

WATER HEATER INSTALLATION INFORMATION



All water heaters shall be installed according to the practices within the Approved Euless Code 2015 IRC and 2015 IPC.

ALL ELECTRIC WATER HEATERS MUST BE "HARD WIRED". Plug ended disconnecting means are not allowed.

All water heaters in garages in the City of Euless shall be elevated eighteen (18") inches above the floor surface and be protected from damage. All water heaters shall also be installed with a pan in all locations with the pan drain run to the outside separately from the temperature & pressure (T&P) line. All water heaters shall drain to the outside, unless physically impossible then an **approved** (by the Building Official or their designee) shutoff device shall be used.

No flex line to the T&P will be allowed. Flex line **may** be used on the hot or cold line.

Water heater replacement inspection fees:

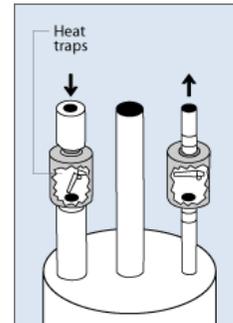
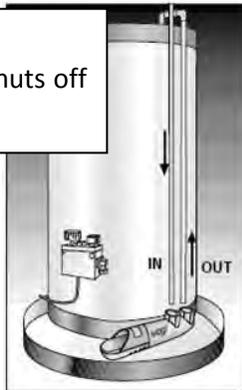
Single family/multi-family residential

\$60.00 per water heater unit

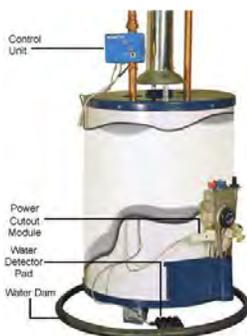
Commercial

based on valuation of work as per Sec. 30-13(b)

Picture of a WAG valve application
WAG valve detects water flow and shuts off water and gas.



Heat traps are required on inlet and outlet lines. Additionally, insulation is required on both.



Picture of an electronic shutoff device. Sensor detects water leakage and sends signal to the control unit which causes the valve to close and stop the flow of water preventing additional flooding.

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2015 International Residential Code Chapter 28 (Water Heaters)

Section P2801 General

P2801.1 Required. Each dwelling shall have an approved automatic water heater or other type of domestic water heater or other type of domestic water-heating system sufficient to supply hot water to plumbing fixtures and appliances intended for bathing, washing or culinary purposes. Storage tanks shall be constructed of noncorrosive metal or shall be lined with noncorrosive material.

P2801.2 Installation. Water heaters shall be installed in accordance with this chapter and Chapters 20 and 24.

P2801.3 Location. Water heaters and storage tanks shall be located and connected so as to provide access for observation, maintenance, servicing and replacement.

P2801.4 Prohibited locations. Water heaters shall be located in accordance with Chapter 20.

Exceptions:

1. Direct-vent water heaters.
2. Appliances installed in a dedicated enclosure in which all combustible air is taken directly from the outdoors, in accordance with Section R703. Access to such enclosure shall be through a solid door, weather-stripped in accordance with the exterior door air leakage requirements of the *International Energy Conservation Code* and equipped with an approved self-closing device.

P2801.5 Required pan. Where water heaters or hot water storage tanks are installed in locations where leakage of the tanks or connections will cause damage, the tank or water heater shall be installed in a galvanized steel pan having a minimum thickness of 24 gage (0.016 inch)(0.4mm) or other pans for such use. Listed pans shall comply with CSA LC3.

P2801.5.1 Pan size and drain. The pan shall be not less than 1.5 inches (38 mm) deep and shall be of sufficient size and shape to receive all dripping and condensate from the tank or water heater. The pan shall be drained by an indirect waste pipe having a minimum diameter of ¾ inch (19 mm) or the outlet diameter of the relief valve, whichever is larger.

P2801.5.2 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.

P2801.6 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.

Section P2802 Water Heaters Used for Space Heating

P2802.1 Protection of potable water. Piping and components connected to a water heater for space heating applications shall be suitable for use with potable water in accordance with Chapter 29. Water heaters that will be used to supply potable water shall not be connected to a heating system or components previously used with nonpotable water heating appliances. Chemicals for boiler treatment shall not be introduced into the water heater.

P2802.2 Temperature control. Where a combination water heater-space heating system requires water for space heating at temperatures exceeding 140°F(60°C), a master thermostatic mixing valve complying with ASSE 1017 shall be installed to temper the water to a temperature of 140°F(60°C) or less for domestic uses.

P2802.3 Scald protection. Where a combination water heater-space heating system requires water for space heating at temperatures exceeding 140°F(60°C), a means such as a mixing valve shall be installed to temper the water for domestic uses.

Section P2803 Relief Valves

P2803.1 Relief valves required. Appliances and equipment used for heating water or storing hot water shall be protected by:

1. A separate pressure-relief valve and a separate temperature-relief valve; or
2. A combination pressure – and temperature-relief valve.

