

AS/NZS 1754:2024



Australian/New Zealand Standard™

Child restraint systems for use in motor vehicles



AS/NZS 1754:2024

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee CS-085, Child Restraints For Use In Motor Vehicles. It was approved on behalf of Standards Australia's Standards Development and Accreditation Committee on 30 September 2024 and by the New Zealand Standards Approval Board on 02 October 2024.

This Standard was published on 25 October 2024.

The following are represented on Committee CS-085:

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- Australian Automobile Association
- Australian Automotive Aftermarket Association
- Australian Chamber of Commerce and Industry
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This Standard was issued in draft form for comment as DR AS/NZS 1754:2023.

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ISBN 978 1 76139 872 8

Australian/New Zealand Standard™

Child restraint systems for use in motor vehicles

Originated in Australia as AS E46—1970.
Originated in New Zealand as NZS 5411:1973.
First Joint edition AS/NZS 1754:1995.Ninth edition AS/NZS 1754:2024.

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Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CS-085, Child Restraints for Use in Motor Vehicles, to supersede AS/NZS 1754:2013.

The objective of this document is to specify requirements for restraining devices for child occupants of passenger cars and their derivatives, such devices being intended, when properly selected, correctly installed and correctly adjusted, to reduce the risk of bodily injury in a vehicle impact. This document requires tests to be conducted according to methods specified in the AS/NZS 3629 series.

This document provides minimum design, construction and performance requirements for child restraint systems in order to provide a high level of protection for children travelling in motor vehicles.

The major changes in this edition are as follows:

- (a) Type A1/B removed. This type included shoulder markers to indicate the rearward to forward facing transition at a height consistent with children approximately 6 months old. Accepted best practice now is that children should remain rear facing for as long as possible, and Type A2/B restraints where the shoulder heights are consistent with a 12 month old transitioning from rearward to forward facing are a safer option. These ages are nominal as the actual determination of orientation is by the shoulder height labels.
- (b) Supply of top tether anchorage components now optional. Many vehicles have top tether anchorage components in-built, allowing for direct connection by the attachment hook without extra components. Consequently, large numbers of the top tether anchorage components are discarded. Allowing their supply to be optional will reduce waste.
- (c) [Appendix C](#) and other mandated consumer information has been revised to include reference to in-built top tether anchorage points in a vehicle. Where a vehicle manufacturer has provided a threaded insert to be used to attach a top tether attachment component, the reference is now to a top tether mounting point. The previously required information about drilling 9 mm holes and fitting the anchorage components supplied has been removed, as in some Australian states this can only be done by an approved person.
- (d) The requirements for occupants with disabilities and medical needs has been expanded from the previous revision to provide clear requirements for variations to child restraints to cater for specific disabilities. [Section 7](#) has been added to this document to cover the variations to child restraints for specific disabilities, including specific design, testing, instructions and marking requirements as well as specific information on the packaging. The variations to the child restraint are in addition to the requirements in this document. They may be applied to a complete child restraint, or the variation may be supplied separately as a kit to be fitted by a parent, carer, occupational therapist or other specialist. Variations to the child restraint may prevent a child from escaping or being poorly restrained, additional support, or caters for an occupant's medical needs.
- (e) Revision of informative material requirements now allowing use of videos and links to smartphones or tablets, and inclusion of quick reference guides for installation instructions.
- (f) Introduced a new booster seat type designation, type E10, suitable for children approximately 4 to 10 years of age.
- (g) Lap-belt positioning devices (previously known as anti-sub clips) are now mandatory on booster seats.
- (h) Mass limit of ISOFIX compatible child restraints have changed from 10 kg in the previous edition to 15 kg for type A and 12 kg for type B.
- (i) Revision of cross-chest device requirements to allow use on harnessed child restraints.

- (j) Type A child restraints include new geometry requirements and recommendations to improve fitment for occupants including new-born babies.

Although this document specifies the requirements for removable items when supplied with a child restraint, additional requirements for accessories not supplied with a child restraint are set out in AS 8005.

Statements expressed in mandatory terms in notes and footnotes to tables and figures are requirements of this document.

The terms “normative” and “informative” have been used in this document to define the application of the appendix to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

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Australian/New Zealand Standard

Child restraint systems for use in motor vehicles

Section 1 Scope and general

1.1 Scope

This document specifies requirements for restraining devices for child occupants of passenger cars and their derivatives, such devices being intended, when properly selected, correctly installed and correctly adjusted, to reduce the risk of bodily injury in a vehicle impact. The devices may also have application to other types of vehicles.

Accessories or removable items supplied with the child restraint or included in the instruction book are included in the scope of this document. Accessories supplied separately for use with child restraints are covered by AS 8005.

Variations in design and construction are included for child restraints intended for transporting children with disabilities.

This document does not cover child restraints that are an integrated feature of a motor vehicle.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

AS 1753, *Webbing for restraining devices for occupants of motor vehicles*

AS 2001.5.4, *Methods of test for textiles, Method 5.4: Dimensional change—Domestic washing and drying procedures for textile testing (ISO 6330:2000, MOD)*

AS 2282.8, *Methods for testing flexible cellular polyurethane, Method 8: Determination of force deflection*

AS 2331.3.1, *Methods of test for metallic and related coatings, Method 3.1: Corrosion and related property tests—Neutral salt spray test (NSS test)*

AS 2755.2, *Textile fabrics—Burning behaviour, Measurement of flame spread properties of vertically oriented specimens*

AS 2755.3, *Textile fabrics—Burning behaviour—Determination of surface burning time*

AS 3629.6, *Methods of testing child restraints, Method 6: Determination of recline angle*

AS 8005, *Accessories for child restraints used in motor vehicles*

AS/NZS 2465, *Unified hexagon bolts, screws and nuts (UNC and UNF threads)*

AS/NZS 3629 (all parts), *Methods of testing child restraints*

AS/NZS 3629.1, *Methods of testing child restraints, Method 1: Dynamic testing*

AS/NZS 3629.3, *Methods of testing child restraints, Method 3: Dynamic testing of upper anchorage components and top tether extension straps*

AS/NZS 3629.4, *Methods of testing child restraints, Method 4: Determination of the force required to adjust a harness*

AS/NZS 3629.5, *Methods of testing child restraints, Method 5: Determination of quick-release device and low attachment connector actuation force*

AS/NZS 3629.7, *Methods of testing child restraints, Method 7: Test for suitability of seatbelt length*

AS/NZS 3629.8, *Methods of testing child restraints, Method 8: Test for suitability of booster seat profile*

AS/NZS 3629.9, *Methods of testing child restraints, Method 9: Test for length of seating surface on a booster seat*

AS/NZS 3629.10, *Methods of testing child restraints, Method 10: Bite test*

AS/NZS 3629.11, *Methods of testing child restraints, Method 11: Measuring energy attenuation*

AS/NZS 4475.5, *Restraint systems for motor vehicles—Performance tests, Method 5: Determination of locking angle of a tilt-lock adjustment device*

AS/NZS ISO 8124-1, *Safety of toys, Part 1: Safety aspects related to mechanical and physical properties*

AS/NZS ISO 8124-3, *Safety of toys, Part 3: Migration of certain elements (ISO 8124.3:1997, MOD)*

ASME B18.21.1, *Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers (Inch Series)*

ASTM D7611, *Standard Practice for Coding Plastic Manufactured Articles for Resin Identification*

SAE J369, *Flammability of polymeric interior materials—Horizontal test method*

SAE J211/1, *Instrumentation for Impact Test Part 1 - Electronic Instrumentation*

UN R129, *Increasing the safety of children in vehicles: For policymakers and concerned citizens*

1.3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

1.3.1

accessories

parts that may be added to, or removed from, a child restraint in normal use

1.3.2

actuation surface

surface area of a quick-release device that is pressed or pulled to activate the device

1.3.3

adjuster

device designed to provide the means of adjustment

1.3.4

anchorage components

terminal parts of a child restraint system for attachment to a vehicle or seat

1.3.5

attachment bolt

a screw used to fix the upper anchorage fitting to the vehicle

Note 1 to entry: See entry [1.3.44](#).

1.3.6

attachment clip

attachment hook

device that allows the child restraint top tether strap to be attached to, and removed from, the upper anchorage fitting

1.3.7

authority

body that has legal powers and rights

1.3.8**booster seat**

device used for raising the child's position in the motor vehicle and adapting an adult lap-sash seatbelt to make it suitable for a child, having a back above the seating plane

1.3.9**chair**

part of a child restraint that seats the child

1.3.10**child restraint**

device used in conjunction with a seatbelt or ISOFIX compatible lower attachment connectors to restrain a child passenger of a motor vehicle in the event of a vehicle impact and thus minimize the risk of bodily injury

1.3.11**child restraint for a child with disability**

device that is able to be modified to accommodate the needs of a child with disability to be safely restrained to minimize the risk of bodily harm in the event of a vehicle impact

1.3.12**child with disability**

person up to 16 years of age —

- (a) with one or more disabilities (short or long term) and/or medical conditions (short or long term) as identified by a medical practitioner; and/or
- (b) who exhibits behaviours of concern in a vehicle, that may affect safe transport as identified by a medical practitioner

1.3.13**converter**

device, other than a booster seat, for varying the geometry of an adult lap-sash belt to make it better fit the occupant or provide additional restraint of the occupant on booster seat

1.3.14**convertible**

a child restraint that includes two or more type designations.

1.3.15**cross-chest device**

device that connects the shoulder straps of a harness across the chest of the occupant

1.3.16**crotch strap**

centrally located webbing strap that is designed to attach the quick-release device to the child restraint and transmit the occupant-restraining forces acting on the quick-release device to the child restraint

1.3.17**downward**

towards the floor of the vehicle

1.3.18**fabric**

woven, knitted or non-woven textile material in the form of a single material or multi-component materials

Note 1 to entry: Multi-component materials may include coated, quilted and multi-layered sandwich construction materials, and similar combinations.

1.3.19**flame spread time**

time taken by a flame on a burning material to travel from the first to the third marker threads when tested in accordance with AS 2755.2, using a 5 s surface ignition time

1.3.20**forward**

towards the front of the vehicle

1.3.21**harness**

webbing straps used for restraining the occupant either partly or wholly

1.3.22**ISOFIX compatible child restraint**

child restraint fitted with lower attachment connectors that are capable of connecting to the ISOFIX low anchorages in a vehicle

1.3.23**ISOFIX low anchorages**

pair of 6 mm diameter rigid round horizontal bars extending from the vehicle which are designed to accept lower attachment connectors fitted to a child restraint

1.3.24**lap-belt positioning device**

device fitted between occupant's legs on Type E8, Type E10 and Type F booster seats

Note 1 to entry: The device is designed to maintain the vehicle seatbelt lap strap low across the child's thighs.

Note 2 to entry: The device can reduce the possibility of an occupant sliding under the lap strap during travel or in a crash.

1.3.25**leg straps**

two or more flexible components that are designed to attach the quick-release device to the restraint and transmit the occupant-restraining forces acting on the quick-release device to the restraint

1.3.26**load-bearing part**

part that has the potential of experiencing tensile, compressive or rotational loads during dynamic testing

1.3.27**lock-off**

device that is fitted to the child restraint for minimizing the loosening of the webbing of the adult lap-sash seatbelt

1.3.28**locking clip**

device that either —

- (a) joins the lap and sash together to convert the seatbelt to a lap belt; or
- (b) prevents the seatbelt from slipping, loosening or tightening

Note 1 to entry: Some devices are also known as “gated buckles” or “gated three bar slides”.

1.3.29**locking device**

when used in context of the installation using a seatbelt, either a lock-off or locking clip

Note 1 to entry: See entries [1.3.27](#) and [1.3.28](#).

1.3.30**lower attachment connectors**

pair of connectors extending from the child restraint that are designed to engage with ISOFIX low anchorages in a vehicle

Note 1 to entry: the connectors may be either rigid or flexibly attached.

1.3.31**may**

indicates the existence of an option

1.3.32**means of adjustment**

parts of a child restraint by which the restraint is adjusted to suit the wearer or the vehicle or both

1.3.33**pelvic region**

area bounded by the sides of the occupant's torso, the seating surface and a plane above and parallel to the seating surface

1.3.34**permanently fixed**

where a component is attached to the child restraint or another component in such a way that it cannot be completely detached without the use of tools

Note 1 to entry: The position of attachment may or may not be able to be adjusted or altered.

