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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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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 Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.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	<p>ECE Regulation No.44</p> <p>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")</p> <p>First published: February 1, 1981</p> <p>Latest revision: September 11, 1992</p>
USA	<p>FMVSS 213</p> <p>Federal Motor Vehicle Safety Standards and Related Materials. Requirements for Child Restraint Systems Used in Motor Vehicles and Aircraft.</p> <p>First published: May 1, 1980.</p> <p>Latest revision: October 1, 1992.</p>
United Kingdom	<p>British Standard, BS</p> <p>British Standard - Seat Belt Assemblies for Motor Vehicles Specification for restraining devices for children.</p> <p>First published: 1960</p> <p>Latest revisions:</p> <p>BS 3254:Part 2:1988 and 1991, Specification for child restraint systems which are forward facing</p> <p>BS AU 185:1983, Specification for seat belt booster cushions</p> <p>BS AU 202a:1988, Specification for rearward facing infant restraint systems</p>

- 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 | <ul style="list-style-type: none">- Integral systems- Non-integral systems |
| USA | <ul style="list-style-type: none">- Add-on systems- Built-in systems- Factory-installed built-in systems |
| UK | <ul style="list-style-type: none">- Integral systems- Non-integral systems |
| Denmark | <ul style="list-style-type: none">- As ECE R.44 |
| Japan | <ul style="list-style-type: none">- Not specified |
| Sweden | <ul style="list-style-type: none">- Not specified |
| Canada | <ul style="list-style-type: none">- 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 | <ul style="list-style-type: none">- 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/s² during the first 10 ms. Then constant deceleration max 200 m/s². 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) | ≥ 3 kN | 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 mm² 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 $7 \pm 0,1$ 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

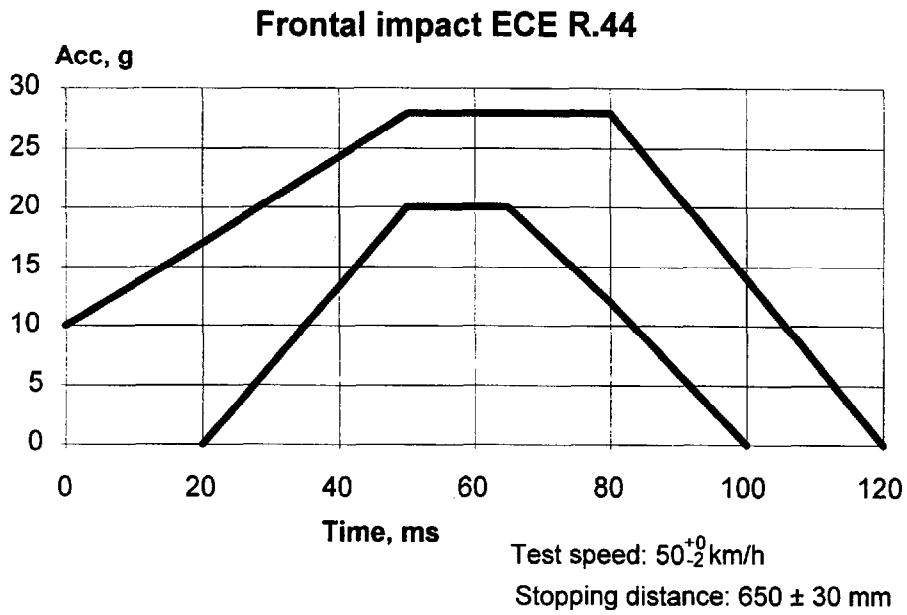
- * Name, trademark, identification of manufacturer
- * month & year of manufacturing
- * max design mass of child wearer in kg

Packaging

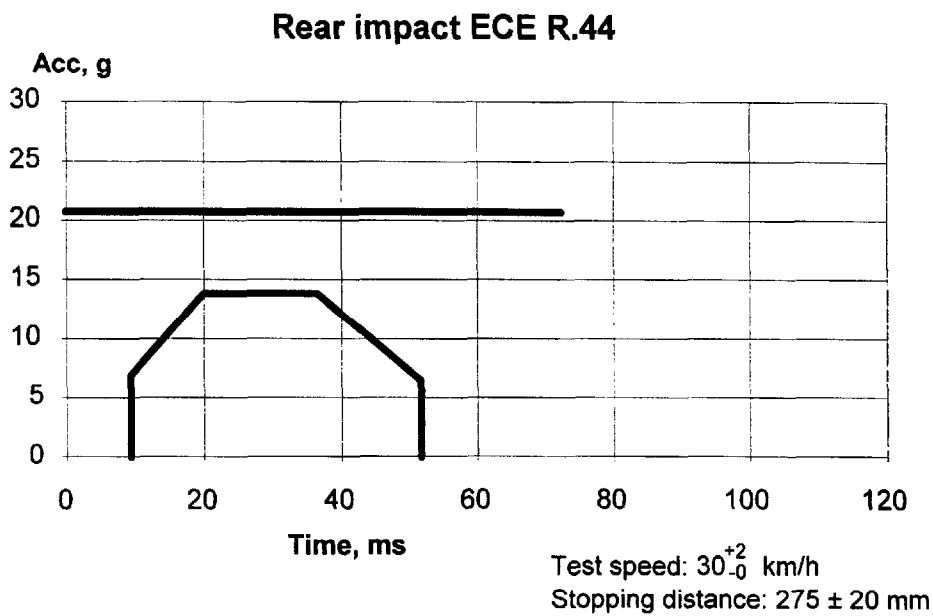
- * manufacturer's registered brand name
- * model designation
- * contents of package

