

Squat Hole Size Determination

Safety Considerations:

(per Public Playground Safety Handbook; U.S. Consumer Product Safety Commission; <http://www.cpsc.gov/PageFiles/122149/325.pdf>)

- Head Entrapment
 - Certain openings could present an entrapment hazard if the distance between any interior opposing surfaces is greater than 3.5 inches and less than 9 inches.
 - Hole must be:

Smaller than Toddler small torso template and/or Preschool- and school-age small torso template

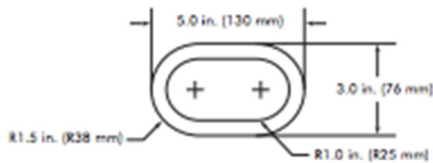


Figure B3. Toddler small torso template

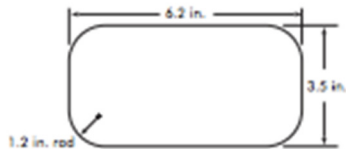
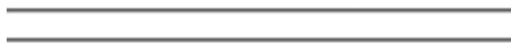


Figure B4. Preschool- and school-age small torso template



OR

Larger than Large head template



Figure B5. Large head template



Based on assessment of full-size templates, the team agrees that a squat hole smaller than the small torso templates will be too difficult to use.

To accommodate usability and safety of children, our design will incorporate a circular squat hole of size 10 inches in diameter. This corresponds to the bottom diameter of a 5-gallon bucket, which is easy to size out to be consistently accurate.

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Test Procedure:

B.2.5 Test fixtures

Two templates are required to determine if completely bounded openings in rigid structures present an entrapment hazard. These templates can easily be fabricated from cardboard, plywood, or sheet metal.

B.2.5.1 Small torso template

The dimensions (see Figure B3 and Figure B4) of this template are based on the size of the torso of the smallest user at risk (5th percentile 6-month-old child for Figure B3 and 2-year-old child for Figure B4). If an opening is too small to admit the template, it is also too small to permit feet first entry by a child. Because children's heads are larger than their torsos, an opening that does not admit the small torso template will also prevent head first entry into an opening by a child.

B.2.5.2 Large head template

The dimensions (see Figure B5) of this template are based on the largest dimension on the head of the largest child at risk (95th percentile 5-year-old child). If an opening is large enough to permit free passage of the template, it is large enough to permit free passage of the head of the largest child at risk in any orientation. Openings large enough to permit free passage of the large head template will not entrap the chest of the largest child at risk.

B.2.5.3 Completely bounded openings with unlimited depth

B.2.5.3.1 Test procedure

- Step 1: Select the appropriate small torso template based on the intended users of the playground (Figure B3 for toddler playgrounds, Figure B4 for preschool- and school-age playgrounds).
- Step 2: Identify all completely bounded openings.
- Step 3: Attempt to place the small torso template in the opening with the plane of the template parallel to the plane of the opening. While keeping it parallel to the plane of the opening, the template should be rotated to its most adverse orientation (i.e., major axis of template oriented parallel to the major axis of the opening.)

- Step 4: Determine if the small torso template can freely pass through the opening.

No: **Pass**, Stop

Yes: Continue



- Step 5: Place the large head template in the opening, again with the plane of the template parallel to the plane of the opening, and try to insert it through the opening.

Pass: The large head template can be freely inserted through the opening.

Fail: The opening admits the small torso template but does not admit the large head template.

