



500 Rainbow Parkway  
Brookings, SD 57006 USA

Report: EUC-12-0103

## Certificate of Conformity

Date of Audit: 1/23/2012

Date of Report: 1/23/2012

Model number or description: EU Original Sunshine Castle Design 2A Commercial

Labeled age grading: 3-12 years



This Product **COMPLIES** with the applicable requirements of the applied standards

*The purpose of the declaration described above is consistent with Directive No. 2009/48/EC of 18 June 2009 of the European Parliament and the Council on the safety of toys (include, where appropriate, other relevant guidelines, such as EMC directives, materials in contact with food, with their references).*

Inspector: Jesse Spurgin

R & D Director: Scott Vomacka

EUC-12-0103

**Legend:** Pass (P), Fail (F), Not Applicable (NA), Dealer or Installer Supplied/Responsible (DS)

**Audit Summary: EN1176-1:2008 General safety requirements & test methods**

|           |   |    |  |
|-----------|---|----|--|
| 4         | Safety Requirements   | P  |  |
| 4.1       | Material  | P  |  |
| 4.1.1     | General   | P  |  |
| 4.1.2     | Flammability  | P  |  |
| 4.1.3     | Timber and associated products  | P  |  |
| 4.1.4     | Metals  | P  |  |
| 4.1.5     | Synthetics  | P  |  |
| 4.1.6     | Dangerous substances  | P  |  |
| 4.2       | Design and Manufacture  | P  |  |
| 4.2.1     | General   | P  |  |
| 4.2.2     | Structural Integrity  | P  |  |
| 4.2.3     | Accessibility for adults  | P  |  |
| 4.2.4     | Protection against falling  | P  |  |
| 4.2.4.1   | Types of protection   | P  |  |
| 4.2.4.2   | Handrails   | P  |  |
| 4.2.4.3   | Guardrails  | P  |  |
| 4.2.4.4   | Barriers  | P  |  |
| 4.2.4.5   | Strength Requirements   | P  |  |
| 4.2.4.6   | Grip Requirements   | P  |  |
| 4.2.4.7   | Grasp Requirements  | P  |  |
| 4.2.5     | Finish of equipment   | P  |  |
| 4.2.6     | Moving Parts  | P  |  |
| 4.2.7     | Protection Against Entrapment   | P  |  |
| 4.2.7.1   | General   | P  |  |
| 4.2.7.2   | Entrapment of the head and neck   | P  |  |
| 4.2.7.3   | Entrapment of clothing  | P  |  |
| 4.2.7.4   | Entrapment of the whole body  | P  |  |
| 4.2.7.5   | Entrapment of the foot or leg   | P  |  |
| 4.2.7.6   | Entrapment of fingers   | P  |  |
| 4.2.8     | Protection against injuries during movement and falling   | P  |  |
| 4.2.8.1   | Determination of free height of fall  | P  |  |
| 4.2.8.2   | Determination of spaces and areas   | P  |  |
| 4.2.8.2.1 | General   | P  |  |
| 4.2.8.2.2 | Minimum space   | P  |  |
| 4.2.8.2.3 | Free space  | P  |  |
| 4.2.8.2.4 | Extent of the impact area   | P  |  |
| 4.2.8.2.5 | Extent of the falling space   | P  |  |
| 4.2.8.3   | Protection against injuries in the free space for users undergoing a movement that is forced by the equipment | P  |  |
| 4.2.8.4   | Protection against injuries in the falling space  | P  |  |
| 4.2.8.5   | Protection against injuries from the surface of the impact area   | P  |  |
| 4.2.8.5.1 | General   | P  |  |
| 4.2.8.5.2 | Equipment with a free height of fall greater than 600mm(23.62") or w/forced movement                          | P  |  |
| 4.2.8.5.3 | Equipment with a free height of fall not exceeding 600mm(23.62") & w/o forced movement                        | NA |  |
| 4.2.8.5.4 | Adjacent platforms  | P  |  |
| 4.2.8.6   | Protection against injuries due to other types of movement  | P  |  |
| 4.2.9     | Means of access   | P  |  |
| 4.2.9.1   | Ladders   | P  |  |

