TECHNICAL REPORT

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Road vehicles — Child restraint systems — Compilation of regulations and standards

Véhicules routiers — Systèmes de retenue pour enfants — Compilation des règlements et des normes

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Foreword

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The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/TR 13214, which is a Technical Report of type 3, was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 12, *Restraint systems*.

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Road vehicles — Child restraint systems — Compilation of regulations and standards

1 Scope

This ISO Technical Report is a compilation of major regulations and standards in the field of Child Restraint Systems (CRS) for road vehicles. The aim is to show similarities and differences at a detailed level for specified items.

Annexes to the standard cover a compilation of

- crash pulses (deceleration curves),
- approval procedures for different countries/markets,
- restraint requirements in different countries, and
- definitions used in regulations and standards.

2 References

Note: This compilation is valid only for the versions and issues given below.

Europe — **ECE Regulation No.44**

United Nations Agreement Concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts.
Uniform Provisions concerning the approval of restraining devices for child occupants of power-driven vehicles ("Child Restraint Systems")
First published: February 1, 1981
Latest revision: September 11, 1992

USA — **FMVSS 213**

Federal Motor Vehicle Safety Standards and Related Materials. Requirements for Child Restraint Systems Used in Motor Vehicles and Aircraft.
First published: May 1, 1980.
Latest revision: October 1, 1992.

United Kingdom — **British Standard, BS**

British Standard - Seat Belt Assemblies for Motor Vehicles Specification for restraining devices for children.
First published: 1960
Latest revisions:
BS 3254:Part 2:1988 and 1991, Specification for child restraint systems which are forward facing
BS AU 185:1983, Specification for seat belt booster cushions
BS AU 202a:1988, Specification for rearward facing infant restraint systems

Denmark — **Danish Standard, DS**

DS 2190, Child restraint Systems for Automobiles.
First published: March, 1983.
(Apart from the deviations mentioned in annex N this standard is technically equivalent with the European Regulation No 44).

Japan — **Japanese Industrial Standard, JIS**

JIS D 0401, Child Restraints for Automobiles.
First published: December 31, 1987
Latest revision: April 1, 1990

Sweden — **T-SB**

Swedish National Approval Requirements.
Child Restraint Systems for Automobiles.
First published: July 1, 1985

Canada — **CMVSS 213**

Canadian Motor Vehicle Safety Standards:
a) CMVSS 213 Child Restraint Systems (for forward facing seats)
First published: December 1, 1982
b) CMVSS 213.1 Infant Seating and Restraint Systems (for rear facing infant carriers)
First published 3 June 1982
c) CMVSS 213.2 Booster cushions
First published 18 February 1983
d) CMVSS 213.3 Restraint Systems for Disabled Persons
First published 25 July 1989

Australia — **Australian Standard, AS**

AS 1754-1991, Child Restraint Systems for Use in Motor Vehicles
AS 3629.1-1991, Methods of testing child restraints. Part 1 - Dynamic testing
AS 3629.2-1991, Methods of testing child restraints. Part 2: Determination of hazardous throat contacts in abnormal situations
AS 3629.3-1991, Methods of testing child restraints. Part 3 - Dynamic testing of upper anchorage components
AS 3629.4-1991, Methods of testing child restraints. Part 4 - Determination of adjustment device forces

France — **AR 19850611A**
First published: September 2, 1975
Latest revisions: June 11, 1985
Withdrawn: May 1, 1992
Note: The new regulation has been recognizing ECE R.44 as the only approval regulation since May 1992.

3 Compilation of regulations and standards

3.1 CLASSES

The term "CLASSES" indicates how dependent the CRS is on the vehicle belt (as defined in ECE R.44)

Europe
- Integral systems
- Non-integral systems

USA
- Add-on systems
- Built-in systems
- Factory-installed built-in systems

UK
- Integral systems
- Non-integral systems

Denmark
- As ECE R.44

Japan
- Not specified

Sweden
- Not specified

Canada
- Currently must use vehicle belt system (change in progress to allow integral system)
- The CR must be capable of being restrained against forward movement solely by means of a specified seat belt assembly or by means of a seat belt assembly together with a tether strap supplied with the CR.

Australia
- All devices use a combination of car seat belts and top tether strap except booster's which can operate with either a three (3) point seat belt or a child harness. (Figures showing the top tether anchor fitting are included in the standard.) The specification ensures compatibility with the North American top tether attachment clips.

3.2 CONFIGURATIONS

Europe	-	Infant carrier /rear-facing
	-	Carry-cot
	-	Child safety chair /rear- and forward-facing
	-	Booster cushion/seat
USA	-	Rear-facing child restraint system
	-	Car-bed
	-	Forward-facing child restraint system
	-	Booster seat
UK	-	Infant carrier /rear-facing
	-	Carry-cot
	-	Child safety chair /rear- and forward-facing
	-	Booster cushion/seat
	-	Belt only system
Denmark	-	As ECE R.44
Japan	-	As ECE R.44
Sweden	-	Child safety chair /rear- and forward-facing
Canada	-	Infant carrier /rear-facing
	-	Child restraint systems
	-	Booster cushion/seat
	-	Restraint systems for disabled persons
Australia	-	Infant carrier /rear-facing or laterally mounted on rear seat
	-	Child safety chair /rear- or forward-facing
	-	Booster cushion and chaises
	-	Child harness

3.3 CATEGORIES

The term "CATEGORIES" indicates how vehicle specific the CR is (as defined in ECE R.44)

Europe	-	Universal - Semi-universal - Specific vehicle
USA	-	All add-on systems must be "universal" - All built-in systems are "specific vehicle" - For add-on CR, the instructions shall specify in general terms the types of vehicles, the types of seating positions, the types of vehicle safety belts with which the system can or cannot be used.
UK	-	Not stated but the Standard capable of dealing with all categories.
Denmark	-	As ECE R.44
Japan	-	Universal
Sweden	-	Not specified
Canada	-	Add-on systems are universal - Built-in systems are vehicle specific
Australia	-	Requirements for integrated child restraint systems being developed.

3.4 MASS GROUPS

Europe
- Group 0: < 10 kg
- Group 1: 9 kg to 18 kg
- Group 2: 15 kg to 25 kg
- Group 3: 22 kg to 36 kg

USA
- < 9 kg (20 lb)
- 9 kg to 23 kg (20 lb to 50 lb)

UK
- Group 0: < 10 kg
- Group A: 9 kg to 18 kg
- Group B: 18 kg to 36 kg
- People of small stature of mass 15 kg or more

Denmark
- As ECE R.44

Japan
- As ECE R.44

Sweden
- "Sitting without support" to 35 kg

Canada
- 0 - 9 kg
- 9 - 18 kg
- more than 22 kg

Australia
- Type A1 - Rearward facing infant restraints: 3 kg - 9 kg
- Type A2 - Laterally mounted infant restraints: 3 kg - 9 kg
- Type B - Forward facing child seat: 8 kg - 18 kg
- Type C1 and C2 - Child harness: 14 kg - 21 kg
- Type D - Rearward facing child seat: 8 kg - 18 kg
- Type E - Booster cushion/chaise: 14 kg - 32 kg.

3.5 DUMMIES

Europe
- Newborn (3,4 kg)
- 9-month (9,0 kg)
- 3-year (15,0 kg)
- 6-year (22,0 kg)
- 10-year (32,0 kg)

USA
- Newborn (3,4 kg, 7,5 lb)*
- 6-month (8 kg, 17,4 lb)
- 9-month (9 kg, 20 lb)*
- 3-year (15 kg, 33,3 lb)
- 6-year (21,4 kg, 47 lb)*

*) Included in "Part 572" as official NHTSA dummy, but use not yet specified in FMVSS 213

UK
- Newborn
- 9 kg
- 15 kg
- 32 kg

Denmark
- As ECE R.44

Japan
- 7,7 or 9 kg
- 9 and 15 kg
- 15 and 22 kg
- 22 and 32 kg

Sweden
- ECE R.44 or FMVSS 213 of "suitable size"

Canada
- 6-month
- 3-year

Australia
- Newborn (TNO-P0)
- 9-month (TNO-P3/4)
- 3-year (TNO-P3)
- 6-year (TNO-P6)
- 10-year (TNO-P10)

3.6 INJURY CRITERIA AND RELATED REQUIREMENTS

Europe

- Chest resultant < 55g/3 ms
- Chest vertical < 30g/3 ms
- Head displacement within certain planes
- No head contact above 24 km/h with any part of the vehicle (Specific vehicle category CR)
- Abdominal penetration

USA

- Chest resultant < 60g/3 ms (forward facing CR)
- HIC < 1000 (forward facing CR)
- Head displacement (forward facing add-on systems)
- Head retention within the system (car beds)
- Head target not pass beyond top of restraint back surface (rear-facing CRS)
- Knee displacement (forward facing CR)
- Torso retention within the system
- Limit of angle of back support surface, 70° from vertical (rear-facing CRS).
- Perform in any adjustment position and with any belt routing path (add-on systems).

UK

- Webbing restraining the child shall ensure that the major part of the impact confined to the chest and pelvis, and there should be no localised forces inflicted on the child. (Forward-facing CR)
- The maximum resultant acceleration of the chest of the dummy shall not exceed 60g (1991 revision)
- No loading of abdomen. Detection is made using bubble film analysis or photographically (1991 revision)
- Head displacement not greater than 500 mm (1991 revision)
- Torso must not create an angle of less than 20 deg. during impact. No total failure of any component. No contact on crown of head. (Rear-facing CR)
- In side elevation the lap belt shall be at an angle greater than 45 degrees (Boosters)
- Hip forward movement
- Limit of angle of back support surface, 70 degrees from vertical

Denmark

- Head resultant acceleration max 80g/3 ms
- Internal height for chair back group II min 580 mm.

