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

Geneva, 12-15 December 2017

Item 17 of the provisional agenda

UN Regulation No. 129 (Lateral collision)**Proposal for Supplement 7 to UN Regulation No. 129
(Enhanced Child Restraint Systems)****Submitted by the expert from France***

The text reproduced below was prepared by the expert from France. It introduces Supplement 7 to UN Regulation No. 129 (Enhanced Child Restraint Systems (ECRS)) agreed by the experts of the Informal Working Group on Child Restraint Systems (IWG CRS) up to the last two meetings of the group. The modifications to the existing text of the UN Regulation No. 129, including ECE/TRANS/WP.29/2017/124 (Proposal for supplement 6 to the original text), are marked in bold for new or strikethrough for deleted characters.

* 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.

GE.17-20855(E)



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I. Proposal

Paragraph 1., amend to read:

"1. Scope

This UN Regulation applies (in Phase 1) to **the following child restraint system** for child occupants of power driven vehicles:

- (a) **Integral Universal ISOFIX Enhanced Child Restraint Systems (i-Size);**
- (b) **Integral Specific vehicle ISOFIX Enhanced Child Restraint Systems.**

Paragraph 2.12., amend to read:

"2.12. "Anti-rotation device"

Means a device intended to limit the rotation of the Enhanced Child Restraint System during a vehicle impact and consisting of:

- (a) A top-tether strap; or
- (b) A support-leg.

Meeting the requirements of this UN Regulation and fitted to an ISOFIX anchorage system and ISOFIX top tether anchorages or vehicle floor contact surface meeting the requirements of UN Regulation No. 14 or UN Regulation No. XX.

An "Anti-rotation device" for a "specific vehicle ~~ISOFIX~~" Enhanced Child Restraint System may comprise a top tether, a support-leg or ~~any other means capable of limiting the rotation~~ **only for Rearward facing Enhanced Child Restraint System, a dashboard."**

Paragraph 2.17., amend to read:

"2.17. "Vehicle seat fixture (VSF)"

- 2.17.1. "ISOFIX Vehicle seat fixture"** means a fixture, according to ISOFIX size ~~classes envelopes~~ whose dimensions are given in Figures 1 to ~~67~~ of Appendix 2 to Annex 17 to UN Regulation No. 16, used by an **Enhanced Child Restraint System** manufacturer to determine the appropriate dimensions of an ISOFIX **Enhanced Child Restraint System** ~~and including~~ the location of its ISOFIX attachments."

Insert new paragraphs 2.56. to 2.58, to read:

- "2.56. "Module", is a part of an Enhanced Child Restraint System that is separate from the ISOFIX attachments and hosts and restrains the child. A module can be used in combination with one or more base and if allowed in this UN Regulation, as a stand-alone to restrain a child in a car.**
- 2.57. "Base", is a part of an Enhanced Child Restraint System that forms an interface between the vehicle and the module of an Enhanced Child Restraint System and has no direct contact with the child. A base is**

connected to the vehicle using ISOFIX anchorages or vehicle belt and an anti-rotation device if applicable.

A base is allowed to accept more than one module (Module A can be replaced by Module B, etc.).

- 2.58. **"Built-in", is an Enhanced Child Restraint System made as an integral part or incorporated as an add-on part of a vehicle. The vehicle manufacturer shall be the applicant for approval."**

Paragraph 3.2.2., amend to read:

- "3.2.2. The applicant shall indicate the kind of application:
- (a) Application for an i-Size Enhanced Child Restraint Systems; or
 - (b) Application for a specific vehicle ISOFIX **Enhanced Child Restraint System;**"

Paragraph 4.3., amend to read:

- "4.3. **The following information shall be clearly indicated on the product:**
- (a) The orientation of the Enhanced Child Restraint System relative to the vehicle;
 - (b) **The size range(s) of the Enhanced Child Restraint System in centimetres;**
 - (c) **The maximum occupant mass allowed for the Integral Enhanced Child Restraint System in kilograms.**

The marking defined in this paragraph shall be visible with the Enhanced Child Restraint System in the vehicle, with the child in the Enhanced Child Restraint System."

