



CITY OF OCEANSIDE

Building Division

300 N Coast Highway

Oceanside, CA 92054

760-435-3950

www.ci.oceanside.ca.us

I.B. 105

2022 California Codes

1/1/2023-12/31/2025

Effective Date

Water Heater

Informational Bulletin

The following information pertains to storage tank type water heaters and includes:

1. Prohibited locations
2. When to elevate a water heater off the floor
3. Bracing requirements
4. Temperature and pressure relief valve requirements
5. When to use a thermal expansion tank

1. Prohibited Locations

Gas-fired water heaters, which depend on combustion of fuel for heat, shall not be installed in the following locations:

1. A room used or designed to be used for sleeping purposes
2. A bathroom
3. A clothes closet, or other confined space opening into a bathroom or bedroom. Exception: Direct vent water heaters listed for the use.
4. Water Heaters shall not be installed in attics or other spaces where damage may result from a leaking water heater, without installing an approved safe pan beneath the water heater with a minimum $\frac{3}{4}$ inch drain to an approved, readily visible location.

2. When to Elevate a Water Heater off the Floor

Water heaters installed in a garage shall be elevated off the floor unless certified as flammable vapor ignition resistant (FVIR).

Note: Water heaters not installed inside a garage, are not required to be elevated.

Water heaters generating a glow, spark or flame capable of igniting flammable vapors may be installed in a garage provided the pilots, burners or heating elements and switches are at least **18 inches above the floor.**

Note: This requirement applies to both gas and electric water heaters.

Where water heaters installed within a garage are enclosed in a separate, approved compartment having access only from the outside of the garage, such water heater may be installed at floor level provided the required combustion air is also taken from the exterior.

Note: When water heaters are installed on a stand or platform base, the base shall be adequately anchored to the floor.

The above requirements apply to water heater installations as follows:

- New water heater installations



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- Water heater replacements
- Water heaters relocations inside a garage

3. Water Heater Bracing Requirements

Experience has shown that water heaters can move or tip over during an earthquake if not properly anchored to the walls. Movement of or to the water heater may cause leaks in gas piping, which in turn may pose a fire hazard. Water leaks from broken water lines may also cause damage to floors and walls. Because of this recognized potential for damage, Assembly Bill (AB) 1890 was passed into law on September 27, 1989.

AB 1890 requires **all new and replacement water heaters sold in California on or after July 1, 1991, to be braced**, anchored or strapped to resist falling or displacement due to earthquake motion. This applies for installation of all new water heaters and when water heaters are replaced or relocated.

Water heater bracing requirements are as follows:

1. The California Plumbing code (CPC) states, water heater strapping shall be at points within the upper one-third of the water heater vertical dimensions. At the lower point, a minimum distance of four inches shall be maintained above the controls with the strapping. The upper strap is generally installed nine inches below the top of the tank.
 2. The Division of the state Architect's Office (DSA) publishes recommendation regarding bracing of water heater. The DSA recommends two methods of bracing water heaters. They are described as The Tape Method and The Conduit Method.
 - a. The Tape Method uses round plumber's tape (24-gauge min.) with ledgers, bolts and lag screws. The Plumber's tape must completely encircle the water heater and be bolted to a 2" x 4" ledger, which is bolted to the wall framing.
 - b. The Conduit Method uses round thin wall conduit along with plumber's tape (**24-gauge min.**), bolts and lag screws.
1. Water heaters up to 52-gallons size shall have two straps minimum. Larger heaters will require additional bracing in proportion to their size to a 52-gallon tank (i.e.-75 gallon would require 3 straps; 100 gallon would require 4 straps). **Note:** Some manufacturers make listed straps for water heater installations. Listed bracing straps may be used in lieu of the above methods when installed per the manufacturer's installation instructions.
 2. Also, when water heaters are installed on a stand or platform, the stand shall be adequately anchored to the floor.
Note: Water heaters in a garage shall be raised off the floor. Sources of ignition shall be **18" min.** off the floor. This applies to both gas & electric water heaters. Exception: Flammable vapor ignition resistant water heaters may be installed less than 18" above the garage floor.

