

## Proposal for the 03 series of amendments to UN Regulation No. 127 (Pedestrian safety)

The text reproduced below was prepared by the experts from OICA to amend the definitions and specifications as well as the Annex 1, Part 1. It is a revised counterproposal to document ECE/TRANS/WP.29/GRSP/2019/18 submitted by Germany. It also replaces the OICA informal documents GRSP-67-07 and GRSP-68-18.

The modifications to the current text of the UN Regulations are marked in bold for new or strikethrough for deleted characters.

### I. Proposal

*Add 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)."**

*Add new paragraphs 5.3. to 5.3.1.2., 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 paragraph 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 paragraph 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. **As an alternative to paragraph 5.3, vehicles equipped with an ARHSS may comply with paragraph 5.3.1.1. and/or 5.3.1.2., where applicable.**

5.3.1.1. **For vehicles equipped with an automatic ARHSS the vehicle manufacturer shall demonstrate by independent means, e.g. a physical test, that the system will return to the normal ride attitude, when the vehicle is operating on public roads; this information will be specified as described in the information document in Annex 1.**

5.3.1.2. **For vehicles equipped with a manually activated ARHSS designed for use in exceptional use cases such as flood/heavy snow and for off road use, the normal ride height of the vehicle shall reset when the system is manually switched off. In all cases the ARHSS shall automatically reset to the normal ride attitude at the next ignition cycle.**

**In cases where the manually activated ARHSS is engaged it shall be indicated to the driver by an optical warning signal. This exceptional use case and use of the system shall also be described in the Owner's handbook."**

*Insert new paragraphs 5.3.2. to 5.3.4., to read:*

- "5.3.2. The legform impactor to be used is the legform impactor as used for the legform to bumper test in normal running condition 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 11.5. to 11.8., to read:*

- "11.5. As from the official date of entry into force of the 03 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 03 series of amendments.
- 11.6. As from 7 July 2024, Contracting Parties applying this Regulation shall not be obliged to accept type-approvals to the preceding series of amendments first issued after 7 July 2024.
- 11.7. Contracting Parties applying this Regulation shall continue to accept type approvals issued according to the preceding series of amendments to this Regulation first issued before 7 July 2024
- 11.8. Contracting Parties applying this UN Regulation may grant type approvals according to any preceding series of amendments to this Regulation.
- 11.9. Contracting Parties applying this UN Regulation shall continue to grant extensions of existing approvals to any preceding series of amendments to this Regulation."

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

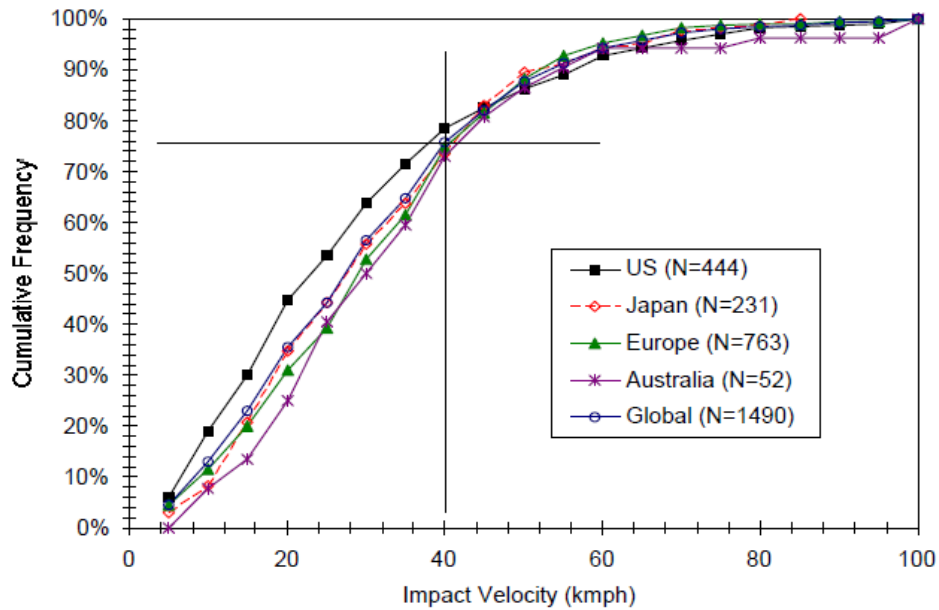
- "9.23.1. A detailed description, including photographs and/or drawings, of the vehicle with respect to the structure, the dimensions, the relevant reference lines and the constituent materials of the frontal part of the vehicle (interior and exterior) shall be provided. This description shall include 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).**"

## II. Justification

1. UN Regulation No. 127 addresses impacts with a pedestrian up to 40 km/h. Therefore, an impact velocity of 11.1 m/s (40 km/h) has been chosen to address a large amount of Maximum Abbreviated Injury Scale 1+ pedestrian accidents (see diagram below).
2. As pointed out by Germany in document ECE/TRANS/WP.29/GRSP/2019/18, the availability of active suspensions allows the development of a system which could change the vehicle height while driving (up to a defined driving speed, e.g. up to 39 km/h). Such a system would allow raising of the suspension for driving off road (SUVs mostly) or driving in a car park (sports cars). In this context, there have been discussions with some manufacturers about the relevance to pedestrian protection. Since the vehicle height has an influence on the headform test area (WAD) and on the test results for legform tests, Germany

considers that all possible vehicle heights up to a driving speed of 11.1 m/s (40 km/h) should be considered to be relevant for impact with a pedestrian. The proposal clarifies this issue.

3. To ensure that such an active suspension system is considered for type approval in any case, there should be a detailed description in the information document.



Source: Informal Group on Pedestrian Safety – 1<sup>st</sup> meeting (4-5 September 2002)  
INF GR / PS / 3. IHRA accident study

4. For tests with active suspensions the same legform impactor shall be used as for the tests at 40km/h. i.e. no change between FlexPLI and Upper legform (§5.3.1). The additional head tested area does not relate to the distribution of HIC 1000/1700 areas (§5.3.3).