Annex A

Crash pulses (deceleration curves) - a comparison

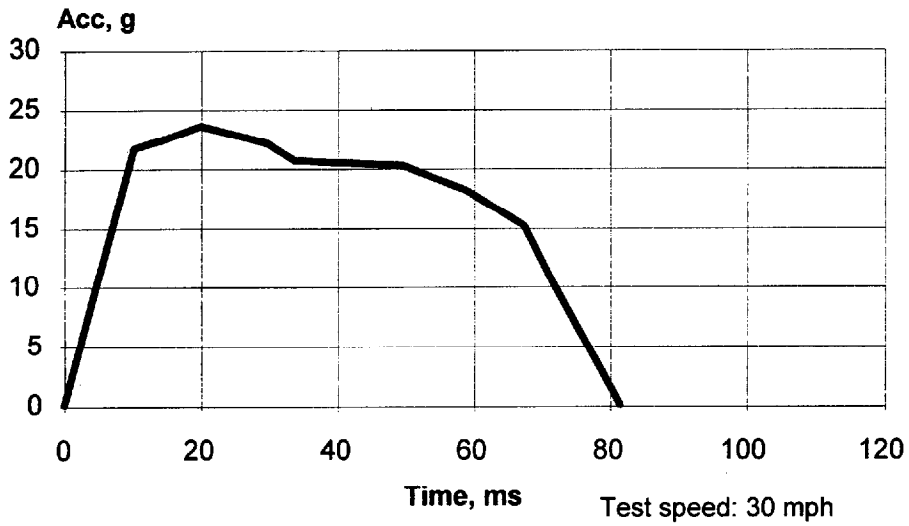


Note: The tolerance for stopping distance without calibration purpose is ± 50 mm.

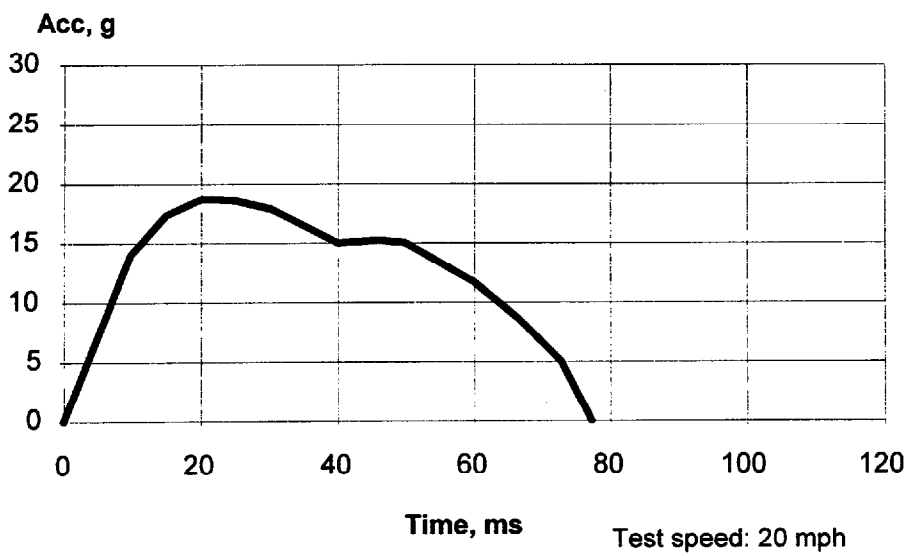


Note: The tolerance for stopping distance without calibration purpose is ± 25 mm.

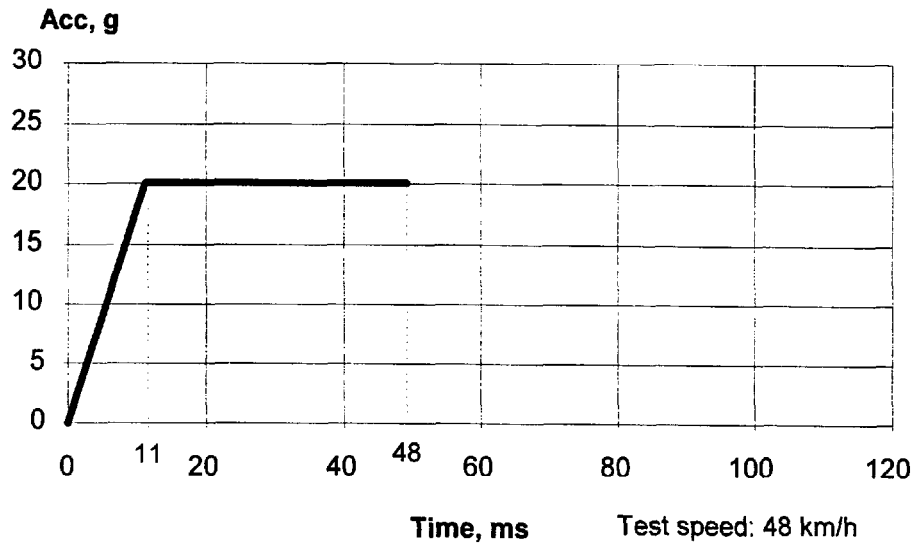
Frontal impact FMVSS 213, configuration I



