
Proposal for the 03 series of amendments as Phase 3 of Regulation No. 129 (Enhanced Child Restraint Systems)

Submitted by the expert from France

The text reproduced below was prepared by the expert from France. It introduces the 03 series of amendments to Regulation No. 129 (Enhanced Child Restraint Systems (ECRS)) that were agreed upon by the experts of the Informal Working Group on Child Restraint Systems (IWG CRS). The modifications to the existing text of the UN Regulation, including ECE/TRANS/WP.29/GRSP/2016/19, ECE/TRANS/WP.29/GRSP/2016/22, ECE/TRANS/WP.29/GRSP/2016/23 and Annex V to the report of the sixtieth session of the Working Party on Passive Safety (GRSP) (see ECE/TRANS/WP.29/GRSP/60, paras. 35 and 36), are marked in bold for new or strikethrough for deleted characters. **This document supersedes ECE/TRANS/WP.29/GRSP/2017/17. It includes all proposals of modifications made by the IWG ECRS during the two last meetings (2017/03/09 and 2017/04/19).**

I. Proposal

Paragraph 1., amend to read:

"1. Scope

This Regulation applies (in Phases 1 ~~and~~, 2 **and** 3) to the following child restraint system for child occupants of power driven vehicles:

- (a) Integral Universal ISOFIX Enhanced Child Restraint Systems (i-Size);
- (b) Integral Specific vehicle ISOFIX Enhanced Child Restraint Systems;
- (c) ~~Non~~-integral Universal Enhanced Child Restraint Systems (i-Size booster seat);
- (d) ~~Non~~-integral ~~Specific~~ vehicle ~~Enhanced~~ ~~Child~~ ~~Restraint~~ ~~Systems~~ (~~Specific~~ vehicle booster seat);
- (e) **Integral Universal Belted Enhanced Child Restraint Systems;**
- (f) **Integral Specific vehicle Belted Enhanced Child Restraint Systems."**

Insert new paragraph 2.3.2., to read:

- "2.3.2. **"Universal belted"** (Integral Universal Belted Enhanced Child Restraint System) is a category of Enhanced Child Restraint System primarily designed to be attached only by the adult safety seat belt in all Universal seating positions of a vehicle, as defined and approved according to Regulation No. 16."

Paragraph 2.3.2. (former), renumber as paragraph 2.3.3. and amend to read:

"2.3.3. "i-Size booster seat" (Non-Integral Universal Enhanced Child Restraint System) is a category of Enhanced Child Restraint Systems with integrated backrest and stowable ISOFIX ~~connectors~~ **attachments** if any, primarily designed for use in all i-Size seating positions of a vehicle."

Paragraph 2.6., amend to read:

"2.6. "**Integral Universal ISOFIX Universal**" is an ISOFIX **Enhanced Child Restraint System** comprising either a top-tether or a support-leg, to limit the pitch rotation of the Enhanced Child Restraint System, attached to, or supported by, the corresponding vehicle."

Insert new paragraph 2.7.3., to read:

"2.7.3. "**Specific vehicle Belted**" is a category of **Integral Enhanced Child Restraint System connecting to specific vehicle types. All vehicle anchorages are to be approved according to Regulation No. 14 or [XX]. It is also an indication for Enhanced Child Restraint Systems including dashboard as a vehicle contact zone.**"

Paragraph 2.12., amend to read:

"2.12. "Anti-rotation device"

means a device intended to limit the rotation of the Enhanced Child Restraint System during a vehicle impact and consisting of:

(a) A top-tether strap; or

(b) A support-leg.

meeting the requirements of this Regulation and fitted to an ISOFIX anchorage system and ISOFIX top tether anchorages or vehicle floor contact surface meeting the requirements of Regulation No. 14. Or Regulation No XX.

An "Anti-rotation device" for a "specific vehicle ISOFIX" Enhanced Child Restraint System may comprise a top tether, a support-leg or any other means capable of limiting the rotation."

Paragraph 2.16., amend to read:

"2.16. "CRF pitch angle "is the angle between the bottom surface of the fixture "ISO/F2 (~~B~~) as defined in Regulation No. 16 (Annex 17, Appendix 2, Figure 2) and the horizontal Z plane of the vehicle as defined in Regulation No. 14 (Annex 4, Appendix 2), **or [XX] (Annex 3, Appendix 2)**, with the fixture installed in the vehicle as defined in Regulation No. 16 (Annex 17, Appendix 2)."

Paragraph 2.17.1., amend to read:

"2.17.1. "ISOFIX Vehicle seat fixture" means a fixture, according to ISOFIX size ~~classes envelopes~~ whose dimensions are given in Figures 1 to 7 of Appendix 2 to Annex 17 to Regulation No. 16, used by an Enhanced Child Restraint System manufacturer to determine the appropriate dimensions of **an Integral Universal Belted ECRS or an ISOFIX Enhanced Child Restraint System and including** the location of its ISOFIX attachments."

Insert new paragraph 2.51.3., to read:

"2.51.3. **"Universal seating position" means a location in accordance with paragraph 8.2.2.5.2.(b) of Regulation No. 16.**"

Paragraphs 2.56.1. and 2.56.2., amend to read:

"2.56.1. **"Class A device"** prevents the child from pulling the webbing of the retractor through to the lap part of the belt, when the adult belt is used to restrain the child directly **(Non-Integral ECRS)**.

2.56.2. **"Class B device"** ~~(to be used in phase III)~~ allows the retention of an applied tension in the lap part of an adult safety belt, when the adult belt is used to restrain ~~the~~ **Integral** Enhanced Child Restraint System. The device intends to prevent the webbing from slipping from the retractor through the device, which would release the tension and place the restraint in a non-optimal position."

Paragraph 2.57., amend to read:

"2.57. **"Module"**, is a part of an ECRS that is separate from the ISOFIX ~~attachments connectors~~ and is **hosting and restraining the child**. A module can be used **in combination with one or more base or, if allowed in this regulation**, as a stand-alone to restrain a child in a car."

2.60. "Base", is a part of an ECRS that forms an adapter between the vehicle and the module of an ECRS and has no direct contact with the child. A base is connected to the vehicle using:

- a. **ISOFIX anchorages,**
- b. **the vehicle belt,**
- c. **a top tether**
- d. **a support leg**
- e. **only combinations allowed by this regulation.**

A base is allowed to accept more than one module (Module A can be replaced by Module B, etc.).

Paragraph 3.2.2., amend to read:

- "3.2.2. The applicant shall indicate the kind of application:
- (a) Application for an i-Size Enhanced Child Restraint Systems; or
 - (b) Application for a specific vehicle ISOFIX; or
 - (c) Application for a i-Size booster seat Enhanced Child Restraint System; or
 - (d) Application for a specific vehicle booster seat Enhanced Child Restraint System; **or**
 - (e) **Application for a Universal belted Enhanced Child Restraint Systems; or**
 - (f) **Application for Specific vehicle belted Enhanced Child Restraint Systems; or**
 - (g) Or any combination of (a),(b),~~(e) and (d)~~**[(c), (d), (e) and (f)]** as long as they fulfil paragraph 5.4.2.2.and 6.1.3.3."

Paragraph 4.3., amend to read:

"4.3. The following information shall be clearly indicated on the product:

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- (a) The orientation of the Enhanced Child Restraint System relative to the vehicle;
- (b) The size range(s) of the Enhanced Child Restraint System in centimetres;
- (c) The maximum occupant mass allowed for the Integral Enhanced Child Restraint System in kilograms.

~~If the Enhanced Child Restraint System is to be used in combination with an adult safety-belt, the correct webbing path shall be clearly indicated by means of a drawing permanently attached to the Enhanced Child Restraint System. If the restraint is held in place by the adult safety-belt, the webbing paths shall be clearly marked on the product by colour coding. The colours used for the path of the safety-belt when the device is installed in the forward-facing position shall be red and when installed in the rearward-facing shall be blue. The same colours shall also be used on the labels on the device that illustrate the methods of use.~~

~~There shall be a clear differentiation between the intended paths for the lap section and the diagonal section of the safety-belt. Indication such as colour coding, words, shapes, etc. shall distinguish between sections of the safety-belt.~~

~~The marking defined in this paragraph shall be visible with the Enhanced Child Restraint System in the vehicle, with the child in the Enhanced Child Restraint System."~~

Insert new paragraphs 4.6. to 4.6.3., to read:

4.6. Webbing path.

The markings defined in this paragraph shall be **permanently and durably attached and visible with the Enhanced Child Restraint System installed in the vehicle, and with the child seated in the Restraint System. The markings shall be placed on both sides of the Enhanced Child Restraint System. The vehicle seat illustrated on the marking shall face the same direction as the real vehicle seat.**

There shall be a clear differentiation between the intended paths for the lap section and the diagonal section of the safety-belt. Indication such as colour coding, words, shapes, etc. shall distinguish between sections of the **adult** safety-belt.

