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Working Party on Passive Safety

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Item 9 of the provisional agenda

UN Regulation No. 127 (Pedestrian safety)

Proposal for the 04 series of amendments

Submitted by the experts from Germany*

The proposal describes the new requirements for new provisions to cope with the Adjustable Ride Height Suspension System (ARHSS). It is based on informal document GRSP-70-17 distributed during the seventieth session of the Working Party on Passive Safety (GRSP) (ECE/TRANS/WP.29/GRSP/70, paragraph 19). The modifications to the current text of the UN Regulation are marked in bold for new characters.

* In accordance with the programme of work of the Inland Transport Committee for 2022 as outlined in proposed programme budget for 2022 (A/76/6 (part V, sect. 20), para. 20.76), 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

Insert a new paragraph 2.29.1., to read:

"2.29.1. "Adjustable Ride Height Suspension System (ARHSS)" means a system that could change the vehicle height while driving (e.g. an active suspension)."

Insert new paragraphs 5.3. to 5.3.4., to read:

"5.3. In the case of a vehicle fitted with an ARHSS, which could change the vehicle height at the front axle more than 20 mm, the provisions of paragraphs 5.1. and 5.2. shall, in addition to the normal running condition as specified by the manufacturer for a vehicle speed of 40 km/h, be met for all adjustable vehicle steady heights corresponding to vehicle speeds from 25 up to 40 km/h.

For these tests, on request of the manufacturer and agreed by the technical service, either the impact speeds defined in paragraphs 5.1. and 5.2. or the impact speed corresponding to the adjusted vehicle height shall be used. In the latter case, the ratio of the head impact vs. the corresponding vehicle velocity shall be ~~{0.9}~~.

5.3.1. The requirements of paragraph 5.3. are deemed to be fulfilled if the vehicle is equipped with an ARHSS fully corresponding to the conditions of paragraph 5.3.1.1. or 5.3.1.2.

5.3.1.1. ARHSS is determined for off-road use only. ARHSS will return automatically to the normal ride attitude, when the vehicle is operating on public roads. The default status of ARHSS is the normal ride height at the initiation of each new engine start/run cycle.

5.3.1.2. ARHSS is determined for use in exceptional low speed use cases (e.g. flood/heavy snow). ARHSS will automatically return to the normal ride height when the vehicle speed exceeds 15 km/h or when the system is manually switched off. If an ARHSS for use in exceptional low speed use cases is engaged, it is indicated to the driver at least by an optical warning signal. The default status of an ARHSS is the normal ride height at the initiation of each new engine start/run cycle.

5.3.1.3. The compliance with the conditions of paragraph 5.3.1.1. or 5.3.1.2. shall be demonstrated by the vehicle manufacturer to the satisfaction of the technical service by independent means (e.g. a physical test). The relevant information shall be described in the information document in Annex I. The exceptional low speed use case of paragraph 5.3.1.2 shall be additionally described in the owner's handbook.

5.3.2. The legform impactor to be used is the legform impactor as used for the legform to bumper test in normal running conditions for a speed of 40 km/h.

5.3.3. With the agreement of the technical service, compliance shall be demonstrated by a limited number of legform tests or by numerical simulation according to the specification set out in paragraph 5.3, so that the biomechanical limits set out in paragraph 5.1.1. and paragraph 5.1.2. respectively are met.

5.3.4. With the agreement of the technical service, compliance shall be demonstrated by a limited number of head impact tests or by numerical simulation showing compliance to the HIC 1,700 requirement on the additional head test area."

Insert new paragraphs 11.14. to 11.18., to read:

- "11.14. As from the official date of entry into force of the 04 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 04 series of amendments.**
- 11.15. As from 1 September 2025, Contracting Parties applying this Regulation shall not be obliged to accept type-approvals to the preceding series of amendments first issued after 1 September 2025.**
- 11.16. Contracting Parties applying this UN Regulation shall continue to accept type approvals issued according to the preceding series of amendments to this Regulation first issued before 1 September 2025.**
- 11.17. Contracting Parties applying this UN Regulation may grant type approvals according to any preceding series of amendments to this Regulation.**
- 11.18. Contracting Parties applying this UN Regulation shall continue to grant extensions of existing approvals to any preceding series of amendments to this UN Regulation."**

Annex 1, Part 1, paragraph 9.23.1., amend to read:

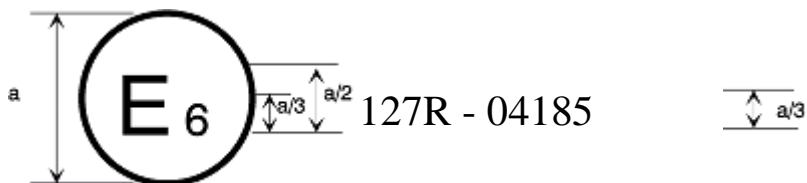
- "9.23.1. A detailed description, including photographs and/or drawings, of the vehicle with respect to the structure, the dimensions, the relevant reference lines and the constituent materials of the frontal part of the vehicle (interior and exterior) shall be provided. This description shall include detail of any active protection system installed **and any system, which could change the vehicle height at the front axle while driving (e.g. active suspension).**"**

Annex 2, amend to read:

"Annex 2

Arrangements of approval marks

(See paragraphs 4.4. to 4.4.2. of this Regulation)



a = 8 mm min

The above approval mark affixed to a vehicle shows that the vehicle type concerned has been approved in Belgium (E 6) with regard to its pedestrian safety performance pursuant to UN Regulation No. 127. The first two digits of the approval number indicate that the approval was granted in accordance with the requirements of UN Regulation No. 127 as amended by the 04 series of amendments."

II. Justification

The above proposal describes the new requirements concerning new provisions to cope with the Adjustable Ride Height Suspension System (ARHSS).