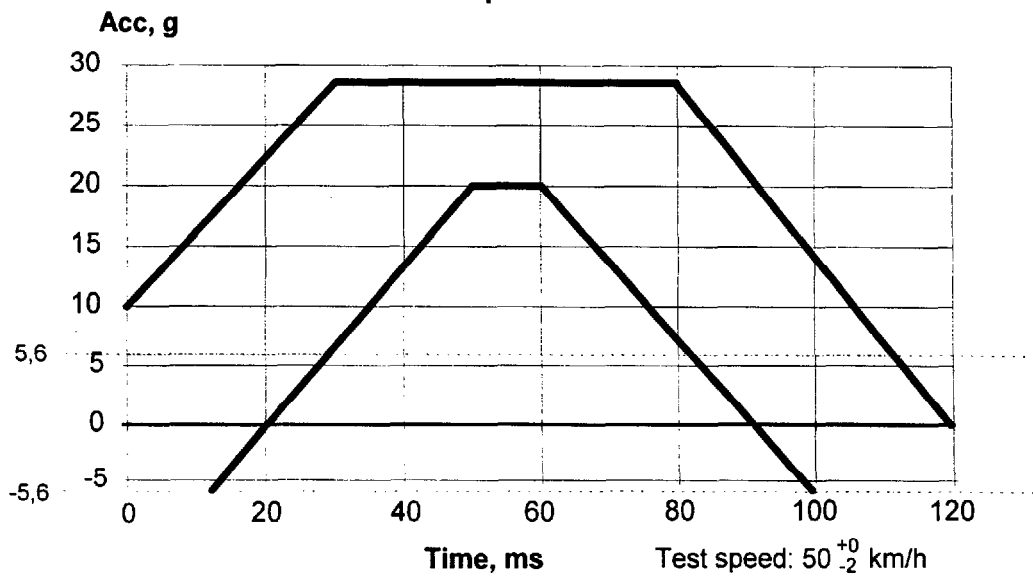
Frontal impact FMVSS 213, configuration II



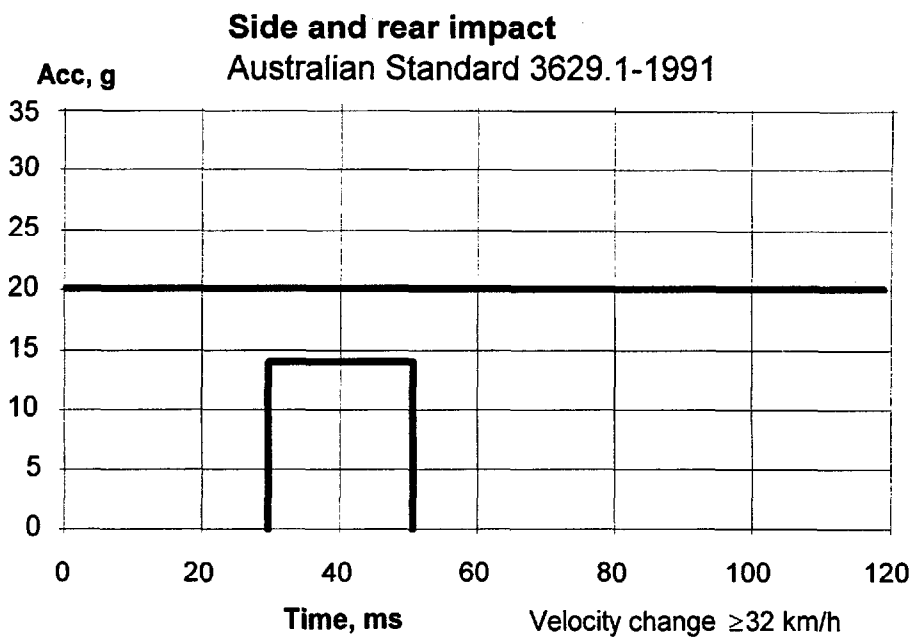
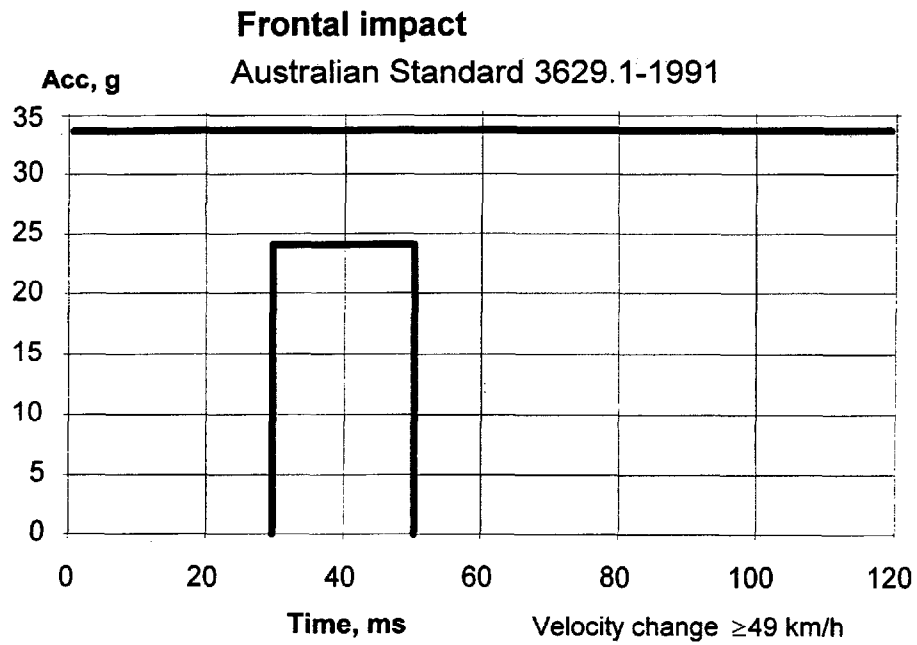
Frontal impact CMVSS 213, 213.1, 213.3

