

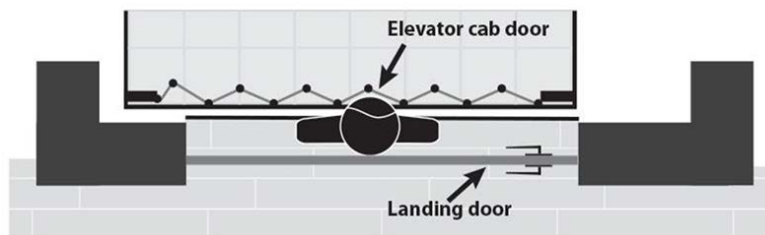


Elevator Safety Program - Technical Clarification

T/C #: 22-01

Equipment Type: Private Residential Elevators		Topic: Residential Elevator Door Hazard to Children	
Residential	ASME A17.3-2015 Section 10	Code:	ASME A17.1/CSA B44
Created:	Jan 12, 2022	Section/Req:	Section 5.3
Last Revision:	Sept 15, 2022	WAC/RCW:	WAC 296-96-00500, RCW 70.87.020

Topic: Residential Elevator Door Hazard to Children



(Illustration taken from the CPSC website notice on “Child Entrapment Hazard”)

<https://www.cpsc.gov/Recalls/2022/CPSC-and-Three-Leading-Elevator-Manufacturers-Announce-Recalls-of-Residential-Elevators-Due-to-Industry-Wide-Issue-of-Child-Entrapment-Hazard-Risk-of-Serious-Injury-or-Death-to-Young-Children>

The State of Washington has always had a robust elevator inspection program. We adopted the ASME A17.1-2016/CSA B44 on October 1, 2018 which further restricted the clearances for residential elevator doors found in the ASME A17.1-2013/CSA B44-13 and earlier codes.

OLD CODE ASME A17.1-2010/CSA B44 – Section 5.3 Private Residence Elevators

5.3.1.7.2 Clearance between Hoistway Doors or Gates and Landing Sills and Car Doors or Gates.

The clearance between the hoistway doors or gates and the hoistway edge of the landing sill shall not exceed 75 mm (3 in.). The distance between the hoistway face of the landing door or gate and the car door or gate shall not exceed 125 mm (5 in.).”

This left a space depicted in the above illustration where a young child could stand with the hall swing door closed. The space has been the subject of several accidents involving children. This space exists on elevators installed under the ASME A17.1-2013 editions and earlier.

NEW CODE ASME A17.1-2016/CSA B44 – Section 5.3 Private Residence Elevators

“5.3.1.7.2 Clearance between Hoistway Doors and Landing Sills. *The distance between the hoistway face of the hoistway doors and the hoistway edge of the landing sill shall not exceed 19 mm (0.75 in.) for swinging doors and 57 mm (2.25 in.) for sliding doors.*

5.3.1.8.3 Clearance between Hoistway Doors and Car Doors or Gates. *The distance between the hoistway face of the landing door and the hoistway face of the car door or gate shall conform to one of the following:*

(a) Power-Operated Horizontally Sliding Hoistway and Car Doors.

Where power-operated horizontally sliding hoistway and car doors are used, the measurement between the leading edge of the doors or sight guard, if provided, shall not exceed 100 mm (4 in.). If it is possible for a user to detach or disconnect either door from the operator (such as in the event of operator failure) and such detachment or disconnection allows the user to operate the door manually, requirement 5.3.1.8.3(e) shall apply.

(b) Swinging Hoistway Doors and Folding Car Doors.

Where swinging hoistway doors and folding car doors are used and both doors are in the fully closed position,

the space between the hoistway door and the folding door shall reject a 100 mm (4 in.) diameter ball at all points.

(c) Swinging Hoistway Doors and Car Gates.

Where swinging hoistway doors and car gates are used, the space between the hoistway door and the car gate shall reject a 100 mm (4 in.) diameter ball at all points.

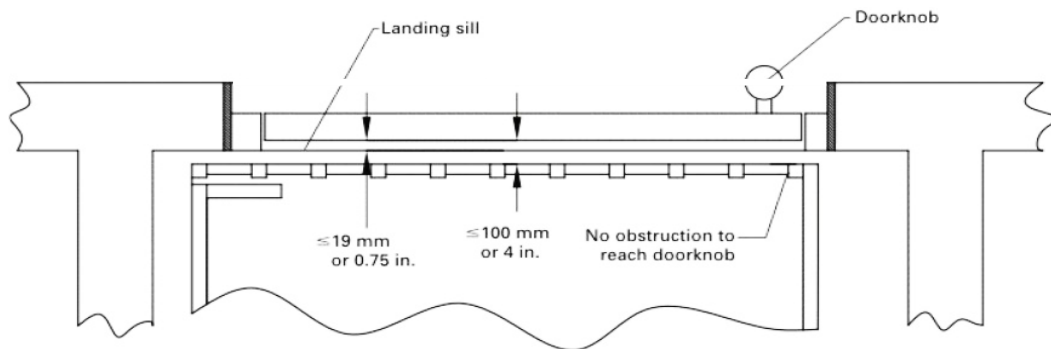
(d) Swinging Hoistway Doors and Power-Operated Horizontally Sliding Car Doors.

