



CPD nline

An Overview of the New Playground Standard - AS 4685:2021 Playground Equipment and Surfacing



Acknowledgement of Country

Engineers Australia acknowledges the traditional custodians of the country throughout Australia and recognises their continuing connection to land, waters and community.

We pay our respects to them and their cultures; and to elders past and present and emerging.



CPD nline

An overview of the 'new'
Playground Standard –
AS 4685:2021 Playground
equipment and surfacing



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Earliest recorded play

Clay model of a female figure swinging
on a swing between two columns

Hagia Triada, 1500 -1450 BC

(within the Heraklion Archaeological
Museum, Crete)





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Animals play too

Two squirrels playing in the snow





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Birds also play

Birds playing in water



Australian Standards – Playground equipment and surfacing

AS 4685.0:2017 Development, installation, inspection, maintenance and operation

AS 4685.1:2021 General safety requirements and test methods

AS 4685.2:2021 Additional safety requirements and test methods for swings

AS 4685.3:2021 Additional safety requirements and test methods for slides

AS 4685.4:2021 Additional safety requirements and test methods for runways

AS 4685.5:2021 Additional safety requirements and test methods for carousels

AS 4685.6:2021 Additional safety requirements and test methods for rocking equipment

AS 4685.11:2014 Additional safety requirements and test methods for spatial networks

AS 4422:2016 Playground surfacing—Specifications, requirements and test methods

Timeline from Project Proposal to Publication

3-4 Aug 2016: CS-005 advised that CEN/TC 136 SC/1 would be publishing EN 1176 Parts 1 to 6 in 2017 – approval in principle for adoption with modifications for Australia obtained

8 Oct 2017: CEN publish EN 1176 Parts 1, 2, 3, 4 & 6

7 Nov 2018: CS-005 kick-off meeting AS 4685 Parts 1, 2, 3, 4 & 6

1 Oct 2019: CEN publish EN 1176 Part 5

19 Feb 2020: CS-005 meeting to resolve PC for AS 4685 Parts 1, 2, 3, 4 & 6 (CS-005 also agreed to adopt Part 5 ‘unamended’)

29 Jan 2021: AS 4685:2021 Parts 1 to 6 published

CEN adoption process

For CEN Standards there are two choices with adoption 'identical' and 'modified adoption'

For 'modified adoption' all changes are contained within an Appendix ZZ at the end of the document

This is akin to an engineering where the 'Special Conditions of Contract' are after the General Conditions of Contract (and hidden at the bottom)

Australia is a signatory to the Marrakesh Agreement WTO TBT (technical barrier to trade)

The TBT establishes rules and procedures regarding the development, adoption of standards:

- Any amendment must be supported by evidence
- These amendments must be specific to Australia
- We can only change 'shall' clauses (ie not allowed to change 'should' clauses or 'notes')



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Variations to EN 1176-1:2017 for Australia

ZZ.2 Variations

The following modifications are required for Australian conditions:

Element **Instruction/New text**

Cl 1 After last paragraph, *add* the following:

For contained play facilities, refer to AS 3533.4.2.

Cl 2 1 After the first paragraph, *add* the following:

The Australian or Australian/New Zealand Standards listed below are not equivalent to the EN normative references and are required for the application of this Standard. All references in the source text to those EN normative references shall be replaced by references to the corresponding Australian or Australian/New Zealand Standards. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably.

2 *Delete “EN 1177, Impact attenuating playground surfacing — Determination of critical fall height” and replace with the following:*

AS 4422, Playground surfacing — Specifications, requirements and test method



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- 3 Delete “EN 1991-1-2, Eurocode 1: Actions on structures — Part 1-2: General actions — Actions on structures exposed to fire” and replace with the following:

AS/NZS 1170.1, Structural design actions, Part 1: Permanent, imposed and other actions

- 4 Delete “EN 1991-1-3, Eurocode 1 — Actions on structures — Part 1-3: General actions — Snow loads” and replace with the following:

AS/NZS 1170.3, Structural design actions, Part 3: Snow and ice actions

- 5 Delete “EN 1991-1-4, Eurocode 1: Actions on structures — Part 1-4: General actions — Wind actions” and replace with the following:

AS/NZS 1170.2, Structural design actions, Part 2: Wind actions

- 6 Delete “ISO 2307, Fibre ropes — Determination of certain physical and mechanical properties (ISO 2307)” and replace with the following:

AS 4143, Methods of tests for fibre ropes (series)



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Variations to EN 1176-1:2017 for Australia

- 7 Delete "ISO 9554, *Fibre ropes — General specifications (ISO 9554)*" and replace with the following:

AS 4142, *Fibre ropes (series)*

- 8 After "ISO 13934-1, *Textiles — Tensile properties of fabrics — Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1)*", add the following:

AS 1604, *Specification for preservative treatment (series)*

AS 5604, *Timber — Natural durability ratings*

AS ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*



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Cl 3.101 After 3.40, *add* the following:
(new)

3.101

supervised early childhood services (SECS)

defined play space used by an education and care service or children's services, for children under school age, which is supervised by educators

Note 1 to entry: Educators are early childhood practitioners who work directly with children in education and care services or children's services.



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Variations to EN 1176-1:2017 for Australia

Cl 3.102 After 3.101, *add* the following:
(new)

3.102

moveable play equipment

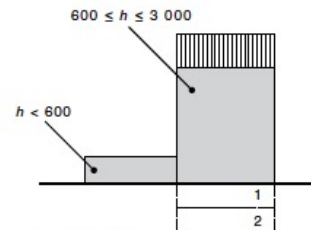
range of purpose-made manufactured equipment used in supervised settings (e.g. SECS, schools) that is not permanently fixed in place and is designed to be adjusted and moved by educators on a regular basis to vary play opportunities

Fig 8 *Delete* figure and *replace* with the following:

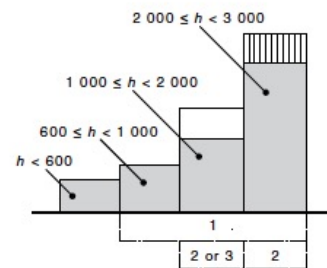


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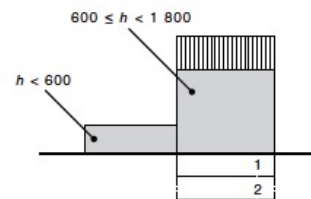
Variations to EN 1176-1:2017 for Australia



(a) Protection against falling for easily accessible equipment



(b) Protection against falling for not easily accessible equipment



(c) Equipment for SECS

Figure 8 — General protection against falling where there is not forced movement



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Variations to EN 1176-1:2017 for Australia

Cl 4.1.3 *Delete clause and replace with the following:*

4.1.3 Timber and associated products

4.1.3.101 General

Timber parts shall be well ventilated and designed such that moisture drains freely away from the timber.

Timber treated with copper chrome arsenate (CCA) or creosote preservatives shall not be used.

NOTE: All preservative treated timber should be installed, finished and maintained in accordance with the supplier's or manufacturer's warranty requirements including supplementary treatment of cut ends, holes, notches etc.



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4.1.3.103 Timber installed above ground

Timber installed above ground shall be one of the following:

- (a) Timber treated in accordance with the AS 1604 series for Hazard Class H3, (excluding CCA and creosote).
- (b) Durability Class 1 or Class 2 in accordance with AS 5604 provided the untreated sapwood does not exceed 15 % of the cross-sectional area. Where the untreated sapwood exceeds 15 %, Item (a) applies.

4.1.3.104 Timber fasteners and connectors

All fasteners and connections shall be corrosion protected.



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Cl 4.2.4.2 *Delete clause and replace with the following:*

4.2.4.2 Handrails

Single handrails shall be not less than 600 mm and not more than 900 mm above the foot position (except in SECS), see Figure 9. Single handrails designed for SECS shall be not less than 450 mm and not more than 700 mm above the foot position.

These requirements shall not preclude the use of two or more handrails provided the upper handrail meets the above requirements and the spacing meets the requirements for entrapment, see Clause 4.2.7.

As a minimum, handrails shall conform to the requirements for grasp, see Clause 4.2.4.7.

Cl 4.2.6 After third paragraph, *add* the following:

Where platforms are provided on track rides, the leading edge shall be impact attenuated.