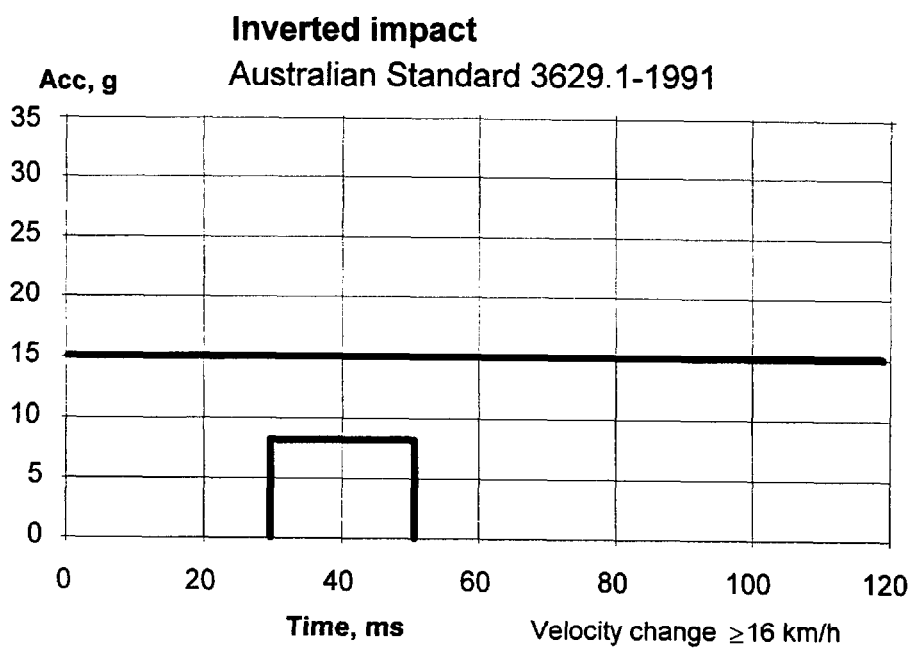


Frontal impact JIS D 0401



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





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.