Optional requirements:

- Head resultant acceleration max 50g/3 ms
- Vertical head acceleration max 20g/3 ms

Japan

Forward-facing CR:

- Chest resultant acceleration max 60g/3 ms
- Head resultant acceleration max 80g/3 ms
- Head displacement
- Knee displacement
- The dummy shall not be released from the apparatus

Rear-facing CR:

- The position of the head gravity centre of the dummy shall not exceed the upper behaviour limit of the seat
- The dummy shall not be released from the apparatus
- Limit of angle of back support surface 60 degrees from vertical

Bed for suckling:
- Head and trunk be kept within the restraint

Seat for school child:
- Dummy or apparatus shall not be released from seat belt

Sweden
- Chest resultant acceleration max 40g
- Head resultant acceleration max 50g/3 ms
- Head vertical acceleration max 20g/3 ms

Canada

Forward facing:
- Chest resultant acceleration < 60g/3 ms
- Maximum head excursion limits, head must not pass through specified vertical transverse plane
- Head resultant < 80g (at present built-in systems only)

Rear facing:
- Provide restraint against rearward head movement towards front of vehicle by integral continuous seat back of specified height and width
- Torso must be retained within CR
- Limit of angle of back support surface 70 degrees from vertical during impact test

Australia
- Each child restraint shall be capable of protecting the wearer under dynamic test conditions specified in AS 3629.1-1991.
- The child restraint must minimise lateral and vertical motion and submarining of the child during impact
- Any harness shall be designed so that the average pressure exerted on the occupant, under a deceleration of 20 g, must be not more than 175 kPa, the average pressure being calculated using the total solid area of material in contact with a specified body block.
- Resultant head acceleration for Type A1, Type A2, and Type D devices must not exceed 150g in frontal tests. The 150g upper limit is under review, as is the need for head acceleration upper limits for Type B and Type C devices, and the chest acceleration upper limits for Type A1, Type A2, Type B, Type C and Type D devices. Dummy excursion limits are also being considered, but are not being proceeded with because of the inappropriate size range of dummies for Type B devices.
- The child restraint must not permit impact of any portion of the wearers head, neck and torso with any tensioned adult seat belt used for securing the child restraint, except for Type C1, Type C2 and Type E restraints.
- The child restraint must minimise the possibility of hazardous impact with the interior of the vehicle.
- For Type B devices, no genital area contact with a crotch strap, in frontal testing.

3.7 OTHER DYNAMIC REQUIREMENTS

Europe
- No buckle, locking system, adjuster system, or displacement system shall break or release

USA
- No complete separation of load-bearing structures or partial separations exposing edges and protrusions
- No change in angle-adjustment position
- Angle between back and seating surface not be less than 45 degrees after impact test
- No loading of the dummy allowed from any restraining belt due to the mass of the system or the seat on which it is placed
- Belt tension pre-impact 53 to 67 N
- Harness tension pre-impact: Application of 9 N force pulls webbing 6,4 mm (0,25 in) from dummy.

UK
- No buckle, locking system or displacement system shall break or release.
- Restrict the total amount of slip of the webbing through load carrying buckles to 25 mm for each buckle, and the total amount of slipping of the webbing assembly to 50 mm.
- The securing buckle shall be capable of normal release after testing
- Either:
  1) There shall have been no significant failure of stitching
  2) If significant failure of stitching has occurred, when retested as described in Appendix D, the stitching shall not fail completely.
- The sides of the chair shall remain sufficiently rigid that they do not distort to the extent of touching the sides of the body block.
- 50 mm slack is introduced into the adult reference belt after it has been tightened.

Denmark
- As ECE R.44

Japan
- The buckle shall not be dissociated during the dynamic test. Respective parts having the strength keeping performance shall not be broken and shall be free from the generation of harmful cracks, deformations, etc, likely to injure children.

Sweden
- No buckle, locking system or displacement system shall break or release.

Canada
- No separation of any load bearing structural elements.

Australia
- Retain the dummy in the child restraint, and the child restraint, including any additional parts, in the rig
- Show no complete separation of any load carrying part or parts and no fragmentation of any rigid components
- Restrict slip at any load carrying part to 25 mm, and the total slip at all parts to 50 mm (excluding extending energy absorbing devices)
- Allow test dummy to be released by operation of a single quick-release device, with a force of not more than 110 N, with a 200 N static load on the dummy

3.8 TEST SET-UP

Europe

Test on a trolley with test seat:
- In the rear-facing case the dashboard is represented by a rigid bar attached to the trolley

Test on a trolley with vehicle body shell:
- Special requirements for securing the body shell

Test with complete vehicle:
- Frontal impact against a rigid barrier, 50 -2 km/h, unladen service weight
- Rear impact by an impactor (moving barrier), 30 +2 km/h, reduced mass 1100 +20 kg
- Additional measurement: Contact of the dummies head with the interior of the vehicle

USA

Add-on systems:
- Test on a trolley with standard seat assembly; no "dashboard".

Built-in systems:
- Test in specific vehicle or in specific vehicle shell mounted on trolley.

UK

- Test on a trolley with test seat, as per ECE R.44, but with a hinged back
- The seat back is free to rotate at its base and has a mass of 16 kg (forward-facing)
- Asymmetric anchorages are used, the outboard anchorage being 115 mm higher and 195 mm forward of the normal ECE R.44 anchorage position. The inboard anchorage is as R.44 (forward-facing).

Denmark

- As ECE R.44

Japan

- Test on a trolley with standard seat assembly, no "dashboard".

Sweden

- As ECE R.44 or relevant parts of vehicle body

Canada

Add-on systems:
- Test on a trolley with standard seat assembly, no "dashboard"

Built-in systems:
- Test in specific vehicle or in specific vehicle shell mounted on trolley

Australia

- A test rig of mass not less than 380 kg, comprising a trolley, a test seat, and a structure for providing seat belt anchorages and top tether strap anchorages.

3.9 CRASH PULSE

Europe

- Different deceleration curves for frontal and rear impact done on a trolley, max 28g and 21g respectively, lower limit 20g and 14g respectively. See annex A.
- Test speed: 50 -2 km/h and 30 +2 km/h.

Note: Acceptable simulation of real vehicle deceleration curves, identical to ISO 7862.

USA

Configuration I (for proper restraint use)
- 30 mph, frontal impact, within specified deceleration curve for tests on trolleys, or natural deceleration of specific vehicle if used (built-in systems only). See annex A.

Configuration II (for specified misuse)
- 20 mph, frontal impact, within specified deceleration curve for tests on trolleys, or natural deceleration of specific vehicle if used (built-in systems only). See annex A.

UK

- Deceleration curves as for ECE R.44 frontal impact. See Annex A.

Denmark

- As ECE R.44. See Annex A.
- Test speed: 48.3 -3 km/h and 50 -2 km/h

Japan

- Deceleration curves, see annex A
- Test speed: 50 -2 km/h.

Sweden

- Deceleration pulse increase max 10.000 m/s^3 during the first 10 ms. Then constant deceleration max 200 m/s^2. Stopping distance < 0.7 m.
- Test speed: 50 ± 2 km/h

Canada

- Test speed: 48 km/h, see Annex A

Australia

- For AS3629:

Frontal - When subject to a velocity change of not less than 49 km/h, a deceleration of between 24g and 34 g shall be achieved within 30 ms. The deceleration shall remain within the range 24g to 34g for not less than 20 ms, but deceleration values outside this range that occur for periods of not greater than 1 ms may be disregarded.

Sideways and rearwards - When subject to a velocity change of not less than 32 km/h, a deceleration of between 14g and 20g shall be achieved within 30 ms. The deceleration shall remain within the range 14g to 20g for not less than 20 ms, but deceleration values outside this range that occur for periods of not greater than 1 ms may be disregarded.

3.10 OVERTURNING

Europe
- The dummy shall not fall out of the CR when the test seat is in an upside-down position - different dummies. Requirement: Head displacement < 300 mm

USA

For aircraft certification only:
- Install on aircraft seat, rotate forward 180° at 35-45 °/s, hold 3 s; repeat for sideways rotation.
- Neither dummy nor CR shall "fall out".

UK
- As ECE R.44 (Rear-facing CR), except that 50 mm slack is introduced into the adult reference belt
- Restraint must be designed to restrain child in rollover (Forward-facing CR)

Denmark
- As ECE R.44

Japan
- Not included

Sweden
- Not included

Canada
- For aircraft certification only

Australia
- **Inverted** - When subject to a velocity change of not less than 16 km/h, a deceleration of between 8g and 15g shall be achieved within 30 ms. The deceleration shall remain within the range 8g to 15g for not less than 20 ms, but deceleration values outside this range that occur for periods of not greater than 1 ms may be disregarded.

3.11 ENERGY ABSORPTION

Europe	-	According to ECE R.21
USA	-	Energy absorption in head-impact area
UK	-	2,75 kg headform dropped from 100 mm on the energy absorbing material. Max allowed acceleration 60g. (Rear-facing CR)
Denmark	-	As ECE R.44
Japan	-	Head contactable surfaces must be covered with a pad material of specified hardness and thickness (Bed for suckling, and rearward-facing infant restraint)
Sweden	-	Not included
Canada	-	Head contactable surfaces must be covered with an energy absorbing material of specified thickness and compression - deflection resistance.
	-	Any back or torso support must have a continuous surface of a specified area.
Australia	-	Determined under the four dynamic test conditions specified in AS 3629.1-1991.

