

Proposal for draft Supplement 12 to the 04 series of amendments to Regulation No. 44 (Child Restraint Systems)

The text reproduced below was prepared by the expert from Spain on behalf of the Technical Services Group (TSG) on Regulation No. 44. The modifications to the current text of Regulation are marked in bold for new or strikethrough for deleted characters.

I. Proposal

Paragraph 7.1.3.1., amend to read:

"7.1.3.1. The child restraint shall be tested as prescribed in paragraph 8.1.2.; at no point during the whole test shall the manikin be fully ejected from the device, in addition when the test **bench** is in the upside down position the manikin's head shall not move more than 300 mm from its original position in a vertical direction relative to the test **bench**, **once the applied load has been removed.**"

Deleted: seat

Deleted: seat

Paragraph 8.1.2.3., amend to read:

"8.1.2.3. At this static inverted position a mass equivalent to 4 times that of the dummy, **with a tolerance of -0/+5% with reference to dummies nominal masses as in Annex 8**, shall be applied vertically downwards in a plane perpendicular to the axis of rotation in addition to the dummy utilizing the load application device described in Annex 23. The load shall be applied in a gradual controlled manner at a rate not exceeding gravitational acceleration or 400 mm/min. Maintain the prescribed maximum load for a duration of 30 - 0/+5 seconds."

Paragraph 8.1.3.1.1.3.1., amend 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, in the case of child restraint tests performed in accordance with paragraph 8.1.3.1., ballasted with inert masses up to 55 kg in order to reproduce one occupied child restraint, and in the case of child restraint tests in a vehicle body shell performed in accordance with paragraph 8.1.3.2., where the trolley is ballasted with the vehicle structure and inert masses up to x times 55 kg reproducing the number of x occupied child restraint systems, shall 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 to this Regulation.~~

~~During calibration of the stopping device, the stopping distance shall be 650 ± 30 mm for frontal impact, and 275 ± 20 mm for rear impact.~~

For frontal impact, the trolley shall be so propelled that, at the beginning of the test, its velocity is 50 + 0 - 2 km/h and its acceleration curve is within the hatched area of the graph in Annex 7, Appendix 1.

For rear impact, the trolley shall be so propelled that, at the beginning of the test, its velocity is 30 +2 -0 km/h and its acceleration curve is within the hatched area of the graph in Annex 7, Appendix 2.

Tests performed at a higher speed and/or with an acceleration that exceeds the upper boundary of the hatched area shall be considered satisfactory if the child restraint system meets the performance requirements for the test.

Tests performed at a lower acceleration shall be considered satisfactory only if the acceleration curve crosses the lower boundary of the hatched area for a cumulative period of up to 3 ms.

In fulfilling 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.

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Paragraphs 8.3. to 8.3.3., amend to read:

- "8.3 Certification of test bench cushion
- 8.3.1. The test **bench** cushion shall be certified when new to establish initial values for impact ~~penetration~~ and peak deceleration, and then after every 50 dynamic tests or at least every month, whichever is the sooner, ~~or before each test if the test rig is used frequently.~~
- 8.3.2. The certification and measuring procedures shall correspond to those specified in the latest version of ISO 6487; the measuring equipment shall correspond to the specification of a data channel with a channel filter class (CFC) 60.

Using the test device defined in Annex 17 to this Regulation, conduct 3 tests **on the bench base prepared as described in Annex 6, foam covered with textile**, 150 ± 5 mm from the front edge of the cushion on the centre line and at 150 ± 5 mm in each direction from the centre line.

Place the **bench cushion** device vertically on a flat rigid surface. ~~Lower the impact mass until it contacts the surface and set the penetration marker to the zero position.~~ Place the device vertically above the test point, ~~raise the mass at a height of 500 ± 5 mm and allow it to fall freely to make impact on the seat surface.~~ Record ~~the penetration and~~ the deceleration curve.

