



Submitted by the IWG on AEBS-HDV

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Agenda item 7

IWG AEBS-HDV Status

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 2020
- ➔ ToR requests an updated regulation per GRVA in February 2022
- ➔ ECE/TRANS/WP.29/GRVA/2022/7
- ➔ GRVA-12-08, containing corrections and the following:
 - Specifications on deactivation of the AEBS
 - Text on requirements and reference to test section
 - Introduction text
- ➔ Final open issue:
 - Transitional provisions



- ➔ IWG had 9 meetings (last meeting: January 11/12)
- ➔ 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
- ➔ Marker Triggering AEBS
 - TNO/NL conducted a study, feedback loop in IWG expected
 - Presentation for May GRVA foreseen → slight extension of mandate?

Recap: Performance (from GRVA11)



Vehicle category			AEB Vehicle-Vehicle	AEB Vehicle-Pedestrian	AEB Vehicle-Bicycle
M2 M3, N2 <= 8t	derived from M1N1	Hydraulic braking (R152 as alternative)	50 km/h	26 km/h	- (no systems)
	others	Hydraulic braking (R152 as alternative)	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 > 8t 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* is expressed in a preamble.



Deactivation of AEBS

The group was of the opinion that heavy vehicle operations are different than M1-N1 and that the following methods are better suited for those vehicles than simply aligning with UN R152:

- ➔ When deactivated manually, AEBS will reactivate again after 15 min
- ➔ A more complex deactivation procedure for longer deactivation after possible sensor damage is allowed
- ➔ AEBS deactivation (e.g. in workshop), e.g. to be able to use front-mounted equipment, persistent over ignition cycles
 - In this case, AEBS deactivation will be indicated for at least 15 secs after operation of the vehicle master control switch



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](#)



Definition of performance requirements

➔ Group agreed on a structured list

- vehicle external influences allow for the required deceleration (*exhaustive list included*)
- the vehicle state itself allows for the required deceleration (*list of examples included*)
- there are no external influences affecting the physical sensing capabilities (*exhaustive list included*)
- the situation is unambiguous (*exhaustive list included*)
- New wording after list: "When conditions deviate from those listed above, the system shall not deactivate or unreasonably switch the control strategy. This shall be demonstrated in accordance with chapter 6 and Annex 3 of this Regulation"

Suggestion to align R152 with a supplement



5.2.1.2. Emergency braking

When the system has detected the possibility of an imminent collision, there shall be a braking demand of at least 4 m/s² to the service braking system of the vehicle. This does not prohibit higher deceleration demand values than 4 m/s² during the collision warning for very short durations, e.g. as haptic warning to stimulate the driver's attention.

The emergency braking may be aborted, or the deceleration demand reduced below the threshold above (as relevant), if the conditions prevailing a collision are no longer present or the risk of a collision has decreased.

This shall be verified according to paragraphs 6.4. and 6.5.

6.4 Warning and Activation Test with a Stationary Vehicle Target

[...]

If this is deemed justified, the technical service may test in any test condition within those specified in paragraph 5.2.1.4., any other speeds listed in the tables in paragraph 5.2.1.4. and within the prescribed speed range as defined in paragraph 5.2.1.3. The Technical Service may verify that the control strategy is not unreasonably changed or the AEBS switched off in other conditions than those specified in paragraph 5.2.1.4. The report of this verification shall be appended to the test report.

Examples – same changes in 5.2.1.1., 5.2.2.1., 5.2.2.2., 6.5., 6.6.1. (*also sugg. to align R152*)



Transitional Provisions

- ➔ Position of **OICA/CLEPA**: September 2025 / September 2028
 - Development time needed (esp. AEB-City → new system!)
 - Synchronization with vehicle modifications already addressing VRUs, due to GSR (in EU)
 - Implementation not before 09/2025, for an adoption at this GRVA-12 (acceptable to keep the same date even with adoption at next GRVA)
- ➔ Position of **Japan**: May 2025 / May 2028
 - When R131-02 adopted today, Industry would have 28 Month
- ➔ Proposal of **Germany, ETSC**: Split AEB-Vehicle & AEB-Pedestrian
 - Changes in AEB-Car important for Safety & state of the art
 - This could be introduced much earlier
 - Split of document to R131-02 and R131-03 required in this case
- ➔ Request to GRVA for decision

Summary

- ➔ All remaining issues were solved in the IWG's final meeting, except for the definition of transitional provisions
- ➔ After a decision from GRVA, the new revision of UN R131 would be ready for adoption

Remaining tasks:

- ➔ Feasibility of marker to trigger AEB intervention → presentation planned for GRVA-13 (if mandate slightly extended)
- ➔ Suggestion to align R152 (definition of performance requirements), possibly inviting R152 experts
- ➔ GRVA is kindly asked for an extension of mandate until GRVA 13