UNITED NATIONS

E

Economic and Social Council

Distr.
GENERAL

TRANS/WP.29/GRSP/2004/18
24 September 2004

Original: ENGLISH
ENGLISH AND FRENCH ONLY

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

World Forum for Harmonization of Vehicle Regulations (WP.29)

Working Party on Passive Safety (GRSP)
(Thirty-sixth session, 7-10 December 2004,
agenda item B.2.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 16
(Safety belts)

Transmitted by the expert from the Netherlands

Note: The intention of this amendment is to propose the total velocity change ΔV (calculated by integration) as the basis of the dynamic test with acceleration and deceleration sleds in order to avoid problems concerning rebound.
New text is underlined, and existing text to be deleted is ~~crossed through.~~
This document is distributed according to the request of GRSP (TRANS/WP.29/GRSP/35, para. 30). It is based on the text of informal document No. GRSP-35-15.

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

A. PROPOSAL

CONTENTS, Annex 8, amend to read.

"Annex 8 - Description of curve of trolley's acceleration or deceleration as a function of time"

Paragraph.7.7.4., amend to read:

"7.7.4. The trolley shall then be accelerated or ~~so~~ propelled ~~that~~ and decelerated in such a way that the total velocity change ΔV is [56 ± 2 km/h]. At the moment that counts as the start of the impact ~~its free running speed is 50 km/h + 1 km/h and~~ the manikin ~~remains~~ shall be stable. The ~~stopping~~ distance to achieve the first 50 ± 1 km/h of the velocity change of the trolley shall be 40 cm ± 5 cm. The trolley shall remain horizontal throughout acceleration or deceleration. The apparatus being the origin for the deceleration ~~of the trolley shall~~ to be achieved ~~by using the apparatus~~ is described in Annex 6 to this Regulation however, ~~or~~ any other device giving equivalent results may be used.
~~This~~ All used apparatus shall comply with the performance specified in Annex 8 to this Regulation."

Paragraph7.7.5., amend to read:

"7.7.5. The trolley speed immediately before impact (only for deceleration sleds, needed for stopping distance calculation), the trolley acceleration or deceleration, the forward displacement of the manikin and the speed of the chest at a 300 mm displacement of the chest shall be measured. The velocity change will be calculated by integration of the recorded sled acceleration or deceleration."

Paragraph7.10.1., amend to read:

"7.10.1. The test report shall record:

- the results of all the tests in paragraph 7 above, and in particular
- the trolley speed on the moment that counts as the start of the impact,
- which kind of sled is used (sled calibrated with inert mass or sled where the curve of the dynamic test counts as calibration),
- legible diagrams showing the acceleration or deceleration curve for sleds that are calibrated with manikin(s),
- the velocity change,
- the maximum forward displacement of the manikin,
- the place - if it can be varied - occupied by the buckle during the test,
- the buckle-opening force, and
- any failure or breakage.

If by virtue of paragraph 7.7.1. the anchorages prescribed in Annex 6 to this Regulation have not been respected, the test report shall describe how the belt assembly or the restraint system was installed and shall specify important angles and dimensions.
The report shall also mention any distortion or breakage of the buckle that has occurred during the test. In the case of a restraint system, the test report shall also specify the manner of attaching the vehicle structure to the trolley, the position of the seats, and the inclination of the seat backs. If the forward displacement of the manikin has exceeded the values prescribed in paragraph 6.4.1.3.2. above, the report shall state whether the requirements of paragraph 6.4.1.4.1. have been met."

Title of Annex 8, amend to read:

"DESCRIPTION OF CURVE OF TROLLEY ACCELERATION OR DECELERATION AS FUNCTION OF TIME
(Curve for Testing Acceleration and Stopping devices)"

Text in Annex 8, below figure, amend to read:

"A: Calibration procedure for sleds that use inert mass during calibration:

The acceleration or deceleration curve of the trolley weighted with inert mass to produce a total mass of 455 kg ± 20 kg for safety-belt tests and 910 + 40 kg for restraining system tests where the nominal mass of the trolley and vehicle structure is 800 kg must remain within the hatched area above.
If necessary, the nominal mass of the trolley and attached vehicle structure can be increased by increments of 200 kg, in which case, an additional inert mass of 28 kg per increment shall be added. In no case shall the total mass of the trolley and vehicle structure and inert masses differ from the nominal value for calibration tests by more than ± 40 kg. During calibration of the acceleration or stopping device, the ~~speed~~ velocity change of the trolley shall be ~~50~~ [56] km/h ± 1 km/h and the acceleration or stopping distance for the first 50 ± 1 km/h of the velocity change shall be 40 cm ± 2 cm.

B: Calibration procedure for sleds that use manikin(s) for calibration:

It shall be demonstrated that a calibration weighted with one or more manikin(s), specified in Annex 7 and installed according Annex 6, will provide an acceleration or deceleration curve which is within the hatched area of Annex 8.
As a result of this calibration procedure, proof of this shall be given by providing the actual deceleration or acceleration curve of each dynamic test.
In both the above all cases the calibration and measuring procedures shall correspond to those defined in the International Standard ISO 6487:1980; the measuring equipment shall correspond to the specification of a data channel with a channel frequency class (CFC) 60."

* * *

B. JUSTIFICATION

The apparatus, being the origin for the deceleration as described in Annex 6, achieves a stopping distance of the trolley from 50 to 0 km/h in 40 ± 2 cm and a rebound velocity of 6 km/h.
Therefore, when making use of velocity change a ΔV of 56 km/h is the value which provides an equivalent level of kinetic energy between other sleds and the original one in Annex 6.
Also, the 40 cm for the first 50 km/h of the velocity change will help to control the first gradient of the curve.
