

PROPOSAL FOR DRAFT AMENDMENT TO REGULATION No.44
TRANSMITTED BY EXPERT FROM JAPAN

A. PROPOSAL

Paragraph 8.1.3.1.1.2., amend to read:

The trolley shall remain horizontal throughout deceleration *or acceleration*.”

Paragraph 8.1.3.1.1.3., amend to read:

Deceleration or acceleration devices

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

8.1.3.1.1.3.1. *Deceleration 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 annex 7 of this Regulation.

8.1.3.1.1.3.2. *Acceleration device*

The trolley shall be so propelled that, during the test, its speed variation is [50 +0/-2 km/h] and its acceleration curve is within the hatched area of the Appendix 2 of Annex7. Despite the fulfillment of the above requirements, the technical service can use a mass of trolley (equipped with its seat), as specified in paragraph 1 of Annex6, superior to 380kg. “

Paragraph 8.1.3.1.1.4.1., amend to read:

Trolley speed

8.1.3.1.1.4.1.1. *in the case of deceleration device;*

the trolley speed immediately before impact

**8.1.3.1.1.4.1.2, in the case of acceleration device;
the trolley maximum speed”**

Paragraph 8.1.3.1.1.4.2, amend to read:

***in the case of deceleration device;
the stopping distance”***

Paragraph 8.1.3.1.2.3, amend to read:

The deceleration ***or the acceleration*** conditions shall satisfy the requirements of paragraph 8.1.3.4. below.”

Paragraph 8.1.3.2.1.6.1, amend to read:

Trolley speed

**8.1.3.2.1.6.1.1 in the case of deceleration device;
the trolley speed immediately before impact**

**8.1.3.2.1.6.1.2 in the case of acceleration device;
the trolley maximum speed”**

Paragraph 8.1.3.2.1.6.2, amend to read:

***in the case of deceleration device;
the stopping distance”***

Paragraph 8.1.3.4, amend to read:

The conditions for dynamic test are summarized in the table below:

Test	Restraint	FRONTAL IMPACT			REAR IMPACT		
		Speed (km/h)	Test Pulse	Stopping distance during test (mm) ***/	Speed (km/h)	Test Pulse	Stopping distance during test (mm) ***/
Trolley with test seat	Forward facing front and rear seats universal semi-universal or restricted */	50+0 -2	1 <i>or</i> 3	650+/-50	-	-	-
	Rearward facing front and rear seat universal semi-universal or restricted **/	50+0 -2	1 <i>or</i> 3	650+/-50	30+2 -0	2 <i>or</i> 4	275+/-25
Vehicle body on trolley	Forward facing */	50+0 -2	1,3 <i>or</i> 5	650+/-50	-	-	-
	Rearward facing */	50+0 -2	1,3 <i>or</i> 5	650+/-50	30+2 -0	2,4 <i>or</i> 6	275+/-25
Whole Vehicle barrier test	Forward facing	50+0 -2	5	not specified	-	-	-
	Rearward facing	50+0 -2	5	not specified	30+2 -0	6	not specified

*/ During calibration, the stopping distance should be 650+/-30mm.

**/ During calibration, the stopping distance should be 275+/-20mm.

***/ *In the case of acceleration device, not specified.*

NOTE: All restraint systems for groups 0 and 0+ shall be tested according to 'Rearward facing' conditions in frontal and rearwards impact.

LEGEND:

Test Pulse No.1 - As prescribed in annex 7 *appendix 1-1* - frontal impact.

Test Pulse No.2 – As prescribed in annex 7 *appendix 1-2* - rear impact.

Test Pulse No.3 – *As prescribed in annex 7 appendix 2-1 – frontal impact.*

Test Pulse No.4 – *As prescribed in annex 7 appendix 2-2 – rear impact.*

Test Pulse No.5 - Deceleration pulse of vehicle subjected to frontal impact.

Test Pulse No.6 - Deceleration pulse of vehicle subjected to rear impact.”

Annex 7,

Paragraph 1, amend to read:

“1. ***In the case of deceleration device;***

The deceleration curve of the trolley weight with inert masses to produce a total mass of 455 +/- 20kg in the case of child restraint tests performed in accordance with paragraph 8.1.3.1 of this Regulation, and of 910 +/- 40kg 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 800kg, must remain, in the case of frontal

impact, within the hatched area shown in *appendix 1-1* to this annex, and, in the case of rear impact, within the hatched area shown in *appendix 1-2* to this annex.”

Paragraph 2., amend to read:

“2. ***In the case of deceleration device;***

If necessary, the nominal mass of the trolley and attached vehicle structure may be increased for each increment of 200kg by an additional inert mass of 28kg. 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 +/- 40kg. During calibration of the stopping device, the stopping distance shall be 650 +/- 30mm for frontal impact, and 275 +/- 20mm for rear impact.”

Appendix 1., renumber as *Appendix 1-1*.

