



# Economic and Social Council

Distr.: General  
9 April 2021

Original: English

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## Economic Commission for Europe

### Inland Transport Committee

### World Forum for Harmonization of Vehicle Regulations

#### 184th session

Geneva, 22-24 June 2021

Item 4.6.2. of the provisional agenda

#### 1958 Agreement:

Consideration of draft amendments to existing

UN Regulations submitted by GRSP

## Proposal for Supplement 5 the 03 series of amendments to UN Regulation No. 129 (Enhanced Child Restraint Systems)

### Submitted by the Working Party on Passive Safety \*

The text reproduced below was adopted by the Working Party on Passive Safety (GRSP) at its sixty-fifth session (ECE/TRANS/WP.29/GRSP/68, para. 22). It is based on ECE/TRANS/WP.29/GRSP/2020/15, ECE/TRANS/WP.29/GRSP/2020/16, and ECE/TRANS/WP.29/GRSP/2020/18 as amended by Annex III to the report. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee (AC.1) for consideration at their June 2021 sessions.

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\* In accordance with the programme of work of the Inland Transport Committee for 2021 as outlined in proposed programme budget for 2021 (A/75/6 (part V sect. 20) para 20.51), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.



*Contents of the Regulation*, amend to read:

"...

Annexes

...

27 List of Minimum Contents for The Test Reports included in the Type Approval Application"

*Text of the Regulation*

*Paragraph 2.7.3.*, amend to read:

"2.7.3. "Specific vehicle Belted" is a category of Integral Enhanced Child Restraint System connected to specific vehicle types by using the vehicle safety-belt, possibly in combination with other attachment methods."

*Insert a new paragraph 4.14.*, to read:

"4.14. For Enhanced Child Restraint Systems which do not provide a paper form of the user instructions to the customer, either a weblink or QR code to the user instructions shall be permanently attached to the Enhanced Child Restraint System and visible to the person installing the Enhanced Child Restraint System in the vehicle."

*Paragraph 6.1.2.4.*, amend to read:

"6.1.2.4. For the "Specific vehicle Belted" category, this shall be primarily by means of the adult safety-belt, possibly in combination with other attachment methods that use vehicle anchorage points and/or floor contact surfaces (e.g. top tethers, support legs or other). Any attachment points required for securing rearward facing Enhanced Child Restraint System shall be checked according to Annex 24."

*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 if fitted, 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 UN Regulation No. 16.

When conducting this assessment, the Integral Enhanced Child Restraint System shall be adjusted to the largest size of its declared stature range (height, depth and width dimensions as defined in Annex 18). When checking the width, the maximum loading allowed on the side of the ISOFIX Vehicle Seat Fixture shall be  $\leq 135$  N.

If the 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. 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."

*Paragraph 6.3.2.2.2.*, amend to read:

"6.3.2.2.2. **Booster Seats**

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 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;
- (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 5 of UN Regulation No. 16.

When conducting this assessment, the booster seat 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. When checking the width, the maximum loading allowed on the side of the i-Size booster fixture shall be  $\leq 135$  N.

The booster seat shall fit within the booster seat fixture in all angles of inclination of the fixture (90°-110°). The Enhanced Child Restraint System 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 booster seat 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 positions.

In such cases, an Enhanced Child Restraint System shall still be categorised as an i-Size booster seat for the entire declared stature range, including statures above 135 cm, provided it fits within the applicable size envelope when adjusted for a child of 135 cm stature. If the maximum child stature that fits within the envelope is less than 135 cm, the booster seat shall be categorised as specific vehicle for statures included in the declared range that no longer fit within the envelope."

*Paragraph 6.3.5.1.*, amend to read:

"6.3.5.1. **Support-leg and support-leg foot geometrical requirements**

The support leg, including its attachment to the Enhanced child restraint systems and the support-leg foot shall lie completely within the support leg dimension assessment volume (see also figures 1 and 2 of annex 19 of this Regulation), which is defined as follows:

- (a) In width by two planes parallel to the X'-Z' plane separated by 200 mm, and centered around the origin; and

- (b) In length by two planes parallel to the Z'-Y' plane and positioned at distances of 585 mm and 695 mm forward of the origin along the X' axis; and
- (c) In height by a plane parallel to the X'-Y' plane, positioned at a distance of 185 mm above the origin and measured perpendicular to the X'-Y' plane. Rigid, non-adjustable parts of the support leg shall not extend beyond a plane parallel to the X'-Y' plane, positioned at a distance of 285 mm below the origin and perpendicular to the X'-Y' plane.

