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World Forum for Harmonization of Vehicle Regulations**Working Party on Automated/Autonomous and Connected Vehicles*****Fourth session**

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Item 7 of the provisional agenda

Advanced Emergency Braking Systems**Proposal for 01 Series of amendments to UN Regulation No. [152] on uniform provisions concerning the approval of motor vehicles with regard to the Advanced Emergency Braking System (AEBS) for M₁ and N₁ vehicles****Submitted by the experts from the Informal Working Group on Advanced Emergency Braking System ****

The text reproduced below was prepared by experts from the Informal Working Group (IWG) on Advanced Emergency Braking System (AEBS) for introducing new and enhanced provisions for the car to pedestrian scenario. The modifications to the existing text of the Regulation, as amended by Supplement 1 of the original text, are marked in bold for new text and strikethrough for deleted text.

* Formerly: **Working Party on Brakes and Running Gear (GRRF)**.

** In accordance with the programme of work of the Inland Transport Committee for 2018–2019 (ECE/TRANS/274, para. 123 and ECE/TRANS/2018/21/Add.1, Cluster 3), 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

Paragraph 5.2.1.4., N_1 table and notes, amend to read (footnote */ unchanged):

“Maximum relative Impact Speed (km/h) for N_1 vehicles* ”

Relative Speed (km/h)	Stationary/Moving			
	Laden Maximum mass		Unladen Mass in running order	
	$\alpha > 1.3$	$\alpha \leq 1.3$	$\alpha > 1.3$	$\alpha \leq 1.3$
10	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00
32	0.00	15.00	0.00	0.00
35	0.00	15.00	0.00	0.00
38	0.00	20.00	0.00	15.00
40	10.00	20.00	0.00	15.00
42	15.00	25.00	0.00	20.00
45	20.00	25.00	15.00	25.00
50	30.00	35.00	25.00	30.00
55	35.00	40.00	30.00	35.00
60	40.00	45.00	35.00	40.00

*/ For relative speeds between the listed values (e.g. 53 km/h), the maximum relative impact speed (i.e. 30 km/h) assigned to the next higher relative speed (i.e. 55 km/h) shall apply.
For masses above the mass in running order, the maximum relative impact speed assigned to the maximum mass shall apply.

with $\alpha = W_r/W \times L/H$, where :

— W_r is the rear axle load.

— W is the subject vehicle mass in running order.

— L is the subject vehicle wheelbase.

— H is the subject vehicle centre of gravity height in running order

The speed reduction shall be demonstrated according to paragraphs 6.4. and 6.5.

At the request of the manufacturer a N_1 vehicle may be assessed according to the Requirements for $\alpha > 1.3$ regardless of its α value.”

Paragraph 5.2.2.4., M_1 and N_1 tables, amend to read:

"Maximum Impact Speed (km/h) for M_1 *

Subject vehicle speed (km/h)	Maximum mass	Mass in running order
20	0.00	0.00
25	0.00	0.00
30	0.00	0.00
35	20.00 0.00	20.00 0.00
40	25.00 0.00	25.00 0.00
42	10.00	0.00
45	30.00 15.00	30.00 15.00
50	35.00 25.00	35.00 25.00
55	40.00 30.00	40.00 30.00
60	45.00 35.00	45.00 35.00

*/ For relative speeds between the listed values (e.g. 53 km/h), the maximum relative impact speed (i.e. ~~40~~ **30** km/h) assigned to the next higher relative speed (i.e. 55 km/h) shall apply.
For masses above the mass in running order, the maximum relative impact speed assigned to the maximum mass shall apply.

Maximum Impact Speed (km/h) for N_1 vehicles*

Subject vehicle speed (km/h)	Maximum mass		Mass in running order	
	$\{\alpha > 1.3\}$	$\alpha \leq 1.3$	$\alpha > 1.3$	$\{\alpha \leq 1.3\}$
20	0.00	0.00	0.00	0.00
25	0.00	10.00	0.00	0.00
30	0.00	15.00	0.00	15.00
35	20.00 0.00	25.00	20.00 0.00	20.00
40	25.00 0.00	30.00	25.00 0.00	25.00
42	10.00	-	0.00	-
45	30.00 15.00	35.00	30.00 15.00	30.00
50	35.00 25.00	40.00	35.00 25.00	35.00
55	40.00 30.00	45.00	40.00 30.00	45.00
60	45.00 35.00	50.00	45.00 35.00	50.00

*/ For subject vehicle speeds between the listed values (e.g. 53 km/h), the maximum impact speed (i.e. ~~40/45~~ **30/30** km/h) assigned to the next higher subject vehicle speed (i.e. 55 km/h) shall apply.
For masses above the mass in running order, the maximum relative impact speed assigned to the maximum mass shall apply.

with $\alpha = W_r/W \times L/H$, where :

- ~~W_r is the rear axle load.~~
- ~~W is the subject vehicle mass in running order.~~
- ~~L is the subject vehicle wheelbase.~~
- ~~H is the subject vehicle centre of gravity height in running order~~

~~The speed reduction shall be demonstrated according to paragraph 6.6."~~

~~At the request of the manufacturer a N_1 vehicle may be assessed according to the Requirements for $\alpha > 1.3$ regardless of its α value."~~

Insert a new paragraph 12., to read:

- “12. Transitional provisions**
- 12.1. As from the official date of entry into force of the 01 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 01 series of amendments.**
- 12.2. As from 1 May 2024, Contracting Parties applying this Regulation shall not be obliged to accept type approvals to the original version of this Regulation, first issued after 1 May 2024.**
- 12.3. Until 1 May 2026, Contracting Parties applying this Regulation shall accept type approvals to the original version of this Regulation, first issued before 1 May 2024.**
- 12.4. As from 1 May 2026, Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to the original version of this Regulation.**
- 12.5. Notwithstanding paragraph 12.4., Contracting Parties applying this Regulation shall continue to accept type approvals issued according to the original version of this Regulation, for vehicles which are not affected by the changes introduced by the 01 Series of amendments.**
- 12.6. Contracting Parties applying this Regulation shall not refuse to grant type approvals according to any preceding series of amendments to this Regulation or extensions thereof.”**

II. Justifications

1. The World Forum for Harmonization of Vehicle Regulations (WP.29) at its 178th session in June 2019 adopted ECE/TRANS/WP.29/2019/61 as a new UN Regulation on AEBS.
2. GRVA agreed at its January 2019 session that car to car requirements (42 km/h collision avoidance) as well as car to pedestrian with reduced performance (collision avoidance at 30 km/h only) would apply from the date of entry into force of the new regulation whereas the car to pedestrian with higher speed (42 km/h) would apply in a second step as a new series of amendments. GRVA also agreed to remove the particular provisions for small N₁ full cab vehicles.
3. The present proposal introduces the requirements for car to pedestrian with higher speed (42 km/h) and removes particular provisions for small N₁ full cab vehicles.
4. The text also includes necessary transitional provisions. They envisage the possibility for contracting parties to mandate improved performance requirements as from 1 May 2024 for new type approvals and from 1 May 2026 for the approval existing vehicle types. The proposed transitional provisions are derived from the guidelines for transitional provisions laid down in document ECE/TRANS/WP.29/1044/Rev.2
5. The group still faces difficulty in agreeing on performance requirements for the car to bicycle collision given the lack of vehicles with this technology on the market (only one vehicle was tested under Euro NCAP in 2018). Consequently, the informal working group agreed to consider car-to-cyclist at a later stage, when more data is available.
6. This proposed 01 series of amendments is drafted assuming that the Supplement 1 to the original series of amendment is first adopted by GRVA.