4.6.1. The adult safety-belt route markings shall be placed on all belt guides and lock-off devices. The adult safety-belt route markings shall be at least the width of the adult-belt path.

4.6.2. For Non-Integral Enhanced Child Restraint System to be used in combination with an adult safety-belt to restrain the child, the correct webbing path [according to paragraph 6.1.2.5.] shall be clearly marked on the product. This shall be by means of an installation drawing on a label permanently attached to the Enhanced Child Restraint System showing the correct path across the child's body. The colors used for the adult-belt route marking of the safety-belt when the device is installed shall be [Green] The same color shall also be used on the labels on the device that illustrate the installation.

4.6.3. For Integral Belted Enhanced Child Restraint System held in place by the adult safety-belt, the webbing paths [according to paragraph 6.1.2.5.]

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shall be clearly marked on the product, and indicated by means of a drawing permanently attached to the Enhanced Child Restraint System. The colors used for the path of the adult belt route marking, when the device is installed in the forward-facing or rearward-facing positions shall be [Green]. The same color shall also be used on the labels on the device that illustrate the installation "

Paragraphs 4.6. to 4.7.2.(former), renumber as paragraphs 4.7. to 4.8.2.

Delete old Paragraph 4.7.3.,

Insert new paragraph 4.9., to read:

"4.9. An impact shield that is not permanently attached to the seat shall have a permanently attached label to indicate the brand and model of the Enhanced Child Restraint System to which it belongs and the size range. The minimum size of the label shall be 40 x 40 mm or the equivalent area."

Insert new paragraph 4.10., to read:

"4.10. Enhanced Child Restraint Systems shall have a permanently attached label to inform the user of the appropriate method of restraint of the child over the entire stature range declared by the manufacturer.
The label shall be visible to the person installing the child restraint in a vehicle and when a child is seated in the restraint. The label shall have a minimum size of 40 x 60 mm or the equivalent area and shall feature a pictogram of each restraint configuration adjacent to the stature range."

Insert new paragraphs 4.11. to 4.11.4., to read:

"4.11. Marking for integral belted ECRS.


The marking shall be located on the part of the ECRS which includes the main load-bearing contact points.

One of the following information labels shall be permanently visible to the person installing the Enhanced Child Restraint System in a vehicle:

4.11.1. Universal belted Enhanced Child Restraint Systems shall have a permanently attached label with the following information visible to the person installing the Enhanced Child Restraint System in the car:

Universal belted 

4.11.2. Specific vehicle belted Enhanced Child Restraint System (including built-in systems) shall have a permanently attached label with the following information visible to the person installing the Enhanced Child Restraint System in the car:

Specific vehicle belted 

4.11.3. An international approval mark as defined in paragraph 5.4.1. In case the ECRS containing module(s) this marking shall be permanently attached to the part of the ECRS that includes the main load-bearing contact points.

4.11.4. An international module mark as defined in paragraph 5.4.3. In case the ECRS containing module(s) this marking shall be permanently attached to the module part of the ECRS."

Deleted: renumber as paragraph 4.8.3. and amend to read:

Deleted: "4.7.3. . An impact shield that is not permanently attached to the seat is considered as a module and shall have a permanently attached label an international module mark as defined in paragraph 5.4.3. This marking shall be permanently attached to the module part of the ECRS. to indicate the make and model of the ECRS to which it belongs. The minimum size of the label shall be 40 x 40 mm."

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Paragraph 4.8. (former), renumber as paragraph 4.12.

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New paragraph 4.12., amend to read:

"4.12. Additional markings

...

(g) The adult belt path of the shoulder and the lap belt of universal belted and specific vehicle belted ECRS shall be indicated with specific icons for shoulder belt path and lap belt path, visible for the user close to the belt guiding area (icon A & B) or on the installation drawings (icon C). Icon A, B and C shall have the same colour coding like used on the installation drawings and the minimum size is 20 mm in diameter.



A

Belt routing icon to be used on or near belt guiders



B

OR



C

Belt routing icon to be used on installation label

Paragraph 5.4.2.1., amend to read:

"5.4.2.1. The words "i-Size universal ISOFIX", or "i-Size booster seat", or "specific vehicle ISOFIX" or "specific vehicle booster seat" or **"Universal belted", or "Specific vehicle belted"**, depending on the category of Enhanced Child Restraint System;"

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Paragraph 5.4.3.1., amend to read:

"5.4.3.1. The words "R129" followed by a dash and the same approval number as the part of the ECRS which includes the ISOFIX attachments **or main load bearing contact points;**"

Insert new paragraphs 6.1.2.3. to 6.1.2.6., to read:

6.1.2.3. For the "Universal belted" category; this shall be by means of the adult safety seat belt.

6.1.2.4. For the "Specific vehicle belted" category; this shall be by means of the adult safety seat belt.

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6.1.2.5. Integral Enhanced Child Restraint Systems of the belted categories shall have a main load-bearing contact point, between the Enhanced Child Restraint System and the adult safety belt. This point shall not be less than 150 mm from the Cr axis when measured with the Enhanced Child Restraint System on the dynamic test bench installed in accordance with paragraph 7.1.3.5.2.3. of this Regulation, without a dummy. This shall apply to all adjustment setups and variable belt paths.

Table 1
Possible configurations for type approval for Integral Enhanced Child Restraint Systems

	Orientation	Category			
		i-Size ECRS	Integral Specific Vehicle ISOFIX ECRS	Universal belted	Specific vehicle belted
INTEGRAL	Lateral facing (Carry-cot)	NA	A	NA	A
	Rearward facing	A	A	A	A
	Forward facing (integral)	A	A	A	A

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Note:
ECRS: Enhanced Child Restraint System
A: Applicable
NA: Non-Applicable

6.1.2.6. The adult seat belt required to secure a belted Integral Enhanced Child Restraint System on the dynamic test bench is defined in Annex 23 to this Regulation. The Enhanced Child Restraint System shall be secured onto the test bench using the appropriate standard seat belt described in Annex 23 using a preload tension of 50N ± 5N. The dummy shall not be installed unless the design of the restraint is such that the installation of a dummy would increase the length of belt used. With the Enhanced Child Restraint System in the installed position, there shall be no additional tension in the belt, apart from that exerted by the standard retractor (4 ± 3 N), where fitted. Where the retractor belt is used, this condition shall be met with at least 150 mm of belt remaining on the spool.

A clamping mechanism used according to paragraph 7.1.3.5.2.3. shall not influence the belt path."

Paragraph 6.1.2.3.(former), renumber as paragraph 6.1.2.7.

Paragraph 6.1.3.4., amend to read:

"6.1.3.4. Enhanced Child Restraint Systems of the i-Size booster seat categories shall have a main load-bearing contact point, between the Enhanced Child Restraint System and the adult safety belt. This point shall not be less than 150 mm from the Cr axis when measured with the Enhanced Child Restraint System on the dynamic test bench installed in accordance with paragraph 7.1.3.5.2.2. of this Regulation, without a dummy. This shall apply to all adjustment ~~configuration setups~~ and variable belt paths."

Paragraph 6.2.1.4., amend to read:

"6.2.1.4. To prevent submarining, either by impact or through restlessness, a crotch strap shall be required on all integral forward-facing restraints incorporating an integral harness belt system. Enhanced Child Restraint Systems which incorporate a shield instead of a harness shall ensure that the shield extends across the full width of the child's body and sits low on the pelvis."

Paragraph 6.2.1.8., amend to read:

"6.2.1.8. With the crotch strap attached and in its longest position if adjustable, it shall not be possible to adjust the lap strap to lie above the pelvis of both the smallest and largest dummy within the size range covered by the approval. For all forward-facing restraints, it shall not be possible to adjust the lap strap to lie above the pelvis of both the smallest and largest dummy within the size range covered by the approval.

An impact shield shall be adjustable so that it comes in contact with the pelvis and abdomen of the smallest and largest dummy within the size range covered by the approval, leaving no gap between the impact shield and the dummy."

Paragraph 6.2.1.10., amend to read:

"6.2.1.10. At least the worst case ~~configuration~~ of the dynamic test for the Enhanced Child Restraint System shall be performed after conditioning according to paragraph 7.2.6."

