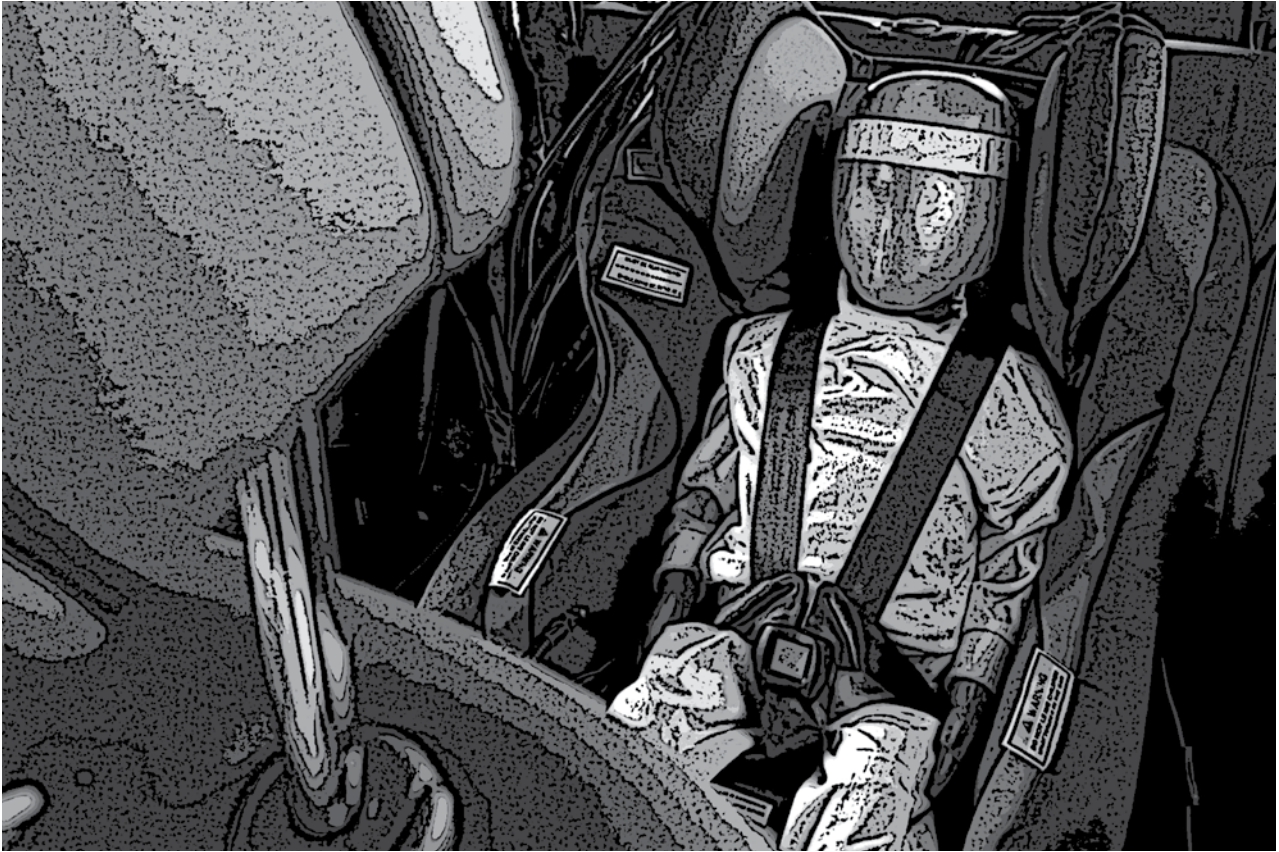




ANCAP
SAFETY



ANCAP Assessment Protocol.
Child Occupant Protection v7.2A

JANUARY 2018



PREFACE

During the test preparation, vehicle manufacturers are encouraged to liaise with ANCAP and to observe the way cars are set up for testing. Where a vehicle manufacturer feels that a particular feature should be altered, they should raise this with the ANCAP assessor present at the test, or in writing to the ANCAP Chief Executive Officer if no assessor is present. ANCAP will consider the matter and at their sole discretion and give direction to the test facility.

