

**Economic and Social Council**Distr.: General
27 September 2019

Original: English

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations**Working Party on Passive Safety****Sixty-sixth session**

Geneva, 10-13 December 2019

Item 20 of the provisional agenda

UN Regulation No. 129 (Enhanced Child Restraint Systems)**Proposal for Supplement 4 to the 03 series of amendments to
UN Regulation No. 129 (Enhanced Child Restraint Systems)****Submitted by the experts 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 clarify aspects of UN Regulation No. 129. The modifications to the current text of the UN Regulations are marked in bold for new or strikethrough for deleted 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.



I. Proposal

Paragraph 6.3.1.1., amend to read:

"6.3.1.1. The Enhanced Child Restraint System manufacturer shall declare in writing that the toxicity of materials used in the manufacture of restraint systems and accessible to the restrained child is in conformity with the ~~relevant parts of EN 71-3:2013+A1:2014 (paragraph 4.2., Table 2, Category III for specific requirements and paragraph 7.3.3. for test methodology)~~ **test requirements of EN 71-3:2019, for a Category III material as defined in paragraph 4.2. Table 2 and following the test method of paragraph 7.2., specifically paragraph 7.2.2., Table 3, Category III sampling method.** Tests confirming the validity of the declaration may be carried out at the discretion of the Technical Service. This paragraph does not apply to non-integral ECRS with a stature range of 100 cm or above."

Paragraph 6.3.2., amend to read:

"6.3.2. General characteristics

The manufacturer shall declare the maximum and minimum stature of the child that may use each configuration of the Enhanced Child Restraint System.

The stature range shall be verified by measuring the internal geometric characteristics according to paragraph 6.3.2.1., while the external dimensions are adjusted to fit within the applicable size envelope according to paragraph 6.3.2.2."

Paragraph 6.3.2.2.2., amend to read:

"6.3.2.2.2. Booster seats

The maximum external dimensions for the width, height and depth of the Enhanced Child Restraint System and the locations of the ISOFIX anchorages system if any, with which its attachments shall engage, shall be defined by the i-Size booster fixture as defined in paragraph 2.17.2. of this Regulation.

- (a) i-Size booster seat Enhanced Child Restraint Systems shall fit within the ISO/B2 size envelope;
- (b) Specific vehicle booster seat Enhanced Child Restraint Systems shall fit:
 - (i) In vehicle(s) specified in a list; or
 - (ii) At least in one of ISO/B2 –ISO/B3 size envelope as described in Annex 17, Appendix 5 of UN Regulation No. 16.

When conducting this assessment, the booster seat shall be adjusted to accommodate children of 135 cm stature (height, depth and width dimensions as defined in Annex 18) or to the largest size of its declared stature range if the upper limit is below 135 cm.

The booster seat shall fit within the booster seat fixture in all angles of inclination of the fixture (90°-110°). The Enhanced Child Restraint System may be adjusted between inclination angles or positions to fit within the different booster seat fixture angles.

If other positions of inclination are outside the limits of the applicable size envelope, the user manual shall indicate that the child restraint may not fit in all approved vehicles when used in one of these positions. If the booster seat has a declared stature range above 135 cm, and if it is necessary to adjust the child restraint outside the limits of the applicable size envelope for such adjustments (height, depth and width dimensions), the user manual shall

indicate that the child restraint may not fit in all approved vehicles when used in one of these positions.

In such cases, an Enhanced Child Restraint System shall still be categorised as an i-Size booster seat for the entire declared stature range, including statures above 135 cm, provided it fits within the applicable size envelope when adjusted for a child of 135 cm stature. If the maximum child stature that fits within the envelope is less than 135 cm, the booster seat shall be categorised as specific vehicle for statures included in the declared range that no longer fit within the envelope."

Paragraph 6.6.4.4.1.1., amend to read:

"6.6.4.4.1.1. Forward facing Enhanced Child Restraint Systems

... Non-integral booster cushion: No part of the head of the dummy shall pass beyond the planes BA and DA as defined in Figure 1 below.

This shall be judged up to 300 ms or the moment that the dummy has come to a definitive standstill, whatever occurs first.

When testing using Q10 dummy the following apply:

- (a) The value in relation to the BA plane is 550 mm; and
- (b) The value in relation to the DA plane is 840 mm; and
- (c) The rebound phase is not considered for the assessment of the plane DA.
- (d) In case of dummy contact with a rigid part of the test bench in the rebound phase, the head acceleration criterion during that contact shall not be considered."**

Annex 6-Appendix 2, paragraph 2., amend to read:

"2. Enhanced Child Restraint Systems in the i-Size ~~universal, and specific vehicle and restricted~~ categories shall use the following anchorage points: H₁ and H₂."

Annex 18., amend to read:

"Annex 18

Geometrical dimensions of Enhanced Child Restraint Systems

...

~~All lateral dimensions are measured under a contact force of 50 N with the devices described in Figure 2 and Figure 3 of this annex and the following tolerances will applied:~~

~~Minimum Sitting height:~~

- ~~(a) Up to 87 cm B — 5 per cent;~~
- ~~(b) From stature from 87 cm and up to 150 cm B — 10 per cent.~~

~~Minimum shoulder height (5 percentile): E1-₂⁺⁰ cm~~

~~Maximum shoulder height (95 percentile): E2-₀⁺² cm.~~

~~The mass of the devices described in Figure 2 and Figure 3 of this annex shall be 10 kg +/- 1 kg.~~

...

Internal geometry assessment method

This method describes how to conduct the internal geometry assessment, as required by paragraph 6.3.2.1., to verify the stature range of the Enhanced Child Restraint System declared by the manufacturer.