3.12 TOXICITY

Europe	-	According to EN Standard Safety of Toys, part 3. Only valid for group 0 and 1.
USA	-	Not included
UK	-	The toxicity of materials used must comply with BS 5665: Part 3.
Denmark	-	As ECE R.44
Japan	-	Not included
Sweden	-	Not included
Canada	-	Not included
Australia	-	Parts or materials which can be put in the mouth must comply with the general requirements and the requirements for coating materials, plastic materials and graphic materials, of Australian Standard 1647.3.

3.13 FLAMMABILITY

Europe	-	According to Trans SC1/WP29/78
USA	-	According to FMVSS 302
UK	-	No requirement
Denmark	-	According to ECE R.44 (see above)
Japan	-	No requirement
Sweden	-	According to FMVSS 302
Canada	-	According to CMVSS 302
Australia	-	Fabrics and padding materials - Testing in accordance with AS 2755.2 and 2753.3, if applicable
	-	Other chair materials - Testing in accordance with SAE J369.

3.14 RESISTANCE TO CORROSION

Europe	-	Exposure test for metal items in a mist chamber with salt solution, 50 hours. No signs of deterioration likely to impair the proper functioning of the CR.
USA	-	According to FMVSS 209 S4.3 (a)
UK	-	16 hours salt solution fog, same solution as ECE R.44. (Forward-facing CR).
	-	15 min in boiling salt solution (Rear-facing CR).
Denmark	-	As ECE R.44
Japan	-	According to JIS D 0201 or JIS D 0202. However, salt spray time shall be 24 hours.
Sweden	-	"Corrosion-resistant" material required on loaded metal parts.
Canada	-	According to CMVSS 209
Australia	-	Exposure for not less than 50 h to salt spray in accordance with AS 2331.3.1.

3.15 DUST RESISTANCE TEST

Europe - Exposure test only for a designed retractor, mounted as described in a special test chamber. Duration 5 h.

USA - Not included

UK - Not included

Denmark - As ECE R.44

Japan - Not included

Sweden - Not included

Canada - Not included

Australia - Not included

3.16 STRAPS

Europe

- Minimum width for group 0 and 1 (25 mm), group 2 and 3 (38 mm) measure under load.
- Breaking load:
  group 0, 1: 3,6 kN
  group 2: 5 kN
  group 3: 7,2 kN
- Additional requirements for the breaking load after room conditioning and some special conditioning tests (light, cold, heat, water, abrasion).
- Crotch straps shall have normal tensile strength.

USA

- Minimum width 38 mm (1,5 in)
- Strength and abrasion per FMVSS 209 S5.1.
- For CRs used in seated position (forward-facing) upper and lower torso restraint in the form of straps, a shield, or a combination.
- For children over 9 kg, CRS with straps or strap/shield combination must have crotch strap attached to lap strap or shield, or other means of holding shield in place.
- CRs for reclined infants (rear-facing, car beds) do not have specific strap requirements.

UK

- Minimum width for group A (25 mm) group B (38 mm) (Forward-facing CR)
- Crotch strap required on the harness of a chair assembly and must comply with strength requirements of the rest of the harness (Forward-facing CR)
- Strength requirements of straps, tested as a full assembly: Group A: 3,6 kN, Group B: 7,1 kN.

Denmark

- As ECE R.44

Japan

- Minimum width
  for W1 and W2: 25 mm
  for W3 and W4: 38 mm

- Breaking load per JIS D 4604 S7.3 (1.1) after room conditioning
  for W1 and W2: 3,6 kN
  for W3: 5,0 kN
  for W4: 7,3 kN

When the abrasion resistance is tested per JIS D 4604 S7.3 (1.5) (a) after room conditioning, breaking load shall be not less than 75 % of the value before the test.

Sweden

- Minimum width 30 mm

Canada

- The CRS shall provide upper torso restraint, lap restraint and if forward-facing, crotch restraint.

Australia - Class of webbing for child restraints is classified by width and minimum dry breaking strength nominated in AS 1753-1990, see table below.

(a) Width:

(i)	≥ 19 mm < 23 mm	designator A
(ii)	≥ 23 mm < 34 mm	designator B
(iii)	≥ 34 mm < 46 mm	designator C
(iv)	≥ 46 mm < 76 mm	designator D

(b) Minimum dry breaking force:

(i)	≥ 3kN	designator 3
(ii)	≥ 7 kN	designator 7
(iii)	≥ 11 kN	designator 11
(iv)	≥ 13 kN	designator 13
(v)	≥ 16 kN	designator 16
(vi)	≥ 22 kN	designator 22

Example of designation:

Webbing having a width of 36 mm and a minimum dry breaking force of 8 kN is designated Class C7. (Such webbing could also be used in applications specifying Class C3).

3.17 BUCKLE

Europe

- Designed to exclude any incorrect manipulation, for example partially closed. When in contact with the child, it shall be not narrower than the width of the straps used.
- Minimum buckle release areas and widths.
- Colour of press button: Red.
- Single operation on a single buckle has to release the child from the restraint, exception group 0 as specified.
- Opening test under load after the dynamic test.
- Buckle release force: Less than 60 N after test (more than 10 N before)

USA

- Pushbutton buckle optional, but minimum area 390 mm (0,6 in) if used.
- Hardware tested per FMVSS 209 S4.3 a,b.
- May not release during dynamic test
- Buckle release force:
  - pre-impact: 40 to 62 N under 9 N tension
  - post-impact: Not more than 71 N under 90 or 200 N tension, depending on dummy used.

UK

- Buckle strength group A 1,35 kN, group B 2,7 kN (Forward-facing CR)
- Buckle maximum width must not exceed 64 mm.
  Button not less than 16 mm wide. (Forward-facing CR)
- Not less than 450 mm enclosed minimum width 15 mm.
  Not less than 250 mm enclosed minimum width 10 mm (Rear-facing CR)
- Buckle release force: After dynamic test buckle under load of 100 N release load not to exceed 60 N. (Rear-facing CR)
- The buckle shall be coloured red
- The minimum buckle release force (no tension test) shall be 30 N (Groups A and B)
- The maximum buckle release force shall not exceed 90 N when under a tension of 220 N (Group A) or 440 N (Group B).

Denmark

- As ECE R.44, but a minimum opening force of 40 N is required for group 1.

Japan

- Opening force unloaded not less than 10 N.
- When tested according to the method given in the Dissociation Force Test it shall be not more than 137 N.
- The buckle shall not be dissociated during test.
- After 5000 cycling, no part of buckles shall be broken, wear, etc.
- All surface shall be smooth, free from sharp corners.
- The coating and surface treatment shall neither easily fade nor peel off.
- The connecting method shall be easily understood by guardian.
- The push button shall be of red, or otherwise letter such as "PUSH", "PRESS".
- The buckle shall be able to be removed by one hand, and it shall be so located as to be easily removed by guardian
- No buckle shall be free from remarkable curvature, damage, etc.

Sweden

- Opening force unloaded: 40-60 N.
- No partial locking.
- Red or orange button.
- Buckle release force less than 80 N after test with 340 N static load on the dummy

Canada

- Buckle release force:
  Before dynamic test: not release where force of less than 40 N is applied, release where a force of 40-62 N is applied
  After dynamic test: release where force of not more than 71 N is applied.

Australia

The child restraint must include a quick-release device complying with the following:

- The quick release device must be designed, constructed, and fitted so that the child can be quickly released from the child restraint by the operation solely of that device.
- The quick release device must not rely on tensioning of the restraint to maintain the engaged condition.
- Separation of the quick release device components must enable the occupant to be released from the child restraint without having to unthread the harness straps and without having to remove the child restraint from the vehicle.
- The quick release device must comply with the requirements of the Standard in each mode of assembly. This requirement does not apply to modes where the harness is obviously incorrectly arranged or assembled. (A twisted strap mode is not intended to be disregarded).
- When a buckle is used as the quick release device:
- The actuation surface shall be not less than 350 mm^2 in area, and not less than 15 mm at every width.
- A single pressing operation shall permit the components of the quick release device to disengage. The required action force when measured perpendicular to the actuation surface and using a probe, the end of which is a 7 ± 0,1 mm radius hemispherical surface, shall be not less than 40 N and not greater than 80 N. The point of actuation shall be at the geometric centre of the actuation surface.
- The colour of the actuation surface of the quick release device shall be red or orange. The colour of the external surfaces of the quick release device, other than the actuation surface, shall not be red or orange.
- The buckle shall not be capable of partial engagement.
- The buckle shall not have a potential for inadvertent release by the vehicle occupants, when tested in accordance with AS 2957.4.
- The force required to operate the buckle following dynamic testing shall not exceed 110 N, with a 200 N static load on the dummy.

3.18 ADJUSTING DEVICE

Europe	-	Sufficient range of adjustment throughout the designed weight group and permitting a satisfactory installation. Quick adjuster type is required. - Strap slip limited to 25 mm and 40 mm respectively.
USA	-	Adjustment hardware requirements per FMVSS 209 S4.3 a,b. - No usage or convenience requirements.
UK	-	Quick adjuster type is required for child harness (Group A and B)
Denmark	-	As ECE R.44
Japan	-	It is so constructed as to be easily able to be controlled and the webbing position shall not be shifted as far as possible even though shock is given. - Adjusting device may be incorporated into a buckle, attachment or retractor.
Sweden	-	Not specified
Canada	-	Labelling requirements for height and weight of child and correct installation.
Australia	-	Adjustment forces to be measured in accordance with AS 3629.4-1991. - A tilt lock adjustment device shall lock at an angle of not less than 25 degrees when tested in accordance with AS 2597.7. - Adjusters must restrict slip at any load carrying part to 25 mm and the total slip at all parts to 50 mm (excluding extending energy absorbing devices). - Manually adjusted harnesses must have not less than 100 mm material extending from the adjuster to provide a grip for adjustment purposes. Appropriate sized dummy used for test.