Vehicle manufacturers warrant not to, whether directly or indirectly, interfere with testing and are forbidden from making changes to any feature that may influence the test, including but not limited to dummy positioning, vehicle setting, laboratory environment etc.

Illustrations in this protocol are reproduced from Euro NCAP publications, and therefore show Euro NCAP markings on left-hand-drive vehicles. Where relevant, the layouts depicted should be adapted to right-hand-drive application.

VERSION	PUBLISHED	DETAILS
7.2A	August 2017	First version of ANCAP protocol.

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DISCLAIMER.

ANCAP has taken all reasonable care to ensure that the information published in this protocol is accurate and reflects the current technical decisions taken by the organisation. In the event this protocol contains an error or inaccuracy, ANCAP reserves the right to make corrections and determine the assessment and subsequent result of the affected requirement(s).

AUSTRALASIAN NEW CAR ASSESSMENT PROGRAM (ANCAP)

ASSESSMENT PROTOCOL – CHILD OCCUPANT PROTECTION

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1 INTRODUCTION

1.1 Background

Starting in 2018, ANCAP will commence Child Occupant Protection Assessments. The assessments take into account the requirements of Australian Standard 1754:2013 and the Australian Design Rules. These assessments are included in this protocol.

1.2 Overview

This protocol defines how protection for children is assessed in ANCAP ratings. 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 protocol is applicable to all classes of vehicles assessed by ANCAP, other than vehicles with two seats and no top-tether anchorage for CRS installation in the passenger seat. The protocol is applicable for vehicles where there is no rear bench or where there is limited space for carrying CRS on the rear seats.

As part of the assessment, various types of child restraints will be installed in the vehicle to assess its ability to accommodate restraints for all ages of children. Instrumented Q6 and Q10 dummies will be used to assess the protection offered in the event of front and side crashes.

During a post-crash vehicle inspection, the car will be assessed on aspects such as labelling, airbag disabling, ISOFIX usability and more. The results from these tests are separately assessed as follows:

- Vehicle based assessment (Chapter 2),
- Problem-free installation of child restraints (Chapter 3),
- Dynamic performance (Chapter 4).

The application of the requirements in this protocol to vehicles with limited rear space and two seaters is detailed in Chapter 5.

Note: Installations will only be carried out on eligible seating positions. Eligible seating positions are those with a top tether anchorage and where the manufacturer does not prohibit use of a CRS. Ineligible front seating positions will be excluded from the assessments.

2 VEHICLE BASED ASSESSMENT

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 row if available. Where a vehicle is available with optional seat rows on any variant, the assessment will be based on a vehicle fitted with the optional seats.

2.1 Preconditions

2.1.1 Provision of Three-point Seat Belts

If any passenger seat is not equipped with three-point lap and diagonal seatbelts, **0 points** shall be awarded for the vehicle based assessment.

2.2 Gabarit Installation on All Passenger Seats

Where the 2nd row outboard seats are in compliance with the requirements in UN Regulation 16 Annex 17 - Appendix 1 and meet the additional requirements specified below, **1 point** shall be awarded. Where, in addition, all other eligible passenger seats comply, an additional **1 point** shall be awarded. For Gabarit installations on the seat 3rd row, it is acceptable to move or fold the 2nd row seats to enable installation provided the vehicle handbook instructs the user to do so.

2.2.1 Additional Requirements for Gabarit Installation:

- a) Once the belt is correctly routed around the Gabarit fixture, it should be possible to draw a further 150mm of belt webbing from the reel.
- b) Where a passenger frontal airbag and top tether anchorage are fitted, it must be possible to activate and deactivate the passenger airbag, either automatically or manually. The requirements of Section 2.5 need not be met to qualify for this award, but the airbag disabling equipment must be standard.
- c) In the case of an adult seat belt that is capable of being switched from an emergency locking retractor (ELR) to an automatic locking retractor (ALR), clear advice, obvious to the user, about how the ALR feature should be used needs to be present on any labels attached to the seat belt (information given in the handbook is not sufficient as reading of the handbook cannot be assumed for all users).

