



**LATIN AMERICAN & CARIBBEAN
NEW CAR ASSESSMENT PROGRAMME
(Latin NCAP)**



**ASSESSMENT PROTOCOL – CHILD OCUPANT PROTECTION
2025 - 2029**

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AKNOWLEDGEMENT

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Table of Contents

1	INTRODUCTION	3
2	CHILD PROTECTION ASSESSMENT	4
2.1	Car Manufacturer’s Recommendation.....	4
3	INSTALLATION OF CHILD RESTRAINTS	7
3.1	Application of the Assessments	7
3.2	PESRI reference List and Car Manufacturer Recommended Seats.....	7
3.3	Installation Matrix	8
3.4	Assessment of Problem-Free Installation & Requirements for all CRS.....	11
3.5	Requirements for seat belt mounted CRSs	13
3.6	Requirements for ISOFIX and i-Size CRS.....	16
3.7	CRS Installed Using Additional Tethers, Straps and Support Legs	18
3.8	CRS Installation Scoring.....	20
4	DYNAMIC ASSESSMENT	22
4.1	Points Calculation.....	22
4.2	Ejection.....	23
4.3	Head Contact with the Vehicle.....	24
5	VEHICLE BASED ASSESSMENTS	29
5.1	Provision of UN or FMVSS compliant three-point Seat Belts and two i-Size seating positions..	29
5.2	Gabarit Installation on all Passenger Seats	29
5.3	i-Size Seating Positions & Accommodation of ISO/R3 positions.....	31
5.4	Passenger Airbag Warning Marking and Disabling	32
5.5	Integrated Child Restraints.....	35
5.6	Child Presence Detection	35
6	TWO SEATERS AND VEHICLES WITH LIMITED REAR SPACE	37
6.1	Vehicles with only Two Seats	37
6.2	Vehicles with Limited Rear Space	38

7	SCORING AND VISUALISATION	39
7.1	Scoring	39
7.2	Child Protection Assessment Points Table (Normal and Limited Rear Space).....	40
7.3	Child Protection Assessment Points Table (No Rear Seats)	41
7.4	Score and stars correlation	41
8	REFERENCES.....	42
	APPENDIX I.....	43
	APPENDIX II.....	44
	APPENDIX III.....	45

1 INTRODUCTION

Latin NCAP has carried out a child occupant safety assessment since its very first test to ensure that the car manufacturers take responsibility for the children travelling in their vehicles. As from this beginning Latin NCAP published a child occupant protection rating to provide clearer information for consumers about the results of these tests. As part of this assessment, Latin NCAP has used 18 month old and 3 year old sized dummies, placed in car manufacturers 'recommended' child seats (Section 2.1), in the frontal and side impact test.

Starting from 2019, the child occupant protection rating has been represented as one of the four assessment boxes and the "child occupant protection star rating" is no longer applied. As well as studying the results from the impact tests, Latin NCAP will continue to verify the clarity of instructions on child seat and vehicle as well as the seat installation in the vehicle to ensure that the child seat could be fitted safely and securely. The installation assessment will also consider the Isofix or i-Size, the Gabarit result, vehicle instruction manual and airbag disconnection for each seating positions.

As from December 2025, relevant changes will be introduced in the dynamic testing, replacing the 18 month old dummy (Q1.5) with a 10 year old dummy (Q10) seated in a booster cushion. In addition to the dummy change, car manufacturers are required to provide internal test performance full data for the 18 month old dummy in a full scale ODB and AE-MDB according to Section 4.1.1.

The Q3 dummy will be positioned behind the driver in the ODB test setup, while the Q10 will be placed behind the front passenger. In the AE-MDB test setup, the Q3 will be placed on the unstruck side, and the Q10 will be on the struck side. For the internal test the Q1.5 dummy must be positioned in the 2nd row in the opposite side of the driver for the ODB and on the crash side for the AE-MDB.

Car manufacturers must recommend one CRS for the Q1.5 dummy for the in-house test, one CRS for the Q3 and a booster for the Q10 to be used in the dynamic test and for the installation assessment.

This protocol contains several references to i-Size seating positions. Vehicles may qualify for any i-Size related rewards provided the relevant i-Size specifications detailed in UN Regulation No. 14 and UN R. No. 16, UN R. No. 145 and UN R. No. 94 are considered further in this protocol. Only fully i-Size compliant vehicles will be able to score points in the Vehicle Based Assessment

DISCLAIMER: Latin NCAP has taken all reasonable care to ensure that the information published in this protocol is accurate and reflects the technical decisions taken by the organisation. In the unlikely event that this protocol contains a typographical error or any other inaccuracy, Latin NCAP reserves the right to make corrections and determine the assessment and subsequent result of the affected requirement(s).

2 CHILD PROTECTION ASSESSMENT

This protocol defines how protection for children is assessed in Latin NCAP. Three areas of Child Protection are assessed; the requirements for each are detailed in the following sections. All contribute to the overall child protection box score, the assessments are:

- Installation of child restraints (Section 3)
- Dynamic performance (Section 4)
- Vehicle based assessments (Section 5)

A number of child seats available in the in the region will be used to assess vehicle to CRS compatibility and Q Series dummies representing 18 months old, 3 year old and 10 year old children will assess dynamic performance in frontal and side impact scenarios. The protocol is applicable to all classes of vehicles currently assessed by Latin NCAP, including vehicles where there is no rear bench or where there is limited space for carrying CRS on the rear seats.

Dummy response data will be recorded in the frontal impact and side impact. Two Q series crash dummies, representing a 3 year old and 10 years old child are placed in child seats recommended by the car manufacturer. The dynamic assessment remains focused on head, neck and chest only. Additional requirements for Q10 dummy include:

- Diagonal belt slipping off the shoulder during forward movement.
- Diagonal belt moving into the gap between the clavicle and upper arm with belt webbing folding.
- Pelvis of the dummy submarining beneath the lap section of the belt or the lap section not preventing upward movement during rebound.

During a post-crash vehicle inspection, the car will be assessed on aspects such as labelling, airbag disabling, Gabarit installation, ISOFIX or i-Size availability and marking, child presence detection (CPD), integrated CRS and more. The scores achieved in the three main categories (fitment of CRS, dynamic performance and vehicle based assessments) are combined to calculate the total Child Occupant Protection Box Score.

Cars with limited or no rear space such as two seaters do not allow a typical dynamic assessment using dummies in the rear. For these classes of vehicles, special provisions have been made to the protocol.

2.1 Car Manufacturer's Recommendation

The principle behind the Child Occupant Protection assessment is that children should be as equally well protected as adults in the event of a crash. The overall responsibility of the car manufacturer is reflected in the recommendation that the car manufacturer must make regarding the CRS to be used in the full scale tests at the start of the process.

Latin NCAP rewards car manufacturers that recommend suitable CRS for all child statures or maturity ranges: infants (up to 83 cm or 13 kg), toddlers or small children (from 76 cm or 15 months up to 18 kg or 105 cm), and children (from 100 cm up to 50 kg or 150 cm), assessed by Q1.5, Q3, and Q10 dummies, respectively.

- 2.1.1 The car manufacturer must recommend three CRS, one suitable for an 18 month old children, one for 3 years old children and one for the 10 year old children. The compatibility of the recommended CRS with the vehicle will be separately assessed as part of the installation check. In order to be used in the dynamic tests, CRS must meet the installation requirements detailed in Section 3 on the two rear outboard seating positions.
- 2.1.2 The Q10 dummy shall be seated on a booster cushion only. The car manufacturer must recommend a high back booster seat with detachable backrest and it will be used without the backrest. If a booster seat with a non-removable backrest is recommended, a suitable booster cushion will be chosen by Latin NCAP. Booster cushions will be accepted for use in the tests provided that when the Q10 dummy is seated on the booster, no part of the head is higher than 840mm vertically above the Cr-point. Booster cushions that have R129 approval will not need to meet this requirement.
- 2.1.3 Where a vehicle is not equipped with two ISOFIX anchorages on second row outboard positions, Q3 and Q10 CRS will use the adult seatbelt only installation mode for both full-scale tests. This does not apply to two-seater vehicles providing that ISOFIX anchorages are standard equipment on the passengers' seat in both left and right hand drive vehicles.
- 2.1.4 Where the vehicle is not equipped with i-Size seating positions on second row outboard positions, the car manufacturer may select i-Size CRS for the full scale test, only if the vehicle is mentioned in the CRS vehicle specific list. In this case, the seating positions mentioned must fulfil the ISOFIX marking requirements mentioned in Section 3.6.
- 2.1.5 The car manufacturer is given the choice to choose appropriate seats from PESRI and the CRS must comply with a 4 or 5 star rating. Alternatively, the car manufacturer may recommend different seats (with installation modes) as long as their performance is in the same range in PESRI. In both cases, the following preconditions must be met for the car manufacturer recommended CRS to be accepted.
- 2.1.6 The CRS must be recommended by the car manufacturer, to their customers, in all countries that cover Latin NCAP, where the vehicle is sold. The recommended CRSs must be available for purchase by the public in all countries where the vehicle is sold within 20 working days from the order. Considering that type approvals R44 cannot be granted any longer, it is preferable that the recommended CRS are R129 type approved. Recommended CRS must be rearward facing for children at least up to a stature of 83cm.
- 2.1.7 Recommended CRS must either still be in production at the time of publication or available for at least 12 months from the end of CRS production.

- 2.1.8 For CRS recommended by the car manufacturer not already tested by PESRI, it is the car manufacturer's responsibility to provide the resources to sponsor the recommended CRS in a Latin American CRS Consumer Testing Program (PESRI) test in order to demonstrate acceptable performance.
- 2.1.9 Recommendation of 'Car Manufacturer rebranded' CRS that are already on PESRI reference list can be accepted with evidence that the rebranded seat will score in the same level of the listed seats. Information will be added to the results to highlight the equivalency between original reference listed seat and 'Car Manufacturer rebranded' seats to the consumer.
- 2.1.10 Where a vehicle is equipped with an integrated seat(s) covering 18 month and/or one 3 years old children and/or 10 year old on the rear outboard test positions, the integrated seat will be used in the dynamic tests. Integrated seats can be used even if they are optional equipment. However, they must be standard equipment in order to gain points in the vehicle based assessments (Section 5).
- 2.1.11 Where a vehicle is equipped with only one integrated restraint on either outboard position covering both or only one of two child ages, the integrated seat can be used only where applicable. An alternative installable CRS must be recommended for the case where the integrated seat is not suitable for the age of the dummy of choice.
- 2.1.12 Where no appropriate recommendation is provided, or for example where the requirements of Section 3 are not met, Latin NCAP will select possible seats from PESRI, or in case this is not feasible, acquire fitting seats for use in the full scale tests. Where this is the case, the dynamic points for CRS will not be awarded. Additional preconditions exist for vehicles equipped with two seats or have limited space in the rear. Refer to Section 6 for further details.

3 INSTALLATION OF CHILD RESTRAINTS

Latin NCAP rewards vehicles that can accommodate a broad variety of child seats available in the Latin NCAP market. For this purpose, a limited number of child seats that are relevant in the Latin-American and the Caribbean are installed in the vehicle.