Paragraph 6.2.3., amend to read:

"6.2.3. It shall not be possible to remove or detach without the use of specific tools, any components not designed to be removable or detachable **for maintenance or change of configuration purpose**. Any components that are designed to be removable ~~or detachable for maintenance or adjustment purpose~~ shall be so designed as to avoid any risk of incorrect assembly and use, as the assembly and disassembly processes shall be explained in detail in the restraint user guides. **For integral Enhanced Child Restraint Systems** Any harness belt **or impact shield** shall be capable of its full range of adjustment without disassembly,"

Paragraph 6.3.2.1., amend to read:

"6.3.2.1. Internal geometric characteristics

The Technical Service conducting the approval tests shall verify that the internal dimensions of the Enhanced Child Restraint System conform to the requirements of Annex 18. The minimum dimensions for shoulder breadth, hip breadth and sitting height shall be fulfilled simultaneously for any stature within the size range declared by the manufacturer.

Integral Enhanced Child Restraint System shall also fulfil the minimum and maximum dimensions of shoulder height, for any stature within the size range declared by the manufacturer.

Integral Enhanced Child Restraint Systems that feature an impact shield shall also be capable of being adjusted to fulfil:

- (a) The 5th percentile upper leg thickness and 5th percentile abdomen depth, simultaneously to the 5th percentile shoulder height;
- (b) The 95th percentile upper leg thickness and 95th percentile abdomen depth, simultaneously to the 95th percentile shoulder height, shoulder breadth, hip breadth and sitting height;

for any stature within the size range declared by the manufacturer.

Non-integral Enhanced Child Restraint System shall also fulfil the maximum dimensions of shoulder height, for any stature within the size range declared by the manufacturer."

Paragraph 6.3.2.2.1., amend to read:

"6.3.2.2.1. Integral Class Enhanced Child Restraint Systems

The maximum external dimensions for the width, height and depth of the Enhanced Child Restraint System and the locations of the ISOFIX anchorages system, with which its attachments shall engage, shall be defined by the ISOFIX Vehicle Seat Fixture as defined in paragraph 2.17.1. of this Regulation.

(a) i-Size or universal belted Forward facing Enhanced Child Restraint Systems shall fit within the ISO/F2x size envelope for a reduced-height forward-facing toddler CRS;

(b) i-Size or universal belted Rearward facing Enhanced Child Restraint Systems shall fit within the ISO/R2 size envelope for a reduced-size rearward-facing toddler CRS;

(c) Specific vehicle ISOFIX or specific vehicle belted Enhanced Child Restraint Systems shall fit:

(i) in vehicle(s) specified in a list or

(ii) at least in one of the ISO (R1,R2X, R2, R3, F2X, F2, F3, L1, L2) size envelopes as described in Annex 17 Appendix 2 of Regulation No. 16.

"

Paragraph 6.3.2.2.2., amend to read:

"6.3.2.2.2. Non-Integral Class Enhanced Child Restraint Systems

The maximum external dimensions for the width, height and depth of the Enhanced Child Restraint System and the locations of the ISOFIX anchorages system if any, with which its attachments shall engage, shall be defined by the i-Size booster seat fixture as defined in paragraph 2.17.2. of this Regulation.

(a) i-Size booster seat Enhanced Child Restraint Systems shall fit within the ISO/B2 size envelope;

Deleted: ...¶
i-Size booster seats shall be adjusted to accommodate children of 135 cm stature (height, depth and width dimensions as defined in Annex 18) or to the largest size of its declared stature range in case the upper limit is below 135 cm. In this case, it must fit within each of its declared Vehicle Seat Fixtures in at least one adjustable position. The Enhanced Child Restraint System may be adjusted to other inclined positions (less or more reclined) that are outside the Vehicle Seat Fixture's height; in this case, the child restraint manufacturer's user manual shall clearly indicate that when used in one of these ~~configuration arrangements~~, the Enhanced Child Restraint System may not fit in all vehicles approved for a Universal fixture

(b) *Specific vehicle booster seat Enhanced Child Restraint Systems shall fit:*

- (i) *in vehicle(s) specified in a list; or*
- (ii) *at least in one of ISO/B2 –ISO/B3 size envelope as described in Annex 17, Appendix 2 of regulation No. 16.*

When conducting this assessment, the non-integral Enhanced Child Restraint System shall be adjusted to accommodate children of 135 cm stature (height, depth and width dimensions as defined in Annex 18) or to the largest size of its declared stature range if the upper limit is below 135 cm.

The Non-integral Enhanced Child Restraint System shall fit within the booster seat fixture in all angles of inclination of the fixture (90°-110°). The ECRS may be adjusted between inclination angles or positions to fit within the different booster seat fixture angles.

If other positions of inclination are outside the limits of the applicable size envelope, the user manual shall indicate that the child restraint may not fit in all approved vehicles when used in one of these positions. If the Non-integral Enhanced Child Restraint System has a declared stature range above 135 cm, and if it is necessary to adjust the child restraint outside the limits of the applicable size envelope for such adjustments (height, depth and width dimensions), the user manual shall indicate that the child restraint may not fit in all approved vehicles when used in one of these position

Deleted: *If the Non-integral Enhanced Child Restraint System is capable of being adjusted to different positions of seat surface inclination, the fitting assessment shall be done in at least one position.*

Paragraph 6.6.2.1., amend to read:

"6.6.2.1. For all devices with backrests, the areas defined in Annex 14 to this Regulation, when tested according to Annex 13, shall give a peak acceleration of less than 60 g. This requirement applies also to areas of impact shields which are in the head strike area as defined in Annex 14."

Insert new paragraph 6.6.4.1.8., to read:

"6.6.4.1.8. In the case of a convertible integral Enhanced Child Restraint System that is equipped with a means of restraining the child that is intended for one orientation only, the dynamic test shall be carried out as follows:

6.6.4.1.8.1. With the means of restraint used in the orientation for which it is intended, and

6.6.4.1.8.2. With the means of restraint used in the orientation for which it is not intended, unless a mechanism is provided to prevent such incorrect use."

Paragraph 6.6.4.1.1.1., amend to read:

"6.6.4.1.1.1. Where a test is conducted in accordance with paragraph 6.6.4.1.6.2. or paragraph 6.6.4.1.8.2 above, a tolerance of +10 per cent shall be applicable to the head excursion value distance between Cr point and plane AB."

Paragraph 6.6.4.1.2.1., amend to read:

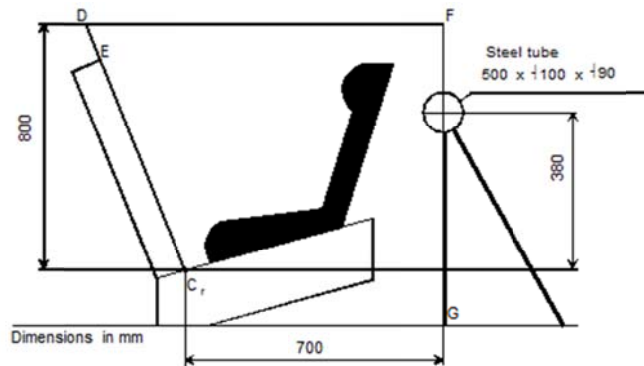
6.6.4.1.2.1. Head excursion: no part of the head of the dummy shall pass beyond the planes FD, FG and DE, as shown in figure 2 below. This shall be judged up to 300 ms or the moment that the dummy has come to a definitive standstill whatever occurs first.

Except when testing using Q6 dummy where:

- a) The value in relation to the FD plane is 840 mm

Where a test is conducted with paragraph 6.6.4.1.6.2. or paragraph 6.6.4.1.8.2. above, only the second configuration test results without 100 mm diameter bar will be considered.

Figure 2
Arrangement for testing a rearward-facing device, not supported by the dashboard



Paragraph 6.6.4.1.2., amend to read:

"6.6.4.1.2. Enhanced Child Restraint Systems of the specific vehicle categories shall be assessed for fit with each vehicle model for which the Enhanced Child Restraint System is intended. The Technical Service responsible for conducting the test may reduce the number of vehicle configurations tested if they do not differ greatly in the aspects listed in paragraph 6.6.4.1.2.3. of this Regulation. This Enhanced Child Restraint System shall be dynamically tested in one of the following ways:"

Paragraph 6.6.4.1.2.1., amend to read:

"6.6.4.1.2.1.

...

Where a test is conducted in accordance with paragraph 6.6.4.1.6.2. above, only the second ~~configuration~~ **test results** without 100 mm diameter bar will be considered."

Paragraph 6.6.5.1., amend to read:

"6.6.5.1. **Buckle assemblies, retractors, adjusters and lock-off devices that are liable to be affected by temperature, shall be subject to the temperature test specified in paragraph 7.2.7. below. This requirement is applicable to any such components that are found on the Enhanced Child Restraint System, regardless of the means of restraint.**"

Paragraph 6.7., amend to read:

"6.7. **Provisions applicable to individual components of the restraint**
This paragraph is applicable to any such components that are found on the Enhanced Child Restraint System, regardless of the means of restraint."