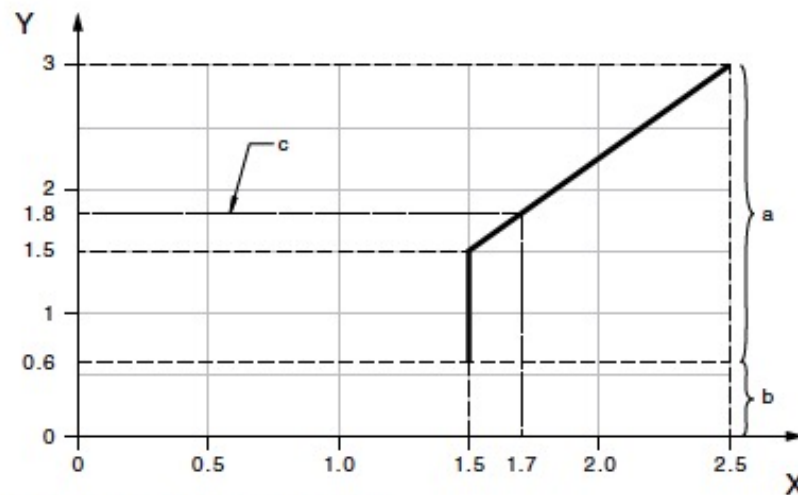
Cl 4.2.8.1 After second paragraph, *add* the following:

The free height of fall for SECS shall not exceed 1 800 mm.



Variations to EN 1176-1:2017 for Australia

Fig 17 Delete figure and replace with the following:



If $0 \leq Y < 0.6$ then $X \leq 1.5$ (in metres)
If $0.6 \leq Y \leq 1.5$ then $X = 1.5$ (in metres)
If $Y > 1.5$, then $X = \frac{2}{3} Y + 0.5$
If $Y = 1.8$ then $X = 1.7$

Key

Y = free height of fall
X = minimum dimension of impact area
a = impact attenuating surface with requirements (Clause 4.2.8.5.2)
b = surface provided in accordance with Clause 4.2.8.5.3
c = maximum free height of fall and impact area for SECS

Figure 17 — Minimum extent of impact area



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Variations to EN 1176-1:2017 for Australia

Cl 4.2.8.5.2 1 *Delete* third paragraph.

2 *Delete* Note 2.

3 *Delete* Note 3.

4 After eighth paragraph, *add* the following:

Sand and gravel shall be well-rounded and washed to eliminate most of the silt or clay particles. Washed sand or gravel is determined to be from alluvial (naturally eroded) deposits and free from most silt or clay particles. Uniformity coefficient should be $D_{60}/D_{10} < 3.0$.

NOTE 2: For gravel this may commonly be described as "pea shingle".

5 *Delete* Note 4.

Tbl 4 *Delete* table.

Cl 4.2.9.5 After Note 2, *add* the following:

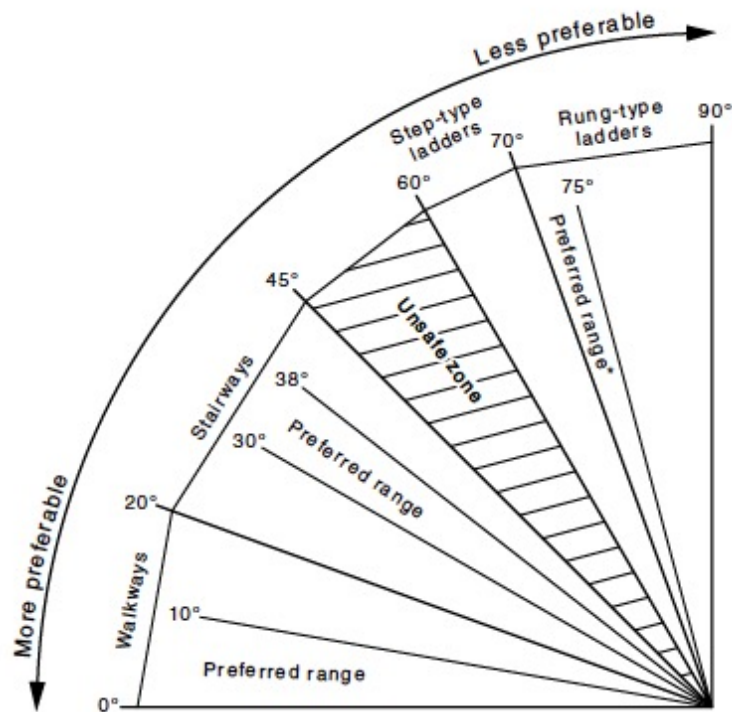
NOTE 3: Figure 101 provides guidance for limits of slope for various means of easy access.