3.1 Application of the Assessments

Where a vehicle is available with optional equipment, the CRS installation assessment will be based on the worst performing configuration. The following optional equipment will be considered for the assessment:

- Seat rows – e.g. 3rd row.
- Additional seating positions – e.g. center position front row.
- ISOFIX & i-Size positions.
- Top-tether anchorages.
- Floor storage compartments.

3.2 PESRI reference List and Car Manufacturer Recommended Seats

The overall responsibility of the car manufacturer for safe transport of children is also reflected in the recommendation that the car manufacturer should make to the consumer regarding the CRS to be used in the vehicle. Hence, besides ensuring vehicles that can accommodate a broad variety of CRSs, Latin NCAP rewards car manufacturers that recommend suitable CRS for each child stature range.

3.2.1 The child seats tested by PESRI that reached 4 and 5 stars rating are the PESRI reference list and can be selected by the car manufacturers for the installation and the dynamic assessment. The list of CRS tested will be checked and updated periodically on PESRI webpage. Where the car manufacturer has recommended CRS for dynamic testing that are not on the Latin NCAP CRS selection for the installation assessment (Appendix III), these will also be included in the installation assessment using the installation mode used in dynamic testing (the total list of seats is referred to as the extended CRS installation list). The preconditions for acceptance of CRS are listed in Section 2.1. All CRS on the “CRS installation List” will be considered for installation in the vehicle. Latin NCAP CRS selection for the installation assessment from Appendix III (9 CRS), plus the recommended CRS for dynamic test (3 CRS) conform the “extended CRS installation list”.

3.2.2 To be eligible for assessment and scoring, any CRS on the “extended CRS installation list” must be detailed on the approved vehicle list if required. Where this is not the case, no award will be given for CRS installation of these seats.

3.3 Installation Matrix

The score for Installation of Child Seats is based on the CRS from the “extended CRS installation List” that can be successfully installed in the vehicle considering all eligible seating positions. Hence, before the assessment starts, the total number of passenger seating positions in the vehicle must be identified including 1st, 2nd and 3rd row if available. Where a vehicle is available with an optional 3rd row on any variant, the installation assessment will be based on a vehicle fitted with the optional seats (3rd row).

Provided that the CRS can be placed in the vehicle without problems (Section 3.4), the CRSs listed under the “extended CRS installation list” representing the most demanding installation scenarios, along with those recommended by the car manufacturer, will be fitted on each seating position, using the installation modes identified in APPENDIX III and the ones used by the car manufacturer on the dynamic assessment. CRS for which the car model is not identified on the CRS vehicle specific list at the time of the 1-2-1 meeting will be included in the assessment but are not eligible for scoring.

3.3.1 Belted CRS

Belt attached CRS detailed in the extended installation list will be installed in all available seating positions. Seating positions must meet the extended Gabarit check (Section 5.2) to be included in the Installation Matrix for the belt attached CRS’s. In addition, these seating positions must be marked with ‘i-U’ or ‘i-UF’ or ‘U’ or ‘UF’ in the vehicle instruction manual. A combination of Universal CRS group and seating position that do not meet these requirements will automatically fail the CRS installation assessment for Universal CRS of that group. Where a vehicle can be equipped with optional inflatable seatbelts or other advanced adult restraint systems, this equipment will not be assessed provided that the vehicle instruction manual clearly states that CRS cannot be installed when this equipment is present. The car manufacturer is asked to contact Latin NCAP in advance of the vehicle assessment to confirm this exemption.

The semi-universal CRS on the CRS installation list that are installed with the adult belt and support leg will be exempted from installation on any seating position when the CRS vehicle list identifies that the CRS cannot be used on this seating position and that it is clearly identified in the vehicle instruction manual (adjacent to the Universal CRS table) not to install a belted CRS with a support leg. When this is the case, the belted semi-universal CRS installation score on that seating position will be awarded the available points.

Exemptions by user manual will only be accepted when there is sufficient technical evidence to justify the excluded position; for example, but not limited to, the following occur:

- 2nd row centre position – transmission tunnel only for CRS with support leg only.
- 3rd row, where applicable to all positions, transmission tunnel, shallow floor, and/or interaction with seat rails.

The above exemptions will only be permitted providing that the vehicle instruction manual clearly indicates that in these seating positions, it is not permitted to install a belted CRS with a support leg. These exemptions cannot be applied to any other seating positions.

Exemptions must be based only on technical motivations and approved by the Secretariat.

Belt attached ISO/R3 size class CRS listed on the installation list will be exempted from installation on any seating position when the CRF ISO/R3 cannot be installed according to Section 3.6 and is clearly identified with an “X” in the CRS table of the vehicle instruction manual as unsuitable for this size. When this is the case, the combination of ISO/R3 size class CRS given installation score on that seating position will be awarded the available points (see Section 3.8).

3.3.2 i-Size CRS

i-Size seating positions must meet the i-Size marking requirements in UN Regulation No. R145 and Section 3.6 to be included in the Installation Matrix for the i-Size/ISOFIX CRS’s. In addition, these seating positions must be marked with ‘i-U’ in the i-Size CRS table in the vehicle instruction manual (‘i-UF’ will be accepted only for seating positions equipped with airbags).

There are no exemptions permitted for i-Size CRS.

Belted i-Size CRS will be installed in all Universal and i-Size seating positions.

i-Size CRS that do not use a support leg will be installed on any ISOFIX positions using the ISOFIX anchorages. The results of these installations will be included in the installation assessment.

ISO/R3 size class seats listed on the CRS installation list will be a “Fail” in the installation on any seating position when ISOFIX or i-Size is present and the CRF ISO/R3 cannot be installed according to section 3.6. Only in the front passenger and centre rear seats in the case that the position is clearly identified with an “X” in the ISOFIX CRS table as unsuitable for this size, the installation will be EXEMPT. When this is the case, the combination of at least two ISO/R3 size class CRS given installation score on that seating position will be awarded the available points in the Vehicle Based assessment (see Section 5.3.1).

A seating position that does not meet these requirements will automatically fail the CRS installation assessment for i-Size CRS on the CRS installation list.

3.3.3 ISOFIX CRS

ISOFIX seating positions must either meet the i-Size marking requirements in UN Regulation No. 145 and Section 3.6 or simply be labelled according to the ISOFIX marking requirements in UN Regulation No. 14 to be included in the Installation Matrix for the ISOFIX CRS’s. In addition, these seating positions must be marked with ‘IL’ or ‘IUF’ in the ISOFIX CRS table. A combination of ISOFIX

size class and seating position that does not meet these requirements will automatically fail the CRS installation assessment for ISOFIX CRS of that size class. Only in the front passenger, centre rear seats and on a 3rd seating row when these positions are clearly identified with an “X” in the ISOFIX CRS table as unsuitable for ISOFIX installation, the position will be EXEMPT. Additionally, the manufacturer must provide evidence on why the position is being exempted.

Exemptions for CRS listed in the installation list will only be accepted when there is sufficient technical evidence to justify the excluded position; for example, but not limited to, the following occur:

- 2nd row centre position- transmission tunnel only for CRS with support leg only.
- 3rd row, where applicable all positions, transmission tunnel, shallow floor, and/or interaction with seat rails.

The above exemptions will only be permitted providing that the vehicle instruction manual clearly indicates that on the above seating positions, it is not permitted to install a CRS with a support leg. These exemptions cannot be applied to any other seating positions.

Exemptions must be based only on technical motivations and approved by the Secretariat.

3.3.4 Passenger Airbag Warning and Disabling

Seating positions which have a frontal passenger airbag present must meet the requirements for Passenger Airbag Warning Marking and Disabling (Section 5.4) to be included in the Installation Matrix. A seating position that does not meet these requirements will automatically fail the CRS installation assessment for all rearward facing Universal belted, ISOFIX and i-Size seats for these seating positions.

3.3.5 Integrated Child Restraints

Where an integrated CRS is offered as standard and indicated as such in the vehicle instruction manual, this seating position will automatically pass the assessments and no installation check is required with the CRS installation List of the weight/size group covered by the integrated CRS.

In practice, for the purpose of assessing the vehicle to child seat compatibility, it may not be necessary to verify each eligible CRS-seating position combination. For example, where for a given passenger seating position an integrated CRS is available (standard fit), no installation check is required with the CRS of the age group covered by the integrated CRS.

3.3.6 Finally, it is important to note that for each passenger seating position at least one of the CRS from the installation list covering babies, toddlers and children must be accommodated, represented in the assessment by the Q1.5, Q3 and Q10 dummies respectively.

Additionally, at least one CRS from the installation List of each maturity stage (infants, toddlers and children, represented in the assessment by the Q1.5, Q3 and Q10 dummies respectively) must be accommodated by the vehicle.

Where one or both of the above conditions are not met, the final CRS Installation score, out of 12 points, (Section 3.8) will be halved.

When a recommended CRS fails in the position to be tested it will be considered as a not valid recommended CRS by the car manufacturer.

3.4 Assessment of Problem-Free Installation & Requirements for all CRS

All combinations of CRS and vehicle seat position will be subsequently checked by installing the CRSs on all seating positions. If any outboard seating positions are identical (adult belts, anchorages, etc) then installation may be performed on one side only, all other positions will be assessed. Where there is any asymmetry in a vehicle, including sliding doors, B-pillar position etc. then all seating positions must be assessed individually.

CRS that uses more than one installation mode or are equipped with anti-rotation devices must meet the requirements of all applicable sections for a successful installation. For example, a CRS using the adult belt, ISOFIX or i-Size must meet the full requirements of both Sections 3.5, and 3.6.3.6 for a successful installation. A CRS that uses the adult belt and a support leg must meet the full requirements of Section 3.5 and Section 3.7.

The vehicle seating position is compatible with the CRS fitted as long as the following conditions are met:

3.4.1 Ease of installation in car

This assessment is of the vehicles ability to allow for easy installation of a range of different CRS by evaluating its provision of sufficient space and access. This does not include fastening the CRS to the vehicle, only positioning on the rear or front seat in preparation for fastening.

3.4.1.1 Initial vehicle settings

Installations on the rear seats:

- The front row seats shall initially be set in the Latin NCAP Frontal ODB impact test position unless clearly instructed otherwise in the vehicle instruction manual.
- If the vehicle has only 3 doors, then it is acceptable to utilise any 'easy entry' function to move the front seat forward and allow access to the rear seats.
- Vehicles with adjustable rear seats shall have the seat back angle and fore/aft set to the mid in-use position and are to be used, unless clearly instructed otherwise in the vehicle instruction manual. The flat folded position of a seat is not considered as an in use position. If the mid position cannot be obtained due to notched adjustments, the next

most vertical position for the seat back or the next rearward position for fore/aft shall be used.

- Head restraints shall be in the lowest/not in use position, unless clearly instructed otherwise in the vehicle instruction manual.
- Movable arm rests shall be set to the position recommended in the vehicle instruction manual. Where there is no recommendation, they shall be positioned so as not to interfere with the CRS installation.
- Where the front seat interacts with the steering wheel, for example with easy entry functions, the steering wheel shall be set to mid/mid.

