

*All installations must comply with 2017 NEC, 2018 IPC, 2018 IRC/IBC requirements.

A. General – Applies to all Water Heaters.

1. Manufacturer's Installation Instructions.

- a. All water heaters are required to comply with the manufacturer's installation instructions.
- b. The installation of a condensate neutralizer is required if required by the manufacturer. (2018 IRC G2448.1, 2018 IFGC 624.1, 2018 IPC 502.1 General)
- c. Because of different installation standards required by each manufacturer, at time of inspection, the manufacturer's installation instructions, and owner's manual, need to be present at the unit(s) for inspector review.

2. Water Heaters Located in an Attic.

Attics containing a water heater must be provided with an opening and unobstructed passageway large enough to allow removal of the water heater. The passageway must be at least 30 inches in height and 22 inches in width and not more than 20 feet in length when measured along the centerline of the passageway from the opening to the water heater. The passageway must have continuous solid flooring at least 24 inches in width. A level service space at least 30 inches in length and 30 inches in width must be present at the front or service side of the water heater. The clear access opening dimensions must be at least 20 inches by 30 inches where such dimensions are large enough to allow removal of the water heater. (2018 IRC P2801.4 & M1305, 2018 IPC 502.3 Water heaters installed in attics)

3. Thermal Expansion Tanks.

All Addison water meters include a check valve; therefore, the installation of a thermal expansion tank is required at the water heater. Thermal expansion tanks must be sized in accordance with the tank manufacturer's instructions and must be sized such that the pressure in the water distribution system does not exceed 80 psi. (2018 IRC P2903.4, 2018 IPC 607.3 Thermal expansion control, 2018 IRC P2903.3.1, 2018 IPC 604.8 Water pressure reducing valve or regulator)

4. Condensate Piping.

Condensate *piping* must be of *approved* corrosion-resistant material and no smaller than the drain connection on the water heater. All *piping* must maintain a minimum slope in the direction of discharge at least one-eighth unit vertical in 12 units horizontal (1-percent slope). (2018 IRC M1411.3, 2018 IFGC 307.2 Fuel Burning Appliances)

5. Drain Pan and Drain Line

a. New Construction or Remodels.

- i. **Material and Thickness.** 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 must be installed in a pan constructed of one of the following: galvanized steel or aluminum of not less than 0.0236 inch (0.6010 mm) in thickness, plastic not less than 0.036 inch (0.9 mm) in thickness, or other approved materials. A plastic pan can not be installed beneath a gas-fired water heater. (2018 IRC P2801.6 & P2801.6.1, 2018 IPC 504.

- ii. **Drain Line.** 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 not less than 6 inches and not more than 24 inches above the adjacent ground surface. (2018 IRC P2801.6.2, IPC 504.7.2 Pan drain termination)
- b. **Existing Water Heaters:**
 - i. **Drain Pan.** Although it is recommended that you install a pan drain to the outside of the building, where a pan drain was not previously installed, you must install a boiler drain with hose bibb threads in the pan. This will allow the occupant to connect a water hose and drain any water accumulating in the pan if a leak occurs. In addition to the boiler drain, you must install an automatic water shut-off valve such as a “Floodstop”. Drain lines may discharge into a garage if the garage utilizes concrete stem walls that will prevent the water from damaging structural wood members.
- 6. **T & P Line.** T&P Valve discharge must terminate to an approved location or discharge outside of the building. Discharge must be within six inches (6”) and not less than 2 times the diameter of the discharge piping above the floor or ground level. (2018 IRC P2804.6.1, 2018 IPC 504.6 Requirements for discharge piping)
- 7. **Water Shut-off Valve.** A shut-off valve is required on the cold-water inlet. (2018 IRC P2903.9.2 Water heater valve, 2018 IPC 503.1 Cold water line valve)
- 8. **Insulation.** All piping in or near an unconditioned space, such as in an attic or garage, is required to be insulated. (2018 P2603.5 Freezing, 2018 IPC 607.5 Insulation of piping)

B. Electric Water Heater Requirements.

- 1. If the water heater is an electric water heater, an electrical disconnect is required at the water heater. (2017 NEC 422.31 Disconnection of Permanently Connected Appliances)
- 2. If an electrical breaker is located within sight of the water heater – or is lockable, a disconnect is not required at the water heater if the lockable device complies with Article 110.25 of the NEC.
- 3. Electric Water Heaters must comply with manufacturer installation instructions. (2018 IRC G2448.1, 2018 IFGC 624.1 General - Manufacturer’s instructions)

