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**Economic Commission for Europe**

Inland Transport Committee

**World Forum for Harmonization of Vehicle Regulations**

**Working Party on Passive Safety**

**61st session**

Geneva, 9 - 12 May 2017

Item ?? of the provisional agenda

**Regulation No. 129 (Enhanced Child Restraints Systems)**

 Proposal for Supplement 3 to the 01 series of amendments to Regulation No. 129

 Submitted by the expert from France[[1]](#footnote-2)\*

The text reproduced below was prepared by the expert from France, on behalf of the informal group on Child Restraints Systems and updates the latest version of Regulation No 129. The modifications to the current text of the UN Regulation are marked in bold for new or strikethrough for deleted characters.

 **I. Proposal**

*Insert new paragraph 4.9.,* to read:

“**4.9. An impact shield that is not permanently attached to the chair shall have a permanently attached label to indicate the brand and model of the Enhanced Child Restraint System to which it belongs and the size range. The minimum size of the label shall be [40 x 40] mm or the equivalent area.”**

*Insert new paragraph 4.10.,* to read:

“**4.10. Enhanced Child Restraint Systems shall have a permanently attached label to inform the user of the appropriate method of restraint of the child over the entire stature range declared by the manufacturer.**

 **The label shall be visible to the person installing the Enhanced Child Restraint System in a vehicle and when a child is seated in the restraint. The label shall have a minimum size of 40 x 60 mm or the equivalent area and shall feature a pictogram of each restraint configuration adjacent to the stature range.**”

*Paragraph 6.2.1.4.*,amend to read:

“6.2.1.4. To prevent submarining, either by impact or through restlessness, a crotch strap shall be required on all integral forward-facing restraints incorporating an integral harness belt system. **Enhanced Child Restraint Systems that incorporate a shield instead of a harness shall ensure that the shield extends across the full width of the child and sits low on the pelvis.**"

*Paragraph 6.2.1.8.*,amend to read:

"6.2.1.8. With the crotch strap attached and in its longest position if adjustable, it shall not be possible to adjust the lap strap to lie above the pelvis of both the smallest and largest dummy within the size range covered by the approval. For all forward-facing restraints, it shall not be possible to adjust the lap strap to lie above the pelvis of both the smallest and largest dummy within the size range covered by the approval.

 **An impact shield shall be adjustable in a way that it comes in contact with the pelvis and abdomen of the smallest and largest dummy within the size range covered by the approval, leaving no gap between the impact shield and the dummy.**”

*Paragraph 6.3.2.1.*,amend to read:

"6.3.2.1. Internal geometric characteristics

 The Technical Service conducting the approval tests shall verify that the internal dimensions of the Enhanced Child Restraint System conform to the requirements of Annex 18. The minimum dimensions for shoulder breadth, hip breadth and sitting height shall be fulfilled simultaneously for any stature within the size range declared by the manufacturer.

Integral Enhanced Child Restraint System shall also fulfil the minimum and maximum dimensions of shoulder height, for any stature within the size range declared by the manufacturer.

**Integral Enhanced Child Restraint Systems that feature an impact shield shall also be capable of being adjusted to fulfil:**

**- the 5th percentile upper leg thickness and 5th percentile abdomen depth, simultaneously to the 5th percentile shoulder height;**

**- the 95th percentile upper leg thickness and 95th percentile abdomen depth, simultaneously to the 95th percentile shoulder height, shoulder breadth, hip breadth and sitting height;**

**for any stature within the size range declared by the manufacturer.**

 Non-integral Enhanced Child Restraint System shall also fulfil the maximum dimensions of shoulder height, for any stature within the size range declared by the manufacturer

*Paragraph 6.6.2.1.*,amend to read:

"6.6.2.1. For all devices with backrests, the areas defined in Annex 14 to this Regulation, when tested according to Annex 13, shall give a peak acceleration of less than 60 g. This requirement applies also to areas of impact shields which are in the head strike area **as defined in Annex 14**”.

*Insert new paragraph 6.6.4.1.8.,* to read:

“**6.6.4.1.8. In the case of a convertible integral Enhanced Child Restraint System that is equipped with a means of restraint of the child that is intended for one orientation only, the dynamic test shall be carried out as follows:**

**6.6.4.1.8.1. With the means of restraint used in the orientation for which it is intended, and**

**6.6.4.1.8.2. With the means of restraint used in the orientation for which it is not intended, unless a mechanism is provided to prevent such incorrect use.**”

*Paragraph 6.6.4.4.1.1.1.*, amend to read:

“6.6.4.4.1.1.1. Where a test is conducted in accordance with paragraph 6.6.4.1.6.2. **or paragraph 6.6.4.1.8.2** above, a tolerance of +10 per cent shall be applicable to the head excursion value distance between Cr point and plane AB.”

*Paragraph 6.6.4.4.1.2.1.*, amend to read:

“6.6.4.4.1.2.1. ……

 Where a test is conducted with paragraph 6.6.4.1.6.2. or **paragraph 6.6.4.1.8.2.** above, only the second configuration test results without 100 mm diameter bar will be considered.