The support-leg may protrude the support-leg dimension assessment volume, providing it remains within the volume of the relevant CRF."

Paragraph 7.3.2., amend to read:

"7.3.2. The certification and measuring procedures shall correspond to those specified in the latest version of ISO 6487-2015; the measuring equipment shall correspond to the specification of a data channel with a channel filter class (CFC) 60.

..."

Paragraph 7.5., amend to read

"7.5. The measuring procedures shall correspond to those defined in the latest version of ISO 6487 with the SAE J211 sign convention. The channel frequency class shall be:

Table 10

Type of measurement	CFC( $F_H$ )	Cut-off frequency ( $F_N$ )
Trolley acceleration	60	see ISO 6487 Annex A-2015
Belt loads	60	see ISO 6487 Annex A-2015
Chest acceleration	180	see ISO 6487 Annex A-2015
Head acceleration	1 000	1 650 Hz
Upper neck force	1 000	1 650 Hz
Upper neck moment	600	1000 Hz
Chest deflection	600	1000 Hz
Abdominal pressure	180	see ISO 6487 Annex A-2015

..."

Insert a new paragraph 8.1., to read:

"8.1. The information defined in Annex 27 shall be provided in the test reports that are included in the Type Approval Application."

Paragraph 8.1., renumber as paragraph 8.2. and amend to read:

"8.2. The conformity of production (CoP) and production qualification 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) The name and address of the laboratory where tests have been performed,
- (h) And any failure or breakage,
- (i) The following dummy criteria: HPC, Resultant head acceleration Cum 3ms, Upper neck tension force, Upper neck moment, Resultant chest acceleration Cum 3ms, Chest deflection; Abdominal Pressure (in frontal and rear impact); and
- (j) Adult safety-belt bench installation forces.
- (k) The minimum and maximum approved stature range for all categories of ECRS;"

*Paragraphs 8.2. to 8.4.(former), renumber as 8.3. to 8.5.,*

*Paragraph 14.1., amend to read:*

- "14.1. Each Enhanced Child Restraint System shall be accompanied by information for its use. The information can be provided to the user, either:
- (a) In a paper form fulfilling requirements 14.2. and 14.3. or
  - (b) In a digital form fulfilling requirements 14.2., 14.3. and 14.4."

*Paragraph 14.2.to 14.2.11., amend to read:*

- "14.2. The following information shall be provided in the language of the country where the device is sold:
- 14.2.1. For i-Size category Enhanced Child Restraint Systems the following label shall be clearly visible on the exterior of the packing:

*Notice*

This is an i-Size Enhanced Child Restraint System. It is approved according to UN Regulation No.129, for use in, i-Size compatible vehicle 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.

- 14.2.2. For i-Size booster seat category Enhanced Child Restraint Systems the following label shall be clearly visible on the exterior of the packing:

*Notice*

This is an i-Size booster seat Enhanced Child Restraint System. It is approved according to UN Regulation No. 129, for use primarily in "i-Size seating positions" as indicated by vehicle manufacturers in the vehicle user's manual.

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

- 14.2.3. For Universal booster cushion category Enhanced Child Restraint Systems, the following label shall be clearly visible on the exterior of the packing:

*Notice*

This is a Universal booster cushion Enhanced Child Restraint System. It is approved according to UN Regulation No.129, for use in i-Size compatible and universal vehicle seating positions as indicated by vehicle manufacturer in the vehicle user’s manual.

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

- 14.2.4. 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 a Universal Belted Enhanced Child Restraint System. It is approved according to UN Regulation No. 129, for use primarily in "Universal seating positions" as indicated by vehicle manufacturers in the vehicle user's manual.

