

**Economic and Social Council**Distr.: General
18 February 2022

Original: English

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations**Working Party on Passive Safety Provisions****Seventy-first session**

Geneva, 9–13 May 2022

Item 10 of the provisional agenda

UN Regulation No. 129 (Enhanced Child Restraint Systems)**Proposal for Supplement 8 to the 03 series of amendments****Submitted by the expert from the Netherlands***

The text reproduced below was prepared by the expert from the Netherlands on behalf of the Ad-Hoc group on Annex 25 (Spain, Germany, Netherlands, TSG, CLEPA, Safesign, Advanced Safety Concepts) to amend the existing procedure that measures the prescriptions of the minimum sitting height for booster cushions. The modifications to the current text of the UN Regulation are marked in bold for new or strikethrough for deleted 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

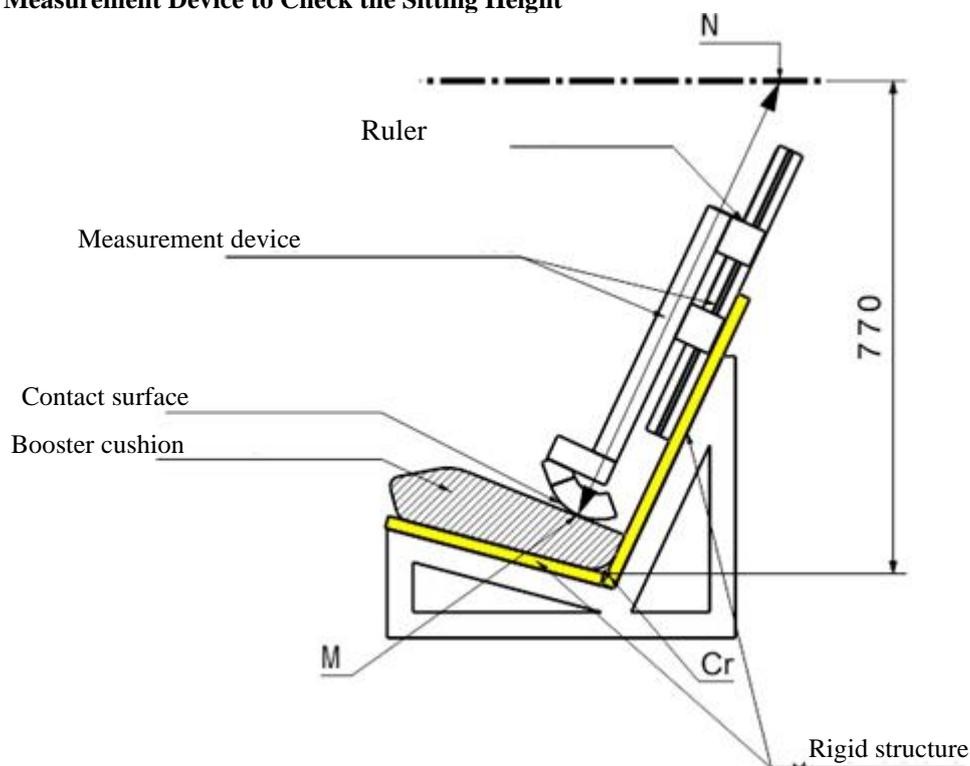
Paragraph 6.1.3.6., amend to read:

"6.1.3.6. For booster cushions, type approval shall not be granted for a stature below 125 cm. Booster cushions shall not be declared for use below a stature of 125 cm.

Booster cushions shall ensure that the top of the child's head is at or above a horizontal plane at 770 mm vertically from the Cr axis when seated on the test bench described in Annex 6.

The procedure to check if a booster cushion fulfils this requirement is outlined as follows (See figure 1 below):

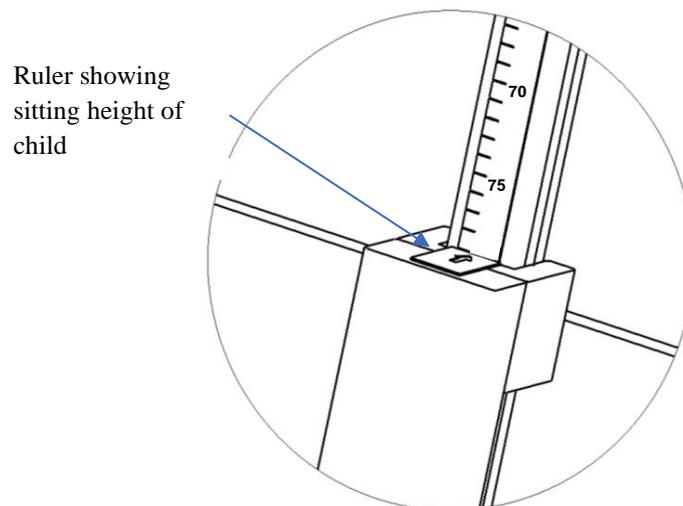
Figure 1
Measurement Device to Check the Sitting Height