1.3.35**permanently fixed in position**

where a component is attached to the child restraint or another component in such a way that it cannot be completely detached without the use of tools, and whose position cannot be adjusted or altered

1.3.36**quick-release device**

securing device with provision for quickly releasing the child from the child restraint, nominated by the manufacturer of the child restraint as being provided for that purpose

1.3.37**rearward**

towards the rear of the vehicle

1.3.38**removable items**

accessories supplied with or fitted to the restraint at point of sale

1.3.39**rigid component**

component that is stiffer than webbing, fabric, padding, comfort foam, and structures that significantly flex or hinge when a force of 50 N is applied

1.3.40**rigid material**

material that is stiffer than webbing, fabric, padding, comfort foam, and structures that significantly flex or hinge when a force of 50 N is applied

1.3.41**roping**

twisting, crushing or curling of the webbing that appreciably reduces the area of the webbing in contact with the wearer

1.3.42**securely attached**

attached to prevent casual or inadvertent removal

Note 1 to entry: Securely attached does not mean permanently fixed.

1.3.43**securing device**

device for securing the child in the child restraint, or for securing the child restraint to the vehicle

Note 1 to entry: A securing device may or may not have provision for quick release.

1.3.44**set screw**

screw used to fix the upper anchorage fitting to the vehicle

Note 1 to entry: A set screw is referred to in consumer literature as an “attachment bolt”.

Note 2 to entry: See [1.3.5](#).

1.3.45**shall**

indicates that a statement is mandatory

1.3.46**should**

indicates a recommendation

1.3.47**shoulder region**

line on top of the shoulder structure that extends from the neck to a point on the shoulder joint of the dummy that is 45 degrees from the bottom of the joint

Note 1 to entry: See [Figure 1.1](#).

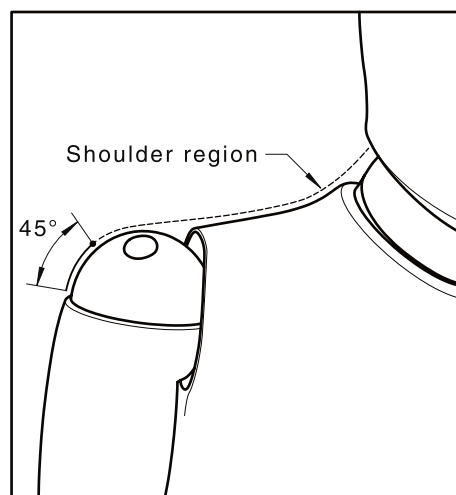


Figure 1.1 — Dummy's shoulder region

1.3.48**splitter plate**

plate or bracket connecting the harness adjuster strap to the shoulder straps and allowing the disconnection of the shoulder straps

1.3.49**strap**

webbing designed to restrain the occupant of a child restraint, or the child restraint

1.3.50**submarining**

occurrence where the lap belt rides up over the iliac crest and into the soft tissue area of the abdomen

1.3.51**surface burning time**

time required for the pile or nap of a fabric to burn to the reference mark, when tested in accordance with AS 2755.3

Note 1 to entry: The surface burning time is expressed as the minimum value of a number of determinations made during testing of the fabric.

1.3.52**swing tag**

label temporarily attached to a child restraint by any means that will allow its removal

1.3.53**tilt-lock adjustment device**

device for adjusting the effective length of a strap so that when a load is applied along the length of the strap, locking occurs, and when the device is tilted away from the line of applied load, length adjustment is provided

Note 1 to entry: Tilt-lock adjustment may be provided as an attaching clip, a security device, a quick-release device, or a strap.

1.3.54**top tether extension strap**

strap, with an anchor fitting and an attachment clip, that is used for the installation of child restraints in vehicles where the child restraint upper anchorage is located at an extended distance from the vehicle seat

1.3.55**top tether strap**

flexible component designed to restrain the top portion of the child restraint

Note 1 to entry: The “top tether strap” was previously referred to in literature as an “upper anchorage strap”.

1.3.56**transversely installed restraint**

restraint where the child lies approximately at right angles to the forward direction of travel of the vehicle

1.3.57**trims**

trimmings such as piping, appliqués, ribbon, overlays, motifs, embroidery, edge trim and similar ornaments

1.3.58**upper anchorage fitting**

component that attaches to the upper anchorage point in a vehicle for the purpose of engaging the top tether strap attachment clip, referred to in consumer literature as the “anchor fitting”

Note 1 to entry: Also known as upper anchor fitting.

1.3.59**upper anchorage point**

a threaded hole provided in the vehicle by the manufacturer for attachment of the upper anchorage fitting.

Note 1 to entry: Also known as upper anchor point.

1.3.60**upward**

towards the roof of the vehicle

1.3.61**variation**

Change in the design or function of a child restraint

Note 1 to entry: This term is used in this document for changes to provide transportation of a child with disability.

1.4 Type designation

Child restraints shall be designated in accordance with the following:

(a) *Type A1*

Rearward-facing restraint with a harness or other means of retaining the occupant, suitable for infants, approximately 6 months of age. Type A1 shall not be used with any other type designation.

(b) *Type A1/0*

Rearward-facing restraint with a harness or other means of retaining the occupant, suitable for infants of low birthweight and up to approximately 6 months of age. Type A1/0 shall not be used with any other type designation.

NOTE 1 Typically referred to as Type A or Type A1 for most of the requirements in this document.

(c) *Type A2*

Rearward-facing restraint with a harness or other means of retaining the occupant, suitable for infants approximately 12 months of age.

(d) *Type A2/0*

Rearward-facing restraint with a harness or other means of retaining the occupant, suitable for infants of low birthweight and up to approximately 12 months of age.

NOTE 2 Typically referred to as Type A or Type A2 for most of the requirements in this document.

(e) *Type A3*

Transversely installed restraint with a harness or other means of retaining the occupant, suitable for infants approximately 6 months of age.

NOTE 3 Australian State and Territory legislation may not allow Type A3 child restraints to be used.

(f) *Type A3/0*

Transversely installed restraint with a harness or other means of retaining the occupant, suitable for infants of low birthweight, up to approximately 6 months of age.

NOTE 4 Typically referred to as Type A or Type A3 for most of the requirements in this document.

NOTE 5 Australian State and Territory legislation may not allow Type A3 child restraints to be used.

(g) *Type A4*

Rearward-facing restraint with a harness or other means of retaining the occupant, suitable for a child up to approximately 30 months of age.

(h) *Type A4/0*

Rearward-facing restraint with a harness or other means of retaining the occupant, suitable for infants of low birthweight and up to approximately 30 months of age.

NOTE 6 Typically referred to as Type A or Type A4 for most of the requirements in this document.

(i) *Type B*

Forward-facing chair with harness, suitable for children approximately 6 to 12 months of age to 4 years of age.

(j) *Type C*

A harness that conforms to either or both of the following:

(i) *Type C1*

Forward-facing harness to be used in conjunction with a booster seat suitable for children approximately 4 to 10 years of age, depending on whether the booster seat is Type E8, E10, or Type F.

(ii) *Type C2*

Forward-facing harness without chair — suitable for children approximately 7 to 10 years of age, used with just the vehicle seat and seatbelt. Not suitable for use with a booster seat.

(k) *Type D*

Rearward-facing chair with harness, suitable for children approximately 6 to 12 months of age to 4 years of age.

(l) *Type E8*

A booster seat used in conjunction with a lap-sash seatbelt, suitable for children approximately 4 to 8 years of age. May also be used in conjunction with a seatbelt and a child harness that meets the requirements of Type C1.

(m) *Type E10*

A booster seat used in conjunction with a lap-sash seatbelt suitable for children approximately 4 to 10 years of age. May also be used in conjunction with a seatbelt and a child harness that meets the requirements of Type C1.

(n) *Type F*

A booster seat with seat width restrictions used in conjunction with a lap-sash seatbelt, suitable for children approximately 4 to 10 years of age. May also be used in conjunction with a seatbelt and a child harness that meets the requirements of Type C1.

(o) *Type G*

Forward-facing chair with harness, suitable for children approximately 6 to 12 months of age to approximately 8 years of age.

(p) *Type H*

A converter used with a booster seat, suitable for children approximately 4 to 7 years of age, which can alternatively be used with a seatbelt without a booster seat for children approximately 7 to 10 years of age.

1.5 Product conformity

Child restraints shall be manufactured utilizing regular testing to ensure consistent performance levels such that the child restraint maintains conformance to this document. [Appendix F](#) sets out the minimum requirements to ensure ongoing conformance to this document.

Section 2 Materials

2.1 Webbing

The following shall apply:

- (a) For Type C1 and C2 child harnesses, load-carrying webbing shall be Class C or Class D, in accordance with AS 1753.
- (b) Load-carrying webbing for other child restraint types shall conform to the requirements for Class B, Class C or Class D in accordance with AS 1753.
- (c) The end of any webbing shall be treated to prevent unravelling.

2.2 Metal parts or coated metal parts

Metal parts or coated metal parts, when exposed for not less than 50 h to salt spray in accordance with either AS 2331.3.1 or the test method specified in UN R129, shall remain operational. In addition, they shall show no significant evidence of base metal corrosion or of blistering of the coating.

Significant evidence means base metal corrosion extending more than 3 mm from an edge or from a line scribed through the coating.

Testing may be performed on individual components or on assemblies.

Any steel part that has been heat treated and plated shall be thermally treated to remove hydrogen embrittlement.

2.3 Flammability

2.3.1 Fabrics and padding materials

When tested in accordance with AS 2755.2, all fabrics, including coated fabrics, padding materials, trimmings and attachments, but excluding webbing, shall conform to the following requirements:

- (a) The flame spread time shall be 12 s or greater in the lengthwise direction and the width wise direction. One determination of the time to burn a test specimen shall be less than 10 s in either the lengthwise direction or the width wise direction. These requirements shall be met before and after washing in accordance with the wash procedure below.

Test specimens shall be washed twice in accordance with Procedure 7B in AS 2001.5.4. After the second wash, test specimens shall be tumble-dried at a temperature that will not damage the fibre.

If, after a repeat test, as required by the relevant clause of AS 2755.2, four or more of six specimens fail to burn to the third marker thread in the lengthwise direction, and four or more of six specimens fail to burn to the third marker thread in the width wise direction, the material shall satisfy the flame spread time test.

In accordance with AS 2755.2, if, in any one set of three specimens, one result exceeds the lowest result by 50 % for no apparent reason, or if one or two specimens fail to reach one of the marker threads, another set of three specimens shall be tested for that direction or face.

- (b) After washing, fabrics with a pile or nap shall be tested in accordance with AS 2755.3. They shall have a surface burning time of 10 s or greater.
- (c) Trims less than 170 mm wide shall be tested at their full width as supplied. They shall be tested in the lengthwise direction only.

- (d) Where the material is composed of one fabric overlaying another (e.g. quilted fabrics), or of a label larger than 10 000 mm² in area overlaying the fabric, or of a fabric overlaying padding, specimens shall be cut and tested as a combination, i.e. as if the overlay were applied to the under fabric or padding.
- (e) Fabric labels smaller than 10 000 mm² in area need not be tested for flammability. Larger labels shall be included in the flammability testing.
- (f) Where composite materials are used on the child restraint in such a manner that the under fabric or padding is exposed, the combination of overlay and under fabric or padding shall be tested on both surfaces.

NOTE There are very few trims, in particular trims made from cotton, poly/cotton and nylon lace, that would meet the above requirements.

2.3.2 Other chair materials

When tested in accordance with SAE J369, chair materials other than those covered under [Clause 2.3.1](#) shall not burn nor transmit a flame across the surface at a rate of more than 100 mm/min.

If a material is self-extinguishing within 60 s from the start of timing and has not burned more than 50 mm from the point where the timing was started, it shall conform to the above burn-rate requirement.

NOTE 1 “Chair materials” includes all materials forming the chair except knobs, adjusters, pull-tags and the like.

NOTE 2 The test method given in SAE J369 is technically equivalent to the test method given in FMVSS 302 and in ISO 3795.

2.4 Toxicity

Any part or material that can be reasonably expected to be mouthed or sucked by a child in the restraint shall conform to the requirements of AS/NZS ISO 8124.3. For the purpose of this document, the words “child restraint component” shall be substituted for the word “toy”.

NOTE Mouthed or sucked parts or materials include seat trims, harness webbing, seat chair material and removable items.

2.5 Plastics stabilization

Plastics used in main load-bearing mouldings shall be stabilized against UV and thermal degradation.

NOTE 1 Thermally stabilized plastics will resist degrading when subject to the moulding process and the temperature changes normally encountered in vehicles. Materials like polypropylene are susceptible to rapid thermal degradation. It has nothing to do with capability of the plastic to retain its structural integrity when hot.

NOTE 2 A load-bearing part is one that has the potential to experience tensile, compressive or rotational loads during dynamic testing.

NOTE 3 Conformance to this clause may be shown by testing conducted by a laboratory that can report on the addition of appropriate stabilizers or the provision of data sheets on the additives stating that they provide both thermal and UV stabilization.

NOTE 4 Plastics used in child restraints should be designed to achieve a usable life of at least 10 years (when used in accordance with the manufacturer's instructions, and not exposed to extensive periods of sunlight or high temperatures).