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

- 14.2.5. For Specific vehicle category Enhanced Child Restraint Systems, information on the applicable vehicle, in at least a physical version, shall be clearly visible at the point of sale without removing the Enhanced Child Restraint System from its packing;

- 14.2.6. The Enhanced Child Restraint manufacturer shall provide information on the exterior packaging as to the address in a physical or a digital version to which the customer can write to obtain further information on fitting the Enhanced Child Restraint in specific cars;

- 14.2.7. In the case of rearward facing Enhanced Child Restraint Systems the customer shall be advised not to use them in seating positions where there is an active frontal airbag installed. This information shall be clearly visible at the point of sale without removing the packaging;

- 14.2.8. For "Special Needs Restraints" Enhanced Child Restraint Systems the following information shall be clearly visible at the point of sale without removing the Enhanced Child Restraint System from its packing:

This "Special Needs Restraint" is designed to give extra support to children who have difficulty sitting correctly in conventional seats. Always consult your doctor to make sure that this restraint system is suitable for your child.

*Insert new paragraphs 14.2.9. and 14.2.10., to read:*

- "14.2.9. For integral forward facing Enhanced Child Restraint Systems, the following information shall be clearly visible on the exterior of the packing:

"IMPORTANT - DO NOT USE BEFORE THE CHILD’S AGE EXCEEDS 15 MONTHS (Refer to instructions)"

- 14.2.10. For integral Enhanced Child Restraint Systems that can be used forward and rearward facing, the following information shall be clearly visible on the exterior of the packing:

"IMPORTANT – DO NOT USE FORWARD FACING BEFORE THE CHILD’S AGE EXCEEDS 15 MONTHS (Refer to instructions)".

"

*Insert a new paragraph 14.2.11., to read:*

- "14.2.11. For Enhanced Child Restraint Systems which do not provide a paper form of the user instructions with the Enhanced Child Restraint System the following information shall be clearly visible on the exterior of the packing in the language of the country:

"IMPORTANT – A PHYSICAL PAPER USER GUIDE IS NOT INCLUDED WITH THIS PRODUCT.

THE USER GUIDE CAN BE FOUND BY FOLLOWING THE QR CODE<sup>Ⓢ</sup>

THE USER GUIDE CAN BE FOUND BY FOLLOWING THIS WEBLINK XXXXXX

"

*Paragraphs 14.3. to 14.3.3., amend to read:*

- "14.3. The instructions for use shall include the following points and be available in the language of the country where the device is sold:
- 14.3.1. The "Size range" for each configuration and for integral Enhanced Child Restraint System the maximum occupant mass for which the device is intended;
- 14.3.2. The method of use shall be shown by photographs and/or very clear drawings. In the case of seats that can be used both forward and rearward facing, clear warning shall be given to keep the Enhanced Child Restraint System rearward facing until the child's age is greater than a stated limit, or some other dimensional criterion is exceeded;"

*Insert new paragraphs 14.3.3. to 14.3.5., to read:*

- "14.3.3. The method of installation shall be illustrated by photographs and/or very clear drawings;
- 14.3.4. The user shall be informed that the rigid items and plastic parts of an Enhanced Child Restraint System shall be located and installed so that they are not liable to become trapped by a movable seat or in a door of the vehicle during everyday use of the vehicle;
- 14.3.5. The user shall be advised to use carry-cots perpendicular to the longitudinal axis of the vehicle;"

*Paragraph 14.3.4. to 14.3.15.(former), renumber as paragraphs 14.3.6. to 14.3.17. and amend to read:*

- "14.3.6. The operation of the buckle and adjusting devices shall be explained clearly;
- 14.3.7. 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;
- 14.3.8. 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;
- 14.3.9. It shall be recommended that the device should be replaced when it has been subject to violent stresses in an accident;
- 14.3.10. Instructions for cleaning shall be given;
- 14.3.11. A general warning shall be given to the user concerning the danger of making any alterations or additions to the device without the approval of the Type