- (a) A simulated test bench shall be used for the assessment. The simulated bench shall have the same geometry as the test bench defined in Annex 6 of this Regulation, including the seat cushions. However, the width of the simulated bench may be reduced, if the width is between 500 and 800 mm, as shown in Annex 25. The simulated test bench shall be of rigid construction and shall not deform when using the measuring device defined in Annex 25.
- (b) A rigid structure is attached to the simulated test bench and holds a sliding part. ~~A horizontal plane that is located at a vertical distance of 770 mm from the Cr axis is defined.~~
- (c) The booster cushion shall be placed on the simulated test bench with its centreline aligned with the centreline of the test bench and the rear surface of the booster cushion contacting the backrest of the test bench.

- (d) If ISOFIX attachments are present these shall be latched with the test bench lower ISOFIX anchorages. An additional force of 135 +/-15N shall be applied in a plane parallel to the surface of the simulated test bench. The force shall be applied along the centreline of the Enhanced Child Restraint System and at a height of no more than 100 mm above the simulated test bench seat surface.
- (e) The measurement device is extended downwards parallel to the simulated test bench backrest, until it is stopped by the booster seat cushion.

Figure 2
Ruler of Measurement Device



- (f) ~~The measured distance between the two points M and N (Figure 1) represents the sitting height of a child who will use the booster cushion.~~ The corresponding value **of the sitting height** is displayed by a ruler that is provided with the device as shown in Figure 2.
- (g) Using the data in Table 3, the sitting height is utilized to determine the corresponding minimum stature of the child that can be accommodated by the booster cushion. Example: A sitting height of 66.2 cm shall correspond to a child minimum stature of 125 cm; a sitting height of 75.9 cm shall correspond to 150 cm.

In case the value obtained for the sitting height is between two integer values always round up to the next integer value (e.g. Measured sitting height = 70.1 cm ► resulting stature = ~~135.65~~ **136.05** cm ► Smallest stature allowed = ~~136~~ **137** cm).
- (h) The stature determined in this procedure shall be compared to the lower limit of the approval stature range. The requirement is fulfilled if the lower approval stature is greater or equal than the obtained minimum stature.

Table 3
Sitting Heights with Corresponding Minimum Statures

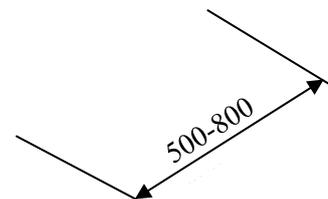
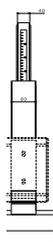
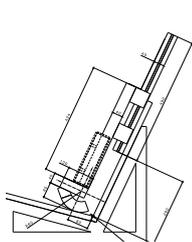
<i>Minimum Sitting Height 50th percentile³</i> (cm)	<i>Stature</i> (cm)
66.2	125
67.9	130
69.7	135
71.6	140
73.6	145
75.9	150

Note: For statures in between the displayed values the respective sitting height needs to be calculated by means of a linear interpolation.

Annex 25., amend to read:

"Annex 25

Device to measure the booster cushion height



The mass of the device shall be 15kg +/-1kg

[all dimensions in mm]

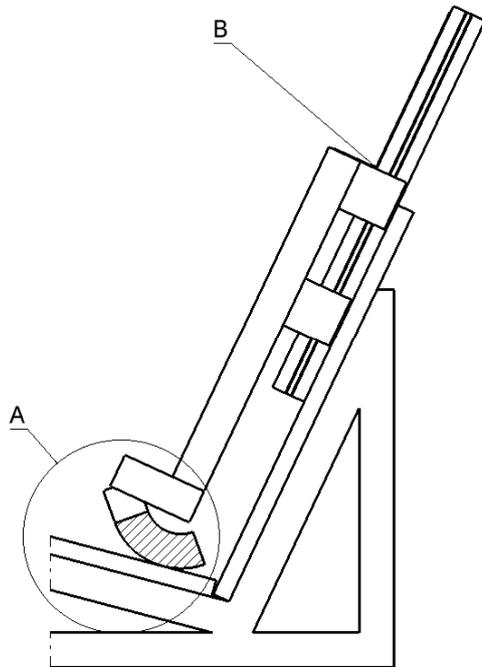
Calibration of the measurement scale

To calibrate the ruler of the measurement device, its structure shall contact the supporting surface (Detail A). In this configuration, the scale shall show the calibration value of **78.7** **79.7** cm (Detail B).