2.3 ISOFix Positions

2.3.1 [Not used – numbering retained for clarity]

2.3.2 ISOFix Availability

Where the vehicle offers two or more ISOFix seating positions, **2 points** are awarded.

2.3.3 Three ISOFix Seating Positions

Where the vehicle is provided with three fully independent ISOFix seating positions that can correctly install ISOFix CRS including top-tether, **1 point** shall be awarded. It will not be acceptable for any ISOFIX or top tether anchorages to be shared between seating positions.

2.4 Two or more ISO/R3 Positions

Where two or more seating positions are suitable for fully independent use with the largest size of rearward facing (Class C) ISOFIX CRS, Fixture (CRF) ISO/R3, **1 point** shall be awarded.

When checking a CRF behind the driver seat, it may be adjusted longitudinally forward but not further than the mid position between its 95th and foremost positions. The seat backrest angle may also be adjusted, but not to a more upright angle than corresponding to a torso angle of 15 degrees. The full range of seat height adjustment can be used. All adjustments of any passenger seats are permissible to install the fixture.

2.5 Passenger Airbag Warning Marking and Disabling

If the vehicle is fitted with a passenger's frontal protection airbag as standard or optional, it must be marked with a permanent airbag warning label that meets the requirements of ECE R94 to be eligible for scoring points under this section.

4 points will be awarded for vehicles with an automatic switch, when the below requirements in sections 2.5.1 and 2.5.3 are met.

2 points will be awarded for vehicles with a manual switch and the information requirements of ECE R94, when requirements for manual switches in sections 2.5.1 and 2.5.2 are met.

2 points will be awarded if no passenger airbag is available on the entire model range.

2 points will be awarded for vehicles with a passenger airbag (without a disabling switch) and the information requirements of ECE R94 are met.

0 points will be awarded to vehicles with a manual switch and labelling that does not meet the requirements of ECE R94.

0 points will be awarded to vehicles with no switch and labelling that does not meet the requirements of ECE R94

2.5.1 General Requirements for Automatic and Manual Switches

- 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's handbook or other source.
- c) The information and warnings must be provided in such a way that they are visible for both the driver and front seat passenger, showing the status of the airbag.
- d) 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. Supplementary warnings will be ignored.
- e) The AIRBAG ON pictogram must be based upon that of the sun visor label (ECE R94) as shown below:



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



- g) 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.
- h) If the information to indicate that the airbag is enabled is provided by a visual signal, the signal is only required to be shown for a period of 60 seconds after the ignition is switched on.
- i) Information to indicate that the airbag is disabled must be permanently displayed, when the ignition is on.
- j) 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.

2.5.2 Additional Requirements for Manual Switches Only

- a) Where a manual switch is used, it must be labelled with the words 'Passenger AIRBAG OFF/ON' and the same pictograms detailed above indicating ON and OFF.
- b) 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.
- c) 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.
- d) 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
- e) It must not be possible for a rearward facing child; restrained on the front passenger seat; to operate the switch at any time.
- f) 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.
- g) 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.

2.5.3 Additional Requirements for Automatic Switches Only

The system must ensure that the airbag is OFF for ANY rearward facing CRS and obviate any risk associated with airbag deployment

- a) If, with the ignition on and with engine running or not, the airbag status can be changed, the entire system must immediately react to the change correctly. Systems will be checked once the vehicle diagnostics/system checks have been completed.
- b) The system must automatically re-activate the airbag when the seat is occupied by a person who is not required to use a child restraint.

2.6 Integrated Child Restraints

Where the vehicle is provided with at least one integrated CRS as standard equipment, **1 point** shall be awarded. If the vehicle offers two or more integrated CRS, as standard equipment, **3 points** shall be awarded.

3 INSTALLATION OF CHILD RESTRAINTS

ANCAP rewards vehicles that can accommodate a broad variety of child restraints available on the Australian market. For this purpose, a limited number of popular CRS, documented in the ANCAP CRS Selection List are installed in the vehicle.

The ANCAP CRS Selection List is selected from the categories of the Australian Standard AS1754 for CRS restrained by the seatbelt and top tether and also for ISOFIX and top tether.

