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World Forum for Harmonization of Vehicle Regulations

Working Party on Brakes and Running Gear

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Item 2 of the provisional agenda

Advanced Emergency Braking Systems**Proposal for amendments to the new UN Regulation on advanced emergency braking systems****Submitted by the experts from the International Organization of Motor Vehicle Manufacturers***

The text reproduced below was prepared by the experts from the International Organization of Motor Vehicle Manufacturers (OICA) to introduce AEBS on vehicles equipped with rigid rear axle suspension, as requested by the informal group on AEBS/LDWS (see item 3 in document AEBS/LDWS-15-08). Modifications to ECE/TRANS/WP.29/2011/92 and ECE/TRANS/WP.29/2011/93 are marked in bold for new characters.

* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106 and ECE/TRANS/2010/8, 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

Amendment to TRANS/WP 29/2011/92 (00 Series)

Introduction, amend to read:

"0. Introduction (for information)

The intention ...conditions.

While, in general, those vehicle categories will benefit from the fitment of an advanced emergency braking system, there are sub-groups where the benefit is rather uncertain because they are primarily used in other conditions than highway conditions (e.g. buses with standing passengers i.e. classes I, II and A). ~~In addition, r~~Regardless from the benefit, there are **other** sub-groups where the installation of AEBS would be technically difficult (e.g. position of the sensor on vehicles of category G and special purpose vehicles, etc.).

In addition, vehicles not equipped with a pneumatic rear-axle suspension need further development such that, under the condition a well validated sensor technology is made available by mid-2013, AEBS can be installed for approval as from 1 November 2016.

The system shall automatically ...switch the system off."

Paragraph 1, amend to read:

"1. Scope and purpose

This Regulation applies to the approval of vehicles of category¹ :~~M₂~~,

- (a) N₂ **above 8 tons**,
- (b) M₃ and
- (c) N₃

equipped with a pneumatic or Air over Hydraulic braking system with regard to an on-board system to avoid or mitigate the severity of a rear-end in lane collision"

Paragraph 5.1.1., amend to read:

"5.1.1. Any vehicle **equipped with a pneumatic rear-axle suspension and** with an AEBS complying with the definition of paragraph 2.1. shall meet the performance requirements contained in paragraphs 5.1. to 5.6.2. of this Regulation and shall be equipped with an anti-lock braking function in accordance with the performance requirements of Annex 13 of Regulation No.13.

¹ As defined in section 2 of the Consolidated Resolution on the Construction of Vehicles (R.E.3) (document ECE/TRANS/WP.29/78/Rev.2).

Vehicles equipped with another type of rear suspension may also be type approved provided that the requirements contained in paragraphs 5.1. to 5.6.2. are fulfilled."

Annex 3, the table, row 3 shall be deleted.

Annex 3, footnote 2 and references to footnote 2 shall be deleted.

Annex 3, footnote 4 and references to footnote 4 shall be deleted.

Annex 3, footnotes a to d and references to footnotes a to d shall be deleted.

Renumber the remaining footnotes accordingly.

Amendment to TRANS/WP 29/2011/93 (01 Series)

Paragraph 5.1.1., amend to read:

"5.1.1. Any vehicle equipped ~~with a pneumatic rear axle suspension and~~ with an AEBS complying with the definition of paragraph 2.1.1. shall meet the performance requirements contained in paragraphs 5.1. to 5.6.2. of this Regulation and shall be equipped with an anti-lock braking function in accordance with the performance requirements of Annex 13 of Regulation No.13.

~~Vehicles equipped with another type of rear suspension may also be type approved provided that the requirements contained in paragraphs 5.1 to 5.6.2 are fulfilled."~~

Annex 3, the table, row 3 shall be deleted.

Annex 3, footnote 1 and references to footnote 1 shall be deleted.

Annex 3, footnote 3 and references to footnote 3 shall be deleted.

Annex 3, footnotes a to d and references to footnotes a to d shall be deleted.

