

Proposal for the 04 series of amendments to UN Regulation No. 129 (Enhanced Child Restraint Systems)

The text reproduced below was prepared by the experts from the European Association of Automotive Suppliers (CLEPA). It proposes amendments to the injury assessment criteria for frontal and rear impact to specify limit values for tension force and flexion moment measured in the upper neck of the Q0, Q1 and Q1.5 dummies. The modifications to the current text of the regulation are marked in bold for new or strikethrough for deleted characters.

I. Proposal

Paragraph 6.6.4.3.1., Table 5, amend (insert row) to read:

"6.6.4.3.1. Injury assessment criteria for frontal and rear impact as in Table 5.

Table 5

<i>Criterion</i>	<i>Abbreviation</i>	<i>Unit</i>	<i>Q0</i>	<i>Q1</i>	<i>Q1.5</i>	<i>Q3</i>	<i>Q6</i>	<i>Q10</i>
Head performance criterion (only in case of contact during in-vehicle testing)	HPC* (15)		600	600	600	800	800	800
Head acceleration 3 ms	A head Cum 3 ms ***	g	75	75	75	80	80	80
Upper neck tension force	Fz	N	700	950	2000	For monitoring purposes only**		
Upper neck flexion moment	My	Nm	10	20	30			
Chest acceleration 3 ms	A chest Cum 3 ms ***	g	55	55	55	55	55	55
Chest deflection	TBC	mm	NA	For monitoring purposes only**				
Abdominal pressure****	P	Bar	NA	NA	1.2	1.0	1.0	1.2

* HPC: see Annex 17.

** To be reviewed within 3 years following entry into force of the series 04+ of this Regulation.

*** Cum 3ms means cumulative 3ms value.

**** Abdominal pressure, the highest recorded value is applicable for injury assessment (i.e., when the right-handed sensors record 1.3 bar and the left-handed sensors record 1.0 bar, the recorded 1.3 bar is to be used for injury assessment).

Insert new paragraphs 16.13 to 16.XX., to read:

"16.13. As from the official date of entry into force of the 04 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type-approvals under this Regulation as amended by the 04 series of amendments.

- 16.14. As from 1 September 20XX, Contracting Parties applying this Regulation shall not be obliged to accept type-approvals issued according to the preceding series of amendments, first issued after 1 September 20XX.
- 16.15. Until 1 September 20XX, Contracting Parties applying this Regulation shall accept type approvals issued according to the preceding series of amendments, first issued before 1 September 20XX.
- 16.16. As from 1 September 20XX, Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to the preceding series of amendments to this Regulation.
- 16.17. Notwithstanding paragraph 16.16, Contracting Parties applying this Regulation shall continue to accept type approvals of the equipment or parts issued according to the preceding series of amendments to this Regulation which are not affected by the 04 series of amendments.
- 16.18. Until 1 September 20XX, Contracting Parties applying this Regulation shall continue to grant extensions of approvals to the 03 series of amendments”.

II. Justification

1. ECE/TRANS/WP.29/GRSP/2019/19 submitted by the experts from the European Association for the Coordination of Consumer Representation in Standardisation (ANEC) on behalf of Consumers International (CI) and from Global New Car Assessment Programme (Global NCAP) proposed to introduce limit values for vertical chest acceleration in front and rear impact tests with the Q0, Q1 and Q1.5 dummies. These chest values were proposed by ANEC, CI and Global NCAP as a “workaround to avoid high neck loads”, with specific concerns raised about the potential for increased neck loads in rear-facing CRS with a more supine seating position.
2. ECE/TRANS/WP.29/GRSP/2020/19 acknowledged that “once limit values for Fz and My are introduced, the Az limits become obsolete and can be dropped”. At present, no injury risk curves are available for Fz or My measurements in the Q-Series dummies and previous attempts to develop them have been unsuccessful. However, R129 requires Technical Services to measure and collect +Fz (tension force) and +My (flexion moment) during type-approval for “monitoring purposes” and these data present an opportunity to set pragmatic limits based on current market performance.
3. GRSP agreed to defer discussion of ECE/TRANS/WP.29/GRSP/2019/19 during the 66th session to allow the monitoring data to be collected and analysed. Data were subsequently provided by the United Kingdom’s Type-Approval Authority; the Vehicle Certification Agency (VCA). These were supplemented with a sample provided by CLEPA in order to derive the proposed limits for tension force, Fz, and flexion moment, My, presented in Informal Document GRSP-67-24. Following the 67th session of GRSP, the expert from Spain submitted their monitoring data, which were taken into account in an updated analysis prepared for this Informal Document. In addition, a meeting was held between CLEPA and the experts from Japan to review the limit proposals with respect to real-world product performance.
4. The limit proposals presented here remain a work-in-progress based on samples provided by the UK/VCA, Spain and CLEPA. Monitoring data from other Contracting Parties would support the analysis undertaken by CLEPA and would help to reinforce the proposed limits in this Informal Document.