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Economic Commission for Europe**Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on Passive Safety****Sixty-sixth session**

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Item 15 of the provisional agenda

UN Regulation No. 94 (Frontal collision)**Proposal for Supplement 2 to the 03 series of amendments to
UN Regulation No. 94 (Frontal collision)****Submitted by the expert from the European Commission on behalf of
the drafting task force***

The text reproduced below was prepared by the experts of the drafting task force to align UN Regulations to the provisions of the revised General Safety Regulation of the European Union to expand the scope of the UN Regulation and to make minor adaptations and clarifications to the existing requirements. It is based on GRSP-65-14 distributed during the sixty-fifth session of the Working Party on Passive Safety (GRSP). The modifications to the current text of the UN Regulations are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2018–2019 (ECE/TRANS/274, para. 123 and ECE/TRANS/2018/21/Add.1, Cluster 3.1), the World Forum will develop, harmonize and update UN regulations to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.



I. Proposal

Paragraph 1, amend to read:

"1. Scope

This Regulation applies to vehicles of category M₁¹ of a total permissible mass not exceeding ~~2.5 tonnes~~ **3,500 kg** and to vehicles of category N₁ of a total permissible mass not exceeding **2,500 kg**; other vehicles may be approved at the request of the manufacturer."

Insert new paragraphs 2.36. and 2.37., to read:

"2.36. **"Displacement system"** means a device by which the seat or one of its parts can be displaced and/or rotated, without a fixed intermediate position, to permit easy access of occupants to and from the space behind the seat concerned.

2.37. **"Ladder frame"** means a chassis composed of two longitudinal rails transversally connected by crossbeams and where the cabin, made of panels, is connected to such rails."

Paragraph 5.2.5.1., amend to read:

"5.2.5.1. To open at least one door ~~if there is one~~, per row of seats, ~~and W~~where there is no such door, ~~to move the seats or tilt their backrests as necessary~~ **it shall be possible** to allow the evacuation of all the occupants **by activating the displacement system of seats, if necessary.** ~~This is however, only applicable to vehicles having a roof of rigid construction. This is not applicable to convertibles where the top can be easily opened to allow the evacuation of the occupants.~~

This shall be assessed for all configurations or worst-case configuration for the number of doors on each side of the vehicle and for both left-hand drive and right-hand drive vehicles, when applicable."

Insert new paragraphs 5.3. to 5.3.2., to read:

"5.3. **Specific provisions**

5.3.1. **Vehicles of category M₁ of a total permissible mass exceeding 2,500 kg that are based on vehicle types of category N₁ of a total permissible mass exceeding 2,500 kg are deemed to meet the requirements of paragraph 5 where the requirements of Regulation No. 137 are fully complied with and at least one of the following conditions is met:**

- (a) **the acute angle alpha (α), measured between a horizontal plane passing through the centre of the front axle and an angular transverse plane passing through the centre of the front axle and the R-point of the driver's seat (see figure 4 below), is more than 22°;**
- (b) **or the ratio between the distance from the driver's R-point to the centre of the rear axle (L101-L114) and the centre of the front axle and the driver's R-point (L114) is more than 1.30¹ (see figure 4 below).**

¹ As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.6, para. 2. – www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html

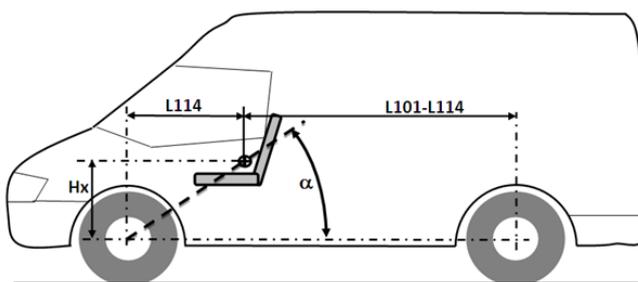
This shall be verified by the Technical Service and subject to the decision of the Type Approval Authority, as well as stated under point 8.2. on the approval communication of Annex 1.

5.3.2. Vehicles of category N1 of a total permissible mass exceeding 2,250 kg but not exceeding 2,500 kg are deemed to meet the requirements of paragraph 5, where their structural basis is a ladder frame and the requirements of Regulation No. 137 are fully complied with and at least one of the following conditions is met:

- (a) the acute angle α , measured between a horizontal plane passing through the centre of the front axle and an angular transverse plane passing through the centre of the front axle and the R-point of the driver's seat (see figure 4 below), is more than 22° ;
- (b) or the ratio between the distance from the driver's R-point to the centre of the rear axle (L101-L114) and the centre of the front axle and the driver's R-point (L114) is more than 1.301 (see figure 4 below).

This shall be verified by the Technical Service and subject to the decision of the Type Approval Authority, as well as stated under point 8.2. on the approval communication of Annex 1.

Figure 4



"

Annex 1, item 8, amend to read:

"8. Mass of the Vehicle

8.1. Mass of vehicle submitted for testing:

Front axle:

Rear axle:

Total:.....

8.2. Where paragraph 5.3.1. or 5.3.2. applies:

Total permissible mass.....

Proof of compliance with UN Regulation 137 (i.e. type approval number or test report): "

II. Justification

1. The European Union is in the process of adopting the revised General Safety Regulation that introduces a range of new safety features. It however also addresses a number of exemptions in essential vehicle safety requirements, e.g. heavy sport utility vehicles and vans.

2. These broad exemptions can no longer be justified in the light of increasing vehicle mass due to, e.g. electrification of the vehicle fleet as well as protection of workers that use light commercial vehicles.
3. Several clarifications have been included in line with common practise in terms of worst-case selection of vehicles.
4. N₁ category vehicles with a relatively high maximum permissible mass could have specific commercial vehicle architecture based on N₂ category vehicles. This could in turn lead to a disproportionally high crash test severity. For this reason, it is proposed not to include these vehicles in the scope with a view to test them according to Regulation No. 137 instead. M₁ category vehicles based on such N₁ vans are proposed to be given the same treatment.
5. A few of these same N₁ vehicles with a total permissible mass between 2,500 kg and 3,500 kg are classified as M₁ vehicles (camper vans, etc.) although these are structurally identical to their N₁ base vehicle. It is recognised that these heavy M₁ should also be excluded from the extension of scope, for this reason the same criteria is incorporated from UN Regulation No. 135. This was originally incorporated in the Pole Side Impact regulation to differentiate between these large N₁ vehicles and more common pick-up vehicles. It is more logical to align Regulation No. 94 with Regulation No. 135 crash regulation exemptions rather than using e.g. the Regulation No. 127 pedestrian protection exemption.
6. N₁ category vehicles of a total permissible mass exceeding 2,250 kg but not exceeding 2,500 kg may also have very specific commercial vehicle architecture based on other excluded vehicles with a higher maximum permissible mass. This could in turn lead to a disproportionally high crash test severity. For this reason, it is proposed not to include these vehicles in the scope with a view to test them according to UN Regulation No. 137 instead.
7. In wide vehicles, it may not be necessary for the front seats to have a displacement system (in accordance with UN Regulation No. 17), as occupants can move forward between the seats. It is proposed to allow this also in this Regulation to allow for the evacuation of rear-seated occupants through a front door in case of a crash. The amended text “by activating the displacement system of seats, if necessary” reflects this option.
8. To avoid diverging interpretations by Technical Services and Type-Approval Authorities, it is clarified that at least a worst-case configuration for side doors must be assessed to prevent that certain configurations would somehow not be checked.