Installations on the front seat:

- The front seat(s) shall initially be set in the Latin NCAP Frontal ODB impact test position unless instructed otherwise in the vehicle instruction manual.
- The front seat adjustments shall remain the same for all further assessments. Where the vehicle instruction manual contains details of alternative front seat positions for individual CRS, this alternative position will be used.
- Head restraints shall be in the lowest position, unless clearly instructed otherwise in the vehicle instruction manual.
- Movable arm rests shall be set to the position recommended in the vehicle instruction manual, otherwise, they will be installed in 'not in use' position or fully vertical.

3.4.1.2 CRS placement

Procedure:

- Where necessary, prepare the CRS for installation by lengthening straps and top-tethers so they are accessible once the CRS is in place.
- Pass the CRS through the nearest occupant entry door. Vehicles with moveable roofs shall have the roof closed during this assessment. No other access routes shall be used, such as the rear hatch/boot.
- If the CRS cannot be easily placed in the vehicle due to the position of the front seat, adjust the front seat to allow CRS placement. Following this, the front seat should then be repositioned back to the instruction manual/initial position.
- For CRSs that allow the child to be carried in the seat the orientation of the CRS may be changed by up to 40 degrees about its axes (x, y,) is acceptable to enable the CRS to fit into the vehicle. For CRSs that are not intended as carry-cots then any orientation may be used to place the CRS in the vehicle.
- Where the CRS contains multiple parts, e.g. base and seat, then both items may be installed sequentially and assessed in the same way.
- For CRS that do not allow installation with the child in the CRS, there must be sufficient space within the vehicle to allow an adult to place and child in the CRS. This will be assessed using the appropriate sized child dummy.

The vehicle meets the requirements if all of the following are met:

- The CRS can be placed on the rear seats without excessive force, difficulty or interaction with the door aperture.
- After adjustment of the front seat, it does not prevent or interfere with correct placement of the CRS. An easy entry function may be used.
- Where applicable, the easy entry function allows the front seat to return and lock in the same seating position after placement of the CRS. If the easy entry function does not return the front seat to the position mentioned in the vehicle instruction manual, it will be adjusted to and assessed in the instruction manual position.
- If there is sufficient space within the vehicle for a child to be correctly placed in the CRS and the child is not prevented from sitting normally in the CRS.

The vehicle would not meet the requirements if any of the following occur:

- The child seat or base does not individually fit through the door aperture.
- The CRS cannot be placed in the vehicle.
- The CRS must be rotated more than the permissible amount to enable placement or where applicable.
- An easy entry system does not allow the front seat to return and lock in the position detailed in the vehicle instruction manual.
- Vehicle structures prevent a child from being placed correctly in the CRS.
- There is insufficient space within the vehicle to allow the child to occupy the CRS as normal.

3.5 Requirements for seat belt mounted CRSs

3.5.1 Use of 3-point belts

3.5.1.1 Ease of fastening seatbelt

Procedure:

- Once placed in the vehicle, the CRS shall be positioned along the centreline of the chosen seating position.
- Route the adult seatbelt around the CRS in accordance with the instructions on the CRS.
- Engage the buckle tongue into the buckle.
- If necessary, some small movement of the CRS is permitted to expose the seat belt buckle. This is limited to rotation of up to 20 deg about the x and z-axes or 50mm lateral movement from the seat centreline.
- For CRS that are not equipped with integral harnesses an appropriate sized dummy shall be placed in the CRS during this procedure.

The vehicle meets the requirements if all of the following are met:

- The tongue can be engaged in the buckle with the use of only one hand and without the need to reposition the CRS to enable access to the buckle, or the tongue can be engaged

using two hands to insert the buckle, where one supports the buckle, and the other is used to insert the tongue.

- The adult seat belt adjacent to the assessed seating position does not prevent installation of the CRS or lead to any instability.
- With the CRS installed, the three point belts on another seating position in that same row should be capable of restraining one other occupant.

The vehicle would not meet the requirements if any of the following occur:

- The belt cannot be buckled due to insufficient belt length.
- The belt length is such that the CRS is not in the correct position on the seat.
- The CRS has to be moved or rotated more than prescribed above to allow access to the buckle, e.g. the buckle is positioned underneath the CRS.
- The installation of the CRS means that an adult cannot occupy another seating position on that row, for example due to limited space or interference with the adult belt system.

3.5.1.2 Ease of tightening belt (Ease of operating the lock-off clip)

This assessment is of the vehicles ability to be able to correctly restrain the CRS using the adult belt systems.

Procedure:

- With the seat belt buckled and belt routed correctly around the CRS, tension shall be introduced into the adult seatbelt by pulling on the diagonal section of the belt in the direction of the reel.
- Tension in the lap section is established by pulling the diagonal section of the belt with no more than 150N force. The tension shall be applied to the diagonal part of the belt before it passes through any upper belt guide or lock off next to the buckle. Away from friction points.
- Seatbelt load cells will be required for this installation.
- For seats that do not have an integral harness, a child dummy of the appropriate size shall be placed in the CRS during this process.

The vehicle meets the requirements if all of the following are met:

- When 150N is applied to the diagonal section of the adult belt, the slack in all parts of the lap section is removed.
- The CRS is held firmly against the seat back and seat base by the adult belt.
- Any movement of the CRS base or back must result in increasing tension within the belt system, e.g. with forward movement of the CRS. The belt reel shall be prevented from spooling out during this check.
- Where applicable, the seat belt must restrain the dummy and the seat correctly.

The vehicle would not meet the requirements if any of the following occur:

- When slack has been removed from the belt system, the buckle tongue stops interfere with the belt lock off.

- It is not possible to remove the slack in any part of the lap section.

3.5.2 Additional tethers and/or support leg

Where the chosen CRS is equipped with an additional tether or support leg apply the relevant assessment outlined in Section 3.7 before moving on to the next section.

3.5.2.1 Obstruction & Stability of the CRS

Procedure:

- The CRS shall be installed in the vehicle with the seat belt buckled and any tethers or support legs attached as per the previous steps. The largest appropriate P or Q dummy shall also be installed in the CRS.
- Any comfort adjustments on the CRS shall be changed e.g. incline, recline etc.
- Check any contact points between the CRS, dummy and vehicle.
- The CRS shall be rocked from side to side about the x axis over a 10° to 15° arc. No other restraint shall be placed on the CRS during rocking.
- The CRS shall be pulled toward the front of the vehicle and twisted about the z axis.
- The CRS shall be returned to the initial position with the belt tightened as per Section 3.4.1.2 and a force of 100N shall be applied perpendicular to the CRS in the y direction at the shoulder level of the dummy. This assessment will not be applied to the Group 0+ or baby carriers (as referred in UN Regulation No. 129) without its base.
- The CRS shall be returned to the initial position with the belt tightened as per Section 3.4.1.2 and a force of 100N shall be applied perpendicular to the CRS in the y direction at a small distance above the vehicle seat. This assessment will not be applied to the Group 0+ or baby carriers without its base.

The vehicle meets the requirements if all of the following are met:

- The vehicle interior can accommodate installation of the CRS in all orientations and adjustments without interaction with other parts of the vehicle. E.g. booster seats with adjustable head restraints must not be restricted by the rear head restraints or C-pillars.
- The presence of head restraints does not prevent correct installation of the CRS and does not lead to significant forward rotation of the CRS or create lateral instability.
- Contact between the CRS and vehicle interior is permitted provided that the CRS is correctly installed, stable and is not rotated by more than 5 degrees.
- The measured backrest angle of the CRS does not exceed 90 degrees. This can be measured using the device described in APPENDIX I.
- The vehicle interior provides stable support for the CRS in the selected installation modes and adjustments. E.g. the CRS back or base tensioning system must be in contact with the vehicle seat base and seat back cushions.
- The CRS sits flat on the seat base cushion and, for forward facing CRS, is supported by the seat back and/or head restraint.
- With the load applied to the CRS the rotation about the X axis does not exceed 20 degrees and the CRS remains secured and has a tendency to return back to the original position.

- As any load is applied, the tension in the belt system increases with the displacement of the CRS.

The vehicle would not meet the requirements if any of the following occur:

- The CRS does not sit correctly on the seat base cushion or is not supported by the seat back including head restraint.
- The vehicle interior can accommodate installation of the CRS with only limited adjustments of the CRS i.e. tilt or adjustable backrests cannot be used due to interference from the vehicle.
- The vehicle interior encroaches into the space in which the child dummy sits resulting in any contact between the dummy head and legs. For example, where the roof is too low or the knees or tibia are against the back of the front seat. Contact with the toes or feet is acceptable.
- Any part of the vehicle interior, including bolsters, arm rests, pillars obstruct the CRS or prevents a particular adjustment from being made. E.g. C-pillar, roof or rear head restraints prevent correct installation of CRS.
- With the appropriate child dummy installed, the size of the car limits the possible age groups that can be installed and exclusions are not made clear in the vehicle instruction manual.
- There is limited support offered to the CRS through lack of contact with the supporting structures, e.g. large side bolsters prevent the CRS from sitting flat on the seat base; or where applicable, poor or inadequate support is provided to CRS support legs.
- When load is applied to the CRS it can move more than the allowed amount or the CRS can move without increasing tension on the belt system.

3.6 Requirements for ISOFIX and i-Size CRS

3.6.1 Insert and locking ISOFIX and i-Size probes

This is an assessment of the ease of which the CRS ISOFIX probes can be engaged with the vehicle ISOFIX anchorages. It does not include assessment of any other tethers, straps or supports.

Procedure:

- The position and orientation of the vehicle anchorages shall be identified and prepared for CRS attachment. Simple, preparatory actions such as sliding a seat belt away from the anchorage, lifting a dedicated flap or covering to expose the anchorage are permissible. Plastic guide funnels supplied with CRS will not be used.
- The CRS shall be placed on the seat centreline, the CRS ISOFIX probes shall be made ready for attachment to the vehicle.
- The CRS and probes shall be pushed toward the anchorages until they are engaged, keeping the CRS on the vehicle seat cushion. Lifting of the CRS from the seat base is not allowed, but some rotation/tilting of the CRS is permissible provided there is still contact with the seat cushion. Separate support frames and bases (if available) may be lifted.

- If necessary, 50mm of lateral movement of the CRS is permitted to allow engagement with the ISOFIX anchorages. Where the CRS has movable ISOFIX probes, they may be adjusted to facilitate engagement provide the CRS remains on the vehicle seat.
- Where the adult belt prevents engagement with the ISOIFX anchorages, it is permissible to reposition the belt to improve access provided that the belt does not have to be held in that position.

The vehicle meets the requirements, once preparatory steps have been performed, if all of the following are met:

- Each vehicle ISOFIX anchorage can be easily engaged. For example, the anchorages are easily accessible or they are equipped with permanent guidance (plastic funnel, fabric slit, etc) which helps the CRS ISOFIX probes align with the vehicle anchorages avoiding any obstruction from the seat, such as the fabric or cushion etc.
- For CRS where the probes are attached to the shell, the CRS can be attached to the vehicle by simply pushing it toward the anchorages, with some tilting but without any other actions that are not described on the CRS itself.
- If the CRS uses a separate support frame, the frame can be easily engaged onto the ISOFIX anchorages without removing fabric, etc.
- With the CRS installed, one of the three point belts on another seating position in that same row should be capable of restraining one other occupant.