Renumber the remaining footnotes accordingly.

II. Justification

A. Extract of the Terms of Reference of the informal group on AEBS and LDWS:

1. "The informal group shall prepare draft regulatory proposals to incorporate Advanced Emergency Braking Systems (AEBS) and Lane Departure Warning Systems (LDWS) into existing or new Regulations annexed to the 1958 Agreement.

2. The group will focus on systems for heavy vehicles in categories N₂, N₃, M₂, and M₃ vehicles. Vehicles of category M₁ and N₁ may be covered in a later stage".

B. Definition of AEBS in the draft regulation:

3. "Advanced Emergency Braking System (AEBS)" means a system which can automatically detect a potential forward collision and activate the vehicle braking system to decelerate the vehicle with the purpose of avoiding or mitigating a collision.

C. Collision Warning Systems

4. The mandate of the informal group on AEBS is to prepare a draft regulatory proposal for an Advanced Emergency Braking System. According to its definition, the AEBS activates the vehicle braking system.
5. The Working Party on Brakes and Running Gear (GRRF) is a working group of technical experts. The vehicle manufacturers participate to GRRF and its informal groups in order to give their best technical advice, to permit the Contracting Parties to take their decisions based on sound technical knowledge.
6. The discussion during the first 13 meetings of the informal group was only focussed on AEBS.
7. From a technical point of view, we state that a Collision Warning System is not an AEBS because it does not activate the vehicle braking system. The vehicle manufacturers have no experience with the driver's acceptance and the real world safety impact of a Collision Warning System and hence cannot provide credible technical advice on this system. Technically, the absence of a braking phase implies in average earlier warnings, themselves implying more frequent false warnings and therefore loss of credibility or confidence toward the system. The impact of this loss of confidence must be correctly evaluated.
8. In consequence, we believe that the requirements for Collision Warning Systems should not be defined in the new UNECE Regulation on AEBS.
9. However, if the Contracting Parties intend to define regulatory provisions for Collision Warning Systems, this could be done, e.g. by getting a new mandate from GRRF. With such a new mandate, the informal group could analyse existing technologies for Collision Warning Systems and the impact on the driver and the vehicle safety. Without such an analysis, it is premature to define regulatory requirements.

D. Scope of the UNECE Regulation on AEBS

10. According to its Terms of Reference, the informal group shall focus on vehicles of categories N2, N3, M2 and M3. OICA can only give its technical advice concerning existing technology and technology under development. For other cases, where no experience and knowledge exists, OICA cannot provide credible expertise on appropriate requirements.
11. As a consequence, only vehicles applying existing technology or that will apply technology under development can be reasonably included in the scope of the new UNECE Regulation on AEBS.
12. At its fifteenth meeting, the GRRF informal group urged OICA to present a reasonable proposal for introduction of AEBS on vehicles equipped with rigid rear axle suspension (see item 3 of in document AEBS/LDWS-15-08). During the latter meeting, OICA stated (see document AEBS/LDWD-15-05) that the manufacturers can give their technical advice only about existing technology and technology in advanced development, but for the other cases, where neither experience nor knowledge exists, they could not provide credible expertise on appropriate requirements. Yet OICA added that the vehicle manufacturers are ready to start development of AEBS for these vehicles, aiming wide equipment as from the year 2016, under some conditions like availability of appropriate sensor technology as from the year 2013 (see document GRRF-70-08). The proposal for amendments, paragraph 5.1.1. in the 00 Series of amendments permits approving vehicles with rigid rear axle suspension on a voluntary basis as from the start of the enforcement of

the AEBS regulation. The proposal for amendments, paragraph 5.1.1. in the 01 Series of amendments permits applying the regulation for these vehicles on a mandatory basis as from the enforcement of the 01 series of amendments (2016 for new types / 2020 for existing types). The proposed level of performance is aligned on the performance requested for vehicles with pneumatic rear axle suspension.