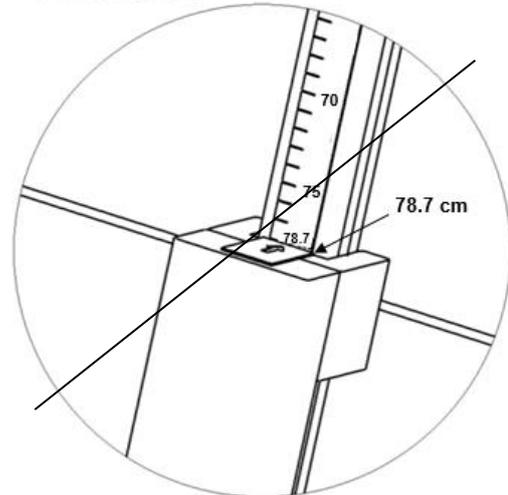
The calibration of the ruler is based on the sitting height of the Hybrid III 5th percentile dummy seated on the test bench defined in Annex 6 of this Regulation. When this dummy is

³ Anthropometric Reference Database France, Volume III: Statistical Results for 0 to 17-year old Children, Children equipment and Accessories. IFTH, Cholet, France, page 525

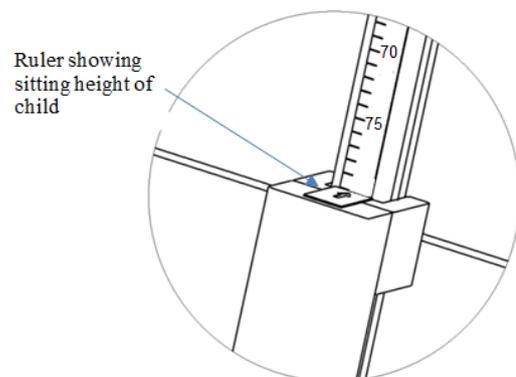
seated on the test bench, the top of the head is 77.0 cm from the Cr axis. The nominal sitting height of the dummy is 78.7 cm. **Taking this value as a reference, when translating the value to the 80 mm distance from the test bench backrest where the sitting height of the child is measured, and taking into account the different angles in between the backrest, the horizontal plane and the head position, a value of 79.7 cm is used as the calibration value.**



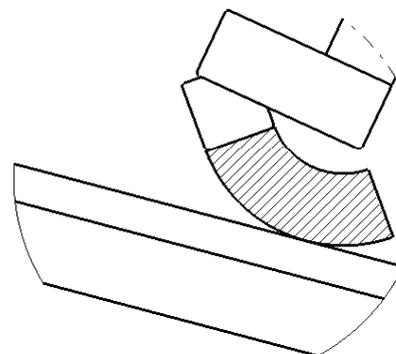
Detail B



Detail B



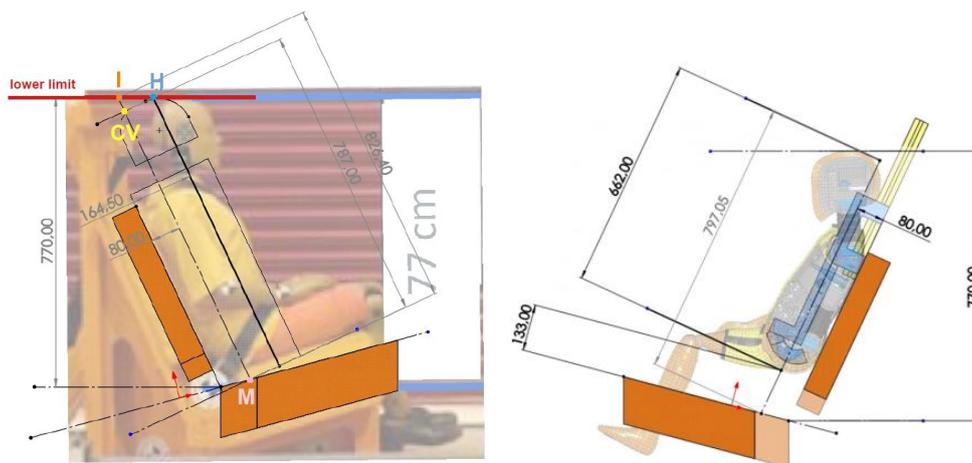
Detail A



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II. Justification

1. Paragraph 6.1.3.6. states that the top of the head of the child must lay at or above a horizontal plane located at 770 mm above Cr.
2. However, there is an inconsistency between the method described in the main body of the existing text and the measurement device described in Annex 25. Paragraph 6.1.3.6. has therefore been amended to remove this conflict.
3. Virtual verification of the calibration value stated in Annex 25 has shown a 10 mm error. This error occurred because there are different distances to the test bench backrest between the 5th percentile female anthropomorphic test device and the Q dummies. It is therefore proposed to increase the Annex 25 calibration value by 10 mm.



4. The calculation in paragraph 6.1.3.6. (g) was incorrect since it came from a linear regression using all of the table values instead of using linear interpolation between the two nearest values in table 3, as it is mentioned in the Note.