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World Forum for Harmonization of Vehicle Regulations

Working Party on Passive Safety

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Item 11 of the provisional agenda

REGULATION No. 17
(Strength of seats)

Alignment with gtr No. 7 (Head restraints)

Submitted by the expert from the Netherlands */

The text reproduced below was prepared by the expert from the Netherlands in order to introduce corrections to ECE/TRANS/WP.29/GRSP/2009/7. It is based on two documents without symbol (informal documents Nos. GRSP-45-12 and GRSP-45-20) distributed during the forty-fifth session of GRSP. The modifications to the current text of Regulation No. 17 are marked in bold or strikethrough characters.

*/ In accordance with the programme of work of the Inland Transport Committee for 2006-2010 (ECE/TRANS/166/Add.1, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance performance of vehicles with respect to passive safety. The present document is submitted in conformity with that mandate.

A. PROPOSAL

Paragraphs 5.5.1 to 5.5.6., amend to read :

- "5.5.1. The presence of the head restraint must not be an additional cause of danger to occupants of the vehicle. In particular, it shall not in any position of use exhibit any dangerous roughness or sharp edge liable to increase the risk or seriousness of injury to the occupants.
- 5.5.1.1. Parts of the front and rear faces of head restraints situated in area 1 as defined in paragraph 6.8.1.1.3. below, shall be so padded as to prevent any direct contact of the head with the components of the structure and shall meet the requirements of paragraph 5.2.4. above applicable to the rear parts of seats situated in area 2.**
- 5.5.1.2.** Parts of the front and rear faces of head restraints situated in area 2, as defined in paragraph 6.8.1.2.2. below, shall be so padded as to prevent any direct contact of the head with the components of the structure and shall meet the requirements of paragraph 5.2.4. above applicable to the rear parts of seats situated in area 2.
- 5.5.2. Parts of the front and rear faces of the head restraints situated in area 1, as defined in paragraph 6.8.1.1.3. below shall pass the energy absorption test.
- 5.5.2.1. This requirement is deemed to be met if in the tests carried out by the procedure specified in **Annex 7** the deceleration of the headform does not exceed 80 g continuously for more than 3 ms. Moreover, no dangerous edge shall occur during or remain after the test.
- 5.5.3.** The requirements of paragraphs **5.5.1.** and **5.5.2.** above, shall not apply to parts of rear faces of head restraints designed to be fitted to seats behind which no seat is provided.
- 5.5.4.** The head restraints shall be secured to the seat or to the vehicle structure in such a way that no rigid and dangerous parts project from the padding of the head restraint or from its attachments to the seat-back as a result of the pressure exerted by the headform during the test.
- 5.5.5.** In the case of seat fitted with a head restraints, the provisions of paragraph **5.2.3.** may, after agreement of the technical service, be considered to be met if the seat fitted with its head restraint complies with the provisions of paragraph **5.5.2.** above."

Paragraph 5.6.2.1., amend to read:

- "**5.6.2.1. Front outboard designated seating positions**

The top of a head restraint located in a front outboard designated seating position shall have a height of:

- (a) not less than 850 mm in at least one position of head restraint adjustment; and**
- (b) not less than 750 mm in any position of head restraint adjustment except as provided for in paragraph 5.6.2.3. of this Regulation."**

B. JUSTIFICATION

Paragraphs 5.5.1 to 5.5.6.:

The expert from the Netherlands introduced the present proposal to clarify the meaning of paragraph 5.5.

The requirement of paragraph 5.5.1. concerning dangerous roughness or sharp edge has to be checked (measuring radii !) before any other dynamic test. Accordingly, no distinction between area 1 or area 2 should be made.

It could be confusing, that the particular requirement regarding measuring radii is placed in paragraph 5.5.3., just after the energy absorption test of paragraph 5.5.2. Furthermore, the measuring of radii is only specified for area 2.

Therefore, it is proposed to cluster in paragraph 5.5.1. the requirements that have to be checked before any dynamic testing, and mention area 2 as well as area 1. Accordingly, the requirement for measuring radii of paragraph 5.2.4. is being used.

New paragraph 5.6.2.1.:

Anthropometric research demonstrates that the present minimum height of 800 mm is insufficient to provide a good biomechanical support for a significant number of the citizens in countries like United Kingdom and the Netherlands.

For a sufficient minimum head restraint height, one has to take into account the erect sitting height, plus the dynamic effects of ramping up and spine straightening.

Between various populations, the erect sitting height does not differ as much as the standing height. For the Netherlands a ninety-fifth percentile male needs a head restraint height of 850 mm.

A cost benefit analysis conducted in the United Kingdom and published by the European Enhanced Vehicle Safety Committee (www.eevc.org) recommended that an increase of the head restraint height to 840 mm would result in the largest benefit minimum cost value.