*Paragraph 6.6.5.1.*,amend to read:

"6.6.5.1. Buckle assemblies, retractors, adjusters and lock-off devices that are liable to be affected by temperature, shall be subject to the temperature test specified in paragraph 7.2.7. below. **This requirement is applicable to any such components that are found on the Enhanced Child Restraint System, regardless of its means of restraint.**"”

*Paragraph 6.7.*,amend to read:

"6.7. Provisions applicable to individual components of the restraint

**This paragraph is applicable to any such components that are found on the Enhanced Child Restraint System, regardless of its means of restraint.**"

*Paragraph 6.7.1.8.2.*,amend to read:

"6.7.1.8.2. Depending on the mass limit declared by the manufacturer, a ~~harness~~ buckle shall withstand:"

*Paragraph 6.7.2.7.*,amend to read:

"6.7.2.7. An adjuster mounted directly on the Child Restraint System shall be capable of withstanding repeated operation and shall, before the dynamic test prescribed in paragraph 7.1.3. undergo a test comprising 5,000 ± 5 cycles as specified in paragraph 7.2.6.**1.**

 **An adjuster mounted on a strap shall be capable of withstanding repeated operation and shall, before the dynamic test prescribed in paragraph 7.1.3. undergo a test comprising 5,000 ± 5 cycles as specified in paragraph 7.2.6.2. ~~that applies the principles of the test specified in paragraph 7.2.3. This test shall be defined by the Technical Service in consultation with the manufacturer~~**

*Insert new paragraph 7.1.3.6.5.*, to read:

**“7.1.3.6.5. The test specified in 6.6.4.1.8. above is a requirement only for:**

**7.1.3.6.5.1. The smallest dummy for which the Enhanced Child Restraint is designed, if the means of restraint is an impact shield.**

**7.1.3.6.5.2. The largest dummy for which the Enhanced Child Restraint is designed, if the means of restraint is a harness.”**

*Paragraph 7.2.6.*, amend to read:

“7.2.6**.1** Conditioning test for adjusters mounted directly on a child restraint”

*Insert new paragraph 7.2.6.*, to read:

**“7.2.6. Conditioning tests for adjusters”**

***Insert new paragraph 7.2.6.2.,* to read:**

**7.2.6.2. Conditioning test for adjusters connected to a strap (not directly mounted to the Enhanced Child Restraint System)**

**Install the largest dummy for which the restraint is intended, as if for the dynamic test, including the standard slack as specified in paragraph 7.1.3.5. above. Mark a reference line on the strap where the free end of the strap enters the adjuster.**

**Remove the dummy and place the restraint in the conditioning rig shown in Figure 2, Annex 15.**

**The strap shall be cycled for a total distance of not less than 150 mm through the adjuster. This movement shall be such that at least 100 mm of strap on the side of the reference line towards the free end of the strap.**

**If the length of strap from the reference line to the free end of the strap is insufficient for the movement described above, the 150 mm of movement through the adjuster shall be from the fully extended strap position.**

**The frequency of cycling shall be 10 ± 1 cycles/minute, with a velocity on ‘B’ of 150 ± 1 mm/s.**

**This process shall be conducted for each adjuster that is part of the retention system of the child within the restraint.**

Paragraph 9.2.1.1., amend to read:

“9.2.1.1. Five Enhanced Child Restraint Systems shall be subjected to the dynamic test described in paragraph 7.1.3. above. The Technical Service that conducted the type approval tests shall choose the conditions that produced the maximum horizontal head excursion during the type approval dynamic tests, excluding the conditions described in paragraph 6.6.4.1.6.2. **and paragraph 6.6.4.1.8.2.** above. All the five Enhanced Child Restraint Systems shall be tested under the same conditions.”

*Paragraph 14.3.5.*,amend to read:

"14.3.5. It shall be recommended that any straps holding the restraint to the vehicle should be tight, that any support-leg should be in contact with the vehicle floor, that any straps **or impact shields** restraining the child should be adjusted to the child's body, and that straps should not be twisted;."

*Paragraph 14.3.6.*,amend to read:

"14.3.6. 'The importance of ensuring that any lap strap is worn low down, **and any impact shield installed properly,** so that the pelvis is firmly engaged, shall be stressed;

Annex 14, amend to read

 “Annex 14

 Method of defining head impact area of devices with backrests **or impact shields** and for rearward-facing devices defining the minimum size of side wings

1. **Head impact area**

**1.1. Definition of backrest head impact area**

Place the device on the test benchdescribed in….