Paragraph 6.2.3., amend to read:

- "6.2.3. It shall not be possible to remove or detach without the use of specific tools, any components not designed to be removable or detachable **for maintenance or change of configuration purpose**. Any components that are designed to be removable **or detachable** ~~for maintenance or adjustment purpose~~ shall be so designed as to avoid any risk of incorrect assembly and use, as the assembly and disassembly processes shall be explained in detail in the restraint user guides. **For integral Enhanced Child Restraint Systems** ~~Any~~ **harness belt or impact shield** shall be capable of its full range of adjustment without disassembly,"

Paragraphs 6.3.2.2. and 6.3.2.2.1., amend to read:

- "6.3.2.2. External dimensions

The Universal Integral Class Enhanced Child Restraint Systems shall be adjusted to the largest size of its declared stature range (height, depth and width dimensions as defined in Annex 18). The Enhanced Child Restraint System may be adjusted to other inclined positions (less or more reclined) that are outside the Vehicle Seat Fixture's height; in this case, the child restraint manufacturer's user manual shall clearly indicate that when used in one of these configurations, the Enhanced Child Restraint System may not fit in all vehicles approved for a Universal fixture.

6.3.2.2.1. Integral Class Enhanced Child Restraint Systems

The maximum **external** dimensions for **the** width, height and depth of the **Enhanced** Child Restraint System and **if fitted**, the locations of the ISOFIX anchorages system, with which its attachments shall engage, shall be defined by the **ISOFIX** Vehicle Seat Fixture (VSF) as defined in paragraph 2.17.1. of this Regulation.

- (a) i-Size Forward facing **Enhanced** Child Restraint Systems shall fit within the ISO/F2x size envelope for a reduced-height forward-facing toddler CRS ~~(height 650 mm) ISOFIX SIZE CLASS B1~~;
- (b) i-Size Rearward facing **Enhanced** Child Restraint Systems shall fit within the ISO/R2 size envelope for a reduced-size rearward-facing toddler CRS ~~ISOFIX SIZE CLASS D~~;
- (c) Specific vehicle ISOFIX **Enhanced** Child Restraint Systems ~~may shall fit: within any ISO size envelope.~~
 - (i) **in vehicle(s) specified in a list or**
 - (ii) **at least in one of the ISO (R1, R2X, R2, R3, F2X, F2, F3, L1, L2) size envelopes as described in Annex 17 Appendix 2 of UN Regulation No. 16.**

When conducting this assessment, the Integral Enhanced Child Restraint System shall be adjusted to the largest size of its declared stature range (height, depth and width dimensions as defined in Annex 18). If the Enhanced Child Restraint System is capable of being adjusted to different positions of seat surface inclination, the fitting assessment shall be done in at least one position. 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."

Paragraph 6.6.4.1.2., amend to read:

"6.6.4.1.2. **Enhanced** Child Restraint Systems of the "specific vehicle ISOFIX" category shall be ~~tested~~ **assessed for fit** with each vehicle model for which the **Enhanced** Child Restraint System is intended. The Technical Service responsible for conducting the test may reduce the number of vehicle ~~models~~ **arrangements** tested if they do not differ greatly in the aspects listed in paragraph 6.6.4.1.2.3. of this UN Regulation. This **Enhanced** Child Restraint System ~~may shall be~~ **dynamically** tested in one of the following ways: ..."

Paragraph 6.6.4.4.1.2.1, amend to read:

"6.6.4.4.1.2.1. Head excursion: no part of the head of the dummy shall pass beyond the planes FD, FG and DE, as shown in figure 2 below. This shall be judged up to 300 ms or the moment that the dummy has come to a definitive standstill whatever occurs first.