3.1 ANCAP CRS Selection List and Manufacturer Recommended Seats

3.1.1 ANCAP CRS Selection List

The Australian child restraints used for the fitment assessment are detailed in the ANCAP CRS Selection List.

3.1.2 Manufacturer's Recommendation

It is expected that the vehicle will incorporate design features to allow a range of CRS types to be safely fitted in the vehicle. A manufacturer may also choose to recommend CRS types suitable for use in the vehicle.

Any recommended CRS must meet the following requirements:

- a) The CRS must be recommended by the vehicle manufacturer and be available to all their customers and the public from vehicle dealers and/or child restraint retailers.
- b) The CRS system must be available to the public within 5 working days of an order being made.
- c) The recommended CRS must have AS1754:2013 certification. For Integrated CRS, no Australian Standards or independent testing is necessary.
- d) Recommendation of 'OEM rebranded' CRS that are already AS1754:2013 certified can be accepted.
- e) ANCAP will verify the problem-free installation of manufacturer's recommended CRS for Q6 and Q10 on the 2nd row rear outboard positions only. The installations will be performed using the CRS installation mode and settings/adjustments recommended by the vehicle manufacturer for dynamic testing, in the same way as for CRS in the ANCAP CRS Selection List. No score is attributed to manufacturer recommended seats (other than the default score listed in Section 3.3). CRS recommended by the manufacturer that are not applicable for dynamic testing will not be installed.

3.1.3 CRS for dynamic tests

- a) The Q6 dummy shall be seated in an appropriate forward facing CRS for a six year old child with shoulder markers that correspond to a child that is the same size as the Q6 dummy. This will be either the CRS recommended by the vehicle manufacturer, or if there is no recommendation (or the recommendation is unsuitable), a suitable CRS from the ANCAP CRS Selection list. Rearwards facing CRS will not be permitted for the Q6.
- b) The Q10 dummy shall be seated on the vehicle seat, or booster seat (Type E or Type F), as recommended by the vehicle manufacturer. Where no recommendation is made by the

manufacturer (or the recommended booster is unsuitable), the dummy shall be seated on the vehicle seat.

- c) Where a vehicle is equipped with an integrated CRS covering the Q6 and/or Q10 on the rear outboard 2nd row test positions, the integrated CRS will be used in the dynamic tests. Integrated CRS will be used even if they are optional equipment, provided that they are fitted to the tested vehicle. Where a vehicle is equipped with only one integrated CRS on either outboard position covering both or only one of two child ages, the integrated CRS will be used only where applicable. If only one integrated CRS is present, the vehicle manufacturer shall recommend a suitable CRS to accommodate the other child dummy. Where this is not the case the steps detailed in a) and/or b) will be followed.

3.2 Installation Matrix

The Vehicle Based Assessment (Section 2) determines the eligibility for scoring for the combinations of CRS's and seating positions in the vehicle. The following provides an overview of the relationship between the Vehicle Based Assessments and the Installation Matrix.

3.2.1 Belted CRS with top tether

Seating positions must meet the extended Gabarit check (Section 2.2) to be included in the Installation Matrix, with the exception that a front seating position provided with a top tether anchorage will be assessed for forward facing only. Where a vehicle does not meet the requirements of Section 2.2 a 'Fail' result will be recorded for installation of all 'Belted with Top Tether' CRS on the ANCAP CRS Selection List.

Where a vehicle can be equipped with optional inflatable seatbelts or other advanced adult restraint systems, this position will not be assessed provided that the vehicle handbook clearly states that CRS cannot be installed when this equipment is present. The vehicle manufacturer is asked to contact ANCAP in advance of the vehicle assessment to confirm this exemption.

3.2.2 [Not used – Numbering retained for clarity]

3.2.3 ISOFIX CRS with top tether

The ISOfix anchorages must comply with ADR 34/02 (UN R14) requirements to be included in the Installation Matrix for the ISOFIX CRS's.