3.19 RETRACTOR

Europe	-	Strap movement - Retracting force - Cycle-test of withdrawal and retraction - Emergency-locking device
USA	-	Not included
UK	-	Not included
Denmark	-	As ECE R.44, but emergency-locking retractors must be of the multiple-sensitivity type.
Japan	-	Where a retractor is incorporated, a locking type retractor shall be used.
Sweden	-	Not included
Canada	-	No performance requirements
Australia	-	As per AS 2596.7

3.20 INSTRUCTIONS

Europe

Instructions on installation

* List of vehicles for which the device is intended (semi-universal)
* Method of installation
* Locating of rigid items and plastic parts

Instructions for use

* Intended weight groups
* Type of safety belt to be used
* Method of use
* Explanation of the buckle operation as well as the adjusting devices
* Tight and correct belt fitting
* Changing the device when subjected to violent stress in an accident
* Instruction for cleaning
* General warning to make any alterations or additions

USA

- In English. Storage location on CRS (add-on only).
- Procedure with diagrams for installation (add-on only), child positioning, adjustment.
- General types of vehicles, seating positions, belts with which the CR can or cannot be used (add-on only).
- Front seat safer than rear (add-on only).
- Head end of car bed in centre (add-on only).
- Consequences of not following warnings on permanent label (see below)
- Secure unoccupied CR (add-on only).
- Registration instructions add-on, aftermarket built-in only).
- Permanent label includes:
  * Manufacturer, model, date (month, year), location
  * Certification statement
  * Height and weight limits of child occupant
  * Specifically worded installation (add-on only), adjustment, and misuse warnings.
  * Installation diagrams with lap belt and with lap/shoulder belt (add-on only).
  * Registration instructions (where applicable).

UK

- More specific and detailed than ECE R.44

Denmark

- More specific and detailed than ECE R.44.

Japan

Instructions for use

* Classification of automobiles capable of being attached and shape of seat or classification of seat belt.
* Purpose of use and its method.
* Countermeasures in emergency.
* Method for prevention of danger.
* Method for maintenance
* Matters for exchange
* Other necessary matters

Sweden

- Not specified

Canada

- In English and French
  * procedure with diagrams for installation, child positioning, fit adjustment
  * specify vehicles, seating positions, lap belts with which CRS can or cannot be used
  * consequences of not following warnings, as per CMVSS 213(16)
  * state secure system even when unoccupied

Australia

Informative labelling

* design limits statement and intended use of restraint

Instructions for installation

* clear, legible, English
* general warning about installation
* advice about need adult seat as part of installation mechanism location at child restraint
* advice to consult the handbook as to anchorage points
* warning on need of protection of webbing from abrasion
* advice against carrying out alternations
* warning against attachment to unsound structures and materials
* exploded view or check list of all components
* advice on possible need to use spacers for top tether strap installation
* advice on possible need for top tether extension straps

Instructions for use

* Illustrated instructions
* Warnings

Marking

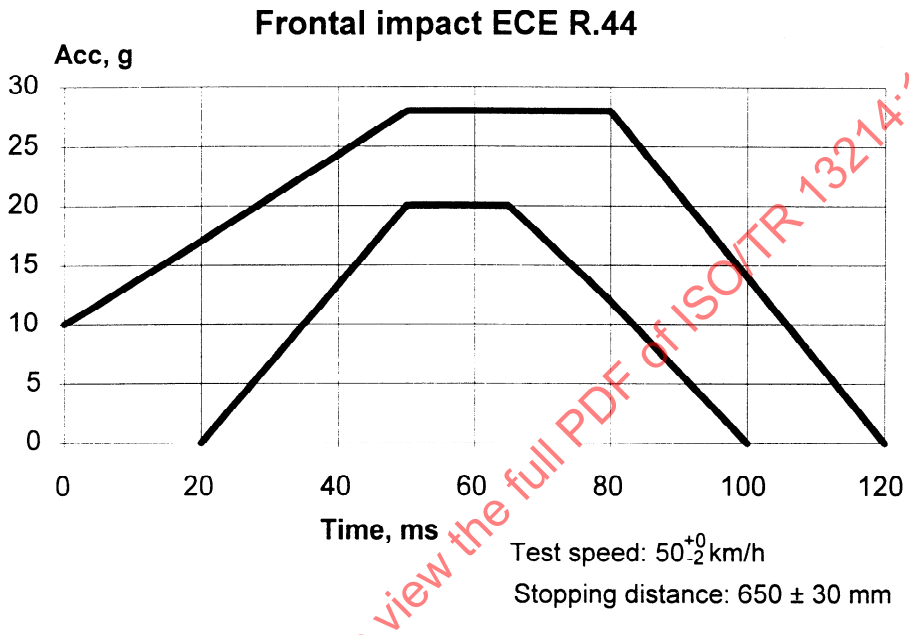
* Name, trademark, identification of manufacturer
* month & year of manufacturing
* max design mass of child wearer in kg

Packaging

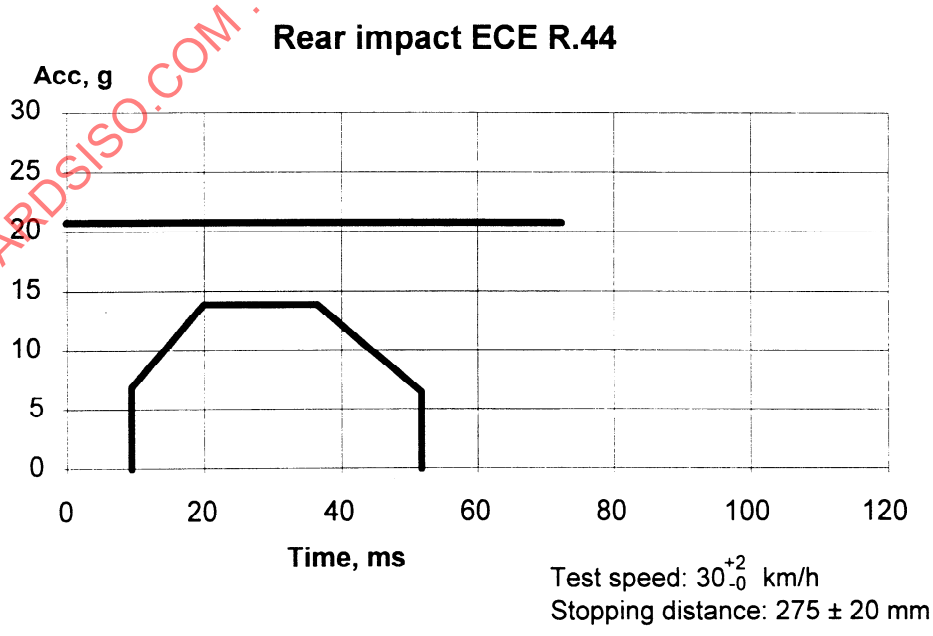
* manufacturer's registered brand name
* model designation
* contents of package

Annex A

Crash pulses (deceleration curves) - a comparison

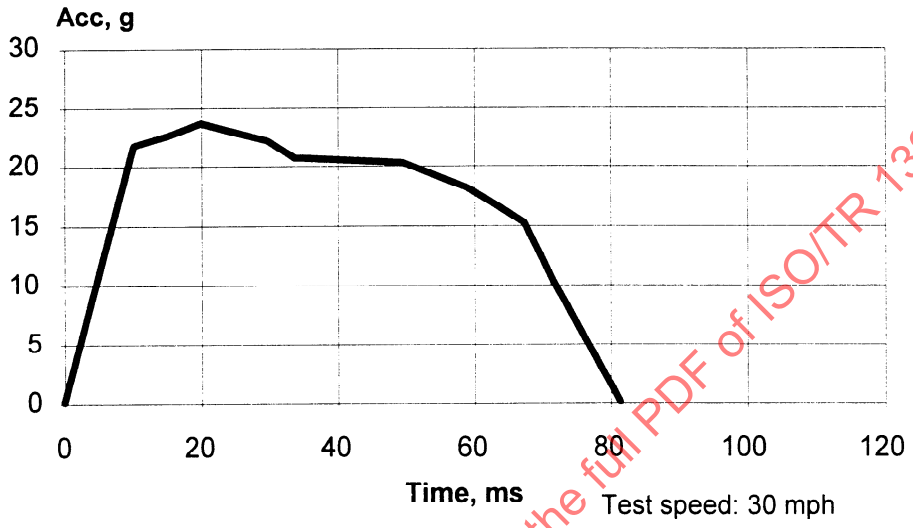


Note: The tolerance for stopping distance without calibration purpose is ± 50 mm.