Paragraph 6.7.1.8.2., amend to read:

"6.7.1.8.2. **Depending on the mass limit declared by the manufacturer, a harness buckle shall withstand:"**

Paragraph 6.7.2.7., amend to read:

"6.7.2.7. **An adjuster mounted directly on the Child Restraint System shall be capable of withstanding repeated operation and shall, before the dynamic test prescribed in paragraph 7.1.3. undergo a test comprising 5,000 ± 5 cycles as specified in paragraph 7.2.6.1.**

An adjuster mounted on a strap shall be capable of withstanding repeated operation and shall, before the dynamic test prescribed in paragraph 7.1.3. undergo a test comprising 5,000 ± 5 cycles that applies the principles of the test specified in paragraph 7.2.3. This test shall be defined by the Technical Service in consultation with the manufacturer."

Insert new paragraphs 6.7.6. to 6.7.6.5., to read:

"6.7.6. **Lock-off device**

6.7.6.1. **The lock-off device shall be permanently attached to the child restraint.**

6.7.6.2. **The lock-off device shall not impair the durability of the adult belt and shall undergo the temperature test operation requirements given in paragraph 7.2.7.1.**

6.7.6.3. **The lock-off device shall not prevent the rapid release of the child.**

6.7.6.4. **Class A device**

The amount of slip of the webbing shall not exceed 25 mm after the test prescribed in paragraph 7.2.9.1. below.

6.7.6.5. **Class B device**

The amount of slip of the webbing shall not exceed 25 mm after the test prescribed in paragraph 7.2.9.2. below."

Paragraph 7.1.2.7., amend to read:

"7.1.2.7. These tests shall be carried out using both the smallest and the largest appropriate dummy of the size range for which the restraining device is intended. Any adjustment of the dummy or Enhanced ~~child~~ **Child restraint** ~~Restraint systems~~ **Systems** during the complete test cycle is not allowed."

Paragraph 7.1.3., amend to read:

"7.1.3. ...
 (e) The lateral dynamic test(s) will be performed in this(ese) ~~configuration~~ **arrangement(s)**;
 ..."

Insert new paragraph 7.1.3.5.2.3., to read:

"7.1.3.5.2.3. **Installation of an Integral Enhanced Child Restraint Systems "Universal belted "** ~~seat or specific vehicle belted seat on the test bench.~~

Deleted: belted

The unoccupied belted ECRS shall be placed on the test bench.

Fit load cell 1 to the outboard position as shown Figure 1. Install the Enhanced Child Restraint System in the correct position. If a lock-off device is fitted to the Enhanced Child Restraint System and acts upon the diagonal belt, place load cell 2 at a convenient position behind the Enhanced Child Restraint System between the lock-off device and the buckle as shown above. If no lock-off device is fitted or if the lock-off device is fitted at the buckle, position the load cell at a convenient position between the pillar loop and the Enhanced Child Restraint System.

Adjust the lap portion of the reference belt to achieve a tension load of $50\text{ N} \pm 5\text{ N}$ at load cell 1. Make a chalk mark on the webbing where it passes through the simulated buckle.

While maintaining the belt at this position, adjust the diagonal to achieve a tension of $50\text{ N} \pm 5\text{ N}$ at load cell 2 by either locking the webbing at the Enhanced Child Restraint System webbing locker or by pulling the belt between the belt clamping mechanism and the standard retractor. If the tension in load cell 2 is achieved by pulling the belt between the clamping mechanism and the retractor, the clamping mechanism shall now be locked.

Extract all webbing from the retractor spool and rewind the excess webbing keeping a tension of $4 \pm 3\text{ N}$ in the belt between the retractor and the pillar loop. The spool shall be locked before the dynamic test.

The dummy shall be placed in the Enhanced Child Restraint System separate from the seat-back of the chair by a flexible spacer. The spacer shall be 2.5 cm thick and 6 cm wide. It shall have length equal to the shoulder height less the thigh height, both in the sitting position and relevant to the dummy size being tested. The resulting height of the spacer is listed in the table below for the different dummy sizes. The board should follow as closely as possible the curvature of the seat and its lower end should be at the height of the dummy's hip joint.

	<i>Q0</i>	<i>Q1</i>	<i>Q1.5</i>	<i>Q3</i>	<i>Q6</i>	<i>Q10</i> (<i>design targets</i>)
Dimensions in mm						

	<i>Q0</i>	<i>Q1</i>	<i>Q1.5</i>	<i>Q3</i>	<i>Q6</i>	<i>Q10</i> (<i>design targets</i>)
Height of spacer device for positioning of dummy	173 ± 2	229 ± 2	237 ± 2	250 ± 2	270 ± 2	359 ± 2

Adjust the ECRS belt in accordance with the manufacturer's instructions, but to a tension of 250 ± 25 N above the adjuster force, with a deflection angle of the strap at the adjuster of 45 ± 5°, or alternatively, the angle prescribed by the manufacturer.

The spacer shall then be removed and the dummy pushed towards to the seat back. Distribute the slack evenly throughout the harness."

Paragraph 7.1.3.5.2.3.(former), renumber as paragraph 7.1.3.5.2.4.

Insert new paragraph 7.1.3.6.5., to read:

"7.1.3.6.5. The test specified in 6.6.4.1.8. above is a requirement only for:

7.1.3.6.5.1. The smallest dummy for which the Enhanced Child Restraint is designed, if the means of restraint is an impact shield.

7.1.3.6.5.2. The largest dummy for which the Enhanced Child Restraint is designed, if the means of restraint is a harness."

Paragraph 7.2.3.2., amend to read:

"7.2.3.2. The free end of the strap shall be arranged in the same ~~configuration way~~ as when the device is in use in the vehicle, and shall not be attached to any other part."

Paragraph 7.2.5.2.6.2., amend to read:

"7.2.5.2.6.2. The table below sets out the general conditions for each test:

Table 8

	Load (N)	Cycles per minute	Cycles (No.)
Type 1 procedure	40 60 ± 0.45	30 ± 10	1 000 ± 5
Type 2 procedure	5 10 ± 0.051	30 ± 10	5 000 ± 5

Where there is insufficient strap to test over 300 mm of shift, the test may be applied over a shorter length subject to a minimum of 100 mm. The dynamic tests shall be conducted with the largest dummy and the smallest dummy as defined in the following tables according to the size range indicated by the manufacturer for the Enhanced Child Restraint System."

Paragraphs 7.2.5.2.6.3. to 7.2.5.2.6.3.2., amend to read:

"7.2.5.2.6.3. Particular test conditions

7.2.5.2.6.3.1. ~~Type 1 procedure: for cases where the strap slides through the quick adjusting device. The 10 N load shall be vertically and permanently applied on one of the straps. The other strap, set horizontally, shall be attached to a device, giving the webbing a back and forth motion. The adjusting device shall be so placed that the horizontal strap of the webbing remains under tension (see Annex 5, figure 1).~~ **Type 1 procedure: for cases where the strap slides through the quick adjusting device. Apply a load of 10 N, if necessary the load may be increased by 10 N steps so as to permit correct sliding, but limited to a maximum of 60 N. This load shall be vertically and permanently applied on the straps. The part of the strap set horizontally shall pass through the quick adjuster it is fitted to and shall be attached to a device, giving the webbing a back and forth motion. The quick adjusting device shall be so placed that the horizontal strap of the webbing remains under tension (see Annex 5, Figure 1). Activate the quick adjuster while pulling the straps in the direction to slacken the harness and deactivate it while pulling the straps in the direction to tighten the harness.**

7.2.5.2.6.3.2. **Type 2 procedure: for cases where the strap changes direction in passing through a rigid part. During this test, the webbing shall pass through the rigid part it is intended for and the test set up shall reproduce the angles as in the real installation (in three dimensions), see Annex 5, Figure 2 for examples. The 10 N load shall be permanently applied. For cases where the strap changes direction more than once in passing through a rigid part, the load of 10 N may be increased by 10 N steps so as to permit correct sliding and achieve the prescribed 300 mm of strap movement through that rigid part.**

~~Type 2 procedure: for cases where the strap changes direction in passing through a rigid part. During this test, the angles of both webbing straps shall be as shown in Annex 5, figure 2. The 5 N load shall be permanently applied. For cases where the strap changes direction more than once in passing through a rigid part, the load of 5 N may be increased so as to achieve the prescribed 300 mm of strap movement through that rigid part. "~~

Paragraph 7.2.6., amend to read:

"7.2.6.1 **Conditioning test for adjusters mounted directly on a child restraint"**

Insert new paragraph 7.2.6., to read:

“7.2.6. Conditioning tests for adjusters”

Insert new paragraph 7.2.6.2., to read:

7.2.6.2. Conditioning test for adjusters connected to a strap (not directly mounted to the Enhanced Child Restraint System)

Install the largest dummy for which the restraint is intended, as if for the dynamic test, including the standard slack as specified in paragraph 7.1.3.5. above. Mark a reference line on the strap where the free end of the strap enters the adjuster.