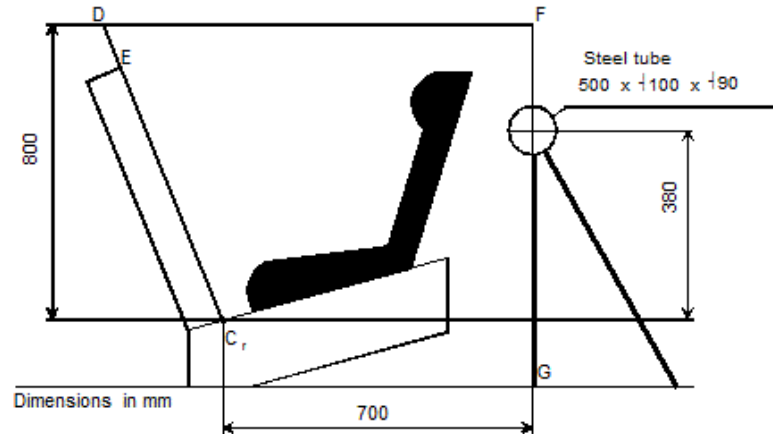
Except when testing using Q6 or Q3 dummy where the value in relation to the FD plane is 840 mm

In the case there is a contact of such a Child Restraint System with the 100 mm diameter bar and all injury assessment and dummy's head displacement criteria are met, there shall be one further dynamic test (front impact) with the heaviest dummy intended for the given range of size

indication and without the 100 mm diameter bar; the requirements for this test are that all criteria other than forward displacement shall be met.

Where a test is conducted in accordance with paragraph 6.6.4.1.6.2. above, only the second configuration without 100 mm diameter bar will be considered.

Figure 2
Arrangement for testing a rearward-facing device, not supported by the dashboard



Paragraph 7.1.2.7., amend to read:

"7.1.2.7. These tests shall be carried out using both the smallest and the largest appropriate dummy of the size range for which the restraining device is intended. Any adjustment of the dummy or Enhanced ~~child~~ **Child restraint Restraint systems-Systems** during the complete test cycle is not allowed."

Paragraph 7.2.3.2., amend to read:

"7.2.3.2. The free end of the strap shall be arranged in the same ~~configuration-way~~ as when the device is in use in the vehicle, and shall not be attached to any other part."

Paragraph 7.2.5.2.6.2., amend to read:

"7.2.5.2.6.2. The table below sets out the general conditions for each test:

Table 8

	Load (N)	Cycles per minute	Cycles (No.)
Type 1 procedure	40 maximum 60 ± 0.15	30 ± 10	1 000 ± 5
Type 2 procedure	5 minimum 10 ± 0.05 10	30 ± 10	5 000 ± 5

Where there is insufficient strap to test over 300 mm of shift, the test may be applied over a shorter length subject to a minimum of 100 mm."

Paragraphs 7.2.5.2.6.3. to 7.2.5.2.6.3.2., amend to read:

"7.2.5.2.6.3. Particular test conditions

7.2.5.2.6.3.1. Type 1 procedure: for cases where the strap slides through the quick adjusting device. ~~The 10 N load shall be vertically and permanently applied on one of the straps. The other strap, set horizontally.~~ **Apply a load of 10 N, if necessary the load may be increased by 10 N steps so as to permit correct sliding, but limited to a maximum of 60 N. This load shall be vertically and permanently applied on the straps. The part of the strap set horizontally shall pass through the quick adjuster it is fitted to and shall be attached to a device, giving the webbing a back and forth motion. The quick adjusting device shall be so placed that the horizontal strap of the webbing remains under tension (see Annex 5, figure 1). Activate the quick adjuster while pulling the straps in the direction to slacken the harness and deactivate it while pulling the straps in the direction to tighten the harness.**

7.2.5.2.6.3.2. Type 2 procedure: for cases where the strap changes direction in passing through a rigid part. During this test, ~~the angles of both webbing straps shall be as shown in~~ **webbing shall pass through the rigid part it is intended for and the test set up shall reproduce the angles as in the real installation (in three dimensions), see Annex 5, figure 2 for examples.** The ~~5 N~~ **10N** load shall be permanently applied. For cases where the strap changes direction more than once in passing through a rigid part, the load of ~~5 N~~ **10N** may be increased ~~so as to~~ **by 10 N steps so as to permit correct sliding and achieve the prescribed 300 mm of strap movement through that rigid part."**