C. Natural Gas or Propane Water Heaters.

- 1. **Gas Shut-off valve.** A hand-operable appliance gas valve is required and sediment trap prior to appliance gas connection. (2018 IRC G2422.1.2.4, 2018 IFGC 409.5 Shutoff valve & 2018 IRC G2419.4, 2018 IFGC 408.4 Sediment trap)
- 2. **Vents.** Appliance venting must comply with manufacturer instructions and utilize manufacturer specified draft diverter, exhaust termination cap, and flashing for type of vent pipe used. Only B-vent can be used in the attic space with a minimum of one inch (1”) clearance from combustibles. (2018 IRC G2427, 2018 IFGC 503 Venting of appliances)

3. **Combustion Air:**

- a. **New Construction or Remodels.** Combustion air must be provided in the upper twelve inches (12") and the lower twelve inches (12") of the closet. Each vent must be a minimum of one cubic inch for every 4,000 BTU of the appliance rating. A 40,000 BTU water heater will require a ten square inch (10 sq. in.) vent in the bottom twelve inches (12") of the closet and a ten square inch (10 sq. in.) vent in the upper twelve inches (12") of the closet. (2018 IRC G2407.6.1, 2018 IFGC 304.6.1)
- b. **Existing Water Heaters.** If the existing water heater did not have combustion air and the structure was built prior to 1980, you will not be required to provide additional combustion air. If the structure was built after 1980 or there has been a history of water heater combustion issues, combustion air must be provided in the upper twelve inches (12") and the lower twelve inches (12") of the closet. Each vent must be a minimum of one hundred square inches (100 sq. in.).

D. Tankless Water Heaters

1. **Gas Piping.**

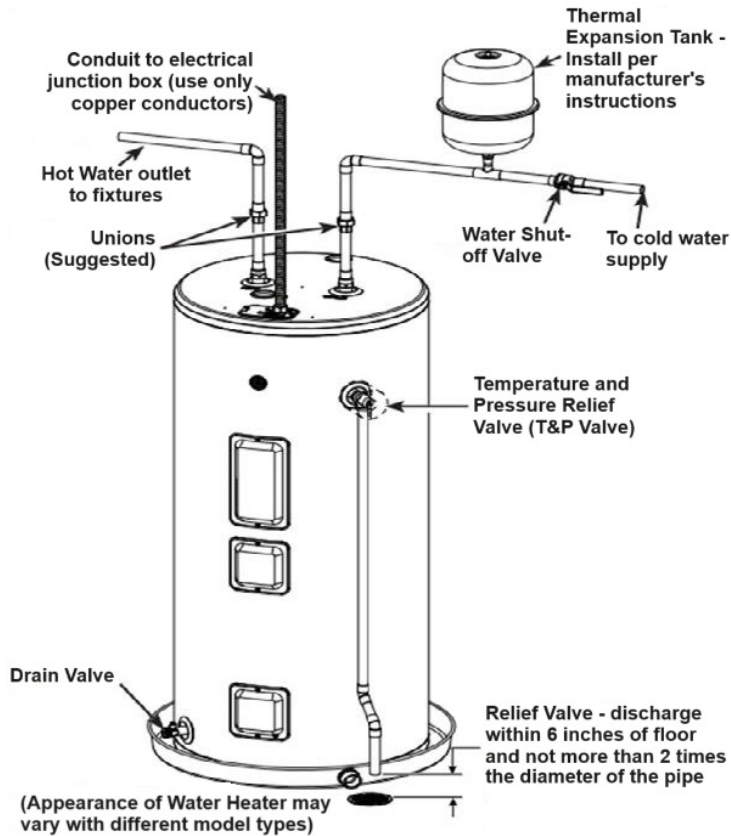
- a. If modifications are made to the gas system, a gas test is required to be performed on the entire gas system and a gas sizing diagram will need to be uploaded to the CSS portal, OR sent via email to inspections@addisontx.gov, prior to the day of the inspection. (2018 IRC G2417.1.3, 2018 IFGC 406.1.3 New branches)
- b. If no modifications have been made to the gas system, a gas sizing diagram is still required to ensure that the existing system can supply the increased BTU demand of the tankless water heater. (2018 IRC G2412.4, 2018 IFGC 401.4 Additional appliances)
- c. A hand-operable appliance gas valve is required and sediment trap prior to appliance connection. (2018 IRC G2422.1.2.4, 2018 IFGC 409.5 Shutoff valve & 2018 IRC G2419.4, 2018 IFGC 408.4 Sediment trap)

2. **Venting.** Venting of appliances shall comply with manufacturer instructions and utilize manufacturer specified exhaust termination cap and flashing for type of vent pipe used. (2018 IRC G2427, 2018 IFGC 503 Venting of appliances)