2.6 Thread

Threads for sewing load-bearing components shall have similar physical and chemical properties to the materials being sewn. Threads containing natural fibres shall not be used for sewing load-bearing webbing.

2.7 Recycling

Plastic parts bigger than 2 kg shall be marked with the Plastics Identification Code as specified in ASTM D7611 or the Australasian Recycling Label Program (ARL).

All plastic parts greater than 2 grams and less than 2 kg should be marked with either the Plastics Identification Code as specified in ASTM D7611 or the Australasian Recycling Label Program.

NOTE 1 Where the recycling symbol cannot be moulded into the plastic part, a label may be used.

NOTE 2 Marking of all plastic parts greater than 2 grams will become mandatory in a future edition of the standard.

2.8 Heat conditioning

All buckles, adjusters and ISOFIX connectors, shall remain operational and functional after completing the following heat conditioning cycle:

- (a) Held in a heating cabinet over water for 24 hours at 80°C, then,
- (b) Three 24-hour tests consisting of a 6-hour period at 100°C followed by 6 hours at 0°C, with the remainder of the 24 hrs held at ambient temperature 20-22°C.

[SOURCE: Based on content from the Federal Register of Legislation at 13/12/2006. For the latest information on Australian Government law please go to <https://www.legislation.gov.au/>. Also refer to Vehicle Standard (Australian Design Rule 4/00 – Seatbelts) 2006.]

Section 3 Design and construction

3.1 Extent of protection

The extent of protection of the child provided by the child restraint system shall be determined by the following criteria:

- (a) The child restraint shall be capable of protecting the wearer under the dynamic conditions specified in AS/NZS 3629.1.
- (b) The child restraint shall minimize the possibility of hazardous impact with the interior of the vehicle.

NOTE The child restraint should —

- (a) minimize lateral and vertical motion and submarining of the child; and
- (b) not permit impact of any portion of the wearer's head, neck and torso with any tensioned adult lap-sash seatbelt used for securing the child restraint, except for child restraints where the adult lap-sash seatbelt is part of the restraint.

3.2 Restraint system

3.2.1 General requirements

The mass of an ISOFIX compatible child restraint system fitted with lower attachment connectors shall not exceed:

- (a) 15 kg for Types A1, A2, and A4, with no more than 10 kg in a separate base or 6 kg in the detachable carrier.
- (b) 12 kg for Type B, Type D and combination of type designations including Type B and Type D.

NOTE 1 No items should be removed during the mass measurement of ISOFIX compatible restraints.

NOTE 2 Restraints should be weighed with all removable items suitable for each type designation as specified in manufacturers instructions

Recommended weight and load limits of other child restraint configurations are as follows:

- (i) The child restraint should weigh not more than 10 kg.
- (ii) The force exerted on the top anchorage strap during dynamic testing should not be more than 7 kN, with an allowance of +0.5 kN tolerance.

NOTE 3 The 0.5kN tolerance arises from the design of the dynamic test rig specified in [clause 5.1](#)

Restraint systems shall conform to the following general requirements as well as the relevant particular requirements of [Clauses 3.2.2](#) to [3.2.14](#):

- (A) The restraint system shall be usable by one occupant only at any time.
- (B) Any harness shall be designed to minimize roping of the webbing during normal use and in the event of a vehicle impact.
- (C) Where adjustable straps are provided, there shall be means to prevent unthreading occurring through the adjustment device.
- (D) The restraint system shall not have any rigid structure forward of the genital region which contacts the genital region during frontal or rearward impact.

NOTE 4 Contouring of the seating surface is not considered a rigid structure.

- (E) Normal wearing adjustments shall be possible with the occupant in the restraint system and without loosening, or removal, of the restraint system from the vehicle. This requirement does not apply to adjustments necessary to accommodate occupants of different age groups and heights.
- (F) The restraint system shall have adequate adjustments for fitment to every vehicle model and seating position for which it purports to be suitable. Adjustments shall be possible with the system in all intended installed seating positions. Adjustment shall be accomplished without the use of tools.
- (G) When the child restraint is installed in a vehicle, the means of harness adjustment for normal wearing shall be accessible to an adult operator. It shall either be visible or its position legibly and permanently marked adjacent to the adjuster. The means of adjustment shall be such that the mechanism returns to the locked position automatically when the adjusting device is released by the operator.
- (H) Any harness or other part of the child restraint that restrains the occupant in the case of a vehicle impact shall be designed to minimize injury to the occupant by absorbing energy or spreading the load, and thereby limiting the restraint loads upon the occupant.

NOTE 5 Absorbing energy may be achieved by other components, not just the harness in the restraint system.

- (I) Child restraints fitted with a harness may be fitted with a cross-chest device. If supplied, the cross-chest device shall meet the following requirements:
 - (1) It shall be suitable for use with the harness by all occupants for which the restraint is suitable.
 - (2) It shall have a maximum allowable height of 45 mm.
 - (3) It shall have a maximum allowable weight of 50 grams.
 - (4) All parts shall remain securely attached to at least one shoulder strap.
 - (5) It shall not adversely interact with shoulder and crotch padding or the harness buckle tongues.
 - (6) It shall be adjustable to align the top with the armpits for the smallest and largest applicable test dummies.
 - (7) It shall be able to be released with a total force of not less than 10 N and not greater than 40 N.

NOTE 6 The cross-chest device may be removed from the child restraint to evaluate this test.

NOTE 7 The cross-chest device should include marking to indicate the point of release.

- (8) When installed with the applicable smallest and largest dummy for each Type designation, it shall not allow the initial position of each shoulder strap in contact with the dummy to alter by more than 15 mm further apart or 15 mm closer together.
- (9) When installed with the largest dummy for each Type designation according to AS/NZS 3629.1, it shall be able to slide with an average force of not less than 3 N and not greater than 20 N. The average force shall be determined from three tests.
- (J) The following applies to liners and covers.

Any removable liner or cover shall be designed so that it can be removed by one of the following methods:

- (1) By not having to remove any part of the harness assembly, or similar part/s of the child restraint.
 - (2) For child restraints fitted with a harness assembly, any part of which has to be removed to remove a liner or cover, the harness assembly shall be designed such that —
 - (a) each shoulder strap is terminated in a loop of webbing;
 - (b) disconnection of each shoulder strap is directly from either —
 - (i) a splitter plate at the back of the restraint that is attached to the harness adjusting strap; or
 - (ii) an anchorage bracket fixed to the restraint, close to the shoulder strap slots;
 - (c) disconnection of the shoulder strap is achieved without the use of tools; and
 - (d) the crotch straps or leg straps and quick-release device attached to the straps shall not prevent the liner or cover being removed without the need to remove the straps from the restraint structure.
 - (3) A removable cover designed to fit expanded polystyrene or cellular foam seats or seats lined with expanded polystyrene or cellular foam shall have a means by which the cover can be well secured to the seat, to avoid children gaining access to the expanded polystyrene or cellular foam.
- (K) A single length of webbing shall not constitute the harness assembly, i.e. shoulder straps, lap belt and adjuster straps.
- (L) Restraints that are a combination of type designations shall meet the shoulder strap positions of all the combined type designations. A single set of shoulder strap positions is permissible if they can be adjusted to conform to the height requirements of all the combined type designations.
- (M) The minimum webbing width for leg or crotch straps shall be 24 mm.
- (N) The rigid seat back height shall be in accordance with [Fig 3.1](#) and [Table 3.1](#) for each type designation. Dimensions shall be taken on a plane 100 mm from and parallel to the back plane with seat covers removed, as shown in [Figure 3.1](#).
- (O) With the exception of Types C1 and C2 and Type H restraints, any structure beside the head that would be sandwiched between the door structure and the dummy's head during the side impact testing specified in [Sections 4](#) and [5](#) shall have energy attenuating properties. The level of energy attenuation shall be determined by conducting a drop test as described in AS/NZS 3629.11.
- The headform acceleration shall not exceed 250 *g* peak. In addition, the cumulative duration of acceleration shall not exceed —
- (a) 3.0 ms for acceleration greater than 200 *g*; and
 - (b) 6.0 ms for acceleration greater than 150 *g*.
- (P) Foot props or other rigid devices that support the child restraint to the vehicle floor shall not be fitted to a child restraint or a base component of the child restraint.

- (Q) Where the child restraint is fitted with items that are intended to be positioned between the harness shoulder straps and the occupant, such as shoulder or chest pads, they shall not be made of frictional material.

NOTE 8 Examples of frictional materials include, but are not limited to, rubber or rubber-like materials.

NOTE 9 This requirement is intended to exclude the use of shoulder pads and chest pads with frictional properties that may be used in an attempt to minimize the forward excursion of the dummy during dynamic testing. These pads could potentially increase the level of injury to an occupant in a crash without limiting the forward excursion of the occupant.

- (R) The harness system consisting of harness and buckle assemblies shall be securely attached to the restraint.

- (S) The harness systems termination fittings shall be secured to ensure no interference with any other mechanism within the restraint.

NOTE 10 Termination fittings include but are not limited to harness anchorages and splitter plates.

- (T) The harness system termination fitting shall be secured to ensure no interference with the seatbelt.

NOTE 11 Termination fittings include but are not limited to harness anchorages and splitter plates.

- (U) Where a child restraint is fitted with an adjustable headrest, the headrest structure shall not restrict the forward movement of the dummy when assessed for accommodation. Follow the manufacturer's instructions when adjusting the headrest.

NOTE 12 This is to avoid the headrest interfering with the shoulders during a frontal impact.

- (V) Child restraint components that are not intended to be disconnected or replaced shall be permanently fixed to prevent inadvertent misuse.

NOTE 13 Typical components include recline base, rebound bar, headrest or structural parts.

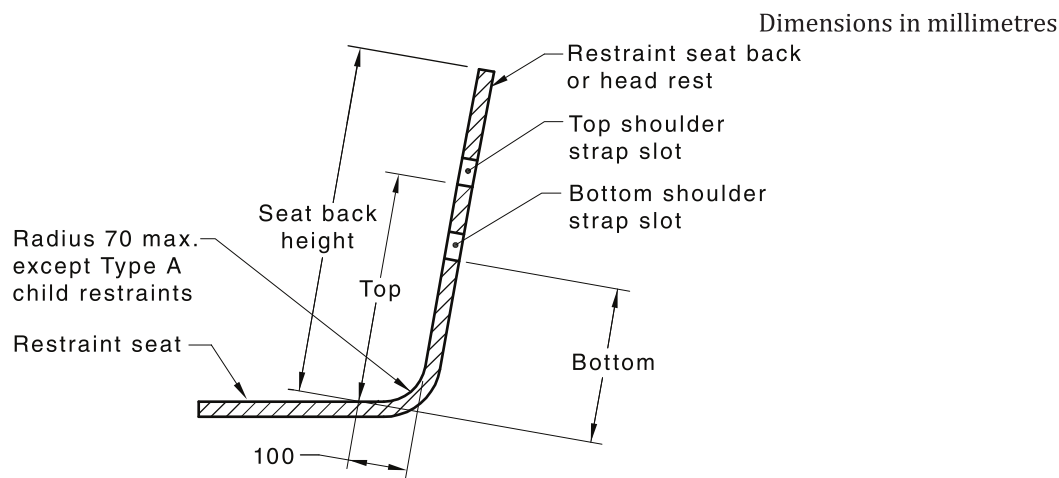
- (W) The shoulder strap slot height shall be in accordance with [Figure 3.1](#) and [Table 3.1](#) for each type designation. Dimensions shall be taken on a plane 100 mm from and parallel to the back plane to the guiding edge of the slot with seat covers removed, as shown in [Figure 3.1](#).

[Figure 3.1](#) shows the shoulder strap heights measured to the bottom of the slot where the shoulder strap would be directed downwards after passing through the slot. For straps that are directed upward after passing through the slot, the top of the slot shall be used for determining the height.

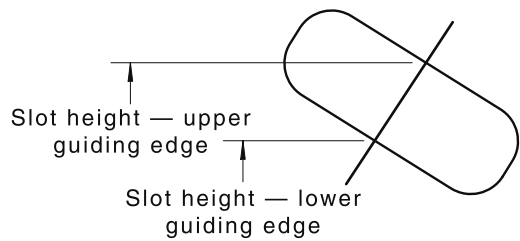
If the shoulder straps pass through two structures, the structure that determines the positioning of the strap on to the shoulder shall be used in determining the shoulder strap slot height.

- (X) No part of the child restraint shall directly restrain the forward movement of the head or neck of the occupant.

- (Y) Where a child restraint is designed to be suitable for two or more type designations then the requirements of this Section shall apply for all of the applicable type designations of the product.