This assessment shall be carried out for each of the following:

- (a) For each ECRS orientation (e.g. rearward and forward facing);
- (b) For each ECRS type (e.g. integral and non-integral);
- (c) For any removable insert (e.g. for use as described by manufacturer's instructions);
- (d) For each occupant restraint method (e.g. harness and shield).

The internal geometry assessment should be conducted with the ECRS placed on a flat surface or connected to a base in the case of ECRS modules.

For integral or non-integral ECRS the device shown in Annex 18, Figure 2 shall be used.

For ECRS with an impact shield the device shown in Annex 18, Figure 3 shall be used.

The mass of the devices described in Figure 2 and Figure 3 shall be 10 kg +/- 1 kg.

1. Determining the Minimum Occupant size

The ECRS should be adjusted to fit the smallest occupant (i.e. headrest height, harness height adjustment, appropriate insert, internal padding, impact shield position), while still fitting within the required ISO volumetric envelope as defined in paragraph 6.3.2.2.

The measurement device shall then be placed in the ECRS. The device shall be aligned centrally to the ECRS.

All measurements shall be taken with the device base in contact with the seat pan of the ECRS and the device backrest in contact with the backrest of the ECRS. **All lateral dimensions shall be measured under a contact force of 50 N with the devices described in Figure 2 and Figure 3 of this annex.**

The measurements shall be taken in the following order:

1.1. Minimum Shoulder Height (E1)

...

1.1.2. For non-integral ECRS

This measurement shall be taken when the top of the shoulder height cylinders of the device are aligned without interference with the lowest part of the headrest. **A 2 cm tolerance may be subtracted from the minimum shoulder height measurement.**

1.1.3. For ECRS with an impact shield

This measurement shall be taken when the top of the shoulder height cylinders of the device are aligned without interference with the lowest part of the headrest. **A 2 cm tolerance may be subtracted from the minimum shoulder height measurement.**

...

2. Determining the Maximum Occupant Size

The measurement ... to the ECRS.

All measurements shall be taken with the device base in contact with the seat pan of the ECRS and the device backrest in contact with the backrest of the ECRS. All lateral dimensions shall be measured under a contact force of 50 N with the devices described in Figure 2 and Figure 3 of this annex.

The measurements shall then be taken in the following order:

..."

Annex 23., paragraph 3, amend to read:

- "3. The retracting belt shall be fitted to the anchorages on the test bench, described in Annex 6, Appendix 2 as follows:
- (a) Belt anchorage A1 shall be fitted to trolley anchorages B0 (outboard);
 - (b) Belt anchorage A2 shall be fitted to trolley anchorage A (inboard);
 - (c) Belt pillar loop P shall be fitted to trolley anchorage C;
 - (d) Belt retractor R shall be fitted to trolley anchorage such that the spool centre line is positioned on Re.

The value of X in Figure 1 below is 200 ± 5 mm. The effective strap length between A1 and the centre line of the retractor spool Re (when the webbing is fully extracted including the minimum length of 150 mm for testing of Enhanced Child Restraint System) shall be $2,820 \pm 5$ mm when measured in a straight line without load and on a horizontal surface. ~~This length may be increased for the testing of restricted categories; for all categories w~~With the Enhanced Child Restraint System installed, there shall be a minimum of 150 mm of strap length on the retractor spool".

II. Justification

1. Different interpretations of UN Regulation No. 129 are being made of the type-approval category of booster seats over 135 cm. This was explained in informal document GRSP-63-28, submitted by CLEPA in response to working documents ECE/TRANS WP.29/GRSP/2018/17 and ECE/TRANS-WP.29/GRSP/2018/18, submitted by Spain on behalf of the Technical Safety Group. The external dimensions test is carried out with the CRS adjusted to accommodate a child of stature 135 cm. However, if the booster has a declared upper stature above 135 cm, and if it is necessary to adjust the CRS outside the applicable size envelope, the user manual must indicate that the CRS may not fit in all approved vehicles. This implies that an i-Size booster seat (ISO/B2 envelope) or specific vehicle booster seat (ISO/B3 envelope) can be approved in a single category; for example, i-Size from 100 to 150 cm. However, the regulation is not always being interpreted in this way, which leads to multiple approval categories being used unnecessarily with the potential for confusing users. This proposal clarifies this aspect of the regulation and removes the possibility of different interpretations.
2. The European Committee for Standardization (CEN) published EN 71-3:2019 on 10 April 2019. This supersedes previous versions of the standard, which must be withdrawn by October 2019. It is necessary, therefore, to update UN Regulation No. 129 to refer to this latest version.
3. Annex 6, Appendix 2 and Annex 23 both refer to Enhanced Child Restraint Systems in the "restricted" category. This is a copy-and-paste error from UN Regulation No. 44. The restricted category is not used in UN Regulation No. 129 and all references to it should be deleted.
4. Annex 18 was amended by Supplement 2 to the 02 series (and Supplement 3 to the 01 series) to specify a detailed procedure for carrying out the internal geometry assessment. This included provisions on the use (or not) of measurement tolerances for certain CRS types. However, the use of tolerances for all CRS types was also specified in the original text at the start of the annex. This original text was not changed by Supplement 2 to the 02 series. As a result, the regulation now includes some contradictory statements and grey areas on the use of tolerances. This proposal removes these contradictions and places all measurement and tolerance provisions together within the assessment procedure.
5. When testing booster cushions with the larger Q-dummies, in particular the Q10, the dummy will rebound over the back of the test bench during a frontal test. The height of the test bench backrest, absence of a head rest and movement of the dummy all contribute to this occurring. This movement leads to either:
 - (a) Contact with rigid parts of the test rig – creating high head accelerations;

(b) Over extension of the neck, which is likely to cause damage to the dummy (costly to replace).

Thus, the proposed solution is to not consider the head acceleration criterion when such a contact occurs.
