

Draft Supplement 13 to the 04 series of amendments to Regulation No.44 (Child Restraint Systems)

I. Proposal

Annex 8 – Appendix 2, amend to read:

" Annex 8 – Appendix 2

Description of the "new-born" manikins Q0 and P0

Manikin Q0

Manikin Q0 is the more recent “new-born” manikin and is underway to be described in the Mutual Resolution No.1 (M.R.1) of the 1958 and the 1998 Agreements (and up to that moment the individual addendum of this manikin is detailed under paragraph 3 “Specific Provisions”, the technical specification and detailed drawings and the technical specifications for its adjustment for tests are deposited on the website of the UNECE, under GRSP, “Q-dummy drawings”).

Manikin P0

The manikin P0 originates back from 1987 (sup.1 to the 02 Series) and is described below.

It comprises a head, torso, arms and legs as a single unit. The torso, arms and legs are a single moulding of Sorbothane covered with a PVC skin and containing a steel spring spine. The head is a polyurethane foam moulding covered by a PVC skin and is permanently attached to the torso. The manikin is provided with a close fitting stretch cotton/polyester suit.

The dimensions and mass distribution of the ~~dummy~~ **manikin** are based on those of a 50th percentile new-born baby and are given in Tables 1 and 2 and in Figure 1.

... and 30° ” *(rest of Appendix 2 is unchanged)*

II. Justification

In the IWG of GRSP on Child restraint systems problems with acquiring the P0 dummy were raised. With a side glance to the years 2001-2002 when in GRSP two side impact dummies, ES-1 and ES-2, were under discussion, it is proposed to take on board in R44 also the Q0 dummy.

In fact the P0 is designed to be used as a loading device, the Q0 is designed to measure also acceleration, forces and moments, but could eventually also simply be used as loading device.

Comparison of Q0-dummy versus P0-dummy

Comparison Mass and Dimensions

The following comparison with regards to mass and dimensions can be made.

Mass

Masses in kg	Q0-dummy (manual specification)	P0-dummy (UNECE R44 specification)	Remark
Head and neck	1.13	0.70	Q0-dummy mass breakdown based on CANDAT segment mass data. The P0-dummy is a one piece dummy with equal density all over the body
Arms (together)	0.28	0.50	
Torso + suit	1.48	1.10	
Legs (together)	0.58	1.10	
Total	3.47	3.40	

The P0-dummy is a simple one piece dummy therefore the mass breakdown is based on density multiplied by volume assessment. The mass breakdown of the Q0-dummy is in line with the other Q-dummies based on body segment mass requirements according to the CANDAT anthropometry data base.

Dimensions

Dimensions in mm	Q0-dummy (manual specification)	P0-dummy (UNECE R44 specification)	Remark
Sitting height	355	345	Q0-dummy dimensions are based on CANDAT anthropometry mass data. The basis of the P0-dummy dimensions is not known.
Shoulder height	255	Not specified	
Shoulder width	145	150	
Hip width	117 ¹⁾	105	

Note 1: Not specified in manual. Value specified is measure from CAD model

Comparison certification

The Q0-dummy certification requirements are specified for the body areas that are most vulnerable in automotive crash conditions being the head and neck. The torso arms and legs are generally well protected by the child restrained shell. The structure of the Q0-dummy is regarding to shoulder lateral stiffness almost rigid and regarding to hip joint stiffness very flexible. Therefore the lateral body and leg joint stiffness requirements applicable for the P0-dummy do not make sense for Q0.
