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Economic Commission for Europe**Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on Passive Safety****Sixty-fifth session**

Geneva, 13-17 May 2019

Item 9 of the provisional agenda

UN Regulation No. 17 (Strength of seats)**Proposal for the 10 series of amendments to UN Regulation No. 17 (Strength of seats)****Submitted by the expert from the European Association of Automotive Suppliers***

The text reproduced below was prepared by the expert from the European Association of Automotive Suppliers (CLEPA) to amend the static options of the draft 10 series of amendments submitted by the experts from Japan and the European Commission (ECE/TRANS/WP.29/GRSP/2018/34). It is based on informal document GRSP-64-25 presented during the sixty-fourth session of the Working Party on General Safety (GRSP). The modifications to ECE/TRANS/WP.29/GRSP/2018/34, are marked in bold or strikethrough characters.

* 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 3.1), the World Forum will develop, harmonize and update UN regulations to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

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I. Proposal

Paragraph 5.2.7., amend to read:

"5.2.7. After the tests, the displacement systems intended for permitting or facilitating the access of occupants shall be in working order; they shall be capable, at least once, of being unlocked and shall permit the displacement of the seat or the part of the seat for which they are intended.

Any other displacement systems, as well as adjustment systems and their locking systems are not required to be in working order.

In the case of seats provided with head restraints, the strength of the seat-back and of its locking devices is deemed to meet the requirements set out in paragraph 6.2. when, after testing in accordance with paragraph Annex 5 below, no breakage of the seat or seat-back has occurred: otherwise, it shall be shown that the seat is capable of meeting the test requirements set out in paragraph 6.2. below.

In the case of seats (benches) with more places to sit than head restraints and in case the manufacturer chooses not to apply 53 daNm during the test of paragraph ~~6.4.4.1. of Annex 5~~, the seat back strength test of para. 6.2 has to be performed in addition to the test of para. ~~6.4.4.1. of Annex 5~~."

Paragraph 5.5.1.2., amend to read:

"5.5.1.2. Parts of the front and rear faces of head restraints situated in area 2, as defined in paragraph 6.8.1.2. below, shall be so padded as to prevent any direct contact of the head with the components of the structure and shall meet the requirements of paragraph 5.2.4. above applicable to the rear parts of seats situated in area 2. ~~For the case that~~ **When paragraph 5.2.4.2. is used for front faces of head restraints, the energy dissipation test shall be conducted according to Annex 12.** In the case of head restraints integrated with the seat back, the front face of the head restraint is considered as the area located above a plane perpendicular to the reference line at 540 mm from the R point and between two vertical longitudinal planes at 85 mm on either side of the reference line."

Paragraph 5.6.2.3., amend to read:

"5.6.2.3. Exception

If the interior surface of the vehicle roofline, including the headliner, physically prevents a head restraint, located in the front designated seating position, from attaining the height required by paragraphs 5.6.2.1. ~~and~~ or 5.6.2.2. of this Regulation as applicable, the gap between the head restraint and the interior surface of the roofline, including the headliner, when measured in accordance with Annex 10 paragraph 2.3.3.1., shall not exceed 50 mm when the head restraint is adjusted to its highest position intended for occupant use. However, in no instance shall the height of a head restraint located in a front ~~outboard~~-designated seating position be less than 700 mm when the head restraint is adjusted to its lowest position intended for occupant use."

Paragraph 5.6.4., amend to read:

"5.6.4. Gaps within head restraint

If a head restraint has any gap greater than 60 mm, when measured in accordance with Annex 8, the maximum rearward displacement of the head

form shall be less than 102 mm when the head restraint is tested at that gap in accordance with Annex 5.

In the case of head restraints integral with the seat-back, the area to be considered is:

Above a plane perpendicular to the reference line at 540 mm from the R point and between two vertical longitudinal planes passing at 85 mm on either side of the reference line."

Paragraph 5.6.7., amend to read:

"5.6.7. The height of intended front contact surface area of a **non-integrated** head restraint determined by distance of IP to the tangent of head restraint lower (see Figure 10-6. Annex 10) shall be not less than 100mm, when measured on parallel to torso reference line."

