



## Water Heater Requirements

\*\*\*\* As of January 1, 2011 any natural gas-fired storage tank water heater less than or equal to 75,000 BTU / Hour **SHALL NOT** emit more than 10 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output. This shall not apply to water heaters used for mobile homes. \*\*\*\*

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Below are Requirements for Gas-Fired Storage Tank Water Heaters Only  
For Tank-Less Water Heaters See the Manufactures Installation Instructions:

### ***Location / Securing Requirements (CPC 505.0)***

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- Water heaters shall not be installed in sleeping rooms and bathrooms unless it complies with one of the following:
  - 1) Fuel-burning water heaters may be installed in a closet located in the bedroom or bathroom provided the closet is equipped with a listed, gasketed door assembly, listed self-closing and latching device. The door assembly shall be installed with a threshold and bottom door seal. All combustion air for such installations shall be obtained from the outdoors. The closet shall be for the exclusive use of the water heater, **OR**
  - 2) Water heater shall be of the direct vent type.
- Water Heaters installed in a garage shall be on a stand to allow the ignition source to be a minimum ok 18" above the floor.
- Minimum of two seismic straps, one at the upper third and one at the lower third of the tank (minimum 4" above controls). Straps shall be secured into framing with 1/4" x 3" lag screws.  
**Note: Perforated iron strap (plumbers tape) is not allowed.**
- Minimum of three seismic straps for water heaters between 75 gallons and 99 gallons and
- Minimum of four seismic straps for water heaters 100 gallons or greater.

### ***Ventilation Requirements (CPC 507.0)***

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- Type B vent required for gas water heaters.
- Single-wall vent connectors must be fastened with minimum three sheet-metal screws.
- Single-wall pipe shall not originate in an attic or concealed space, nor pass through an attic, inside wall, floor or concealed space, and shall be located within the same room or space as the water heater and have a minimum 6" clearance away from combustibles.
- For vent termination see figure on back.

### ***Plumbing Requirements (CPC Chapter 5)***

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- Full bore valve at cold water supply. Pressure and temperature valve required with full size pipe.
- Insulate hot and cold water lines within the first 5 feet of the water heater.
- Flexible gas line and shut-off valve required.
- Bond hot-cold gas pipes with approved clamps and # 8 copper wire.
- Drain-pan required if located in the interior other than garage.
- P & T drain line shall slope downward, minimum 1/4" per foot to the exterior (if water heater installed in garage P & T drain line can terminate in garage).
- P & T drain line shall terminate between 6" – 24" above grade pointing downward (no thread fitting allowed).

Water heaters install in basements or areas where a gravity drain P & T cannot be achieved, a "Watts 210 Valve" will be required.

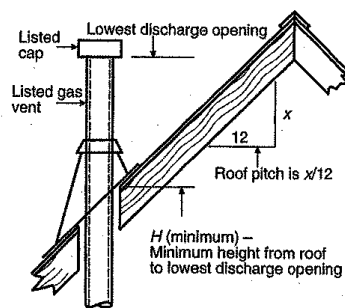
## Combustion Air Requirements (CPC 507.0)

### Indoor Combustion Air:

- Standard Method: Minimum required volume shall be 50 cubic feet per 1,000 Btu/hour.
- Openings on the Same Story: Each opening shall have a minimum free area of 1 square inch per 1000 Btu/hour of the total input rating of all gas utilization appliances in the space, but not less than 100 square inches. Two openings shall be within the top 12 inches and the bottom 12 inches. The minimum dimension of air openings shall not be less than 3 inches.
- Combining Spaces in Different Stories: The volumes of spaces in different stories shall be considered as communicating spaces where such spaces are connected by one or more openings in doors or floors having a total free area of not less than two square inches / 1000 Btu/hour of total input rating of all gas utilization appliances.

### Outdoor Combustion Air:

- Two Permanent Openings Method: Two permanent openings within 12 inches of the top and bottom. (Minimum dimension of air openings shall not be less than 3 inches):
  - When directly communicating with the outdoors or where communicating to the outdoors through using vertical ducts each opening shall have a minimum free area of 1 square inch per 4,000 Btu/hour of total input rating of all appliances in the enclosure.
  - When using horizontal ducts each opening shall have a minimum free area of 1 square inch per 2,000 Btu/hour of total input rating of all appliances in the enclosure.
- One Permanent Opening Method: One permanent opening within 12 inches of the top of the enclosure. The appliance shall have clearances of at least 1 inch from the sides and back and 6 inches from the front of the appliance. The openings shall directly communicate with the outdoors or direct communication through ducts (horizontal or vertical) to the outdoors or spaces that freely communicate with the outdoors and shall have a minimum free area of the following:
  - 1 square inch per 3000 Btu/hour of the total input rating of all appliances located in the enclosure, **AND**
  - Not less than the sum of the areas of all vent connectors in the space.



Roof pitch heights

Roof pitch	H(minimum) ft.	m
Flat to 6/12	1.0	0.30
Over 6/12 to 7/12	1.25	0.38
Over 7/12 to 8/12	1.5	0.46
Over 8/12 to 9/12	2.0	0.61
Over 9/12 to 10/12	2.5	0.76
Over 10/12 to 11/12	3.25	0.99
Over 11/12 to 12/12	4.0	1.22
Over 12/12 to 14/12	5.0	1.52
Over 14/12 to 16/12	6.0	1.83
Over 16/12 to 18/12	7.0	2.13
Over 18/12 to 20/12	7.5	2.27
Over 20/12 to 21/12	8.0	2.44

**Gas Vent Termination Locations for Listed Caps 12 in or Less in Size at Least 8 ft from a Vertical Wall.**

**For Any Questions, Contact the Building Division, at 650-802-4261**