|          |   |       |  |
|----------|---|-------|--|
| 4.2.9.2  | Stairs  | NA    |  |
| 4.2.9.3  | Ramps   | NA    |  |
| 4.2.9.4  | Steep Play elements                                       | P     |  |
| 4.2.9.5  | Easily accessible playground equipment                    | P     |  |
| 4.2.10   | Connections   | P     |  |
| 4.2.11   | Consumable components                                     | P     |  |
| 4.2.12   | Ropes   | P     |  |
| 4.2.12.1 | Ropes fixed at one end (swinging ropes)                   | NA    |  |
| 4.2.12.2 | Ropes fixed at both ends (climbing ropes)                 | P     |  |
| 4.2.12.3 | Wire ropes  | NA    |  |
| 4.2.12.4 | Sheathed wire ropes                                       | NA    |  |
| 4.2.12.5 | Fiber ropes   | NA    |  |
| 4.2.13   | Chains  | NA    |  |
| 4.2.14   | Foundations   | P     |  |
| 4.2.15   | Heavy suspended beams                                     | P     |  |
| 5        | Test Methods and Reports                                  | P     |  |
| 6        | Information to be provided by the manufacturer/supplier   | P     |  |
| 6.1      | playground equip  | P     |  |
| 6.1.1    | General product information                               | P     |  |
| 6.1.2    | Pre-information   | P/DS  |  |
| 6.1.3    | Installation information                                  | P     |  |
| 6.1.4    | Inspection and maintenance information                    | P     |  |
| 6.1.4.1  | Instructions for maintenance                              | P     |  |
| 6.1.4.2  | Frequency of maintenance                                  | P     |  |
| 6.1.4.3  | Instructions shall specify.....                           | P     |  |
| 6.2      | Pre-information   | P     |  |
| 6.2.1    | Pre-information   | P/DS  |  |
| 6.2.2    | Installation  | NA/DS |  |
| 6.2.3    | Inspection and maintenance                                | NA/DS |  |
| 6.2.4    | Identification of impact-attenuating playground surfacing | NA/DS |  |
| 7        | Marking   | P     |  |
| 7.1      | Equipment identification                                  | P/DS  |  |
| 7.2      | Basic level mark  | P/DS  |  |

#### **Audit Summary: EN 1176-2 – Additional specific safety requirements & testing for swings**

|          |  |    |                    |
|----------|--|----|--------------------|
| 4        | Safety   | P  |                    |
| 4.1      | General  | P  |                    |
| 4.2      | Ground Clearance Minimum 350 mm  | P  | 16" (406 mm)       |
| 4.3      | Seat clearance for single point swings (Type 3)                              | NA |                    |
| 4.4      | Min clearance & stability of swing seats w/more than one point of suspension | P  | 26.75" (679 mm)    |
| 4.4.1    | Min space between the seats of swings  | P  | 32" (813-mm)       |
| 4.4.2    | Lateral stability of swing seats   | P  | 508mm > 355 +5% mm |
| 4.5      | Means of suspension  | P  |                    |
| 4.6      | Impact attenuation of swing seats  | DS |                    |
| 4.6.1    | Swing seats and vertical tire seats  | DS |                    |
| 4.6.2    | Cradle swing seats   | NA |                    |
| 4.6.3    | Swing seats and platforms for several users                                  | NA |                    |
| 4.7      | Dynamic load for swing equipment   | P  |                    |
| 4.8      | Structural Integrity   | P  |                    |
| 4.8.1    | Forces when calculated according to EN 1176-1:2006, Annex B                  | P  |                    |
| 4.8.2    | Testing in accordance with EN 1176-1:2006, Annex C                           | P  |                    |
| 4.9      | Frameworks   | P  |                    |
| 4.1      | Height of fall and impact area   | P  |                    |
| 4.10.1   | Free height of fall  | P  | 1384 mm            |
| 4.10.2   | Dimensions of falling space and impact area                                  | DS |                    |
| 4.10.2.1 | Falling space  | DS | EUC-12-0108        |