Remove the dummy and place the restraint in the conditioning rig shown in Figure 2, Annex 15.

The strap shall be cycled for a total distance of not less than 150 mm through the adjuster. This movement shall be such that at least 100 mm of strap on the side of the reference line towards the free end of the strap.

If the length of strap from the reference line to the free end of the strap is insufficient for the movement described above, the 150 mm of movement through the adjuster shall be from the fully extended strap position.

The frequency of cycling shall be 10 ± 1 cycles/minute, with a velocity on ‘B’ of 150 ± 1 mm/s.

This process shall be conducted for each adjuster that is part of the retention system of the child within the restraint.

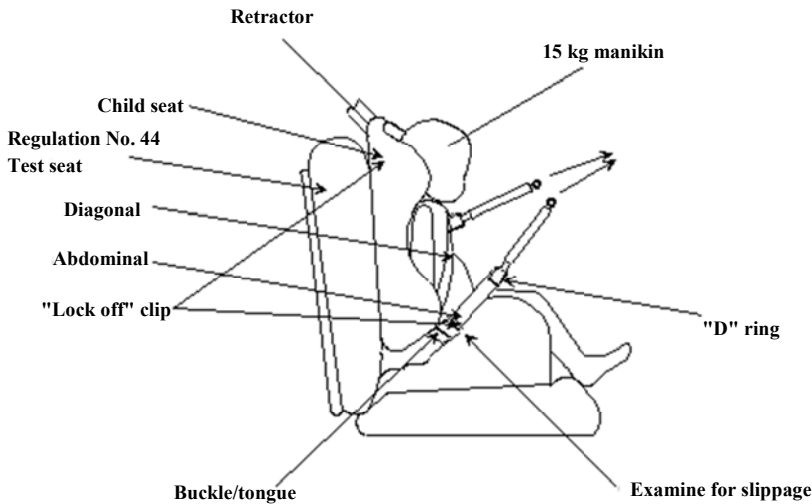
Insert new paragraphs 7.2.9. to 7.2.9.2., to read:

"7.2.9. Lock-off devices

7.2.9.1. Class A devices

The child restraint and the largest manikin for which the child restraint is intended shall be set up as shown in Figure 4 below. The webbing used shall be as specified in Annex 23 to this Regulation. The lock-off shall be fully applied and a mark made on the belt where the belt enters the lock-off. The force gauges shall be attached to the belt via a D ring, and a force equal to twice (± 5 per cent) the mass of the heaviest dummy of group I shall be applied for at least one second. The lower position shall be used for lock-offs in position A and the upper position for lock-offs in position B. The force shall be applied for a further 9 times. A further mark shall be made on the belt where it enters the lock-off and the distance between the two marks shall be measured. During this test, the retractor shall be unlocked.

Figure 4



7.2.9.2. Class B devices.

The child restraint shall be firmly secured, and the webbing as specified in Annex 23 to this Regulation, shall be passed through the lock-off and frame following the routing described in the manufacturer's instructions. The belt shall pass through the testing equipment as described in Figure 5 below and be attached to a mass of 5.25 ± 0.05 kg. There shall be 650 ± 40 mm of free webbing between the mass and the point where the webbing leaves the frame. The lock-off shall be fully applied and a mark made on the belt where it enters the lock-off. The mass shall be raised and released so that it falls freely over a distance of 25 ± 1 mm. This shall be repeated 100 times ± 2 at a frequency of 60 ± 2 cycles per minute, to simulate the jerking action of a child restraint in a car. A further mark shall be made on the belt where it enters the lock-off and the distance between the two marks shall be measured.

The lock-off device shall cover the full width of the webbing in the installed condition with 15 kg dummy installed. This test is to be conducted using the same webbing angles as those formed in normal use. The free end of the lap belt portion shall be fixed. The test shall be conducted with the child restraint system firmly attached to the test bench used in the overturning or dynamic test. The loading strap can be attached to the simulated buckle."

Paragraph 9.2.1.1., amend to read:

"9.2.1.1. Five Enhanced Child Restraint Systems shall be subjected to the dynamic test described in paragraph 7.1.3. above. The Technical Service that conducted the type approval tests shall choose the conditions that produced the maximum horizontal head excursion during the type approval dynamic tests, excluding the conditions described in paragraph 6.6.4.1.6.2. and paragraph 6.6.4.1.8.2. above. All the five Enhanced Child Restraint Systems shall be tested under the same conditions."

Insert new paragraph 14.2.3., to read:

"14.2.3. For Universal belted seat category Enhanced Child Restraint Systems the following label shall be clearly visible on the exterior of the packing:

Notice:

This is an Universal belted Enhanced Child Restraint System. It is approved according to Regulation No.129, for use primarily in "Universal seating positions" as indicated by vehicle manufacturers in the vehicle users' manual.

If in doubt, consult either the Enhanced Child Restraint System manufacturer or the retailer.

Paragraphs 14.2.3. to 14.2.9. (former), renumber as paragraphs 14.2.4. to 14.2.10.

Paragraph 14.3.5., amend to read:

"14.3.5. It shall be recommended that any straps holding the restraint to the vehicle should be tight, that any support-leg should be in contact with the vehicle floor, that any straps or impact shields restraining the child should be adjusted to the child's body, and that straps should not be twisted;."

Paragraph 14.3.6., amend to read:

"14.3.6. The importance of ensuring that any lap strap is worn low down, and that any impact shield installed properly, so that the pelvis is firmly engaged, shall be stressed;"

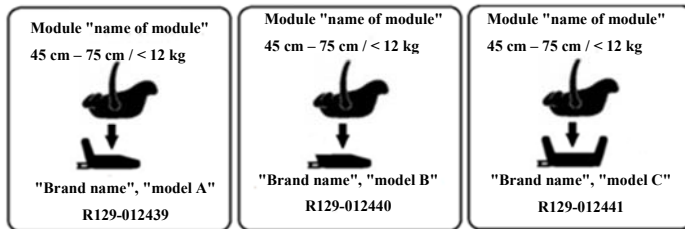
Insert new paragraphs 16.8. to 16.10., to read:

- "16.8. As from the official date of entry into force of the 03 series of amendments to this Regulation, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals to this Regulation as amended by the 03 series of amendments.
- 16.9. Until 1 September 2020, type approvals to the preceding series of amendments to the Regulation which are not affected by the 03 series of amendments to the Regulation shall remain valid and Contracting Parties applying this Regulation shall continue to accept them.
- 16.10. Until 1 September 2022, Contracting Parties applying this Regulation shall not refuse to grant extensions of approval to the 01 and 02 series of amendments to this Regulation."

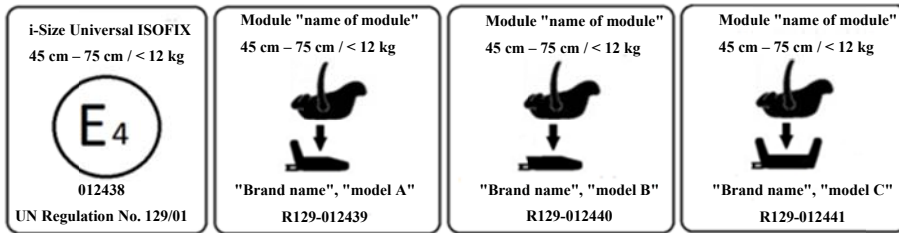
Annex 2, amend to read:

"Annex 2

1. Arrangements of the approval mark
...
2. Arrangements of the approval mark in combination with a module mark
...
- 2.1. Arrangements of the module mark in combination with an approval mark
- 2.1.1. **Where a module is approved for use with more than one base, the individual base and module combinations are to be indicated on the module in separate module marks and each shall bear their applicable size ranges.**



An Enhanced Child Restraint System that bears an approval mark for the stand-alone configuration of use and a module mark for the use on three different bases thus carries the following arrangement of approval and module marks:



An Enhanced Child Restraint System bearing the above marks is capable of being used with a vehicle belt for the 45 cm - 75 cm size range and mass limit of 12 kg; it is approved under the number 001440.

