

**510.6** A water heater supported from the ground shall rest on level concrete or other approved base extending not less than three (3) inches (76 mm) above the adjoining ground level.

**510.7** When a water heater is located in an attic, attic-ceiling assembly, floor-ceiling assembly, or floor-subfloor assembly where damage may result from a leaking water heater, a watertight pan of corrosion resistant materials shall be installed beneath the water heater with a minimum three-quarter (3/4) inch (20 mm) diameter drain to an approved location.

**510.8 Relief Valve Discharge**

Discharge from a relief valve into a water heater pan shall be prohibited.

**511.0 Access and Working Space**

Every water heater installation shall be accessible for

inspection, repair, or replacement. The appliance space shall be provided with an opening or doorway of sufficient size to remove the water heater. In no case shall such opening or doorway be less than twenty-four (24) inches (610 mm) in width. Such access shall be continuous and shall be one or any combination of the following means:

**511.1** By an opening or door, and passageway not less than two (2) feet (610 mm) in width and large enough to permit removal of the water heater, but not less than thirty (30) inches (762 mm) in height. Stairways and ramps leading to or part of such passageways shall comply with the Building Code.

**511.2** Every attic, roof, mezzanine, or platform more than eight (8) feet (2438 mm) above the ground or floor level shall be made accessible by a stairway or ladder permanently fastened to the building. Such a

**TABLE 5-2**  
Size of Combustion Air Openings or Ducts<sup>1</sup> for Gas- or Liquid-Burning Water Heaters

Btu	watts
1000	293
2000	586
4000	1172
5000	1465
100,000	29,300

Column 1 Buildings of Ordinary Tightness		Column 2 Buildings of Unusually Tight Construction	
Condition	Size of Opening or Duct	Condition	Size of Opening or Duct
Appliance in unconfined <sup>2</sup> space	May rely on infiltration alone.	Appliance in unconfined <sup>2</sup> space: Obtain combustion air from outdoors or from space freely communicating with outdoors.	Provide 2 openings, each having 1 sq. in. (645 mm <sup>2</sup> ) per 5,000 Btu/h input.
Appliance in confined <sup>4</sup> space 1. All air from inside building	Provide two openings into enclosure each having 1sq. in. (645 mm <sup>2</sup> ) per 1,000 Btu/h input freely communicating with other unconfined interior spaces. Minimum 100 sq. in. (0.06 m <sup>2</sup> ) each opening.	Appliance in confined <sup>4</sup> space: Obtain combustion air from outdoors or from space freely communicating with outdoors.	1. Provide two vertical ducts or plenums: 1 sq. in. (645 mm <sup>2</sup> ) per 4,000 Btu/h input each duct or plenum. 2. Provide two horizontal ducts or plenums: 1 sq. in. (645 mm <sup>2</sup> ) per 2,000 Btu/h input each duct or plenum. 3. Provide two openings in an exterior wall of the enclosure: each opening 1 sq. in. (645 mm <sup>2</sup> ) per 4,000 Btu/h input. 4. Provide 1 ceiling opening to ventilated attic and 1 vertical duct to attic: each opening 1 sq. in. (645 mm <sup>2</sup> ) per 4,000 Btu/h input. 5. Provide 1 opening in enclosure ceiling to ventilated attic and 1 opening in enclosure floor to ventilated crawl space: each opening 1 sq. in. (645 mm <sup>2</sup> ) per 4,000 Btu/h input.
2. Part of air from inside building	Provide 2 openings into enclosure <sup>3</sup> from other freely communicating unconfined <sup>2</sup> interior spaces, each having an area of 100 sq. in. (0.06 m <sup>2</sup> ) plus one duct or plenum opening to outdoors having an area of 1 sq. in. (645 mm <sup>2</sup> ) per 5,000 Btu/h input rating.		
3. All air from outdoors: Obtain from outdoors or from space freely communicating with outdoors.	Use any of the methods listed for confined space in unusually tight construction as indicated in Column 2.		

<sup>1</sup> For location of opening, see Section 507.3.

<sup>2</sup> As defined in Section 223.0.

<sup>3</sup> When the total input rating of appliances in enclosure exceeds 100,000 Btu/h, the area of each opening into the enclosure shall be increased 1 sq. in. (645 mm<sup>2</sup>) for each 1,000 Btu/h over 100,000 Btu/h.

<sup>4</sup> As defined in Section 205.0.