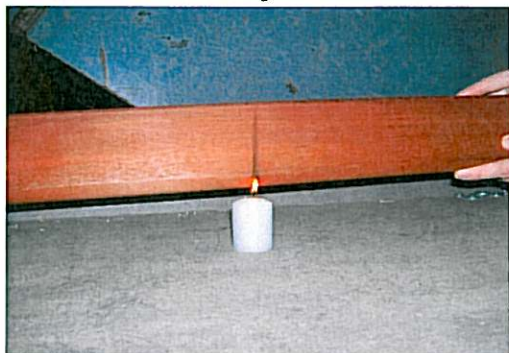


|          |  |    |  |
|----------|--|----|--|
| 4.10.2.2 | Swing seats (Types 1, 2, and 4)  | P  |  |
| 4.10.2.3 | Single point swings (Type 3)   | NA |  |
| 4.11     | Additional requirements for swings with several rotational axes (Type 2) | NA |  |
| 4.12     | Additional requirements for single-point swings (Type 3)                 | NA |  |
| 4.13     | Additional requirements for contact swings (Type 4)                      | NA |  |
| 5        | Test reports   | P  |  |
| 6        | Marking (*Applied during installation)                                   | DS |  |

#### **Audit Summary: EN 1176-3: 2008 Additional specific safety requirements & testing for slides**

|       |   |    |          |
|-------|---|----|----------|
| 4     | Safety requirements                           | P  |          |
| 4.1   | General                                       | P  | 19" - 4° |
| 4.2   | Access  | P  | 19" - 4° |
| 4.3   | Starting section                              | P  |          |
| 4.3.1 | Starting section: length and angle            | P  |          |
| 4.3.2 | Starting section: barriers                    | P  |          |
| 4.3.3 | Starting section: width                       | P  |          |
| 4.3.4 | Starting section: lateral protections (sides) | P  |          |
| 4.4   | Sliding section                               | P  |          |
| 4.4.1 | Sliding section: angle                        | P  | 33°      |
| 4.4.2 | Sliding section: width                        | P  | 16.5"    |
| 4.4.3 | Sides and profile of the slide                | P  |          |
| 4.5   | Run-out section                               | P  | 24" - 2° |
| 4.6   | Surface of the slide                          | P  |          |
| 4.7   | Free space                                    | P  |          |
| 4.8   | Impact area                                   | P  |          |
| 4.9   | Tunnel and mixed tunnel slides                | NA |          |
| 4.9.1 | Tunnel and mixed tunnel slides: Clearance     | NA |          |
| 4.9.2 | Tunnel and mixed tunnel slides: Position      | NA |          |
| 5     | Test reports                                  | P  |          |
| 6     | Marking (*Applied during installation)        | P  |          |

#### **4.1.2 Flammability**



Conclusion: A 1.5" diameter candle was used to test the flammability of a board used on this barrier. The candle was lit and the board was held on it for 6 seconds. The board did not ignite.

## Structural Integrity 4.2.2

### A.2.6.5 Access ladders and stairs (Rung ladder)

Outside-47"

Inside-40.5"

Length-73"

1 rung = 1.03m (40.5")

1.25m x 6 rungs-6.2m =>7

n=7

$F_{tot,v} = 1312 \text{ lbs}(5837\text{N})$

$F_{tot,v} = 1312/6 = 219\text{lbs per rung}$



Discussion and conclusion: A step ladder was tested according to instructions outlined in section A.3.3 and B.3.4. A pre-test inspection found that the ladder was attached according to assembly instructions with no visible cracks or deformations. As calculated, each rung was required to withstand a force of 219lbs. Each rung was loaded with a mass of 250 lbs. The ladder withstood a force of 1500lbs (6672N). This surpasses the requirement of 1312lbs. A post-test inspection of the ladder and support structure showed that there was no deformations of any kind on the ladder or support structure.