(a) Dimensions on the seat



(b) Measurement of angled slots in restraint back

Figure 3.1 — Shoulder strap positions and restraint back height

Table 3.1 — Shoulder slot positions and seat back height

Type designation	Bottom shoulder strap height		Minimum top shoulder strap slot height	Seat back height/head rest height	Vertical slot spacing
	Min	Max		Min	Max.
A1	180	275	290	490	80
A2	180	275	310	525	80
A3	180	275	290	490	80
A4	180	275	360	545	80
A1/0, A2/0, A3/0, A4/0	(4)	(4)	—	—	—
B	290	365	385	560	80
D	290	365	405	560	80
E8 (booster seat)	—	—	—	630	—
E10 and F (booster seat)	—	—	—	670	—
G	290	365	485	630	80

Table 3.1 (continued)

Type designation	Bottom shoulder strap height		Minimum top shoulder strap slot height	Seat back height/head rest height	Vertical slot spacing
	Min	Max		Min	Max.
NOTE 1 For Type A child restraints, it is desirable that a slot be located at a height of approximately 250 mm and another at approximately 290 mm to 300 mm.					
NOTE 2 Restraints that are a combination of Type A and Type B may have a lower slot height of 180 mm minimum.					
NOTE 3 Shoulder strap slot locations should be located in such a way as to encourage the use of a restraint up to the maximum height for which a restraint is suitable, rather than at the minimum size for which the next restraint is suitable. For convertible restraints, the transition shoulder strap slot should aim to encourage the use of the restraint in the mode designed for smaller children as long as possible within the size limits of the restraint.					
For example, for a Type A2/B restraint, the slot position intended for transition from rearward- to forward-facing mode should be located so as to encourage rearward-facing use for as long as the restraint is suitable to be used in that mode rather than at the minimum shoulder height for which forward-facing use is permissible. See Clause 6.7.2 for requirements on aligning the shoulder strap slots with the shoulder height markers.					
NOTE 4 See Figure 3.19 for slot positioning for restraints for low birthweight infants, Type A/0.					

3.2.2 Type A1 child restraints

It is recommended that any deceleration forces acting upon the occupant during a frontal impact should be distributed as uniformly as is practicable over the back of the occupant's head and torso.

The following requirements apply to Type A1 child restraints:

- (a) The contact area between a TNO P³/₄ dummy and any harness shall be not less than 7000 mm².

NOTE 1 This area of contact is that calculated to result in a contact pressure not greater than 175 kPa for a 9 kg dummy subjected to 14 g deceleration.

- (b) The restraint system shall —
- (i) accommodate a TARU Theresa dummy clothed in summer-weight clothing in accordance with [Appendix A](#);
 - (ii) accommodate a TNO P³/₄ dummy clothed in winter-weight clothing in accordance with [Appendix A](#); and
 - (iii) for child restraints suitable for low birthweight infants (Type A1/0), accommodate a LBW dummy clothed in summer-weight clothing in accordance with [Appendix A](#).
- (c) With the TNO P³/₄ dummy in the child restraint, manually adjusted harnesses shall have not less than 100 mm of material extending from the adjuster, to provide a grip for adjustment purposes.

NOTE 2 The material may either be attached to, or form part of, the free end of the strap.

- (d) Any restraining harness shall have not more than one adjuster.
- (e) All harnesses shall meet the following requirements:
- (i) Any restraining harness shall have not less than five points of attachment to the shell comprising shoulder straps, lap straps and a crotch strap or leg straps.

NOTE 3 Crotch and leg straps may be adjustable.

- (ii) There shall be a minimum of three sets of shoulder strap height positions provided, not including positions for low birthweight infants.

NOTE 4 The positions may be achieved by slots or by a means of adjusting strap height.

- (iii) The shoulder slot width shall not be less than the width of the shoulder strap.
- (iv) The shoulder straps shall meet the height positions in accordance with the requirements of [Figure 3.1](#) and [Table 3.1](#).

NOTE 5 Shoulder strap height requirements are intended to ensure that compressive forces on the occupant's shoulders are limited and are not greater than the resultant compressive forces caused by a shoulder strap angled down (and back) 15° to the horizontal plane tangential to the occupant's shoulders.

- (v) The vertical spacing between any two shoulder strap positions shall not exceed 80 mm.
- (vi) The horizontal spacing between the inside edges of the shoulder straps at the backrest surface shall be between 30 mm and 50 mm. This width shall be measured in the lower shoulder strap position and maintained for at least 40 mm above this position.

NOTE 6 This width is specified so that the shoulder straps do not come off the infant's shoulders and is maintained to allow for the initial growth up to approximately 5 months of age.

- (vii) The distance between the rearmost part of the crotch strap or leg straps and the junction between the backrest and the leg support region shall be between 70 mm and 90 mm when measured along the longitudinal centre-line of the seating surface as shown in [Figure 3.2](#). If the distance is adjustable, adjust in the rearmost position, not including positions for low birthweight infants.
- (viii) Straps shall be tensioned by hand to enable measurement.
- (ix) If the requirements of (vi) and (vii) are achieved using a removable item, the removable item shall be securely attached in position.
- (x) If a child restraint is also suitable for low birthweight infants, the additional requirements in Item 3.2.2(h) shall also be met.

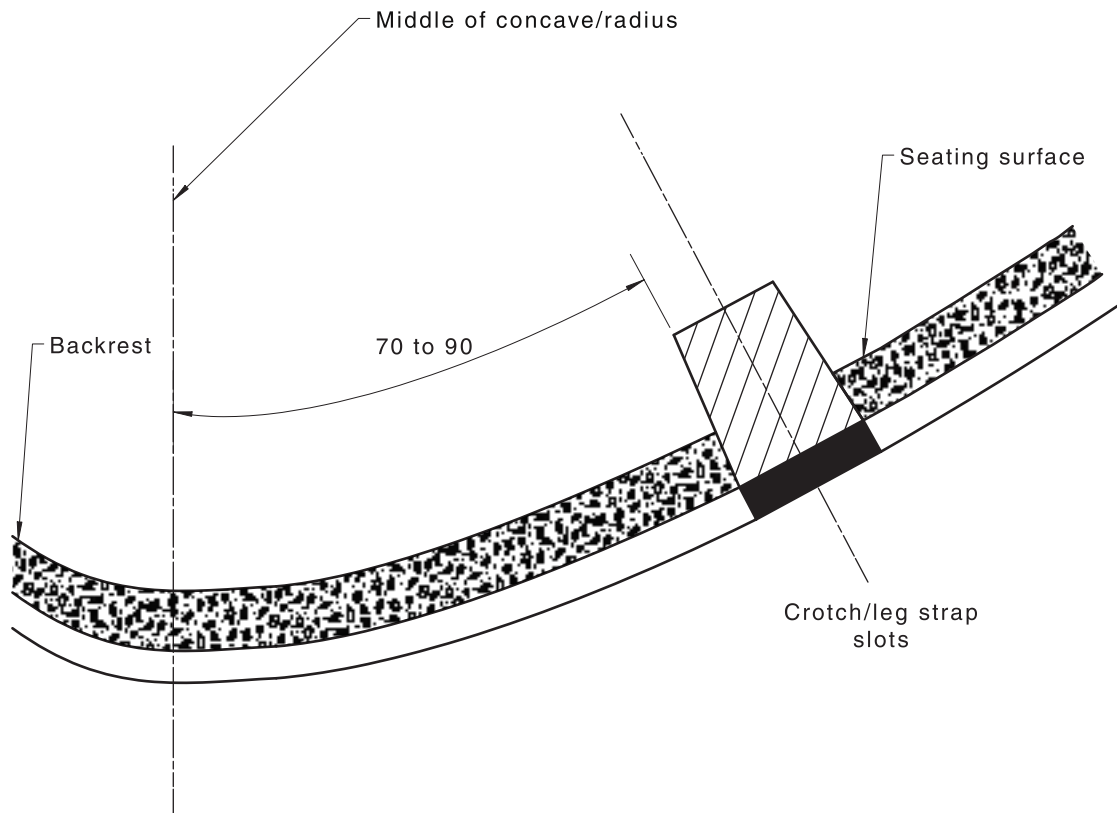


Figure 3.2 — Crotch/leg strap position for newborn babies in Type A restraint

- (f) The child restraint shall have a visual indication of the desired installation angle so that it is visible from both sides when installed in a vehicle. The indication can be on each side or centrally positioned. The means of providing the correct angle of installation may be either —
- (i) an indicator marked on the side of the child restraint such that when in a vehicle a horizontal line is parallel with the road within the indicated range. The indicator shall be at least 60 mm long and at least 3 mm wide in a contrasting colour to its background;
 - (ii) a mechanical device that indicates the correct installation angle; or
 - (iii) a spirit or bubble level that indicates the correct installation angle.

NOTE 7 Examples of mechanical indicators include mechanisms using a pendulum or a ball on a curved surface.

NOTE 8 The housing for the liquid should not be made from glass or other material that may shatter.

Where more than one indicator is used, they shall be of the same type. For child restraints with a separate base, the indication shall be visible when the restraint is installed on to the base.

When measured in accordance with AS 3629.6, the average backrest recline angle shall be between 40° and 55° with reference to the horizontal plane for all recline positions in rearward facing mode. For child restraints that have an indicator showing a range of installation angles when adjusted in accordance with the manufacturer's instructions, the average backrest recline angle when installed at the maximum and minimum positions allowable shall be between 40° and 55°.

- (g) When measured in accordance with AS 3629.6, the head plane shall be between the height of the torso plane and not more than 15 mm below the torso plane.-

NOTE 9 This requirement is intended to improve an infant's head position to avoid "chin on chest" positioning for at least the first three months of life.

- (h) If a child restraint is suitable for low birthweight infants (Type A1/0), the following requirements apply:

- (i) The child restraint shall be adjusted in accordance with the manufacturer's instructions before conducting any of the measurements specified below. This may include the addition of removable items.
- (ii) Straps shall be designed and located so that they attach to or are guided by the load bearing structure of the restraint (see [Figure 3.19](#)). The harness slots or guides shall provide a configuration which conforms to the following requirements:

(A) The centre of the waist strap slots shall be located at the middle of the concave of the junction between the backrest and the leg support region. The distance between the waist straps shall be 100 ± 10 mm when measured along the seating surface.

(B) The distance between the shoulder straps and the centre of the waist straps shall be 160 ± 20 mm when measured along the longitudinal centre-line of the seating surface.

(C) The distance between the rearmost part of the crotch strap or leg straps and the centre of the waist straps shall be between 50 mm and 70 mm when measured along the longitudinal centre-line of the seating surface.

(D) The outside width of the crotch strap or leg straps shall not be more than 40 mm when measured along the seating surface.

NOTE 10 This width is specified so that the infant's legs are not forced apart.

(E) The horizontal spacing between the inside edges of the shoulder straps at the backrest surface shall be between 30 mm and 40 mm.

NOTE 11 This width is required so that the shoulder straps do not come off the infant's shoulders.

NOTE 12 Straps tensioned according to the manufacturer's instructions. Straps may be tensioned by hand to enable the measurement.

Measurements shall be conducted using a means of determining the slot edge or centre of slot that extends through the fabric cover and padding.

The requirements for shoulder, waist or crotch strap/leg strap slot locations shall allow for additional slots for larger or smaller occupants.

- (iii) The backrest region that supports the back of the LBW dummy shall be substantially flat.

NOTE 13 This is to avoid a curved backrest that could cause restriction in the baby's breathing.

- (iv) The harness when tensioned in accordance with the manufacturer's instructions on the LBW dummy shall provide adjustment to achieve the following:

(A) The harness shall allow the dummy to be placed in the harness and easily removed.

- (B) The quick release device shall not extend into the region located 50 mm below the dummy's neck.

NOTE 14 This is required so that any hardware is kept away from the infant's neck and throat regions.

- (v) When measured in accordance with AS 3629.6, the average backrest recline angle shall be between 40° and 55° with reference to the horizontal plane. For child restraints that have an indicator showing a range of installation angles, the average backrest recline angle when installed at the maximum and minimum positions allowable shall be between 40° and 55°.
- (vi) When measured in accordance with AS 3629.6, the head plane shall be between the height of the torso plane and not more than 15 mm below the torso plane.

NOTE 15 This requirement is intended to improve an infant's head position to avoid "chin on chest" positioning.

3.2.3 Type A2 child restraints

It is recommended that any deceleration forces acting upon the occupant during a frontal impact should be distributed as uniformly as is practicable over the back of the occupant's head and torso.

The following requirements apply to Type A2 child restraints:

- (a) The contact area between a TNO P1½ dummy and any harness shall be not less than 12 000 mm².

NOTE 1 This is the area of contact calculated to result in a contact pressure not greater than 175 kPa for a 12 kg dummy subjected to 14 g deceleration.

