

## **Proposal for the 09 series of amendment to UN Regulation No. 107 (General construction M<sub>2</sub> & M<sub>3</sub>)**

### **Submitted by the experts of the Informal Working Group on Behaviour of M<sub>2</sub> and M<sub>3</sub> vehicles in case of Fire Event\***

The text reproduced below was prepared by the Informal Working Group (IWG) on Behaviour of M<sub>2</sub> and M<sub>3</sub> vehicles in case of Fire Event (BMFE) in charge to evaluate and develop the opportunity for regulatory amendment(s) aimed at increasing the safety of M<sub>2</sub> and M<sub>3</sub> vehicles in case of fire by improving their general construction with regard to evacuation time. This proposal amends the working document referenced ECE-TRANS-WP.29-GRSG-2020-19e. The modifications to the current proposal ECE-TRANS-WP.29-GRSG-2020-19e are marked in red and strikethrough characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2020 as outlined in proposed programme budget for 2020 (A/74/6 (part V sect. 20) para 20.37), 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 10.25. to 10.28., to read:*

- “10.25. As from the official date of entry into force of the 09 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type-approvals under this Regulation as amended by the 09 series of amendments.
- 10.26. As from 1 September [2022], Contracting Parties applying this Regulation shall not be obliged to accept type-approvals to the preceding series of amendments, first issued after 1 September [2022].
- 10.27. Until 1 September [2024], Contracting Parties applying this Regulation shall accept type-approvals to the preceding series of amendments, first issued before 1 September [2022].
- 10.28. As from 1 September [2024], Contracting Parties applying this Regulation shall not be obliged to accept type-approvals issued to the preceding series of amendments to this Regulation.
- 10.29 Notwithstanding paragraphs 10.26. and 10.28., Contracting Parties applying this Regulation shall continue to accept type approvals granted to the 06, 07 or 08 series of amendments to vehicles which are not affected by the 09 series of amendments.”**

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*Annex 1, part 1, Appendix 1, insert a new paragraph 4.4. to read:*

- “4.4. **Reference temperature for the detection system (per paragraph 7.5.1.5.1.)**  
: ...”

*Annex 1, part 1, Appendix 3, insert a new paragraph 5. to read:*

- “5. **Reference temperature for the detection system (per paragraph 7.5.1.5.1.)**  
: ...”

*Annex 3, paragraph 7.5.1.5.1. amend to read:*

- "7.5.1.5.1. The alarm system and the fire suppression system, if fitted, shall be automatically activated through a fire detection system. The detection system shall be designed so as to detect a temperature, in the engine compartment, and in each compartment where a combustion heater is located, in excess of the **reference** temperature occurring during normal operation **as declared by the manufacturer.**

**At the time of Type Approval, this temperature detection shall be verified by the Technical Service, in accordance with the manufacturer's recommendations.**

**The fire suppression system may alternatively be activated automatically by other means, as long as it activates the alarm system.”**

*Annex 3, insert a new paragraph 7.5.7. and 7.5.7.1., to read:*

- “7.5.7. **Fire event**
- 7.5.7.1 **In the case of vehicles of Classes ~~II~~, II, III and B, having the engine located to the rear of the driver's compartment, in the event of activation of an alarm system:**
- **the emergency lighting system according to paragraph 7.8.3. ~~if fitted~~ shall automatically activate and,**

- after a single positive action of the driver on any of the door controls in the driver's compartment, all power-operated doors situated on the side of the vehicle that is nearer of the side of the road corresponding to the direction of traffic for which the vehicle is designed shall open and shall remain in the opened position.

**This is applicable when the vehicle is stationary or driving at a speed less than or equal to 3 km/h.**

**A repeated use of the opening control shall not reverse the opening movement of the door, in order to avoid unintended re-closing in an emergency situation."**

*Annex 3, insert a new paragraph 7.19. to read:*

**"7.19. Safety information:**

**In the case of vehicles of Classes ~~II~~, II non low floor, III and B, means to transmit safety information, which permit the operator, driver and/or crew to easily inform the passengers of the safety instructions as e.g. the location of the emergency exits, the location of the fire extinguishers, safety sign, shall be specified by the manufacturer in the application for approval.**

**These means shall be adapted to the design and architecture of the vehicle with the aim of making the safety instructions easily accessible and intelligible by any passenger."**

## II. Justification

(a) Alarm initiation based on a temperature reference

1. Experts agreed during BMFE- 05 to provide a draft proposal for a minimum performance level for fire detection systems in order to harmonize practices depending on the application need. In this case the most measurable detection criterion seems to be the temperature.
2. The proposed temperature of detection should be a maximum one aiming a reasonable reaction time in case of fire. This maximum detection temperature however depends largely on the location where the temperature excess must be detected, the technology of the power train and combustion heater, as well as on the combustion heater compartments. Some sides of an engine compartment can be rather hot and, depending on the 'robustness' of detection conduit material and its assembly, a fire detection temperature of e.g. 170°C could be too low, while in other places the temperature could reach 230° in normal operation.
3. This temperature should be declared by the manufacturer since he is the one who best knows the technology and configuration of the vehicle. In addition, mandating a too high detection temperature could lead to missing some fire ignitions, while mandating a too low temperature could lead false alarms and loss of credibility by the driver.
4. The verification method should be decided following the manufacturer's recommendation since the temperatures to be detected may vary according to the location of detection.
5. The proposal also indicates that the Technical Service should verify the threshold via a technology different to that of the fire detection system (e.g. infrared vs. a thermocouple) in order to ensure reliability of the measure.
6. The last point of this amendment proposal has been submitted by the experts in order to avoid any detection without alarm engagement due to multiple internal systems.

## (b) Opening of all power-operated doors

7. According to investigations and discussions between experts during several sessions, it appears that passengers unconscious behaviour in case of fire event is to use the same way they used to come into the vehicle.

8. An opportunity to improve passenger evacuation, in addition to already specified emergency exits, is to ensure, under driver decision, to open all power-operated issue in a simple action. This measure, in association to the lighting, aims to let the opportunity to passenger to also use a “classical” way to evacuate the vehicle with regard to a safe operation under driver’s control.

9. The relevant criteria for capturing this new requirement are as follows:

10. Position of the engine to the rear of the driver’s compartment

- a) Type of operating door: restrict the requirement only to power operated service doors.
- b) Speed < 3 km/h or vehicle is stationary
- c) Proper side of the vehicle (according to the direction of traffic)

### Safety instructions

Experts debated during BMFE- 04 the following table parameters :

<b>If the regulation provides requirements on:</b>	<b>The manufacturer shall provide:</b>	<b>The operator shall:</b>	<b>Comments</b>
A safety card	Dedicated space for the cards	Provide the card adapted to the use of the vehicle	Design restrictive as it mandates a card.  Difficulty to adapt the language to the territory where the vehicle will be operated
The safety instructions in general	General instructions like the location of the emergency exits	Adapt the instructions to the occupants and the type of travels.	Technology neutral solution, permitting safety cards, video instructions, signalization, crew instructions, etc.  However, difficulty in defining the pass/fail criteria.
The details related to the construction of the vehicle, like the location of the emergency exits or fire extinguishers	The relevant location for each emergency exit or fire extinguisher	Adapt the instructions to the interior fitments they order to the manufacturers	Technology neutral. However, difficulty in defining the pass/fail criteria.

A consensus has been found within the group based on the following key parameters:

- Technology neutral
- Related to the construction of the vehicle

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