



The Problem



The unbraced water heater in this home fell during an earthquake; the resulting fire destroyed the home.

Source: California Seismic Safety Commission

Unsecured water heaters often fall over during an earthquake.

If water heaters are not properly braced, they can topple over during an earthquake causing:

- Broken gas lines and gas leaks
- Fires causing major damage to homes
- Broken water lines and flooding

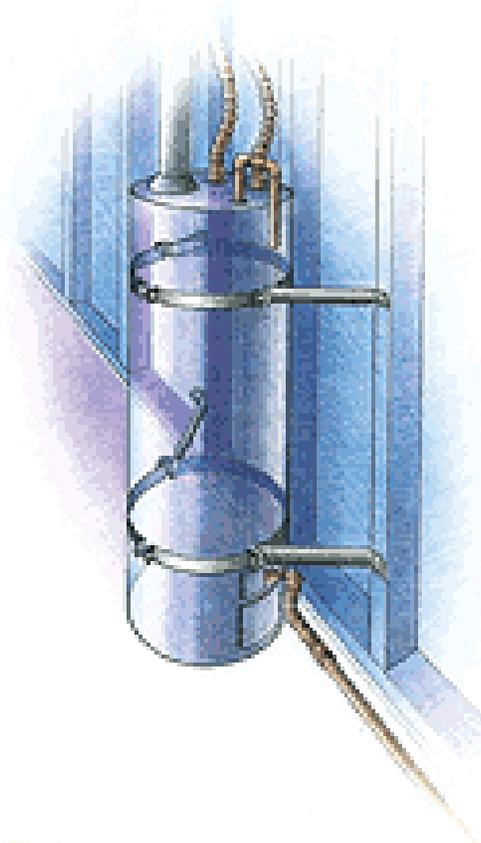
How to Identify

If your water heater does not have two straps that wrap completely around it and are screwed into the studs or masonry of the wall, then it is not properly braced.

Bracing kits are available that make this process simple. Also, have a plumber install flexible (corrugated) copper water connectors, if not already done.

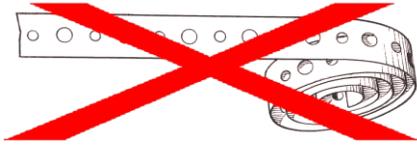
Remember:

- A typical water heater holds 30 to 50 gallons of water.
- Water heaters are extremely vulnerable to the ground undulation (swells and rolls) and ground acceleration of earthquakes, causing them to tip over.
- You can protect your home by securing your water heater to the wall studs.



Changes to strapping recommendations

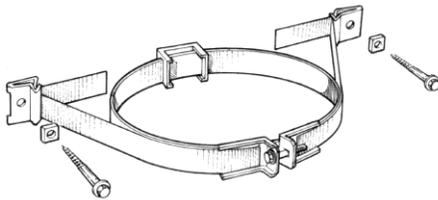
Your tank may be strapped, but incorrectly, as old methods are no longer recommended. Experts have modified the recommended procedure for strapping water heaters because many tanks broke through their strapping in past earthquakes. Experts recommend these two important changes:



Do NOT use this – this is plumber's tape. Use heavy gauge steel strapping instead. *Source: SPAN Disaster Services, Inc.*

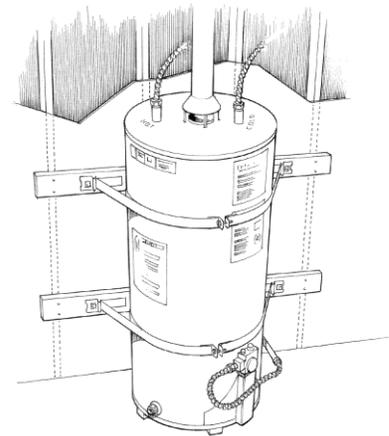
1. Secure both the top and the bottom, rather than just the top or just the middle, of the hot water tank.
2. Use heavy-gauge metal strapping, not plumber's tape. Many water heaters in past earthquakes broke through plumber's tape that was intended to keep them secure. The thin metal in plumber's tape has been found to be too brittle to be effective.

Securing your hot water tank



Commercially available kits like this come complete with the strapping, lag screws, washers, spacers, and tension bolts. These kits can be purchased at many local hardware stores and are recommended.

Make sure the strap wraps around the water heater 1 1/2 times! Water heaters are an excellent supply of emergency water. Water can be accessed from the drain spout – this is made easier by connecting a garden hose to the drain spout. Open a faucet somewhere in the house to allow the water to drain easier. Make sure the electricity or natural gas is shut off before opening the drain. *Source: SPAN Disaster Services, Inc.*



Secure your water heater.

- There should be very little space between the water heater and the wall. If there is more than 1 or 2 inches, attach a wooden block to the wall studs with long lag screws (see illustration on page 20). The purpose is to prevent the heater from tipping backwards.
- Wrap the heavy-gauge metal strapping 1½ times around the tank. Start by placing the strapping at the back of the tank. Bring it to the front and then take it back to the wall (see illustration below).
- Secure this strapping to the wall studs or the wood block using several 1/4" x 3" or longer lag screws with oversized washers. If you are securing it directly into concrete, use 1/4" expansion bolts in place of the screws.
- Replace copper and metal piping with flexible natural gas and water line connectors.