3.2.4 Passenger Airbag Warning and Disabling

An *eligible* front seating position that does not meet the requirements of Section 2.5 will automatically fail the CRS installation assessment for all rearward facing belted (with top tether) and ISOFIX (with top tether) seats on the ANCAP CRS Selection list for these seating positions, unless satisfactory information has been provided to show that the frontal airbag does not present an injury risk to a child occupant for that CRS configuration.

3.2.5 Integrated Child Restraints

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

3.3 CRS Installation Scoring

Each CRS-seating position combination from the Installation Matrix will be used for scoring. When all of the requirements are met for a given CRS-seating position, it is awarded the points available and is shown as a “Pass”.

Where the vehicle based assessment result prevented scoring or where the requirements are not met and the requirements on which the CRS installation failed are considered to be safety critical, the CRS-Seating position combination is considered a “Fail”. When a non-safety critical requirement is not met, it is considered to be a “Partial Fail” (P Fail). For both cases, “Fail” and “P Fail”, no points are awarded for the CRS-seating position combination, however the results will be differently communicated.

The score for each individual CRS on the installation matrix, CRS_i, will be calculated by dividing the number of successful installations in the vehicle by the total number of *eligible* passenger seating positions in the vehicle.

Table 1. Installation score for individual CRS on the ANCAP CRS Selection List.

CRSi	Installed in	CRSi Installation Score
Belted with top tether	All passenger positions with a top tether anchorage	Number of “Pass” / All passenger positions
ISOFIX with top tether	All ISOFIX positions with a top tether anchorage	Number of “Pass” / All ISOFIX positions

NOTE: No installation of any rearwards facing CRS will be carried out in the front passenger seating position. An *eligible* seating position that meets the requirements of Section 2.5 (refer also section 3.2.4) will be recorded as Not Applicable for all rearwards facing installations.

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

CRS type	ANCAP scoring
Belted CRS with top tether	4 points
ISOFIX CRS	2 points
(i-size CRS)	Default 4 points

The score for each CRS category is calculated by taking the average of the CRS_i scores in the category and applying the percentage to the points allocated for this category of CRS.

Point scores associated with manufacturer recommended CRS (2 points) are defaulted by ANCAP.

The maximum available score for the installation assessment will be **12 points** and is independent of the number of seats on the ANCAP CRS Selection List.

3.3.1 Rounding

The resulting point scores per CRS is expressed as numbers, with 3 decimal points. The total score for CRS installation is the sum of the points for fitment all CRS’s.

Table 2. Example of ANCAP CRS Selection List installations

CRS listed are an example and ANCAP CRS Selection List may be updated from time to time. The example table is intended to demonstrate the scoring, and is not representative of actual vehicle installations.

CRS Installation Assessment				SEATING POSITION									SCORING			
				Front		2nd row			3rd row			Pass	Fail	Exempt	Score	
				Left	Centre	Left	Centre	Right	Left	Centre	Right					
Restraint model name	Type Description	Belt	N/A	ISOFIX	Belt	ISOFIX	N/A	N/A	N/A	Pass	Fail	Exempt	Score			
		Belted (with top tether)	Type A	Britax Safe n Sound Unity ISOFix (belt mode)	separate capsule type	N/A		Pass	P Fail					Pass	N/A	N/A
Type A4	MaxiCosi Euro A4 NXT ISO (rearward facing, belt mode)		extended rearward facing	N/A		Pass	Pass	Pass	N/A	N/A	N/A	3	0	0	100.0%	
	Britax Safe n Sound Slimm Line (belt mode)		extended rearward facing	N/A		Pass	Pass	Pass	N/A	N/A	N/A	3	0	0	100.0%	
Type B	MaxiCosi Euro A4 NXT ISO (forward facing, belt mode)		forward facing	N/A		Pass	Pass	Pass	N/A	N/A	N/A	3	0	0	100.0%	
	Britax Safe n Sound Slimm Line (belt mode)		forward facing	N/A		Pass	Pass	Pass	N/A	N/A	N/A	3	0	0	100.0%	
Type E	Britax Safe n Sound Highliner SG		booster 4 to 8 years	N/A		Fail	Pass	Fail	N/A	N/A	N/A	1	2	0	33.3%	
Type F	Britax Safe n Sound KidGuard Pro	booster 4 to 10 years	N/A		Pass	Fail	Pass	N/A	N/A	N/A	2	1	0	66.7%		
ISOFIX	Type A	Britax Safe n Sound Unity ISOFix (ISOFix mode)	separate capsule type	N/A		Pass	N/A	Pass	N/A	N/A	N/A	2	0	0	100.0%	
	Type A4	MaxiCosi Euro A4 NXT ISO (rearward facing, ISO mode)	extended rearward facing	N/A		P Fail	N/A	P Fail	N/A	N/A	N/A	0	2	0	0.0%	
		Britax Safe n Sound Slimm Line (ISO mode)	extended rearward facing	N/A		Pass	N/A	Pass	N/A	N/A	N/A	2	0	0	100.0%	
	Type B	MaxiCosi Euro A4 NXT ISO (Forward facing, ISOFix mode)	forward facing	N/A		Pass	N/A	Pass	N/A	N/A	N/A	2	0	0	100.0%	
		Britax Safe n Sound Slimm Line (Forward facing, ISOFix mode)	forward facing	N/A		Pass	N/A	Pass	N/A	N/A	N/A	2	0	0	100.0%	
OEM	Type A															
	Type B															
	Type D															
	Type E/F/G															
SUMMARY																
Belted assessment													3.238			
ISOFIX assessment													1.600			
i-Size assessment (Default Score)													4.000			
OEM assessment (Default Score)													2.000			
TOTAL INSTALLATION ASSESSMENT													10.838			