The vehicle would not meet the requirements if any of the following occur:

- If the anchorages cannot be engaged without further actions. For example, where the seat cushions have to spread apart by hand in order to create access to the anchorages.
- The CRS has to be lifted off the seat cushion to allow engagement with the anchorages. Lifting of separate support frames is permissible.
- Any part of the seat or cushion prevents attachment of the CRS.
- Where the CRS probes are clearly misaligned with the ISOFIX anchorages.
- Where physical guidance is required, such as plastic funnels, they are not permanently attached to the vehicle.

3.6.2 Additional tethers and/or support leg

Where the chosen CRS is equipped with an additional tether or support leg apply the relevant assessment outlined in Section 3.7 before moving on to the next section.

3.6.3 Obstruction & Stability of the ISOFIX CRS or i-Size

The principle here is identical to that of Section 3.5.2.1.

Procedure:

- The CRS shall be installed in the vehicle with ISOFIX and any tethers or support legs attached. A child dummy of the appropriate size shall also be installed in the CRS.

- Any comfort adjustments on the CRS shall be changed e.g. incline, recline etc.
- Check any contact points between the CRS and vehicle.
- The CRS shall be pulled toward the front of the vehicle and twisted about the z-axis.

The vehicle meets the requirements if all of the following are met:

- The vehicle interior can accommodate installation of the CRS in all orientations and seat adjustments without interaction with other parts of the vehicle. E.g. booster seats with adjustable head restraints must not be restricted by the rear head restraints or C-pillars.
- The presence of head restraints must not lead to significant forward rotation of the CRS or create lateral instability.
- Contact between the CRS and vehicle interior is permitted provided that the CRS is correctly installed, stable and is not rotated by more than 5 degrees.
- The measured backrest angle of the CRS does not exceed 90 degrees. This can be measured using the device described in APPENDIX I.
- The vehicle interior provides stable support for the CRS and its attachments with the vehicle in all installation modes and adjustments.
- There is little or no rotation of the CRS about all axes.

The vehicle would not meet the requirements if any of the following occur:

- The vehicle interior can accommodate installation of the CRS with only limited adjustments of the CRS i.e. tilt or adjustable backrests cannot be used due to interference from the vehicle.
- The vehicle interior encroaches into the space in which the child dummy sits resulting in any contact between the dummy head and legs. For example, where the roof is too low or the knees or tibia are against the back of the front seat. Contact with the toes or feet is acceptable.
- Any part of the vehicle interior, including bolsters, arm rests, pillars, obstructs the CRS or prevents a particular adjustment from being made. E.g. C-pillar or rear head restraint prevents correct installation of CRS.
- The size of the car limits the possible age groups that can be installed and insufficient exclusions are not made clear in the vehicle instruction manual.
- There is limited support offered to the CRS through lack of contact with the supporting structures. E.g. large side bolsters preventing the CRS from sitting flat on the seat base, poor or inadequate support is provided to CRS support legs or the support legs cannot be correctly positioned.

3.7 CRS Installed Using Additional Tethers, Straps and Support Legs

3.7.1 Ease of use of tethers & straps

This is an assessment of the ease of which the additional tether anchorages such as top tethers can be engaged with the vehicle, where applicable.

Procedure:

- Once the CRS has been attached to the vehicle with the belt or ISOFIX, any additional tethers, straps and corresponding anchorages or brackets shall be readied. Simple, preparatory actions such as lifting a dedicated flap or covering to expose the attachment point are permissible.
- The removal or repositioning of a parcel shelf or tonneau cover is allowable. It must be possible to replace these parts once the CRS installation has been completed.
- Head restraints may be repositioned or removed for CRS installation if instructed in the vehicle instruction manual.

The vehicle meets the requirements if all of the following are met:

- The top tether can be engaged and tightened easily, without having to carry out any further actions other than already mentioned.
- Where equipped, any additional tethers can be easily attached to the anchorage and tightened, for example the front seat rail or any other attachment points.

The vehicle would not meet the requirements if any of the following occur:

- The strap(s) or tether(s) cannot be engaged without any further actions of vehicle adjustments, e.g. it would not be acceptable to tilt the rear seat forward to be able to engage the tether.
- The strap(s) or tether(s) pass through luggage or occupant space and prevent the use of other parts of the vehicle, including rear seats. Top tether straps that remain above the top of the vehicle seat back are acceptable.
- The strap(s) or tether(s) obstruct the function or movement of other parts of the vehicle, such as the front seats or luggage space.

3.7.2 Ease of use of support legs

This is an assessment of the vehicles ability to provide adequate support to any support legs, where applicable.

The vehicle meets the requirements if all of the following are met:

- The vehicle provides sufficient space to allow stable placement of any support legs.
- The support leg must be installed in the intended positions, for example fully locked out.
- The area upon which a support rests must also be capable of providing adequate restraint during an impact as described in ECE-TRANS-WP29-2012-53e and UN Regulation No. 14 and UN Regulation No. 145.

The vehicle would not meet the requirements if any of the following occur:

- Poor or inadequate support is provided to CRS support legs or where the support leg cannot be positioned correctly due to interference from the front seat or other vehicle structures.

- The support leg cannot be fully locked out or cannot provide the intended level of support for any reason, such as due limited space.

3.8 CRS Installation Scoring

Each eligible CRS-seating position combination from the Installation Matrix will be deemed successful when the requirements of Section 3 are met. Where an integrated seat is provided for a similar age group as the respective CRS on the CRS installation List, the case will be treated as if the CRS-seating combination meets the requirements of Section 3. Where the requirements of Section 3 are not met, the CRS-Seating position combination is considered as a fail.

To prevent manufacturers from exempting positions in the car instruction manual when there is no technical reason behind it, CRS that were installed problem-free according to 3.4 but are marked as EXCEMPTED will have its points halved for that CRS in that position of the installation matrix. OEMs can provide Latin NCAP secretariat technical evidence on why the position is excepted

The score for each individual CRS on the installation matrix will be calculated by dividing the number of successful installations in the vehicle by the total number of eligible positions in which it was fitted.

$$\text{The installation score } CRS_i = \sum \frac{T_i - F_i}{T_i}$$

T_i = Total number of eligible positions in the vehicle for the CRS_i ,

F_i = Number of failed installations, and where $i = 1, \dots, M$; the total number of CRS on the CRS installation List (with or without manufacturer's additions).

3.8.1 Where the total number of eligible seating positions for any CRS equals zero, this CRS will not be considered as a 'FAIL' but it will get zero points in installation'.

3.8.2 Separate points will be given for fitment of the CRS from each category as follows:

CRS installation listed CRS	10 points
OEM Recommended CRS	2 points

3.8.3 The CRS score is calculated by taking the average of the CRS_i scores of all CRS on the original CRS installation List (excluding those exempted for all seating positions only for the case of single seat row cars) and applying the percentage to 10 points

3.8.4 The OEM Recommended CRS score is calculated by taking the average of the CRS_i scores of the three recommend seats and applying the percentage to 2 points. The calculation is performed regardless whether the recommended CRS are taken from the original CRS installation list or not.

- 3.8.5 The resulting point scores are expressed as numbers, with 3 decimal points. The total score for CRS installation is the sum of the points for fitment of all CRS (see Table 1).
- 3.8.6 The maximum available score for the installation assessment will be **12 points** and is independent on the number of seats on the CRS installation List and recommended seats.
- 3.8.7 If there is no recommendation for CRS, the maximum available score for CRS fitment will be **10 points**.

Table 1. Example of CRS installation scoring

Extended CRS Installation list				2nd row			3rd row			Subtotal			Score	
			Right	Left	Centre	Right	Left	Centre	Right	Pass	Fail	Exempt		
Reference List	I-Size, RWF, Q1.5	Britax Baby Safe 52 w/base	_ _ _	exempt	pass	exempt	pass	N/A	N/A	N/A	2	0	2	100,0%
	I-Size, RWF, Q1.5	Jole I-Spin 360	_ _ _	exempt	pass	exempt	pass	N/A	N/A	N/A	2	0	2	100,0%
	I-Size, RWF, Q1.5	Nuna Tres LX/Jole EveryStage	B _ _ _	pass	fail	pass	pass	N/A	N/A	N/A	3	1	0	75,0%
	FMVSS213, FWF, Q3	Graco Cadeira Nautilus	B TT _	exempt	fail	exempt	pass	N/A	N/A	N/A	1	1	2	50,0%
	I-Size, RWF, Q3	Cybex Sirona Z	_ _ _	pass	pass	exempt	pass	N/A	N/A	N/A	3	0	1	100,0%
	FMVSS213, RWF, Q3	Britax One4life	B TT _	exempt	fail	exempt	pass	N/A	N/A	N/A	1	1	2	50,0%
	I-Size, FWF, Q10	Cybex Solution Z	B _ _	exempt	fail	exempt	pass	N/A	N/A	N/A	1	1	2	50,0%
	FMVSS213, FWF, Q10	Graco Cadeira Nautilus	B TT _	exempt	fail	exempt	pass	N/A	N/A	N/A	1	1	2	50,0%
	FMVSS213, FWF, Q10	Britax One4life	B TT _	exempt	fail	exempt	pass	N/A	N/A	N/A	1	1	2	50,0%
	OEM	Q1.5	OEM Selection		exempt	pass	exempt	pass	N/A	N/A	N/A	2	0	2
Q3		OEM Selection		exempt	pass	exempt	pass	N/A	N/A	N/A	2	0	2	100,0%
Q10		OEM Selection		exempt	fail	exempt	pass	N/A	N/A	N/A	1	1	2	50,0%
SUMMARY														
Reference list							6,944							
OEM assessment							1,667							
Group 0+ and I coverage							fail							
A least one of each group (0 to III) can be accommodated							PASS							
TOTAL INSTALLATION ASSESSMENT							4,306							

Note: Red/fail means safety critical issues exist, 0 points awarded.

Legend:

- Pass** CRS can be installed correctly.
- P Fail** CRS can be installed correctly but more actions are needed that do not meet the requirements of Latin NCAP and 0 points are awarded.
- Fail** Safety critical issues exist, 0 points awarded.
- Exempt** Vehicle instruction manual exempts the CRS from being installed on that seating position. The only allowable exemptions are detailed in Sections 3.3.1, 3.3.2 & 3.3.1.
- N/A** This combination of CRS and seating position cannot be installed.

4 DYNAMIC ASSESSMENT

The protection offered by the combination of vehicle and recommended CRS in the event of a crash is assessed by Q-series of child dummies in the full scale front and side impact test. Initially, each relevant body area is given a score based on the measured dummy parameters. These scores that can be adjusted after the test based on the defined modifiers.

From the information collected in the two test scenarios, individual test scores are computed for the Q3 and Q10 dummy, as well as the in-house data of ODB and AE-MDB full scale tests for the Q1.5. Where a vehicle is available with optional 2nd seat row on any variant, the dynamic assessment will be based on a vehicle fitted with the optional seats.

This section is only applicable to vehicles equipped with rear seats; vehicles without rear seats shall be assessed according to Section 6. Recommended CRS must be rearward facing for children at least up to a stature of 83cm.