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Variations to EN 1176-1:2017 for Australia

Fig 101 (new) After Clause 4.2.9.5 Note 3, add the following:



*For twin-stile rung-type ladders

Figure 101 — Guidance for limits to slope



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Variations to EN 1176-1:2017 for Australia

Cl 4.2.101 After Clause 4.2.16.2, *add* the following:
(new)

4.2.101 Free height of fall, impact area and other requirements for moveable play equipment

Educators shall apply a risk assessment approach to the setting up of moveable play equipment suitable to the ages and developmental stages of the children utilizing the moveable play equipment.

The free height of fall for moveable play equipment shall not exceed 1 500 mm.

A minimum impact area of 1 500 mm covered/filled with a playground impact attenuating surfacing, in accordance with Clause 4.2.8.5.2, shall apply for moveable play equipment items that measure more than 600 mm from ground level. Moveable play equipment items shall not require handrails, guardrails or barriers. The clauses in this document relating to entrapment shall apply to moveable play equipment.



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Variations to EN 1176-1:2017 for Australia

Cl 7.1 *Delete clause and replace with the following:*

7.1 Equipment identification

The equipment shall be marked legibly, permanently and in a position visible from ground level with at least the following:

- (a) Name, address and ABN of the manufacturer, importer or supplier.
- (b) Equipment reference and year of manufacture.
- (c) The designation (number and date) of this Australian Standard, i.e. AS 4685.1:2020, and any other applicable part of the AS 4685 series.

The use of the term “permanently” above shall take into account the life of the equipment and the environment in which it is likely to be installed.

NOTE: Manufacturers making a statement of conformity with this document on the equipment, packaging, within contractual documentation, internet, or promotional material related to that product are advised to ensure that conformity is capable of being verified.



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Variations to EN 1176-2:2017 for Australia

ZZ.2 Variations

The following modifications are required for Australian conditions:

Element	Instruction/New text
CI 2	<ol style="list-style-type: none">1 After the first paragraph, <i>add</i> the following: <p>The Australian Standard listed below is a modified adoption of, or not equivalent to, the EN normative reference and is required for the application of this Standard. All references in the source text to those EN normative references shall be replaced by references to the corresponding Australian Standards. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably.</p>2 <i>Delete</i> “EN 1176-1:2017, <i>Playground equipment and surfacing — Part 1: General safety requirements and test methods</i>” and <i>replace</i> with the following: <p>AS 4685.1:2020, <i>Playground equipment and surfacing, Part 1: General safety requirements and test methods (EN 1176-1:2017, MOD)</i></p>



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Variations to EN 1176-2:2017 for Australia

**Cl 3.101
(new)**

After Clause 3.13, *add* the following:

3.101

circulation space

area around the equipment that allows movement from, between and around equipment, and is free of all obstacles that users could run into, trip on or fall on top of, and therefore be injured

Note 1 to entry: The circulation space includes the fall zones of the equipment and extends to at least the width of the equipment.

Cl 4.2

Delete first sentence and *replace* with the following:

The minimum ground clearance for single-use swings (see Figures 5 and 6) at rest position shall be 400 mm except for supervised early childhood services (SECS) where the minimum ground clearance is 300 mm.

Cl 4.6.1

After first sentence, *add* the following:

Flexible strap seats and toddler seats constructed of SBR rubber or equivalent are exempt from this requirement.

Cl 4.10.2.1

After third paragraph, *add* the following:

For supervised education and SECS, the impact area for loose fill materials dimension C, may be reduced to 1.75 m.



Variations to EN 1176-3:2017 for Australia

ZZ.2 Variations

The following modifications are required for Australian conditions:

Element	Instruction/New text
Cl 2	<p>1 After the first paragraph, <i>add</i> the following:</p> <p>The Australian Standard listed below is a modified adoption of, or not equivalent to, the EN normative reference and is required for the application of this Standard. All references in the source text to those EN normative references shall be replaced by references to the corresponding Australian Standards. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably.</p> <p>2 <i>Delete</i> "EN 1176-1:2017, <i>Playground equipment and surfacing — Part 1: General safety requirements and test methods</i>" and <i>replace</i> with the following:</p> <p><i>AS 4685.1:2020, <i>Playground equipment and surfacing, Part 1: General safety requirements and test methods (EN 1176-1:2017, MOD)</i></i></p>
Cl 3.101 (new)	<p>After Clause 3.14, <i>add</i> the following:</p> <p>3.101</p> <p>competent person</p> <p>person who has aquired through training, qualifications or experience, or a combination of these, the knowledge and skills enabling that person to perform a specific task</p>