P2803.2 Rating. Relief valves shall have a minimum rated capacity for the equipment served and shall conform to ANSI Z 21.22.

WATER HEATER INFORMATION

P2803.3 Pressure relief valves. Pressure-relief valves shall have a relief rating adequate to meet the pressure conditions for the appliances or equipment protected. In tanks, they shall be installed directly into a tank tapping or in a water line close to the tank. They shall be set to open at least 25 psi. (172 kPa) above the system pressure but to over 150 psi (1034 kPa). The relief valve setting shall not exceed the tanks rated working pressure.

P2803.4 Temperature relief valves. Temperature relief valves shall have a relief rating compatible with the temperature conditions of the appliances or equipment protected. The valves shall be installed such that the temperature-sensing element monitors the water within the top 6 inches (152 mm) of the tank. The valve shall be set to open at a maximum temperature of 210°F (99°C).

P2803.5 Combination pressure/temperature relief valves. Combination pressure/temperature-relief valves shall comply with all the requirements of separate pressure-and temperature-relief valves.

P2803.6 Installation of relief valves. A check or shutoff valves shall not be installed in the following locations:

1. Between a relief valve and the termination point of the relief valve discharge pipe;
2. Between a relief valve and a tank; or
3. Between a relief valve and heating appliances or equipment.

P2803.6.1 Requirements of discharge pipe. The outlet of a pressure relief valve, temperature relief valve or combination thereof, shall not be directly connected to the drainage system. The discharge from the relief valve shall be piped full size separately to the floor, to the outside of the building, or to an indirect waste receptor located inside the building. In areas subject to freezing, the relief valve shall discharge through an air gap into an indirect waste receptor located within a heated space, or by other approved means. The discharge shall be installed in a manner that does not cause personal injury or property damage and that is readily observable by the building occupants. The discharge from a relief valve shall not be trapped. The diameter of the discharge piping shall not be less than the diameter of the relief valve outlet. The discharge pipe shall be installed so as to drain by gravity flow and shall terminate atmospherically not more than 6 inches (152 mm) above the floor. The outlet end of the discharge pipe shall not have a valve installed.

P2803.6.2 Relief valve drains. Relief valve drains shall comply with Section P2904.5 or ASME A112.4.1.

CITY OF EULESS AMENDMENTS TO 2015 IRC REGARDING WATER HEATERS

Section P2801.4 Prohibited locations add: Water heaters shall not be installed in attics.

WATER HEATER INFORMATION

2015 International Plumbing Code (Chapter 5) Water Heaters (COMMERCIAL)

Section 501 – General

- 501.1 Scope.** The provisions of this chapter shall govern the materials, design and installation of water heaters and the safety devices and appurtenances.
- 501.2 Water heater as space heater.** Where a combination potable water heating and space heating system requires water for heating at temperatures higher than 140°F (60°C), a master thermostat mixing valve complying with ASSE 1017 shall be provided to limit the water supplied to the potable hot water distribution system to a temperature of 140°F (60°C) or less. The potability of the water shall be maintained throughout the system.
- 501.3 Drain valves.** Drain valves for emptying shall be installed at the bottom of each tank-type water heater and hot water storage tank. Drain valves shall conform to ASSE 1005.
- 501.4 Location.** Water heaters and storage tanks shall be located and connected so as to provide access for observation, maintenance, servicing, and replacement.
- 501.5 Water heater labeling.** All water heaters shall be third-party certified.
- 501.6 Water temperature control in piping from tankless heaters.** The temperature of water from tankless water heaters will be a maximum of 140°F (60°C) when intended for domestic uses. This provision shall not supersede the requirements for defective shower valves in accordance with Section 424.3.
- 501.7 Pressure marking of storage tanks.** Storage tanks and water heaters installed for domestic hot water shall have the maximum allowable working pressure clearly and indelibly stamped in the metal or marked on a plate welded there to or otherwise permanently attached. Such markings shall be in an accessible position outside of the tank so as to make inspection or inspection readily possible.
- 501.8 Temperature controls.** All hot water supply systems will be equipped with automatic temperature controls capable adjustments from the lowest to the highest acceptable temperature settings for the intended temperature operating range.

Section 502 – Installation

- 502.1 General.** Water heaters shall be installed in accordance with the manufacturer's installation instructions. Oil-fired water heaters shall conform to the requirements of this code and *International Mechanical Code*. Electric water heaters will conform to the requirements of this code and provisions of *ICC Electrical Code*. Gas-fired water heaters shall conform to the requirements of the *International Fuel Gas Code*.
- 502.2 Rooms used as a plenum.** Water heaters using solid, liquid, or gas fuel shall not be installed in a room containing air-handling machinery when such room is used as a plenum.
- 502.3 Water heaters installed in attics.** Attics containing a water heater shall be provided with a n opening and unobstructed passageway large enough to allow removal of the water heater. The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) in length when measured along the centerline of the passageway from the opening to the water heater. The passageway shall have continuous solid flooring not less than 24 inches (610 mm) wide. A level service space at least 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the water heater. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm) where such dimensions are large enough to allow removal of the water heater.
- 502.4 Seismic supports.** Where earthquake loads are applicable in accordance with the *International Building Code*, water heater supports shall be designed and installed for the seismic forces in accordance with the *International Building Code*.

