

## **Proposal for amendments to the Consolidated Resolution on the Construction of Vehicles (R.E.3)**

This document was prepared by the expert from the Russian Federation in order to change the measuring units for vehicle masses from tonnes to kilograms in R.E.3 (document ECE/TRANS/WP.29/78/Rev.4).

### **I. Proposal**

R.E.3 - the following paragraphs amend to read:

- 2.2.2. "*Category M<sub>2</sub>*": Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass not exceeding ~~5 tonnes~~ **5,000 kg**.
- 2.2.3. "*Category M<sub>3</sub>*": Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass exceeding ~~5 tonnes~~ **5,000 kg**.
- 2.3.1. "*Category N<sub>1</sub>*": Vehicles used for the carriage of goods and having a maximum mass not exceeding ~~3.5 tonnes~~ **3,500 kg**.
- 2.3.2. "*Category N<sub>2</sub>*": Vehicles used for the carriage of goods and having a maximum mass exceeding ~~3.5 tonnes~~ **3,500 kg** but not exceeding ~~12 tonnes~~ **12,000 kg**.
- 2.3.3. "*Category N<sub>3</sub>*": Vehicles used for the carriage of goods and having a maximum mass exceeding ~~12 tonnes~~ **12,000 kg**.
- 2.4.1. "*Category O<sub>1</sub>*": Trailers with a maximum mass not exceeding ~~0.75 tonnes~~ **750 kg**.
- 2.4.2. "*Category O<sub>2</sub>*": Trailers with a maximum mass exceeding ~~0.75 tonnes~~ **750 kg**, but not exceeding ~~3.5 tonnes~~ **3,500 kg**.
- 2.4.3. "*Category O<sub>3</sub>*": Trailers with a maximum mass exceeding ~~3.5 tonnes~~ **3,500 kg**, but not exceeding ~~10 tonnes~~ **10,000 kg**.
- 2.4.4. "*Category O<sub>4</sub>*": Trailers with a maximum mass exceeding ~~10 tonnes~~ **10,000 kg**.
- 2.8.1.1. Vehicles in category N<sub>1</sub> with a maximum mass not exceeding ~~2 tonnes~~ **2,000 kg** and vehicles in category M<sub>1</sub> are considered to be off-road vehicles if they have...

- 2.8.1.2. Vehicles in category N<sub>1</sub> with a maximum mass exceeding ~~2 tonnes~~ **2,000 kg** or in category N<sub>2</sub>, M<sub>2</sub> or M<sub>3</sub> with a maximum mass not exceeding ~~12 tonnes~~ **12,000 kg** are considered to be off-road vehicles either if all their wheels are designed to be driven simultaneously, including vehicles where the drive to one axle can be disengaged, or if the following three requirements are satisfied...
- 2.8.1.3. Vehicles in category M<sub>3</sub> with a maximum mass exceeding ~~12 tonnes~~ **12,000 kg** or in category N<sub>3</sub> are considered to be off-road either if the wheels are designed to be driven simultaneously, including vehicles where the drive to one axle can be disengaged, or if the following requirements are satisfied...
- 2.8.2.1. Vehicles in category N<sub>1</sub> with a maximum mass not exceeding ~~two tonnes~~ **2,000 kg** and vehicles in category M<sub>1</sub> shall be in running order, namely with coolant fluid, lubricants, fuel, tools, spare-wheel and a driver considered to weigh a standard ~~75 kg kilograms~~.
- 8.14.1.1. The occupants of such a vehicle shall be protected by a screen or headboard capable of withstanding, without breaking, a uniformly-distributed static force of 800 daN per ~~ton~~ **1,000 kg** of the vehicle permissible load, exerted horizontally and parallel to the longitudinal median plane of the vehicle...
- 8.14.3. Where a vehicle is equipped with a trestle or bolster behind the cab for the purpose of supporting long loads, such as steel girders or telegraph poles, the trestle or bolster shall be capable of withstanding the combined effect of two forces, each of 600 daN per ~~ton~~ **1,000 kg** of permissible load, acting forwards and downwards on the top of the trestle.
- 8.28. Tachographs
- The fitting of a tachograph<sup>1</sup> should be compulsory on motor vehicles whose permissible maximum weight, including that of trailers permitted to be coupled to the vehicle, exceeds ~~7.5 tonnes~~ **7,500 kg**, or which belong to category D as defined in Annexes 6 and 7 to the 1968 Convention on Road Traffic.

## II. Justification

This proposal is aimed at using of SI system, reaching uniformity in indicating measuring units for mass of L, M, N and O category vehicles in R.E.3 and between R.E.3 and 1968 Convention on Road Traffic.

The use of tonnes for measuring vehicle mass reduces the number of significant digits in a measured value, which may lead to incorrect vehicle classification.

Mathematical rounding of measured values is performed taking into account a certain number of significant digits, where the latter figure is questionable, and the penultimate figure is reliable.

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<sup>1</sup> Requirements on fitting of tachographs in accordance with the AETR (European Agreement concerning the Work of Crews of Vehicles engaged in international Road Transport) supersede this recommendation.

The significant digits in the value are all those standing to the right from the first digit not equal to zero. Along with this, zeros following from the record 10 to the power of n are not significant.

Following the rules of mathematical rounding one can conclude that the records, for example, 12 tonnes and 12,000 kg are not equivalent since the first value consists of 2 significant digits and the second value consists of 5 significant digits. So that the accuracy of measurements for the first and second cases may be different.

To compare the measured value with the established limit the measured value would be precise enough with one more significant digit than the established limit. The measured value shall be rounded to the same number of significant digits as the established limit.

Returning to the example with the established value of 12 tonnes, the **mass of** 11,550 kg and 12,450 kg in the both cases equals to the established value of 12 tonnes.

Thus with the value presently established in R.E.3, a vehicle with maximum mass 12,499 kg still belongs to N2 category, although this seems to be against logic.

The proposed amendment would help to avoid misuse of established limits for mass in R.E.3.

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