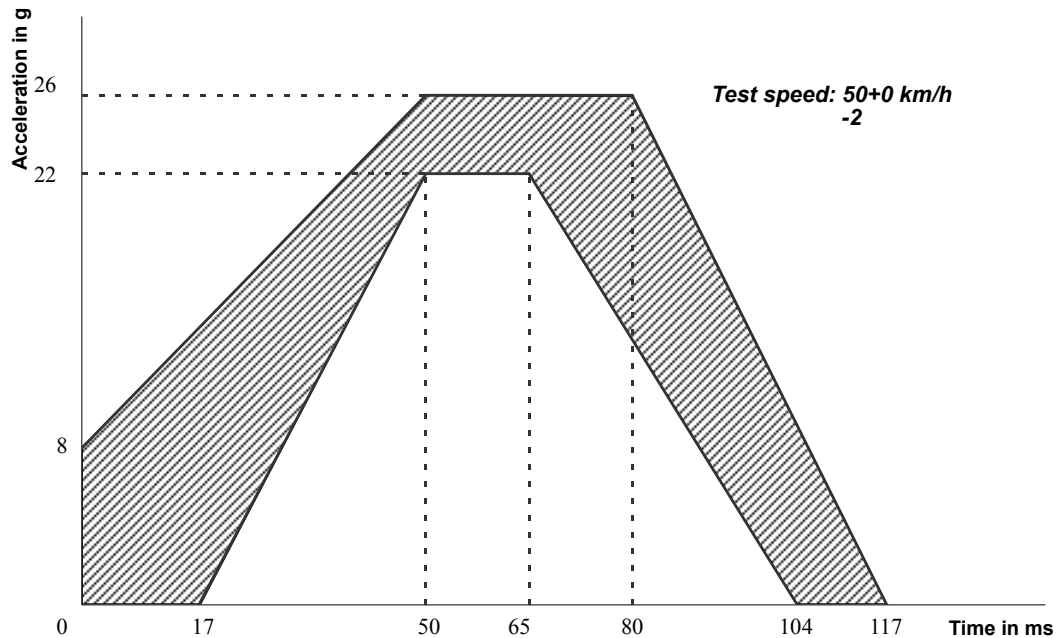
Appendix 2. (former)., renumber as *Appendix 1-2*.

Insert new Appendix 2-1., to read

Annex 7 - *Appendix 2-1*

Curves of the trolley's acceleration as a function of time

Frontal impact

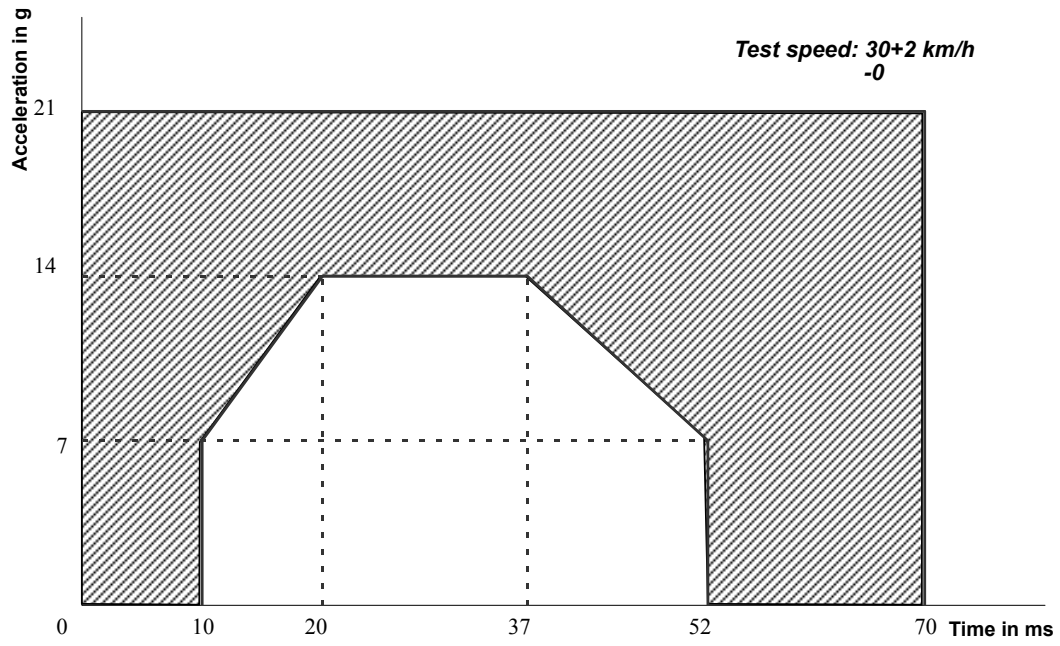


Insert new Appendix 2-2., to read

Annex 7 - *Appendix 2-2*

Curves of the trolley's acceleration as a function of time

Rear impact



B. JUSTIFICATION

In the deceleration device, ΔV varies widely, and some ΔV don't reach at 50km/h. If ΔV of acceleration device is defined on the basis of rebound of deceleration device, various crush pulse currently used in test labs in Europe should be considered and validated.

In addition, we are not able to find any justification to change 50+0/-2km/h, the speed of deceleration device for acceleration device.

[Modification of corridor ($\pm 4G \rightarrow \pm 2G$ for acceleration device)]

By improving test accuracy and accordingly minimizing difference in test conditions, test repeatability would be achieved. Hence, test conditions should be progressed within the allowable limits.

Corridor shown in annex 7 appendix 2-1 to this regulation has smaller limits comparing with existing corridor of deceleration device.

The new corridor has width of $\pm 2G$ from the centre line while existing corridor has one of $\pm 4G$. Timing of inflection point and slope are set the same in both corridors.