### Test: A.2.6.6-Barriers and Guard Rails

The horizontal load on barriers and guard rails is 750 N/m acting in a horizontal direction on the top rail

$750\text{N/m} = 4.28 \text{ lb/in}$

$29.25 \text{ in} \times 4.28 \text{ lb} = 125.19 \text{ lb}$



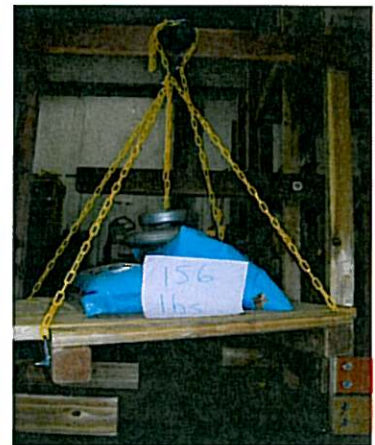




Conclusion: The purpose of this test was to gauge the structural integrity of our barrier. A pulley was used to change direction of force in a horizontal direction. The barrier tested was attached according to installation instructions. An inspection of the barrier was done prior to the test. There were no visible cracks or deformations before or after the test. A load of 136 pounds was applied laterally to the top rail, which surpasses the requirement of 125.4 pounds.

#### Test A.3.2 Number of users on a point (Rock Wall)

$n=153\text{lbs}(69.5\text{kg})$



Conclusion: A single rock from a rock wall was mounted to a 2x6 piece of lumber according to assembly instructions. A load of 156 lbs (70.76kg) was attached to the rock. This load surpasses the requirement specified in A.3.2

#### Test: A.3.4-Number of users on an area

Deck Size =  $52''(1.32\text{m}) \times 52''(1.32\text{m}) = 2704\text{in}^2 (1.74\text{m}^2)$

$1.74\text{m}^2 / 0.36 = 4.84=5$

$n=5$

$F_{\text{tot},v} = 3648\text{N} (820\text{lbs})$



Conclusion: Structural integrity of the platform was tested using the calculation outlined in section B.3.2. A pre-test inspection was performed. The platform was assembled according to assembly instructions. A load of 840 lbs was applied to the platform and left for 5 minutes. A post-test inspection was performed, and there were no visible deformations.

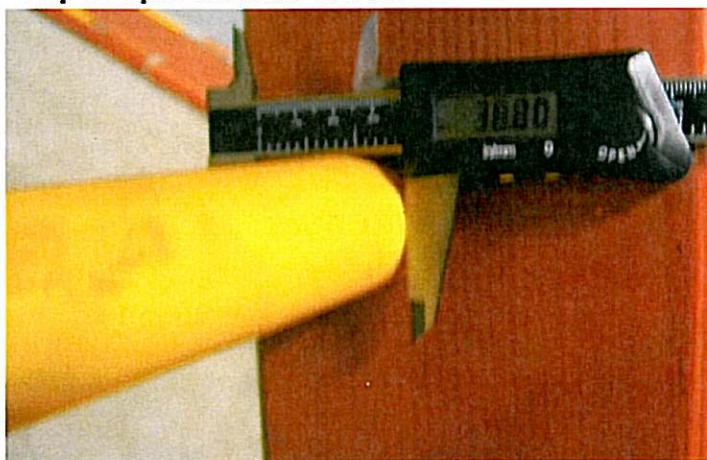


#### Barriers 4.2.4.4



Conclusion: The exit entrances on both opening must be more than 500-mm width of entrance and exit openings

#### Grip Requirements 4.2.4.6



Conclusion: The cross section of any support designed to be gripped shall have a dimension of not less than 16.