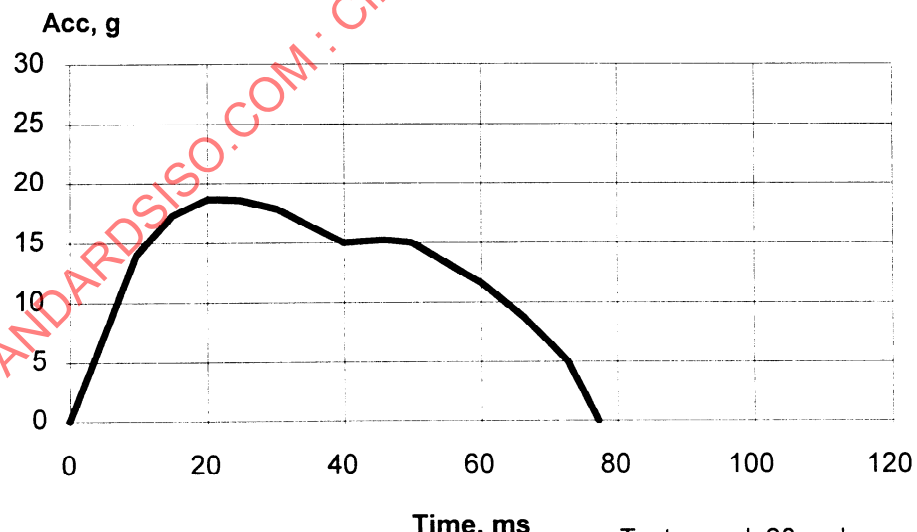
Note: The tolerance for stopping distance without calibration purpose is ± 25 mm.

Frontal impact FMVSS 213, configuration I



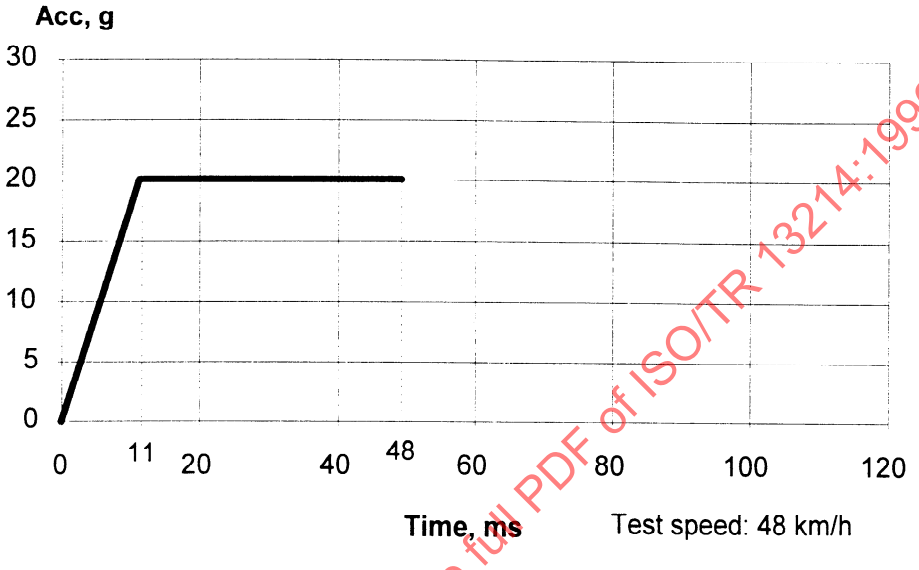
Test speed: 30 mph

Frontal impact FMVSS 213, configuration II

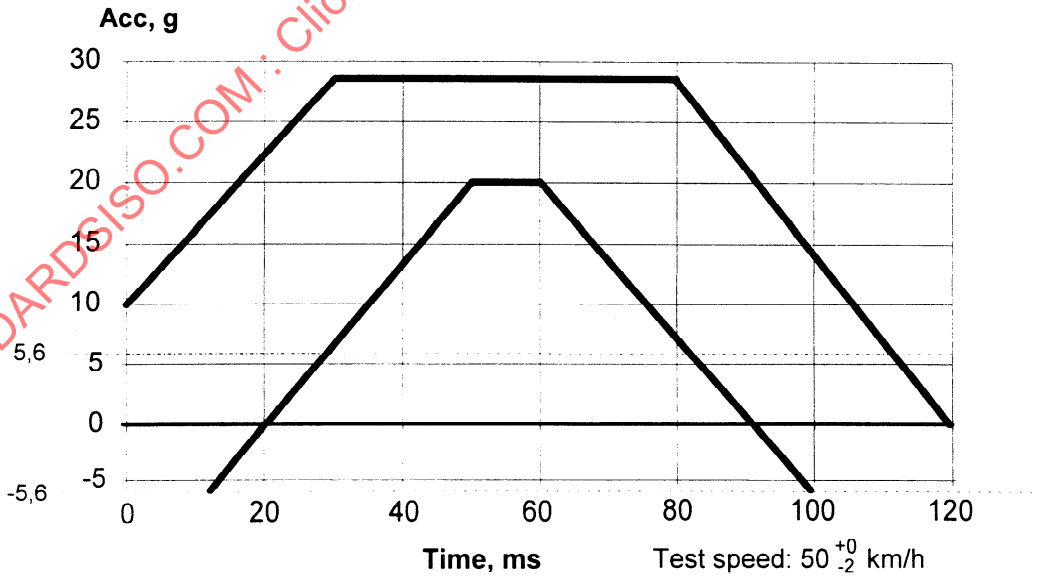


Test speed: 20 mph

Frontal impact CMVSS 213, 213.1, 213.3



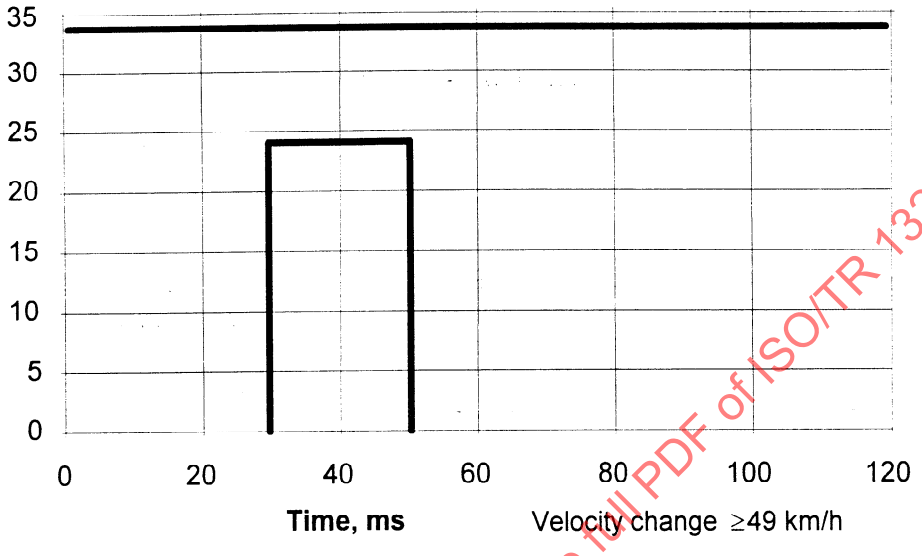
Frontal impact JIS D 0401



Note: There is a tolerance zone between +5,6g and -5,6g.

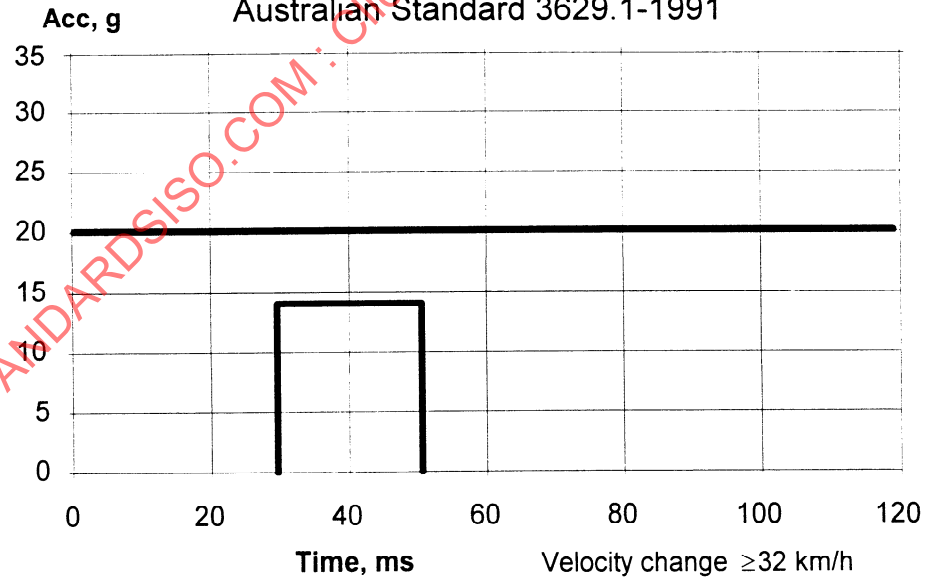
Frontal impact

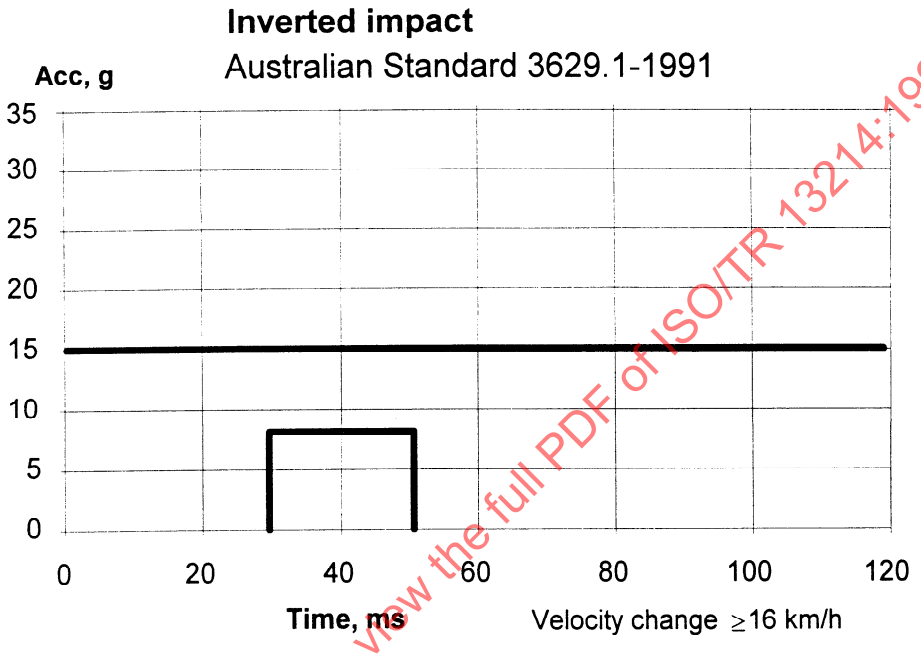
Australian Standard 3629.1-1991



Side and rear impact

Australian Standard 3629.1-1991





Annex B

TYPE APPROVAL SYSTEM FOR ECE APPROVED CRS IN EUROPE

The Economic Commission for Europe (ECE), which is a body of the United Nations, published in 1981 a Regulation on CRS. Later, several changes have been made to this Regulation and at present (March, 1993) the following documents are valid:

Regulation No. 44 UNIFORM PROVISIONS CONCERNING THE APPROVAL OF RESTRAINING DEVICES FOR CHILD OCCUPANTS OF POWER-DRIVEN VEHICLES ("CHILD RESTRAINT SYSTEMS") Entry into force: 1 February 1981.
(Document No. E/ECE/324 E/ECE/TRANS/505 Rev.1/Add.43 22 January 1981)

Amendment 1 01 series of amendments entered into force on 17 November 1982.
(Document No. E/ECE/324 E/ECE/TRANS/505 Rev.1/Add.43/Amend.1 16 November 1982)

Amendment 1 - Corrigendum 1
(Document No. E/ECE/324 E/ECE/TRANS/505 Rev.1/Add.43/Amend. 1/Corr.1 19 March 1984)

Amendment 2 02 series of amendments which entered into force on 4 April 1986
(Document No. E/ECE/324 E/ECE/TRANS/505 Rev.1/Add.43/Amend.2 18 April 1986)

Amendment 3 Supplement 1 to the 02 series of amendments which entered into force on 8 November 1987.
(Document No. E/ECE/324 E/ECE/TRANS/505 Rev.1/Add.43/Amend.3 15 December 1987)

Amendment 4 Supplement 2 to the 02 series of amendments (not requiring changes in the approval number) - Date of entry into force: 28 February 1989
(Document No. E/ECE/324 E/ECE/TRANS/505 Rev.1/Add.43/Amend.4 16 February 1989)

Amendment 5 Supplement 3 to the 02 series of amendments. Date of entry into force: 29 November 1990.
(Document No. E/ECE/324 E/ECE/TRANS/505 Rev.1/Add.43/Amend.5 17 April 1991)

Corrigendum 1
(Document No. E/ECE/324 E/ECE/TRANS/505 Rev.1/Add.43/Corr.1 9 October 1992)

Amendment 4 - Corrigendum 1
(Document No. E/ECE/324 E/ECE/TRANS/505 Rev.1/Add.43/Amend.4/Corr.1
9 October 1992)

These documents can be ordered at a nominal charge from:
United Nations Office at Geneva
Conference Services Division
Distribution and Sales Section
Office C-115-1
Palais des Nations
CH-1211 GENEVA 10
Fax +41 22 733 9879

A consolidated version of Regulation 44 and a list of all issued approvals can be obtained from:
VTI
Crash Safety Group
S-581 95 LINKÖPING
Fax +46 13 20 40 33

The Regulation has been adopted by the following countries:

E1	Germany	84-03-23
E2	France	92-01-01
E3	Italy	89-01-29
E4	Netherlands	81-02-01
E5	Sweden	81-06-13
E6	Belgium	82-11-17
E7	Hungary	88-11-14
E8	Czech and Slovak Fed. Republic	82-11-17
E11	United Kingdom	81-02-01
E12	Austria	87-07-28
E13	Luxemburg	84-05-01
E16	Norway	88-02-21
E17	Finland	91-04-12
E18	Denmark	81-05-24
E19	Romania	84-02-03

In each of these countries there is a Designated Administrative Department(s) and a Designated Technical Service(s) that will handle the tests and approvals. A list of these authorities is available in ECE Document: TRANS/SC1/WP29/343 (latest edition 6 August 1992).

A CRS manufacturer who wants to have an ECE approval shall contact the authorities of any of the countries mentioned above. After tests made by the Technical Service an approval can be issued by the Administrative Department.

SELF-CERTIFICATION ACCORDING TO FMVSS 213 IN THE USA

In 1966 the United State Congress passed the **National Traffic and Motor Vehicle Safety Act**. This act authorizes the Secretary of Transportation, without any other congressional approval, to issue the necessary Safety Standards capable of reducing deaths and injuries on the nation's highways.

This act enabled the Secretary of Transportation in 1970 to publish FMVSS 213 - Child Seating Systems, and on 1 April 1971 the standard went into effect. This standard was designed for children of 22.73 Kg (50 lbs) or less and required only a static performance test. This 1971 FMVSS 213 was a stop-gap standard needed to insure a minimum of protection until a dynamic standard could be established. This new standard was published in May 1978, and went into effect on 1 January 1981.

FMVSS 213, as are all U.S. Federal Motor Vehicle Safety Standards, is a self certifying standard. That is when a manufacturer registers with NHTSA and prints on his child restraint system, in English, **"THIS CHILD RESTRAINT SYSTEM CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS"**, he has in fact certified, with documentation, that his child restraint system does meet all of FMVSS 213. He may then **manufacture and sell** his system in the United States. Any new requirements would apply only to child seats manufactured after the effective date of this rule. Child seats manufactured before the effective date of this rule may be **sold** until the supply is depleted.

If the manufacturer's system is checked by The U.S. Department of Transportation, National Highway Traffic Safety Administration, Enforcement, and found to be in non-compliance the manufacturer can be forced to publicly announce the non-compliance and how the public can have their restraint system brought into compliance. This manufacturer can also receive two types of fines: 1) For not being in compliance, and if applicable, 2) for not having the supporting documentation for certification.

There are two additional regulations besides FMVSS 213 that are in effect if a foreign manufacturer plans to import child restraint systems into the United States. Both of these regulations accompany this review. The first is 49 CFR Part 566, Manufacturer Identification. This regulation requires a Manufacturer (including Importers) of child restraint systems to submit its name, address, and a brief description of the restraint system to NHTSA within 30 days of the date the child restraints are first manufactured, or imported into the United States.

The second regulation is 49 CFR part 551, Procedural Rules. Section 551.45 requires the actual manufacturer of foreign-manufactured child restraints to designate a permanent resident of the United States as the manufacturer 's agent for service of process in the United States. It is not necessary for an importer located within this country to designate its own agent as well. Part 551 specifies that the designation of agent by the manufacturer must contain the following six items of information:

1) A certification that the designation is valid in form and binding upon the manufacturer under the laws, corporate by-laws, or other requirements governing the making of the designation at the time and place where it is made;

2) The full legal name, principal place of business, and mailing address of the manufacturer;

3) Mark, trade name, or other designation of origin of the manufacturer's child restraint systems that do not bear its name;

4) A statement that the designation shall remain in effect until withdrawn or replaced by the manufacturer;

5) A declaration of acceptance duly signed by the agent appointed by the manufacturer, and that agent may be an individual, firm, or U.S. corporation; and

6) The full legal name and address of the designated agent.

Such a designation must be received by NHTSA before any of the manufacturer's child restraint systems are imported into the country.

** The Federal motor vehicle safety standards, and other NHTSA regulations, can be obtained from:

SUPERINTENDENT OF DOCUMENTS
U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON, D.C. 20402
PHONE: 1 202 783-3238

A small fee will be charged, call first.

** Any persons requesting an interpretation of NHTSA statutes, regulations, and standards should write to:

OFFICE OF THE CHIEF COUNSEL
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ROOM 5219
400 SEVENTH STREET, S.W.
WASHINGTON, D.C. 20590
PHONE: 1 202 366-2992

TESTING AND APPROVAL PROCEDURES IN CANADA

A self-certification procedure is applied, which means the manufacturer test their own systems according to "Motor Vehicle Safety Standards, section 213 - Child restraint systems, section 213.1 - Infant seating and restraint systems, and section 213.2 - Booster cushions".

Once a year, Transport Canada checks for compliance by testing one of each systems on the market. These samples are purchased (as a consumer) at local Department stores and not directly from the manufacturer.

In practice (although not mandatory), the manufacturers typically supply Transport Canada with their results of their in-house testing.

APPROVAL SYSTEM FOR CRS ACCORDING TO BRITISH STANDARDS

In order to manufacture CRS to British Standards there are three basic requirements.

1. Manufacturing Plant Approval

The manufacturing site is licensed by BSI, which requires that the operation meets and is confirmed as to comply with BS 5750 Quality System, ISO 9000 or EN 29000. A licence is required for each Standard to which products are manufactured, i.e BS 3254, BS AU185, BS AU186 and BS AU202.

2. Type Approval

That each product model is type approved by the BSI test house.

Product is dynamically tested in all variations of use, i e a reclining CRS fittable by 2 point, 3 point, and specific anchorage straps would be tested upright and reclined in each condition of installation, i.e 6 tests plus necessary static tests.

