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Item B.1.6. of the provisional agenda

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

Submitted by the expert from Japan

Note: The text reproduced below was prepared by the expert from Japan for the use in proposing new provisions of an acceleration test device in Regulation No. 16. It is aimed at clarifying that the acceleration sled pulse requirement shall be met under calibration condition of acceleration test device which was proposed in ECE/TRANS/WP.29/GRSP/2005/5/Rev.1 by the expert from France on behalf of the ad hoc group. It is based on a document without a symbol (informal document No. GRSP-39-18), distributed during the thirty-ninth session of GRSP (see report ECE/TRANS/WP.29/GRSP/39, para. 33).

The modifications to ECE/TRANS/WP.29/GRSP/2005/5/Rev.1 are marked in **bold** characters or marked as strikethrough.

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 deceleration or acceleration as a function of time"

THE TEXT OF THE REGULATION,

Paragraph 7.7.4., amend to read:

"7.7.4. Deceleration or acceleration devices

The applicant shall choose to use one of the two following devices:

7.7.4.1. Deceleration test device

The trolley shall be so propelled that at the moment of impact its free running speed is 50 km/h ± 1 km/h and the manikin remains stable. The stopping distance of the trolley shall be 40 cm ± 5 cm. The trolley shall remain horizontal throughout deceleration. The deceleration of the trolley shall be achieved by using the apparatus described in Annex 6 to this Regulation or any other device giving equivalent results. This apparatus shall comply with the performance hereafter specified:

The deceleration curve of the trolley, weighted with inert mass to produce a total mass of 455 kg ± 20 kg for safety-belts tests and 910 kg ± 40 kg for restraining systems tests where the nominal mass of the trolley and vehicle structure is 800 kg, must remain within the hatched area of the graph in Annex 8. 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 stopping device, the speed of the trolley shall be 50 km/h ± 1 km/h and the stopping distance shall be of 40 cm ± 2 cm.

7.7.4.2. Acceleration test device

The trolley shall be so propelled that, ~~during the test~~, its total velocity change ΔV is 51 km/h $^{+2}_{-0}$ km/h. ~~and its acceleration curve is within the hatched area of the graph in annex 8, and stay above the segment defined by the coordinates **10g, 5 ms** and **20g, 10 ms**.~~ The trolley shall remain horizontal during the acceleration. ~~The start of the impact (T0) is defined, according to ISO DIS 17 373 for a level of acceleration of 0.5g.~~ **The acceleration of the trolley shall be achieved by using the apparatus complying with the performance hereafter specified:**

The acceleration curve of the trolley, weighted with inert mass, must remain within the hatched area of the graph in Annex 8, and stay above the segment defined by the coordinates 10g, 5 ms and 20g, 10 ms. The start of the impact

(T0) is defined, according to ISO 17 373 (2005) for a level of acceleration of 0.5g. 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 test device, trolley's total velocity change ΔV shall be 51 km/h $^{+2}_{-0}$ km/h.

Despite the fulfilment of the above requirements, the technical service shall use a mass of trolley (equipped with its seat), as specified in paragraph 1 of Annex 6, **greater than** 380 kg."

Paragraph 7.7.5., amend to read:

"7.7.5. The trolley speed immediately before impact (only for deceleration trolleys, 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 trolley acceleration or deceleration.

The distance to achieve the first 50 km/h $^{+1}_{-0}$ km/h of the velocity change of the trolley may be calculated by double integration of the recorded trolley deceleration."

Paragraph 7.10.1., amend to read:

"7.10.1. The test report shall record :

(a) the results of all the tests in paragraph 7. above and in particular:
(b) the type of device used for the test (acceleration or deceleration device),
(c) the total velocity change,
(d) the trolley speed immediately before impact only for deceleration trolleys,
(e) the acceleration or deceleration curve during all the velocity change of the trolley,
(f) the maximum forward displacement of the manikin,
(g) the place - if it can be varied - occupied by the buckle during the test,
(h) the buckle-opening force,
(i) 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."

Annex 1B, insert a new item 11. to read:

"11. Type of device: deceleration/acceleration 2/"

Items 11. to 16. (former), renumber as items 12. to 17.

Annex 8, amend to read:

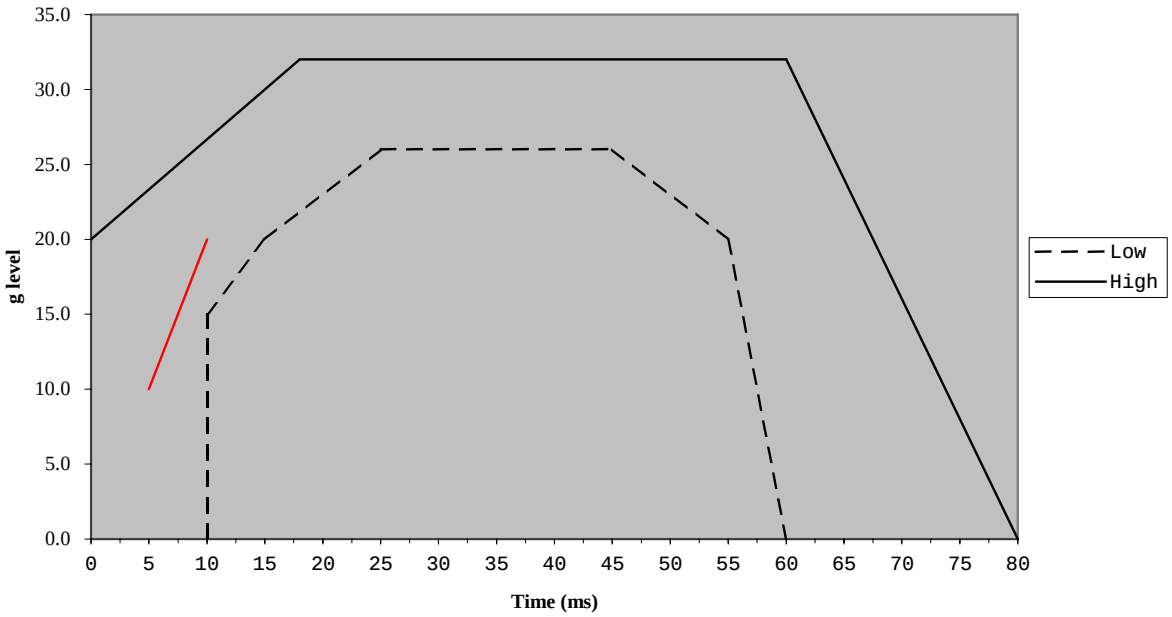
"Annex 8

DESCRIPTION OF THE CURVE OF TROLLEY'S DECELERATION OR ACCELERATION, AS A FUNCTION OF TIME

In all cases the calibration and measuring procedures shall correspond to those defined in the International Standard ISO 6487 **(2002)**; the measuring equipment shall correspond to the specification of a data channel with a channel frequency class (CFC) 60.

Definition of the different curves

Time (ms)	Acceleration (g) Low corridor	Acceleration (g) High corridor
0	-	20
10	0	-
10	15	-
15	20	-
18	-	32
25	26	-
45	26	-
55	20	-
60	0	32
80	-	0



The additional segment (see paragraph 7.7.4.2.) applies only for the acceleration sled "

B. JUSTIFICATION

General:

This proposal is to clarify that ECE/TRANS/WP.29/GRSP/2005/5/Rev.1 requires that, at the calibration, the acceleration sled pulse shall be achieved to the specified corridor using acceleration test device as well as deceleration test device. This proposal is aimed at inserting new provisions for the acceleration test device for dynamic testing subject into UNECE Regulation No. 16.

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