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World Forum for Harmonization of Vehicle Regulations**Working Party on General Safety Provisions****122nd session**

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Item 8 of the provisional agenda

UN Regulation No. 66 (Strength of superstructure (buses))**Proposal for Supplement 1 to the 02 series of amendments to UN
Regulation No. 66 (Strength of superstructure (buses))****Submitted by the expert from the Russian Federation ***

The text reproduced below was prepared by the expert of the Russian Federation to amend UN Regulation No. 66 to clarify the verifications after the performance of the strength test. It is based on informal document GRSG-121-31. The modifications to the current text of the UN Regulation are marked in bold for new and strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2021 as outlined in proposed programme budget for 2021 (A/75/6 (Sect.20), para 20.51), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate

I. Proposal

Insert new paragraphs 2.34. and 2.35., to read:

- "2.34. "Escape hatch" means an opening in the roof or the floor intended for use as an emergency exit by passengers in an emergency only.
- 2.35. "Emergency exit" means an emergency door, emergency window or escape hatch."

Insert new paragraph 5.3.5., to read:

- "5.3.5. however, if the approval was granted without assessing the operability of the emergency hatches and injury-safety in the passenger compartment, as provided for in Appendix 1 to Annex 5, then a Contracting Party may require verification of compliance with the requirements of Appendix 1 to Annex 5 at the national level."

Annex 5, paragraph 2.1., amend to read:

- "2.1. The vehicle to be tested need not be in a fully finished, "ready for operation" condition. ~~Generally, any alteration from the fully finished condition is acceptable if the basic features and behaviour of the superstructure are not influenced by it.~~ **It shall be allowed to replace the elements, which do not contribute to the strength of the superstructure, by elements equivalent in mass and method of installation with the exception of elements, which may, after the bus rollover, change their location and enter into the living space of the passengers.** The test vehicle shall be the same as its fully finished version in respect of the following:
- ..."

Annex 5, paragraph 2.1.3., amend to read:

- "2.1.3. elements, which do not contribute to the strength of the superstructure and are too valuable to risk damage (e.g. drive chain, dashboard instrumentation, driver's seat, kitchen equipment, toilet equipment, etc.) can be replaced, **by agreement with the technical service**, by additional elements equivalent in mass and method of installation. These additional elements must not have a reinforcing effect on the strength of superstructure."

Insert new paragraphs 2.2.4. and 2.2.5., to read:

- "2.2.4. **All emergency hatches and exits shall be closed. In the case of an easily breakable hatch, a device, easily accessible to vehicle occupants, shall be installed in its vicinity in order to allow breaking the hatch;**
- 2.2.5. **Fire extinguishers shall be located in their designated places and attached in a standard manner."**

Insert new Appendix 1 to Annex 5, to read:

"Annex 5 – Appendix 1

1. **After conducting the test, verify the following:**
 - 1.1. **The emergency hatch in the roof is not jammed and is still serviceable. In case the emergency hatch is opened by mechanical means (in the case of a glass hatch - without breaking it), the force applied in any direction shall not be more than 400 N.**

Note: If there is only one emergency hatch in the roof, the opening check is carried out from the outside. If there are two or more hatches, the opening check is carried out both from the inside and the outside.
 - 1.2. **No destruction of the seat mounts occurred.**
 - 1.3. **Based on the analysis of video recording materials obtained using the**

filming devices installed on the vehicle, verify that there was no movement of injury-causing objects (fire extinguishers, devices for breaking the easily breakable hatch, etc.) in the residual space."

II. Justification

1. This UN Regulation No. 66 prescribes requirements and methods for the assessment of strength of a superstructure. Different test methods are allowed in accordance with UN Regulation No. 66, but the test of a complete vehicle is assumed to be the basic reference method.
 2. When carrying out full-scale tests of a complete vehicle, we propose to do additional checks in terms of passive safety:
 - (a) destruction of seats mounts. The break-off and displacement of seats is not covered by the current Regulation, since they are initially located inside the residual space and their displacement is not assessed;
 - (b) injury-causing objects entering the residual space and moving within it. If a person is hit by a fire extinguisher or other object when the vehicle overturns, it may cause serious or even fatal injuries.
 3. Emergency hatches are designed to evacuate passengers in case of road accidents when the vehicle has fallen to its side. An emergency hatch is often the only way to leave the vehicle. Provided that the complete vehicle has already been damaged during testing and is on its side, as it happens during an accident, we consider it reasonable to check the operability of its emergency hatches. Because after the vehicle overturns there is a risk of the hatch getting jammed or the hatch opening mechanisms getting damaged.
 4. The force applied to the emergency hatch opening mechanisms is equivalent to the agreed within the official GRSP working group on UN Regulation No. 95 (document E/ECE/324/Rev.1/Add.94/Rev.2/ Amend.4), in part of the ability of a person to apply pressure to the door from the inside of the vehicle. Because people of different age groups shall be able to open emergency hatches.
 5. In view of the above, we propose to add Appendix 1 to Annex 5, which would include all additional proposed checks. Implementation of this Appendix shall be optional, but if the applicant has received approval without assessment provided for in the Annex 5 - Appendix 1, the Contracting Parties may require such assessment. This proposal is drawn up to be similar to paragraph 1.4. of paragraph 1. "Scope" of UN Regulation No. 144.
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