Paragraph 8.1., amend to read:

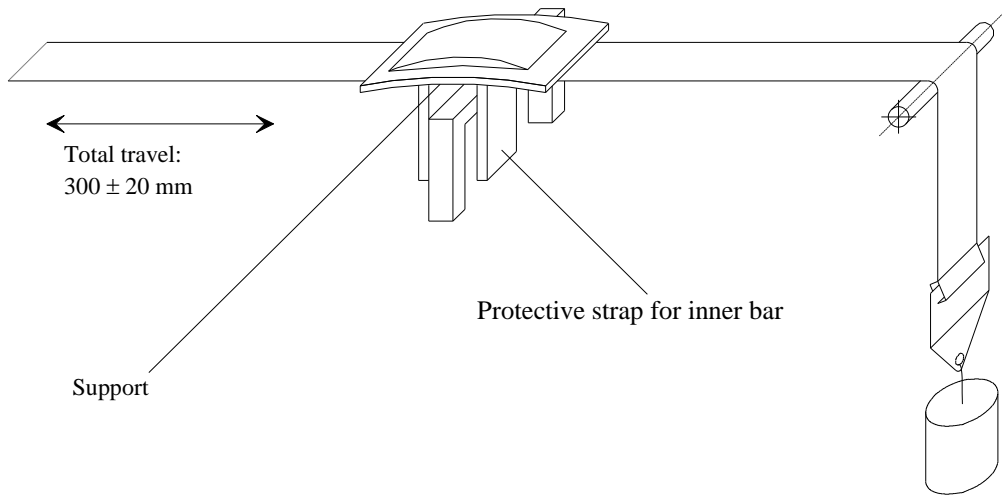
- "8.1. The test report shall record the results of all tests and measurements including the following test data:
- (a) The type of device used for the test (acceleration or deceleration device),
 - (b) The total velocity change,
 - (c) The trolley speed immediately before impact only for deceleration sleds,
 - (d) The acceleration or deceleration curve during all the velocity change of the trolley and at least 300 ms,
 - (e) The time (in ms) when the head of the manikin reaches its maximum displacement during the performance of the dynamic test,
 - (f) The place occupied by the buckle during the tests, if it can be varied, and
 - (g) The name and address of the laboratory where tests have been performed,
 - (h) And any failure or breakage,
 - (i) The following dummy criteria: HPC, Head acceleration Cum3ms, Upper neck tension force, Upper neck moment, Chest acceleration Cum3ms, Chest deflection; Abdominal Pressure (in frontal **and rear** impact)."

Annex 5, Figures 1 and 2, amend to read:

"Annex 5

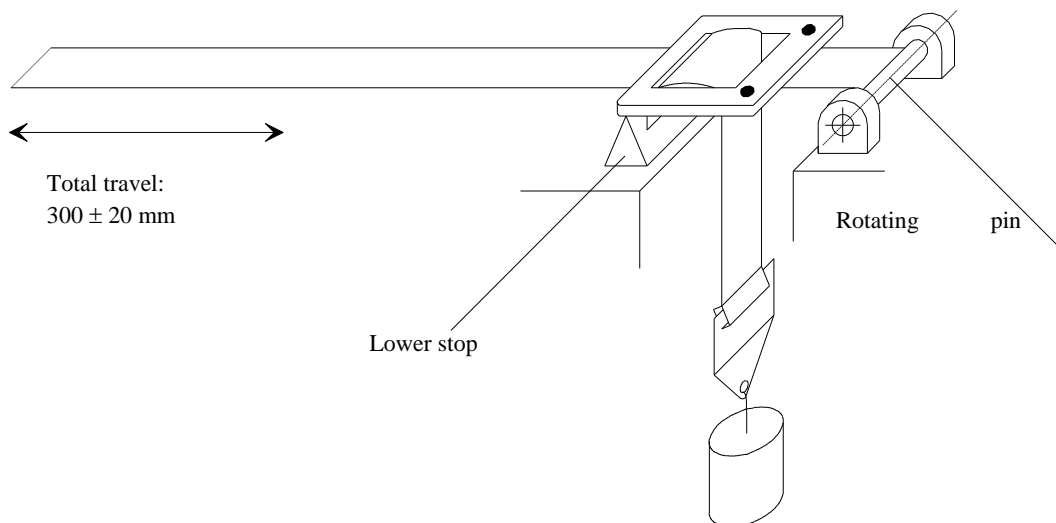
Abrasion and microslip test

Figure 1
Procedure type 1



$F = 10 \pm 0.1 \text{ N}$, can be increased up to $F = 60 \pm 0.5 \text{ N}$ (see table 8 paragraph 7.2.5.2.6.2.)

Example a

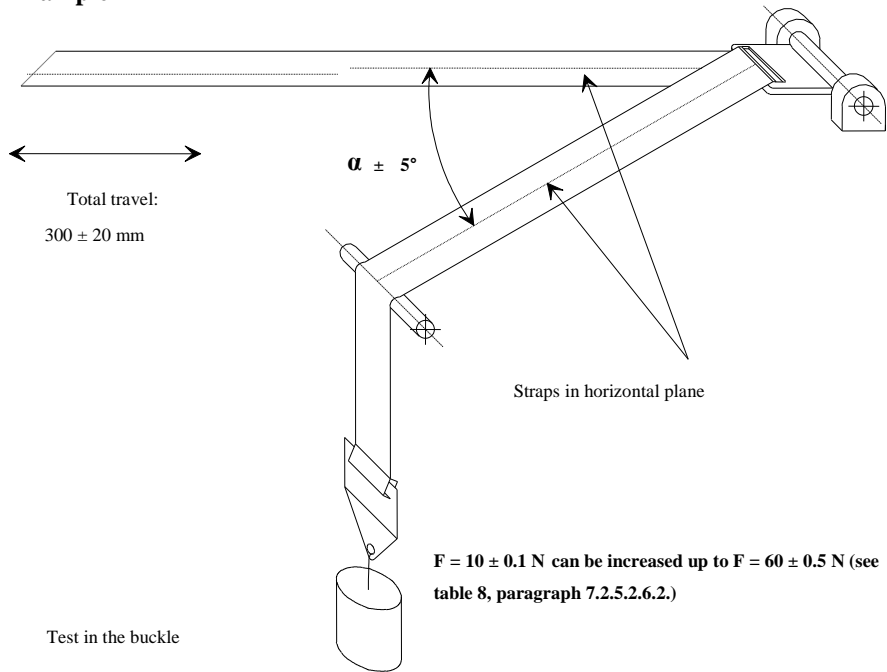


Example b
 Examples of test arrangements corresponding to the type of adjusting device

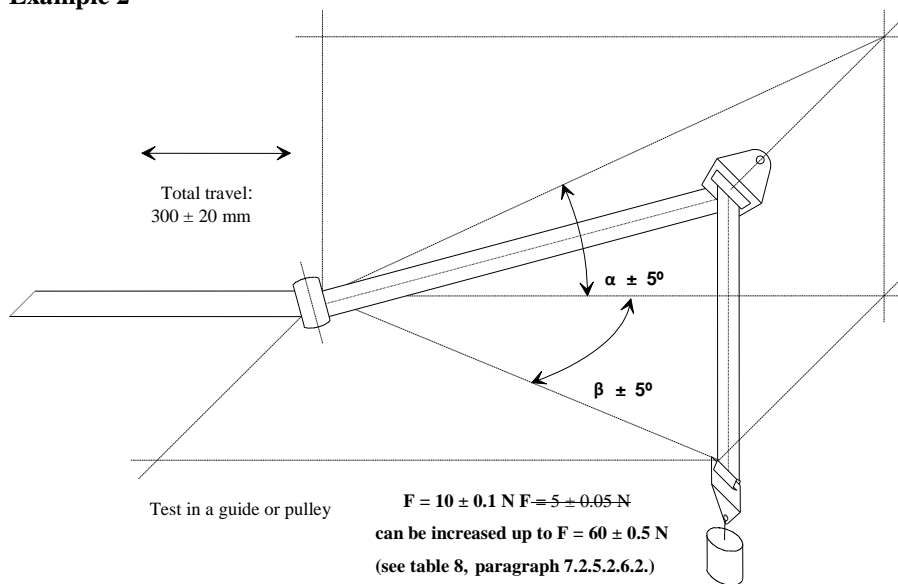
$F = 10 \pm 0.1 \text{ N}$, can be increased up to $F = 60 \pm 0.5 \text{ N}$ (see table 8, paragraph 7.2.5.2.6.2.)