3. Conformity of Production

Conformity of production is by recorded batch control (batch sizes generally 500 - 2500) with either in house recorded tests (on equipment checked and approved by BSI), or by tests at an external test house. Records are examined regularly by BSI Inspectorate. Additionally, audit samples are taken for external tests four times per annum.

APPROVAL SYSTEM FOR CRS ACCORDING TO AUSTRALIAN STANDARDS

In order to manufacture CRS to Australian Standards there are three basic requirements.

1. **Manufacturing Plant Approval**

The manufacturing site is licensed by Standards Australia, which requires that the operation meets and is confirmed as to comply with the Standards Australia, Quality Plan Summary. This is the equivalent of AS 3902 - Quality Systems for Production and installation. A licence is required for each Standard to which products are manufactured, i.e AS 1754 or a product schedule.

2. **Type Approval**

That each product model is type approved by the Standards Australia test house.

Product is dynamically tested in all variations of use, i.e a reclining CRS and specific anchorage straps would be tested upright and reclined in each condition of installation. A minimum of five tests is required.

3. **Conformity of Production**

Conformity of production is by recorded batch control either in house recorded tests (on equipment checked and approved by Standards Australia), or by tests at an external test house. Records are examined regularly by Standads Australia, Quality Assurance Services Inspectorate.

APPROVAL SYSTEM FOR CRS IN JAPAN

There are two kinds of standards for child restraints in Japan. These are the Japanese Industrial Standard (JIS) and the Type Approval Standard.

JIS is authorized by the Ministry of International Trade and Industry. The manufacturer may indicate a successful plant inspection by applying a mark on the product. See figure 1.

The Type Approval Standard is authorized by the the Ministry of Transport. The manufacturer may indicate a successful product inspection by applying another mark on the product. See figure 2.

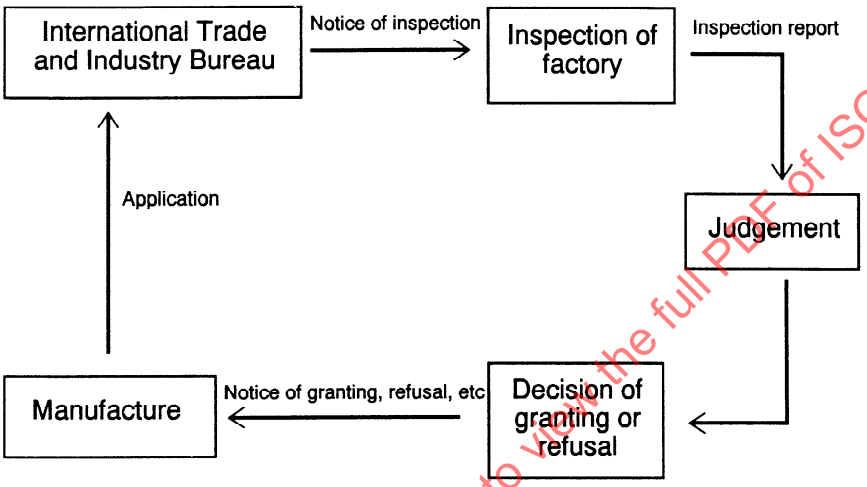


Figure 1 - Approval according to the JIS standard

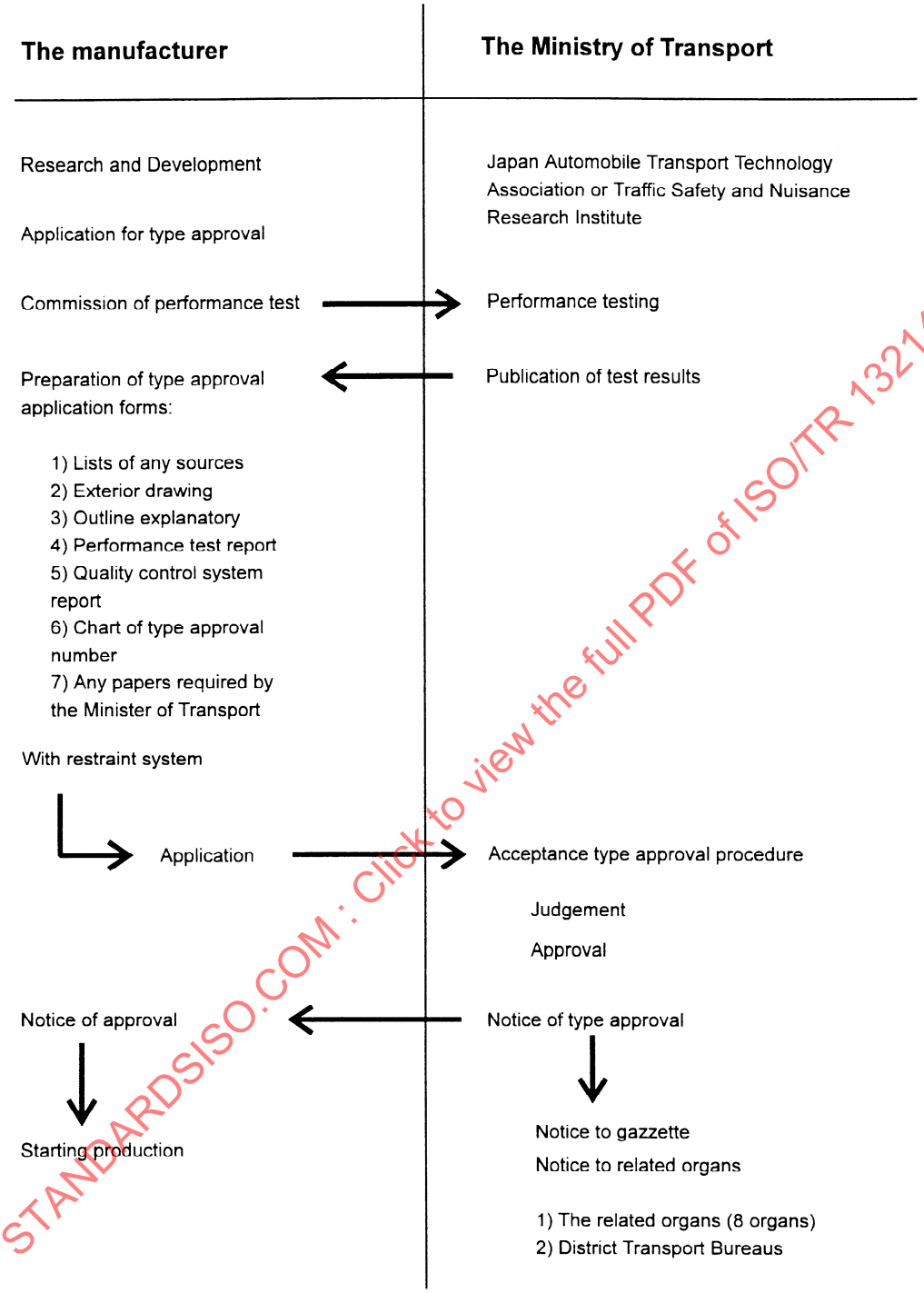


Figure 2 - Type approval procedure according to the type approval standard

Annex C

Positioning of children in cars and restraint requirements for European countries

Country	children in cars			rear seat belts	
	front passenger seat		rear seats		
	use	**condition**	**protection**	**fitting**	**use (adults)**
AUSTRIA	prohibited* up to 12	-	CRS or belts	mandatory	mandatory
BELGIUM	prohibited* up to 12	-	CRS or belts	mandatory	mandatory
DENMARK	permitted	CRS up to 7	CRS or belts	optional	mandatory where fitted
FINLAND	permitted	CRS up to 7	CRS or belts	mandatory	mandatory
FRANCE	permitted	CRS, rearward facing up to 3	CRS mandatory up to 10	mandatory	mandatory
GERMANY	permitted	CRS up to 12	CRS mandatory	mandatory	mandatory
GREECE	prohibited* up to 10	-	none	optional	voluntary
IRELAND	permitted	CRS or belts up to 12	none	optional	voluntary
ITALY	permitted	CRS	CRS or belts	optional	mandatory where fitted
LUXEMBOURG	prohibited* up to 10	-	CRS or belts	optional	mandatory where fitted
NETHERLANDS	permitted	CRS up to 4, booster cushion up to 12	CRS or belts	mandatory	voluntary
NORWAY	permitted	CRS up to 7	CRS mandatory	mandatory	mandatory
PORTUGAL	prohibited*	-	none	optional	voluntary
SPAIN	permitted	belt obligation**	none	optional	voluntary
SWITZERLAND	prohibited* up to 7	-	CRS or belts	optional	voluntary
SWEDEN	permitted	CRS up to 7	CRS mandatory	mandatory	mandatory
UNITED KINGDOM	permitted	CRS up to 3, CRS or belts up to 12	CRS or belts	mandatory on cars built since 1987	mandatory where fitted

*) CRS or belts with booster cushion are generally accepted

**) only on rural roads and highways

Restraint requirements in different states of the USA

All 50 States and the District of Columbia have laws requiring children under specific ages to be restrained in infant carriers, special safety seats or, in some cases regular adult safety belts. These laws cover children of specified ages in virtually all kinds of motor vehicles (passenger cars, pickups, vans, and utility vehicles), although the laws in 14 states (Alabama, Arizona, Arkansas, Georgia, Indiana, Iowa, Mississippi, Missouri, Nevada, North Carolina, Ohio, Pennsylvania, South Carolina, and Washington) cover children travelling in vehicles that are registered in the state.