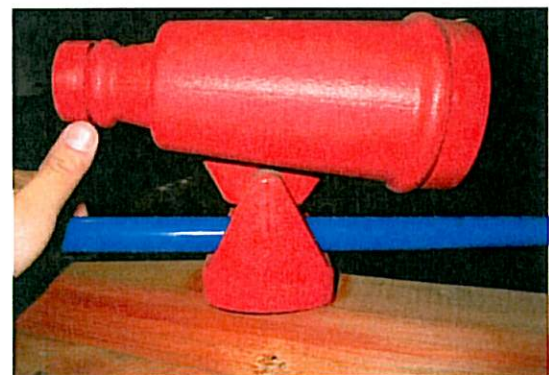
#### 4.2.6 Moving Parts & 4.2.7.6 Entrapment of Fingers



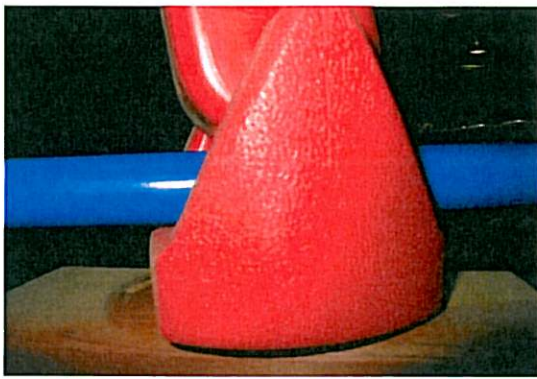
Telescope



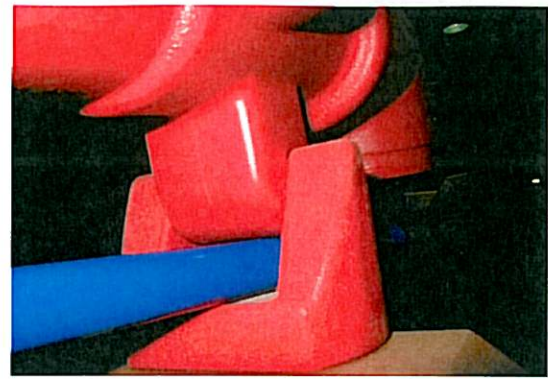
Binoculars







Periscope



Conclusion: If the 8mm(0.315") rod passes through the opening, the 25mm (1") finger rod shall also pass

#### 4.2.7 Protection Against Entrapment



Conclusion: Probes C or E shall not pass through any opening unless it also allows the passage of the large