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 ANCAP and 0 points are awarded
- Fail** Safety critical issues exist, 0 points awarded
- Exempt** CRS Vehicle list exempt the CRS from being installed on that seating position
- N/A** This combination of CRS and seating position is not applicable

4 DYNAMIC ASSESSMENT

The starting point for the dynamic assessment of child occupant protection is the dummy response data recorded in two different test configurations: frontal impact in offset and side impact. All criteria used are calculated according to Technical Bulletin 21. Initially, each relevant body area is given a score based on the measured dummy parameters. These scores 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 both the Q6 and Q10 dummy. 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.

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 available for a criteria, this limit is used as a “Pass”/ “Fail” criteria.

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

4.2 Criteria and Limit Values

The basic assessment criteria used for frontal impact, with the upper and lower performance limits for each parameter, are summarised below. Where multiple criteria exist for an individual body region, the lowest scoring parameter is used to determine the performance of that region. Injury parameter assessments highlighted in Table 3 and Table 4 will not be evaluated during the rebound phase.

4.2.1 Precondition

If the restraint system is unable to keep the child dummy restrained that dummy will be penalised for its dynamic performance in the impact in which the issue occurred.

4.2.1.1 Restraint

- 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 off 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.

4.2.1.2 Ejection

Dummy ejection will be evaluated at any time throughout both the front and side impacts.

- a) The dummy pelvis does not remain in the booster seat or on the booster cushion and is not correctly restrained by the lap section of the seatbelt.
- b) The CRS does not remain within the same seating position or is no longer correctly restrained by the adult belt. It must not be displaced onto the floor or any other part of the rear seat/occupant compartment.

4.2.1.3 Failure of restraint system components

Failure of the restraint system components will be evaluated at any time throughout both the front and side impacts.

- a) There is any breakage or fracturing of load-bearing parts of the belt system including buckles, webbing and anchorage points.
- b) There is any breakage or fracturing of any seat belt lock-offs, tethers, straps, ISOFIX anchorages or any other attachments which are specifically used to anchor the CRS to the vehicle fail.

4.2.2 Frontal Impact

4.2.2.1 Head contact

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

4.2.2.2 Head excursion modifier

The head score is reduced for excessive forward excursion. Where the head of the Q6 exceeds the 550mm forward excursion line a **4 point modifier** is applied. 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.