**1.2. Definition of impact shield head impact area**

 **The impact shield head impact area is the whole upper surface of the impact shield, which comprises any surfaces visible from the top, looking down on the shield.**”

Annex 15, amend to read

“**Description of conditioning for adjusters connected to a strap**



Strap end clamped or fixed to ECRS

Strap

Adjuster (rigidly clamped)

1. **Method**

**1.1. Rigidly clamp the adjuster**

**1.2. With the strap set at the reference position described in paragraph 7.2.6., withdraw at least 50 mm of strap from the adjuster by pulling on the free end of the strap.**

**1.3. Attach the adjuster part of the strap to the pulling device A.**

**1.4. Activate the adjuster (C) and pull at least 150 mm of strap through the adjuster. This represents half of one cycle and puts pulling device A to the maximum strap extraction position.**

**1.5. Connect the free end of the strap to pulling device B.**

**2. The cycle is:**

**2.1. Pull B at least 150 mm whilst A exerts no tension on the strap.**

**2.2. Activate the adjuster (C) and pull A whilst B exerts no tension on the free end of the strap.**

**2.3. At the end of the stroke, de-activate the adjuster.**

**2.4. Repeat the cycle as specified in paragraph 6.7.2.7. of this regulation.”**

Annex 18, amend to read:

Figure 1.

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| Applicable to all Enhanced Child Restraint Systems | Additional dimensions applicable to Enhanced Child Restraint Systems that feature an impact shield |
|  | Min | Min | Min | Min | Max |  | Min | Max | Min | Max |
| Stature | Sitting height cm | Shoulder breadth cm | Hip breadth cm | Shoulder height cm | Shoulder height cm |  | Abdomen depth cm | Abdomen depth cm | Upper leg thickness cm | Upper leg thickness cm |
| A | B | C | D | E1 | E2 |  | F1 | F2 | G1 | G2 |
|   | 95%ile | 95%ile | 95%ile | 5%ile | 95%ile |  | 5%ile | 95%ile | 5%ile | 95%ile |
| <40 |  |  |  | NA | NA |  | Not allowed for these dimensions |
| 45 | 39.0 | 12.1 | 14.2 | 27.4 | 29.0 |  |
| 50 | 40.5 | 14.1 | 14.8 | 27.6 | 29.2 |  |
| 55 | 42.0 | 16.1 | 15.4 | 27.8 | 29.4 |  |
| 60 | 43.5 | 18.1 | 16.0 | 28.0 | 29.6 |  |
| 65 | 45.0 | 20.1 | 17.2 | 28.2 | 29.8 |  |
| 70 | 47.1 | 22.1 | 18.4 | 28.3 | 30.0 |  |
| 75 | 49.2 | 24.1 | 19.6 | 28.4 | 31.3 |  | 12.5  | 15.1 | 5.7 | 8.4 |
| 80 | 51.3 | 26.1 | 20.8 | 29.2 | 32.6 |  | 12.7 | 15.7 | 5.8 | 8.4 |
| 85 | 53.4 | 26.9 | 22.0 | 30.0 | 33.9 |  | 12.9 | 16.2 | 5.9 | 8.5 |
| 90 | 55.5 | 27.7 | 22.5 | 30.8 | 35.2 |  | 13.1 | 16.8 | 6.2 |  8.5 |
| 95 | 57.6 | 28.5 | 23.0 | 31.6 | 36.5 |  | 13.3 | 17,8 | 6.5 |  8.9 |
| 100 | 59.7 | 29.3 | 23.5 | 32.4 | 37.8 |  | 13.5 | 18.2 | 6.5  |  9.6 |
| 105 | 61.8 | 30.1 | 24.9 | 33.2 | 39.1 |  | 13.6 | 18.8 | 6.6 |  10.3 |
| 110 | 63.9 | 30.9 | 26.3 | 34.0 | 40.4 |  | 13.9 | 19.6 | 6.6 |  10.3  |
| 115 | 66.0 | 32.1 | 27.7 | 35.5 | 41.7 |  | 13.9 | 19.9  | 6.6 |  10.4 |
| 120 | 68.1 | 33.3 | 29.1 | 37.0 | 43.0 |  | 14.3 | 20.2 | 6.8 |  10.5 |
| 125 | 70.2 | 33.3 | 29.1 | 38.5 | 44.3 |  | 14.7 | 20.7 | 7.5 |  10.9 |
| 130 | 72.3 | 33.3 | 29.1 | 40.0 | 46.1 |  | Not allowed for these dimensions |
| 135 | 74.4 | 33.3 | 29.1 | 41.5 | 47.9 |  |
| 140 | 76.5 | 34.2 | 29.6 | 43.0 | 49.7 |  |
| 145 | 78.6 | 35.3 | 30.8 | 44.5 | 51.5 |  |
| 150 | 81.1 | 36.4 | 32.0 | 46.3 | 53.3 |  |

*Figure 3*

*Side and Front View of the measuring device for measurements applicable to Enhanced Child Restraint Systems that feature and impact shield*

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| --- | --- |
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*All dimensions in mm*

II. Justification

The proposed amendments to the text have been developed to authorise the type approval of integral and non-integral Enhanced Child Restraint Systems equipped with impact shield as restraint device.

1. \* In accordance with the programme of work of the Inland Transport Committee for 2016–2017 (ECE/TRANS/254, para. 159 and ECE/TRANS/2016/28/Add.1, cluster 3.1), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate. [↑](#footnote-ref-2)