4.1 Points Calculation

A sliding scale system of points scoring is used to calculate points for each measured criterion where a higher and lower performance limit exists. Where a value falls between the two limits, the score is calculated by linear interpolation. If only a lower performance limit is available for a criterion, this limit is used as a “Pass”/ “Fail” criteria.

Capping limits are applied to the Q10 child dummy, and exceeding a capping limit generally indicates an unacceptable high risk of injury. Where a dummy measurement has exceeded a capping limit, the score of that entire dummy will be **0 points** in the impact in which the limit was exceeded.

4.1.1 Q1.5 points reduction

Car manufacturers are required to provide internal test performance data for the 18-month-old dummy in full-scale ODB and AE-MDB crash tests. These tests must include two HIII 50% adults in the front seats and adhere to the same conditions as the evaluated model for ODB and AE-MDB.

For the internal test, the Q1.5 dummy must be positioned in the 2nd row on the side opposite the driver for the ODB test and on the crash side for the AE-MDB test. Cars used for the internal test must be final production vehicles and must match the most basic passive safety equipment.

All points lost by the Q1.5 dummy in the ODB and AE-MDB tests will be deducted from the Dynamic Score obtained by the Q3 and Q10 dummies. For example, if the Q1.5 dummy scores 8.75 points, 3.25 points will be deducted from the dynamic score.

If no internal data is provided for the Q1.5 dummy by the car manufacturer, a 12-point penalty will be applied to the dynamic score. The total dynamic score cannot be negative.

4.1.2 Incorrect Airbag Deployment

Any airbag(s) which does not deploy fully in the designed manner will attract a -1 point modifier applicable to each of the most relevant body part(s) for the affected occupant. Where the incorrect deployment affects multiple body parts, the modifier will be applied to each individual body part. For example, where a seat or door mounted side airbag deploys incorrectly in the frontal impact that is intended to provide protection to the head as well as the thorax, abdomen and pelvis, the penalty will be applied to two body regions, -1 to the head and -1 to the chest.

The modifier(s) will be applied to the scores of the impacts for which the airbag was intended to offer protection, regardless of the impact in which it deployed incorrectly. For example, the penalty will be applied if a seat mounted side airbag deploys incorrectly in the frontal impact.

4.1.3 Side Head Protection Device (HPD)

Vehicles equipped with head protection side airbags, curtain, seat mounted or any other, will have the inflated energy absorbing areas evaluated by means of a geometric assessment. The airbags must provide protection for a range of occupant sizes in both the front and the rear on both sides of the vehicle. Where a vehicle does not offer sufficient protection on the rear seats, according to Latin NCAP Side Airbag Head Protection Evaluation, Q10 head score will be **zero points**. Any vehicle that does not provide a head protection device covering the rear seat positions on both sides of the vehicle will attract this modifier.

4.2 Ejection

If the child dummy is ejected or partially ejected from the CRS at any time throughout the impact including rebound, that CRS is awarded **zero points** for its dynamic performance in front and side impact. If the CRS is partially or wholly unrestrained by any of the vehicle interfaces at any time throughout the impact including rebound, or CRS fracture or rupture, that CRS is awarded **zero points** for its dynamic performance in front and side impact.

If the Q10 dummy pelvis does not remain on the booster cushion and is not correctly restrained by the lap section of the seatbelt, or the CRS does not remain within the same seating position or is no longer correctly restrained by the adult belt, the CRS is awarded **zero points** for its dynamic performance. It must not be displaced onto the floor or any other part of the rear seat/occupant compartment. The Q10 assessment includes the following requirements:

- a) During the forwards movement of the dummy only, the diagonal belt slips off the shoulder. Where this occurs **zero points** will be awarded to the dummy. Slipping of the shoulder is when the belt moves below the shoulder joint down the upper arm.
- b) During the forwards movement of the dummy only, the diagonal belt moves into the gap between the clavicle and upper arm with folding of the belt webbing. Where this occurs a penalty of **-4 points** will be applied to the overall dummy score of the impact in which it occurs.
- c) At any time throughout the impact either the pelvis of the dummy submerges beneath the lap section of the belt or the lap section does not prevent the dummy from moving upwards during rebound and is no longer restraining the pelvis. Where this occurs **zero points** will be awarded to the dummy.

The vehicle interfaces for ISOFIX or i-Size restraints are the two ISOFIX anchorages, top tether anchorage or any other means of rotation limiting device such as a support leg resting on the floor. Seat belt lock-offs, tethers, straps or any other attachments which are specifically used to anchor the CRS to the vehicle will also be penalised if their failure presents a risk of total or partial ejection of the child or child restraint. Ejection is an unusual and highly undesirable situation. The idea of “partial ejection” has been included to allow Latin NCAP to deal with situations where the dummy is only partially held within the restraint, such as: by a foot under the impact shield. Where the child dummy and CRS are fully restrained throughout the impact, points are awarded as given below.

CONCEPT: *The child should be held securely in the restraint and not be ejected from the restraint.*

4.3 Head Contact with the Vehicle

If there is head contact with any part of the vehicle at any time throughout the impact including rebound or through bottoming out a side airbag, the CRS containing that dummy is awarded **zero points** for its head performance, in that test. This will reduce the maximum achievable number of points in that test to 4 points (neck and chest). Otherwise, points are awarded as given below.

4.3.1 Frontal Impact

4.3.1.1 Head Contact with the CRS (Q1.5 and Q3)

Contact with the CRS is defined by either:

- a) Direct evidence of contact
- b) Peak resultant acceleration: $Q1\frac{1}{2} \geq 80g$
 $Q3 \geq 96g$

In the absence of contact:

Q1.5 and Q3 are awarded **4 points**

In the presence of contact, the score is based on the Head Resultant Acceleration, 3msec exceedence. Hard contacts occurring during the head rebound will not be considered.

Q1.5	4 points $\leq 72g$;	0 points $\geq 88g$
Q3	4 points $\leq 87g$;	0 points $\geq 100g$

Note: Between limit values, a sliding scale will be used, for this and other parameters.

4.3.1.2 Head Score (Q10)

If there is no hard contact seen on the high speed film, the head score is based on the Resultant 3ms acceleration only.

The score is based on the Head Resultant Acceleration, 3msec exceedence and HIC₁₅ (only for the Q10). Hard contacts occurring during the head rebound will not be considered.

4 points ≤ 60g; **0 points** ≥ 80g

HIC₁₅ **4 points** ≤ 500; **0 points** ≥ 700; Capping ≥ 800

Note: Between limit values, a sliding scale will be used, for this and other parameters.

4.3.1.3 Head Excursion (Forward Facing CRS)

Where possible the maximum forward excursion of the head, relative to the CR point, is estimated. If the forward excursion cannot be estimated, it will be deemed to be ≤ 549mm; otherwise the points will be based on the following:

Q3 **4 points** ≤ 549mm; **0 points** ≥ 550mm

For the Q10 a stepped modifier is used, where the Q10 head exceeds the 450mm or 550mm forward excursion line, a 2 or 4 point modifier respectively is applied. The excursion will be measured from the H-point location of the 5th female occupant with the rear seats adjusted in accordance with the Frontal ODB test protocol.

Q10 **4 points** ≤ 449mm; 549mm ≤ **2 points** ≥ 450mm; **0 points** ≥ 550mm

If in future a more precise method of measuring head excursion becomes available, a sliding scale may be introduced. Again, in future, consideration may be given to basing the limits on internal geometry of the vehicle.

4.3.1.4 Head Exposure (Rearward Facing CRS)

CONCEPT: *The CRS shell must be in a position to provide some energy absorption between the child's head and an intruding object at all times during the forward excursion of the dummy.*

Where the following requirements are complied with, the Q1.5 and Q3 will be awarded **4 points**.

- a) No compressive loads shall be applied to the top of the head.
- b) The head must remain fully contained within CRS shell, during the forward movement of the dummy (i.e. the top of the head must not be exposed to the possibility of direct contact with parts of the vehicle)

4.3.1.5 Neck

4.3.1.5.1 Tension F_z

The neck tension assessment is based on the parameter detailed below.

Upper neck Fz

Q1.5, Q3 and Q10 **2 points** $\leq 1.70\text{kN}$; **0 points** $\geq 2.62\text{kN}$

4.3.1.5.2 Extension M_y (with head to interior contact)

The neck *extension* assessment is based on the parameter detailed below.

Upper neck M_y

Q10 **2 points** $< 49\text{Nm}$

4.3.1.6 Chest

The chest score is based on the chest resultant acceleration, as detailed below.

Chest resultant acceleration, 3msec exceedence.

Q1.5 **2 points** $\leq 41\text{g}$; **0 points** $\geq 55\text{g}$

Q3 **2 points** $\leq 50\text{g}$; **0 points** $\geq 66\text{g}$

Q10 **2 points** $\leq 41\text{g}$; **0 points** and capping $\geq 55\text{g}$

Chest acceleration peaks caused by the firing of seatbelt pretensioners early in the loading event will be ignored.

4.3.1.7 Overall Dynamic Score for Frontal impact

The Overall Dynamic Score for the Frontal Impact is calculated as:

Worst score from:

- + Score from Head Contact with the CRS (Q1.5 and Q3) (Section 4.3.1.1)
- + Head Score (Q10) (Section 4.3.1.2)
- + Head Excursion (FWF CRS) (Section 4.3.1.3)
- + Head Exposure (RWF CRS) (Section 4.3.1.4)

4 points

+ Score from Neck (Section 4.3.1.54.3.1.5)

2 points

+ Score from Chest (Section 4.3.1.6)

2 points

4.3.2 Side Impact

4.3.2.1 Head Containment

If the head is not contained within the shell of the Q1.5 and Q3 CRS at any time throughout the impact including rebound, the CRS containing that dummy is awarded **zero points**. Otherwise, points are awarded as given in section 4.3.2.2 below.

“Contained” requires that some energy absorbing section of the side wing remains between the head and a virtual intruding vertical plane, representing the side structure of the vehicle. There must also be no fracturing of the CRS which might compromise the performance of the side wing of the CRS.

CONCEPT: *The CRS shell must be in a position to provide some energy absorption between the child’s head and an intruding vertical plane striking the seat from the struck side.*

4.3.2.2 Head Contact with the CRS (Q1.5 and Q3)

Contact with the CRS is defined by either:

- a) Direct evidence of contact
- b) Peak resultant acceleration:

$$Q1.5 \text{ and } Q3 \geq 80g$$

In the absence of contact:

Q1.5 and Q3 are awarded **4 points**

In the presence of contact, the score is based on the Head Resultant Acceleration, 3msec exceedence.

$$Q1\frac{1}{2} \text{ and } Q3 \text{ **4 points** } \leq 72g; \text{ **0 points** } \geq 88g$$

4.3.2.3 Head Score (Q10)

The score is based on the Head Resultant Acceleration, 3msec exceedence and HIC₁₅. If there is no hard contact seen on the high speed film, the score is based on the Resultant 3ms acceleration only. Hard contacts occurring during the head rebound will not be considered.

$$\text{2 points} \leq 60g; \quad \text{0 points} \geq 80g$$

$$HIC_{15} \text{ **2 points** } \leq 500; \quad \text{0 points} \geq 700; \text{ Capping } \geq 800$$

CONCEPT: *Incorrect airbag deployment*

All airbags that deploy during an impact should do so fully and in the designed manner to provide the maximum amount of protection to occupants. It is expected that, where required, all airbags should be deployed in a robust manner regardless of the impact scenario.