Figure 2
Procedure type 2
 Following two examples of test set up

Example 1



Example 2



Where α and β reproduce the angles as in the real installation (in three dimensions)
 ..."

Annex 8, Table 2, amend to read:

"Table 2

Q-dummy dimensions

No.		Q0	Q1	Q1.5	Q3	Q6	Q10 (design targets)
<i>Dimensions in mm</i>							
17	Seating height (head tilted forward)	355 ± 9	479 ± 9	499 ± 9	544 ± 9	601 ± 9	748 ± 9 733.7 ± 9
18	Shoulder height (sitting)	225 ± 7 255 ± 5	298 ± 7	309 ± 7	329 ± 7	362 ± 7	473 ± 7
	Stature (head tilted forward)	-	740 ± 9	800 ± 9	985 ± 9	1143 ± 9	1443 ± 9 1453.2 ± 12
5	Chest depth	-	114 ± 5	113 ± 5	146 ± 5	141 ± 5	171 ± 5
15	Shoulder width	230 ± 7 145 ± 5	227 ± 7	227 ± 7	259 ± 7	305 ± 7	338 ± 7
12	Hip width	-	191 ± 7	194 ± 7	200 ± 7	223 ± 7	270 ± 7
1	Back of buttocks to front of knees	130 ± 5	211 ± 5	235 ± 5	305 ± 5	366 ± 5	488 ± 5 485.4 ± 6
2	Back of buttocks to popliteus	-	161 ± 5	185 ± 5	253 ± 5	299 ± 5	418 ± 5 414.9 ± 6
21	Thigh height, sitting		69	72	79	92	114 ± 3
	Height of spacer device for positioning of dummy ¹		229 ± 2	237 ± 2	250 ± 2	270 ± 2	359 ± 2

"

Annex 12, paragraph 2.2.1.4., Notes, amend to read:

"Notes:

MH means harder ~~configuration~~ **condition** (the least good results obtained in approval or extension of approval)

LH signifies a less hard ~~configuration~~ **condition**."

II. Justification

1. This proposal introduces Supplement 7 to UN Regulation 129 in its 00 series of amendments. The text includes mainly correction of wording or chapter references, clarification of test procedures and new definitions.

2. The text includes all modifications proposed by GRSP up to and including its sixty-first (8-12 May 2017) as well as those of the Informal Working Group on Child

Restraint Systems up to and including at its sixty-seventh session (Brussels, 31th August 2017).

3. This proposal refers to the series 00 text of Regulation No. 129, including the following amendments:

- (a) Corrigendum 1 to the original version of the Regulation - Date of entry into force: 9 July 2013;
 - (b) Supplement 1 to the original version of the UN Regulation - Date of entry into force: 26 January 2014;
 - (c) Supplement 2 to the original version of the UN Regulation - Date of entry into force: 10 June 2014;
 - (d) Supplement 3 to the original version of the UN Regulation - Date of entry into force: 9 October 2014;
 - (e) Supplement 4 to the original version of the UN Regulation - Date of entry into force: 8 October 2015;
 - (f) Supplement 5 to the original version of the UN Regulation - Date of entry into force: 22 June 2017;
 - (g) Proposal for Supplement 6 to the original version of the UN Regulation – ECE/TRANS/WP.29/2017/124.
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