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Speakers



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Content

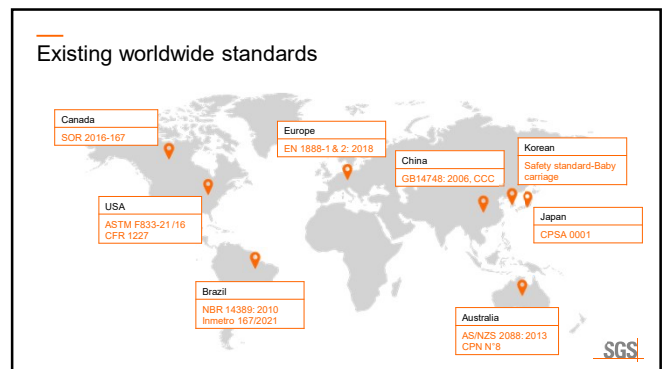


- Scope and background to the standard
- Principles of the standard
- Requirements and rationales
- Differences and similarities with other existing standards
- Questions

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General requirements



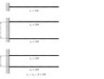
Protective functions

- Provide a protected volume
- Suitability of vehicle
- Internal height of pram body
- Child restraint system



Gaps – Entrapment /moving hazards


- Finger entrapment
- Foot entrapment
- Shearing hazards
- Crushing hazards
- Wheels
- Locking mechanisms



Entanglement

Cords, strings and other narrow fabrics:


- Free length
- Combined size



Choking and Ingestion/suffocation

Avoid small parts:

- Torque, tensile
- Bumper bar protective covering removal
- Internal lining
- Packaging



Edges and protrusions

- Rounded or chamfered and free from burrs and sharp edges

General requirements

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Requirements on performance

Performance



Parking and braking devices

- Efficiency
- Operation



Stability

- Rear, front and sideways stability



Restraint system

- Strength
- Effectiveness
- Slippage

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Requirements on strength and durability

Strength and durability



Irregular surfaces

Structural integrity:

- (5 ± 0.1) km/h 72000cycles



Dynamic strength

- Three times for each alternative arrangement
- Five times with seat unit for each orientation
- Repeat in the reverse direction



Wheel strength

- Non-swivel wheels: 45 kg
- Swivel wheels: 23 kg



Handle strength

- 200 times reversible handles
- 10,000 times durability test
- Dynamic resistance of reversible and/or adjustable and telescopic handles

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Differences and similarities with other existing standards: General safety requirement – small parts, choking and ingestion hazards

General requirements

ISO 31110 § 8.5	Torque 0.34 Nm Tensile 90 N – or 70 N to fabrics Removal of the covering on bumper bars 70 N
Standard	Comment
EN 1888 – Part 1	90 N applicable to all types of materials Bite test applicable to bumper bar
ASTM F833	Application of 16 CFR 1501 Foam on tray (small parts + warning)
AS/NZS 2088	0.45 ± 0.02 Nm 70 ± 2 N
SOR 2016-167	90 N Torque and tension tests
GB 14748	Application of GB 6675 Sharp edges, points

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Differences and similarities with other existing standards: General safety requirement – entrapment hazards

General requirements

ISO 31110 § 8.2	Entrapment of fingers: < 7 mm or > shape assessment probe Mesh : < 7 mm Footrest : < 25 mm or > 45 mm
Standard	Comment
EN 1888 – Part 1	Adds head entrapment between handle and pram body
ASTM F833	< 5.33 mm or > 9.53 mm or depth < 9.53 mm Holes or slots that extend entirely through a wall section of any rigid material
AS/NZS 2088	< 5 mm or > 12 mm
SOR 2016-167	< 5 mm or > 10 mm
GB 14748	< 5 mm or > 12 mm

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Differences and similarities with other existing standards: Locking mechanism (1/2)

General requirements

ISO 31110 § 8.3.5	Requirements when chassis can be folded with seat unit or pram body attached Operating device – Locking device – Locking mechanism ❖ Incomplete deployment: automatic engagement ❖ Unintentional release: • At least one operating device requires two consecutive actions, the second depending on the first, and cannot be activated in one single action • Two separate and independent operating devices – operated by foot, at least one reengages automatically; operated by hand, both reengage automatically • Three or more separate and independent operating devices, one located out protected volume or need > 50 N force ❖ Durability and strength tests
Standard	Comment
ASTM F833	❖ A latching device or other provision ❖ Strollers that employ hinged links with a geometric over center action to maintain in use position shall require two distinct and separate actions

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Differences and similarities with other existing standards: Locking mechanism (2/2)

General requirements



Standard	Comment
AS/NZS 2088	❖ Locking devices shall have a distinct locked position and shall not appear locked when they are not ❖ Folding vehicles shall have, at least, either: • A separate primary and secondary locking device • A combined primary and secondary locking device
SOR 2016-167	❖ Latch system, needs positive action ❖ Safety device, automatically engaged, needs positive action
GB 14748	There must be at least one locking mechanism and, the release of this locking must require: • Two separate operations acting on two separate parts of the baby buggy; or • Two consecutive operations, the first being kept as the second operation is being carried out

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Differences and similarities with other existing standards:
General safety requirement – restraint system (1/2)



ISO 31110 § 8.1.3	Crotch restraint Type A: efficiency – corresponds to EN 1888 or Type B: dimensional requirements – corresponds to ASTM F833 Anchorage points required in pram bodies > 800 mm Strength 150 N Strength of fasteners 200 N Slippage of adjusters < 20 mm Minimum width 19 mm
Standard	Comment
EN 1888 – Part 1	Corresponds to Type A
ASTM F833	Corresponds to Type B Slippage of adjusters < 25 mm Strength of anchoring points 200 N and fasteners, x 5 Buckle release: double action or 40 N Occupant retention using CAMI Dummy