4.3.2.4 Upper Neck Resultant Force (Q10)

The neck force assessment is based on the parameter detailed below.

Upper neck F_R

Q10 1 points $\leq 2.2\text{kN}$

4.3.2.5 Chest (Q10)

The chest score is based on the chest resultant acceleration 3ms, as detailed below.

Chest resultant acceleration, 3msec exceedence.

Q10 1 points $\leq 67\text{g}$

Chest acceleration peaks caused by the firing of seatbelt pretensioners early in the loading event will be ignored.

The Overall Dynamic Score for the Side Impact is calculated as:

Worst score from:

- | | | |
|-----------------------------------------------------------|---|-------------------------------------|
| + Score from Head Containment (Section 4.3.2.1) | } | 4 points for the Q1.5 and Q3 |
| + Score from Head Contact with the CRS (Section 4.3.2.2) | | |
| + Score from Head Contact with the CRS (Section 4.3.2.3) | | 2 points for the Q10 |
| + Score from Upper Neck Resultant F_R (Section 4.3.1.5) | | 1 points for the Q10 |
| + Score from Chest (Section 4.3.1.6) | | 1 points for the Q10 |

5 VEHICLE BASED ASSESSMENTS

All vehicle based assessments will be only performed on vehicles that meet the relevant fitment requirements at the time of assessment. Hence, before the assessment starts, the total number of passenger seating positions in the vehicle must be identified including 1st, 2nd, and 3rd rows if available. Where a vehicle is available with optional seat rows and/or floor storage compartments, the assessments will be based on the most demanding or challenging configuration.

5.1 Provision of UN or FMVSS compliant three-point Seat Belts and two i-Size seating positions.

For the years 2026 and 2027, If any passenger seat is not equipped with three-point lap and diagonal seatbelts and/or they do not meet UN or FMVSS regulations and/or the vehicle does not meet ISOFIX requirements in at least two (only one will be required for Section 6.1, Vehicle with only Two Seats) seating positions, **0 points** shall be awarded for the vehicle based assessments.

For 2028 onwards, If any passenger seat is not equipped with three-point lap and diagonal seatbelts and/or they do not meet UN or FMVSS regulations and/or the vehicle does not meet i-Size requirements in at least two (only one will be required for Section 6.1, Vehicle with only Two Seats) seating positions, **0 points** shall be awarded for the vehicle based assessments.

Vehicle instruction manual must indicate the ability to accommodate CRS of all types, e.g. belted, i-Size, ISOFIX, ISO/R3 etc. Where any of the applicable vehicle instruction manual information for CRS installation is not present or not in compliance with UN Regulation No. 16, CRS installation **0 points** shall be awarded in this area.

Information in the manufacturer form must not conflict with information detailed in the vehicle instruction manual.

CONCEPT: *All forward or rearward facing seats should be equipped with a three-point belt that meets a technical standard.*

The vehicle should be capable of accommodating at least two i-Size child restraint systems (CRS). The car manufacturer must complete an information form that aligns with the vehicle's instruction manual and according to UN Regulation No. 16.

5.2 Gabarit Installation on all Passenger Seats

Where all second row passenger seats are in compliance with the requirements in section 5.2.2 which are based on UN Regulation No. 16.05 [2], **1 point** shall be awarded to the Child Protection score.

CONCEPT: *The layout of the adult seat belt should ensure compatibility between the adult seat belt and any CRS.*

CONCEPT: *All possible seating positions should be capable of providing a good interface with a*

CRS, secured by an adult seat belt.

5.2.1 To assess compliance, the Gabarit, as specified in APPENDIX II, shall be installed on all passenger seats according to the following procedure:

- Adjust the seat to its fully rearward and lowest position, the seat back to an angle of 25 degrees from the vertical or nearest fixed position and the upper seat belt anchorage to its lowest position. Adjustable rear seats shall be set fully rearward.
- If alternative seat, seat-back or safety-belt anchorage adjustments are to be used for either front or rear seats when installing CRS, information about the alternative position must be included in the vehicle instruction manual giving the information required in 5.2.2f). Where this information is provided, set the seat to this position.
- Place a cotton cloth on the seat-back and cushion.
- Place the Gabarit on the vehicle seat.
- Arrange the safety-belt strap around the fixture in approximately the correct position as shown in Figures 1 and 2, and then latch the buckle.
- Ensure that the fixture is located with its centreline on the apparent centreline of the seating position ± 25 mm with its centreline parallel with the centreline of the vehicle.
- Ensure that all webbing slack is removed. Use sufficient force to remove the slack, do not attempt to tension the webbing.
- Push rearwards on the centre of the front of the fixture with a force of $100 \text{ N} \pm 10 \text{ N}$, applied parallel to the lower surface, and remove the force.
- Push vertically downwards on the centre of the upper surface of the fixture with a force of $100 \text{ N} \pm 10 \text{ N}$, and remove the force.

INSTALLATION OF FIXTURE ONTO VEHICLE SEAT

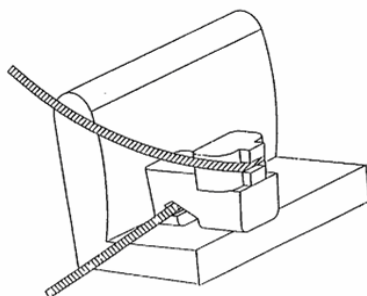
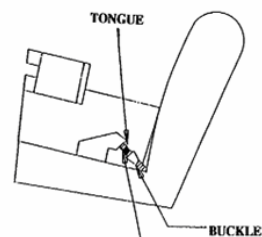


Figure 1

CHECK FOR COMPATIBILITY



Note: THE SEAT BELT WEBBING
MUST CONTACT THE CURVED EDGE
ON BOTH SIDES OF THE FIXTURE

LAP BELT ONLY SHOWN

Figure 2

5.2.2 Requirements:

- a) With correct routing of the adult seat belt around the Gabarit, the base of the Gabarit shall contact both the forward and rearward parts of the seat cushion upper surface.

If such contact does not occur due to the belt access gap in the Gabarit, this gap may be covered in line with the bottom surface of the Gabarit.

- b) The lap portion of the belt shall touch the fixture on both sides at the rear of the lap belt path.
- c) There shall be sufficient seat belt webbing to fit around the entire Gabarit while allowing the contact between the Gabarit and both the forward and rearward parts of the seat cushion upper surfaces.
- d) Once the belt is correctly routed around the fixture, it should be possible to draw a further 150mm of belt webbing from the reel.
- e) With the Gabarit in position and the buckle fastened, it must be possible to establish a tension of at least 50 N in the lap section of the belt by external application of tension in the diagonal section of the belt in the direction of the upper seat belt guide. This may result in movement of the lower anchorages and/or buckles from their anticipated 'design position'. For example, the tension may cause the lap section of the belt to slide between the rear of the seat base and bottom of the seat back, hence shortening the length of the lap section. However, if this is considered to be achievable through 'normal use' then the assessment will be made with the anchorage/buckle in this position.

To achieve an **additional 1 point** for all seating passenger positions, the following requirements must be met in addition to those detailed above:

- f) The vehicle instruction manual must indicate which passenger seats are suitable for use with a Group 0 and Group 1 CRS, or babies and toddlers in case of fulfilling i-Size requirements.
- g) Where a passenger frontal airbag is fitted, the vehicle instruction manual must clearly indicate that when the passenger airbag is active the seat is NOT suitable for RWF CRS as well as indicating that it is suitable for CRS when the airbag has been disabled.
- h) Where a passenger frontal airbag is fitted, it must be possible to activate and deactivate the passenger airbag, either automatically or manually. The requirements of Section 5.4 need not be met to qualify for this award, but airbag disabling equipment must be standard.
- i) For vehicles with a 3rd row, Gabarit requirement shall be met also in these positions. Exemptions must be communicated to Latin NCAP Secretariat, and if accepted, ISO/B2 fixture must pass the installation requirements and be correctly indicated in the vehicle instruction manual allowing forward facing CRS installation.

5.3 i-Size Seating Positions & Accommodation of ISO/R3 positions

5.3.1 Where the vehicle is provided with two fully independent i-Size seating positions that can correctly accommodate the ISO/R3 fixture (Class C), **1 point** shall be awarded.

5.3.2 Where the vehicle is provided with three or more i-Size seating positions with Top-Tethers,

all correctly marked, **2 points** shall be awarded.

CONCEPT: *Vehicles that provide three or more seating positions suitable for a i-Size CRS should be rewarded. Vehicles that can accommodate two ISO/R3 fixture should be rewarded.*

- 5.3.2.1 If the assessment includes the front passenger seat and if a passenger frontal airbag is fitted, it must be possible to activate and deactivate the passenger airbag, either automatically or manually for RWF CRS. The requirements of Section 5.4 do not need to be met to qualify for this award, but airbag disabling equipment must be standard. Car Manufacturer recommended combinations of CRS and seating positions will be considered where provided.
- 5.3.2.2 There must be sufficient space within the vehicle to accommodate simultaneously the CRS and relevant sized child dummies. For example, if the vehicle instruction manual recommends that the front passenger seat is moved fully rearward, it must not prevent the relevant CRS and child from being installed on the seating position behind.
- 5.3.2.3 The vehicle instruction manual must inform the user that the vehicle is capable of accommodating the ISO/R3 fixture.
- 5.3.2.4 For scoring the additional points on three or more i-Size position availability, exemptions to marking requirements of the third i-Size position can be considered for front passenger and 3rd row seating positions only and the car manufacturer must provide evidence that these positions fulfil i-Size requirements. Exemptions must be communicated and approved by the Secretariat.

5.4 Passenger Airbag Warning Marking and Disabling

If the vehicle is fitted with a serial or optional front seat passenger's frontal protection airbag, is marked with a permanent airbag warning label that meets either the requirements of the Child protection protocol or UN Regulation No. 94 latest version, or the requirements of Section 5.4.1 are met, a maximum of **3 points** will be awarded. Alternatively, **2 points** will be awarded where a label meets the above requirements and those of Section 5.4.2 are met.

When the permanent airbag warning label meets the requirements of the UN Regulation No. 94, **1 point** shall be awarded.

If no passenger airbag is available on the entire model range, **2 points** will be awarded to the Child Protection score.

CONCEPT: *A warning regarding the hazard posed by a frontal protection air bag to the occupant of a rearward-facing child restraint should be permanently and explicitly marked on the vehicle and be designed to last the lifetime of the vehicle.*

The vehicle should make provision for the safe carrying of a child in a rearward facing CRS in the front passenger seat, without additional actions by the installer.

Where a manual switch is used to disable the airbag, precautions should be taken to ensure that the switch cannot be operated by a child, without the knowledge of the driver.

