

Proposal for Amendment X to XX series of amendments of Regulation No.129

The text reproduced below was prepared by the experts from Global NCAP and ANEC on behalf of Consumers International. It proposes a to introduce limit values for the chest vertical acceleration of Q-dummies during dynamic testing of ECRS.

I. Proposal

Par 6.6.4.3.1., amend Table 4 (insert row):

Criterion	Abbreviation	Unit	Q0	Q1	Q1.5	Q3	Q6	Q10	
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 Cum3 ms ***	g	75	75	75	80	80	80	
Upper neck tension Force	Fz	N	For monitoring purpose only**						
Upper neck flexion moment	My	Nm							
Chest vertical acceleration**	Az	g	30	30	30				
Chest acceleration 3 ms	A chest Cum 3 ms ***	g	55	55	55	55	55	55	
Chest deflection	TBC	mm	NA	For monitoring purpose 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 01 of this Regulation. **Once limit values for Fz and My are introduced, the Az limits become obsolete and can be dropped.**

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

II. Justification

The transition from UN R44 to UN R129 brings several changes, a.o.:

- The mandatory use of rearward facing CRS is extended
- Q-series dummies replaced P-series
- New requirements – e.g. limits for the head loading – are introduced, and others – e.g. the limit for chest vertical acceleration – should be replaced by more appropriate ones.

Regarding the latter, the chest vertical acceleration was used in R44 as a workaround to avoid high neck loads, as P-dummies lack sensors in the neck area. Q-dummies are equipped with such sensors, but up to now no limit values could be established.

Tests by consumer groups in Europe revealed that some (rearward facing) R129 infant carriers allow a somewhat inclined position resulting in increased neck loads in frontal impacts. Although so far no

excessive neck loads were seen, there is a potential risk that products enter the market that offer an even more horizontal transport with undesirably high neck loads as a consequence.

The chest vertical acceleration does not allow to calculate a corresponding neck force, but has proven to be able to control these forces sufficiently under R44. Therefore it is proposed to introduce (temporarily) limit values for the chest vertical acceleration until the limits for upper neck tension force and upper neck flexion moment limit values are established and introduced. The criterion is already known by the Technical Services and manufacturers for decades. From accident research we know that babies are very well protected – so the old limit fulfilled its intention.