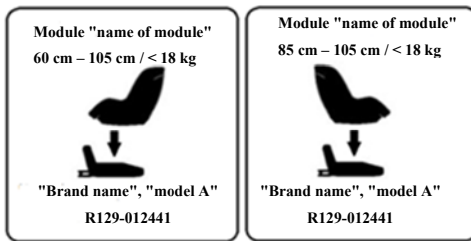
The Enhanced Child Restraint System is also to be used as a module in combination with the base "brand name & model A", for the 45 cm - 75 cm size range and mass limit of 12 kg; approved according to Regulation No. 129 under the number 012439.

The Enhanced Child Restraint System is also to be used as a module in combination with the base "brand name & model B", for the 45 cm - 75 cm size range and mass limit of 12 kg; approved according to Regulation No. 129-01 under the number 012440.

The Enhanced Child Restraint System is also to be used as a module in combination with the base "brand name and model C", for the 45 cm - 75 cm size range and mass limit of 12 kg; approved according to Regulation No. 129-01 under the number 012441.

The approval numbers indicate that the approval was granted in accordance with the requirements of the Regulation concerning the approval of Enhanced Child Restraint Systems used on board of motor vehicles as amended by the 01 series of amendments.

- 2.1.2. Where a module requires conversion of the product in order to transform from one transport configuration to the other, this shall be indicated in separate module marks, each bearing their applicable size ranges.

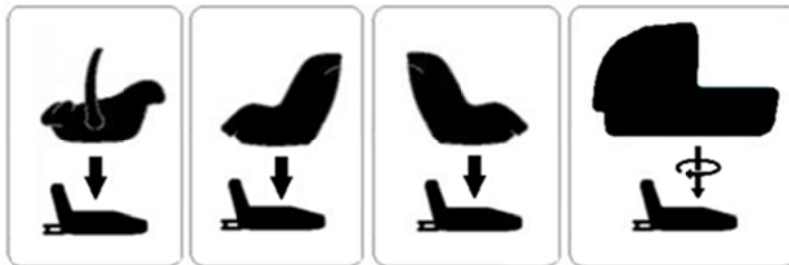


The Enhanced Child Restraint System bearing the above marks is capable of being used in a rearward facing configuration with the base "brand name & model A", for the 60 cm - 105 cm size range and with a mass limit of 18 kg; approved according to Regulation No. 129 under the number 012441.

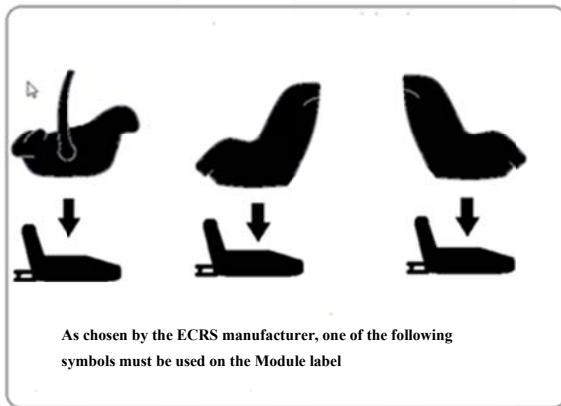
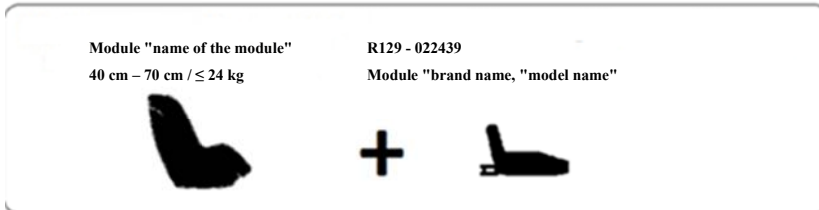
The Enhanced Child Restraint System bearing the above marks is also capable of being used in a forward facing configuration with the base "brand name and model A", for the 85 cm - 105 cm size range and with a mass limit of 18 kg; approved according to Regulation No. 129 under the same number 012441.

The approval number indicates that the approval was granted in accordance with the requirements of the Regulation on the approval of Enhanced Child Restraint Systems used on-board motor vehicles as amended by the 01 series of amendments.

At the choice of the ECRS manufacturer, one of the following symbols must be used on the module mark.



2.2 Examples of the symbols to be used on the module mark are given in the figures below.



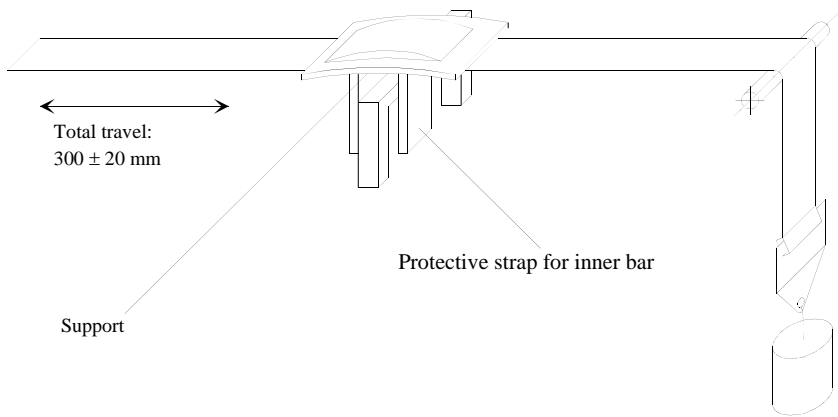
The Enhanced Child Restraint System module bearing the above module mark capable of being used for the 40 cm – 70 cm size range and mass limit of 24 kg; it is approved under the number 022439 to be used in combination with device approved according to Regulation No. 129 under the same number 022439. The approval number indicates that the approval was granted in accordance with the requirements of the Regulation concerning the approval of Enhanced Child Restraint Systems used on board of motor vehicles as amended by the 02-series of amendments."

Annex 5, Figures 1 and 2, amend to read:

"Annex 5

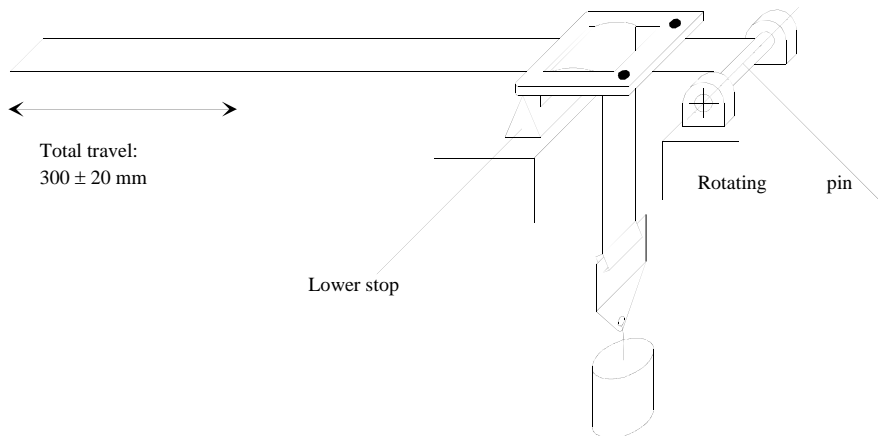
Abrasion and microslip test

Figure 1
Procedure type 1



F = 10 ± 0.1 N, can be increased up to F = 60 ± 0.5 N

Example a



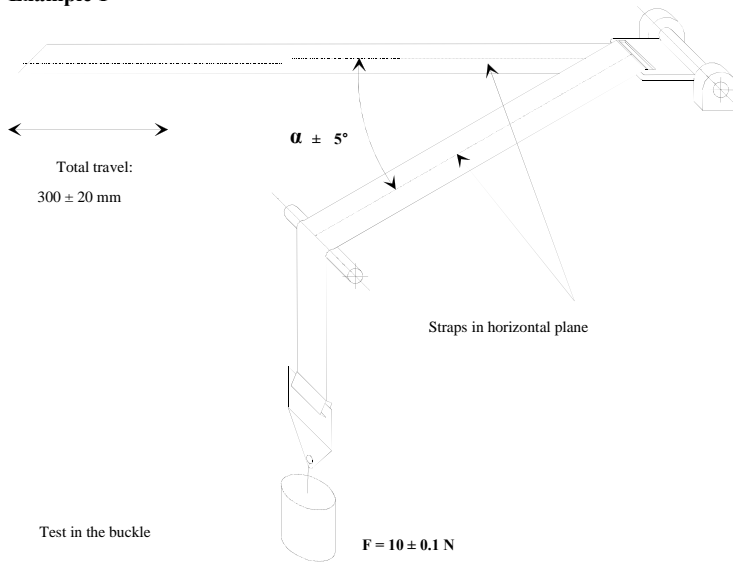
Example b

Examples of test arrangements corresponding to the type of adjusting device

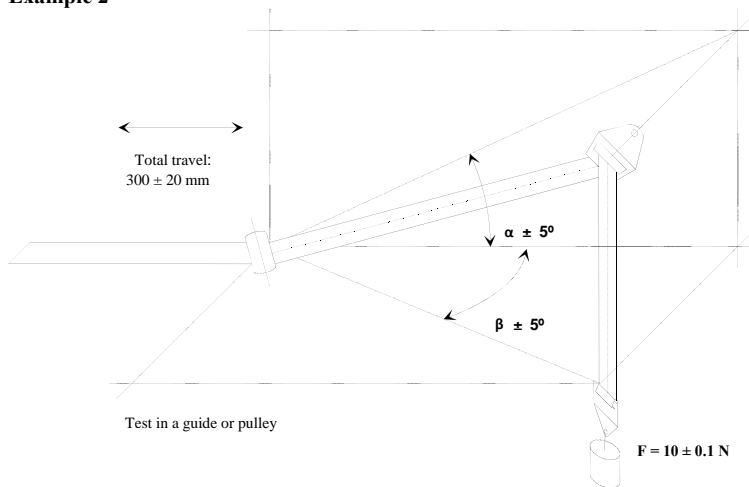
F = 10 ± 0.1 N, can be increased up to F = 60 ± 0.5 N

