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**Economic Commission for Europe**

Inland Transport Committee

**World Forum for Harmonization of Vehicle Regulations****Working Party on Brakes and Running Gear****Seventy-eighth session**

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Item 3(e) of the provisional agenda

**Regulations Nos. 13 and 13-H (Braking) – Other business****Proposal for an amendment to Regulation No. 13 (Heavy vehicle braking)****Submitted by the experts from the European Association of Automotive Suppliers, the International Organization of Motor Vehicle Manufacturers and the Federation of European Manufacturers of Friction Materials\***

The text reproduced below was prepared by the experts from the European Association of Automotive Suppliers (CLEPA), the International Organization of Motor Vehicle Manufacturers (OICA) and the Federation of European Manufacturers of Friction Materials (FEMFM), based on informal document GRRF-76-21, to amend the provisions of Regulation No. 13. The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

## I. Proposal

*Annex 10*

*Paragraph 1.1.*, amend to read:

"1.1. Vehicles of categories M<sub>2</sub>, M<sub>3</sub>, N, O<sub>2</sub>, O<sub>3</sub> and O<sub>4</sub> ~~which are not equipped with an anti-lock system as defined in Annex 13 to this Regulation~~ shall meet all the requirements of this annex. If a special device is used, this shall operate automatically.<sup>1/</sup>

~~However, vehicles in the above categories which are equipped with an anti-lock system as defined in Annex 13, shall also meet the requirements of paragraphs 7. and 8. of this annex if they are in addition fitted with a special automatic device which controls the distribution of braking among the axles. In the event of failure of its control, it shall be possible to stop the vehicle as stipulated under paragraph 6. of this annex.~~ **equipped with an anti-lock braking system and fulfil the relevant requirements of Annex 13, shall also fulfil all the relevant requirements of this Annex with the following exceptions:**

- (a) **Compliance with the adhesion utilization requirements associated with diagrams 1A, 1B or 1C, as appropriate, is not required.**
- (b) **In the case of towing vehicles and trailers, equipped with a compressed air braking system, compliance with the unladen compatibility requirements associated with diagrams 2, 3 or 4, as appropriate, is not required. However, for all load conditions, a braking rate shall be developed between a pressure of 20 kPa and 100 kPa or the equivalent digital demand value at the coupling head of the control line(s)."**

*Paragraph 1.3.1.*, amend to read:

"1.3.1. At the time of type approval it shall be checked that the development of a braking on an axle of each independent axle group shall be within the following pressure ranges:

- (a) Laden vehicles:

At least one axle shall commence to develop a braking force when the pressure at the coupling head is within the pressure range 20 to 100kPa **or equivalent digital demand value.**

At least one axle of every other axle group shall commence to develop a braking force when the coupling head is at a pressure  $\leq$  120kPa **or equivalent digital demand value.**

- (b) Unladen vehicles:

At least one axle shall commence to develop a braking force when the pressure at the coupling head is within the pressure range 20 to 100kPa **or equivalent digital demand value."**

*Paragraph 6.*, amend to read:

"6. Requirements to be met in case of failure of the braking distribution system

When the requirements of this annex are fulfilled by means of a special device (e.g. controlled mechanically by the suspension of the vehicle) **or if the vehicle is equipped with such a special device**, it shall be possible, in the event of the failure of its control, to stop the vehicle under the conditions

specified for secondary braking in the case of power-driven vehicles; for those power-driven vehicles authorized to tow a trailer fitted with compressed-air braking systems, it shall be possible to achieve a pressure at the coupling head of the control line within the range specified in paragraph 3.1.3. of this annex. In the event of failure of the control of the device on trailers, a service braking performance of at least 30 per cent of that prescribed for the vehicle in question shall be attained."

*Paragraph 7.*, amend to read:

- "7. Markings
- 7.1. Vehicles which meet the requirements of this annex by means of a device mechanically controlled by the suspension of the vehicle **or if the vehicle is equipped with such a device**, shall be marked to show the useful travel of the device between the positions corresponding to vehicle unladen and laden states, respectively, and any further information to enable the setting of the device to be checked..."

*Annex 13*

*Paragraph 1.1.*, amend to read:

- "1.1. This annex defines the required braking performance for road vehicles **equipped fitted with an anti-lock braking system(s)**. ~~In addition, power-driven vehicles which are authorized to tow a trailer, and trailers equipped with compressed air braking systems, shall, when the vehicles are laden, meet the requirements for compatibility set out in Annex 10 to this Regulation. However, for all load conditions, a braking rate shall be developed between a pressure of 20 kPa and 100 kPa (0.2 bar and 1 bar) or the equivalent digital demand value at the coupling head of the control line(s).~~"

## II. Justification:

1. The 10 series of amendments to UN Regulation No. 13 were introduced following discussions within an informal working group that was convened to define requirements for improving the braking compatibility of towing and towed vehicles. One of the adopted amendments was to include, at the time of type approval, a physical check to ensure that a braking force was developed by a brake when the pressure/signal at the coupling head was within a specified range. Paragraph 1.3. of Annex 10 defines the requirements.
2. The current paragraph 1.1. of Annex 10 requires that vehicles of categories M<sub>2</sub>, M<sub>3</sub>, N, O<sub>2</sub>, O<sub>3</sub> and O<sub>4</sub> not equipped with an anti-lock braking system fulfil all the relevant requirements of Annex 10. This paragraph then goes on to define the requirements for vehicles in the above categories equipped with an anti-lock braking system where such vehicles are only required to fulfil the provisions of paragraphs 7. (markings) and 8. (vehicle testing). In addition where a vehicle is equipped with a device which automatically controls the distribution of braking among the axles in the event of a failure of its control it shall be possible to fulfil the requirements of paragraph 6. (defined braking performance).
3. Paragraph 1.1. of Annex 13 requires towing vehicles and trailers with an anti-lock braking system and a compressed air braking system to comply with:
  - (a) The laden compatibility requirements of Annex 10;
  - (b) For all states of loads. a braking rate shall be developed when the coupling head pressure/signal is between 10kPa and 100kPa.
4. Thus, by combining the requirements for a vehicle equipped with an anti-lock braking system currently defined in Annex 10 and Annex 13 such vehicles are not required

to comply with the requirements of paragraph 1.3. of Annex 10. This is an error as the requirements of paragraph 1.3. of Annex 10 were intended to be fulfilled by all towing and towed vehicles with compressed air braking systems. In consequence, this proposal removes all references to requirements of Annex 10 from Annex 13; and amends Annex 10 to include in this Annex all associated provisions for vehicles with and without an anti-lock braking system.

5. The amendments to paragraph 1.3.1. are to include a reference to the electric control line signal.

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