4.2.2.3 Frontal Impact Criteria

Table 3. Frontal impact criteria, limits and available points per body region for Q6, Q10

	Criteria	Performance limits			Available points
		Higher	Lower	Capping	
Head Score	HIC15 (with hard contact)	500	700	800	4 points
	Resultant 3ms acceleration	60g	80g	80g	
	Head excursion modifier Q6 Q10	450mm	550mm 550mm	NA NA	
Upper Neck	Tension Fz	1.7kN	2.62kN	NA (monitoring)	2 points
	Extension My (with head to interior contact) Q6 Q10	NA NA	36Nm 49Nm	NA NA	

Chest (T4)	Resultant 3ms acceleration* Q6 Q10	NA 41g	NA 55g	NA 55g	2 points
	Deflection Q6 Q10	30mm (monitoring)	42mm (monitoring)	NA NA	
Pelvis	ASIS load	NA	NA	NA	
TOTAL					8 points/dummy

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

4.2.3 Side Impact

4.2.3.1 Head contact

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

4.2.3.2 Side Impact Criteria

Table 4. Side impact criteria, limits and available points per body region for Q6, Q10

	Criteria	Performance limits			Available points
		Higher	Lower	Capping	
Head Score	HIC15 (with hard contact)	500	700	800	2 points
	Resultant 3ms acceleration	60g	80g	80g	
Upper Neck	Resultant Force Q6 Q10		2.4kN 2.2kN	NA (monitoring)	1 points
Chest (T4)	Resultant 3ms acceleration		67g	NA (monitoring)	1 points
TOTAL					4 points/dummy

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

The contribution of the Dynamic Score to the Child Occupant Protection Score is calculated by summing the body scores for the relevant body regions for the Q6 and Q10 in both front and side impact (24 in total).

4.3 ANCAP Republication of Euro NCAP Dynamic COP Results

Where a vehicle is rated by Euro NCAP and ANCAP chooses to republish the rating for Australia and/or New Zealand, results from the Euro NCAP Dynamic Assessment will also be republished (ie ANCAP will not require additional dynamic testing using Australian Standard child restraint systems or configurations). Test results from Dynamic tests using European specification booster seat and booster cushion will be scored as per the Euro NCAP test result.

A manufacturer may, however, choose to sponsor additional official dynamic tests using Australian Standard child restraint systems. In such an instance Section 3 of the COP Testing Protocol will apply in full.

5 TWO SEATERS AND VEHICLES WITH LIMITED REAR SPACE

This section details how protection for children is assessed by ANCAP in vehicles equipped with two seats, where the passenger seat is fitted with a top-tether anchorage for CRS installation, and in vehicles where space is limited in the rear.

5.1 Vehicles with only front row seats

Vehicles with only front row seats and without any top tether anchorage will be exempt from COP assessment.

5.1.1 Vehicle based assessments

For two seater vehicles, the same precondition as described in Section 2.1 apply for the passenger seat. Furthermore an adjusted vehicle based assessment will be applied to two seater vehicles:

5.1.1.1 Gabarit Installation on all Passenger Seats

Where the passenger seat is in compliance with the requirements in Section 2.2, **2 points** shall be awarded.

5.1.1.2 ISOFix Positions

Where the passenger seat is in compliance with the requirements in Section 2.3, **3 points** shall be awarded.

5.1.1.3 One ISO/R3 Position

Where the passenger seat is suitable for use with the largest size of rearward facing (Class C) ISOFIX CRS, Fixture (CRF) ISO/R3, **1 point** shall be awarded.

5.1.1.4 Passenger Airbag Warning Marking and Disabling

Points shall be awarded as listed in section 2.5.

5.1.1.5 Integrated Child Restraints

Where the vehicle is provided with an integrated CRS as standard equipment, **1 point** shall be awarded. Where this integrated CRS in the vehicle is homologated to cover "Group I-III" as standard, **2 additional points** shall be awarded.

5.1.2 CRS installation assessment

For two seater vehicles, all of the requirements and scoring principle in Chapter 3 apply (front passenger seat only).

5.1.3 Dynamic assessment

For two seater vehicles the dynamic COP assessment will be performed with the Q6 dummy sitting on the front passenger seat in both ODB and AE-MDB impacts. For the ODB impact test the manufacturer will be required to supply in house data showing performance for the Q6 dummy. The official AE-MDB test, conducted by ANCAP, will include the Q6 dummy for side impact assessment. Where the manufacturer provides no data zero points will be awarded for the dynamic tests.