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Differences and similarities with other existing standards:
General safety requirement – restraint system (2/2)

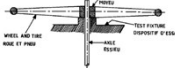

Standard	Comment
AS/NZS 2088	Restraint system permanently attached All components – connections not removable Buckle release: 40 N or a double action No loop created when central buckle is released Width of straps: 20 mm for waist and crotch, 15 mm for shoulders Dimensional requirements on adjustment in height Waist secured to the frame of vehicle Crotch permanently fixed to the main buckle
SOR 2016-167	Restraint straps permanently attached Strength test 200 N (x 9) then up to 450 N Attachment points: 225 N

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Differences and similarities with other existing standards:
Parking device



ISO 31110 § 8.8	Operated by the carer standing adjacent to the handle If within protected volume, shall not be operable by a child Maximum movement of wheels 90 mm (on a 9° slope)
Standard	Comment
EN 1888	On vehicles with swiveling front wheels the device shall be engaged simultaneously on all rear wheels in one single action
ASTM F833	Application of a force corresponding to 0.34 x Weight of the product + Weight of the occupant Prevent wheel from rotating by > 90°
AS/NZS 2088	Be red in color (contrasting) Activated by one foot/one hand Maximum movement of wheels 50mm/90 mm Also note a tether strap is required
SOR 2016-167	Tested on a 12° slope Maximum rotation of the wheel 90°

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Differences and similarities with other existing standards:
Stability

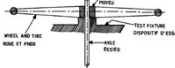

ISO 31110 § 8.9	On a 12° slope Using test cylinders And stops 25 x 25 mm Rearwards, frontwards, sideways
Standard	Comment
ASTM F833	Using a CAMI Dummy + Front stability (child climbing in)
AS/NZS 2088	Stops for each wheel, 20 mm if Ø ≤ 200 mm or max 15% for Ø > 200 mm Tilting movement to 12°
SOR 2016-167	Using a sandbag Stops 19 mm + Stability on horizontal plane, vertical force on the footrest

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Differences and similarities with other existing standards:
Wheel strength



ISO 31110 § 8.10.6	Non swivel wheels: 45 kg along axle center line and rotate wheel at 360° for 10 cycles Swivel wheels: 23 kg along axle center line to pull on fasteners and rotate wheel at 360° for 10 cycles Swivel assembly attachment to the frame: 200 N
Standard	Comment
EN 1888 AS/NZS 2088	200 N for 120 s, in a direction that would remove wheel or wheel assembly
SOR 2016-167	450 N, for 120 s

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Differences and similarities with other existing standards:
Handle strength

ISO 31110 § 8.10.7	Durability test for 10,000 cycles, force to lift the wheels (120 mm) applied vertically to the handle Dynamic resistance for adjustable, reversible and telescopic handles: drop of 15 kg, 100 mm
Standard	Comment
AS/NZS 2088	Kerb mounting durability for 3,000 cycles, force on the handle to raise wheels (120 mm) between 55° to 90° from the horizontal Security of reversible handle engagement: 200 N

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Differences and similarities with other existing standards: Handle strength

Standard	Comment
GB 14748	Durability test for 800 cycles, force to lift the wheels (120 mm) applied vertically to the handle
	New draft GB14748 increase from 800 cycles to 3000cycles



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Differences and similarities with other existing standards: Irregular surface test

ISO 31110 § 8.10.4	72,000 cycles, 5 km/h
Standard	Comment
AS/NZS 2088	64 hours (different obstacles)

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Differences and similarities with other existing standards: Dynamic strength

ISO 31110 § 8.10.5	Vehicle runs for 1m down a 10° slope against steel stop Forwards and backwards directions Five cycles each seat configuration Three cycles each accessory configuration
Standard	Comment
ASTM F833	Vehicle runs for 1.02m down a 20° slope against steel stop Car seat: CAMI Dummy Seat unit: 18.1kg Handle bar: 2.3-kg Five cycles for seat/carriages configuration Three cycles for car seat configuration

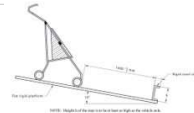


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Differences and similarities with other existing standards: Dynamic strength

Standard	Comment
AS/NZS 2088	Vehicle runs for 1m down a 10° slope against steel stop Load the weight as claimed Handle bar: 5 kg Ten cycles for facing forward, and another ten cycles for facing rearward
Static strength SOR 2016-167	40 kg for a pram 60 kg for a seat unit 20 kg for a footrest 2 minutes



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Differences and similarities with other existing standards: Static load strength (only other standards)

Standard	Comment
GB 14748	Single seat stroller: 40kg Single pram/carriage: 35kg Twin stroller: 35kg*2 Twin pram/carriage: 30kg*2
Static strength SOR 2016-167	40 kg for a pram 60 kg for a seat unit 20 kg for a footrest 2 minutes

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Differences and similarities with other existing standards: Static load strength (only other standards)

Standard

Comment

AS/NZS 2088

Please refer to below table

MASS OF SANDBAGS FOR STATIC DURABILITY TEST

Vehicle type	Mass of sandbag, kg		
	Designated space for seating, lying or standing (except toddler seat)	Storage container	Toddler seat
Prams:			
Pram designed for one child	40	15	20
Pram designed for two children	60	15	20
Pram designed for more than two children	20 plus 20 per child	15	20
Strollers:			
Stroller designed for one child	50	15	20
Stroller designed for two children	70	15	20
Strollers designed for more than two children	30 plus 20 per child	15	20

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Conclusion: meeting requirements of the standard



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