

## Adopted amendments to ECE/TRANS/WP.29/2011/92 and ECE/TRANS/WP.29/2011/93 (Advanced Emergency Braking Systems)

### I. Proposal to WP.29/2011/92 (00 Series of amendments)

*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,~~ ~~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, systems intended for vehicles not equipped with a pneumatic rear-axle suspension require the integration of advanced sensor technology to take into account the variation of the pitch angle of the vehicle. Contracting Parties wishing to apply this regulation to these vehicles should provide adequate time for this.**

The system shall..."

#### "1. Scope and purpose

This Regulation applies to the approval of vehicles of category<sup>1</sup>: ~~M<sub>2</sub>~~,

- (a) N<sub>2</sub> **above 8 tons**,
- (b) M<sub>3</sub> and
- (c) N<sub>3</sub>

**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"

*Renumber paragraphs 2.4. to 2.13 as 2.3. to 2.12.*

*Correct 5.1.1 to delete prerequisite for EVSC*

*[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

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<sup>1</sup> 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).

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."]**

*Paragraph 5.2.2.*, amend to read:

5.2.2. Subsequent to the warning(s) of paragraph 5.2.1.1., and subject to the provisions of paragraphs 5.3.1. to 5.3.3., there shall be an emergency braking ~~—deceleration—~~ phase having the purpose of significantly decreasing the speed of the subject vehicle. This shall be tested in accordance with paragraphs 6.4. and 6.5.

*Paragraph 6.4.1.*, amend to read:

“6.4.1. The subject vehicle ...

... at least 120 m from the target.

From the start of the functional part until the point of collision there shall be no adjustment to any **control of** the subject vehicle ~~control~~ by the driver other than slight ~~steering~~ adjustments **to the steering control** to counteract any drifting.”

*Annex III*, amend the table to read (merging rows 1 and 2, endorsing the value of 1,4 s in cell E1, deleting footnote 1 and the reference to footnote 1, deleting footnote 4 and the reference to footnote 4 and re-numbering reference to row 3 as a reference to row2) :

“

A	B	C	D	E	F	G	H	
	Stationary target			Moving target				
	Timing of warning modes		Speed reduction (ref. paragraph 6.4.4.)	Timing of warning modes		Speed reduction (ref. paragraph 6.5.3.)	Target speed (ref. paragraph 6.5.1.)	
	At least 1 haptic or acoustic (ref. paragraph 6.4.2.1.)	At least 2 (ref. paragraph 6.4.2.2.)		At least 1 haptic or acoustic (ref. paragraph 6.5.2.1.)	At least 2 (ref. paragraph 6.5.2.2.)			
M <sub>3</sub> , N <sub>2</sub> >8t and N <sub>3</sub> <sup>{1}, {2}, {3}, {4}</sup>	Not later than 1.4 s. before the start of emergency braking phase	Not later than 0.8 s. before the start of emergency braking phase	Not less than 10 km/h	Not later than 1.4 s. before the start of emergency braking phase	Not later than 0.8 s. before the start of emergency braking phase	No impact	32 ± 2 km/h	1
N <sub>2</sub> >8t <sup>{3}, {4}</sup>	Not later than 1.4 s. before the start of emergency braking phase	Not later than 0.8 s. before the start of emergency braking phase	Not less than 10 km/h	Not later than [1.4 s] before the start of emergency braking phase	Not later than 0.8 s. before the start of emergency braking phase	No impact	32 ± 2 km/h	2
N <sub>2</sub> ≤ 8t and M <sub>2</sub> <sup>{3}, {5}</sup>	[No restriction regarding timing and warning modes <sup>a)</sup>  -or [Blank]	[No restriction regarding timing and warning modes <sup>a)</sup>  -or [Blank]	[0 km/h <sup>b)</sup>  -or [Blank]	[No time restriction]  -or [Blank]	[Not later than 1.4 s. before the start of emergency braking phase <sup>d)</sup>  -or [Blank]	[0 km/h <sup>d)</sup>  -or [Blank]	[32 ± 2 km/h]  -or [Blank]	3 2

<sup>1</sup> Vehicles with pneumatic hydraulic braking system (AoH) are subject to the requirements of row 2

<sup>2</sup> Vehicles of category M<sub>3</sub> with hydraulic braking system are subject to the requirements of row 3 2.

<sup>3</sup> Vehicles with pneumatic braking system are subject to the requirements of row 1.

<sup>4</sup> Applicable only to vehicles with pneumatic rear axle suspension.]

<sup>5</sup> Reservation from J for light M<sub>2</sub>/N<sub>2</sub> vehicles.

<sup>a</sup> For zero speed reduction, the start of the emergency braking phase is time to collision. In this case, paragraph 6.4.3. does not apply.

<sup>b</sup> Speed reduction optional.

<sup>c</sup> For zero speed reduction, the start of the emergency braking phase is time to collision.

<sup>d</sup> In this case, paragraph 6.5.3. does not apply. Speed reduction optional.”

## II. Proposal to WP.29/2011/93 (01 Series of amendments)

### “1. Scope and purpose

This Regulation applies to the approval of vehicles of category M<sub>2</sub>, N<sub>2</sub>, M<sub>3</sub> and N<sub>3</sub><sup>2</sup> 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 2.1.1. 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 III, amend the table to read (merging rows 1 and 2, deleting footnote 1 and the reference to footnote 1, deleting footnote 4 and the reference to footnote 4 and re-numbering the reference to row 3 as a reference to footnote 2) :

Annex III, row 2 of the table (vehicles of categories N2 < 8 tons and M3), amend to read:

A	B	C	D	E	F	G	H		
	Stationary target			Moving target					
	Timing of warning modes		Speed reduction (ref. paragraph 6.4.4.)	Timing of warning modes		Speed reduction (ref. paragraph 6.5.3.)	Target speed (ref. paragraph 6.5.1.)		
	At least 1 haptic or acoustic (ref. paragraph 6.4.2.1.)	At least 2 (ref. paragraph 6.4.2.2.)		At least 1 haptic or acoustic (ref. paragraph 6.5.2.1.)	At least 2 (ref. paragraph 6.5.2.2.)				
M <sub>3</sub> , N <sub>2</sub> >8t and N <sub>3</sub> <sup>1</sup>	Not later than 1.4 s. before the start of emergency braking phase	Not later than 0.8 s. before the start of emergency braking phase	Not less than 20 km/h	Not later than 1.4 s. before the start of emergency braking phase	Not later than 0.8 s. before the start of emergency braking phase	No impact	12 ± 2 km/h	1	
N <sub>2</sub> ≤ 8 t and M <sub>2</sub> <sup>2</sup>	<b>The pass/fail values for the warning and activation test requirements in Cells B2 to H2 applicable to the vehicles types of category N2 &lt; 8 tons and of category M2 will be defined by GRRF and adopted by WP.29 at least 36 months before 1 November 2016. Until such values are adopted Contracting Parties shall refrain from issuing type-approvals for these types of vehicles in accordance with the 01 series of amendments to the AEBS Regulation.</b>							2	

<sup>1</sup> Vehicles of category M<sub>3</sub> with hydraulic braking system are subject to the requirements of row 3 2

<sup>2</sup> Vehicles with pneumatic braking system are subject to the requirements of row 1