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**PROPOSAL FOR SUPPLEMENT 1 TO THE 04 SERIES OF AMENDMENTS
TO REGULATION No. 44**

(Child restraint systems)

Transmitted by the Working Party on Passive Safety (GRSP)

Note: The text reproduced below was adopted by GRSP at its thirty-seventh session and is transmitted for consideration to WP.29 and AC.1 (TRANS/WP.29/GRSP/37, paras. 19 and 38). It is based on documents TRANS/WP.29/GRSP/2005/6, as amended (TRANS/WP.29/GRSP/37, para. 28 and Annex 3) and TRANS/WP.29/GRSP/2005/8, as amended (TRANS/WP.29/GRSP/37, para. 19).

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<http://www.unece.org/trans/main/welcwp29.htm>

The list of contents, Annex 7, amend to read:

"Annex 7 - Curve of trolley's deceleration or acceleration as a function of time

Annex 7 – Appendix 1 - Curve of trolley's deceleration or acceleration as a function of time. Frontal Impact

Annex 7 – Appendix 2 - Curve of trolley's deceleration or acceleration as a function of time. Rear Impact"

The text of the Regulation,

Paragraph 8.1.3.1.1.2., amend to read:

"8.1.3.1.1.2. The trolley shall remain horizontal throughout deceleration or acceleration."

Paragraph 8.1.3.1.1.3., amend to read:

"8.1.3.1.1.3. Deceleration or acceleration devices

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

Insert new paragraphs 8.1.3.1.1.3.1. and 8.1.3.1.1.3.2., to read:

"8.1.3.1.1.3.1. Deceleration test device

The deceleration of the trolley shall be achieved by using the apparatus prescribed in Annex 6 to this Regulation or any other device giving equivalent results. This apparatus shall be capable of the performance specified in paragraph 8.1.3.4. and hereafter specified:

Calibration procedure:

The deceleration curve of the trolley weighted with inert masses to produce a total mass of 455 ± 20 kg in the case of child restraint tests performed in accordance with paragraph 8.1.3.1. of this Regulation, and of 910 ± 40 kg in the case of child restraint tests performed in accordance with paragraph 8.1.3.2. of this Regulation, where the nominal mass of the trolley and vehicle structure is 800 kg, must remain, in the case of frontal impact, within the hatched area of the graph in Annex 7, Appendix 1 of this Regulation, and, in the case of rear impact, within the hatched area of the graph in Annex 7, Appendix 2 of this Regulation.

If necessary, the nominal mass of the trolley and attached vehicle structure may be increased for each increment of 200 kg by an additional inert mass of 28 kg.

In no case shall the total mass of the trolley and the 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 stopping distance shall be 650 ± 30 mm for frontal impact, and 275 ± 20 mm for rear impact.

The trolley shall be so propelled that at the moment of impact its free running speed and its stopping distance are according to paragraph 8.1.3.4. of this Regulation and the manikin remains stable.

8.1.3.1.1.3.2. Acceleration test device

Dynamic testing conditions:

For frontal impact, the trolley shall be so propelled that, during the test, its total velocity change ΔV is $52 + 0 - 2$ km/h and its acceleration curve is within the hatched area of the graph in Annex 7, Appendix 1 and stay above the segment defined by the coordinates (5g, 10ms) and (9g, 20ms). The start of the impact (T0) is defined, according to ISO DIS 17 373 for a level of acceleration of 0.5 g.

For rear impact, the trolley shall be so propelled that, during the test, its total velocity change ΔV is $32 + 2 - 0$ km/h and its acceleration curve is within the hatched area of the graph in Annex 7, Appendix 2 and stay above the segment defined by the coordinates (5g, 5ms) and (10g, 10ms). The start of the impact (T0) is defined, according to ISO DIS 17 373 for a level of acceleration of 0.5 g.

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, superior to 380 kg.

However, if the tests above were performed at a higher speed and/or the acceleration curve has exceeded the upper level of the hatched area and the child restraint meets the requirements, the test shall be considered satisfactory."

Paragraphs 8.1.3.1.1.4. to 8.3.1.1.4.5., amend to read:

- 8.1.3.1.1.4. The following measurements shall be made:
- 8.1.3.1.1.4.1. the trolley speed immediately before impact (only for deceleration sleds, needed for stopping distance calculation),
 - 8.1.3.1.1.4.2. the stopping distance (only for deceleration sleds), which may be calculated by double integration of the recorded sled deceleration,
 - 8.1.3.1.1.4.3. the displacement of the manikin's head in the vertical and horizontal planes for groups I, II and III and for group 0 and 0+ the displacement of the manikin without considering its limb,

8.1.3.1.1.4.4. the chest deceleration in three mutually perpendicular directions; except for new-born manikin,

8.1.3.1.1.4.5. any visible signs of penetration of the modelling clay in the abdomen (see paragraph 7.1.4.3.1.); except for new-born manikin,"

Insert a new paragraph 8.1.3.1.1.4.6., to read:

"8.1.3.1.1.4.6. the trolley acceleration or deceleration for at least the first 300 ms."