- Approval Authority, and a danger of not following closely the installation instructions provided by the child restraint manufacturer;
- 14.3.12. When the chair is not provided with a textile cover, it shall be recommended that the chair should be kept away from sunlight, otherwise it may be too hot for the child's skin;
- 14.3.13. It shall be recommended that children are not left in their Enhanced Child Restraint System unattended;
- 14.3.14. It shall be recommended that any luggage or other objects liable to cause injuries in the event of a collision shall be properly secured.
- 14.3.15. It shall be recommended that:
- 14.3.15.1. The Enhanced Child Restraint System shall not be used without the cover;
- 14.3.15.2. The Enhanced Child Restraint System cover should not be replaced with any other than the one recommended by the manufacturer, because the cover constitutes an integral part of the restraint performance.
- 14.3.16. There shall be provisions made so that the instructions can be retained on the child restraint for its life period or in the vehicle handbook in the case of built-in restraints.
- 14.3.17. For an "i-Size Enhanced Child Restraint System", the user shall also be referred to the vehicle manufacturer's handbook."

*Insert new paragraphs 14.4. to 14.4.6., to read:*

- "14.4. Quick-start guide
- The Enhanced Child Restraint System shall be accompanied with a physical "quick-start guide" in a paper form written in the language of the country where the device is sold, that includes the following information as a minimum:
- 14.4.1. The "Size range" for each configuration, and for integral Enhanced Child Restraint Systems, the maximum occupant mass for which the device is intended;
- 14.4.2. A weblink and QR code with the product to where a digital version of the information detailed in paragraph 14.3. can be found. The website linked from the weblink and QR code shall be written in the language of the country where the ECRS is sold or, on the top page of the website, a language selection shall be available. The digital version shall be edited in a printable format and available for the life time of the product, at least 10 years counted from the time when production is definitely discontinued. A statement, added to the approval documentation, confirming that this information will be available for at least 10 years after the production has been discontinued, shall be provided by the manufacturer. The consumer shall not be required to enter any personal data into the website before being able to access the digital user guide;
- 14.4.3. Contact details for the customer to request a printed paper version of the full user instructions from the Enhanced Child Restraint System manufacturer. The CRS manufacturer shall ensure a printed paper version is available over the lifetime of the product;
- 14.4.4. For specific vehicle categories of Enhanced Child Restraint Systems, information on the applicable vehicle(s), in a weblink or QR code. This information may be provided in the same weblink or QR code as that required by 14.4.2.;
- 14.4.5. The address to which the customer can write to obtain further information on fitting the Enhanced Child Restraint System in specific cars. The digital version shall be edited in a printable format;

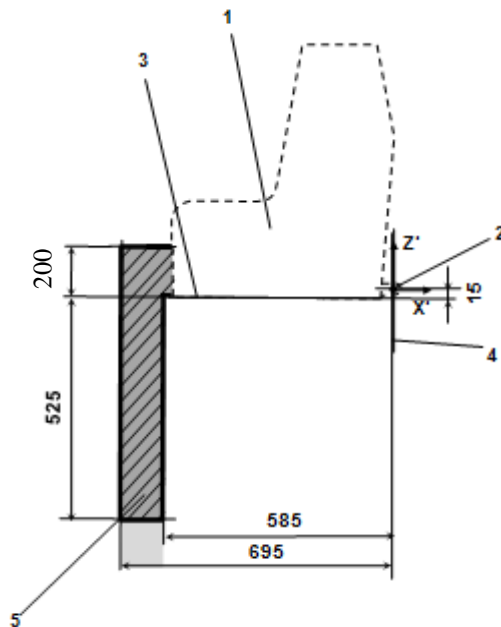


- 14.4.6. If the instructions are provided in a digital form, a quick-start guide that complies with paragraph 14.4. can be retained on the child restraint for its life period."