*Where Latin NCAP refers to the airbag deactivation components as ‘**the system**’, this refers to the switch, airbag status indicator, airbag and any other components associated with the deactivation of the airbag.*

5.4.1 If the vehicle is equipped with a system which automatically switches the airbag off for ANY rearward facing CRS and obviates any risk associated with airbag deployment, **2 extra points** will be awarded:

- a) The permanent airbag warning label must be present and meeting the requirements of the UN Regulation No. 94.
- b) The General and Airbag status indicator requirements detailed in Section 5.4.2 are met.
- c) If, with the ignition on and with engine running or not, the airbag status can be changed, the entire system must react correctly to the change immediately. Systems will be checked once the vehicle diagnostics/system checks have been completed.
- d) The system must automatically re-activate the airbag when an adult occupant occupies the seat.
- e) The method for assessing automatic systems is detailed in Euro NCAP’s TB023.

5.4.2 The airbag can be de-activated manually and the following requirements are met, **1 extra points** will be awarded:

General requirements:

- a) Any text, labelling and instructions in relation to airbag disabling must be permanently attached to the vehicle.
- b) The information provided must be clear, without reference to the vehicle instruction manual or other source.
- c) There must be no possibility of the users being given false information.

Airbag status indicator requirements:

- d) Easily visibly information and warnings must be provided for the driver and front seat passenger, showing the status of the airbag.
- e) The status indicator must be labelled with the words ‘Passenger AIRBAG OFF/ON’. Abbreviations such as ‘Pass’, ‘AB’ or any other combination is NOT acceptable. Translation of the words ‘Passenger AIRBAG OFF/ON’ to the official language use where the vehicle is sold could be accepted. Errors in translation will be penalized, therefore not accepted.
- f) The AIRBAG ON pictogram must be based upon that of the sun visor label (ECE R94) as shown below:



- g) The AIRBAG OFF pictogram must be based upon that detailed in ECE R121 as shown below:



- h) Slight alterations to the ON/OFF pictograms above are acceptable provided that the basic geometry of the pictogram remains the same. Mirroring and monochrome colours are acceptable.
- i) If the information to indicate that the airbag is enabled is provided by an illuminated signal, the signal is only required to be illuminated for a period of 60 seconds after the ignition is switched on.
- j) Information to indicate that the airbag is disabled must be permanently displayed, when the ignition is on. If at any time the airbag is switched from the OFF position to the ON position, the status indicator showing that the airbag is ON must signal this immediately after checking period for at least 60 seconds, regardless of the length of time the ignition has been switched on, or until the ignition is switched off again.

Manual airbag deactivation requirements:

- k) Where a switch is used, it must be labelled with the words 'Passenger AIRBAG OFF/ON' and the same pictograms detailed above indicating ON and OFF.
- l) The individual switch positions must be marked with the same pictograms that are used to indicate the airbag status. The two positions must be marked with the text ON & OFF along with the corresponding pictogram.
- m) Where the two switch positions are marked not on the switch but on an adjacent label, the label must be sufficiently close to the switch, such that the user clearly associates one with the other.
- n) Where a hardware switch is used, it must be accessible and clearly visible when installing CRS. For example, where a switch is located in the glove box, the presence of the switch must be clearly highlighted either by switch itself or an additional, permanent, label when the lid is open. For example, the switch may not be located on the driver's side of the vehicle
- o) It must not be possible for a rearward facing child; restrained on the front passenger seat; to operate the switch at any time.
- p) Where a software based switch is used, clear instructions detailing 'Passenger AIRBAG OFF/ON' (no abbreviations) must be presented in the menu at the same time as the corresponding pictograms used for the status indicator.
- q) If, with the ignition on and with engine running or not, the airbag status can be changed,

the system must react correctly to the change immediately. Systems will be checked once the vehicle diagnostics/system checks have been completed.

Summary:

No airbags in all model range: total 2 points

Label OK, but no airbag disconnection: total 1 point (Label is pre-condition)

Manual disconnection possible and label OK: total 2 points (Label is pre-condition)

Automatic disconnection possible and label OK: total 3 points (Label is pre-condition)

5.5 Integrated Child Restraints

- 5.5.1 Where the vehicle is provided with an integrated CRS as standard equipment, **1 point** shall be awarded to the Child Protection score.
- 5.5.2 Where the vehicle is provided with one or more integrated CRS covering two or all mass/growing ranges (*babies, toddlers and children*) as standard equipment, **1 additional point** shall be awarded to the Child Protection score.

For vehicles without rear seats refer to Section 6.

CONCEPT: *Vehicles that provide, as standard, one or more integrated restraints should be rewarded.*

CONCEPT: *Vehicles that offer at least one integrated restraint suitable for two or all mass/growing ranges, should be rewarded.*

5.6 Child Presence Detection

Where the vehicle is equipped with a Child Presence Detection (CPD) system that meets the requirements detailed in the Euro NCAP CPD Test and Assessment Protocol v1.2, scaled up to **3 points** shall be awarded.

CPD points will only be eligible for score when there is no red body region for the child passengers in any of the tests.

Note: *During this protocol, Latin NCAP will use for the assessment the Euro NCAP CPD Test and Assessment Protocol v1.2.*

The available score depends on the type of detection system used, the covered areas of the vehicle and which identified scenarios are covered by the system.

Sensing	Warning and interventions	2026-2027	
		All passenger seats	Rear seats only
Indirect Sensing	Alert (according to US commitment)	N/A	0.5
Indirect Sensing	Initial warning	2	1
Direct Sensing	Initial warning	2.25	1.125
Direct Sensing only	Initial and escalation warning	2.5	1.25
	Initial escalation and intervention	3	1.5

Sensing	Warning and interventions	2028-2029	
		All passenger seats	Rear seats only
Indirect Sensing	Alert (according to US commitment)	N/A	0.25
Indirect Sensing	Initial warning	1	0.5
Direct Sensing	Initial warning	2.25	1.125
Direct Sensing only	Initial and escalation warning	2.5	1.25
	Initial escalation and intervention	3	1.5

Latin NCAP's will only reward direct detection systems in the future. However, in the immediate term, it is important that vehicles are equipped with any type of CPD.

6 TWO SEATERS AND VEHICLES WITH LIMITED REAR SPACE

This Section details how protection for children is assessed by Latin NCAP in vehicles equipped with two seats and in vehicles where space is limited in the rear.

6.1 Vehicles with only Two Seats

6.1.1 CRS installation assessment

6.1.1.1 The “CRS installation list” (APPENDIX III) and any vehicle manufacturer recommended seats will be installed on the passenger seat as detailed in Section 3. Where the passenger seat is able to meet the requirements of Sections 3.4, 3.5, 3.6, 3.6 and 3.7 for CRS the vehicle will be awarded **12 points**. The score will be calculated as described in Section 3.8.

6.1.1.2 All *mass/growing ranges (babies, toddlers and children)* must be represented by the CRS installation List Listed and car manufacturer recommended CRS. Where this requirement is not met or the seating position is exempted, the CRS installation assessment will be **0 points**. Exemptions by user manual will only be accepted when there is sufficient technical evidence to justify the excluded position. For example, positions where 3-point belts can be installed, 2 points belts will be rated as “Fail” independently from the vehicle instruction manual indications.

6.1.1.3 Where the car manufacturer exempts the front passenger seat, **0 points** will be awarded for the CRS installation assessment.

6.1.2 Dynamic assessment

6.1.2.1 For two seater sports cars there will be no dynamic assessment, therefore the maximum number of points is 12+11.

6.1.2.2 To ensure that these vehicles are not penalised for having no dynamic assessment, the relative score weighting of the available assessments remains the same between the applicable assessments. The score out of 23 points for two seaters is scaled to be equivalent to any other vehicle that is assessed out of the full 49 points.

6.1.3 Vehicle based assessments

6.1.3.1 Provision of UN or FMVSS compliant three-point Seat Belts and frontal i-Size seating position.

Where the passenger seat is in compliance with the requirements in Section 5.1, the vehicle based assessment will be **0 points**. i-Size requirements will be exempted in these kinds of vehicles until December, 2027.

6.1.3.2 Gabarit Installation on all Passenger Seats

Where the passenger seat is in compliance with the requirements in Section 5.2.2, **1 point** shall be awarded to the Child Protection score.

6.1.3.3 i-Size Seating Positions & Accommodation of ISO/R3 positions

Where the vehicle can correctly accommodate in this position the ISO/R3 fixture (Class C), **1 extra point** shall be awarded.

Where the passenger seat is provided with an i-Size seating position including a Top-Tether both correctly marked, **1 points** shall be awarded to the Child Protection score.

6.1.3.4 Passenger Airbag Warning Marking and Disabling

Where the vehicle is in compliance with the requirements in Section 5.4, a maximum of **3 points** shall be awarded to the Child Protection score. Vehicles with passenger airbag that are not equipped with a passenger airbag deactivation switch will not be eligible to score in the vehicle based assessments. Where this is the case, the vehicle based assessment will be **0 points**.

6.1.3.5 *Integrated Child Restraints*

Where the vehicle is in compliance with the requirements in Section 5.5.1, **1 point** shall be awarded to the Child Protection score.

Where the vehicle is in compliance with the requirements in Section 5.5.2, **1 additional point** shall be awarded to the Child Protection score.

6.1.3.6 *Integrated Child Restraints*

Where the vehicle is in compliance with the requirements in Section 5.6, a maximum of **3 points** shall be awarded to the Child Protection score.

6.2 Vehicles with Limited Rear Space

Vehicles will be considered as having limited rear space when the CRSs recommended by the car manufacturer or the dummy cannot be installed with the front seats in the Latin NCAP Frontal ODB test position. Where this is the case, the car manufacturer should provide evidence showing that the CRS and/or child cannot be installed without interference from the vehicle.

Latin NCAP defines a vehicle with limited rear space as one that cannot accommodate a CRS and presents no risk of consumer mistakenly believing that it can do so. Car manufacturers are encouraged to consult with the Secretariat in advance to verify if the model meets the criteria for limited rear space car.

It is important to note that interference between the car and the CRS alone does not mean a vehicle considered as limited rear space, such vehicles will be assessed as a normal passenger car in all three areas of assessment.

For vehicles with rear seating positions approved for people transport, Latin NCAP considers consumers usage, necessitating child seating options. All CRS seating positions, rearward and forwards facing, of various sizes and designs must be considered.

6.2.1 CRS installation assessment

6.2.1.1 The CRS installation list Listed seats and any car manufacturer recommended seats will be installed on the passenger and rear seats as detailed in Section 3, using the front seat settings as specified in the vehicle instruction manual. Where the passenger seat is able to meet the requirements of Sections 3 for CRS the vehicle will be awarded **12 points**. The score will be calculated as described in Section 3.8.

6.2.2 Dynamic assessment

6.2.2.1 Where a car manufacturer wishes to avoid being awarded zero points for the CRS dynamic assessments, data from additional full scale frontal and side impact tests may be provided by the car manufacturer. These tests shall be performed using the appropriate CRS with the front seats positioned as required to allow for installation of the CRS. This front seat position should be mentioned in the vehicle instruction manual. The tests must be equivalent to the Latin NCAP front and side impact tests and contain an equivalent level of instrumentation. Adult dummies are not required. It is the responsibility of the vehicle car manufacturer to ensure that adequate film coverage of the impact, and specifically child head excursion and head containment, is provided.

