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agenda item 1.1.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 13

(Braking)

Transmitted by the expert from the United Kingdom

Note: The text reproduced below was prepared by the expert from the United Kingdom to continue discussion on the proposal to remove M<sub>1</sub> category vehicles from Regulation No. 13.

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Note: This document is distributed to the Experts on Brakes and Running Gear only.

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**A. PROPOSAL**

Paragraph 1.1., amend to read:

"1.1. This Regulation applies to the braking of power-driven vehicles individually and of trailers individually of categories M<sub>2</sub>, M<sub>3</sub>, N and O as defined in Annex 7 to the Consolidated Resolution on the Construction of Vehicles (R.E. 3). \*/

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\*/ Braking requirements for M<sub>1</sub> category vehicles are now to be found in Regulation No. 13-H."

Paragraph 5.2.1.7.2., amend to read:

"5.2.1.7.2. In the case of N<sub>1</sub> category vehicles ....."

Paragraph 5.2.1.11.1., amend to read:

"5.2.1.11.1. Wear adjustment shall be automatic for the service brakes. However, the fitting of automatic adjustment devices is optional for off-road vehicles of categories N<sub>2</sub> and N<sub>3</sub> and for rear brakes of vehicles of categories N<sub>1</sub>.

Brakes equipped with automatic wear adjustment devices ....."

Paragraph 5.2.1.23., should be deleted.

Paragraph 5.2.1.24. (former), renumber as paragraph 5.2.1.23 and amend to read.

"5.2.1.23. With the exception of vehicles of categories N<sub>1</sub>, power-driven vehicles ....."

Paragraphs 5.2.1.25. to 5.2.1.25.1.2. (former), renumber as paragraphs 5.2.1.24. to 5.2.1.24.3. and amend to read:

"5.2.1.24. Additional requirements for vehicles of categories M<sub>2</sub>, N<sub>1</sub> and N<sub>2</sub> (< 5 tonnes) equipped with an electric regenerative braking system of category A:

5.2.1.24.1. The electric regenerative braking shall only be actuated by the accelerator control and/or the gear selector neutral position for vehicles of category N<sub>1</sub>.

5.2.1.24.2. In addition, for vehicles of categories M<sub>2</sub> and N<sub>2</sub> (< 5 tonnes), the electric regenerative braking control can be a separate switch or lever.

5.2.1.24.3. The requirements of paragraphs 5.2.1.27.6. and 5.2.1.25.7. also apply to Category A electric regenerative braking systems."

Paragraphs 5.2.1.25.2. to 5.2.1.25.4. (former), renumber as paragraphs 5.2.1.25. to 5.2.1.25.7. and amend to read:

"5.2.1.25. Additional requirements for vehicles of categories M<sub>2</sub>, N<sub>1</sub> and N<sub>2</sub> (< 5 tonnes) equipped with an electric regenerative braking system of category B:

5.2.1.25.1. It shall not be possible to disconnect partially or totally one part of the service braking system other than by automatic means. This should not be construed as a departure from the requirements of paragraph 5.2.1.10.

5.2.1.25.2. The service braking system shall have only one control device.

5.2.1.25.3. For vehicles fitted with an electric regenerative braking system of both categories, all the relevant prescriptions shall apply except paragraph 5.2.1.25.1.1. above.

In this case, the electric regenerative braking may be actuated by the accelerator control and/or the gear selector neutral position for vehicles of category N<sub>1</sub>.

Additionally, the action on the service braking control shall not reduce the above braking effect generated by the release of accelerator control.

5.2.1.25.4. The service braking system shall not be adversely affected by the disengagement of the motor(s) or by the gear ratio used.

5.2.1.25.5. If the operation of the electric component of braking is ensured by a relation established between the information coming from the control of the service brake and the braking force at the respective wheels, a failure of this relation leading to the modification of the braking distribution among the axles (Annex 10 or 13, whichever is applicable) shall be signalled to the driver by an optical warning signal at the latest at the moment when the control is actuated and this signal shall remain lit as long as this defect exists and that the vehicle control switch (key) is in the "ON" position.

5.2.1.25.6. The operation of any electric regenerative braking must not be adversely affected by magnetic or electric fields.

5.2.1.25.7. For vehicles equipped with an antilock device, the antilock device shall control the electric regenerative braking system of either Category."

Paragraph 5.2.1.26.2., amend to read:

"5.2.1.26.2. In the case of a break in the wiring ..... starts to set the vehicle in motion again. In the case of vehicles of category N<sub>1</sub>, the engine/manual transmission ....."

Paragraph 5.2.1.29.2., amend to read:

"5.2.1.29.2. With the exception of vehicles of category N<sub>1</sub>, power-driven vehicles ....."

Paragraph 12.1.3.3., amend to read:

"12.1.3.3. For vehicles of category N<sub>1</sub>, approvals granted to the 06 series ....."

Annex 4.

Paragraph 1.3.2., amend to read:

1.3.2. Behaviour of the vehicle during braking on a road on which adhesion is reduced. The behaviour of vehicles of categories M<sub>2</sub>, M<sub>3</sub>, N<sub>1</sub>, N<sub>2</sub>, N<sub>3</sub>, O<sub>3</sub> and O<sub>4</sub> on a road on which .....

Paragraph 1.5.1.1., the table, the M<sub>1</sub> row should be deleted.