Annex 19, Figure 1 amend to read:

"Figure 1

**Side view of the support leg dimension assessment volume**



Key:

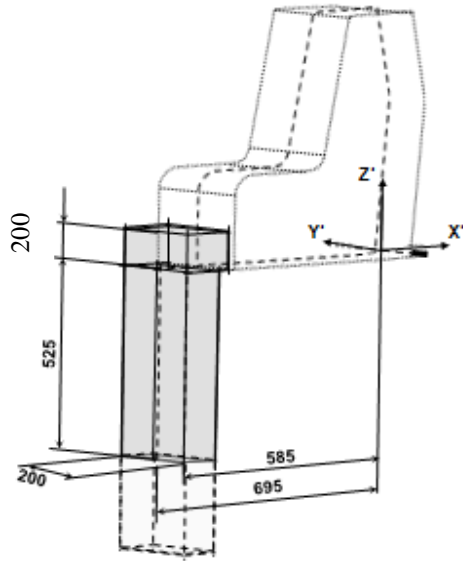
1. Enhanced Child Restraint Fixture (CRF).
2. ISOFIX low anchorages bar.
3. Plane formed by the bottom surface of the CRF, which is parallel to and 15 mm below the X'-Y' plane of the coordinate system.
4. Z'-Y' plane of the coordinate system.
5. Upper part of the support-leg dimension assessment volume, which shows the dimensional limitations in X' and Y' direction, the upper height limit in Z' direction, as well as the lower height limitation in Z' direction for rigid, not in Z' direction adjustable support leg components.

Note:

1. Drawing not to scale."

Annex 19, Figure 2 amend to read:

"Figure 2  
**3D view of the support leg dimension assessment volume**



Note:

1. Drawing not to scale."

Insert a new Annex 27, to read:

## "Annex 27

### List of Minimum Contents for The Test Reports included in the Type Approval Application

This Annex contains a list of the minimum content and information that shall be provided in the test reports that are included in the Type Approval Application. How this information is presented in the Type Approval Application shall be the choice of the Technical Service, i.e. the layout, format, order of the information may be changed.

*ECRS Description*

	ECRS Category (3.2.2.)	Stature Range	Orientation	Attachment
Category 1				
Category 2				
Category 3				
.....				
<b>6. General Requirements</b>				
6.1.2.5.	Measurement from Cr to load bearing point (Left & Right)			mm
6.1.3.4.				mm
6.1.2.6.	Belt remaining on spool			mm
6.1.3.5.				

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6. *General Requirements*

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If a gauge or fixture is used to verify the required dimensions, instead of recording precise measurements, verification photos of the physical check shall be provided

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6. *General Requirements*

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6.2.1.4. Buckle position when smallest & largest dummies are installed

6.2.1.5. Angle  $\alpha$  and  $\beta$  measured with smallest & largest dummies

	$\alpha$ 1	
	$\beta$ 1	
	$\alpha$ 2	
	$\beta$ 2	

If a gauge or fixture is used to verify the required dimensions, instead of recording precise measurements, verification photos of the physical check shall be provided

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	Signed Declaration Received?	Test Report Reference (If applicable)
6.3.1.1. Flammability		
6.3.1.2. Toxicity		

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6.3.2.1. *Internal measurement\**

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Configuration measured:

ISO volume used to confirm external dimensions:

Internal measurements:

Calculated Stature Range	Minimum	cm
	Maximum	cm
Sitting height measurement		mm
Shoulder breadth measurement		mm
Hip breadth measurement		mm
E1) Min shoulder height measurement		mm
E2) Max shoulder height measurement		mm
F1) Min Abdomen depth measurement (If Applicable)		mm
F2) Max Abdomen depth measurement (If Applicable)		mm
G1) Min Upper leg thickness measurement (If Applicable)		mm
G2) Max Upper leg thickness measurement (If Applicable)		mm

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\*Complete for each different configuration

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6.3.2.2. *External measurement\**

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Configuration measured:

e.g. Lateral Facing, Rearward Facing, Forward Facing Integral, Booster Seat, Booster Cushion

ISO volume used to confirm external dimensions:

ECRS Adjustments that fit within volume (if applicable):

Head rest position

Recline position

Side wing position

Verification photos of physical check

Or

Verification image if checked using CAD drawing

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\*Complete for each different configuration

6.6.1. *Corrosion*

Test Reference number

Description of parts tested

Description of results:

6.6.2. *Energy Absorption*

Test Reference number

Description of impact site

Measured Acceleration (g)

Site 1

Site 2

Site 3

.....