(The above text is quoted from "Child Restraint Laws, State Law Facts 1992, published by the Insurance Institute for Highway Safety)

Most US states require a CRS approved according to FMVSS 213 to be used up to an age of 4 to 6 years. For most of the states the seating position is not specified, i e children in CRS will be permitted for all passenger seating positions.

Restraint requirements in different states of Australia

All 6 States, the Australian Capital Territory and the Northern Territory have regulations requiring children up to 1 year of age to be restrained in an infant restraint or child seat, if the vehicle is fitted with child restraint anchorages. Children over the age of 1 year and up to 14 years are required to use a child restraint system or a regular adult seat belt, if one is available. If a reatraint is not available the child must not ride in the seating compartment.

All child restraints are required to be approved to Australian Standard 1754 and must be used in accordance with the manufacturers specifications. Booster cushions are allowed in any seating position fitted with a lap sash seat belt. All other child restraint systems must be used in a rear seating position, in conjunction with a top tether strap.

Annex D

CRS definitions — A compilation of major regulations and standards

Definition	Reference
infant: means a person whose mass is less than 9 kg.	Canada CMVSS 213
child: It is the generic name of the newborn baby, suckling, infant, school child of not more than 36 kg in body weight.	JAPAN JIS D 0401-1987 1
child: means a person whose mass is between 9 kg and 22 kg inclusive.	Canada CMVSS 213
50th percentile 6-year old child: means a person having as physical characteristics a weight of 21,5 kg, an erect sitting height of 645,2 mm, a hip sitting breadth of 213,4 mm, a hip sitting circumference of 607,1 mm and a waist sitting circumference of 528,3 mm.	Canada CMVSS 213
child restraint: A device which is designed to prevent or lessen injury to a child in the event of an abrubt deceleration. It may comprise a combination of straps, securing buckle, adjusting devices, attachments, a supplementary chair or impact shield capable of being anchored to the seat or the structure of a vehicle.	ISO/TC22/SC12/WG7 N 42
infant restraint: A type of child restraint, specially designed for small children.	ISO/TC22/SC12/WG7 N 42
child restraint system: means any device, except Type 1 or Type seat belts, designed for use in a motor vehicle to restrain a child.	Canada CMVSS 213
child restraint system ("restraint"): means an arrangement of components which may comprise a combination of straps or flexible components with a securing buckle, adjusting devices, attachments, and in some cases a supplementary device as a carry-cot, infant carrier, a supplementary chair and/or an impact shield, capable of being anchored to a powerdriven vehicle. It is so designed as to diminish the risk of injury to the wearer, in the event of a collision or of abrupt deceleration of the vehicle, by limiting the mobility of the wearer's body.	ECE R.44 2.1 Amendment 02
child restraints fall into four "mass groups":	ECE R.44 2.1.1. Amendment 02
group 0 for children of a mass less than 10 kg;	2.1.1.1.
group I for children of mass from 9 kg to 18 kg;	2.1.1.2.
group II for children of mass from 15 kg to 25 kg;	2.1.1.3.
group III for children of mass from 22 kg to 36 kg;	2.1.1.4.
child restraints fall into three "categories":	ECE R.44 2.1.2.
a "universal" category for use on all types of vehicle;	2.1.2.1.

Definition	Reference
a "semi-universal" category for use on certain specified types of vehicle;	2.1.2.2.
a "specific vehicle" category for use on one single vehicle type equipped " with the anchorages designed by the manufacturer of the vehicle, or the manufacturer of the child restraint system.	2.1.2.3 Amendment 02
Child restraint systems may be of two classes:	ECE R.44 2.1.3. Amendment 02
An integral class comprising a combination of straps or flexible components with a securing buckle, adjusting device, attachments, and in some cases a supplementary chair and/or impact shield, capable of being anchored by means of its own integral strap or straps;	
A non-integral class that may comprise a partial restraint, which, when used in conjunction with an adult belt, which passes around the body of the child or restrains the device in which the child is placed, forms a complete child restraint system.	
partial restraint: means a device, such as a booster cushion, which, when used in conjunction with an adult seat belt, which passes around the body of the child or restrains the device in which the child is placed, forms a complete child restraint system.	ECE R.44 2.1.3.1. Amendment 02
child safety restraints in motor vehicles: Child safety restraint means a device designed to protect small children against bodily injury when travelling in a motor vehicle. For the purpose of this regulation, small child means a child weighing less than 35 kg able to sit unsupported.	SWEDEN TSVFS 1985:60 2.1
child restraint system: means any device, except Type I or Type II seat belts, designed for use in a motor vehicle or aircraft to restraint, seat or position children who weigh 50 pounds or less.	USA FMVSS 213
infant restraint system: An arrangement of components which may comprise a combination of infant carrier, straps and adjusters. These can be defined in two groups:	UNITED KINGDOM BS AU 202:1985 2.1
Type A: an infant restraint system designed to be used with an approved adult seat belt nominated by the restraint manufacturer.	
Type B: an infant restraint system, designed to be used with any other means of attachment to the vehicle structure.	
infant restraint system: means a system designed to transport an infant in a vehicle.	Canada CMVSS 213
child-restraint type: means child restraints which do not differ in such essential respects as:	ECE R.44 2.19
the category, and the mass group(s) for which and the position and orientation (as defined in paragraphs 2.15 and 2.16) in which the restraint is intended to be used;	2.19.1

Definition	Reference
the geometry of the child restraint;	2.19.2
the dimensions, mass, material and colour of - the seat; - the padding; and - the impact shield:	2.19.3
the material, weave, dimensions and colour of the straps:	2.19.4
the rigid components (buckle, attachments, etc.):	2.19.5
add-on child restraint system: means any portable child restraint system.	USA FMVSS 213
built-in child restraint system: means any child restraint system which is an integral part of a passenger car.	USA FMVSS 213
factory-installed built-in child restraint systems: means a built-in child restraint system that was installed in a motor vehicle at the time of its delivery to a dealer or distributor for distribution.	USA FMVSS 213
restraint system for disabled persons: means any device, except a Type 1 or Type 2 seat belt assembly, that is designed for use directly on the seat of a vehicle to restrain a mobility-impaired occupant.	Canada CMVSS 213
car seat restraining device: A device to anchor a car seat backrest to the car structure to prevent it moving forward in the event of excessive deceleration. It may be separate from or part of a child restraining device and be suitable for either a back or a front seat, or both.	UNITED KINGDOM BS 3254-2:1988 2.9
booster cushion: A reinforced cushion that a child can sit on while wearing an adult seat belt. It improves the lie of the belt across the child's body.	ISO/TC22/SC12/WG7 N 42
booster cushion: means a firm cushion, which can be used with an adult seat belt and which is restrained by either that seat belt or by separate means.	ECE R.44 2.1.3.2 Amendment 02
booster cushion: means a device for use in a motor vehicle for the purpose of seating a child in an elevated position on the vehicle seat in order to adapt an adult seat belt assembly of the motor vehicle to the child.	Canada CMVSS 213
cushion: a device used for raising the child's position in the motor vehicle and adapting an adult seat belt to make it suitable for a child, and having no back above the seating plane.	Australia AS 1754
booster seat: means a child restraint which consists of only a seating platform that does not extend up to provide a cushion for the child's back or head.	USA FMVSS 213
vehicle seat: means a structure, which may or may not be integral with the vehicle structure, complete with trim and intended to seat one adult person. In this connexion.	ECE R.44 2.20

Definition	Reference
seat type: means a category of adult seats which do not differ in such essential respects as;	ECE R.44 2.23
the shape, dimensions and materials of the seat structure,	2.23.1
the types and dimensions of the seat-lock adjustment and locking systems, and	2.23.2
the type and dimensions of the adult safety-belt anchorage on the seat, of the seat anchorage, and of the affected parts of the vehicle structure.	2.23.3
group of vehicle seats: means either a bench seat or a plurality of seats which are separate but side by side (i.e. so fixed that the front anchorages of one seat are in line with the front or rear anchorages of another seat or on a line passing between those anchorages), each seat accommodating one or more seated adult persons.	ECE R.44 2.20.1
vehicle bench seat: means a structure complete with trim and intended to seat more than one adult person.	ECE R.44 2.20.2
vehicle front seats: means the group of seats situated foremost in the passenger compartment, i.e. having no other seat directly in front of them.	ECE R.44 2.20.3
vehicle rear seats: are fixed, forward-facing seats situated behind another group of vehicle seats.	ECE R.44 2.20.4
seat for infant: It is the restraint by which principally an infant is restrained or positioned, backward or forward, by the following items without directly restraining the infant with a seat belt. Notes(1) It is the apparatus used for softening the shock by attaching it in front of a child in order to restrain the forward motion of the child in a head-on collision. Notes(2) The auxiliary seat is used for seating an infant on the seat of an automobile and is equipped with a seat cushion, or otherwise with the seat cushion and a seat back.	JAPAN JIS D 0401-1987 3
seat for school child: It is the restraint by which principally a school child is suitably positioned so that the school child can be directly restrained with a seat belt.	JAPAN JIS D 0401-1987 4
seat back: it is a part of the restraint, which is the leaning back intended for receiving man's head and trunk.	JAPAN JIS D 0401-1987 11
seat cushion: it is a part of the restraint, which is the part of the seat intended for receiving man's waist.	JAPAN JIS D 0401-1987 10
contactable surface: means any child restraint system surface (other than that of a belt, belt buckle, or belt adjustment hardware) that may contact any part of the ear or torso of the appropriate test dummy, specified in S7, when a child restraint system is tested in accordance with S6.1.	USA FMVSS 213