fuel tank used in M, N and O vehicles, and from 2016/1/1 all types of fuel tank used in M, N and O vehicles, shall comply with this regulation.

66.1.2 The applicants applying for low volume safety approval or vehicle-by-vehicle low volume safety approval could exempt from regulation of “Fuel tank” except large passenger vehicle and child-only vehicle.

66.2 Definitions

66.2.1 Fuel tank: means the tank(s) designed to contain the liquid fuel, as defined in paragraph 66.2.3., used primarily for the propulsion of the vehicle excluding its accessories (filler pipe, if it is a separate element, filler hole, cap, gauge, connections to the engine or to compensate interior excess pressure, etc.;

66.2.2 Capacity of the fuel tank: means the fuel tank capacity as specified by the manufacturer; and

66.2.3 Liquid fuel: means a fuel which is liquid in normal conditions of temperature and pressure.

66.3 Fuel tank shall according to suitable types and range of principle are as below：

66.3.1 The structure, shape, dimensions and material (metal/plastic) of the fuel tank(s);

66.3.2 The intended use of the fuel tank: universal use or specific vehicle use;

66.3.3 The presence or absence of the accessories.

66.4 Declaration of design compliance: applicant shall ensure and declare to comply with the following requirements.

66.4.1 Fuel tanks shall be made so as to be corrosion-resistant.

66.4.2 Any excess pressure or any pressure exceeding the working pressure shall be compensated automatically by suitable devices (vents, safety valves, etc.).

66.5 General specifications for all liquid fuel tanks

66.5.1 Fuel tanks shall satisfy, when equipped with all accessories, which are normally attached to them, the leakage tests carried out according to paragraph 6.1. at a relative internal pressure equal to double the working overpressure, but in any event not less than an overpressure of 0.3 bar.

66.5.2 The fuel shall not escape through the fuel tank cap or through the devices provided to compensate excess pressure during the foreseeable course of operation of the vehicle.

In the case of overturning of the vehicle, a drip may be tolerated provided that it does not exceed 30 g/min;this requirement shall be verified during the test prescribed in paragraph 6.2.

66.5.3 The fuel tank should be made of fireproof material.

66.6 Inspection and tests necessary for all liquid fuel tanks

66.6.1 Hydraulic test：The fuel tank shall be subjected to a hydraulic internal pressure test which shall be carried out on an isolated unit complete with all its accessories. The fuel tank shall be completely filled with a non-flammable liquid (water, for example). After all communication with the outside has been cut off, the pressure shall be gradually increased, through the pipe connection through which fuel is fed to the engine, to a relative internal pressure equal to double the working pressure used and in any case to not less than an excess pressure of 0.3 bar (30 kPa), which shall be maintained for one minute. During this time the fuel tank shell shall not crack or leak; however, it may be permanently deformed.

66.6.2 Overturn test：

66.6.2.1 The fuel tank and all its accessories shall be mounted on to a test fixture in a manner corresponding to the mode of installation on the vehicle for which the fuel tank is intended: this also applies to systems for the compensation of the interior excess pressure.

66.6.2.2 The test fixture shall rotate about an axis lying parallel to the longitudinal vehicle axis.

66.6.2.3 The test shall be carried out with the fuel tank filled to 90 per cent of its capacity and also 30 per cent of its capacity with a non-flammable liquid having a density and a viscosity close to those of the fuel normally used (water may be accepted).

66.6.2.4 The fuel tank shall be turned from its installed position 90 degrees to the right. The fuel tank shall remain in this position for at least five minutes. The fuel tank shall then be turned 90 degrees further in the same direction. The fuel tank shall be held in this position, in which it is completely inverted, for at least another five minutes. The fuel tank shall be rotated back to its normal position. Testing liquid that has not flowed back from the venting system into the fuel tank shall be drained and replenished if necessary. The fuel tank shall be rotated 90 degrees in the opposite direction and left for at least five minutes in this position.

The fuel tank shall be rotated 90 degrees further in the same direction. This completely inverted position shall be maintained. Afterwards the fuel tank shall be rotated back to its normal position.

The rotation rate for each successive increment of 90 degrees shall take place in any time interval from 1 to 3 minutes.