- (b) The restraint system shall —

- (i) accommodate a TARU Theresa dummy clothed in summer-weight clothing in accordance with [Appendix A](#);
- (ii) accommodate a TNO P1½ dummy clothed in winter-weight clothing in accordance with [Appendix A](#); and
- (iii) for child restraints suitable for low birthweight infants (Type A2/0), accommodate a LBW dummy clothed in summer-weight clothing in accordance with [Appendix A](#).

- (c) With the TNO P1½ dummy in the child restraint, manually adjusted harnesses shall have not less than 100 mm of material extending from the adjuster, to provide a grip for adjustment purposes.

NOTE 2 The material may either be attached to, or form part of, the free end of the strap.

- (d) Any restraining harness shall have not more than one adjuster.

- (e) All harnesses shall meet the following requirements:

- (i) Any restraining harness shall have not less than five points of attachment to the shell comprising shoulder straps, lap straps and a crotch strap or leg straps.

NOTE 3 Crotch and leg straps may be adjustable.

- (ii) There shall be a minimum of three sets of shoulder strap height positions provided, not including positions for low birthweight infants.

NOTE 4 The positions may be achieved by slots or by a means of adjusting strap height.

- (iii) The shoulder slot width shall not be less than the width of the shoulder strap.

- (iv) The shoulder straps shall meet the height positions in accordance with the requirements of [Figure 3.1](#) and [Table 3.1](#).

NOTE 5 Shoulder strap height requirements are intended to ensure that compressive forces on the occupant's shoulders are limited and are not greater than resultant compressive forces caused by a shoulder strap angled down (and back) 15° to the horizontal plane tangential to the occupant's shoulders.

- (v) The vertical spacing between any two shoulder strap positions shall not exceed 80 mm.

- (vi) The horizontal spacing between the inside edges of the shoulder straps at the backrest surface shall be between 30 mm and 50 mm. This width shall be measured in the lower shoulder strap position and maintained for at least 40 mm above this position.

NOTE 6 This width is specified so that the shoulder straps do not come off the infant's shoulders and is maintained to allow for the initial growth up to approximately 5 months of age.

- (vii) The distance between the rearmost part of the crotch strap or leg straps and the junction between the backrest and the leg support region shall be between 70 mm and 90 mm when measured along the longitudinal centre-line of the seating surface as shown in [Figure 3.2](#). If the distance is adjustable, adjust in the rearmost position, not including positions for low birthweight infants.

- (viii) Straps shall be tensioned by hand to enable measurement.

- (ix) If the requirements of (vi) and (vii) are achieved using a removable item, the removable item shall be securely attached in position.-

- (x) If a child restraint is also suitable for low birthweight infants, the additional requirements in Item 3.2.3(h) shall also be met.

- (f) The child restraint shall have a visual indication of the desired installation angle so that it is visible from both sides when installed in a vehicle. The indication can be on each side or centrally positioned. The means of providing this correct angle of installation may be either —

- (i) an indicator marked on the side of the child restraint such that when in a vehicle a horizontal line parallel with the road is within the indicated range. The indicator shall be at least 60 mm long and at least 3 mm wide in a contrasting colour to its background;

- (ii) a mechanical device that indicates the correct installation angle; or

NOTE 7 Examples of mechanical indicators include mechanisms using a pendulum or a ball on a curved surface.

- (iii) a spirit or bubble level that indicates the correct installation angle.

NOTE 8 The housing for the liquid should not be made from glass or other material that may shatter.

Where more than one indicator is used, the indicators shall be of the same type. For child restraints with a separate base, the indication shall be visible when the restraint is installed on to the base.

When measured in accordance with AS 3629.6, the average backrest recline angle shall be between 40° and 55° with reference to the horizontal plane, for all recline positions in rearward facing mode. For child restraints that have an indicator showing a range of installation angles when adjusted in accordance with the manufacturer's instructions, the

average backrest recline angle when installed at the maximum and minimum positions allowable shall be between 40° and 55°.

- (g) When measured in accordance with AS 3629.6, the head plane shall be between the height of the torso plane and not more than 15 mm below the torso plane.-

NOTE 9 This requirement is intended to improve an infant's head position to avoid "chin on chest" positioning.

- (h) If a child restraint is suitable for low birthweight infants (Type A2/0), then the following requirements apply:

- (i) The child restraint shall be adjusted in accordance with the manufacturer's instructions before conducting any of the measurements specified below. This may include the addition of removable items.
- (ii) Straps shall be designed and located so that they attach to or are guided by the load bearing structure of the restraint (see [Figure 3.19](#)). The harness slots or guides shall provide a configuration which conforms to the following requirements:

- (A) The centre of the waist strap slots shall be located at the middle of the concave of the junction between the backrest and the leg support region. The distance between the waist straps shall be 100 ± 10 mm when measured along the seating surface.
- (B) The distance between the shoulder straps and the centre of the waist straps shall be 160 ± 20 mm when measured along the longitudinal centre-line of the seating surface.
- (C) The distance between the rearmost part of the crotch strap or leg straps and the centre of the waist straps shall be between 50 mm and 70 mm when measured along the longitudinal centre-line of the seating surface.
- (D) The outside width of the crotch strap or leg straps shall not be more than 40 mm when measured along the seating surface.

NOTE 10 This width is specified so that the infant's legs are not forced apart.

- (E) The horizontal spacing between the inside edges of the shoulder straps at the backrest surface shall be between 30 mm and 40 mm.

NOTE 11 This width is required so that the shoulder straps do not come off the infant's shoulders.

NOTE 12 Straps tensioned according to the manufacturer's instructions. Straps may be tensioned by hand to enable the measurement.

Measurements shall be conducted using a means of determining the slot edge or centre of slot that extends through the fabric cover and padding.

The requirements for shoulder, waist or crotch strap or leg strap slot locations shall allow for additional slots for larger or smaller occupants.

- (iii) The backrest region that supports the back of the LBW dummy shall be substantially flat.

NOTE 13 This is to avoid a curved backrest that could cause restriction in the baby's breathing.

- (iv) The harness, when tensioned in accordance with the manufacturer's instructions on the LBW dummy, shall provide adjustment to achieve the following:

- (A) The harness shall allow the dummy to be placed in the harness and easily removed.
- (B) The quick release device shall not extend into the region located 50 mm below the dummy's neck.

NOTE 14 This is required so that any hardware is kept away from the infant's neck and throat regions.

- (v) When measured in accordance with AS 3629.6, the average backrest recline angle shall be between 40° and 55° with reference to the horizontal plane. For child restraints that have an indicator showing a range of installation angles, the average backrest recline angle when installed at the maximum and minimum positions allowable shall be between 40° and 55°.

- (vi) When measured in accordance with AS 3629.6, the head plane shall be between the height of the torso plane and not more than 15 mm below the torso plane.-

NOTE 15 This requirement is intended to improve an infant's head position to avoid "chin on chest" positioning.

3.2.4 Type A3 child restraints

It is recommended that any deceleration forces acting upon the occupant during a frontal impact should be distributed as uniformly as is practicable over the back of the occupant's head and torso.

The following requirements apply to Type A3 restraints:

- (a) The contact area between a TNO P $\frac{3}{4}$ dummy and any harness shall be not less than 7000 mm².

NOTE 1 This area of contact is that calculated to result in a contact pressure not greater than 175 kPa for a 9 kg dummy subjected to 14 g deceleration.

- (b) The restraint system shall —

- (i) accommodate a TARU Theresa dummy clothed in summer-weight clothing in accordance with [Appendix A](#);
- (ii) accommodate a TNO P $\frac{3}{4}$ dummy clothed in winter-weight clothing in accordance with [Appendix A](#); and
- (iii) for child restraints suitable for low birthweight infants (Type A3/0), accommodate a LBW dummy clothed in summer-weight clothing in accordance with [Appendix A](#).

- (c) With the TNO P $\frac{3}{4}$ dummy in the child restraint, manually adjusted harnesses shall have not less than 100 mm of material extending from the adjuster to provide a grip for adjustment purposes.

NOTE 2 The material may either be attached to, or form part of, the free end of the strap.

- (d) Any restraining harness shall have not more than one adjuster.

- (e) Any harness shall meet the following requirements:

- (i) Any restraining harness shall have not less than five points of attachment to the shell comprising of shoulder straps, lap straps and crotch strap or leg straps.

NOTE 3 Crotch and leg straps may be adjustable.

- (ii) There shall be a minimum three sets of shoulder strap height positions provided, not including positions for low birthweight infants.

NOTE 4 The positions may be achieved by slots or by a means of adjusting strap height.

- (iii) The shoulder slot width shall not be less than the width of the shoulder strap.
- (iv) The shoulder straps shall meet the height positions in accordance with the requirements of [Figure 3.1](#) and [Table 3.1](#).

NOTE 5 Shoulder strap height requirements are intended to ensure that compressive forces on the occupant's shoulders are limited, and are not greater than resultant compressive forces caused by a shoulder strap angled down (and back) 15° to the horizontal plane tangential to the occupant's shoulders.

- (v) The vertical spacing between any two shoulder strap positions shall not exceed 80 mm.
- (vi) The horizontal spacing between the inside edges of the shoulder straps at the backrest surface shall be between 30 mm and 50 mm. This width shall be measured in the lower shoulder strap position and maintained for at least 40 mm above this position.

NOTE 6 This width is specified so that the shoulder straps do not come off the infant's shoulders and is maintained to allow for the initial growth up to approximately 5 months of age.

- (vii) The distance between the rearmost part of the crotch strap or leg straps and the junction between the backrest and the leg support region shall be between 70 mm and 90 mm when measured along the longitudinal centre-line of the seating surface as shown in [Figure 3.2](#). If the distance is adjustable, adjust in the rearmost position, not including positions for low birthweight infants.
- (viii) Straps shall be tensioned by hand to enable measurement.
- (ix) If the requirements of (vi) and (vii) are achieved using a removable item, the removable item shall be securely attached in position.
- (x) If a child restraint is also suitable for low birthweight infants, the additional requirements in Item 3.2.4(g) shall also be met.

- (f) When measured in accordance with AS 3629.6, the head plane shall be between the height of the torso plane and not more than 15 mm below the torso plane.

NOTE 8 This requirement is intended to improve an infant's head position to avoid "chin on chest" positioning.

- (g) If a child restraint is suitable for low birthweight infants (Type A3/0), the following requirements apply:

- (i) The child restraint shall be adjusted in accordance with the manufacturer's instructions before conducting any of the measurements specified below. This may include the addition of removable items.
- (ii) Straps shall be designed and located so that they attach to or are guided by the load bearing structure of the restraint (see [Figure 3.19](#)). The harness slots or guides shall provide a configuration which conforms to the following requirements:
 - (A) The centre of the waist strap slots shall be located at the middle of the concave of the junction between the backrest and the leg support region. The distance between the waist straps shall be 100 ± 10 mm when measured along the seating surface.

(B) The distance between the shoulder straps and the centre of the waist straps shall be 160 ± 20 mm when measured along the longitudinal centre-line of the seating surface.

(C) The distance between the rearmost part of the crotch strap or leg straps and the centre of the waist straps shall be between 50 mm and 70 mm when measured along the longitudinal centre-line of the seating surface.

(D) The outside width of the crotch strap or leg straps shall not be more than 40 mm when measured along the seating surface.

NOTE 9 This width is specified so that the infant's legs are not forced apart.

(E) The horizontal spacing between the inside edges of the shoulder straps at the backrest surface shall be between 30 mm and 40 mm.

NOTE 10 This width is specified so that the shoulder straps do not come off the infant's shoulders.

NOTE 11 Straps tensioned according to the manufacturer's instructions. Straps may be tensioned by hand to enable the measurement.

Measurements shall be conducted using a means of determining the slot edge or centre of slot that extends through the fabric cover and padding.

The requirements for shoulder, waist or crotch strap or leg strap slot locations shall allow for additional slots for larger or smaller occupants.

(iii) The backrest region that supports the back of the LBW dummy shall be substantially flat.

NOTE 12 This is to avoid a curved backrest that could cause restriction in the baby's breathing.

(iv) The harness, when correctly tensioned on the LBW dummy, shall provide adjustment to achieve the following:

(A) The harness shall allow the dummy to be placed in the harness and easily removed.

(B) The quick release device shall not extend into the region located 50 mm below the dummy's neck.

NOTE 13 This is required so that any hardware is kept away from the infant's neck and throat regions.

(v) When measured in accordance with AS 3629.6, the head plane shall be between the height of the torso plane and not more than 15 mm below the torso plane.-

NOTE 14 This requirement is intended to improve an infant's head position to avoid "chin on chest" positioning.

3.2.5 Type A4 child restraints

It is recommended that any deceleration forces acting upon the occupant during a frontal impact should be distributed as uniformly as is practicable over the back of the occupant's head and torso.