Where car door(s) are power-operated and arranged so that the car door(s) cannot be closed until after the hoistway door is closed, and car door(s) automatically open when the car is at a landing and the hoistway door is opened, the measurement between the hoistway face of the hoistway door and the hoistway face of the car door at its leading edge shall not exceed 100 mm (4 in.). If it is possible for a user to detach or disconnect either door from the operator (such as in the event of operator failure) and such detachment or disconnection allows the user to operate the door manually, requirement 5.3.1.8.3(e) shall apply.

(e) Swinging or Horizontally Sliding Hoistway Doors and Manually Operated Horizontally Sliding Car Doors.

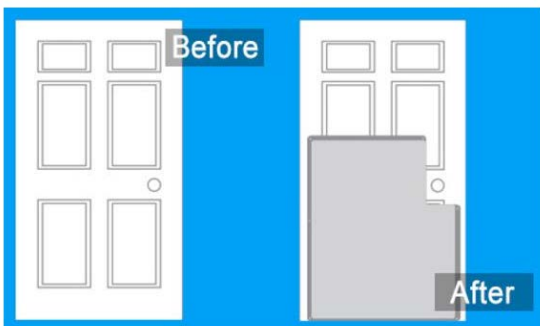
Where swinging or horizontally sliding hoistway doors and manually operated horizontally sliding car doors are used and both doors are in the fully closed position, the space between the swinging or horizontally sliding hoistway doors and the manually operated horizontally sliding car doors shall reject a 100 mm (4 in.) diameter ball at all points.”

The currently adopted code ASME A17.1-2016/B44 CSA requires the space to be limited to 4 inches between hall and car doors. This is depicted below for private residential elevators.



The above illustration shows the hall door located to the back of the door frame toward the elevator closer to the hall threshold edge. This modification can be done by your original licensed elevator installer or another licensed elevator contractor of your choice. If needed the inner standard door knob should be replaced by a low profile (less than $\frac{3}{4}$ inch) lever style door hardware.

The owner of older (installed prior to 10/01/2018) residential elevators are strongly encouraged to install space guards that attach to the back of the hall swing door. This will significantly reduce the between the hall door and the edge of the hoistway door sill and car gate thus making it virtually impossible for children to stand in this space with the hall door closed. Below and to the right are examples of what these may look like. This option is significantly less expensive than relocating the hall door to the back of the door frame as mentioned above.



Immediate Action Recommended

The State of Washington Elevator Program is calling for all homeowners of older (prior to 10/01/2018) Private Residence Elevators with a gap greater than $\frac{3}{4}$ of an inch to either relocate the hall doors closer to the edge of the hall threshold or install space guards on the inside of all elevator hall swing doors. These may be able to be obtained through the original elevator contractor. If the original elevator installation company cannot be located, contact a licensed elevator contractor to assist in providing the proper space guards for the elevator.

We further strongly suggest that homeowners with small children to immediately refrain from using their residence elevators until the space guards are installed. Homeowners who lease out their homes on online vacation rental sites that have older (installed prior to 10/01/2018) Private Residence Elevators should immediately disable these elevators until the space guards are installed. This is necessary for the life safety of children that may accompany families renting those residential vacation properties.

An additional strong recommendation that all private residence (i.e. single family dwellings) where elevators are installed prior to 10/01/2018 be inspected for the presence of required elevator hall swing door space guards prior to resale of the property. The state has records of residential properties with elevators that had installation permits applied for and inspected. Unfortunately not all builders and/or homeowners pulled permits or followed prescribed codes which may have left even further spaces for children to be trapped and injured. This is another reason why the "Point-of Sale" of private residences with elevators should be inspected for life safety issues.

Respectfully,

Gerald R. Brown

Chief Elevator Inspector – QEI C-4789

Washington State Elevator Program Manager - AHJ

Washington State Department of Labor & Industries

Phone: 360-999-0592 | Gerald.Brown@Lni.wa.gov

General elevator inquiries: elevatorsect@lni.wa.gov Phone: 360-902-6130