Water heater manufacturers provide installation instructions that should be followed for anchoring water heaters. Also, the Division of the State Architects office (DSA) publishes recommendations for bracing of water heaters. The Uniform Plumbing Code has specific regulations regarding water

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heater bracing. Building Inspectors use these documents and their judgment to determine whether water heaters are installed per minimum requirements.

Note: *No permit is required for voluntary bracing of water heaters.*

4. Temperature & pressure relief (T & P) valve installation requirements

Storage-type water heaters and hot water boilers shall be provided with, in addition to the primary temperature controls, a combination temperature and pressure relief valve (T & P valve). The T & P valve shall be constructed, listed, and installed in accordance with nationally recognized applicable standards.

The following 12 items pertain to T & P valve installation requirements:

1. Each T&P valve shall be an approved type with a drain.
2. No Shutoff valve shall be installed in the relief valve drain line system.
3. T & P valves located inside a building shall be provided with a drain, not smaller than the relief valve outlet, of galvanized steel, hard drawn copper pipe & fittings which will not reduce the internal bore of the piping.
4. The piping shall extend from the valve to the outside of the building with the end of the pipe not more than 2’ or less than 6” above the ground pointing downward. Note: It is **not** acceptable to terminate the T & P in the under floor area.
5. In residential garages, it shall be permissible to terminate the drain directly below the water heater, no more than six inches above the garage floor (not six inches above the top of the water heater stand/platform). Garage floors must slope toward the overhead garage door. For this case, the drain may terminate in a receptor pan at the base of the water heater if the pan has a drain extending to within 6 inches of the floor.
6. For water heaters located in garages, the P & T drain may terminate in a receptor offset from and connected to the washer standpipe (connected above the trap); a one-inch air gap must be maintained.
7. The T & P drain shall not be connected to the sanitary sewer.
8. T & P drainage piping shall run independently from other drainage piping.
9. For replacement of existing water heaters located in the interior of existing dwelling units, if no existing drain is present, and if the water heater is not adjacent to an exterior wall, a listed automatic gas shutoff valve will be required to be installed in accordance with the manufacturer’s installation instructions. A receptor pan shall be installed to collect incidental drainage water and to allow some time for the occupant to detect the “pop off” condition before a large amount of water is discharged.
10. In non-residential settings, P & T drains may terminate in floor sinks, floor drains or other similar receptors, when a 1” air gap is maintained.
11. No part of such drain shall be trapped.
12. The terminal end of the drainpipe shall not be threaded.
13. The terminal end shall be readily observable.

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5. When to use a thermal expansion tank

The 2022 California Plumbing Code Section 608.3: Any water system provided with a check valve, backflow preventer or a pressure regulating device which does not have a bypass feature at its source shall be provided with an approved, listed, adequately sized pressure relief valve or means to control expansion.

The Plumbing code requires that thermal expansion control be addressed in the plumbing systems. **A temperature and pressure relief valve is not considered a thermal expansion device.**

Thermal expansion of heated water may occur wherever potable water is heated in a closed system (when the potable water is isolated from the public water supply by a one-way valve, such as a pressure reducing valve that does not have a bypass, backflow preventer or a check valve).

Expansion tanks are designed to absorb the increased volume of the water created by thermal expansion and to maintain a balanced pressure throughout the potable water supply system. They are used to prevent plumbing system and/or water heater damage and unnecessary relief valve discharge caused by excessive pressure from thermal expansion.

Only closed plumbing systems shall require the installation of an expansion tank. All residential dwellings shall be considered to have an open system, unless a visual inspection provides evidence of the existence of a **check valve, backflow preventer or a pressure-regulating device.**

During the replacement of a water heater, the building department recommends installing an expansion tank. However, it is not required as a part of a replacement water heater permit and inspection.