The following requirements apply to Type A4 child restraints:

(a) The contact area between a TNO P3 dummy and any harness shall be not less than 15 000 mm².

NOTE 1 This is the area of contact calculated to result in a contact pressure not greater than 175 kPa for a 15 kg dummy subjected to 14 g deceleration.

- (b) The restraint system shall —
- (i) accommodate a TARU Theresa dummy clothed in summer-weight clothing in accordance with [Appendix A](#);
 - (ii) accommodate a TNO P3 dummy clothed in winter-weight clothing in accordance with [Appendix A](#); and
 - (iii) for child restraints suitable for low birthweight infants (Type A4/0), accommodate a LBW dummy clothed in summer-weight clothing in accordance with [Appendix A](#).

- (c) With the TNO P3 dummy in the child restraint, manually adjusted harnesses shall have not less than 100 mm of material extending from the adjuster, to provide a grip for adjustment purposes.

NOTE 2 The material may either be attached to, or form part of, the free end of the strap.

- (d) Any restraining harness shall have not more than one adjuster.

- (e) All harnesses shall meet the following requirements:

- (i) Any restraining harness shall have not less than five points of attachment to the shell comprising shoulder straps, lap straps and crotch strap or leg straps.

NOTE 3 Crotch and leg straps may be adjustable.

- (ii) There shall be a minimum of three sets of shoulder strap height positions provided, not including positions for low birthweight infants.

NOTE 4 The positions may be achieved by slots or by a means of adjusting strap height.

- (iii) The shoulder slot width shall not be less than the width of the shoulder strap.
- (iv) The shoulder straps shall meet the height positions in accordance with the requirements of [Figure 3.1](#) and [Table 3.1](#).

NOTE 5 Shoulder strap height requirements are intended to ensure that compressive forces on the occupant's shoulders are limited and are not greater than resultant compressive forces caused by a shoulder strap angled down (and back) 15° to the horizontal plane tangential to the occupant's shoulders.

- (v) The vertical spacing between any two shoulder strap positions shall not exceed 80 mm.

- (vi) The horizontal spacing between the inside edges of the shoulder straps at the backrest surface shall be between 30 mm and 50 mm. This width shall be measured in the lower shoulder strap position and maintained for at least 40 mm above this position.

NOTE 6 This width is specified so that the shoulder straps do not come off the infant's shoulders and is maintained to allow for the initial growth up to approximately 5 months of age.

- (vii) The distance between the rearmost part of the crotch strap or leg straps and the junction between the backrest and the leg support region shall be between 70 mm and 90 mm when measured along the longitudinal centre-line of the seating surface as shown in [Figure 3.2](#). If the distance is adjustable, adjust in the rearmost position, not including positions for low birthweight infants.

- (viii) Straps shall be tensioned by hand to enable measurement.

- (ix) If the requirements of (vi) and (vii) are achieved using a removable item, the removable item shall be securely attached in position.
 - (x) If a child restraint is also suitable for low birthweight infants, the additional requirements in Item 3.2.5(h) shall also be met.
- (f) The child restraint shall have a visual indication of the desired installation angle so that it is visible from both sides when installed in a vehicle. The indication can be on each side or centrally positioned. The means of providing this correct angle of installation may be either —
- (i) an indicator marked on the side of the child restraint such that when in a vehicle a horizontal line parallel with the road is within the indicated range. The indicator shall be at least 60 mm long and at least 3 mm wide in a contrasting colour to its background;
 - (ii) a mechanical device that indicates the correct installation angle; or
- NOTE 7 Examples of mechanical indicators include mechanisms using a pendulum or a ball on a curved surface.
- (iii) a spirit or bubble level that indicates the correct installation angle.
- NOTE 8 The housing for the liquid should not be made from glass or other material that may shatter.
- Where more than one indicator is used, the indicators shall be of the same type. For child restraints with a separate base, the indication shall be visible when the restraint is installed on to the base.
- When measured in accordance with AS 3629.6, the average backrest recline angle shall be between 40° and 55° with reference to the horizontal plane, for all the positions in rearward facing mode. If provided with backrest angle adjustment then one position shall meet the requirement with other backrest angles being more upright. For child restraints that have an indicator showing a range of installation angles when adjusted in accordance with the manufacturer's instructions, the average backrest recline angle when installed at the maximum and minimum positions allowable shall be between 40° and 55°.
- (g) When measured in accordance with AS 3629.6, the head plane shall be between the height of the torso plane and not more than 15 mm below the torso plane.
- NOTE 9 This requirement is intended to improve an infant's head position to avoid "chin on chest" positioning.
- (h) If a child restraint is suitable for low birthweight infants (Type A4/0), the following requirements apply:
- (i) The child restraint shall be adjusted in accordance with the manufacturer's instructions before conducting any of the measurements specified below. This may include the addition of removable items.
 - (ii) Straps shall be designed and located so that they attach to or are guided by the load bearing structure of the restraint (see [Figure 3.19](#)). The harness slots or guides shall provide a configuration which conforms to following requirements:
 - (A) The centre of the waist strap slots shall be located at the middle of the concave of the junction between the backrest and the leg support region. The distance between the waist straps shall be 100 ± 10 mm when measured along the seating surface.

(B) The distance between the shoulder straps and the centre of the waist straps shall be 160 ± 20 mm when measured along the longitudinal centre-line of the seating surface.

(C) The distance between the rearmost part of the crotch strap or leg straps and the centre of the waist straps shall be between 50 mm and 70 mm when measured along the longitudinal centre-line of the seating surface.

(D) The outside width of the crotch strap/leg straps shall not be more than 40 mm when measured along the seating surface.

NOTE 12 This width is specified so that the infant's legs are not forced apart.

(E) The horizontal spacing between the inside edges of the shoulder straps at the backrest surface shall be between 30 mm and 40 mm.

NOTE 10 This width is specified so that the shoulder straps do not come off the infant's shoulders.

NOTE 11 Straps may be tensioned by hand to enable the measurement.

Measurements shall be conducted using a means of determining the slot edge or centre of slot that extends through the fabric cover and padding.

The requirements for shoulder, waist or crotch strap or leg strap slot locations shall allow for additional slots for larger or smaller occupants.

(iii) The backrest region that supports the back of the LBW dummy shall be substantially flat.

NOTE 12 This is to avoid a curved backrest that could cause restriction in the baby's breathing.

(iv) The harness, if tensioned in accordance with the manufacturer's instructions on the LBW dummy, shall provide adjustment to achieve the following:

(A) The harness shall allow the dummy to be placed in the harness and easily removed.

(B) The quick release device shall not extend higher than 50 mm below the dummy's neck.

NOTE 13 This is required so that any hardware is kept away from the infant's neck and throat regions.

(v) When measured in accordance with AS 3629.6, the average backrest recline angle shall be between 40° and 55° with reference to the horizontal plane. For child restraints that have an indicator showing a range of installation angles, the average backrest recline angle when installed at the maximum and minimum positions allowable shall be between 40° and 55° .

(vi) When measured in accordance with AS 3629.6, the head plane shall be between the height of the torso plane and not more than 15 mm below the torso plane.

NOTE 14 This requirement is intended to improve an infant's head position to avoid "chin on chest" positioning.

3.2.6 Type B child restraints

It is recommended that any deceleration forces acting upon the occupant during a frontal impact should be distributed as uniformly as is practicable over the pelvic region and upper torso.

The following requirements apply to Type B child restraints:

- (a) The harness shall provide pelvic restraint by a small downward pressure on the occupant's upper thighs when tightened, and the deceleration forces on the chest shall be applied principally to the upper skeletal structure.
- (b) The contact area between a TNO P3 dummy and the harness shall be not less than 25 000 mm².

NOTE 1 This is the area of contact calculated to result in a contact pressure not greater than 175 kPa for an 18 kg dummy subjected to 24 g deceleration.

- (c) The restraint system shall —
 - (i) accommodate a TNO P³/₄ dummy clothed in summer-weight clothing in accordance with [Appendix A](#); and
 - (ii) accommodate a TNO P6 dummy clothed in winter-weight clothing in accordance with [Appendix A](#).
- (d) With the TNO P6 dummy in the child restraint, manually adjusted harnesses shall have not less than 100 mm of material extending from the adjuster, to provide a grip for adjustment purposes.

The material shall either be attached to, or form part of, the free end of the strap.

- (e) The harness shall have not less than six points of attachment to the shell comprising shoulder straps, lap straps and leg straps.

NOTE 2 Leg straps can reduce the possibility of loading of the genital region in a frontal crash.

NOTE 3 Leg straps may be adjustable.

- (f) There shall be a minimum of two sets of shoulder strap slots provided or a means of adjusting the shoulder strap height. The height of the slots shall be in accordance with [Figure 3.1](#) and [Table 3.1](#).

NOTE 4 Shoulder strap slot height requirements are intended to ensure that compressive forces on the occupant's shoulders are limited, and are not greater than the resultant compressive forces caused by a shoulder strap angled down (and back) 15° to the horizontal plane tangential to the occupant's shoulders.

- (g) The angle measured between the back of the body block as shown in [Figure 3.3](#) and with nominal dimensions in [Table 3.2](#) and a vertical plane shall be not greater than 45° when the child restraint is installed on the test seat specified in AS/NZS 3629.1, for all modes of installation.
- (h) When a body block of smooth, hard construction and of the form shown in [Figure 3.3](#) and with nominal dimensions in [Table 3.2](#) is installed in the child restraint, the centre-line of the lap belt shall lie within the shaded area as shown in [Figure 3.4](#).

NOTE 5 This requirement is intended to ensure that the forces transmitted to the occupant by the lap belt are not applied to the soft tissue area of the lower abdomen.

- (i) With the device positioned in its most upright position on the test seat shown in Figure 1 in AS/NZS 3629.1:2024, and with the top tether strap and the attachment clip extended in a rearwards direction over the top of the test seat back, as if attempting to attach to the top tether anchorage fitting at Point A1, no part of the attachment clip shall pass through the vertical plane XY situated 130 mm from the front edge of the test seat as shown in Detail A of Figure 1 in AS/NZS 3629.1:2024, when the top tether strap is adjusted to its shortest length.
- (j) The restraining harness shall have not more than one adjuster.

(k) With the buckle held perpendicular to the seating surface and in the correct orientation, the following requirements apply:

- (i) The horizontal distance between the leg straps at the seating surface shall not be less than 40 mm.

The separation of the straps shall be measured across the seating surface without the compression of padding or fabric cover. Where the straps are not parallel as they exit the seat cover, the spacing shall be measured at the webbing edge on the side closest to the back of the seat.

NOTE 6 Fabric cover or padding fitted between the leg straps should be designed so as not to restrict the horizontal distance.

NOTE 7 The fabric may be pressed flat by hand prior to the measurement.

- (ii) The vertical distance between the seating surface and either the lowest edge of the buckle housing or the top of the leg strap opening, whichever is the lower of the two, shall not be less than 60 mm.

The vertical distance shall be measured by placing the test mass shown in [Figure 3.5\(a\)](#) on the seating surface with the larger width closer to the seat back and the narrow section placed centrally between the leg straps, so that Step A of the test mass just contacts the rear edge of the leg straps as shown in [Figure 3.5\(b\)](#). The perpendicular height of either the lowest edge of the associated device or the lowest sewing or fastener joining the two straps shall be measured with respect to the bottom of the test mass. The distance shall be measured without compression of padding or fabric cover except from the compression induced by the test mass.

Follow the manufacturer's instructions when adjusting any device.

Fabric cover or padding is permitted to be fitted between the leg straps and the occupant closing the gap between the leg straps. These fabric covers or any padding shall be removed for evaluation of this clause.

(l) The top tether strap —

- (i) shall be securely attached to the fixed portion of the child restraint; and
- (ii) the middle of the strap entry or attachment part to the seat structure shall be at a point not less than 500 mm from the bottom surface of the seat base with the seat in an upright position. The measurement shall be made in the rigid test seat shown in AS/NZS 3629.8. The height shall be measured parallel to the back plane of the rigid test seat, from the base of the rigid seat to the middle of the strap entry or attachment part to the seat structure.

The entry point for the strap shall not be on a height adjustable headrest or back rest. This requirement shall not apply to backrests whose adjustment is for recline angle.

3.2.7 Type C1 child harness

It is recommended that any deceleration forces acting upon the occupant during a frontal impact should be distributed as uniformly as is practicable over the pelvic region and upper torso.

The following requirements apply to Type C1 child harnesses that are used with Type E8, Type E10 and Type F booster seats:

- (a) The child harness shall have not less than three points of attachment.
- (b) The child harness, excluding the vehicle seatbelt, shall not have more than one adjuster.