All Results <60g

Pass/Fail

6.6.3. *Overtuning\**

Test Reference number

ECRS Configuration

Integral / Non-integral

RF / FF

Booster Seat / Booster Cushion

ATD

Mass Applied (kg)

Rotation

1

2

3

4

Pass/Fail

ATD Displacement  
(mm)

\*Repeat for each configuration & ATDs

6.6.5. *Resistance to temperature*

Test Reference number

Description of parts tested

Description of results

Dynamic Test Reference using this ECRS

6.7.1. *Buckle Requirements*

6.7.1.2. Enclosed or non-enclosed buckle?

Surface area of button

If a gauge or fixture is used to verify the required dimensions, instead of recording precise measurements, verification photos of the physical check shall be provided

6.7.1.4. <i>Shoulder strap positioner</i>	<i>Criteria</i>	<i>Measure</i>	<i>Pass/Fail</i>
-------------------------------------------	-----------------	----------------	------------------

6.7.1.4.1. Force required to close shoulder strap positioner	<15 N	N	
--------------------------------------------------------------	-------	---	--

6.7.1.4.2. The force required to release the device	<15 N	N	
-----------------------------------------------------	-------	---	--

6.7.1.4.3. Height of shoulder strap positioner	<60 mm	mm	
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<i>Buckle Tests</i>	<i>Test No.</i>	<i>Criteria</i>	<i>Measure</i>	<i>Pass/Fail</i>
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6.7.1.7.1. Buckle Test under load		<80 N	N	
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6.7.1.7.2. Buckle No-load test		40-80 N	N	
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6.7.1.8. Buckle Strength Test		>4000 N	N	
		>10000 N		

<i>Clause</i>	<i>Requirement</i>	<i>Measure-ment</i>	<i>Value</i>
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6.7.4.	Straps		
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Test Reference

6.7.4.1.	Width		
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6.7.4.1.1.	The minimum width at the child-restraint straps which make contact with the dummy shall be 25 mm. These dimensions shall be measured during the strap strength test prescribed in paragraph 7.2.5.1. below, <ul style="list-style-type: none"> <li>• without stopping the machine and</li> <li>• under a load equal to 75 per cent of the breaking load of the strap</li> </ul>	min. Width, under load	mm
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6.7.4.2.	Strength after room conditioning		
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<i>Clause</i>	<i>Requirement</i>	<i>Measure-ment</i>	<i>Value</i>
6.7.4.2.1.	On two sample straps conditioned as prescribed in paragraph 7.2.5.2.1., the breaking load of the strap shall be determined as prescribed in Paragraph 7.2.5.1.2. below.	Strap1 [kN] Strap2 [kN]	
6.7.4.2.2.	The difference between the breaking loads of the two samples shall not exceed 10 per cent of the greater of the two breaking loads measured.	Difference [%]	
6.7.4.3.	Strength after special conditioning:		
6.7.4.3.	Water	Water1 [kN]	
6.7.4.3.		Water2 [kN]	
6.7.4.3.		Differ. [%]	
6.7.4.3.	Cold	Cold1 [kN]	
6.7.4.3.		Cold2 [kN]	
6.7.4.3.		Differ. [%]	
6.7.4.3.	Hot	Hot1 [kN]	
6.7.4.3.		Hot2 [kN]	
6.7.4.3.		Differ. [%]	
6.7.4.3.	Light	Light1 [kN]	
6.7.4.3.		Light2 [kN]	
6.7.4.3.		Differ. [%]	
6.7.4.3.	Abrasion	Abrasion1	
6.7.4.3.		Abrasion2	
6.7.4.3.		Differ. [%]	
6.7.4.3.1.	On two straps conditioned as prescribed in one of the provisions of paragraph 7.2.5.2. below (except para. 7.2.5.2.1.), the breaking load of the strap shall be not less than 75 per cent of the average of the loads determined in the test referred to in paragraph 7.2.5.1.	Mean [kN]: >75%	
6.7.4.3.2.	In addition, the breaking load shall be not less than 3.6 kN for the restraints of i-Size Enhanced Child Restraint Systems.		
6.7.5.	<i>ISOFIX attachment specifications</i>		
6.7.5.1.	ISOFIX attachments and latching indicators shall be capable of withstanding repeated operations and shall, before the dynamic test prescribed in paragraph 7.1.3. of this Regulation, undergo a test comprising $2,000 \pm 5$ opening and closing cycles under normal conditions of use.		
6.7.5.2.	ISOFIX attachments shall have a locking mechanism which complies with the requirements specified in (a) or (b) as follows:		