The head excursion in the ODB impact will be measured from the H-point location of 5th female dummy with the front passenger seat adjusted in accordance to the user manual information for the seating position with child restraints. The passenger frontal airbag will be set by the manual switch according user manual, in case of automatic deactivation systems, the airbag status will be determined by the vehicle.

5.2 Vehicles with Limited Rear Space

A vehicle will be deemed as having limited rear space as defined in Section 3.5 of the COP Testing protocol. Where this is the case, the test laboratory will confirm that child dummy cannot be installed in the frontal ODB and/or side MDB test without interference from the vehicle.

All assessments will be applied as normal, except the assessment of dynamic performance which will be based on Manufacturers data from test(s) with modified seating settings, as described in the Testing Protocol – COP. Where the manufacturer provides no data zero points will be awarded for the dynamic tests.

A “hybrid rating” would be produced using the adult data from the official full scale test (performed without CRS but with compensation for the reference mass) and the child data from the additional tests. In the final vehicle rating, ANCAP will indicate that it was not possible to install the CRS and/or child dummy with and adult in the normal ANCAP front seat test position.

6 SCORING & VISUALISATION

6.1 Scoring

The maximum number of points available for child protection in vehicles with rear seats (including limited rear space and two seaters where a top-tether is fitted) is 49. The maximum points available in each assessment is as follows:

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

The child protection score will be the sum of all three areas. The tables below summarise the maximum possible score in each (sub)category.

6.1.1 Normal and Limited Rear Space Vehicles

Category	Total points (49)
Dynamic Assessment	(24)
Frontal Impact	16
Side Impact	8
Vehicle Based Assessments	(13)
Gabarit Installation on all Passenger Seats	2
ISOFix Availability	3
Two or more ISO/R3 Positions	1
Passenger Airbag Warning Marking and Disabling	4
Integrated CRS	3
Installation of Child Restraints	(12)
Belted with top tether seats	4
ISOFIX seats	2
i-Size seats	Default 4
Recommended seats	Default 2

6.1.2 Two Seater Vehicles

Category	Total points (49)
Dynamic Assessment	(24)
Frontal Impact	16
Side Impact	8
Vehicle Based Assessments	(13)
Gabarit Installation on all Passenger Seats	2
ISOFix Availability for ANCAP	3
One ISO/R3 Position	1
Passenger Airbag Warning Marking and Disabling	4
Integrated CRS	3
Installation of Child Restraints	(12)
Belted with top tether seats	4
ISOFIX seats	2
i-Size seats	Default 4
Recommended seats	Default 2

6.2 Visualisation

6.2.1 Dynamic protection

The dynamic protection provided to children for each body region is presented visually using coloured segments within body outlines. The colour used is based on the points awarded for that body region (rounded to three decimal places), as follows:

Number of points available for body region:		4 points	2 points	1 point
Green	'Good'	4.000	2.000	1.000
Yellow	'Adequate'	2.670 – 3.999	1.335 – 1.999	0.667 – 0.999
Orange	'Marginal'	1.330 – 2.669	0.665 – 1.334	0.333 – 0.666
Brown	'Weak'	0.001 – 1.329	0.001 – 0.664	0.001 – 0.332
Red	'Poor'	0.000	0.000	0.000

6.2.2 ANCAP CRS Selection List installation

The results of the CRS installation check will be shown in terms of “Pass”, “P Fail”, “Fail”, “Exempt” or “N/A” in tabular format.

6.2.3 Visualisation of ANCAP CRS Selection List installation.

The website and/or datasheet will present the installation results for each CRS type. Details of specific CRS may be de-identified for this presentation.



Install without problem

The CRS could be installed on that seating position safely, easily and without any issues.



Safety critical problem

The CRS could not be installed on that seating position. Issues arose that prevented the CRS from being installed correctly and safely.

● Install with care

The CRS could be installed on that seating position but it could not be done easily and without problems.

✗ Installation prohibited

No top tether anchorage is fitted - a belted CRS with top tether or ISOFix CRS with top tether cannot be installed on that seating position.