Paragraph 8.1.3.1.2.3., amend to read:

"8.1.3.1.2.3. The deceleration conditions shall satisfy the requirements of paragraph 8.1.3.1.1.3.1.

The acceleration conditions shall satisfy the requirements of paragraph 8.1.3.1.1.3.2."

Paragraph 8.1.3.1.2.4., amend to read:

"8.1.3.1.2.4. The measurements to be made shall be similar to those listed in paragraphs 8.1.3.1.1.4. to 8.1.3.1.1.4.6. above."

Paragraph 8.1.3.2.1.5., amend to read:

"8.1.3.2.1.5. The deceleration conditions shall satisfy the requirements of paragraph 8.1.3.1.1.3.1.

The acceleration conditions shall satisfy the requirements of paragraph 8.1.3.1.1.3.2."

Paragraphs 8.1.3.2.1.6. to 8.1.3.2.1.6.5., amend to read:

"8.1.3.2.1.6. The following measurements shall be made:

8.1.3.2.1.6.1. the trolley speed immediately before impact (only for deceleration sleds, needed for stopping distance calculation),

8.1.3.2.1.6.2. the stopping distance (only for deceleration sleds), which may be calculated by double integration of the recorded sled deceleration,

8.1.3.2.1.6.3. any contact of the manikin's head with the interior of the vehicle body shell;

8.1.3.2.1.6.4. the chest deceleration in three mutually perpendicular directions; except for new-born manikin,

8.1.3.2.1.6.5. any visible signs of penetration of the modelling clay in the abdomen (see paragraph 7.1.4.3.1.) except for new-born manikin,"

Insert a new paragraph 8.1.3.2.1.6.6., to read:

"8.1.3.2.1.6.6. the trolley and vehicle body shell acceleration or deceleration for at least the first 300 ms."

Paragraph 8.5., amend to read:

"8.5. The measuring procedures shall correspond to those defined in ISO 6487: 2002. The channel frequency class shall be:

<u>Type of measurement</u>	<u>CFC(F_H)</u>	<u>Cut-off frequency (F_N)</u>
Trolley acceleration	60	see ISO 6487:2002 Annex A
Belt loads	60	see ISO 6487:2002 Annex A
Chest acceleration	180	see ISO 6487:2002 Annex A
Head acceleration	1000	1650

The sampling rate should be a minimum of 10 times the channel frequency class (i.e. in installations with channel frequency class of 1000, this corresponds to a minimum sampling rate of 10000 samples per second per channel). "

Paragraph 9.1., amend to read:

"9.1. The test report shall record the results of all tests and measurements including the following test data:

- (a) the type of device used for the test (acceleration or deceleration device),
- (b) the total velocity change,
- (c) the trolley speed immediately before impact only for deceleration sleds,
- (d) the acceleration or deceleration curve during all the velocity change of the trolley and at least 300 ms,
- (e) the time (in ms) when the head of the manikin reaches its maximum displacement during the performance of the dynamic test,
- (f) the place occupied by the buckle during the tests, if it can be varied, and
- (g) and any failure or breakage."

Annex 1.

Insert a new item 9., to read:

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

Items 9. to 16. (former), renumber as items 10. to 17.

Annex 7., amend to read:

"Annex 7

CURVE OF TROLLEY'S DECELERATION OR ACCELERATION,
AS 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."

Annex 7, Appendices 1 and 2, amend to read:

"Annex 7 – Appendix 1

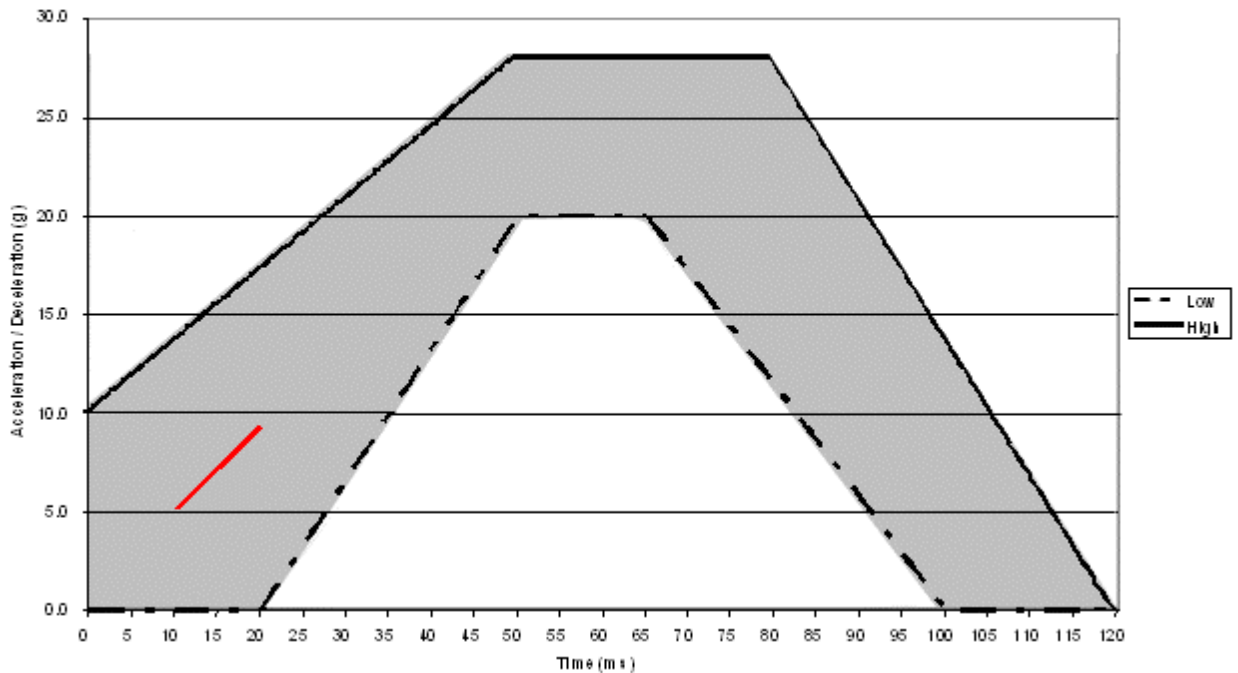
CURVE OF TROLLEY'S DECELERATION OR ACCELERATION,
AS FUNCTION OF TIME

FRONTAL IMPACT

Definition of the different curves

Time (ms)	Acceleration (g) Low corridor	Acceleration (g) High corridor
0	-	10
20	0	-
50	20	28
65	20	-
80	-	28
100	0	-
120	-	0

Regulation No. 44 Frontal impact



The additional segment (see paragraph 8.1.3.1.1.3.2.) applies only for the acceleration sled

Annex 7 – Appendix 2

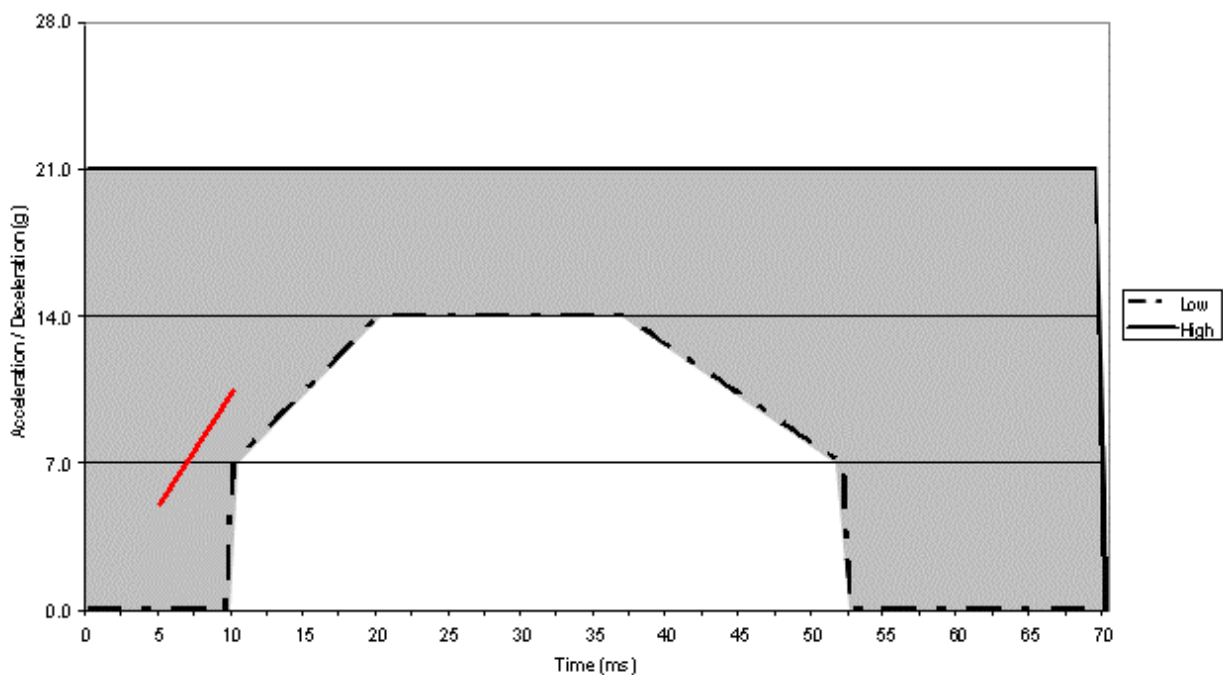
CURVES OF TROLLEY'S DECELERATION OR ACCELERATION,
AS FUNCTION OF TIME

REAR IMPACT

Definition of the different curves

Time (ms)	Acceleration (g) Low corridor	Acceleration (g) High corridor
0	-	21
10	0	
10	7	-
20	14	-
37	14	-
52	7	-
52	0	
70	-	21
70	-	0

Regulation No. 44 Rear impact



The additional segment (see paragraph 8.1.3.1.1.3.2.) applies only for the acceleration sled"