Figure 2
Procedure type 2
Following two examples of test set up

Example 1



Example 2



Where α and β reproduce the angles as in the real installation (in three dimensions)
..."

Annex 12, paragraph 2.2.1.4., Notes, amend to read:

"Notes:

MH means harder ~~configuration condition~~ (the least good results obtained in approval or extension of approval)

LH signifies a less hard ~~configuration condition~~."

Annex 14, amend to read:

"Annex 14

Method of defining head impact area of devices with backrests or impact shields and for rearward-facing devices defining the minimum size of side wings

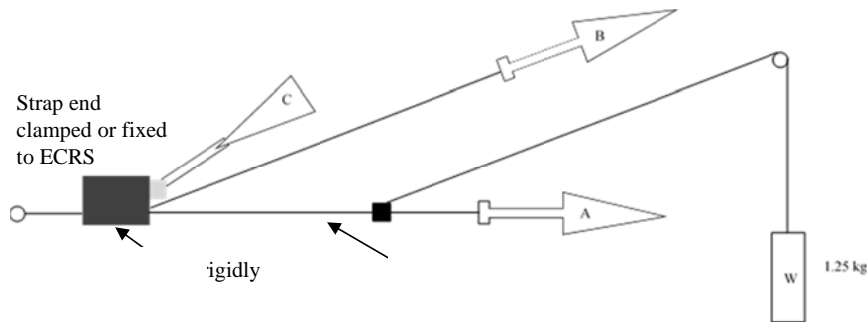
1. Head impact area
 - 1.1. Definition of backrest head impact area

Place the device on the test bench described in....
 - 1.2. Definition of impact shield head impact area

The impact shield head impact area is the whole upper surface of the impact shield, which comprises any surfaces visible from the top, looking down on the shield."

Annex 15, amend to read

"Description of conditioning for adjusters connected to a strap



1. Method
 - 1.1. Rigidly clamp the adjuster
 - 1.2. With the strap set at the reference position described in paragraph 7.2.6., withdraw at least 50 mm of strap from the adjuster by pulling on the free end of the strap.
 - 1.3. Attach the adjuster part of the strap to the pulling device A.

- 1.4. Activate the adjuster (C) and pull at least 150 mm of strap through the adjuster. This represents half of one cycle and puts pulling device A to the maximum strap extraction position.
- 1.5. Connect the free end of the strap to pulling device B.
2. The cycle is:
 - 2.1. Pull B at least 150 mm whilst A exerts no tension on the strap.
 - 2.2. Activate the adjuster (C) and pull A whilst B exerts no tension on the free end of the strap.
 - 2.3. At the end of the stroke, de-activate the adjuster.
 - 2.4. Repeat the cycle as specified in paragraph 6.7.2.7. of this regulation.”

Annex 18, amend to read:

"Annex 18

Applicable to all ECRS						Additional internal dimensions for ECRS with impact shield systems							
	Min	Min	Min	Min	Max	Min	Max	Min	Max				
Stature	Sitting height cm	Shoulder breadth cm	Hip breadth cm	Shoulder height cm	Shoulder height cm	Abdomen depth cm	Abdomen depth cm	Upper leg thickness cm	Upper leg thickness cm				
A	B	C	D	E1	E2	F1	F2	G1	G2				
	95%ile	95%ile	95%ile	5%ile	95%ile	5%ile	95%ile	5%ile	95%ile				
≤40				< 27.4		Not allowed for these dimensions and stature below 76 cm							
45	39.0	12.1	14.2	27.4	29.0								
50	40.5	14.1	14.8	27.6	29.2								
55	42.0	16.1	15.4	27.8	29.4								
60	43.5	18.1	16.0	28.0	29.6								
65	45.0	20.1	17.2	28.2	29.8								
70	47.1	22.1	18.4	28.3	30.0								
75	49.2	24.1	19.6	28.4	31.3					12.5	15.1	5.7	8.4
80	51.3	26.1	20.8	29.2	32.6					12.7	15.7	5.8	8.4
85	53.4	26.9	22.0	30.0	33.9					12.9	16.2	5.9	8.5
90	55.5	27.7	22.5	30.8	35.2	13.1	16.8	6.2	8.5				
95	57.6	28.5	23.0	31.6	36.5	13.3	17.8	6.5	8.9				
100	59.7	29.3	23.5	32.4	37.8	13.5	18.2	6.5	9.6				
105	61.8	30.1	24.9	33.2	39.1	13.6	18.8	6.6	10.3				
110	63.9	30.9	26.3	34.0	40.4	13.9	19.6	6.6	10.3				
115	66.0	32.1	27.7	35.5	41.7	13.9	19.9	6.6	10.4				
120	68.1	33.3	29.1	37.0	43.0	14.3	20.2	6.8	10.5				

125	70.2	33.3	29.1	38.5	44.3	14.7	20.7	7.5	10.9
130	72.3	33.3	29.1	40.0	46.1	Not allowed for these dimensions and stature over 125 cm			
135	74.4	33.3	29.1	41.5	47.9				
140	76.5	34.2	29.6	43.0	49.7				
145	78.6	35.3	30.8	44.5	51.5				
150	81.1	36.4	32.0	46.3	53.3				

Geometrical dimensions of Enhanced Child Restraint Systems

Figure 1.

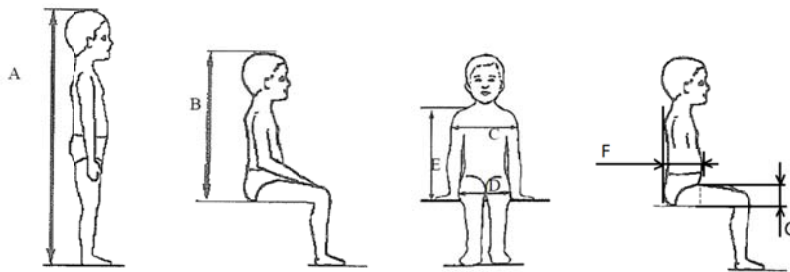


Table 1

All lateral dimensions are measured under a contact force of 50 N with the devices described in Figure 2 & Figure 3 of this annex and the following tolerances will applied:

Minimum Sitting height:

- up to 87 cm B - 5 per cent
- From stature from 87 cm and up to 150 cm B - 10 per cent,

Minimum shoulder height (5 percentile): $E1_{-2}^{+0}$ cm

Maximum shoulder height (95 percentile): $E2_{-0}^{+2}$ cm

The mass of the devices described in Figure 2 & Figure 3 of this annex shall be 10 kg +/- 1 kg

Internal geometry assessment method

This method describes how to conduct the internal geometry assessment, as required by 6.3.2.1., to verify the stature range of the ECRS declared by the manufacturer.

This assessment shall be carried out for each of the following:

- For each ECRS orientation (e.g. rearward and forward facing)
- For each ECRS type (e.g. integral and non-integral)
- For any removable insert (e.g. for use as described by manufacturer's instructions)
- For each occupant restraint method (e.g. harness & shield)

The internal geometry assessment should be conducted with the ECRS placed on a flat surface or connected to a base in the case of ECRS modules.

For integral or non-integral ECRS the device shown in Annex 18, Figure 2 shall be used.

For ECRS with an impact shield the device shown in Annex 18, Figure 3 shall be used.

1 Determining the Minimum Occupant size

The ECRS should be adjusted to fit the smallest occupant (i.e. headrest height, harness height adjustment, appropriate insert, internal padding, impact shield position), whilst still fitting within the required ISO volumetric envelope as defined in 6.3.2.2.