Paragraph 5.8.4.2., amend to read:

"5.8.4.2. In all rear **outboard, rear centre** and front centre designated seating positions equipped with head restraints, the head restraint shall, when tested in accordance with Annex 15, be capable of manually rotating either forward or rearward by not less than 60 degrees from any position of adjustment intended for occupant use in which its minimum height is not less than that specified in paragraph 5.6.2. of this Regulation. **A head restraint rotated by minimum 60° forward or rearward, is considered to be placed in a non-use position even if the head restraint height in such a position would be greater than that specified in paragraph 5.6.2."**

Paragraph 5.8.4.5., amend to read:

"5.8.4.5. The **presence of a non-use position of a** head restraint shall be marked with a label, in the form of a pictogram which may include explanatory text. The label shall either provide an indication when the head restraint is in a non-use position or provide information to enable an occupant to determine whether the head restraint is in a non-use position. The label shall be durably affixed and located such that it is clearly visible by an occupant when entering the vehicle to the designated seating position. **The number of labels is not requested to not exceed the number of head restraints with non-use positions.** Examples of possible designs of pictograms are shown in Figure 1."

Paragraph 5.10., amend to read:

"5.10. If the head restraint is adjustable, it shall not be possible to raise it beyond the maximum operational height, or remove it, except by deliberate action on the part of the user distinct from any act necessary for its **upward** adjustment."

Paragraph 6.4.4., amend to read:

"6.4.4. To demonstrate compliance with paragraphs 5.6. through 5.8. of this Regulation, ~~with~~ any adjustable lumbar support **and any adjustable side bolster adjustment is** adjusted to its most rearward nominal design position. If the seat cushion adjusts independently of the seat back, position the seat cushion such that the lowest H-point position is achieved with respect to the seat back. These conditions, however, may be superseded by the detailed test procedures described in the Annexes."

Paragraph 6.6.3., shall be deleted

Paragraph 6.8.1.3.1., amend to read:

"6.8.1.3.1. Area 3 is defined as the part of the back of the seat or the bench seats situated above the horizontal planes ~~through the R-point of the seat, but defined in paragraph 5.2.4.1.3. above,~~ excluding parts situated in area 1 and area 2."

Paragraph 6.9., amend to read:

"6.9. Equivalent test methods

If a test method other than those specified in paragraphs 6.2., 6.3., ~~6.4.~~ above ~~and or in Annex 5, Annex 6 or Annex 12~~ is used, its equivalence shall be ~~proved~~ **proven.**"

Paragraphs 13.13.1.to 13.13.3., amend to read:

"13.13.1. As from [1 September **2022,**] Contracting Parties applying this UN Regulation shall not be obliged to accept UN type approvals to the preceding series of amendments that were first issued on or after [1 September **2022.**]

13.13.2. Until [1 September **2025,**] Contracting Parties applying this UN Regulation shall accept UN type-approvals to the preceding series of amendments that were first issued before [1 September **2022.**]

13.13.3. As from [1 September **2025,**] Contracting Parties applying this Regulation shall not be obliged to accept type-approvals issued to the preceding series of amendments to this Regulation **for front head restraints.**"

Annex 4, paragraph 2.1., amend to read:

"2.1. The seat shall be adjusted such that its H-point coincides with the R-point; if the seat back is adjustable, it is set at the design seat back angle; both these adjustments shall be in accordance with the requirements of paragraph 2.1. of Annex 10.

The head restraint shall be adjusted to its highest and most rearward position relative to the seat back."

Annex 5, paragraphs 2.3. and 2.4., amend to read:

"2.3. Establish the displaced torso reference line 'r1' by creating a rearward moment of 373 ± 7.5 Nm about the R-point by applying a force to the seat back through the back pan at the rate of **[2.5 Nm/second to 37.3 Nm/second]**. The initial location on the back pan of the moment generating force vector has a height of $290 \text{ mm} \pm 13 \text{ mm}$. Apply the force vector normal to the torso reference line and maintain it within 2 degrees of a vertical plane parallel to the vehicle longitudinal centreline. Constrain the back pan to rotate about the R-point. Rotate the force vector direction with the back pan. **In the case of simultaneous testing of bench seats, the rearward moment shall be applied to all seating positions of the bench simultaneously, irrespective of if position is equipped with or without a head restraint.**

2.4. Maintain the position of the back pan as established in paragraph 2.3. of this Annex. Using a 165 ± 2 mm diameter spherical headform establish the headform initial reference position by applying, perpendicular to the displaced torso line, a rearward initial load at the seat centreline at a height 65 ± 3 mm below the effective top of the head restraint that will produce a 373 ± 7.5 Nm moment about the R-point. Maintain this moment for at least 5 seconds and then record the rearward displacement of the headform with the load applied.