Section 503 – Connections

- 503.1 Cold water line valve.** The cold water branch line from the main water supply line to each hot water storage tank or water heater shall be provided with a valve, located near the equipment and serving only the hot water storage tank or water heater. The valve shall not interfere with or cause a disruption of the cold water supply to the remainder of the cold water system. The valve shall be provided access on the same floor level as the water heater served.

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- 503.2 Water circulation.** The method of connecting a circulating water heater to the tank shall provide proper circulation of water through the water heater. The pipe or tubes required for the installation of appliances that will draw from the water heater or storage tank shall comply with the provisions of this code for material and installation.

Section 504 – Safety devices

- 504.1 Antisiphon devices.** An approved means, such as a cold water “dip” tube with a hole at the top or a vacuum relief valve installed in the code water supply line above the top of the heater or tank, shall be provided to prevent siphoning of any storage water heater or tank.
- 504.2 Vacuum relief valve.** Bottom fed water heaters and bottom fed tanks connected to water heaters shall have a vacuum relief valve installed. The vacuum relief valve shall comply with ANSI Z21.22.
- 504.3 Shutdown.** A means for disconnecting an electric hot water supply system from its energy supply shall be provided in accordance with the IEC Electrical Code. A spate valve shall be provided to shut off the energy fuel supply to all other types of hot water supply systems.
- 504.4 Relief valve.** All storage water heaters operating above atmospheric pressure shall be provided with an approved, self-closing (levered) pressure relief valve and temperature relief valve or combination thereof. The relief valve shall conform to ANSI Z21.22. The relief valve shall not be used as a means of controlling thermal expansion.
- 504.4.1 Installation.** Such valves shall be installed in the shell of the water heater tank. Temperature relief valves shall be so located in the tank as to be actuated by the water in the top 6 inches (152 mm) of the tank served. For installations with separate storage tanks, the valves shall be installed on the tank and there shall not be any type of valve installed between the water heater and the storage tank. There shall not be a check valve or shutoff valve between a relief valve and the heater or tank served.
- 504.5 Relief valve approval.** Temperature and pressure relief valves, or combinations thereof, and energy cutoff devices shall bear the label of an approved agency and shall have a temperature setting of not more than 210°F (99°C) and a pressure setting not to exceed the tank or water heater manufacturer’s rated working pressure or 150 psi (1035kPa), whichever is less. The relieving capacity of each pressure relief valve and each temperature relief valve shall equal or exceed the heat input to the water heater or storage tank.
- 504.6 Relief outlet waste.** The outlet of a pressure, temperature or other relief valve shall not be directly connected to the drainage system.
- 504.6.1 Discharge.** The relief valve shall discharge full size to a safe place of disposal such as the floor, outside the building, or an indirect waste receptor. The discharge pipe shall not have any trapped sections and shall have a visible air gap or air gap fitting located in the same room as the water heater. The outlet end of the discharge pipe shall not be threaded and such discharge pipe shall not have a valve discharge piping to the disposal point. Such pipe shall be installed in a manner that does not cause personal injury to occupants in the immediate area or structural damage to the building.
- 504.6.2 Materials.** Relief valve discharge piping shall be of those materials listed in Section 605.4 or shall be tested, rated, and approved for such use in accordance with ASME A112.4.1. Piping from safety pan drains shall be of those materials listed in Table 605.4.
- 504.7 Required Pan.** Where water heaters or hot water storage tanks are installed in locations where leakage of the tanks or connections will cause damage, the tank or water heater shall be installed in a galvanized steel pan having a minimum thickness of 24 gauge, or other pans approved for such use.
- 504.7.1 Pan size and drain.** The pan shall be not less than 1.5 inches (38 mm) deep and shall be of sufficient size and shape to receive all dripping or condensate from the tank or water heater. The pan shall be drained by an indirect waste pipe having a minimum diameter of ¾ inch (19 mm).
- 504.7.2 Pan drain termination.** The pan drain shall extend full-size and terminate over a suitably located indirect waste receptor or floor drain or extend to the exterior of the building and terminate no less than 6 inches (152 mm) and not more than 24 inches (610 mm) above the adjacent ground surface.

Section 505 - Insulation

- 505.1 Unfired vessel insulation.** Unfired hot water storage tanks shall be insulated so that heat loss is limited to a maximum of 15 British thermal units per hour (Btu/h) per square foot (47 W/m²) of external tank surface area. For purposes of determining this heat loss, the design ambient temperature shall not be higher than 65°F (18°C).