Variations to EN 1176-3:2017 for Australia

- Cl 4.3.2** After fifth paragraph, *add* the following:
NOTE: Where the starting section of the slide extends less than 200 mm beyond the platform, the requirement for additional guarding does not apply.
- Cl 4.5** *Delete* fifth paragraph and *replace* with the following:
The end of Type 1 slide run-outs shall turn down into the ground with a radius of at least 50 mm or reverse at an angle of at least 90°, see Figures 6 and 7 for examples.
- Fig 7** *Delete* "≥100°" and *replace* with "≥90°".
- Cl 4.7** *Delete* second paragraph and *replace* with the following:
Supporting posts on spiral slides may be used in the free space.
- Cl 4.9.101 (new)** After Clause 4.9.2, *add* the following:
4.9.101 Protection against climbing
A physical barrier shall be provided to significantly reduce the likelihood of climbing on the outside of a tunnel slide to a height in excess of maximum free height of fall.
The portion of the tube slide in the impact area before the barrier shall—
- (a) be accessible;
 - (b) have an impact area; and
 - (c) an impact attenuating surfacing,
- Element** **Instruction/New text**
in accordance with AS 4685.1.



Variations to EN 1176-4:2017 for Australia

ZZ.2 Variations

The following modifications are required for Australian conditions:

Element	Instruction / New text
Cl 2	<p>1 After the first paragraph, <i>add</i> the following:</p> <p>The Australian Standards listed below are modified adoptions of, or not equivalent to, the EN normative references and are required for the application of this Standard. All references in the source text to those EN normative references shall be replaced by references to the corresponding Australian Standards. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably.</p> <p>2 <i>Delete</i> "EN 1176-1:2017, <i>Playground equipment and surfacing — Part 1: General safety requirements and test methods</i>" and <i>replace</i> with the following:</p> <p>AS 4685.1:2020, <i>Playground equipment and surfacing, Part 1: General safety requirements and test methods (EN 1176-1:2017, MOD)</i></p> <p>3 <i>Delete</i> "EN 1176-2:2017, <i>Playground equipment and surfacing — Part 2: Additional specific safety requirements and test methods for swings</i>" and <i>replace</i> with the following:</p> <p>AS 4685.2:2020, <i>Playground equipment and surfacing, Part 2: Additional specific safety requirements and test methods for swings (EN 1176-2:2017, MOD)</i></p> <p>4 <i>Delete</i> "EN 1176-6:2017, <i>Playground equipment and surfacing — Part 6: Additional specific safety requirements and test methods for rocking equipment</i>" and <i>replace</i> with the following:</p> <p>AS 4685.6:2020, <i>Playground equipment and surfacing, Part 6: Additional specific safety requirements and test methods for rocking equipment (EN 1176-6:2017, MOD)</i></p>
Cl 4.14	<p><i>Delete</i> second paragraph and <i>replace</i> with the following:</p> <p>Starting platforms, together with the access ramps may be provided without an impact attenuating surface up to a maximum free height of fall of 1 000 mm.</p>



Variations to EN 1176-5:2017 for Australia

ZZ.2 Variations

The following modifications are required for Australian conditions:

Element	Instruction/New text
Cl 2	<ol style="list-style-type: none">1 After the first paragraph, <i>add</i> the following: The Australian Standards listed below are modified adoptions of, or not equivalent to, the EN normative references and are required for the application of this Standard. All references in the source text to those EN normative references shall be replaced by references to the corresponding Australian Standards. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably.2 Delete "EN 1176-1:2017, <i>Playground equipment and surfacing — Part 1: General safety requirements and test methods</i>" and replace with the following: <i>AS 4685.1:2021, Playground equipment and surfacing, Part 1: General safety requirements and test methods (EN 1176-1:2017, MOD)</i>3 Delete "EN 1176-2:2017, <i>Playground equipment and surfacing — Part 2: Additional specific safety requirements and test methods for swings</i>" and replace with the following: <i>AS 4685.2:2021 Playground equipment and surfacing, Part 2: Additional safety requirements and test methods for swings (EN 1176-2:2017+AC:2019, MOD)</i>4 Delete "EN 1176-6:2017+AC:2019, <i>Playground equipment and surfacing — Part 6: Additional specific safety requirements and test methods for rocking equipment</i>" and replace with the following: <i>AS 4685.6:2021 Playground equipment and surfacing, Part 6: Additional safety requirements and test methods for rocking equipment (EN 1176-6:2017+AC:2019, MOD)</i>



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Variations to EN 1176-6:2017 for Australia

ZZ.2 Variations

The following modifications are required for Australian conditions.