In the case of simultaneous testing of bench seats, the force shall be applied to all head restraints as present on the bench seats simultaneously."

Annex 5, paragraph 3.4., amend to read:

- "3.4. Establish the displaced torso line by creating a posterior moment of 373 ± 7.5 Nm about the R-point by applying a force to the seat back through the back pan at the rate between **[2.5 Nm/second and 37.3 Nm/second]**. The initial location on the back pan of the moment generating force vector has a height of $290 \text{ mm} \pm 13 \text{ mm}$. Apply the force vector normal to the torso line and maintain it within 2 degrees of a vertical plane parallel to the vehicle longitudinal centreline. Constrain the back pan to rotate about the R-point. Rotate the force vector direction with the back pan."

Annex 5, paragraph 3.7. and 3.8., amend to read:

- "3.7. Increase the initial load at the rate of **[2.5 Nm/second to 37.3 Nm/second]** until a 373 ± 7.5 Nm moment about the R-point is produced. Maintain the load level producing that moment for not less than 5 seconds and then measure the rearward displacement of the headform relative to the displaced torso line.
- 3.8. Reduce the load at the **rate of [2.5 Nm/second to 37.3 Nm/second]** until 0 Nm. Wait **not more than 10 2** minutes. Re-load to 37 ± 0.7 Nm about the R-point. While maintaining the load level producing that moment, measure the rearward displacement of the headform position with respect to its initial reference position."

Annex 5, paragraph 4.1., amend to read:

- "4.1. Increase the load specified in paragraph 3.8. of this annex at a rate **between [5 N/second and 200 N/second]** to $890 \text{ N} \pm 5 \text{ N}$ and maintain the applied load for not less than 5 seconds without any breakage of the seat or head restraint. **At the request of the manufacturer, the load of paragraph 2.3. of Annex 5 is increased simultaneously to 530 Nm for seating positions without head restraints only to allow simultaneous compliance with paragraphs 5.11. and 6.2."**

Annex 8, paragraph 2.3., amend to read:

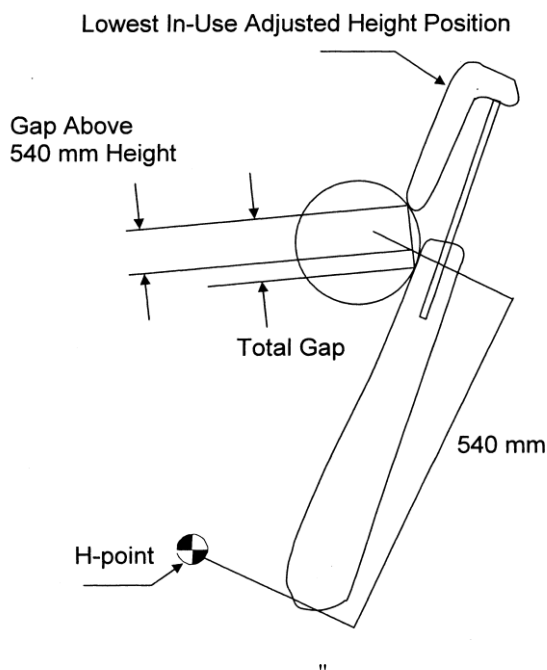
- "2.3. The area of measurement is anywhere between two vertical longitudinal planes passing at 85 mm on either side of the torso line and above ~~the top of the seat back~~ **a height greater than 540 mm."**

Annex 8, paragraph 2.5., amend to read:

- "2.5. Determine the gap dimension by measuring the straight line distance between the inner edges of the two furthest contact points, as shown in Figures 8-1, ~~and 8-2 and 8-3."~~

Annex 8, insert new Figure 8-3, to read:

**"Figure 8-3
Portion of gap above 540mm**



Annex 8, paragraph 3.3., amend to read:

"3.3. The gap shall be measured as the perpendicular distance between two parallel planes, described as follows (see Figure 8-34):

- (a) each plane shall be perpendicular to the design torso line;
- (b) one of the planes shall be tangent to the bottom of the head restraint;
- (c) the other plane shall be tangent to the top of the seat back."