Paragraph 2.1.1., the table, the M<sub>1</sub> row should be deleted.

Paragraph 2.1.2., amend to read:

"..... by the power-driven vehicle manufacturer.  
The combination performance ....."

Paragraph 2.2.1., the category M<sub>1</sub> performance should be deleted.

Paragraphs 2.2.2. and 2.2.3., amend to read:

"2.2.2. If the control is manual, the prescribed performance must be obtained by applying to the control a force not exceeding 60 daN and the control must be so placed that it can be easily and quickly grasped by the driver.

2.2.3. If it is a foot control, the prescribed performance must be obtained by applying to the control a force not exceeding 70 daN and the control must be so placed that it can be easily and quickly actuated by the driver."

Paragraph 2.2.4., the words "M<sub>1</sub>: 80 km/h" should be deleted.

Paragraphs 2.3.3. and 2.3.4., amend to read:

"2.3.3. If the control is manual, the force applied to it must not exceed 60 daN.

2.3.4. If it is a foot control, the force exerted on the control must not exceed 70 daN."

Paragraph 2.4.1., the table, the row corresponding to vehicle category M1 should be deleted.

Annex 10,

Paragraph 1.1., amend to read:

"1.1. Vehicles of categories M<sub>2</sub>, M<sub>3</sub>, N , 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 must operate automatically. 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 in paragraph 6. of this annex."

Paragraph 3.1.2.1. and 3.1.2.2., amend to read (the reference to footnote 6/ and footnote 6/ should be deleted:

"3.1.2.1. As from 1 October, 1990, at all braking rates between 0.15 and 0.8, for vehicles of category N<sub>1</sub>. with a laden/unladen rear axle loading ratio not exceeding 1.5 or having a maximum mass of less than 2 tonnes, in the range of z values between 0.3 and 0.45, an inversion of the adhesion utilization curves is permitted provided that the adhesion utilization curve of the rear axle does not exceed by more than 0.05 the line defined by the formula  $k = z$  (line of ideal adhesion utilization - see diagram 1A of this annex);

3.1.2.2. for all braking rates between 0.15 and 0.50 in the case of other vehicles of category N<sub>1</sub>.

This condition is also considered satisfied ....."

Paragraph 7.1., amend to read:

"7.1. Vehicles which meet the requirements of this annex by ....."

Diagrams 1A and 1B, amend the titles to read:

"DIAGRAM 1A

CERTAIN VEHICLES OF CATEGORY N<sub>1</sub> (after October 1, 1990)  
(see paragraph 3.1.2.1. of this annex)

DIAGRAM 1B

POWER-DRIVEN VEHICLES OTHER THAN THOSE OF CATEGORY N<sub>1</sub>  
(see paragraph 3.1.2.3. of this annex)"

Paragraph 4.2., amend to read:

"4.2. Power-driven vehicles equipped with an anti-lock system and authorized to tow a trailer equipped with such a system, with the exception of vehicles of category N<sub>1</sub>, shall be fitted with a separate optical warning signal for the anti-lock system of the trailer, ....."

Paragraph 5.3.1., the table, M<sub>1</sub> from the 'Low Adhesion Surface' row, the M<sub>1</sub> vehicle category should be deleted.

## **B. JUSTIFICATION**

The braking system for a passenger car (M<sub>1</sub>) may be approved to either Regulation No. 13 or Regulation No. 13-H and this is regarded, in some parts of the world, as an anomaly. The position would be resolved by the removal of the specific references to these vehicles from Regulation 13 and leave this category to be covered by Regulation No.13-H alone.

The majority of changes are the removal of M<sub>1</sub> from the text of the Regulation No. 13, leaving N<sub>1</sub> alone in the place of the commonly occurring M<sub>1</sub> and N<sub>1</sub>.

The SCOPE is changed to define categories covered as M<sub>2</sub>, M<sub>3</sub>, N and O and the footnote amended to refer the reader to Regulation No. 13-H for M<sub>1</sub> passenger cars.

Complication of the text changes occurs with the removal of paragraph 5.2.1.23.

[The text of paragraph 5.2.1.23. relates to the use of M<sub>1</sub> vehicles with temporary-use spare wheels/tyres and no comparable paragraph appears in Regulation 13-H. It should therefore be noted that the requirement set out in Annex 3 to Regulation 64 needs to be transferred.]

In order to limit the renumbering of subsequent paragraphs, the following Electric Regenerative Braking section is split into 2 sections – Category A and Category B.

This prevents renumbering of paragraphs 5.2.1.26. 5.2.1.27. and 5.2.1.28. and especially paragraph 5.2.1.29. which, covering fault warning, has very many references in all other parts of the Regulation and is well known to those readers who have some familiarity with the text.

Annex 4 performance tables have the M<sub>1</sub> rows and columns removed.

In Annex 10, paragraph 3.1.2.1. is adjusted so that in Diagram 1A of the annex, whilst no longer applying to M<sub>1</sub> vehicles, it is made clear that it applies to the N<sub>1</sub> vehicles which were set out in the previous footnote 6. This footnote is deleted and the conditions are brought into the paragraph.

Whilst no distribution diagrams of Annex 10 are removed, two titles are changed to refer appropriately to  $N_1$  vehicles only.

Annexes other than those mentioned above remain unchanged.

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