- (c) With the child harness and all nominated compatible Type E8 Booster Seats accommodating both a TNO P6 and a P6 on Spacer C test dummy as specified in [Appendix B](#) and when fitted on the test seat shown in Figure 1 in AS/NZS 3629.1:2024, no part of the attachment clip shall pass through the vertical plane XY situated 130 mm from the front edge of the test seat shown in Detail A of Figure 1 in AS/NZS 3629.1:2024, when the top tether strap is adjusted to its shortest length. The top tether strap and the attached clip shall be tested by extending in a rearwards direction over the top of the test seat back, as if attempting to attach to the top tether anchorage fitting at Point A1.
- (d) With the child harness and all nominated compatible Type E10 and Type F Booster Seats accommodating both a TNO P6 and a TNO P10 test dummy on Spacer C as specified in [Appendix B](#) and when fitted on the test seat shown in Figure 1 in AS/NZS 3629.1:2024, no part of the attachment clip shall pass through the vertical plane XY situated 130 mm from the front edge of the test seat shown in Detail A of Figure 1 in AS/NZS 3629.1:2024, when the top tether strap is adjusted to its shortest length.

The top tether strap and the attached clip shall be tested by extending in a rearwards direction over the top of the test seat back, as if attempting to attach to the top tether anchorage fitting at Point A1.

3.2.8 Type C2 child harness

It is recommended that any deceleration forces acting upon the occupant during a frontal impact should be distributed as uniformly as is practicable over the pelvic region and upper torso.

The following requirements apply to Type C2 child harnesses:

- (a) The child harness shall have not less than three points of attachment.
- (b) The child harness, excluding the vehicle seatbelt, shall not have more than one adjuster.
- (c) With the child harness accommodating both a TNO P6 and a TNO P10 test dummy on Spacer C specified in [Appendix B](#) and when fitted on the test seat shown in Figure 1 in AS/NZS 3629.1:2024, no part of the attachment clip shall pass through the vertical plane XY situated 130 mm from the edge of the test seat shown in Detail A of Figure 1 in AS/NZS 3629.1:2024, when the top tether strap is adjusted to its shortest length. The top tether strap and the attached clip shall be tested by extending in a rearwards direction over the top of the test seat back, as if attempting to attach to the top tether anchorage fitting at Point A1.
- (d) A rigid component (e.g. adjuster) shall not be situated between the dummy's head and the front edge of the test seat when the tip of the attachment clip is aligned with the vertical plane XY.

3.2.9 Type D child restraints

It is recommended that any deceleration forces acting upon the occupant during a frontal impact should be distributed as uniformly as is practicable over the back of the occupant's head and torso.

The following requirements apply to Type D child restraints:

- (a) The harness shall provide pelvic restraint by a small downward pressure on the occupant's upper thighs when tightened. The decelerating forces on the chest, in a rear impact, shall be applied principally to the upper skeletal structure.
- (b) The contact area between a TNO P3 dummy and the harness shall be not less than 14 000 mm².

NOTE 1 This is the area of contact calculated to result in a contact pressure not greater than 175 kPa for an 18 kg dummy subjected to 14 g deceleration.

- (c) The restraint system shall —
- (i) accommodate a TNO P $\frac{3}{4}$ dummy clothed in summer-weight clothing in accordance with [Appendix A](#); and
 - (ii) accommodate a TNO P6 dummy clothed in winter-weight clothing in accordance with [Appendix A](#).
- (d) With the TNO P6 dummy in the child restraint, manually adjusted harnesses shall have not less than 100 mm of material extending from the adjuster, to provide a grip for adjustment purposes.
- NOTE 2 The material may either be attached to, or form part of, the free end of the strap.
- (e) The harness shall have not less than five points of attachment to the shell.
- (f) The angle measured between the back of the body block, as shown in [Figure 3.3](#) and with nominal dimensions in [Table 3.2](#), and a vertical plane shall be not greater than 45° when the child restraint is installed on the test seat specified in AS/NZS 3629.1, for all modes of installation.
- (g) There shall be a minimum of two sets of shoulder strap slots provided or a means of adjusting the shoulder strap height. The height of the slots shall be in accordance with [Figure 3.1](#) and [Table 3.1](#).
- NOTE 3 Shoulder strap slot height requirements are intended to ensure that compressive forces on the occupant's shoulders are limited and are not greater than the resultant compressive forces caused by a shoulder strap angled down (and back) 15° to the horizontal plane tangential to the occupant's shoulders.
- (h) The restraining harness shall have not more than one adjuster.

3.2.10 Type E8 child restraints

The following requirements apply to Type E8 booster seats:

- (a) The restraint system shall —
- (i) accommodate a TNO P3 dummy clothed in summer-weight clothing in accordance with [Appendix A](#); and
 - (ii) accommodate a TNO P6 dummy clothed in winter-weight clothing in accordance with [Appendix A](#), using spacers as specified in [Figure B.1](#), with Spacers A positioned between the upper arms of dummy and the child restraint, and with Spacers B between the upper legs of the dummy and the child restraint, while seated on Spacer C.
- (b) The restraint of the child occupant shall be provided by means of an adult lap-sash seatbelt, or a Type C1 child harness and seatbelt.
- (c) Booster seats shall be restrained so that they will not become dislodged during dynamic testing. Where booster seats are indirectly restrained through the body of the child, the child and booster seat shall be restrained simultaneously.
- (d) The maximum permissible mass of booster seats shall be not more than 2 kg except when attachment to an upper anchorage point is provided by a top tether strap designed to restrain the back of the booster seat in a vehicle impact. If the booster seat is fitted with a top tether strap, the total mass of the booster seat, excluding the mass of the top tether strap, adjustment device and attachment clip external to the seat structure, shall be not more than 7.5 kg. The mass of the back of the booster seat shall be not more than 5.5 kg.

- (e) The design of the booster seat shall be such that, when fitted in accordance with the manufacturer's instructions and in normal driving conditions, there is reduced propensity for the child occupant to slip off the booster seat when asleep or wriggle off the booster seat when active.
- (f) Where the booster seat incorporates foam thicker than 30 mm, either singly or compositely on or beneath the seating surface, the seating surface shall be subjected to $175 \text{ N} \pm 5 \%$ pre-load force normal to the seating surface and allowed to stabilize for 30 s followed by $2250 \text{ N} \pm 5 \%$ test force, applied to the seating surface through the indenter apparatus described in AS 2282.8, so that the outer edges of the indenter apparatus disc are within 10 mm of the side and front edges of the seating surface.

When the test force is applied, there shall be not more than 32 mm deflection from the stabilized position of the indenter.

- (g) Booster seats that are fitted with a top tether strap shall conform to the requirement that, with the device positioned in its most upright position on the test seat shown in Figure 1 in AS/NZS 3629.1:2024 and with the top tether strap and attachment clip extended in a rearwards direction over the top of the test seat back, as if attempting to attach to the top tether anchorage fitting at Point A1, no part of the attachment clip shall pass through the vertical plane XY situated 130 mm from the front edge of the test seat as shown in Detail A of Figure 1 in AS/NZS 3629.1:2024 when the top tether strap is adjusted to its shortest length.
- (h) With the child restraint installed on the test seat specified in AS/NZS 3629.1 and fitted with a TNO P6, the booster seat sash guide shall not inhibit retraction of the sash belt.
- (i) The top tether strap shall —

- (i) be securely attached to the fixed portion of the child restraint; and
- (ii) be attached to the seat structure at a point not less than 370 mm from the bottom surface of the seat base with the seat in an upright position. The measurement shall be made in the rigid test seat shown in AS/NZS 3629.8. The height shall be measured parallel to the back plane of the rigid test seat, from the base to the middle of the strap entry or attachment part to the seat structure.

The entry point for the strap shall not be on a height adjustable headrest or backrest. This requirement shall not apply to backrests whose adjustment is for recline angle.

- (j) With an unclothed TNO P6 dummy in the restraint placed on the rigid test seat as specified in AS/NZS 3629.8, and adjusted in accordance with the manufacturer's instructions with the lap-sash seatbelt only, the seatbelt position shall conform to the following in both the most reclined and the most upright position of the restraint:
 - (i) The top edge of the lap belt shall not be more than 20 mm above the top edge of the rigid portion of the dummy's pelvis, when measured at the midline of the dummy's pelvis.

The position of the lap belt shall be determined by the average of three fittings of the seatbelt.

A minimum of 160 mm of the sash belt shall be in contact with the dummy's upper torso segment. This contact region shall be considered to be the first point of contact between the sash belt and the dummy's upper torso segment to the last point of contact between the sash belt and the dummy's upper torso segment.
 - (ii) The booster seat shall have upper sash guides permanently fixed to the restraint. An intended physical movement of the sash belt shall be required to disengage it from the guide.

- (iii) The booster seat shall be fitted with a lap belt positioning device securely attached to the restraint.

In applying the lap belt it shall be routed over the upper thighs of the dummy. A 200 N force shall be used to tension the lap belt and then the sash belt in the direction to eliminate slack before observations are made.

If the lap belt tends to stick on or grip the surface of the dummy, a piece of thin slippery fabric shall be added between the dummy and the seatbelt.

- (k) When measured in accordance with AS/NZS 3629.9, the angle between the plane of the upper thigh and the shin of the dummy's leg shall not be less than 45° for upright and reclined modes of installation as shown in [Figure 3.6\(b\)](#).
- (l) The height of the head support of the backrest shall conform to [Figure 3.1](#) and [Table 3.1](#). Where the headrest is adjustable, it shall be measured in the fully extended position according to the manufacturer's instructions.
- (m) The booster seat shall be supplied with a lap-belt positioning device, in accordance with the following requirements:

- (i) The horizontal distance between the leg straps at the seating surface shall be not less than 40 mm.

With the leg straps and associated device held perpendicular to the seating surface, separation of the straps shall be measured across the seating surface without the compression of padding or fabric cover. Where the straps are not parallel as they exit the seat cover, the spacing shall be measured at the webbing edge on the side closest to the back of the seat.

NOTE 1 Fabric cover or padding fitted between the leg straps should be designed so as not to restrict the horizontal distance.

NOTE 2 The fabric may be pressed flat by hand prior to the measurement.

- (ii) The vertical distance between the seating surface and either the lowest edge of the associated device or the top of the leg strap opening shall be not less than 60 mm.

With the straps and associated device held perpendicular to the seating surface, the vertical distance shall be measured by placing the test mass shown in [Figure 3.5\(a\)](#) on the seating surface with the larger width closer to the seat back and the narrow section placed centrally between the leg straps, so that Step A of the test mass just contacts the rear edge of the leg straps, as shown in [Figure 3.5\(b\)](#). The perpendicular height of either the lowest edge of the associated device or the lowest sewing or fastener joining the two straps shall be measured with respect to the bottom of the test mass. The distance shall be measured without compression of padding or fabric cover except from the compression induced by the test mass.

- (iii) The device shall be securely attached to the restraint.
- (iv) The leg straps shall be adjustable to allow the device to correctly locate the lap belt on the occupant's hips and thighs.

Follow the manufacturer's instructions when adjusting this device.

Fabric cover or padding is permitted to be fitted between the leg straps and the occupant, closing the gap between the leg straps. These fabric covers or any padding shall be removed for testing.

- (n) The width or spacing of the path for a child harness shall be such that it does not cause the inside edges of the shoulder straps of a Type C1 child harness to be spaced more than 100 mm

apart. This measurement shall be taken with a TNO P6 dummy in the seat. The measurement shall be taken at a point at the rear of the dummy's neck.

- (o) Either torso or shoulder support, or both, may be provided to support the occupant from lateral movement in everyday use. Where provided, the backrest should have rigid lateral supports attached to each side of the seat such that the supports are substantially perpendicular to the backrest. The minimum projected area of the lateral support should have a depth of at least 90 mm when measured at right angles to the backrest and maintain this depth for a height of at least that nominated in [Figure 3.7](#).

The minimum height of the support should be measured parallel to the centre-line of the backrest at a distance from the seating surface as nominated in [Figure 3.7](#).

The lateral support structure may have an aperture or apertures in the structure, provided that the measured projected area is not less than 13 500 mm².

Where the lateral support structure is movable, it shall be rigidly connected to a moving backrest or moving headrest structure so that the combination moves simultaneously when adjusted. Separately adjusted lateral supports shall not be used.

NOTE 3 Apertures in lateral supports should not allow the shoulder to penetrate during a crash.

