



## Water Heaters

## TECHNICAL BULLETIN RESD-5-1

City of San Diego  
Development Services Department

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The purpose of this technical bulletin is to provide guidelines for water heater installations. All original and replacement water heater installations are required to be in compliance with California Plumbing Code (CPC). A plumbing permit is required for the installation of a water heater .

### I. GENERAL

Water heaters shall be located per the following requirements :

- A. Water heaters, either gas or electric, that generate a glow, spark, or flame capable of igniting flammable vapors may be installed in a garage if the pilots, burners, or heating elements and switches are elevated at least 18 inches above the floor. If the water heater is installed on a stand or platform base, the base must be adequately anchored to the floor. If the water heater installed within a garage is enclosed in a separate, approved compartment that is accessed only from outside of the garage, it may be installed at floor level provided that the required combustion air is drawn from outside .
- B. Water heaters installed in a garage shall be guarded against damage by being installed behind protective barriers, be elevated, or located out of the normal path of vehicles .
- C. Gas-fired water heaters shall not be installed in bathrooms, clothes closets, or rooms used for sleeping, any closet or confined space that opens into a bathroom or bedroom unless the closet meets the requirements of CPC Section 504.1(1) except for direct vent water heaters.
- D. Water heaters are prohibited to be located in an attic or space where a water leak could cause damage unless an approved safe pan is installed below the water heater with a minimum 3/4-inch drain to an approved, readily visible location.

### II. SEISMIC STRAPPING

All water heaters are required to be anchored or strapped to resist movement during an earthquake per the CPC. This can be accomplished by installing any of the products especially made for restraining water heaters .

Strapping shall be at points within the upper one-third (1/3) and lower one-third (1/3) of it's vertical dimensions. At the lower point, a minimum distance of four (4) inches shall be maintained above the controls with the strapping.



### III. TEMPERATURE AND PRESSURE RELIEF VALVE

In addition to primary temperature controls, storage-type water heaters and hot water boilers must be provided with a combination temperature and pressure relief valve (T&P valve). The T&P valve must be listed by a nationally recognized listing agency and installed in accordance with listing. T&P requirements are as follows :

- A. Each T&P valve must have a drain.

- B. Shutoff valve shall not be installed in the relief valve drain line system .
- C. The drain provided to T&P valves shall not be smaller than the relief valve outlet and must be made from galvanized steel, CPVC, hard-drawn copper piping and fittings, or be a listed relief valve drain tube with fittings that will not reduce the internal bore of the piping.
- D. The piping shall extend from the valve to the outside of the building with the end of the pipe pointing downward, not more than 2 feet nor less than 6 inches above the ground, or to an approved receptor with a minimum 1 inch airgap. It is not acceptable to terminate the T&P in the underfloor area .
- E. T&P drainage piping must run independently from other drainage piping. For example, it is not acceptable to combine T&P drains with A/C condensate drainage piping or water heater drain pan piping. Also, it is not acceptable to terminate the T&P drain into a water heater drain pan (Smitty pan) .
- F. The T&P drain must not be directly connected to the sanitary sewer .
- G. No part of such drain shall be trapped. and the terminal end shall not be threaded.

#### **IV. COMBUSTION AIR**

Combustion air shall be provided for fuel -burning water heaters with indoor combustion air or outdoor combustion air as described below.

- A. Water heaters in an enclosure shall be provided with properly sized combustion air openings shall located within the upper and lower 12 inches of the enclosure .
- B. Garage that serve as an enclosure shall be provided with openings to the exterior.

#### **V. VENTING**

Install listed vents in accordance with the CPC and the manufacturer's recommendations. Type B vents must be sized for the new water heater plus any other gas-fired appliances which share the same system as allowed by water heater manufacturer.

#### **VI. INSULATION**

Provide insulation as follows:

- A. For water heaters with an energy factor equal to or less than the federal minimum standards, the storage tank shall be externally wrapped with insulation having an insulated thermal resistance of R-12 or greater or have internal insulation of at least R-16 and a label on the exterior of the tank showing the insulation R-value.
- B. Hot water pipe and the first five (5) feet of cold water pipe from the storage tank shall be insulated.

#### **VII. EXPANSION TANKS**

Per CPC Section 608.2 and 608.3, any water system provided with a check valve, backflow preventer, or any other normally closed device that prevents dissipation of building pressure back into the water main shall be provided with an approved, listed, and adequately sized expansion tank or other approved device having a similar function to control thermal expansion, independent of the type of water heater. Such expansion tank or other approved device shall be installed on the building side of the check valve,

backflow preventer, or other device and shall be sized and installed in accordance with the manufacturer's recommendation.

#### **VIII. GAS PIPING SYSTEM**

The gas piping requirements are as follows :

- A. When replacing a storage tank water heater with a tankless water heater, the gas line connected to the water heater and the pipe size of each section to the water heater shall be sized to meet the increased BTU demand rating. Manufacturer's recommendations shall be followed .
- B. A sediment trap is required per CPC Section 1212.9 .
- C. Flexible appliance connectors shall not be reused.

#### **IX. PERMITTING**

For additional information on permitting requirements, options for service and permitting fees, refer to Information Bulletin 103.

#### **X. INSPECTIONS**

Water heaters will be inspected after installation has been completed. To schedule an inspection, call the inspection office at 858-581-7111 or schedule [online](#) .

#### **Documents referenced in this Technical Bulletin**

- [2019 California Mechanical Code \(CMC\)](#)
- [2019 California Plumbing Code \(CPC\)](#)
- [2019 California Residential Code \(CRC\)](#)
- [Information Bulletin 103, Fee Schedule for Mechanical, Electrical, Plumbing/Gas Permits](#)