6.7.5. *ISOFIX attachment specifications*

- 6.7.5.2. (a) Release of the locking mechanism of the complete seat, shall require two consecutive actions, the first of which should be maintained while the second is carried out; or
- 6.7.5.2. (b) The ISOFIX attachment opening force shall be at least 50 N when tested as prescribed in paragraph 7.2.8.

6.7.6. *Lock-off device*

- 6.7.6.1. The lock-off device shall be permanently attached to the Enhanced Child Restraint System.
- 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.

6.3.2.3. *Mass (integral systems)*

<p>The mass of an integral ISOFIX Enhanced Child Restraint System (including inserts) combined with the mass of the largest child intended to use the Enhanced Child Restraint System shall not exceed 33 kg.</p>	<p>Mass of CRS [kg]</p> <p>Max. Mass of Occupant [kg]</p>
<p>For module systems the combined mass of the module &amp; base shall be recorded.</p>	<p>Mass of System [kg]</p>
<p>This mass limit is also applicable for "Specific vehicle ISOFIX" Enhanced Child Restraint Systems.</p>	



6.3.3. ISOFIX attachments			
6.3.3.2.	Dimensions		
6.3.3.3.	Partial latching indication		
6.3.3.3.	The ISOFIX Enhanced Child Restraint System shall incorporate means by which there is a clear indication that both of the ISOFIX attachments are completely latched with the corresponding ISOFIX lower anchorages.	latch indicator	[Y/N]
6.3.3.3.	The indication means may be audible,	check	[Y/N]
6.3.3.3.	tactile or	check	[Y/N]
6.3.3.3.	visual or	check	[Y/N]
6.3.3.3.	a combination of two or more.	check	[Y/N]
6.3.3.3.	In case of visual indication, it shall be detectable under all normal lighting conditions.	check	[Y/N]
6.3.4.	ISOFIX Enhanced Child Restraint System top tether strap specifications		
6.3.4.1.	Top tether connector		
6.3.4.1.	The top tether connector shall be ISOFIX top tether hook as shown in Figure 0(c), or similar devices that fit within the envelope given by Figure 0(c).  Figure 0(c): ISOFIX top tether connector (hook type) dimensions		[Y/N]
6.3.4.2.	ISOFIX top tether strap features		
6.3.4.2.	The ISOFIX top tether strap shall be supported by webbing (or its equivalent), having a provision for adjustment and release of tension.	check	[Y/N]
6.3.4.2.1.	ISOFIX Top tether strap length ISOFIX Enhanced Child Restraint System top tether strap length shall be at least 2,000 mm.	TT strap length [mm]	
6.3.4.2.2.	No-slack indicator The ISOFIX top tether strap or the ISOFIX Enhanced Child Restraint System shall be equipped with a device that will indicate that all slack has been removed from the strap. The device may be part of an adjustment and tension relieving device.	check	[Y/N]
6.3.4.2.3.	Dimensions Engagement dimensions for ISOFIX top tether hooks are shown in Figure 0(c).	check	