The measurement device shall then be placed in the ECRS. The device shall be aligned centrally to the ECRS. All measurements shall be taken with the device base in contact with the seat pan of the ECRS and the device backrest in contact with the backrest of the ECRS

The measurements shall be taken in the following order:

1.1 Minimum Shoulder Height (E1)

1.1.1 For integral ECRS:

This measurement shall be taken when the top of the shoulder height cylinders of the device are aligned with the lowest harness slot position. For this alignment, the top of the shoulder cylinder shall be aligned perpendicular to the harness webbing outlet in the ECRS backrest.

A tolerance may be subtracted from this measurement to allow the shoulders of the occupant to be lower than the harness shoulder slots.

Either:

- If the ECRS instruction manual provided by the manufacturer quantifies the distance the child's shoulder may be below the harness slots, then this distance shall be subtracted from the minimum shoulder height measurement.
- If no distance is specified a 2 cm tolerance may be subtracted from the minimum shoulder height measurement

1.1.2 For non-integral ECRS

This measurement shall be taken when the top of the shoulder height cylinders of the device are aligned without interference with the lowest part of the headrest.

1.1.3 For ECRS with an impact shield:

This measurement shall be taken when the top of the shoulder height cylinders of the device are aligned without interference with the lowest part of the headrest.

1.2 Minimum Upper Leg Thickness (G1)

This requirement only applies to ECRS with impact shields.

Whilst maintaining the minimum shoulder height position (E1), the minimum leg measurement shall be measured when the device is adjusted so that the simulated thighs contact the bottom of the impact shield.

1.3 Minimum Abdomen Depth (F1)

This requirement only applies to ECRS with impact shields

This measurement shall be taken whilst maintaining the minimum leg thickness measurement position (G1) and minimum shoulder height position (E1).

The bottom of the simulated abdomen of the device shall be aligned with the top of the simulated thighs.

The abdomen depth shall be measured when the simulated abdomen contacts the shield.

2 Determining the Maximum Occupant Size

Integral ECRS shall be adjusted to fit the largest occupant (i.e. headrest height, harness height adjustment, impact shield position), whilst still fitting within the required ISO volumetric envelope as defined in 6.3.2.2.1.

Non-integral ECRS shall be adjusted to accommodate children of 135 cm stature or to the largest size of its declared stature range if the upper limit is below 135 cm (i.e. headrest), whilst still fitting within the required ISO volumetric envelope as defined in 6.3.2.2.2.

The measurement device shall then be placed in the ECRS. The device shall be aligned centrally to the ECRS.

The measurements shall then be taken in the following order:

2.1 Sitting Height (B)

This measurement shall be taken to the highest part of the ECRS that is the effective headrest (head pad or backrest).

A tolerance is added to this measurement to allow part of the head to protrude from the ECRS:

- +5% for stature ranges below 87cm
- +10% for statures ranges above 87cm

2.2 Hip Breadth (D)

The hip breadth measurement shall be taken whilst maintaining the sitting height measurement (B).

The hip breadth measurement shall be taken whilst asserting a 50 N contact force on the ECRS.

If 50 N force cannot be achieved, because the ECRS restricts the space at the simulated thighs then the measurement should be taken at the point the simulated thighs contact the ECRS. There shall be no lateral deformation of the ECRS caused by the measuring device.

2.3 Maximum Shoulder Height (E2)

The maximum shoulder height measurement shall be taken whilst maintaining the sitting height (B) and hip breadth (D) measurements.

2.3.1 For integral ECRS

This measurement shall be taken when the top of the shoulder height cylinders of the device are aligned with the highest harness slot position still fitting within the required ISO volumetric envelope. For this alignment, the top of the shoulder cylinder shall be aligned perpendicular to the harness webbing outlet in the ECRS backrest.

A tolerance may be added to this measurement to allow the shoulders of the occupant to be higher than the harness shoulder slots. However if there is a physical restriction due to the design of the ECRS (e.g. the headrest) that would prevent a child with taller shoulders fitting the tolerance should not be added.

If there is no possible interference then the following tolerances may be added:

- If the ECRS instruction manual provided by the manufacturer quantifies the distance the child's shoulder may be above the harness slots, then this distance shall be added to the maximum shoulder height measurement.
- If no distance is specified a 2 cm tolerance may be added to the maximum shoulder height measurement

2.3.2 For non-integral ECRS

This measurement shall be taken when the top of the shoulder height cylinders of the device are aligned without interference with the lowest point of the headrest, this includes any belt routing guide.

No tolerance shall be added to this measurement.

2.3.3 For ECRS with an impact shield

This measurement shall be taken when the top of the shoulder height cylinders of the device are aligned without interference with the lowest point of the headrest, this includes any belt routing guide.

No tolerance shall be added to this measurement.

2.4 Maximum Upper Leg Thickness (G2)

This requirement only applies to ECRS with impact shields.

This measurement shall be taken whilst maintaining the sitting height (B), hip breadth (D) and maximum shoulder height (E2) measurements.

The maximum upper leg thickness measurement shall be measured when the device is adjusted so that the simulated thighs contact the bottom of the impact shield.

2.5 Maximum Abdomen Depth (F2)

This requirement only applies to ECRS with impact shields.

This measurement shall be taken whilst maintaining the maximum upper leg thickness (G2), maximum shoulder height (E2), hip breadth (D) and sitting height (B) measurement positions.

The bottom of the simulated abdomen of the device shall be aligned with the top of the simulated thighs.

The abdomen depth shall be measured when the simulated abdomen contacts the shield.

2.6 Shoulder Breadth (C)

The shoulder breadth measurement shall be taken whilst maintaining the sitting height (B) and hip breadth (D) measurements.

The width of the ECRS at the maximum shoulder height measurement position shall be measured whilst asserting a 50N contact force on the ECRS.

If there is no side wing structure to the ECRS at the maximum shoulder height (E2), the shoulder breadth measurement shall be taken at a height, which is the closest proximity to the maximum shoulder height, with side wing structure.

If the width of the ECRS between the minimum and maximum shoulder height measurements is not a consistent width i.e. significantly narrower at any point between the E1 and E2 measurements, then an intermediate shoulder breadth measurements shall be taken"

Annex 23, amend to read:

"1. The safety-belt for the dynamic test and for the maximum length requirements shall be made according to the ~~configuration~~ **definition** shown in Figure 1. These are a three-point retracting belt system.

..."

Deleted: ¶

II. Justification

1. The proposed amendment includes Enhanced Child Restraint Systems from the universal belted or specific to vehicle belted categories into the scope of UN Regulation No. 129. This represents Phase 3 of the UN Regulation.

2. The text includes all modifications proposed by GRSP up to and including its sixtieth session (13-16 December 2016) as well as those of the Informal Working Group on Child Restraint Systems up to and including its sixty-third session (Brussels, 25th January 2017) **and all proposals of modifications made by the IWG ECRS during the two last meetings (2017/03/09 and 2017/04/19).**

3. **The proposed amendments to the text have been developed to authorise the type approval of integral and non-integral Enhanced Child Restraint Systems equipped with impact shield as restraint device.**

4. **A vertical displacement of 840 mm. should be accepted for all dummies, since it's already accepted for the Q10 dummy.**

5. **A method describing how to conduct the internal geometry assessment, as required by 6.3.2.1., to verify the stature range of the ECRS declared by the manufacturer was needed.**

6. **Improved indication of correct belt path.**

7. This proposal refers to the original text of Regulation No. 129, including the following amendments:

- Corrigendum 1 to the original version of the Regulation - Date of entry into force: 9 July 2013;
- Supplement 1 to the original version of the Regulation - Date of entry into force: 26 January 2014;
- Supplement 2 to the original version of the Regulation - Date of entry into force: 10 June 2014;
- Supplement 3 to the original version of the Regulation - Date of entry into force: 9 October 2014;
- Supplement 4 to the original version of the Regulation - Date of entry into force: 8 October 2015;

- Proposal for the 01 series of amendments - Date of entry into force: 9 February 2017;
 - Proposal for Supplement 1 to the 01 series of amendments - Date of entry into force: [22 June 2017];
 - Proposal for the 02 series of amendments - Date of entry into force: [22 June 2017];
 - Proposal for Supplement 1 to the 02 series of amendments - ECE/TRANS/WP.29/GRSP/2016/19 and ECE/TRANS/WP.29/GRSP/2016/23 amended by GRSP-60-08-Rev.1;
 - Proposal for Supplement 2 to the 01 series of amendments ECE/TRANS/WP.29/GRSP/2016/22 amended by GRSP-60-09-Rev.2.
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