3.2.11 Type E10 child restraints

The following requirements apply to Type E10 booster seats:

- (a) The restraint system shall —
- (i) accommodate a TNO P3 dummy clothed in summer-weight clothing in accordance with [Appendix A](#); and
 - (ii) accommodate a TNO P10 dummy clothed in winter-weight clothing in accordance with [Appendix A](#), with the back of the dummy flat against the back of the child restraint and with spacers as specified in [Figure B.1](#) positioned between the upper arms of dummy and the child restraint and between the upper legs of the dummy and the child restraint, while seated on Spacer C, as shown in [Appendix B](#).
- (b) When the booster seat with the cover on is positioned on the rigid test seat, as specified in AS/NZS 3629.9, in its most upright mode and with a TNO P10 test dummy seated in the booster seat, the distance between the centre of the accelerometer mounting block bolt of the dummy and the base of the booster seat when measured perpendicularly as shown in Figure 3.6(a) shall not be more than 815 mm. Assessment shall be carried out with the cover on.
- (c) The restraint of the child occupant shall be provided by means of an adult lap-sash seatbelt or a C1 child harness and seatbelt.
- (d) Booster seats shall be restrained so that they will not become dislodged during dynamic testing. Where booster seats are indirectly restrained through the body of the child, the child and booster seat shall be restrained simultaneously.
- (e) When measured in accordance with AS/NZS 3629.9, the angle between the plane of the upper thigh and the shin of the dummy's leg shall not be less than 45° for upright and reclined modes of installation as shown in Figure 3.6(b).
- (f) The design of the booster seat shall be such that, when fitted in accordance with the manufacturer's instructions and in normal driving conditions, there is reduced propensity for the child occupant to slip off the booster seat when asleep or wriggle off the booster seat when active.

- (g) Either torso or shoulder support, or both, should be provided to support the occupant from lateral movement in everyday use. Where provided, the backrest should have rigid lateral supports attached to each side of the seat such that the supports are substantially perpendicular to the backrest. The minimum projected area of the lateral support should have a depth of at least 120 mm when measured at right angles to the backrest and maintain this depth for a height of at least that nominated in [Figure 3.7](#).

The minimum height of the support should be measured parallel to the centre-line of the backrest at a distance from the seating surface as nominated in [Figure 3.7](#).

The lateral support structure may have an aperture or apertures in the structure, provided that the measured projected area is not less than 13 500 mm².

Where the lateral support structure is movable, it shall be rigidly connected to a moving backrest or moving headrest structure so that the combination moves simultaneously when adjusted. Separately adjusted lateral supports shall not be used.

NOTE 1 Apertures in lateral supports should not allow the shoulder to penetrate during a crash.

- (h) With an unclothed TNO P10 dummy in the restraint placed on the rigid test seat as specified in AS/NZS 3629.8, and adjusted in accordance with the manufacturer's instructions with the lap-sash seatbelt only, the seatbelt position shall conform to the following in both the most reclined and the most upright position of the restraint:

- (i) The top edge of the lap belt shall not be more than 20 mm above the top edge of the rigid portion of the dummy's pelvis, when measured at the midline of the dummy's pelvis.

The position of the lap belt shall be determined by the average of three fittings of the seatbelt.

A minimum of 160 mm of the sash belt shall be in contact with the dummy's upper torso segment. This contact region shall be considered to be from the first point of contact between the sash belt and the dummy's upper torso segment to the last point of contact between the sash belt and the dummy's upper torso segment.

- (ii) The booster seat shall have upper sash guides permanently fixed to the restraint. An intended physical movement of the sash belt shall be required to disengage it from the guide.
- (iii) The booster seat shall be fitted with a lap belt positioning device securely attached to the restraint.

In applying the lap belt, it shall be routed over the upper thighs of the dummy and a 200 N force shall be used to tension the lap belt and then the sash belt in the direction to eliminate slack before observations are made.

If the lap belt tends to stick on or grip the surface of the dummy, a piece of thin slippery fabric shall be added between the dummy and the belt.

- (i) The maximum permissible mass of booster seats shall be not more than 2 kg, except when attachment to an upper anchorage point is provided by a top tether strap designed to restrain the back of the booster seat in a vehicle impact. If the booster seat is fitted with a top tether strap, the total mass of the booster seat, excluding the mass of the top tether strap, adjustment device and attachment clip external to the seat structure, shall be not more than 7.5 kg, and the mass of the back of the booster seat shall be not more than 5.5 kg.
- (j) Where the booster seat incorporates foam thicker than 30 mm, either singly or compositely on or beneath the seating surface, the seating surface shall be subjected to 175 N $\pm$ 5 % pre-load force normal to the seating surface and allowed to stabilize for 30 s followed by 2250 N $\pm$ 5 % test force, applied to the seating surface through the indenter apparatus described in

AS 2282.8, so that the outer edges of the indenter apparatus disc are within 10 mm of the side and front edges of the seating surface.

When the test force is applied, there shall be not more than 32 mm deflection from the stabilized position of the indenter.

- (k) Booster seats that are fitted with a top tether strap shall conform to the requirement that, with the device positioned in its most upright position on the test seat shown in Figure 1 in AS/NZS 3629.1:2024 and with the top tether strap and attachment clip extended in a rearwards direction over the top of the test seat back, as if attempting to attach to the top tether anchorage fitting at Point A1, no part of the attachment clip shall pass through the vertical plane XY situated 130 mm from the front edge of the test seat as shown in Detail A of Figure 1 in AS/NZS 3629.1:2024 when the top tether strap is adjusted to its shortest length.
- (l) With the child restraint installed on the test seat specified in AS/NZS 3629.1 and fitted with a TNO P10, the booster seat sash guide shall not inhibit retraction of the sash belt.
- (m) The child restraint shall be fitted with a lap-belt positioning device conforming to the following requirements:

- (i) The horizontal distance between the leg straps at the seating surface shall be not less than 40 mm.

With the leg straps and associated device held perpendicular to the seating surface, separation of the straps shall be measured across the seating surface without the compression of padding or fabric cover. Where the straps are not parallel as they exit the seat cover, the spacing shall be measured at the webbing edge on the side closest to the back of the seat.

NOTE 2 Fabric cover or padding fitted between the leg straps should be designed so as not to restrict the horizontal distance.

NOTE 3 The fabric may be pressed flat by hand prior to the measurement.

- (ii) The vertical distance between the seating surface and either the lowest edge of the associated device or the top of the leg strap opening shall be not less than 60 mm.

With the straps and associated device held perpendicular to the seating surface, the vertical distance shall be measured by placing the test mass shown in [Figure 3.5\(a\)](#) on the seating surface with the larger width closer to the seat back and the narrow section placed centrally between the leg straps so that Step A of the test mass just contacts the rear edge of the leg straps. The perpendicular height of either the lowest edge of the associated device or the lowest sewing or fastener joining the two straps shall be measured with respect to the bottom of the test mass. The distance shall be measured without compression of padding or fabric cover except from the compression induced by the test mass.

- (iii) The device shall be securely attached to the restraint.
 - (iv) The leg straps shall be adjustable to allow the device to correctly locate the lap belt on the occupant's hips and thighs.

Follow the manufacturer's instructions when adjusting this device.

Fabric cover or padding is permitted to be fitted between the leg straps and the occupant, thus closing the gap between the leg straps. These fabric covers or any padding shall be removed for evaluation of this clause.

- (n) The top tether strap shall —
 - (i) be securely attached to the fixed portion of the child restraint; and

- (ii) be attached to the seat structure at a point not less than 370 mm from the bottom surface of the seat base with the seat in an upright position. The measurement shall be made in the rigid test seat shown in AS/NZS 3629.8. The height shall be measured parallel to the back plane of the rigid test seat, from the base to the middle of the strap entry or attachment part to the seat structure.

The entry point for the strap shall not be on a height adjustable headrest or backrest. This requirement shall not apply to backrests whose adjustment is for recline angle.

- (o) The height of the head support of the backrest shall conform to [Figure 3.1](#) and [Table 3.1](#). Where the headrest is adjustable, it shall be measured in the fully extended position according to the manufacturer's instructions.
- (p) The width or spacing of the path for a child harness shall be such that it does not cause the inside edges of the shoulder straps of a Type C1 child harness to be spaced more than 100 mm apart. This measurement shall be taken with a TNO P6 dummy in the seat. The measurement shall be taken at a point at the rear of the dummy's neck.

3.2.12 Type F child restraints

The following requirements apply to Type F booster seats:

- (a) The restraint system shall —
 - (i) accommodate a TNO P3 dummy clothed in summer-weight clothing in accordance with [Appendix A](#); and
 - (ii) accommodate a TNO P10 dummy clothed in winter-weight clothing in accordance with [Appendix A](#), with the back of the dummy flat against the back of the child restraint using spacers as specified in [Figure B.1](#), with Spacers A positioned between the upper arms of dummy and the child restraint and with Spacers B between the upper legs of the dummy and the child restraint, while seated on Spacer C.
- (b) When the booster seat with the cover on is positioned on the rigid test seat as specified in AS/NZS 3629.9 in its most upright mode and with a TNO P10 test dummy seated in the booster seat, the distance between the centre of the accelerometer mounting block bolt of the dummy and the base of the booster seat when measured perpendicularly as shown in [Figure 3.6\(a\)](#) shall not be more than 815 mm.
- (c) The restraint of the child occupant shall be provided by means of an adult lap-sash seatbelt or a C1 child harness and seatbelt.
- (d) Booster seats shall be restrained so that they will not become dislodged during dynamic testing. Where booster seats are indirectly restrained through the body of the child, the child and booster seat shall be restrained simultaneously.
- (e) When measured in accordance with AS/NZS 3629.9, the angle between the plane of the upper thigh and the shin of the dummy's leg shall not be less than 45° for upright and reclined modes of installation as shown in [Figure 3.6\(b\)](#).
- (f) The booster seat shall have a profile that will fit within the gauge blocks spaced at 450 mm when tested in accordance with AS/NZS 3629.8.
- (g) The design of the booster seat shall be such that, when fitted in accordance with the manufacturer's instructions and in normal driving conditions, there is reduced propensity for the child occupant to slip off the booster seat when asleep or wriggle off the booster seat when active.
- (h) Either torso or shoulder support or both shall be provided to support the occupant from lateral movement in everyday use. The backrest shall have rigid lateral supports attached to each side of the seat such that the supports are substantially perpendicular to the backrest.

The minimum projected area of the lateral support shall have a depth of at least 120 mm when measured at right angles to the backrest and maintain this depth for a height of at least that nominated in [Figure 3.7](#).

The minimum height of the support shall be measured parallel to the centre-line of the backrest at a distance of 100mm from the back plane and at a height from the seating surface as nominated in [Figure 3.7](#). Measurements shall be conducted without covers.

The lateral support structure may have an aperture or apertures in the structure, provided that the measured projected area is not less than 13 500 mm².

Where the lateral support structure is movable, it shall be rigidly connected to a moving backrest or moving headrest structure so that the combination moves simultaneously when adjusted. Separately adjusted lateral supports shall not be used.

NOTE 1 Apertures in lateral supports should not allow the shoulder to penetrate during a crash.

NOTE 2 The head rest or backrest need not be fully raised to meet these requirements.

- (i) With an unclothed TNO P10 dummy in the restraint placed on the rigid test seat as specified in AS/NZS 3629.8, and adjusted in accordance with the manufacturer's instruction with the lap-sash seatbelt only, the seatbelt position shall conform to the following in both the most reclined and the most upright position of the restraint:

- (i) The top edge of the lap belt shall not be more than 20 mm above the top edge of the rigid portion of the dummy's pelvis, when measured at the midline of the dummy's pelvis.

The position of the lap belt shall be determined by the average of three fittings of the seatbelt.

A minimum of 160 mm of the sash belt shall be in contact with the dummy's upper torso segment. This contact region shall be considered to be from the first point of contact between the sash belt and the dummy's upper torso segment to the last point of contact between the sash belt and the dummy's upper torso segment.

- (ii) The booster seat shall have upper sash guides permanently fixed to the restraint. An intended physical movement of the sash belt shall be required to disengage it from the guide.
- (iii) The child restraint shall be fitted with a lap belt positioning device securely attached to the restraint.

In applying the lap belt, it shall be routed over the upper thighs of the dummy and a 200 N force shall be used to tension the lap belt and then the sash belt, in the direction to eliminate slack before observations are made.

If the lap belt tends to stick on or grip the surface of the dummy, a piece of thin slippery fabric shall be added between the dummy and the belt.

- (j) The maximum permissible mass of booster seats shall be not more than 2 kg except when attachment to an upper anchorage point is provided by a top tether strap designed to restrain the back of the booster seat in a vehicle impact. If the booster seat is fitted with a top tether strap, the total mass of the booster seat, excluding the mass of the top tether strap, adjustment device and attachment clip external to the seat structure, shall be not more than 7.5 kg, and the mass of the back of the booster seat shall be not more than 5.5 kg.
- (k) Where the booster seat incorporates foam thicker than 30 mm, either singly or compositely on or beneath the seating surface, the seating surface shall be subjected to 175 N $\pm$ 5 % pre-load force normal to the seating surface and allowed to stabilize for 30 s followed by 2250 N $\pm$ 5 % test force, applied to the seating surface through the indenter apparatus described in