#### 4.2.12.2 Ropes fixed at both ends Climbing ropes

Inches

1.07

0.963

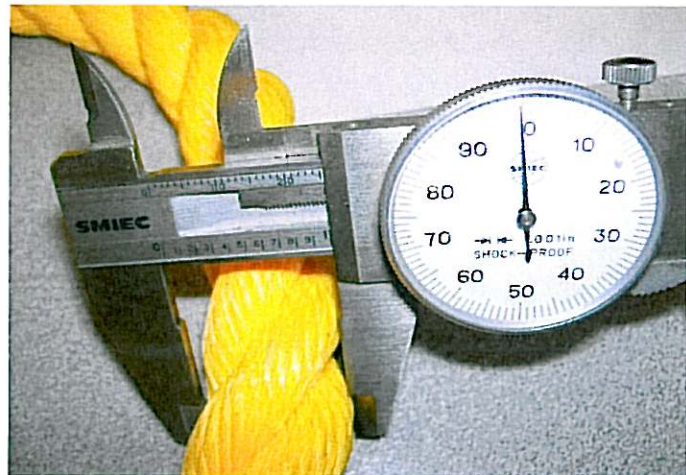
0.975

0.937

0.962

0.9814

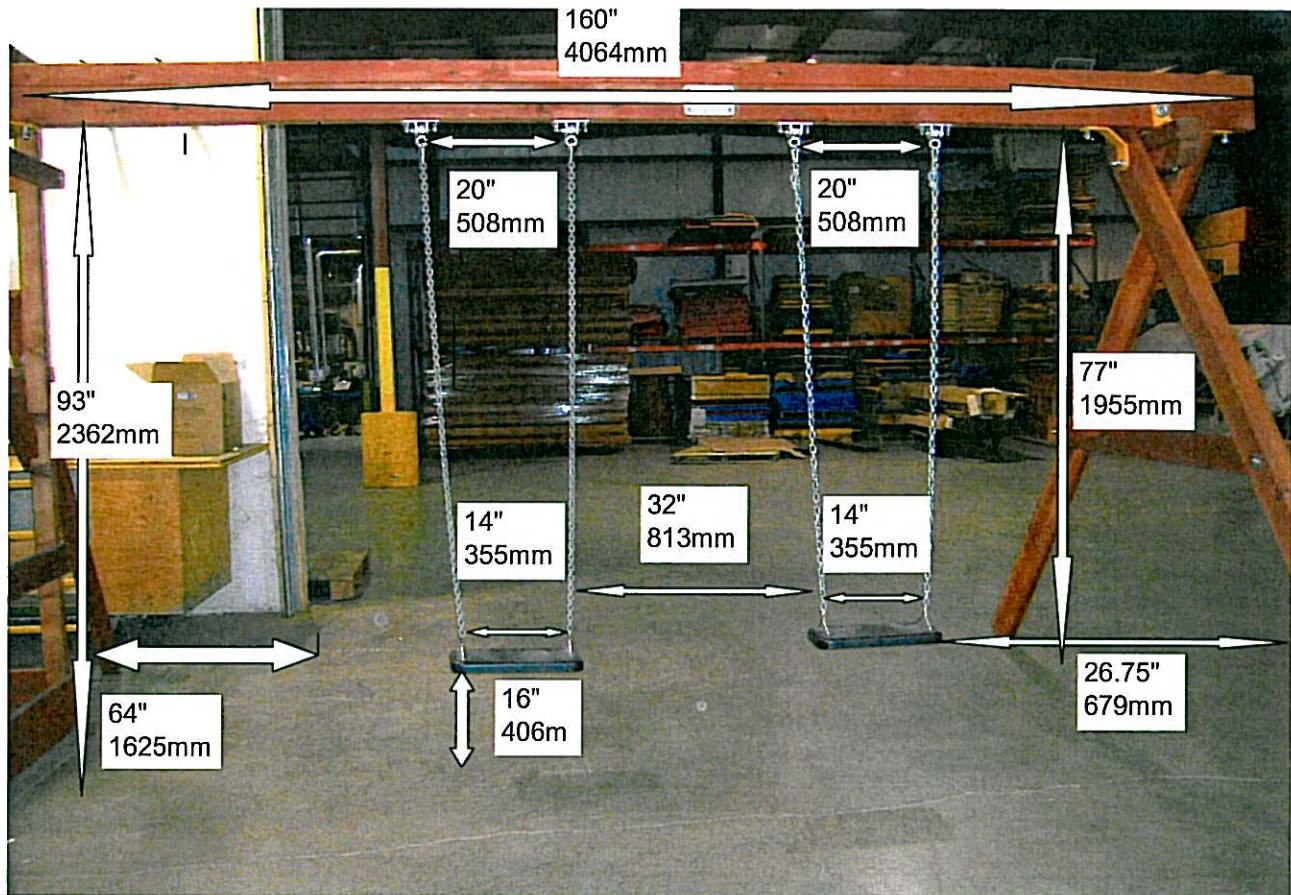
Average width



Conclusion: The rope diameter shall be between 16 and 45-mm. The table shown above contains



**EN 1176-2:2008 Additional specific safety requirements and test methods for swings**



4.2: Ground clearance: The minimum ground clearance at rest shall be 350mm

4.4.1 Minimum space between the seats of swings:

Distance between seat of swing and adjacent structure =  $c \geq 20\%l + 200\text{mm}$