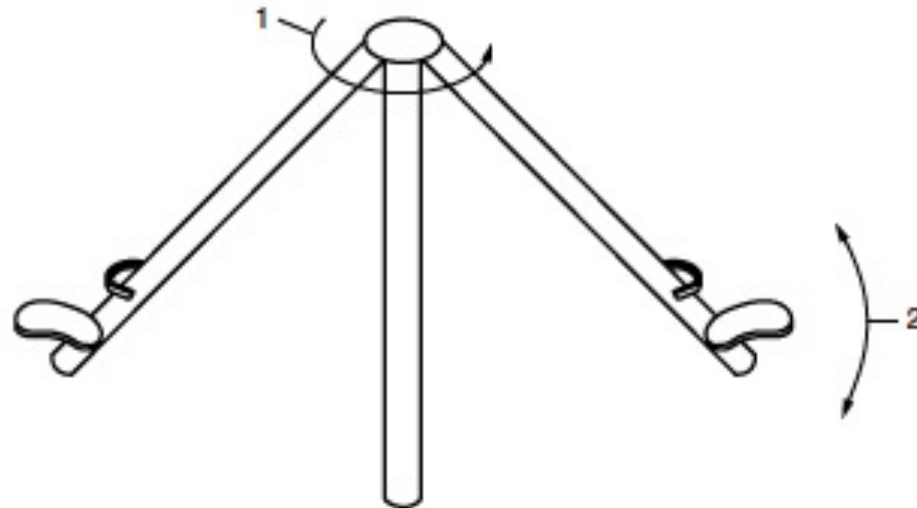
Element	Instruction / New text
Cl 2	<ol style="list-style-type: none">1 After the first paragraph, <i>add</i> the following: The Australian Standard listed below is a modified adoption of, or not equivalent to, the EN normative reference and is required for the application of this Standard. All references in the source text to this EN normative reference shall be replaced by references to the corresponding Australian Standard. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably.2 Delete “EN 1176-1:2017, <i>Playground equipment and surfacing — Part 1: General safety requirements and test methods</i>” and <i>replace</i> with the following: AS 4685.1:2020, <i>Playground equipment and surfacing, Part 1: General safety requirements and test methods (EN 1176-1:2017, MOD)</i>



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Fig 6 Delete figure, excluding key text and figure title, and *replace* with the following:





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Fig 9 Figure Key, after

x extent of falling space

add the following:

y free height of fall

Tbl 1 Third column heading, after "(see 4.3)", *add* "degrees".

Cl 5.4 After second paragraph, *add* the following:

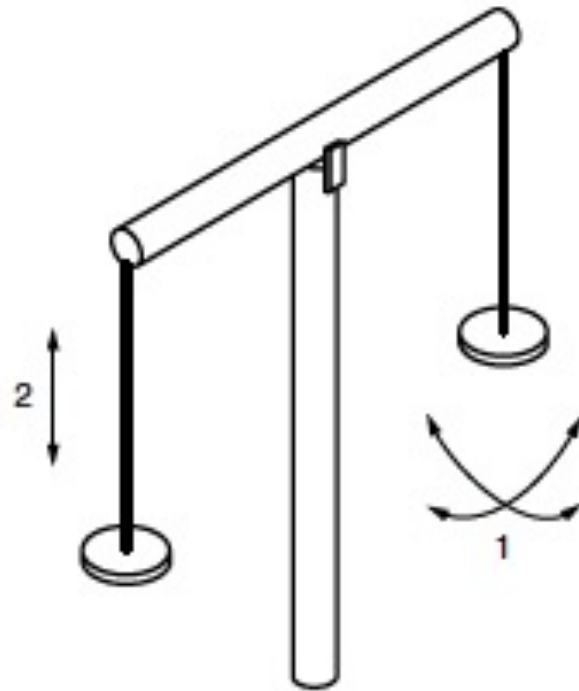
The minimum ground clearing shall be 230 mm measured when loaded with 69.5 kg as specified in EN 1176-1:2017, Table A.1.



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Fig 7 Delete figure, excluding key text and figure title, and *replace* with the following:



Q&A

