



Residential Water Heater Requirements

The following guide details the portions of the 2015 International Residential Code as it pertains to both electrically and fuel fired hot water heaters. While this document does contain the most common code sections with regard to the installation of water heaters other portions of the 2015 International Residential Code will still apply as well. Chapter 24 of the IRC will contain the fuel gas requirements and Chapters 34-42 will detail the electrical portion of a water heater installation. The 2015 IRC is available for free viewing at <https://codes.iccsafe.org/content/IRC2015>

WATER HEATERS

SECTION P2801 GENERAL REQUIREMENTS

P2801.1 Required.

Hot water shall be supplied to plumbing fixtures and plumbing appliances intended for bathing, washing or culinary purposes.

P2801.2 Drain valves.

Drain valves for emptying shall be installed at the bottom of each tank-type water heater and hot water storage tank. The drain valve inlet shall be not less than 3/4-inch (19.1 mm) nominal iron pipe size and the outlet shall be provided with a male hose thread.

P2801.3 Installation.

Water heaters shall be installed in accordance with this chapter and Chapters 20 and 24.

P2801.4 Location.

Water heaters and storage tanks shall be installed in accordance with Section M1305 and shall be located and connected to provide access for observation, maintenance, servicing and replacement.

M1305.1 Appliance access for inspection service, repair and replacement.

Appliances shall be accessible for inspection, service, repair and replacement without removing permanent construction, other appliances, or any other piping or ducts not connected to the appliance being inspected, serviced, repaired or replaced. A level working space not less than 30 inches deep and 30 inches wide (762 mm by 762 mm) shall be provided in front of the control side to service an appliance.

P2801.5 Prohibited locations.

Water heaters shall be located in accordance with Chapter 20.

M2005.2 Prohibited locations.

Fuel-fired water heaters shall not be installed in a room used as a storage closet. Water heaters located in a bedroom or bathroom shall be installed in a sealed enclosure so that combustion air will not be taken from the living space. Installation of direct-vent water heaters within an enclosure is not required.

M2005.2.1 Water heater access.

Access to water heaters that are located in an attic or underfloor crawl space is permitted to be through a closet located in a sleeping room or bathroom where ventilation of those spaces is in accordance with this code.

P2801.6 Required pan.

Where a storage tank-type water heater or a hot water storage tank is installed in a location where water leakage from the tank will cause damage, the tank shall be installed in a pan constructed of one of the following:

1. Galvanized steel or aluminum of not less than 0.0236 inch (0.6010 mm) in thickness.
2. Plastic not less than 0.036 inch (0.9 mm) in thickness.
3. Other approved materials.

A plastic pan shall not be installed beneath a gas-fired water heater.

P2801.6.1 Pan size and drain.

The pan shall be not less than 11/2 inches (38 mm) deep and shall be of sufficient size and shape to receive dripping or condensate from the tank or water heater. The pan shall be drained by an indirect waste pipe of not less than 3/4 inch (19 mm) diameter. Piping for safety pan drains shall be of those materials indicated in Table P2905.5. Where a pan drain was not previously installed, a pan drain shall not be required for a replacement water heater installation.

P2801.6.2 Pan drain termination.

The pan drain shall extend full-size and terminate over a suitably located indirect waste receptor or shall extend to the exterior of the building and terminate not less than 6 inches (152 mm) and not more than 24 inches (610 mm) above the adjacent ground surface.

P2801.7 Water heaters installed in garages.

Water heaters having an ignition source shall be elevated such that the source of ignition is not less than 18 inches (457 mm) above the garage floor.

Exception: Elevation of the ignition source is not required for appliances that are listed as flammable vapor ignition-resistant.

SECTION G2407 (304) COMBUSTION, VENTILATION AND DILUTION AIR

G2407.1 (304.1) General.

Air for combustion, ventilation and dilution of flue gases for appliances installed in buildings shall be provided by application of one of the methods prescribed in Sections G2407.5 through G2407.9. Where the requirements of Section G2407.5 are not met, outdoor air shall be introduced in accordance with one of the methods prescribed in Sections G2407.6 through G2407.9. Direct-vent appliances, gas appliances of other than natural draft design, vented gas appliances not designated as Category I and appliances equipped with power burners, shall be provided with combustion, ventilation and dilution air in accordance with the appliance manufacturer's instructions.

Exception: Type 1 clothes dryers that are provided with makeup air in accordance with Section G2439.5.

G2407.2 (304.2) Appliance location.

Appliances shall be located so as not to interfere with proper circulation of combustion, ventilation and dilution air.

G2407.3 (304.3) Draft hood/regulator location.

Where used, a draft hood or a barometric draft regulator shall be installed in the same room or enclosure as the appliance served to prevent any difference in pressure between the hood or regulator and the combustion air supply.

G2407.4 (304.4) Makeup air provisions.

Where exhaust fans, clothes dryers and kitchen ventilation systems interfere with the operation of appliances, makeup air shall be provided.

G2407.5 (304.5) Indoor combustion air.

The required volume of indoor air shall be determined in accordance with Section G2407.5.1 or G2407.5.2, except that where the air infiltration rate is known to be less than 0.40 air changes per hour (ACH), Section G2407.5.2 shall be used. The total required volume shall be the sum of the required volume calculated for all appliances located within the space. Rooms communicating directly with the space in which the appliances are installed through openings not furnished with doors, and through combustion air openings sized and located in accordance with Section G2407.5.3, are considered to be part of the required volume.

G2407.5.1 (304.5.1) Standard method.

The minimum required volume shall be 50 cubic feet per 1,000 Btu/h (4.8 m³/kW) of the appliance input rating.

SECTION G2411 (310) ELECTRICAL BONDING

G2411.1 (310.1) Pipe and tubing other than CSST.

Each above-ground portion of a gas piping system other than corrugated stainless steel tubing (CSST) that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. Gas piping other than CSST shall be considered to be bonded where it is connected to appliances that are connected to the equipment grounding conductor of the circuit supplying that appliance.

G2411.1.1 (310.1.1) CSST.

Corrugated stainless steel tubing (CSST) gas piping systems and piping systems containing one or more segments of CSST shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection electrode system.

G2411.1.1.1 (310.1.1.1) Point of connection.

The bonding jumper shall connect to a metallic pipe, pipe fitting or CSST fitting.

G2411.1.1.2 (310.1.1.2) Size and material of jumper.

The bonding jumper shall be not smaller than 6 AWG copper wire of equivalent.

G2411.1.1.3 (310.1.1.3) Bonding jumper length.

The length of the bonding jumper between the connection to a gas piping system and the connection to a grounding electrode system shall not exceed 75 feet (22 860 mm). Any additional grounding electrodes used shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection grounding electrode system.

G2411.1.1.4 (310.1.1.4) Bonding connections.

Bonding connections shall be in accordance with NFPA 70.

G2411.1.1.5 (310.1.1.5) Connection devices.

Devices used for making the bonding connections shall be listed for the application in accordance with UL 467.