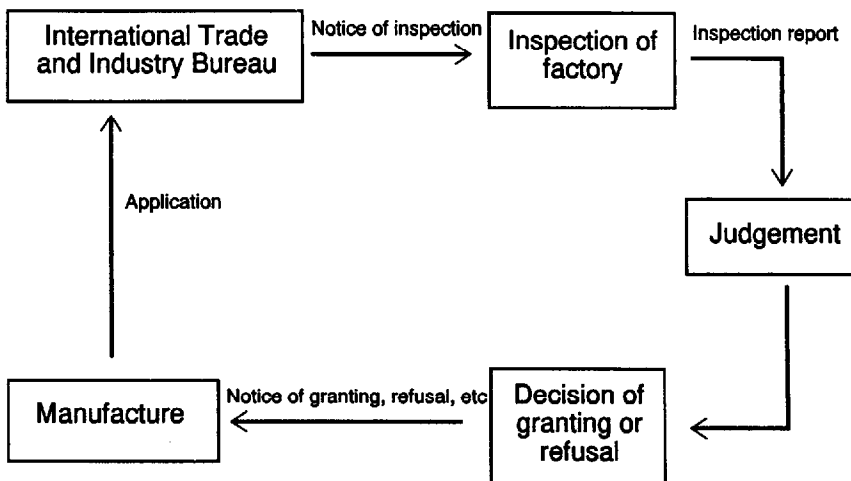


Figure 1 - Approval according to the JIS standard

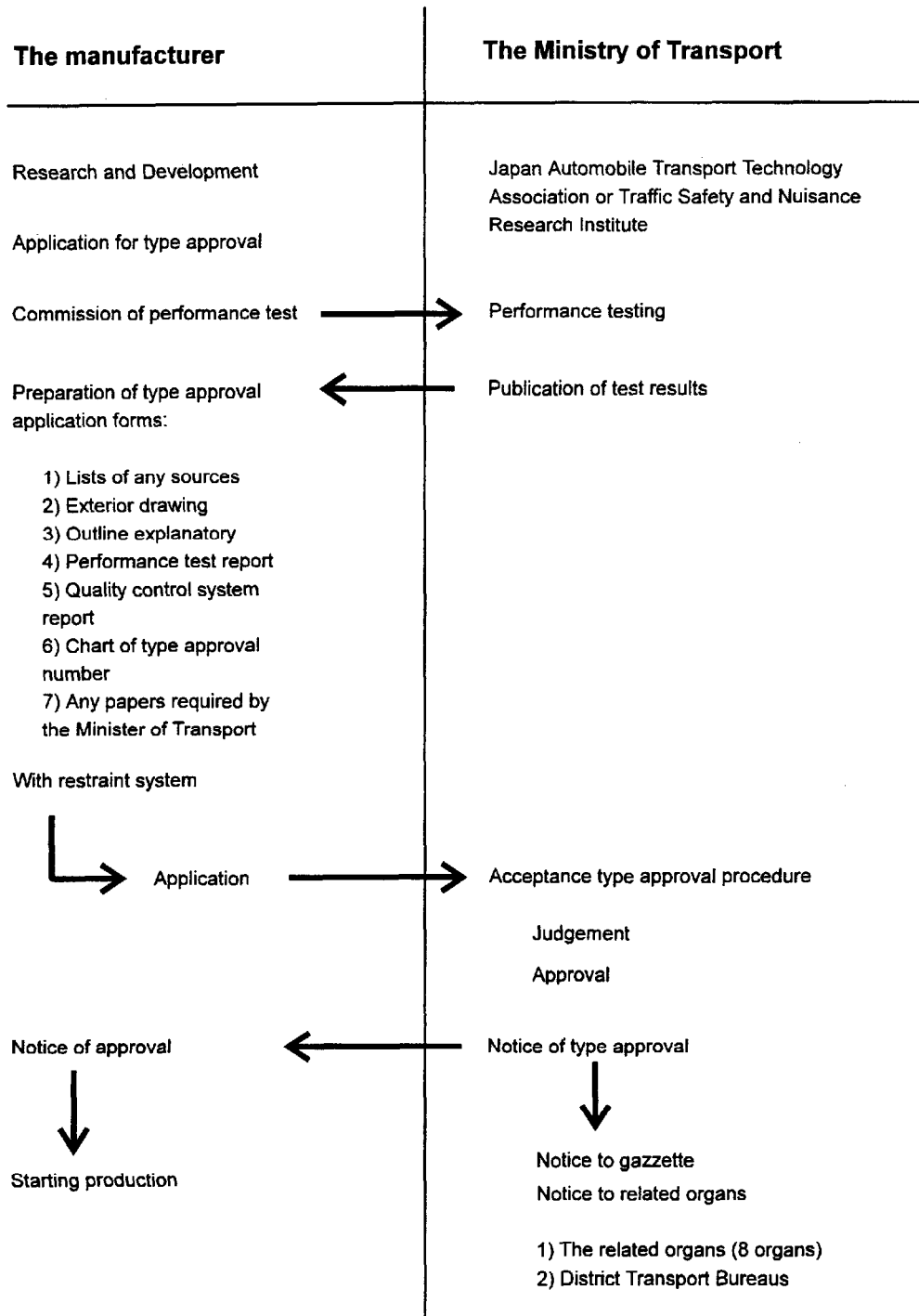


Figure 2 - Type approval procedure according to the type approval standard

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	fitting	use (adults)
	use	condition	protection		
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 restraint 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 abrupt 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.
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;	Amendment 02
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
<p>seat type: means a category of adult seats which do not differ in such essential respects as:</p> <p>the shape, dimensions and materials of the seat structure,</p> <p>the types and dimensions of the seat-lock adjustment and locking systems, and</p> <p>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.</p>	<p>ECE R.44 2.23</p> <p>2.23.1</p> <p>2.23.2</p> <p>2.23.3</p>
<p>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.</p>	<p>ECE R.44 2.20.1</p>
<p>vehicle bench seat: means a structure complete with trim and intended to seat more than one adult person.</p>	<p>ECE R.44 2.20.2</p>
<p>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.</p>	<p>ECE R.44 2.20.3</p>
<p>vehicle rear seats: are fixed, forward-facing seats situated behind another group of vehicle seats.</p>	<p>ECE R.44 2.20.4</p>
<p>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.</p>	<p>JAPAN JIS D 0401-1987 3</p>
<p>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.</p>	
<p>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.</p>	
<p>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.</p>	<p>JAPAN JIS D 0401-1987 4</p>
<p>seat back: it is a part of the restraint, which is the leaning back intended for receiving man's head and trunk.</p>	<p>JAPAN JIS D 0401-1987 11</p>
<p>seat cushion: it is a part of the restraint, which is the part of the seat intended for receiving man's waist.</p>	<p>JAPAN JIS D 0401-1987 10</p>
<p>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.</p>	<p>USA FMVSS 213</p>