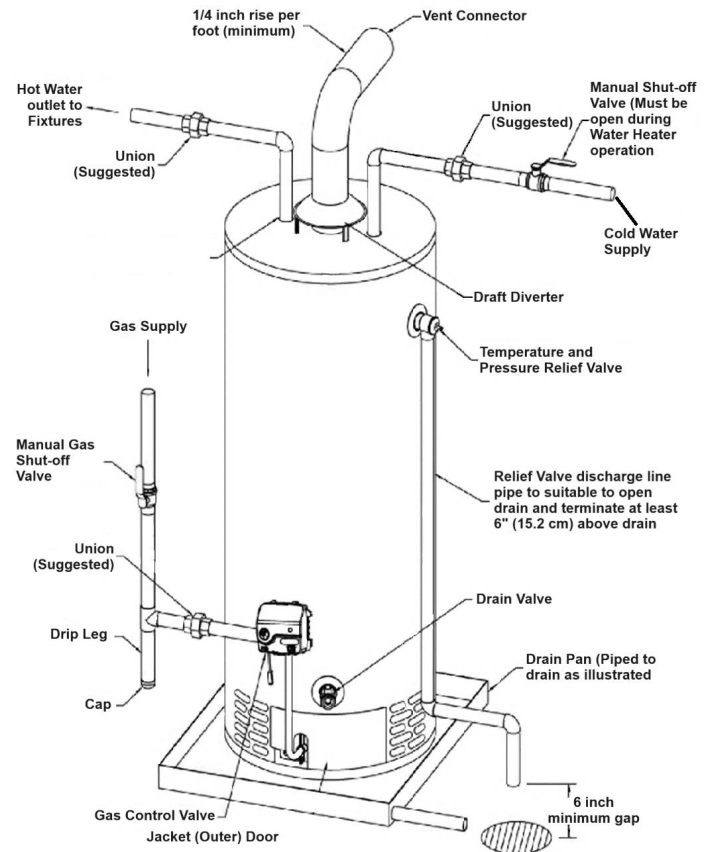
3. **Electrical Cord.** A flexible cord may be used to supply power to the water heater. All flexible cords must be continuous lengths without splices or taps. (2018 IRC E3909.3/E3909.1)

4. **Electrical Power.** If an electrical receptacle is added, an Electrical contractor will need to be added to the permit. All electrical work, including the addition of the receptacle, must be done by a licensed Electrician, and meet the requirements of the 2017 NEC.

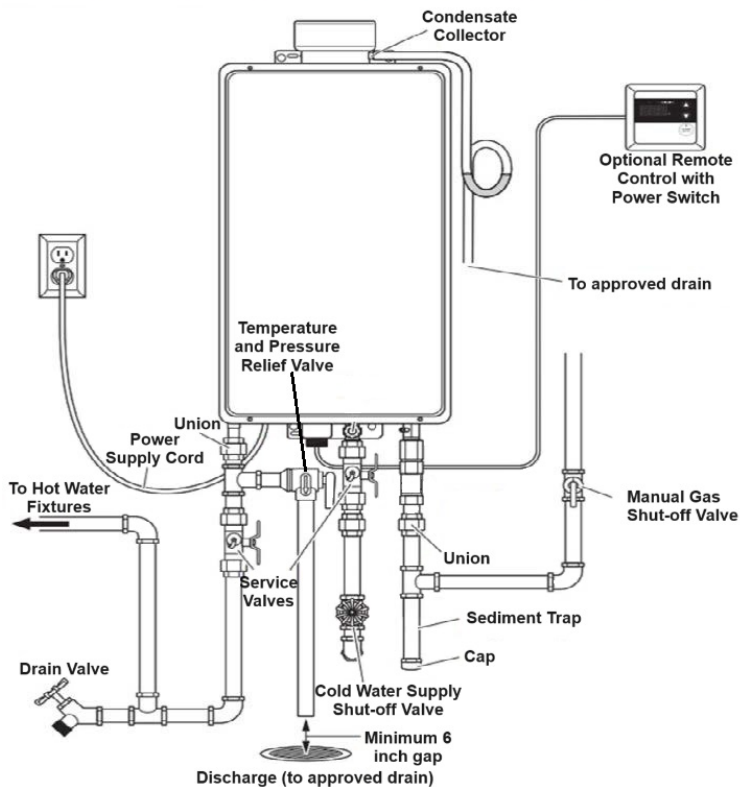
TANK TYPE - ELECTRIC WATER HEATER



TANK TYPE - GAS-FIRED WATER HEATER



TANKLESS INDOOR - GAS-FIRED UNIT



TANKLESS OUTDOOR - GAS-FIRED UNIT

