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agenda item 2.8.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 94  
(Frontal collision protection)

Transmitted by the Expert from Sweden

Note: The text reproduced below was prepared by the expert from Sweden in order to amend annex 9 of the Regulation as proposed by EEVC Working Group 16. It is based on a text distributed without a symbol (informal document No. 12) during the twenty-eighth session of GRSP (TRANS/WP.29/GRSP/28, para. 84).

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Note: This document is distributed to the Experts on Passive Safety only.

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**A PROPOSAL**

Annex 9,

Paragraphs 1.1. and 1.2., amend to read (footnote 1/ unchanged):

"1.1. Main Honeycomb Block

Dimensions

Height: 650 mm (in direction of honeycomb ribbon axis)  
Width: 1,000 mm  
Depth: 450 mm (in direction of honeycomb cell axes)  
All above dimensions should allow a tolerance of  $\pm 2.5$  mm

Material: Aluminium 3003 (BS 1470)  
Foil Thickness: 0.076 mm  $\pm 15\%$   
Cell Size: 19.1 mm  $\pm 20\%$   
Density: 28.6 kg/m<sup>3</sup>  $\pm 20\%$   
Crush Strength: 0.342 MPa +0% -10% 1/

1.2. Bumper Element

Dimensions

Height: 330 mm (in direction of honeycomb ribbon axis)  
Width: 1,000 mm  
Depth: 90 mm (in direction of honeycomb cell axes)  
All above dimensions should allow a tolerance of  $\pm 2.5$  mm

Material: Aluminium 3003 (BS 1470)  
Foil Thickness: 0.076 mm  $\pm 15\%$   
Cell Size: 6 .4 mm  $\pm 20\%$   
Density: 82.6 kg/m<sup>3</sup>  $\pm 20\%$   
Crush Strength: 1.711 MPa +0% -10% 1/

Paragraph 4.4., amend to read:

"....of the nominal distances. These hole locations are a recommendation only. Alternative positions may be used which offer at least the mounting strength and security provided by the above mounting specifications."

Paragraph 5.1., footnote 2/, amend to read:

"2/ A mass, the end of which is between 125 mm and 925 mm high and 1,000 mm deep, is considered to satisfy this requirement."

Paragraph 5.2., amend to read:

"..... and have a thickness of at least 3 mm. The edges of the clamping strips should be rounded-off to prevent tearing of the barrier against the strip during impact. The edge of the strip should be located no more than 5 mm above the base of the upper barrier-mounting flange, or 5 mm below the top of the lower barrier-mounting flange. Five clearance holes of 9.5 mm diameter must be drilled in both strips to correspond with those in the mounting

flange on the barrier (see paragraph 4.). The mounting strip and barrier flange holes may be widened from 9.5 mm up to a maximum of 25 mm in order to accommodate differences in back-plate arrangements and/or load cell wall hole configurations. None of the fixtures shall fail in the impact test. In the case where the deformable barrier is mounted on a load cell wall (LCW) it should be noted that the above dimensional requirements for mountings are intended as a minimum. Where a LCW is present, the mounting strips may be extended to accommodate higher mounting holes for the bolts. If the strips are required to be extended, then thicker gauge steel should be used accordingly, such that the barrier does not pull away from the wall, bend or tear during the impact. If an alternative method of mounting the barrier is used, it should be at least as secure as that specified in the above paragraphs."

Figure 1,

Replace the value of "50 psi" by "0.342 MPa", and the value of "250 psi" by "1.711 MPa"

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#### **B. JUSTIFICATION**

Re. Annex 9, paragraphs 1.1. and 1.2.:

In the text of the Regulation, individual tolerances for the barrier face material were replaced by general but inappropriate tolerances. It is recommended that the original EEVC proposal be used. This is already used by EuroNCAP.

Re. Annex 9, paragraphs 4.4. and 5.2.:

Annex 9 (Deformable Barrier Specification) specifies a single precise and detailed method for barrier attachment to an impact block. This was originally to ensure secure fixation. It is currently worded such that there is no allowable alternative to this method. With the use of a Load Cell Wall (LCW) and in some cases different back-plates, it is clear that a provision to allow alternative barrier mounting solutions is required. The steel mounting strips used to clamp the barrier flanges to the block can occasionally have sharp edges and may lead to tearing of the barrier flange during impact. To avoid this a statement should be inserted into the Regulation stipulating that the edges of the steel strips be rounded-off. The position of the strip is also defined, relative to the edge of the barrier top and bottom surfaces.

Re. Annex 9, paragraph 5.1., footnote 2/:

There is an error in the mounting specification (footnote 2). This specifies that the vehicle does not contact any part of the structure more than 75 mm from the top surface of the barrier. The footnote gives example dimensions of a support of which the height dimensions are incorrect. It is recommended that this be corrected to the dimensions detailed above.

Re. Annex 9, figure 1:

To align with annex 9, paragraphs 1.1. and 1.2. (Component and material specifications).

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