Definition	Reference
contact surface: It is the surface of the apparatus body with which the head and trunk of a dummy are contacted when the dummy is seated on a restraint in a normal state.	JAPAN JIS D 0401-1987 13
car bed: means a child restraint system designed to restrain or position a child in the supine or prone position on a continuous flat surface.	USA FMVSS 213
bed for suckling: It is the restraint by which principally a sucking is laid down with one's face upward or downward on a continuous plane to be restrained or positioned.	JAPAN JIS D 0401-1987 2
child-safety chair: means a child restraint incorporating a chair in which the child is held.	ECE R.44 2.2
chair: means a structure which is a constituent part of the child restraint and is intended to accommodate a child in a seated position.	ECE R.44 2.4
chaise: 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 a back above the seating plane.	Australia AS 1754
chair assembly: An assembly intended primarily for children of group A, consisting of a shaped seat in which the child is restrained and which itself rests on the car seat and is anchored back to the car structure by restraining straps, which also retain it in place should the car overturn.	UNITED KINGDOM BS 3254-2:1988 2.1
carry-cot: means a restraint system intended to accommodate and restrain the child in a supine or prone position with the child's spine perpendicular to the median longitudinal plane of the vehicle. It is so designed as to distribute the restraining forces over the child's torso and head and body excluding its limbs in the event of a collision.	ECE R.44 2.4.1 Amendment 02
carry-cot restraint: means a device used to restrain a carry-cot to the structure of the vehicle.	ECE R.44 2.4.2 Amendment 02
infant carrier: means a restraint system intended to accommodate the child in a rearward-facing semi-recumbent position. It is so designed as to distribute the restraining forces over the child's head and body excluding its limbs in the event of the frontal collision.	ECE R.44 2.4.3 Amendment 02
infant carrier: That part of the restraint system intended to accommodate an infant in a semi-recumbent position, so designed to distribute the restraining forces over the torso and head of an infant in an accident situation.	UNITED KINGDOM BS AU 202:1985 2.2
chair support: means that part of a child restraint by which the chair can be raised.	ECE R.44 2.5
child support: means that part of a child restraint by which the child can be raised within the child restraint.	ECE R.44 2.6

Definition

Reference

Definition	Reference
side support: It is a part of the restraint with a seat back, which is the support preventing the lateral motion of a head.	JAPAN JIS D 0401-1987 12
impact shield: means a device secured in front of the child and designed to distribute the restraining forces over the greater part of the height of the child's body in the event of a frontal impact.	ECE R.44 2.7
strap: A flexible component designed to restrain the infant or infant carrier and to transmit forces to the vehicle structure either directly or indirectly.	UNITED KINGDOM BS AU 202:1985 2.4
strap: means a flexible component designed to transmit forces.	ECE R.44 2.8
lap strap: means a strap which, either in the form of a complete belt or in the form of a component of such a belt, passes across the front of, and restrains, the child's pelvic region.	ECE R.44 2.8.1
crotch strap: means a strap or divided straps, where two or more pieces of webbing form the crotch strap which is attached to the child restraint and the lap strap and is so positioned as to pass between the child's thighs, it is designed to maintain the lap strap in its correct position during normal traffic conditions.	ECE R.44 2.8.3 Amendment 02 Supplement 2
crotch strap: A strap of straps passing between the child's thigh, intended to prevent the child sliding under the lap strap in normal use and to prevent the lap strap moving up off the pelvis in an impact.	UNITED KINGDOM BS 3254-2:1988 2.11
crotch strap: A webbing strap which is designed to attach the quick release device to the child restraint.	Australia AS 1754
leg straps: Flexible components which 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.	Australia AS 1754
guide strap: means a strap of the adult seat belt in a position to suit the child and where the effective position at which the shoulder strap changes direction can be adjusted by means of a device which can be moved up and down the strap to locate the wearer's shoulder, and then locked into that position. This guide strap is not meant to carry a significant part of the dynamic load.	ECE R.44 2.1.3.3 Amendment 02
upper anchorage strap: The flexible component designed to restrain the top portion of the child restraint.	Australia As 1754
upper anchorage fitting: A device which attaches to the anchorage point in a vehicle for the purpose of engaging the upper anchorage strap attachment clip.	Australia AS 1754
tether strap: means a device that is fitted with a tether belt hook and secured to the rigid structure of a child restraint system or a restraint system for disabled persons and that transfers the load from that system to the anchorage hardware.	Canada CMVSS 213

