



Submitted by the IWG on AEBS-HDV

Informal document **GRVA-11-27**
11th GRVA, 27 Sept. – 1 Oct. 2021
Provisional agenda item 7

IWG AEBS-HDV

Status and Outlook

Toshiya Hirose (JP) & Patrick Seiniger (BAST, DE)
Chairs of the IWG on AEBS for HDV



Introduction

- ➔ Informal Working Group on AEBS-HDV was initiated by GRVA in September 2021
- ➔ ToR requests an updated regulation per GRVA in February 2022
- ➔ ToR asks for a dedicated report to GRVA in September 2021 with special emphasis on whether this timing can be met

- ➔ IWG had 6 meetings (last meeting: September 21/22)
- ➔ Main task: develop a draft regulatory proposal to revise UN Regulation No. 131
 - a) Assess the accident situation for heavy duty vehicles
 - b) Investigate the feasibility of a generic marker triggering AEBS
 - c) Define state of the art performance requirements
 - d) Review the values for the target speed reduction for M₂ and N₂
 - e) Review AEBS on V2Car, V2Ped, V2Bicycle, others
 - f) Incorporate as relevant new concepts from UN Regulation No. 152
- ➔ Current activity and status: Writing draft regulation, basically finished (open issues left, see following slides) up to and including section 5 (specs)



Outlook

- ➔ Next meeting: October 26-28 (in total 9 hrs)
- ➔ Core activities of AEBS-HDV-07
 - Clarify open issues after feedback from GRVA-11
 - Finish remaining sections 6 (testing), 12 (transitional provisions) and Annex 3, Appendix 2 (false reaction scenarios)
 - Prepare working document for GRVA in February
- ➔ Buffer:
 - Meetings in Nov, Dec, Jan to prepare an informal document amending the working document
- ➔ **Timing goal will be achieved**

Agreement on Performance



Vehicle category			AEB Vehicle-Vehicle	AEB Vehicle-Pedestrian	AEB Vehicle-Bicycle
M2 N2 < 8t	derived from M1N1	Hydraulic braking	50 km/h (R152 as alternative)	26 km/h (R152 as alternative)	- (no systems)
	derived from / based on "heavies"	Hydraulic braking (including M3)	35 km/h	20 km/h	- (no systems)
		Pneumatic braking	70 km/h 40 km/h (urban)	20 km/h	- (no systems)
N2 > 8t M3 (except hydraulic braking) N3			70 km/h 40 km/h (urban)*	20 km/h	- (no systems)

This is relative speed $v_{0,Ego} - v_{0,Target}$, up to which avoidance would be required. Mitigation speeds also required, comparable to R152

No differentiation Moving/Stationary

Ambition for higher values and *AEB Vehicle-Bicycle* will be expressed in a preamble.



Deactivation of AEBS

- ➔ An agreement on the deactivation procedure is not yet reached
- ➔ Specifically:
 - Deactivation possible only below 10 km/h → from R152
 - Request for guidance from GRVA-11

Definition of performance requirements

- ➔ As in R152, performance requirements are given together with boundary requirements
- ➔ Different interpretations of the text (copied from R152) possible
- ➔ See next two slides for an introduction
- ➔ *After clarifying, the text in R152 might need to be aligned as well.*



5.2.1.4. Speed reduction by braking demand

In absence of driver's input which would lead to interruption according to paragraph 5.3.2., the AEBS shall be able to achieve a relative impact speed that is less or equal to the maximum relative impact speed as shown in the following table:

- (a) For collisions with unobstructed and constantly travelling or stationary targets;
- (b) On flat, horizontal and dry roads affording good adhesion;
- (c) No trailer is coupled to the motor vehicle and the mass of the motor vehicle is between maximum mass and mass in running order conditions;
- (d) ... [Condition list in which the requirements have to be fulfilled](#)

[It is recognised that the performances required in this table may not be fully achieved in other conditions than those listed above.](#) However, the system shall not deactivate or unreasonably switch the control strategy in these other conditions. This shall be demonstrated in accordance with Annex 3 of this Regulation. [How to treat situations when conditions above are not met](#)

[\[... Performance requirements table ...\]](#) [Performance requirements in conditions above](#)



⇒ Clear:

- Not all conditions (a) – (...) are fulfilled
- Performance targets not required, but changing strategy not allowed

⇒ Unclear

- All conditions (a) – (...) are fulfilled
- An additional parameter (e.g. lane markings, lamp posts, fog, anything else) is introduced

⇒ *How to deal with parameters not explicitly listed in the requirements, but obviously influencing the performance?*

⇒ Request for Guidance from GRVA: **What is GRVA's interpretation?**



Summary

- ➔ Performance requirements agreed within the group
- ➔ Timing target will very likely be met; progress is good and buffer for unforeseeable difficulties is considered
- ➔ Request for guidance from GRVA:
 1. Deactivation of AEBS possible at speeds > 10 km/h or not?
 2. Interpretation of condition list w.r.t. performance requirements and conditions