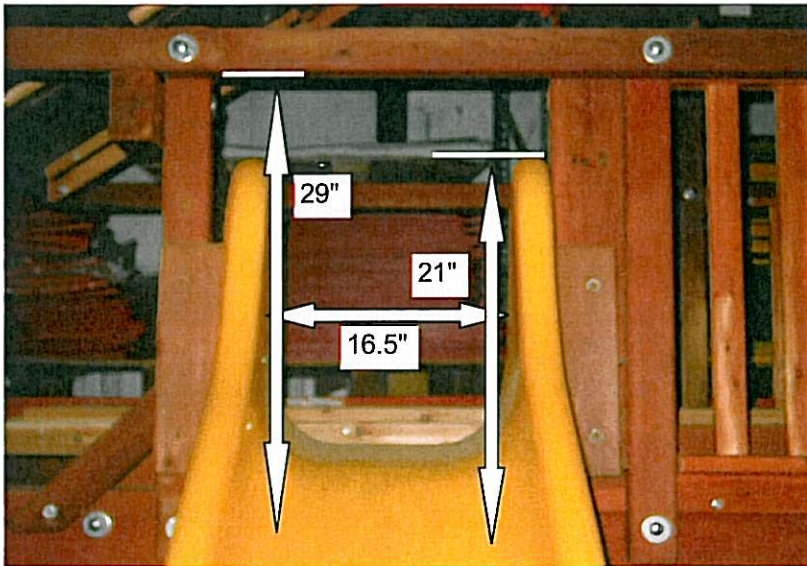
$391 + 200\text{mm} = 591\text{mm}$

Distance between adjacent swing seats =  $s \geq 20\%l + 300\text{mm}$

$391 + 300\text{mm} = 691\text{mm}$

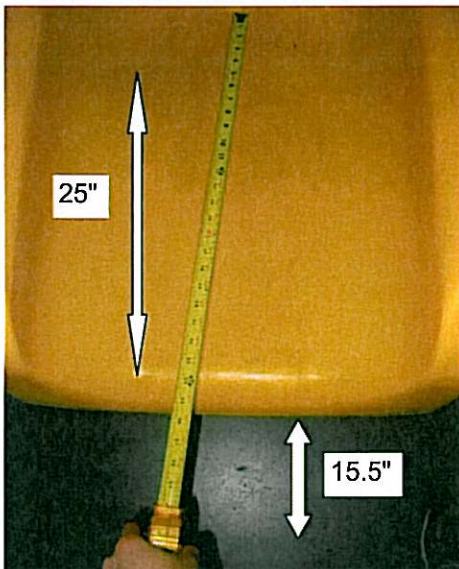
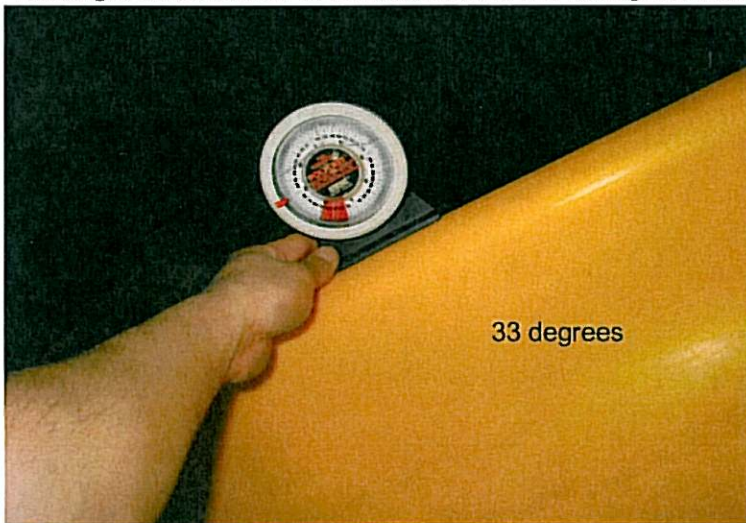
4.4.2 Stability of swing seats: The distance between suspension members shall be F, where  $F \geq G + 5\%l$

$355 + 98 = 453\text{mm}$



#### 4.4.1 Sliding section: Angle

The angle of declination to the horizontal of the sliding section shall not exceed 60 degrees at any point and shall



#### 4.5 Runout section