



Water Heater Installation Information



Prevent Your Water Heater from Tipping Over During an Earthquake

To prevent a water heater from tipping over during an earthquake and leaking gas or causing water damage, state law, AB 1890, requires all new and replacement water heaters sold in California on or after July 1, 1991 to be strapped, braced, and anchored as outlined in this Bulletin.

The Division of the State Architects Office also provides these online [Guidelines for Earthquake Bracing for Residential Water Heaters](#).

No permit is required for voluntary seismic bracing of water heaters.

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For safety, it is vital to follow all specifications and regulations regarding the location and replacement of water heaters. This bulletin pertains to storage-type water heaters.

REGULATIONS FOR LOCATING GAS-FIRED WATER HEATERS

Prohibited locations. Gas-fired water heaters use fuel combustion for heat. For safety, do NOT install them in bathrooms, clothes closets, or rooms used for sleeping. Do not install them in any closet or confined space that open into a bathroom or bedroom.

Exception: Direct vent water heaters.

Use of safe pans. Locating a storage tank water heater in an attic or space where a leak could cause damage is prohibited UNLESS you install an approved safe pan below the water heater with a minimum 3/4-inch drain to an approved, readily visible location.

Stairways and landings. Where not prohibited by other regulations, water heaters may be located under a stairway or landing.

In a garage. 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.

REQUIREMENTS FOR STRAPPING, BRACING OR ANCHORING

A water heater can move or tip over during an earthquake and cause leaks in gas piping, which in turn may pose a fire hazard. Broken water lines may also cause damage to floors and walls. State law, AB 1890, requires all new and replacement water heaters sold in California on or after July 1, 1991 to be strapped, braced, or anchored as follows:

Strapping. Per the California Plumbing Code, for water heaters up to 52-gallon size, two straps are required:

Upper strap - Place 9 inches from the top of the unit or within the upper one-third of the unit.

Lower strap - Place at least 4 inches above the controls and within the lower one-third of the unit.

Larger heaters require additional bracing in proportion to their sizes: A 75-gallon unit requires 3 straps and a 100-gallon unit requires 4 straps, etc. Some manufacturers make listed straps for water heater installations; these may be used instead of the methods discussed below when installed per the manufacturer's instructions.

Bracing. Use one of the two bracing methods recommended by the Division of the State Architect's Office (DSA):

Tape Method - Use 24-gauge (minimum) plumber's tape to encircle the water heater and use lag screws to bolt it to a 2x4-inch ledger that is bolted to the wall framing. The 2x4-inch ledger is required at each strap location.

Conduit Method - Use a round thinwall conduit along with 24-gauge (minimum) plumber's tape, bolts, and lag screws.

Anchoring. Follow the instructions provided by the water heater manufacturer.

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TEMPERATURE AND PRESSURE RELIEF (T&P) VALVE REQUIREMENTS

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 constructed, listed, and installed in accordance with nationally recognized applicable standards. T&P requirements are as follows:

1. Each T&P valve must be an approved type with a drain.
2. A union must be installed in the drain line near the water heater to facilitate removal and replacement of the water heater or the T&P valve. Exception: If a water heater can be replaced without adversely affecting the drainpipe installation, the union may be omitted.
3. No shutoff valve shall be installed in the relief valve drain line system.
4. The drain provided to T&P valves located inside a building must not be smaller than the relief valve outlet, and must be made from galvanized steel, 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.
5. 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. It is not acceptable to terminate the T&P in the underfloor area.
6. When a water heater is located in a garage, the T&P drainpipe may terminate in the garage. The piping must extend from the valve to within 12 inches but not less than 6 inches above the floor and point downward.
7. Water heaters not located in a garage cannot terminate the T&P drain in the garage. These drain lines must terminate to the outside.
8. 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).
9. The T&P drain must not be connected to the sanitary sewer.
10. No part of such drain shall be trapped.
11. The terminal end of the drainpipe must not be threaded.

Permits and inspections

- Help keep your property safe
- Help assure the quality of your remodeling investment
- Are required by law