A “hybrid rating” would be produced using the adult data from the normal full scale test (performed without CRS) and the child data from the additional tests. In the final vehicle rating, Latin NCAP will indicate that it was not possible to install the CRS with and adult in the normal Latin NCAP front seat test position. A maximum of **24 points** can be achieved.

6.2.3 Vehicle based assessment

All vehicle based assessments will apply as detailed in Section 5 and be assessed out of a maximum **11 points**.

7 SCORING AND VISUALISATION

7.1 Scoring

Currently, the maximum number of points available for child protection in vehicles with rear seats is 49. For vehicles without rear seats, the maximum score is 23 points. The maximum points available in each assessment area are as follows:

	With rear seats	without rear seats
• Dynamic Assessment	24	0
• Installation of Child Restraints	12	12
• Vehicle Based Assessments	13	11

The child protection score will be the sum of all three areas.

The tables below summarise the maximum possible score in each (sub)category for vehicles with limited rear space and for vehicles with no rear seats (such as two seaters).

7.2 Child Protection Assessment Points Table (Normal and Limited Rear Space)

Section	Category	Total points (49)
3	Installation of Child Restraints	(12)
3.8	CRS installation List listed CRS	10
3.8	OEM Recommended CRS	2
4	Dynamic Assessment	(24)
4.1.1	Q1.5 score reduction	- 8
4.2	Ejection	<i>switch</i>
4.3	Head Contact with the Vehicle	<i>switch</i>
4.3.1	Frontal Impact	(16)
4.3.1.1	Head Contact with the CRS (Q1.5 and Q3)	8
4.3.1.2	Head Score (Q10)	
4.3.1.3	Head Excursion (Forward Facing CRS)	
4.3.1.4	Head Exposure (Rearward Facing CRS)	
4.3.1.5.1	Neck Tension	2
4.3.1.5.2	Neck Extension My (Q10 only)	
4.3.1.6	Chest	2
4.3.2	Side Impact	(8)
4.3.2.1	Head Containment	Switch
4.3.2.2	Head Contact with the CRS (Q1.5 and Q3)	4
4.3.2.3	Head Score (Q10)	2
4.3.2.4	Upper Neck Resultant Force (Q10 Only)	1
4.3.2.5	Chest (Q10 Only)	1
5	Vehicle Based Assessments	(13)
5.1	Provision of Three-point Seat Belts and 2 i-Size	<i>switch</i>
5.2	Gabarit Installation on all Passenger Seats	2
5.3	i-Size seating positions & accommodating ISO/R3	3
5.4	Passenger Airbag Warning Marking and Disabling	0 to 3
5.5	Integrated CRS	2
5.6	Child Presence Detection	3

7.3 Child Protection Assessment Points Table (No Rear Seats)

Section	Category	Total points (23)
6.1.1	Installation of Child Restraints	(12)
	CRS installation CRS List listed CRS	10
	Recommended seats	2
6.1.3	Vehicle Based Assessments	(11)
6.1.3.1	Provision of Three-point Seat Belts and i-Size	<i>switch</i>
6.1.3.2	Gabarit Installation on front Passenger Seat	1
6.1.3.3	i-Size Seating Position & Accommodating of ISO/R3	2
6.1.3.4	Passenger Airbag Warning Marking and Disabling	0 to 3
6.1.3.5	Integrated CRS	2
6.1.3.6	Child Presence Detection	3

7.4 Score and stars correlation

The maximum number of points available for child protection is 49 points, the rating is based on the total points scored in the assessment as detailed in the Overall Rating document.

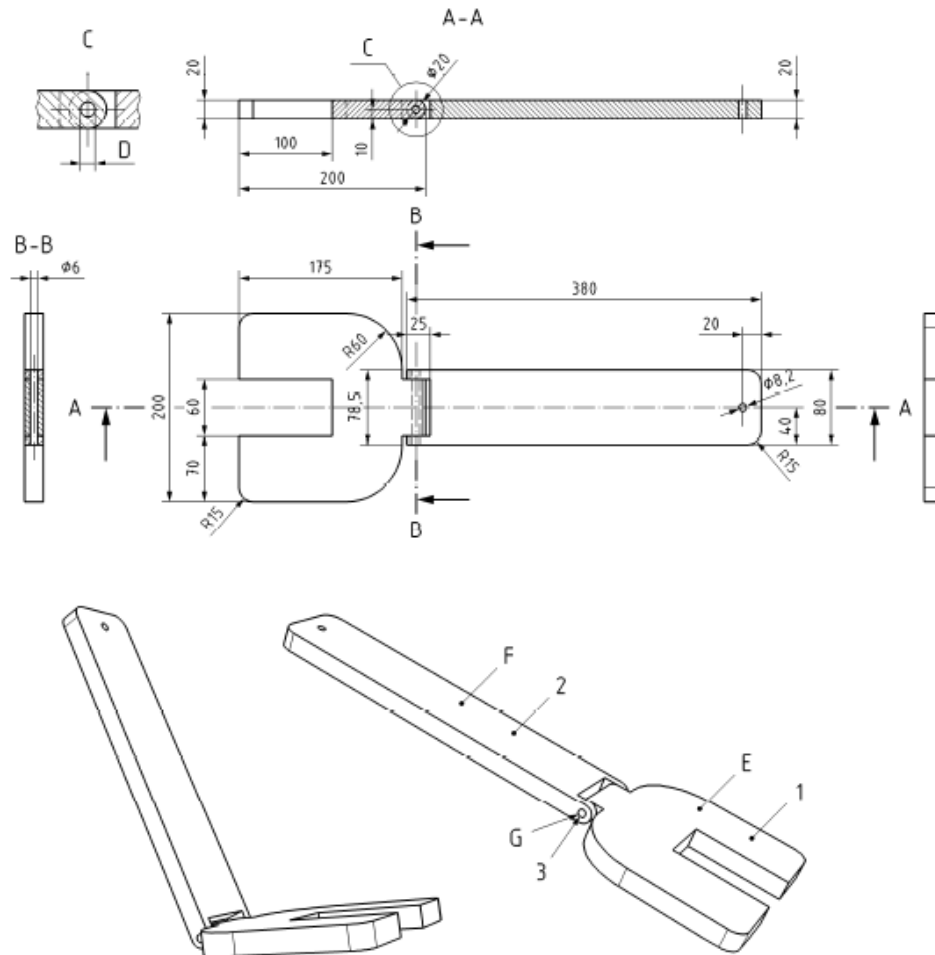
8 REFERENCES

- 1 UN Regulation No. 44, Revision 2, "Uniform Provisions Concerning The Approval Of Restraining Devices For Child Occupants Of Power-Driven Vehicles ("Child Restraint System")", 4 February 2008.
- 2 UN Regulation No. 16 Revision 05 "Uniform Provisions Concerning The Approval Of: I. Safety-Belts, Restraint Systems, Child Restraint Systems And ISOFIX Child Restraint Systems For Occupants Of Power-Driven Vehicles; II. Vehicles Equipped With Safety-Belts, Restraint Systems, Child Restraint Systems and ISOFIX Child Restraint Systems", October 2012.
- 3 UN Regulation No. 129 "Uniform provisions concerning the approval of enhanced Child Restraint Systems used on board of motor vehicles (ECRS)", July 2013.

APPENDIX I

ANGLE MEASURING DEVICE

A 9 kg articulated steel device used to measure the angle between the seat and the backrest. Extract taken from pr EN1888:2012: Childcare articles - Wheeled child conveyances – Safety requirements and test methods.

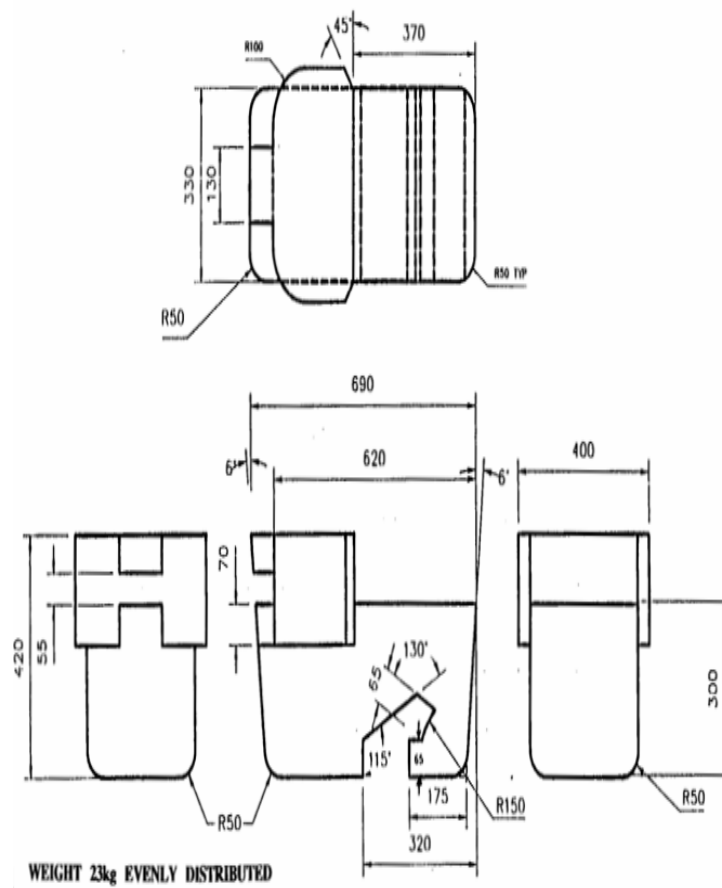


Key

- 1 part to be placed onto the seat surface made of steel
- 2 part to be placed onto the backrest surface made of steel
- 3 hinge pin made of steel
- E mass: 4495 ± 50 g
- F mass: 4501 ± 50 g
- G mass of hinge axle: $17 \pm 0,5$ g, length: 79,5 mm.
- total mass tolerance: $(9 \pm 0,1)$ kg dimensions tolerance: ± 2 mm
- All edges shall be chamfered.

APPENDIX II

GABARIT SPECIFICATION



All dimensions are in mm

APPENDIX III
CRS INSTALLATION LIST

#	Dummy	Position	Brand	Model	Installation mode	Regulation	
1	Q1.5	RWF	Britax	Baby Safe 5Z w/base	i-Size	R129	
2	Q1.5	RWF	Joie	i-Spin 360	i-Size	R129	
3	Q1.5	RWF	Nuna/Joie	Tres LX/EveryStage	Seatbelt	R129	
4	Q3	FWF	Graco	Nautilus	Latch, seatbelt and TT	FMVSS213	
5	Q3	RWF	Cybox	Sirona Z	i-Size	R129	
6	Q3	RWF	Britax	One4Life	Latch, seatbelt and TT	FMVSS213	
7	Q10	FWF	Cybox	Solution Z	i-Size, Seatbelt	R129	
8	Q10	FWF	Graco	Nautilus	Latch, seatbelt and TT	FMVSS213	
9	Q10	FWF	Britax	One4Life	Latch, seatbelt and TT	FMVSS213	TBC

Latin NCAP may review the installation list as from 2 years into the protocol.