Annex 8, Figure 8-3 (former), renumber as Figure 8-4

Annex 10, paragraph 2.3., amend to read:

"2.3. Height measurement

All measurements shall be taken in the median longitudinal plane of the designated seating position."

Annex 12, paragraph 3.1.1., amend to read:

"3.1.1. Use an impactor with a semispherical headform of a 165 ± 2 mm diameter. The headform and associated base have a combined mass such that at a speed of ~~not more than~~ 24.1 km/h at the time of impact an energy of 152 ± 6 Joule will be reached."

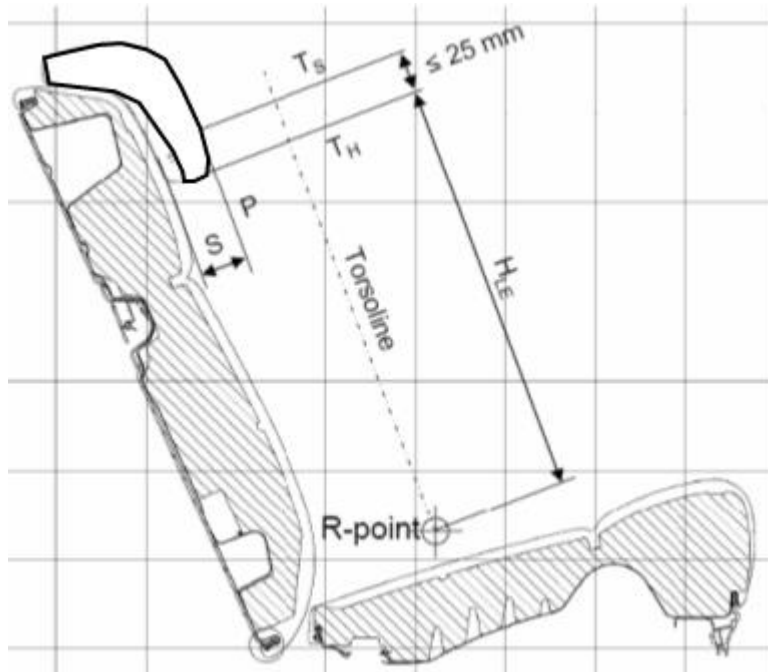
Annex 13, insert a new paragraph 2.10., to read:

"2.10. Alternatively, when the manufacturer demonstrates that the difference of the reference positions of the cylinder measured in paragraphs 2.3 and 2.6 of this

Annex is smaller than the value required by paragraph 5.7.4. of the Regulation, then the test result will also comply to paragraph 5.7.4. of the Regulation. In this case measurements of paragraphs 2.4. and 2.7. do not need to be recorded."

Annex 15, figure 15-1, amend to read:

"Figure 15 – 1.



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II. Justification

1. When the experts from CLEPA started to apply the draft 10 series of amendments to UN Regulation No. 17, they experienced different ways to apply the proposed amendments which made it necessary to add some clarifications.
2. The proposed 10 series of amendments removed or altered paragraphs of the 09 series of amendments to UN Regulation No. 17, which changed the meaning of existing useful paragraphs. Therefore, CELPA proposes to re-insert some paragraphs of the 09 series of amendments which were removed by ECE/TRANS/GRSP/2018/34, either by keeping such paragraphs unchanged or by copying their content in a way that it fits to the proposed new structure of UN Regulation No. 17.
3. In addition, the gap measurement procedure by the sphere was modified in the Federal Motor Vehicle Safety Standard 202a to consider only gaps in the area over 540 mm. This proposal adds the proposed area where the gap is considered for the sphere method.