Deleted: For frontal impact, the trolley shall be so propelled that, at the beginning of the test, its velocity is 50 + 0 - 2 km/h and its acceleration curve is within the hatched area of the graph in Annex 7, Appendix 1.¶
For rear impact, the trolley shall be so propelled that, at the beginning of the test, its velocity is 30 +2 -0 km/h and its acceleration curve is within the hatched area of the graph in Annex 7, Appendix 2.¶
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.¶

Deleted: 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."

- 8.3.3. **The initial peak recorded values for impact deceleration shall be 18 ± 3 g and subsequent** ~~The~~ peak values recorded shall not deviate by more than 15 percent from the initial values."

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 following dummy criteria: Resultant Chest acceleration, Vertical Chest acceleration, and their cumulative time duration above prescribed limits**
 - (g) The place occupied by the buckle during the tests, if it can be varied, and
 - (h) **The name and address of the laboratory where tests have been performed**
 - (i) And any failure or breakage."

Annex 6, paragraph 3.1.5, Table 1, amend to read:

"

Density according to ISO 485 (kg/m^3)	43 40 -0/+5
Bearing strength according to ISO 2439B (N)	
p - 25 percent	125
p - 40 percent	155
Bearing strength factor according to ISO 3386 (kPa)	4
Elongation at rupture according to ISO 1798 (percent)	180
Breaking strength according to ISO 1798 (kPa)	100
Compression set according to ISO 1856 (percent)	3

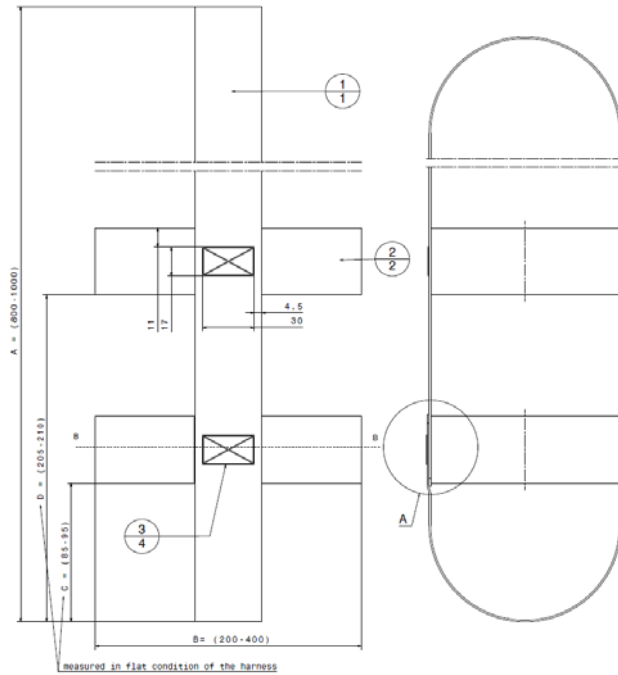
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Annex 23, amend to read:

"Annex 23

...

Load application device II



..."

II. Justification

Paragraphs 8.3. to 8.3.3 and Annex 6, paragraph 3.1.5, Table 1

The original text in 8.3 requires to guarantee a maximum deviation from original values. But, there is no requirement about the initial value. Amendment introduces this acceleration value. The table in Annex 6 does not introduce any tolerance ; the proposal introduces it with figures consistent with initial acceleration requirements.

Paragraph 8.1.3.1.1.3.1.

Proposal aligns requirements for deceleration test devices to acceleration ones, making explicit that it is mandatory to match the corridor for each test.

Paragraph 9.1.

Proposal introduces in the list of information to be inserted in test reports the dummy criteria and a mandatory requirement of ISO 17025, which all Technical Service have to adhere.

Annex 23

Proposal aligns requirements set in 7.1.3.1 to test methods, 8.1.2.4 where it is already stated; modification in 8.1.2.3 add tolerances to better define test method. Amendment in Annex 23, specifies how to measured dimensions C and D.