Definition	Reference
tether belt hook: means a device as illustrated in Figure 4 of section 213, used to attach a tether strap to tether anchorage hardware.	Canada CMVSS 213
clips; slides: Devices through which the webbing passes and by which the effective length of the straps can be controlled to suit the circumstances.	UNITED KINGDOM BS 3254-2:1988 2.5
child-restraining strap: means a strap which is a constituent part of the belt and restrains only the body of the child.	ECE R.44 2.8.4
child-restraint attachment strap: means a strap "which attaches the child restraint to the structure of the vehicle and may be a part of the vehicle-seat retaining device.	ECE R.44 2.8.5
belt: means a child restraint comprising a combination of straps with a securing buckle, adjusting devices and attachments.	ECE R.44 2.3
belt for child: It consists of a webbing, a buckle, a length regulator, etc. as a part of restraint and restrains a child.	JAPAN JIS D 0401-1987 7
seat belt assembly: means any strap, webbing or similar device designed to secure a person in a vehicle in order to mitigate the results of any accident and includes a) all necessary buckles and other fasteners and all hardware, and b) a belt assembly that provides passive occupant protection to the user thereof.	Canada CMVSS 213
harness belt: means a belt assembly comprising a lap belt and shoulder restraints.	ECE R.44 2.8.6 Amendment 01
auxiliary belt: It is the belt used for fixing the restraint attached to the seat of an automobile by seat belt, to the seat back or the like of the automobile in order to stabilize and to help the prevention of falling down.	JAPAN JIS D 0401-1987 8
Remark: In such impacts as in traffic accidents or the like, restraints can not be held securely by this auxiliary belt only.	
harness assembly: An assembly of straps and buckles which is intended to restrain the movement of a child in the event of an accident and prevent harmful contact with any part of the car structure as a result of deceleration up to the equivalent of the dynamic test.	UNITED KINGDOM BS 3254-2:1988 2.2
buckle: means a quick release device which enables the child to be held by the restraint or the restraint by the structure of the car and can be quickly opened. The buckle may incorporate the adjusting device.	ECE R.44 2.9 Amendment 02
buckle: A quick release device which can be readily operated by an adult to release the child from attachment to the car.	UNITED KINGDOM BS 3254-2:1988 2.3

Definition	Reference
buckle: Buckle means the device by means of which straps or equivalent devices used to hold the child in the restraint can be secured together.	SWEDEN TSVFS 1985:60 2.2
enclosed buckle release button: a buckle release button such that it must not be possible to release the buckle using a sphere having a diameter of 40 mm.	ECE R.44 2.9.1 Amendment 02
non-enclosed buckle release button: a buckle release button such that it must be possible to release the buckle using a sphere having a diameter of 40 mm.	ECE R.44 2.9.2
adjusting device: means a device enabling the restraint or its attachments to be adjusted to the physique of the wearer, the configuration of the vehicle, or both. The adjusting device may either be part of the buckle, or be a retractor or any other part of the safety belt.	ECE R.44 2.10 Amendment 02
adjusting device: Adjusting device means a device enabling the straps or equivalent used to hold the child in the restraint to be adjusted.	SWEDEN TSVFS 1985:60 2.3
adjuster: A device through which a strap passes and which, by means of moving, enables the effective length of the straps to be controlled to suit the circumstances.	UNITED KINGDOM BS AU 202:1985 2.5
quick adjuster: means an adjusting device which can be operated by one hand in one smooth movement.	ECE R.44 2.10.1
shoulder restraint: means that part of a belt which restrains the child's upper torso.	ECE R.44 2.8.2
body restraining components: Those components of an assembly that directly restrain the movement of the body and are in contact with it.	UNITED KINGDOM 3254-2:1988 2.6
apparatus body: It is the restraint other than the belt for child.	JAPAN JIS D 0401-1987 9
attachments: means parts of the child restraint, including securing components, which enable the child restraint to be firmly secured to the vehicle structure either directly or through the vehicle seat.	ECE R.44 2.11
attachment clip: a device which allows the child restraint to be quickly and conveniently attached to, and removed from, the vehicle	Australia AS 1754
energy absorber: means as device which is designed to dissipate energy independently of or jointly with the strap and forms part of a child restraint.	ECE R.44 2.12
retractor: means a device designed to accommodate a part or the whole of the strap of a child restraint. The term covers the following devices:	ECE R.44 2.13