6.3.5.1. Support-leg and support-leg foot geometrical requirements	
6.3.5.1.	The support leg, including its attachment to the Enhanced child restraint systems and the support-leg foot shall lie completely within the support leg dimension assessment volume (see also figures 1 and 2 of annex 19 of this Regulation), which is defined as follows:
6.3.5.1. (a)	In width by two planes parallel to the X'-Z' plane separated by 200 mm, and centred around the origin; and
	Width in Y [mm]
6.3.5.1. (b)	In length by two planes parallel to the Z'-Y' plane and positioned at distances of 585 mm and 695 mm forward of the origin along the X' axis; and
6.3.5.1. (b)	min [mm]
	max [mm]
	-> Distances in X
6.3.5.1. (c)	In height by a plane parallel to the X'-Y' plane, positioned at a distance of 70 mm above the origin and measured perpendicular to the X'-Y' plane. Rigid, non-adjustable parts of the support leg shall not extend beyond a plane parallel to the X'-Y' plane, positioned at a distance of 285 mm below the origin and perpendicular to the X'-Y' plane.
6.3.5.1. (c)	min [mm]
	max [mm]
	-> Height in Z
6.3.5.1.	The support-leg may protrude the support-leg dimension assessment volume, providing it remains within the volume of the relevant CRF.
	check
	If a gauge or fixture is used to verify the required dimensions, instead of recording precise measurements, verification photos of the physical check shall be provided
6.3.5.2.	Where incremental adjustment is provided, the step between two locked positions shall not exceed 20 mm.
	Adjustment increments [mm]
6.3.5.2.	The support leg foot assessment volume is defined as follows:
6.3.5.2. (a)	In width by two planes parallel to the X'-Z' plane, separated by 200 mm, and centred around the origin; and
	Width in Y [mm]
6.3.5.2. (b)	In length by two planes parallel to the Z'-Y' plane and positioned at distances of 585 mm and 695 mm forward of the origin along the X' axis; and
	min [mm]
	-> Distances in X
6.3.5.2. (b)	
	max [mm]
6.3.5.2. (c)	In height by two planes parallel to the X'-Y' plane positioned at distances of 285 mm and 540 mm below the origin along the X' axis.
	min [mm]

6.3.5.1. <i>Support-leg and support-leg foot geometrical requirements</i>	
-> Height in Z	
6.3.5.2. (c)	max [mm]
6.3.5.2.	It shall be permissible for the support-leg to be adjustable beyond the height limits in the Z' direction (as indicated by key 6 in Figure 3 of Annex 19), providing that no parts extend beyond the limiting planes in the X' and Y' directions.
	check [Y/N]
6.3.5.3. <i>Support-leg foot dimensions</i>	
6.3.5.3.	The dimensions of the support-leg foot shall meet the following requirements:
6.3.5.3. (a)	Minimum support-leg contact surface shall be 2,500 mm <sup>2</sup> , measured as a projected surface 10 mm above the lower edge of the support-leg foot (see Figure 0(d));
	Contact Surface [mm <sup>2</sup> ]
6.3.5.3. (b)	Minimum outside dimensions shall be 30 mm in the X' and Y' directions, with maximum dimensions being limited by the support-leg foot assessment volume;
	min X' [mm]
	min Y' [mm]
6.3.5.3. (c)	Minimum radius of the edges of the support-leg foot shall be 3.2 mm.
	Radius [mm]
	If a gauge or fixture is used to verify the required dimensions, instead of recording precise measurements, verification photos of the physical check shall be provided
8.1 <i>Minimum Dynamic Test Information (per test)</i>	
Test Facility Name & Address	
Test Reference Number	
ECRS Configuration (e.g. integral harness, non-integral booster seat)	
ECRS Orientation (e.g. Forward Facing, Rearward Facing, Lateral Facing)	
Recline Position (if applicable) (e.g. Upright, Reclined)	
Attachment Method (e.g. seat belt, ISOFIX, ...)	
Buckle Position (if applicable)	
Support Leg Length (if applicable)	
Top Tether Position (if applicable)	
Installation Belt Forces (if applicable)	N
Test Dummy	

8.1 Minimum Dynamic Test Information (per test)

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Sled Type (Deceleration/Acceleration)		
Impact Speed		km/h
Total Velocity Change		km/h
Stopping Distance (deceleration only)		mm
Maximum Head Horizontal Excursion		mm
Time it occurs		ms
Maximum Head Vertical Excursion		mm
Time it occurs		ms
D-E plane exceedance?		
HPC		
Resultant Head acceleration Cum 3ms		g
Upper neck tension force (Fz+)*		N
Upper neck flexion moment (My+)*		Nm
Resultant Chest acceleration Cum 3ms		g
Chest deflection (in frontal and rear impact)		mm
Abdominal Pressure (in frontal and rear impact)		bar

Breakage of parts?

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\*The measurement procedures shall follow those of ISO 6487 with SAE J211 sign convention."