Definition	Reference
automatically-locking retractor: a retractor which allows extraction of the desired length of a strap and, when the buckle is fastened, automatically adjusts the strap to the wearer's physique, further extraction of the strap without voluntary intervention by the wearer being prevented;	ECE R.44 2.13.1
emergency-locking retractor: a retractor which does not restrict the belt wearer's freedom of movement in normal driving conditions. Such a device has length-adjusting devices which automatically adjust the strap to the wearer's physique, and a locking mechanism actuated in an emergency by;	ECE R.44 2.13.2
deceleration of the vehicle, extraction of the strap from the retractor, or any other automatic means (single sensitivity) or	2.13.2.1
a combination of any of these means (multiple sensitivity).	2.13.2.2
anchorage points: Any provision on the car structure for securing the anchoring attachments.	UNITED KINGDOM BS 3254-2:1988 2.10
anchorage device: Anchorage device means a device used to secure the restraint in the vehicle.	SWEDEN TSVFS 1985:60 2.4
seat belt anchorage: means a device for transferring seat belt assembly loads to the vehicle structure.	Canada CMVSS 213
restraint anchorages: means those parts of the vehicle structure or seat structure to which the child-restraint attachments are secured.	ECE R.44 2.14
additional anchorage: means a part of the vehicle structure or of the vehicle seat structure, or any other part of the vehicle, to which a child restraint is intended to be secured and which is additional to the anchorages approved under Regulation No. 14.	ECE R.44 2.14.1
anchoring attachments: Devices at the end of the webbing straps used to attach straps to the car structure.	UNITED KINGDOM BS 3254-2:1988 2.8
vehicle seat anchorage: means the system, including the affected parts of the vehicle structure, by which the adult seat as a "hole is secured to the vehicle structure.	ECE R.44 2.22
emergency release: A quick release device that can be readily operated to release the child from the vehicle with or without the infant carrier.	UNITED KINGDOM BS AU 202:1985 2.3
enclosed emergency release: A device designed in such a way that it is not possible to release the buckle using a sphere having a diameter of 40 mm.	UNITED KINGDOM BS AU 202:1985 2.6

Definition	Reference
non-enclosed emergency release: A device designed in such a way that it is possible to release the buckle using a sphere having a diameter of 40 mm.	UNITED KINGDOM BS AU 202:1985 2.7
load carrying components: Those components of an assembly that link the body restraining components of the car structure. NOTE. It is possible for some components to perform both functions.	UNITED KINGDOM BS 3254-2:1988 2.7
adjustment system: means the complete device by which the vehicle seat or its parts can be adjusted to suit the physique of the seat's adult occupant; this device may, in particular, permit:	ECE R.44 2.21
longitudinal displacement, and/or	ECE R.44 2.21.1
vertical displacement, and/or	ECE R.44 2.21.2
angular displacement;	ECE R.44 2.21.3
displacement system: means a device enabling the adult seat or one of its parts to be displaced angularly or longitudinally, without a fixed intermediate position, to facilitate the entry and exit of Passengers and the loading and unloading of objects.	ECE R.44 2.24
locking system: means a device ensuring that the adult seat and its parts are maintained in the position of use.	ECE R.44 2.25
representative aircraft passenger seat: means either a Federal Aviation Administration approved production aircraft passenger seat or a simulated aircraft passenger seat conforming to Figure 6.	USA FMVSS 213
seat orientation reference line: or "SORL" means the horizontal line through Point Z as illustrated in Figure IA.	USA FMVSS 213
specific vehicle shell: means the actual vehicle model part into which the built-in child restraint system is lubricated, including the complete surroundings of the built-in system. If the built-in child restraint system is manufactured as part of the rear seat, these surroundings, include the back of the front seat, the interior rear side door panels and trim, the rear seat, the floor pan, the B and C pillars, and the ceiling. If the built-in system is manufactured as part of the front seat, these surroundings include the dashboard; the steering wheel, column, and attached levers and knobs; the "A" pillars; any levers and knobs installed in the floor or on a console; the interior front side door panels and trim; the front seat; the floor pan; and the ceiling.	USA FMVSS 213
dummy: It is the human phantom similar to a child.	JAPAN JIS D 0401-1987 14

Definition	Reference
trunk: It is the body part of the dummy in a sitting down state between the sitting surface of a restraint and the shoulder top of the dummy. However, the upper and lower limbs of the dummy are excepted.	JAPAN JIS D 0401-1987 15
torso: means the portion of the body of a seated anthropomorphic test dummy, excluding the thighs, that lies between the top of the child restraint system seating surface and the top of the shoulders of the test dummy.	USA FMVSS 213
forward: It is the same direction as the advance direction of an automobile.	JAPAN JIS D 0401-1987 5
backward: It is the reverse direction to the advance direction of an automobile.	JAPAN JIS D 0401-1987 6
forward-facing: means facing in the normal direction of travel of the vehicle.	ECE R.44 2.15
rearward-facing: means facing in the direction opposite to the normal direction of travel of the vehicle.	ECE R.44 2.16
inclined-position: means a special position of the chair which allows the child to recline.	ECE R.44 2.17
lying down/supine/prone position: means a position where at least the child's head and body excluding its limbs are on a horizontal surface when at rest in the restraint.	ECE R.44 2.18 Amendment 02
guardian: It is the person in a position of guarding the child riding in the same vehicle.	JAPAN JIS D 0401-1987 16
misuse of CRS: Any deviation from the intended application and use, which might reduce the protective performance of the CRS.	ISO/TC22/SC12/WG1 N 1

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